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Abstracts
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<td>Liste der Erstautoren / Liste des premiers auteurs</td>
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Does thyroid hormone replacement reduce fatigability in older adults with subclinical hypothyroidism? A randomized placebo controlled trial

Mirah Shuber1, Elisavet Moutzouz1,2, Martin Feller1,2, Cinzia Del Giovane1, Manuel R Blum1,2, Nancy W Glynn3, Douglas C Bauer4, Jakobin Gusselko1,2, Vera J O McCarthy5, Patricia M Kearney6, Drahomir Aujesky7, Rud Westendorp8, David J Scott9, Nicolas Rodondi1,2

1Institute of Primary Care Health (BHIAM), University of Bern, 2Department of General Internal Medicine, Inselspital, Bern University Hospital, Bern, Switzerland, 3Department of Health Research and Policy, Division of Epidemiology, Stanford University School of Medicine, Stanford, 4University of Pittsburgh, Graduate School of Public Health, Department of Epidemiology, Center for Aging and Population Health, Pittsburgh, 5Departments of Medicine and Epidemiology and Biostatistics, University of California, San Francisco, United States, 6Department of Endocrinology / General Internal Medicine, Leiden University Center, 7Department of Public Health and Primary Care, Leiden University Center, Leiden, Netherlands, 8School of Nursing and Midwifery, University College Cork, 9School of Public Health, University College Cork, Cork, Ireland, 10Department of Public Health and Center for Healthy Aging, University of Copenhagen, Copenhagen, Denmark, 11Institute of Cardiovascular Medicine, University of Glasgow, Glasgow, United Kingdom

Background: Global fatigue is one of the most commonly reported symptoms in subclinical hypothyroidism (SHypo) and one of the main reasons for prescribing levothyroxine. Our recent TRUST trial indicated no benefit on global fatigue from levothyroxine replacement in SHypo, but it might not have enough power to detect a difference (n=230). Given that treatment of SHypo remains controversial, we analyzed the effect of levothyroxine replacement in patients with SHypo on physical and mental fatigability which has been shown to be a more sensitive measure than global fatigue.

Methods: The TRUST trial was a double-blind, randomized, placebo-controlled, parallel-group trial involving adults aged ≥65 and diagnosed with SHypo defined as the presence of persistently elevated TSH levels (4.6-19.9 mIU/L) with free thyroxine within the reference range. The present substudy on fatigability included participants from Switzerland and Ireland. Our outcome was the between-group difference in perceived physical and mental fatigability after 1 year using the Pittsburgh Fatigability Scale (PFS), a 10-item self-administered questionnaire, that measures both physical and mental fatigability (scores range from 0 to 50, higher score = higher fatigability). Multivariate linear regression models were adjusted for levothyroxine starting dose, sex, site and baseline scores in a modified intention to treat population.

Results: This study included 230 participants (mean age: 73.4 years; 44.4% female). The means±SD TSH was 6.2±1.9 mIU/L at baseline and after 1 year decreased to 3.1±1.3 mIU/L in the levothyroxine group vs. 5.3±2.3 mIU/L in the placebo group (p <0.001). At baseline, mean physical PFS score was 14.7±9.3 in levothyroxine group and 11.1±9.1 in placebo group; mean mental PFS score was 7.4±8.0 and 5.1±6.9, respectively. The mean physical PFS score at 12 months (adjusted for covariates) was 13.7±5.7 for levothyroxine group and 13.6±5.7 for placebo group with a between-group difference of -0.2 (95% confidence interval [CI] = -1.8 to 2.1; p = 0.88), mean mental PFS score was 5.5±0.6 and 6.5±0.7, respectively, with a between-group difference of -1.0 (95% CI = -2.8 to 0.8; p = 0.26).

Conclusions: Our substudy extended the TRUST trial’s findings by examining the novel constructs of physical and mental fatigability. Levothyroxine replacement in SHypo was not associated with change in physical or mental fatigability. Therefore, fatigue does not seem to be a good indication to prescribe levothyroxine in SHypo.

Level of physical activity in elderly patients hospitalized in a Swiss university hospital
Plamena Tasheva, Vanessa Kraege, Peter Vollenweider, Marie Mean, Pedro Marques-Vidal
CHUV, Department of Medicine, Internal Medicine, Lausanne, Switzerland

Introduction: Low mobility of elderly patients during hospitalization is associated with a wide range of negative outcomes, such as physical decline, increased fall risk, longer hospitalization and new institutionalization. Several studies have assessed inpatient mobility based on observational data (brief surveys of patient location, periodic nursing reports) but few have used accelerometry. Hence, we aimed to record physical activity (PA) levels of acutely admitted medical patients via accelerometer.

Methods: Observational cohort study conducted between February and November 2018 in an acute internal medicine unit in the Lausanne university hospital, Switzerland. Overall, 200 patients aged ≥65 years were studied, including patients with cognitive impairment or confusion at admission. PA during acute hospital stay was objectively and continuously recorded via a 3D wrist accelerometer and categorized into sedentary (<85 mini-g [units of acceleration, 1g = 9.8 m/s²]), light (85-181 mini-g), moderate-vigorous (>181 mini-g) and overall activity. PA levels were described as the average amount of PA in percentage of time and minutes per day, nighttime not considered.

Results: Of the initial 200 patients, 124 (62%, median age 83 years, 59% men) had accelerometry data for at least 48h. At admission, one third had cognitive impairment/confusion and most of them experienced slight or moderate dependence before their hospital admission (median Barthel index at inclusion: 88). The characteristics and the PA levels of the 124 patients studied are summarized in the table. Overall and most of the time, patients did not mobilize at all (median amount of time of sedentary status: 762 minutes, i.e. 98.5% of the day). The median time of light PA per day was 5.4 minutes (1.5%). No moderate-vigorous PA was recorded. Levels of PA did not differ according to gender. Intra-daily activity analysis showed three peak periods of PA: between 8 and 10 am, at 12 am and at 6 pm (figure). We found similar findings when all patients with available PA data (n = 160) were included or when another algorithm to assess PA was applied.

Conclusion: Elderly hospitalized patients mobilize less than 6 minutes a day and perform only light PA. The intra-daily pattern of PA may cor...
respond to eating periods. Specific intervention programs in order to increase the amount of physical activity in elderly hospitalized patients are urgently needed.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Men (N=73)</th>
<th>Women (N=91)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>70 ± 6</td>
<td>64 ± 4</td>
<td>0.003</td>
</tr>
<tr>
<td>Body mass index (kg/m²)</td>
<td>24.9 ± 5.2</td>
<td>24.2 ± 4.8</td>
<td>0.438</td>
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<tr>
<td>Barthel index at inclusion</td>
<td>95 [86 - 100]</td>
<td>96 [88 - 98]</td>
<td>0.817</td>
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<tr>
<td>Cognitive impairment/confusion</td>
<td>26 (35.6)</td>
<td>9 (17.7)</td>
<td>0.029</td>
</tr>
<tr>
<td>Use of auxiliary walking tools (%)</td>
<td>36 (49.3)</td>
<td>30 (58.8)</td>
<td>0.296</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical activity levels (min/day)</th>
<th>Sedentary</th>
<th>Light</th>
<th>Moderate + vigorous</th>
<th>All</th>
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<tbody>
<tr>
<td>776 (722 - 808)</td>
<td>0.747</td>
<td>0.895</td>
<td>0.300</td>
<td>0.364</td>
</tr>
<tr>
<td>761 (732 - 804)</td>
<td>0.747</td>
<td>0.895</td>
<td>0.300</td>
<td>0.364</td>
</tr>
<tr>
<td>5 [2 - 15]</td>
<td>0.003</td>
<td>0.003</td>
<td>0.003</td>
<td>0.003</td>
</tr>
<tr>
<td>6 [1 - 17]</td>
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<td>0.003</td>
<td>0.003</td>
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<tr>
<td>0 [0 - 1]</td>
<td>0.003</td>
<td>0.003</td>
<td>0.003</td>
<td>0.003</td>
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<tr>
<td>2 [1 - 4]</td>
<td>0.003</td>
<td>0.003</td>
<td>0.003</td>
<td>0.003</td>
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</tbody>
</table>

Results are expressed as mean ± standard deviation or as median [interquartile range] for continuous variables and as number of patients (percentage) for categorical variables. Statistical analysis by student’s t-test or Kruskal-Wallis test (§) for continuous variables and chi-square for categorical variables.

Table: characteristics and physical activity levels according to gender.

[Figure: average physical activity per hour. Results are shown as average and 95% confidence interval]

FM5

Clinical presentation and outcomes in elderly patients with symptomatic isolated subsegmental pulmonary embolism

Nina Stöller1, Andreas Limacher2, Marie Meän1, Christine Baumgartner1, Tobias Trischler1, Marc Rigini3, Jürg Hans Beer4, Nicolas Rodondi1, Drahomir Aujesky1
1Department of General Internal Medicine, Inselspital, Bern University Hospital, University of Bern, 2CTU Bern, University of Bern, Bern, 3Division of Internal Medicine, Lausanne University Hospital, Lausanne, 4Division of Angiology and Hemostasis, Geneva University Hospital, Geneva.

Introduction: Data are limited on clinical presentation and outcomes in elderly patients with acute symptomatic isolated subsegmental pulmonary embolism (SSPE).

Methods: We prospectively followed 658 patients aged ≥65 years with acute symptomatic isolated SSPE or more proximal pulmonary embolism (PE) in a multicenter Swiss cohort study. We compared the clinical presentation, risk factors, processes of care, and outcomes between patients with isolated SSPE and patients with more proximal PE. We examined the association between localization of PE and clinical outcomes (recurrent venous thromboembolism [VTE], major bleeding, and overall mortality) using regression models, adjusting for potential confounders and periods of anticoagulation as a time-varying covariate.

Results: Overall, 66 of 658 patients (10%) had isolated SSPE. Patients with SSPE were less likely to have new/worsening dyspnea (71% vs. 82%, p = 0.03), concomitant deep vein thrombosis (6% vs. 18%, p = 0.02), and a heart rate ≥110/min (3% vs. 13%, p = 0.02), but were more likely to have active cancer (29% vs. 16%, p = 0.007) and to receive outpatient care (12% vs. 4%, p = 0.004) than patients with more proximal PE. Virtually all patients (98%) with isolated SSPE received anticoagulants. Patients with isolated SSPE and those with more proximal PE had similar 3-year cumulative incidences of recurrent VTE (8% vs. 13%, p = 0.32; Figure 1), major bleeding (24% vs. 15%, p = 0.37; Figure 2), and death (28% vs. 20%, p = 0.11). After adjustment, isolated SSPE was not significantly associated with a lower risk of clinical outcomes compared to more proximal PE (sub-hazard ratio [SHR] for recurrent VTE: 0.6, 95% confidence interval [CI] 0.3-1.5; SHR for major bleeding: 1.2, 95%CI 0.6-2.2; hazard ratio for death: 1.0, 95%CI 0.6-1.9). In a sensitivity analysis excluding patients with isolated SSPE who had concomitant proximal deep vein thrombosis, the results remained similar.

Conclusions: Elderly patients with acute isolated SSPE had a more discrete clinical presentation but similar incidences of adverse outcomes compared to patients with more proximal PE. Thus, our study does not provide any evidence that selected, elderly patients with isolated SSPE have a more benign clinical course.
Do patients with subclinical hypothyroidism who suffer from greater symptom burden benefit from levothyroxine therapy? Randomized placebo-controlled TRUST trial

Maria de Montmollin1,2, Martin Feller1,2, Shanthi Beglinger1,2, Alex McConnachie3, Cinzia Del Giovane2, Rosalinde K Poortvliet4, Drahomir Aujesky1, Ian Ford3, Simon P Mooijaart4,5, Torquil Watt6, Rudi G Westendorp7, Patricia M Kearney8, Jacobijn Gussekloo4,9, David J Stott10, Nicolas Rodondi1,2, Douglas C Bauer11

1General Internal Medicine, Inselspital, Bern University Hospital, 2Institute of Primary Health Care (BIHAM), University of Bern, Bern, Switzerland, 3Robertson Centre for Biostatistics, Institute of Health and Wellbeing, University of Glasgow, Glasgow, United Kingdom, 4Public Health and Primary Care, Leiden University Medical Center, 5Institute for Evidence-based Medicine in Old Age, Leiden University Madical Center, Leiden, Netherlands, 6Copenhagen University Hospital Herlev, 7Public Health and Center for Healthy Aging, University of Copenhagen, Copenhagen, Denmark, 8School of Public Health, University College Cork, Cork, Ireland, 9General Internal Medicine, Leiden University Medical Center, Leiden, Netherlands, 10Institute of Cardiovascular and Medical Sciences, University of Glasgow, Glasgow, United Kingdom, 11Medicine and Epidemiology and Biostatistics, University of California, San Francisco, United States

Introduction: A recent large trial and meta-analysis of all RCTs found that levothyroxine does not improve hypothyroid symptoms or quality of life among adults with subclinical hypothyroidism (SCH). However, those who report higher symptom burden prior to treatment might still benefit. The aim of this analysis is to determine whether levothyroxine, compared to placebo, improves hypothyroid physical symptoms and tiredness among older adults with SCH and higher baseline symptom burden.

Methods: We analyzed data from adults ≥65 years with persistent SCH (defined as TSH 4.6 to 19.9mIU/L for >3 months, normal IT4) included in the TRUST trial, a multicenter, double blinded, placebo-controlled, randomized trial. Participants were randomized to levothyroxine or matching placebo including mock titration. The main outcomes were the change in 1-year Hypothyroid Symptoms score (4 items) and Tiredness score (7 items) in the Thyroid-Related Quality-of-Life Questionnaire (ThyPRO). All outcomes were compared between the levothyroxine and placebo groups.

Results: At baseline, 132 persons (20.7%) had Hypothyroid Symptoms scores >30 (mean age of 75.0 years, 64.4% women, mean TSH±SD 6.2mIU/L±1.65 and mean Hypothyroid Symptoms score±SD 45.2±14.6) and 209 persons (32.8%) had Tiredness scores >30 (mean age of 74.7 years, 63.2% women, mean TSH 6.2mIU/L±1.65 and mean Tiredness score 48.9±14.9). After 1 year, among those with a Hypothyroid Symptoms score >30 at baseline, the mean score was 34.9 in the placebo and 32.8 in the levothyroxine group; among those with a Tiredness score >30 at baseline, the mean score was 43.1 in the placebo and 41.3 in the levothyroxine group.

1-year outcomes were similar between the levothyroxine and placebo groups (adjusted difference -0.5, 95%CI: -6.8 to 5.8, p = 0.88; and -0.7, 95% CI: -6.1 to 4.8, p = 0.80, respectively, Figures 1 & 2).

Among all TRUST participants (n = 737), baseline scores of the two main outcomes (as continuous variables) did not modify the effects of levothyroxine vs. placebo on Hypothyroid Symptoms (interaction p value = 0.85) or Tiredness (p = 0.65).

Conclusions: In this secondary analysis of older adults with SCH and higher symptom burden at baseline, levothyroxine therapy did not improve hypothyroid symptoms or tiredness.
Background: The rate of hospital readmission or death is high among patients surviving acute hypercapnic respiratory failure (AHRF). Traditional severity scores such as BODE index perform poorly to predict readmission. Evaluation of functional performances could be a simple and useful way to assess this risk.

Aim: To evaluate the relationship between gait speed and hospital readmission or death in patients surviving AHRF.

Methods: 78 patients were recruited to form a cohort of patients surviving AHRF in the intensive care unit (ICU). All predictive variables were prospectively collected within 15 days after resolution of respiratory failure before hospital discharge. Gait speed was measured by a 6-minute walking test. Hospital readmission and death were recorded at regular intervals for 6 months.

Results: 34/71 (48%) patients died or were readmitted to the hospital during the observation period. Median gait speed was 0.7 m/sec. 66% (25/33) slow walkers (gait speed <0.7 m/s) and 27% (9/33) non-slow walkers died or were readmitted at six months (p = 0.002). Treated as a continuous variable, gait speed was significantly associated with death or readmission in univariate analysis (HR 0.41; 95% CI 0.19 to 0.90, p = 0.025). In the multivariate model adjusted for age, sex, BMI, forced expired volume in one second (FEV1), heart failure and home mechanical ventilation (HMV), gait speed remained the only variable associated with readmission or death (multivariable HR: 0.35; CI95: 0.14-0.88, p = 0.025).

Conclusion: This study suggests that a simple frailty parameter such as gait speed predicts death or readmission in patients surviving an acute hypercapnic respiratory failure.

**Table 1: Diagnostic accuracy of red flags for serious spinal pathologies (selection)**

<table>
<thead>
<tr>
<th>Red flag</th>
<th>Sens %</th>
<th>Spec %</th>
<th>LR+</th>
<th>LR-</th>
</tr>
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<tbody>
<tr>
<td>Spinal cancer</td>
<td>100</td>
<td>96.4</td>
<td>27.9</td>
<td>0.00</td>
</tr>
<tr>
<td>Vertebral fracture</td>
<td>History of trauma</td>
<td>80</td>
<td>54.9</td>
<td>1.8</td>
</tr>
<tr>
<td>Epidural abscess</td>
<td>Intravenous drug use</td>
<td>60.4</td>
<td>65.6</td>
<td>13.7</td>
</tr>
<tr>
<td>Epidural abscess</td>
<td>Indwelling vascular catheter</td>
<td>9.4</td>
<td>99.4</td>
<td>15.7</td>
</tr>
<tr>
<td>Epidural abscess</td>
<td>Other infection site</td>
<td>28</td>
<td>91.8</td>
<td>13.7</td>
</tr>
<tr>
<td>Epidural abscess</td>
<td>Elevated ESR (&gt; 20 mm/hour)</td>
<td>100</td>
<td>67</td>
<td>3</td>
</tr>
<tr>
<td>Epidural abscess</td>
<td>Any risk factor²</td>
<td>100</td>
<td>76.7</td>
<td>4.3</td>
</tr>
<tr>
<td>Spinal cordocaudal equina compression</td>
<td>Any serious outcome³</td>
<td>33.4</td>
<td>89.1</td>
<td>3.1</td>
</tr>
</tbody>
</table>

Sens: sensitivity; Spec: specificity; LR+: positive likelihood ratio; LR-: negative likelihood ratio; ESR: erythrocyte sedimentation ratio; 1 - included edema, intravenous drug use, recent spine procedure or inter epatic surgical implants, recent spine fracture, indwelling vascular catheter, immunocompromised patient, other site of infection, chronic liver diseases; 2 - included the following pathologies: osteomyelitis, epidural abscess, spinal cancer, cauda equina syndrome, severe disc prolapse requiring urgent intervention, intrapethoral bleeding, compression fracture, spinal abscesses requiring urgent intervention.

**FM9**

Genes, diet... or bad luck? Impact of dietary and genetic scores on weight gain

Laila Barataeli, Pedro Marques-Vidal, Marie Méan
Chuv, Département de Médecine Interne, Lausanne, Switzerland

Introduction: Obesity results from complex genetic and environmental interactions. Whether the genetic background or lifestyle behaviors (or both) influence weight gain in middle-aged subjects is debated.

Aim: To assess the changes in body mass index, weight, waist and hip circumferences according to dietary and previously known obesity genetic scores in a Swiss population-based cohort study (CoLaus, Lausanne).

Methods: Cross-sectional and prospective (follow-up of 5.6 years) study including 3033 participants (53.2%; women, mean age 58.4 years). Two previously described obesity genetic risk scores using 31 or 68 SNPs were computed. Dietary intake was assessed using a validated, self-administered, semi-quantitative food frequency questionnaire. Naïve dietary patterns (one healthy “Fruits & vegetables” and two unhealthy “Meat & fries”, “Fatty & sugary”) were based on food consumption frequencies. Three hypothesis-oriented dietary scores [two Mediterranean diet scores and the alternative healthy eating index (AHEI)] were also computed.

Results: On the cross-sectional analysis, obesity markers were negatively associated with healthy dietary scores and dietary patterns, and positively associated with unhealthy dietary patterns and genetic scores. On the prospective analysis, the AHEI and the “Fruits & vegetables” dietary pattern were negatively associated with waist gain: multivariable-adjusted average ± standard error 0.96±0.25 vs. 1.11±0.26 cm (p for trend 0.006), and 1.14±0.26 vs. -0.05±0.26 cm (p for trend <0.001) for quartiles 1 and 4 of the AHEI and the “Fruits & vegetables” dietary pattern, respectively. Similar results were obtained when the changes in waist or weight were categorized into < or ≥5 cm or ≤5 and >5 kg: multivariable-adjusted odds ratio and (95% confidence interval) for ≥5 cm waist gain: 0.85 (0.50-0.85) and 0.67 (0.51-0.89) for the fourth vs. the first quartile of the AHEI and the “Fruits & vegetables” dietary pattern, respectively. No associations were found between genetic scores and changes in all obesity markers, and no significant gene-diet interactions were found for all obesity markers both in the cross-sectional and the prospective analyses.

Conclusion: Dietary intake, not genetic scores, are associated with waist and to a lesser degree with weight gain in subjects aged 40 to 80 living in Lausanne, Switzerland. Physicians should target dietary behaviors rather than rely on genetics to manage obesity.

**FM10**

Promoting shared decision making (SDM) in colorectal cancer screening in primary care: a cluster randomized controlled trial

Yonas Martin1,2, Julia Schneider1, Marc-Andrea Janggen3, Charles Dvôrák3, Kali Tal4, Nikola Biller-Andorno5, Jean-Luc Bulliard5, Cyril Ducros6, Jacques Comuz5, Kevin Selby5, Reto Auer1,5

1Berner Institut für Hausarztmedizin (BIHAM), 2Department of General Internal Medicine, 3University Hospital Bern, Inselspital, Department of General Internal Medicine, 4Massachusetts General Hospital, Institute of Health Policy and Management, 5University Hospital Bern, Inselspital, Department of Health, 6University Hospital Bern, Bern, Switzerland

Background: Colorectal cancer (CRC) is the second most common cause of cancer mortality globally. Current guidelines recommend a flexible sigmoidoscopy every 5 years for people aged 50 to 64 and a combination of sigmoidoscopy and fecal occult blood test (FOBT) every 10 years for people aged 50 to 75 years. Many people do not participate in CRC screening. Shared decision making (SDM) is an effective strategy to promote SDM in CRC screening. This study examined whether a SDM intervention significantly increased screening uptake compared with usual care.

Methods: 14 primary care practices were recruited. One practice was randomly assigned to usual care and the other 13 were assigned to the SDM intervention. The SDM intervention included a 1-hour training session for practice staff and patients and a decision aid. The decision aid included information about CRC, the merits and limitations of screening, and a pro/con checklist to facilitate discussion about CRC screening. Practices were encouraged to implement the SDM intervention using their usual practice setting and procedures.

Results: Baseline survey data were collected from 3,038 patients (54% women, mean age 58 years). The intervention group compared with the usual care group had a significantly higher percentage of patients who reported ever having CRC screening (61.6% vs. 29.5%, p <0.001). Furthermore, the intervention group had a significantly higher percentage of patients who reported being currently up to date with CRC screening (59.6% vs. 11.4%, p <0.001).

Conclusion: This study shows that a SDM intervention can increase CRC screening uptake compared with usual care.

*Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.*
Trajectories of aging in the European DO-HEALTH study

Virginia Ghisla1,2, Patricia Chocano-Bedoya1,2, Andreas Egli1,2, Angélique Sadlon1,2, Heike Annette Bischoff-Ferrari1,2,3, DO-HEALTH Study Group

1Centre on Aging and Mobility, University Hospital Zurich, Waid City Hospital, and University of Zurich, 2Department of Geriatrics, University Hospital Zurich, 3University Clinic for Acute Geriatric Care, Waid City Hospital, Zurich, Switzerland

Introduction: Aging is a dynamic process ranging from delayed aging, allowing adults to stay active and healthier, to accelerated aging, putting adults at increased risk of frailty. Little is known, however, if and to what extend older adults may change between aging trajectories. Therefore, we aimed to assess trajectories of aging in the large DO-HEALTH Study.

Methods: We took advantage of the DO-HEALTH study cohort including 2157 comprehensively phenotyped adults age 70 and older living in the community, recruited from 5 European countries and followed over 3 years.

To classify healthy agers, we used the Nurses’ health study (NHS) definition: No comorbidities, no major impairments in cognition, physical function or mental health. To classify pre-frailty and frailty, we used the Fried definition, where “pre-frail” was defined by presence of 1 or 2 and “frailty” by presence of at least 3 of 5 Fried frailty symptoms (weakness, unintentional weight loss, fatigue, slowness and low activity). The healthy ager status (HA) precluded the presence of any frailty symptom. Participants who did not meet the HA status were classified as “premature agers” (PA) if they were not pre-frail or frail and as “accelerated agers” (AA) if they did not meet the HA status and were at least pre-frail. Between these three categories, we pre-defined 9 trajectories of aging from baseline to the 3 year follow-up, and assessed their incidence in DO-HEALTH overall, by gender and by age.

Results: Over 3 years, 59.3% of 1384 DO-HEALTH participants remained in their baseline aging category (63.1% of 480 HA, 43.2% of 484 PA, 73.3% of 420 AA). Overall, 15.3% of participants improved: 20.7% of PA improved to HA and 26.7% of the AA recovered to either HA (6.2%) or PA (20.5%). However, 25.4% progressed: 36.2% of PA progressed to AA, and 36.9% of HA progressed to either PA (20.6%) or AA (16.3%). AA at baseline was more frequent among adults 75 and older vs. those 70-74 years (40.6% vs. 23.4%, p <0.0001) and among women vs. men (34.8% vs. 23.9%, p <0.0001). Adults 75 and older improved less frequently (12.3%) compared to adults aged 70-74 years (17.3%, p = 0.01). No significant differences in trajectories were observed between men and women.

Conclusion: In this large prospective study of healthy European adults age 70 and older, we found that within 3 years 25.4% switched towards a less advantageous aging trajectory, while 15.3% improved. Improvement was more frequent among those less than 75 years of age.
Methods: We considered all patients consecutively admitted into the ACE unit of the University hospital of Lausanne from January 1st to August 31st, 2018. Administrative data for the year 2018 was compared to those obtained from the two previous years when the rehabilitation programme was not yet implemented. Clinical data used in the analyses were obtained through a comprehensive geriatric assessment (CGA) conducted within the first 48 hours of the hospital stay.

Results: Over the 8-month period, 378 patients (mean age 86.3±6.2, 72.8% women) were admitted into the ACE unit through the emergency department for 94.7%. Compared to previous years, the rehabilitation programme had significantly reduced the median length of stay to 10.4 days (mean length of stay to 11.7±8.1 day - p <0.05), and the rates of transfer to rehabilitation centres after the acute hospital stay and of early unplanned hospital readmission. Direct discharges to community care (i.e., personal home or institutional setting) were also significantly increased (35.7%). The rates of death during the hospital stay (2.6%) were similar across the three years considered.

Conclusion: The primary results of this study tend to demonstrate the interest of integrating early rehabilitation programme in ACE unit. Further analyses have still to be computed to identify clinical determinants of the adherence rate and the cost/benefit of such programme in order to recommend such approach to all hospitalized aged patients.

FM13
An example of a specific rehabilitation program after surgical intervention for peripheral artery disease in an elderly population: patients' characteristics, functional outcomes and cardiovascular risk factors
Tommaso De Francesco1, François Saucy2, Sébastien Déglise3, Jean-Marc Corpataux2, Hervé Probst3, Rebecca Dreher4
1 Ensemble Hospitalier de la Côte, Gilly, 2 CHUV, Service de Chirurgie Vasculaire, Lausanne, 3 Ensemble Hospitalier de la Côte, Service de Chirurgie, Morges, 4 Ensemble Hospitalier de la Côte, Géronte, Gilly, Switzerland

Introduction: Peripheral Artery Disease (PAD) increases with age. By-pass surgery and/or endovascular interventions are often performed. Literature is scarce on post-operative rehabilitation outcomes in these patients. We set up a specific rehabilitation program which included a) functional rehabilitation and b) identification of cardiovascular risk factors followed by targeted interventions. The interdisciplinary team received training by the cardio-vascular team. Joint visits (geriatrician-vascular surgeon) occurred bi-monthly.

Objective: To identify patients' characteristics, functional outcomes, cardiovascular risk factors and consequent interventions.

Method: Retrospective study from February to December 2018, including all patients who were hospitalized after a vascular intervention. Data on demographics, cognitive and functional status were collected upon admission using standardized measures.

Results: N = 98 patients (mean age 76.4 years, 58% men, 47% living alone) participated. Cognitive impairment (MMSE <24/30) was present in 30% (N = 29/98). Functional dependency was present in 56% (N = 55/98) of patients upon admission (FIM <90/126). At discharge 35% (N = 19/55) of patients with an initial functional dependency had regained their autonomy (FIM >90/126). Walking perimeter increased by ≥ 50 m in 42%, and increased by ≥ 100m in 28%. Active smoking was present in 31% (N = 30/98) and an intervention (education, motivational support, patch-inhaler) occurred in 80%.

Hypertension was present in 79% (N = 77/98) and diabetes in 29% (N = 28/98). Medication was adapted in 23% (N = 18/77) and 11% (N = 3/28) respectively. All patients (100%) had dyslipidemia, medication was adapted in 43% (N = 42/98).

Conclusion: In this elderly polymorbid population over half the patients presented a functional dependency at admission and a third had impaired cognition. In spite of this, 20% of those presenting an initial functional dependency recuperated their functional autonomy at discharge. However, in spite of being in a rehabilitation setting, 36% (N = 35/98) remained functionally impaired (MIF <90/120) at discharge. Although patients had treated cardiovascular risk factors, medication was frequently insufficient and adapted 63 times. Nearly half (43%) of dyslipidemia cases were undertreated.

Further research is needed to identify which patients are at risk of poorer functional outcomes and better understand why cardiovascular risk factors are often undertreated.

FM14
Rehabilitation outcomes in older inpatients after hip fracture using instrumented shoes
Kristof Major1, Christopher El Achkar2, Constanze Lenoble-Hoskovc1, Hélène Krief1, Annie Paraschiv-Ionescu3, Kamiar Aminian2, Christophe Bül1, 1Chuv, 2EPFL, Lausanne, Switzerland

Introduction: Older patients suffering from a hip fracture most often need rehabilitation in post-acute care. Goals of care include to recover sufficient functional independence, improve mobility and locomotion, as well as strength and endurance. Wearable activity monitoring seems promising to better assessing not only gait performance but also several of these functional outcomes.

Methods: Patients aged >65 years admitted to post-acute care after a hip fracture were monitored using an instrumented shoes system consisting of an inertial measurement unit (Physilog®, CH) with a 3D accelerometer and gyroscopes, and a pressure sensing insole (Smart Insole®, LU). Activity data were collected over 8 hours at admission (baseline measure) and 14 days later (follow up measure). Daily activity was profiled and gait parameters, load symmetry, and activity barcodes were obtained using dedicated algorithms.

Results: Among participants (12 older adults, 7 women, 5 men, aged 87.8±7.2 years, BADL at home 5.3±0.8, MMSE during hospitalization 26.6±3.31, Tinetti POMA at admission 17.5 ± 2.54) percent time sitting decreased (92.11% vs 85.60%, p = 0.10) whereas walking (2.50% vs 3.71%, p = 0.16) and standing (4.55% vs 10.24%, p = 0.07) increased at follow up compared to baseline and Lempel Ziv physical activity complexity (0.163 vs 0.193, p = 0.07) has improved. Significant improvement was noted in load symmetry index (0.16 vs 0.10, p = 0.03), stride velocity (0.3 vs 0.38 m/s, p = 0.02), stride-length (0.58 vs 0.64m, p = 0.03), and% of stance symmetry index (0.03 vs 0.02, p = 0.02). Instantaneous cadence distribution graph shifted to the right and tended to have a more physiological biphasic shape at follow up.

Conclusions: This pilot study shows that instrumented shoes are part of new technologies that could potentially improve the monitoring of patients’ progresses during rehabilitation. Besides classical spatio-temporal gait parameters, new and promising measures are obtained like load symmetry index, instantaneous cadence distribution and physical activity complexity metrics that are sensitive to functional improvements.
Large regional variations in novel cardiac procedures in Switzerland: A population-based small area variation analysis

Nina Stoller1, Maria M. Werth2, Alan G. Haynes2,3, Arnaud Chioler4,5, Nicolas Rodondi1,4, Radoslaw Panckiewicz3, Drahomir Aujesky1
1Department of General Internal Medicine, University Hospital, University of Bern, Bern, Switzerland
2Institute of Social and Preventive Medicine, University of Bern, Switzerland
3Clinical Trials Unit, Department of Clinical Research, University of Bern, Switzerland
4Institute of Primary Health Care (BIHAM), University of Bern, Bern, Switzerland
5Department of Epidemiology, Biostatistics, and Occupational Health, McGill University, Montreal, Canada

Introduction: Novel cardiac procedures, such as transcatheter aortic valve implantation (TAVI), and the more controversial percutaneous closure of a patent foramen ovale (PFO) or the left atrial appendage (LAA), are increasingly used in clinical practice. We assessed the regional variation in the rates of these procedures across Switzerland and explored potential determinants of variation.

Methods: We conducted a population-based analysis using patient discharge data from all Swiss hospitals and census data for calendar years 2013-2016. Hospital service areas (HSAs) for TAVI, PFO, and LAA were derived by analyzing patient flows. We calculated age-/sex-standardized mean procedure rates and measures of regional variation (extremal quotient [EQ]), i.e., highest divided by lowest rate; systematic component of variation [SCV], i.e., non-random part of variation). An SCV >5.4 indicates a high and >10 a very high variation. We estimated the reduction in the variance of TAVI/PFO/LAA rates using multilevel Poisson regression models, with progressive adjustment for patient demographics (age, sex), language region, socioeconomic factors (urbanization, insurance status), disease burden, and the number of cardiologists.

Results: Overall, 4769 TAVI, 1680 PFO, and 1630 LAA were performed in Switzerland between 2013 and 2016. The age-/sex-standardized mean TAVI, PFO, and LAA rates were 16 (range 4-22), 5 (2-8), and 4 (1-10) per 100,000 persons across 10 HSAs, respectively. The EQ (TAVI 5.2, PFO 3.2, LAA 14.6) and the SCV (TAVI 7.9, PFO 9.2, LAA 34.8) indicated high to very high regional variations. Figure 1 shows the overall TAVI/PFO/LAA rates across HSAs, adjusted for year, age, sex, language region, socioeconomic factors, disease burden, and the number of cardiologists. These factors explained 98% of the variance across HSAs, with language region and socioeconomic factors explaining 85% of the variance. Higher procedure rates were observed in men, German-speaking regions, peri-urban/rural areas, and HSAs with a higher proportion of (semi)privately insured patients and a higher disease burden. The number of cardiologists was not associated with procedure rates.

Conclusions: We found a high regional variation in TAVI and very high variations in PFO and LAA rates across Swiss HSAs. A substantial proportion of the variation in novel cardiac procedures was related to the language region and socioeconomic factors, including insurance status.

Comparison of two cardiovascular prevention strategies in a Swiss population-based cohort with a 10-year follow-up

Hadrien Beuret1, Nadine Hausler1, Pedro Marques-Vidal1, David Nanchen2, Julien Vaucher1
1Centre Hospitalier Universitaire Vaudois (CHUV), Departement de Medicine Interne, 2Policlinique Medicale Universitaire (PMU), Prevention Clinique et Communautaire, Lausanne, Switzerland

Introduction and aims: Cardiovascular (CV) prevention relies on strategies evaluating the 10-year CV risk to identify high-risk individuals. In Switzerland, two risk scores are recommended: i) Prospective cardiovascular Münster score calibrated for Switzerland (SAI-AGLA); and ii) Systematic coronary risk estimation (SCORE). SAIAGLA predicts major coronary events (sudden cardiac deaths, and fatal or nonfatal myocardial infarctions) and SCORE predicts fatal CV events. Using a Swiss population-based cohort, we determined the predictive accuracy of two prevention strategies based on incident cardiovascular events over a 10-year period. The first aim was to assess prediction of major coronary events and fatal CV events for both scores. The second aim was to assess prediction of any CV event for both scores.

Methods: Prospective cohort involving 6,733 subjects aged 35-75 years at baseline. Incident CV events were independently adjudicated. Very high-risk individuals were defined by presence of prior coronary disease, diabetes mellitus or chronic kidney disease. For the first aim, high-risk participants at 10 years were defined based on a major coronary event risk of >20% according to SAI-AGLA, and a fatal CV event risk of >5% according to SCORE. For the second aim, high-risk participants were defined based on 10-year risk of any CV event using the same risk thresholds. Discrimination, calibration, and model fit of both scores were compared.

Results: 5,539 participants were analyzed, with a mean follow-up of 10.2 years. Overall, 422 incident CV events occurred, including, among others, 117 major coronary events, 34 fatal CV events and 158 strokes. Among very high- and high-risk participants, SAI-AGLA would have...
tected 53% of major coronary events, whereas SCORE would have detected 68% of fatal CV events. Concerning individuals in high-risk categories with any CV event, SAI-AGLA and SCORE would have detected 52% and 56% of fatal and nonfatal CV events, respectively. Discrimination of SAI-AGLA and SCORE for prediction of any CV event was similar (AUROC, 0.77 and 0.78, respectively; p = 0.20), whereas SCORE presented a better calibration and model fit.

Conclusion: In this Swiss population-based cohort, prevention strategy of SCORE for very high- and high-risk individuals identified more subjects developing any CV event compared to SAI-AGLA, despite an equal number of individuals classified in high-risk categories.

P18
Are cardiovascular risk factors an indication to substitute subclinical hypothyroidism? An individual participant analysis of 13 large international cohorts
Oliver Bastele1,2, Emanuel R Blum1,2, Leidat Wilds1er, Eliasouf Moutzouri3, Cinzia Del Giovane4, Douglas C Bauer5, Anne R Coppola6, Bjørn O Avol7, Jacobijn Gusske8, Massimo Iacovelli9, Giorgio Iervasi10, Misa Imaizumi11, Stefan Weiler12,13, Kay-Kee Khaw14, Salman Razvi15, José A Sgarbi16, Henry Völzke17, John P Walsh18, Rudi G J Westendorp19, Drahomir Aujesky20, Martin Feller1,2, Nicolas Rodondi21,22, For the Thyroid Studies Collaboration

1Inselspital, Bern University Hospital, Department of General Internal Medicine, 2Institute of Primary Health Care (BIHAM), University of Bern, Bern, Switzerland, 3Stanford University School of Medicine, Department of Preventive Medicine, Division of Epidemiology, Stanford, 4University of California, Departments of Medicine and Epidemiology & Biostatistics, San Francisco, 5University of Pennsylvania School of Medicine, Department of Medicine, Division of Endocrinology, Diabetes, and Metabolism, Philadelphia, United States, 6Norwegian University of Science and Technology, Department of Public Health and Nursing, Trondheim, Norway, 7Leiden University Medical Center, Department of Public Health and Primary Care, and Department of Internal Medicine, Section Gerontology and Geriatrics, Leiden, Netherlands, 8University of Bari, Emergency and Organ Transplantation Department, Cardiology Unit, Bari, 9National Research Council, Institute of Clinical Physiology, Tuscan Radiological Research Network, Florence, 10Universidad de Barcelona, Hospital Clinic, Radiology, Barcelona, Spain, 11Radiation Effect Research Foundation, Department of Clinical Studies, Nagasaki, Japan, 12University Hospital Zurich, Department of Clinical Pharmacology and Toxicology, 13National Poisons Information Centre, Tox Info Suisse, Associated Institute of the University of Zurich, Zurich, Switzerland, 14University of Cambridge, Department of Public Health and Primary Care, Cambridge, 15Newcastle University, Institute of Genetic Medicine, Newcastle upon Tyne, United Kingdom, 16Faculdade de Medicina de Marília, Division of Endocrinology, Marília, Brazil, 17University Medicine Greifswald, Institute for Community Medicine, Clinical-Epidemiological Research Unit, Greifswald, 18University of Bern, Department of Internal Medicine & Sir Charles Gardiner Hospital, Department of Endocrinology and Diabetes, Nedlands, Australia, 19University of Copenhagen, Department of Public Health and Center for Healthy Aging, Copenhagen, Denmark

Introduction: Subclinical hypothyroidism (Shypo) is linked to an increased risk for coronary heart disease (CHD). Moreover, Shypo is associated with several modifiable cardiovascular risk factors (CVRFs), but population-based data on these associations are inconsistent. Also, the impact of hormonal substitution in Shypo on CHD remains unclear with the lack of adequately powered trials. By pooling individual participant data from large prospective cohorts, this study assessed the association between Shypo and CVRFs across wide age ranges to help clarify the possibly increased risk for cardiovascular events in patients with Shypo.

Methods: CVRFs as primary outcomes were assessed in euthyroid (TSH 0.45–4.5 mU/l) and patients with Shypo (TSH >4.5 mU/l, normal free thyroxine) from cohorts within the Thyroid Studies Collaboration (www.thyroid-studies.org). Participants on exposure/outcome-modifying medications were excluded and multilevel mixed-effects linear regression models adjusted for age and smoking status used.

Results: Among 50’045 participants (mean age 58, range 18-100 years, 59% women, 27% current smokers), 2’832 (6%) had SHypo. All associations significantly increased in female gender (women vs men: 0.10; HDL-cholesterol p for interaction = 0.03), except for hs-CRP (p for interaction = 0.60). Systolic blood pressure was higher with Shypo vs euthyroidism in women (138±10 vs 135±11 mmHg, p <0.01), but not in men (138±7 vs 138±7 mmHg, p = 0.70) as was total cholesterol (women 610±0.56 vs 603±0.52 mmol/l, p <0.001; men 541±0.53 vs 574±0.41 mmol/l, p = 0.39). With Shypo, HDL-cholesterol was lower (women 1.48±0.06 vs 1.51±0.05 mmol/l, p <0.001; men 1.16±0.04 vs 1.23±0.04 mmol/l, p <0.001) and triglycerides were higher (women 1.50±0.24 vs 1.38±0.22 mmol/l, p <0.001; men 1.68±0.31 vs 1.67±0.24 mmol/l, p <0.05) in both women and men, while LDL-cholesterol was slightly higher only in women (4.16±0.56 vs 4.12±0.55 mmol/l, p <0.001; men 3.68±0.51 vs 3.96±0.44 mmol/l, p = 0.83). hs-CRP levels were similar in Shypo vs euthyroidism for both genders (women 2.01±0.70 vs 1.91±0.67 mg/l, p = 0.04; men 1.81±0.67 vs 1.64±0.68 mg/l, p = 0.39). CVRFs did not significantly differ across age groups.

Conclusions: Shypo is associated with elevations of traditional CVRFs (but not hs-CRP) that differ according to gender, but not age. However, the differences may not be of clinical relevance as they are small. Therefore, CVRFs do not appear to be a strong argument to substitute Shypo.

P19
Appropriateness of antimicrobial prescribing in a Swiss tertiary care hospital - a repeated point prevalence survey
Céline Giehl1, Andrea Erba2, Stefano Bassetti3, Michael Osthoff4
1Universitätsspital Basel, Klinik für Innere Medizin, Basel, 2Kantonsspital Olten, Olten, Switzerland

Introduction: Inappropriate use of antimicrobials is associated with the emergence of antimicrobial resistance and adverse events. Antimicrobial stewardship programs may both optimize treatment of infections and reduce antimicrobial resistance. We assessed inappropriate use of antimicrobials in a single study week of Swiss hospitals. In addition, data on Swiss prescribing patterns are limited. We conducted a two-point prevalence survey to evaluate antimicrobial usage in a single tertiary care center.

Methods: Two audits of antimicrobial use were conducted (summer 2017 and winter 2018) among all patients admitted to the University Hospital Basel, Switzerland. Data were collected from the electronic health record. Appropriateness of antimicrobial use was evaluated by two infectious diseases physicians according to local and international guidelines.

Results: We evaluated 1112 patients of whom 378 (34%) were receiving 547 prescriptions in total (30% for prophylaxis). Penicillins with β-lactamase inhibitors were most commonly used (30%) followed by cotrimoxazole (12%) and young residents110pc Intons. In a 2015 time-mo-

P20
Impact of structural and organizational reforms on allocation of in-

Primary and Hospital Care 2018;19 (Suppl. 10) | www.primary-hospital-care.ch
reorganization, and a daily interprofessional patient orientation meeting. Along with indicators such as mean length of stay (LOS), we aimed to assess how residents changed time allocation after implementing these changes in work organization.

Methods: We repeated the 2015 time-motion study between May and July 2018. Trained observers followed residents and recorded 22 predefined activities and context (with a computer) during day (08:00-18:24) and evening shifts. All residents of our tertiary internal medicine department were included and observed twice. We recorded shift duration and mean patient LOS during the studies. One endpoint was time spent for administrative tasks marked in table 1. Results were expressed as mean [95% confidence interval] and adjusted for number of handled patients per resident.

Results: We recorded 66 shifts in 2015 and 76 shifts in 2018, summing 1478 hours of observation. Results of 75 residents (60% female; 29.6 years old [29.1-30.2]; 3.0 years of training [2.8-3.3]) are presented in table 1. Day shift duration decreased from 11.38 to 10.45 (95% CI 11.15-12:01 and 10:30-10:59, p < .001), i.e., 21 min more than the official schedule. Simultaneously, personal time increased to 62 min (+87%, p < .001) and activities using a computer decreased to 4.8 hours per shift (-11%, p = .005). Conversely, residents spent more time on administrative tasks (+55%, p < .001) and less time with patients (-20%, p = .001). Adjustments did not modify these results, even though the department activity grew dramatically between 2015 and 2018: admissions increased from 89 to 102 a week (+14.5%) and mean LOS decreased from 13.4 to 7.1 days (-47%).

Conclusions: Reforms in an internal medicine department can rapidly modify allocation of residents’ time. Work condition quality improved as shown by shift duration reduction and personal time increase, despite admissions and turnover of patients radically increasing. This implies that residents may have been more efficient and less stressed, despite a higher patient workload.

P21

Diagnostic performance of C-reactive protein, procalcitonin, serum amyloid A and neopterin to diagnose pneumonia in elderly patients

Astrid Malézieux-Picard1, Leire Azurmendi2, Nicolas Garin2, Véronique Lamonerie1, Clémence Cuvelier1, Jean-Luc Reny2, Jean-Charles Sanchez2, Jerome Stirneman4, Virginie Prendki1

1Hôpitaux Universitaires De Genève - Hôpital des Trois Chênes, Thônex, *UNIGE, Human Protein Science Department, Geneva, 2Hôpital Riviera-Chablais, Rennaz, 3Hôpitaux Universitaires de Genève, Genève, Switzerland

Introduction: Diagnosis of pneumonia in elderly patients is complex. Sustained confusion and symptoms are frequent, especially for severe cases. Computed tomography (CXR) is difficult to interpret. Limited diagnostic accuracy of CRP and PCT in the diagnosis of community-acquired pneumonia has been reported. We aimed to identify: 1) the diagnostic value of biomarkers in patients >65 years hospitalized for suspicion of pneumonia, using CRP, PCT, serum amyloid A (SAA), neopterin and 2) the sensitivity of panels combined with clinical and biological data.

Methods: In an ancillary study of a prospective single-center cohort study evaluating the impact of low-dose CT scan on the diagnosis of pneumonia (Prendki, Eur Resp J 2018), C-reactive protein (CRP), procalcitonin (PCT), serum amyloid A (SAA) and neopterin (NPT) were assessed in blood at admission. All patients had CT scan and the probability of a diagnosis of pneumonia incorporating clinical, biological, microbiological (including viral PCR on naso-pharyngeal swabs) and radiological data were obtained by experts. Diagnostic values of biomarkers were assessed and iterative Combination of Biomarkers and Thresholds (ICBT) was used to define the best panel of markers.

Results: 200 patients, median age of 64 years (IQR: 78.6-90.2), were included. The experts classified 131 patients with pneumonia and 67 without. Area under the curve (AUC) was 0.64 (95% CI: 0.56-0.72) for CRP; 0.59 (95% CI: 0.51-0.68) for PCT; 0.60 (95% CI: 0.52-0.69) for SAA; 0.59 (95% 0.50-0.68) for neopterin; 0.63 (95% 0.52-0.71) for CRP/NPT and 0.61 (CI: 0.53-0.70) for SAA/NPT. AUC was 0.55 (CI: 0.40-0.69) for CRP/PNT and 0.45 (CI: 0.31-0.59) for SAA/NPT to distinguish patients with positive viral PCR vs bacterial pneumonia. The best panel to diagnose pneumonia was CRP, neopterin and cough with a sensitivity of 90.6% (CI: 84.7-96.5) and a specificity of 47.2% (CI: 30.6-63.9).

Conclusion: Diagnostic performance of biomarkers seemed insufficient for the diagnosis of pneumonia in elderly patients and to distinguish bacterial from viral pneumonia. A combination of CRP, neopterin and cough had a good sensitivity to diagnose pneumonia. In a score predicting pneumonia in the same cohort, CRP and cough were also independently associated with the presence of pneumonia (Prendki et al).

P22

Twelve-year trends in diabetes prevalence in the canton of Geneva
Carlos de Mestral1,2, Silvia Stringhi1,2, Idris Guessous1, François Jornayvaz2

1Hôpitaux Universitaires de Genève, Unité d’Épidémiologie Populationnelle, Département de Médecine de Premier Recours, Genève, 2Institut Universitaire de Médecine Sociale et Préventive, Division de Maladies Chroniques, Lausanne, 3Hôpitaux Universitaires de Genève, Service d’Endocrinologie, Diabétologie, Hypertension et Nutrition, Département des Spécialités de Médecine, Genève, Switzerland

Introduction: Against a backdrop of increasing type 2 diabetes prevalence across most high-income populations, little is currently known about its prevalence and secular trends in the canton of Geneva. Thus, we aimed to estimate trends in diabetes prevalence, awareness, and control using data from the Bus Santé Study.

Methods: Population-based cross-sectional study of adults residing in the canton of Geneva, conducted annually from 2005 to 2016. We included a total of 8,674 participants, of which 51% were women with a mean age (standard deviation) of 49.2 (±13.3). We defined the prevalence of diabetes as having a previous diagnosis of diabetes; the prevalence of undiagnosed diabetes as having fasting plasma glucose level of ≥7 mmol/L and not having a previous diagnosis of diabetes; the prevalence of total diabetes as the sum of diagnosed and undiagnosed diabetes; diabetes awareness as the ratio of diagnosed diabetes to total diabetes; and diabetes control as having diagnosed diabetes and fasting plasma glucose level below 7 mmol/L. To assess trends, we grouped survey years into five categories: 2005-2008, 2009-2010, 2011-2012, 2013-2014, 2015-2016.

Results: In total, 599 cases of diabetes were identified over twelve years. The prevalence of total diabetes for the 2005-2008 period was 7.5% (95% CI: 5.8 - 9.3), remaining stable to 2015-2016 at 6.7% (5.6 - 7.8) (P for linear trend = 0.45). Similarly, the prevalence of diagnosed diabetes was 5.9% (4.3 - 7.5) in 2005-2008 and 5.3% (4.3 - 6.3) in 2015-2016 (P for linear trend = 0.51). The prevalence of undiagnosed diabetes decreased from 1.7% (0.8 - 2.5) in 2005-2008 to 0.7% (0.3 - 1.1) in 2011-2012 but increased to 1.4% (0.8 - 1.9) by 2015-2016 (P for quadratic trend = 0.02). The prevalence of diabetes awareness increased from 77.8% (67.6 - 88.1) in 2005-2008 to 88.1% (81.8 - 94.4) in 2011-2012, but later decreased to 79.8% (72.9 - 86.8) by 2015-2016 (P for quadratic trend = 0.03). The prevalence of controlled diabetes decreased from 70.8% (61.8 - 79.8) in 2005-2008 to 59.0% (50.6 - 69.2) in 2015-2016 (P for linear trend = 0.01).

Conclusion: In this representative sample of the population of Geneva, the estimated prevalence of diabetes has remained relatively stable over...
a period of 12 years. There was a suggestion that the proportion of dia-
abetic people who are able to control their blood glucose level has de-
creased in recent years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Prevalence, % (95% CI)</th>
<th>N = 854</th>
<th>N = 1999</th>
<th>N = 1676</th>
<th>N = 2009</th>
<th>N = 2036</th>
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<td>2005-2008</td>
<td>7.5 (8.5-8.3)</td>
<td>84.0 (67.4-91.7)</td>
<td>85.4 (81.1-89.4)</td>
<td>88.1 (81.8-89.4)</td>
<td>83.3 (77.2-88.4)</td>
<td>79.8 (72.9-86.8)</td>
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<td>2009-2012</td>
<td>6.6 (6.2-7.0)</td>
<td>84.0 (67.4-91.7)</td>
<td>85.4 (81.1-89.4)</td>
<td>88.1 (81.8-89.4)</td>
<td>83.3 (77.2-88.4)</td>
<td>79.8 (72.9-86.8)</td>
</tr>
<tr>
<td>2013-2016</td>
<td>6.4 (6.2-6.6)</td>
<td>84.0 (67.4-91.7)</td>
<td>85.4 (81.1-89.4)</td>
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<td>83.3 (77.2-88.4)</td>
<td>79.8 (72.9-86.8)</td>
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<td>2017-2019</td>
<td>6.1 (5.8-6.4)</td>
<td>84.0 (67.4-91.7)</td>
<td>85.4 (81.1-89.4)</td>
<td>88.1 (81.8-89.4)</td>
<td>83.3 (77.2-88.4)</td>
<td>79.8 (72.9-86.8)</td>
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**P23**

**Hyperthyroidism and iodine contrast media: a retrospective, ob-
servational study in a Swiss hospital**

**Sara Bagutti**, Christine Schmid, Sandra Jäggli, Esther B. Bachli
Spital Uster, Medizinische Klinik, Uster, Switzerland

**Introduction:** Iodine contrast media (ICM) increases the risk of an acute thy-
hroid crisis and the possibility of a delayed reaction in patients with a
known hyperthyroidism. In certain countries, guidelines recommend a
thyroid-stimulating hormone (TSH) measurement and a prophylactic
therapy with sodium-perchlorate before the administration of ICM in pa-
tients with known or suspected hyperthyroidism. We investigated the fre-
quency of the evaluation of the thyroid function and the administration of
a protective therapy in patients receiving a computed tomography (CT)
with ICM in a Swiss hospital.

**Methods:** We carried out a retrospective, observational study in a cohort
of adult patients with a diagnosis of hyperthyroidism (ICD-Code E05) ad-
mitted to a hospital between 2014 and 2016. All reports of these patients
were reviewed for CT with or without ICM. Laboratory results (TSH
measurements before and after ICM) were extracted from a database.
Furthermore, we assessed if a prophylactic or therapeutic intervention
(sodium-perchlorate and/or carbimazole) was applied.

**Results:** Between 2014 and 2016, 111 patients were found with ICD-
Code E05 and were screened. The mean age was 69.1 (+/-18.6) years.
Older patients were more likely to have a delayed reaction to ICM.
The prevalence of hyperthyroidism was Morbus Basedow in (n = 41; 37%),
unimultinodular goiter (n = 28; 25%) and mixed causes (n = 42; 38%).
25 patients (22.5%) received a CT and ICM and
were further evaluated. Within these 25 patients, a preliminary TSH
measurement occurred in 84% (n = 21) of the cases. 10 patients (40%)
didn’t receive a prophylactic therapy. Positive post-exposure therapy occurred
in 7 patients (28%) with carbimazole, in 3 patients (12%) with sodium-
perchlorate and in 2 patients (8%) with both treatments. A prophylactic
therapy with sodium-perchlorate before the CT was started in 3 patients
(12%). TSH was controlled in 13 patients (52%) after the exposure.

**Conclusions:** TSH measurement was performed in the majority of the
patients with known hyperthyroidism before a CT with ICM, only 12%
(n = 3) received adequate prophylactic therapy with sodium-perchlorate.
This preliminary data suggest the need for more detailed guidelines re-
garding the evaluation of the thyroid function and for an adequate pro-
tective therapy before and after a CT with ICM.

**P24**

**Regional variation of hysterectomy in Switzerland: a population-
based small area variation analysis**

**Nina Stölder**, Maria M. Wernli, Tabea M. Zaugg, Alan G. Haynes, Claudia Scheuere, Arnaud Chiolero, Nicolas Rodondi, Radoslav Panczak, Drahomir Aujesky
1Department of General Internal Medicine, Inselspital, Bern University Hospital, University of Bern, 2Department of Technology and Innovation, Inselspital, Bern University Hospital, University of Bern, 3CTU Bern, and Institute of Social and Preventive Medicine (ISPM), University of Bern, Bern, *Department of Internal Medicine, Hôpital Neuchâtelois, Neuchâtel, Switzerland, 4Division of General Medicine, Brigham and Women’s Hospital, Boston, United States

**Introduction:** In benign uterine disease, hysterectomy should not be the
first treatment option in most cases and if hysterectomy is done, vaginal
hysterectomy should be preferred over more invasive techniques when
ever possible. We assessed the regional variation in hysterectomy rates
for benign uterine diseases in Switzerland and explored potential deter-
minants of variation.

**Methods:** We conducted a population-based analysis using patient dis-
charge data from all Swiss hospitals and census data for calendar years
2013-2016. Hospital service areas (HSAs) for hysterectomies were de-
\[EQ\], i.e., highest divided by lowest rate; systematic component of vari-
ation [SCV], i.e., the non-random part of variation) for overall and proce-
dure-specific (vaginal, laparoscopic, abdominal) hysterectomies. A SCV
>5 is indicative of a significant variation. We estimated the reduction in
the variance of hysterectomy rates using multilevel Poisson regression
models, with adjustment for year, age, language region, socioeconomic
factors (urbanization, socioeconomic position, insurance status, nation-
ality), population burden of disease, and number of gynecologists.

**Results:** Overall, 40,211 hysterectomies for benign uterine disease were
performed in Switzerland between 2013 and 2016. The age-standard-
ized mean hysterectomy rate was 298/100,000 women across 54 HSAs.
The EQ was 2.5 and the SCV 3.7. For specific procedures, the EQ (vag-
inal 5.0, laparoscopic 6.3, abdominal 8.0) and the SCV (vaginal 17.5,
laparoscopic 11.2, abdominal 16.9) were much larger. Figure 1 shows
the variations of overall hysterectomy rates across HSAs, adjusted for
year, age, language, socioeconomic factors, burden of disease, and the
number of gynecologists. These factors explained 34% of the variance
across HSAs. Higher procedure rates were observed in women aged 50-
54 years, in German-speaking regions, and in small urban areas. Insur-
ance status and the number of gynecologists were not associated with
procedure rates.

**Conclusions:** While the overall variation in hysterectomy was moderate,
we found a very high procedure-specific variation across HSAs. As only
one third of the variation was explained by differences in demographics,
socioeconomic, and other specific factors, part of the remaining variation
could be due to differences in individual physicians’ practice style.

**P25**

**Development and validation of a new tool to assess inpatient com-
plexity: the Patient Complexity Assessment (PCA) score**

**Fabian D. Liechti,** Thomas Beck, Adrian Rütsche, Marie C. Roumet, Andreas Limacher, Tobias Tritschler, Jacques D. Donzé
1Department of Internal Medicine, Inselspital, Bern University Hospital, University of Bern, 2Department of Technology and Innovation, Inselspital, Bern University Hospital, University of Bern, 3CTU Bern, and Institute of Social and Preventive Medicine (ISPM), University of Bern, Bern, *Department of Internal Medicine, Hôpital Neuchâtelois, Neuchâtel, Switzerland, 4Division of General Medicine, Brigham and Women’s Hospital, Boston, United States

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one third of the variation was explained by differences in demographics,
socioeconomic, and other specific factors, part of the remaining variation
could be due to differences in individual physicians’ practice style.
Introduction: In primary care, up to one third of patients are categorized as complex, while this proportion is not well known in the hospital setting. By definition complex patients demand more effort and/or resources. The treating physician’s assessment is the gold standard, which makes the monitoring of patient complexity over time difficult. We aimed to develop and validate a new score to assess inpatient complexity (Patient Complexity Assessment, PCA score) and to compare its performance with a frequently used tool to estimate patient complexity, i.e. the Charlson comorbidity index.

Methods: All consecutive patients discharged from the department of medicine of a large tertiary care hospital were prospectively included into a derivation cohort from October, 2016 to February 16, 2017, and a temporal validation cohort from February 17, 2017, to March, 2017. The residents in charge of the patient assessed complexity at patient discharge. Potential predictors comprised 52 parameters from the electronic health record (EHR), including demographics, health factors and hospital care usage. We fit a logistic regression model with backward selection to create a scoring system. The model and score were then externally validated in the validation cohort. Performance was assessed using measures of discrimination and calibration.

Results: Overall, 447 of 1,407 patients (32%) in the derivation cohort, and 116 of 482 patients (24%) in the validation cohort were identified as complex. Eleven variables that were independently associated with complexity, were included in the PCA score (table). The PCA score’s area under the Receiver Operating Characteristic Curve, AUROC was 0.78 (95% CI 0.75-0.80) in the derivation cohort, and 0.78 under the receiver operating characteristic (AUROC) was 0.78 (95% CI 0.75-0.80), in the derivation cohort from October, 2016 to February 16, 2017, and a temporal validation cohort from February 17, 2017, to March, 2017. The residents in charge of the patient assessed complexity at patient discharge. Potential predictors comprised 52 parameters from the electronic health record (EHR), including demographics, health factors and hospital care usage. We fit a logistic regression model with backward selection to create a scoring system. The model and score were then externally validated in the validation cohort. Performance was assessed using measures of discrimination and calibration.

Conclusion: The simplified HOSPITAL score is an easy-to-use prediction model that accurately identifies patients at high-risk of 30-day unplanned readmission before hospital discharge. Because an early stratification of the risk of readmission would allow more preparation time for transitional care interventions, we aimed to assess whether the score would perform similarly by using of hemoglobin and sodium level at time of admission in addition to basic demographic data. The simplified score was compared to the laboratory results at discharge.

Comparison of the simplified hospital score to predict 30-day readmission using lab values at admission or at discharge

Philippe A. Mathys1, Lukas Büliköfer2, Daniel Genné2, Jürg Leuppi3, Marco Mancinetti6,7, Gregor John8,9, Jacques D. Donzé1,8,10

1Bern University Hospital, Bern, 2Geneva University Hospitals, Geneva, 3CTU Bern, University of Bern, Bern, 4Centre Hospitalier Biennier, Biennier, 5Kantonsspital Baselland in Liestal, Liestal, 6Hôpital Cantonal de Fribourg, 7Faculty of Science and Medicine, University of Fribourg, Fribourg, 8Hôpital Neuchâtelois, 9University of Geneva, Geneva, Switzerland, 10Division of General Medicine and Primary Care, Brigham and Women’s Hospital, Harvard Medical School, Boston, United States

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Conclusion: The majority of Swiss GIM residents are satisfied with their job, approximately 20% appear to have a reduced well-being or career choice regret and around 60% feel burnout. Having few rewarding work hours and a low satisfaction with training quality and job autonomy are the most significant predictors of reduced well-being. Given the human costs of physician distress to both patients and physicians, health care organizations have the ethical responsibility to improve physician well-being.

P27

Comparison of the simplified hospital score to predict 30-day readmission using lab values at admission or at discharge

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Among the 923 patients included, 126 (13.5%) had a 30-day unplanned readmission or death. The median hemoglobin level at admission and discharge was 132 and 124 g/l, and the median sodium level was 137 and 139 mmol/l, respectively. Both score versions categorized 316 patients (34%) as likely to be readmitted. The 2 versions of the HOSPITAL score showed better goodness of accuracy (Brier score 0.11, 95% confidence interval 0.10-0.13). Their AUROC were 0.84 (95% CI 0.80-0.89), and 0.65 (95% CI 0.60-0.70), respectively, without statistical difference (p = 0.51). The optimal cut-point according to Youden’s index was 4 score points. Compared with the model at discharge, the model with lab at admission showed improvement in discrimination based on the continuous NRI (25% vs 15% NRI CI 11-47; P = 0.003) mainly driven by an improvement in prediction of non-cases that compensated the worse prediction for cases: 75% (596/797) non-cases had a lower risk if lab at admission was used, while 60% (50/126) cases had a lower risk if lab at admission was used.

The revised HOSPITAL score using lab values at time of admission performed at least as good as with lab values at discharge in order to identify high-risk patients for 30-day unplanned readmission or death. Therefore, this revised HOSPITAL score version offers a readmission risk stratification early during the hospital stay, which allows a timely preparation of transition care interventions to the patients who may benefit the most.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Hemoglobin level at admission (&lt;120 g/l)</td>
<td>yes</td>
<td>1</td>
</tr>
<tr>
<td>Discharge from an Oncology service or active cancer</td>
<td>yes</td>
<td>2</td>
</tr>
<tr>
<td>Low Sodium level at admission (&lt;135 mmol/l)</td>
<td>yes</td>
<td>1</td>
</tr>
<tr>
<td>Initial admission for urgent or emergent (nonselective)</td>
<td>yes</td>
<td>1</td>
</tr>
<tr>
<td>Number of hospital Admission(s) during the previous year</td>
<td>0-1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2-5</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>&gt;5</td>
<td>5</td>
</tr>
</tbody>
</table>

adapted to the median length of stay of the country

[Revised HOSPITAL score for 30-day unplanned readmissions and death (maximum score: 12 points):]

Conclusion: Our results confirm patient’s positive attitude toward the use of EHR by physicians as well as towards the use of the EHR that follows expert recommendations. Such recommendations should be more consistently taught during medical training.

P29

Shireen Dumont1, Stéphane Cullat2,3, Orly Manor4, Delphine S. Courvoisier5, Christine Bouchardy6, Rastine Merat7, Idris Guessous8

1Hôpital de La Tour, Internal Medicine Department, Meyrin, 2Institute of Sociological Research, 3Hôpitaux Universitaires de Genève, Division of Quality of Care, Genève, Switzerland, 4Hebrew University-Hadassah, School of Public Health and Community Medicine, Jerusalem, Israel, 5Department of General Internal Medicine, Rehabilitation and Geriatrics, 6Geneva Cancer Registry, Global Health Institute, 7Division of Dermatology and Venerology, 8Hôpitaux Universitaires de Genève, Division of Primary Care, Department of Primary Care Medicine, Genève, Switzerland

Introduction: Skin cancer is one of the most common malignancies and its incidence has increased worldwide. Despite controversy over its efficacy, skin cancer screening has become widespread. Important socioeconomic screening inequalities have been documented. Switzerland has the highest rate of melanoma in Europe but Swiss trends in skin cancer screening and social disparities have not been investigated. This study aims to evaluate trends in skin cancer screening and its association with socioeconomic indicators in Switzerland between 1997 and 2012.

Method: We used data from five waves (from 1997-2012) of the population-based Swiss Health Interview Survey. Multivariable Poisson regression was used to estimate weighted prevalence ratio (PR) and 95% Confidence Intervals (CI) adjusting for demographics, health status and use of healthcare.

Results: This study included 60764 participants with a mean age of 49.1 years (standard deviation (SD) 17.2) and 53.6% of women. Between 1997 and 2012, the weighted prevalence of ever-life time skin examination and skin examination in the current year increased by 38.2% and 33.2% respectively (p-value <0.001). Participation with a lower education level, lower income and living in non-metropolitan areas were less often screened than their counterparts.

Conclusion: While skin cancer screening prevalence in Switzerland increased from 1997 to 2012, a lower rate of screening among low educated, low income and rural areas residents was reported.

P30

The ecology of medical care - Prevalence of illness in the community and health care utilisation in Switzerland
Andreas Zeller, Wiebke Breschneider, Roland Fischer, Stéphanie Giezendanner
Universitäres Zentrum für Hausarztmedizin beider Basel, Liestal, Switzerland

Introduction: The allocation and equal distribution of healthcare resources is one of the major challenges today. Therefore, a framework to analyse the prevalence of illness in the community and the use of various sources of healthcare is crucial. The aim was to evaluate the health seeking behaviour of 1000 individuals in Switzerland in a two-month period in 2018.

Method: Population-based, cross-sectional health survey with a multi-stage, stratified cluster design. The LINK Institute (Luzern, Switzerland, https://www.link.ch/) interviewed a representative sample of the adult Swiss population (age ≥18, three language regions, German (70%), French (25%), and Italian (5%)) by phone. The health seeking behaviour of around 1000 individuals during the past 8 weeks was calculated. There were two interview rounds to respect potential seasonal variations in May (n = 506) and November 2018 (n = 516).

Results: In total, data of 1025 individuals were analysed (51% females, median age 51, range 18 to 85, 18% were <30 years of age, 53% ≥30 and <60, 23% ≥60 and <80, and 6% were ≥80). During the preceding 8 weeks, per 1,000 adults, 520 had at least one symptom, 169 stated several symptoms, 251 took self-medication, 225 sought medical advice. Of the latter, two thirds (n = 154) contacted their GP, one third (n = 71) contacted a specialist in private practice, 15 self-admitted to an accident and emergency department, 11 contacted a pharmacy, and 7 continued an alternative medicine health care provider. In total, 25 persons were admitted to a hospital of which 12 underwent surgical procedures, 21 were transferred to a regular ward, and four subjects required ICU services. The vast majority (95%) of subjects was registered with a GP.
Conclusion: This study represents an attempt to obtain the health care utilisation of the Swiss population. The current utilisation patterns show a high demand for primary care physicians. Such population needs-based mapping may be useful for projecting or planning distributing health care resources and to guide medical education.

[Health care utilisation in 1000 individuals of Switzerland]

P31

Computer log data and time-motion observations of internal medicine residents: activity during and after clinic hours
Francois Bastardot1,2,5, Vanessa Kraege1, Julien Castioni1,4, Olivier Pignollet1, Antoine Garnier1,6
1Centre Hospitalier Universitaire Vaudois (CHUV), Department of Medicine, Lausanne, Switzerland, 2Brigham and Women’s Hospital, Division of General Internal Medicine and Primary Care, 3Harvard Medical School, Boston, United States, 4Human Resources Direction, 5Department of Information Technology, 6Centre Hospitalier Universitaire Vaudois (CHUV), Medical Direction, Lausanne, Switzerland

Introduction: The electronic health record (EHR) has become the primary tool of Internists. We performed a time-motion study about residents’ activities on wards and observed that they spent 5.1 hours a day out, consultation, documentation, prescription, alerts, and settings.

Results: We collected 35,065 logs during 63 observations and results are shown in figure 1.

![EHR log data during the day shift (8:00 AM - 6:24 PM)](image)

The heaviest period was from 9:15 until 10:00 AM, before patient rounds. The 1:00 PM postgraduate training period marked the lowest activity. Afternoon activity was remarkable until logs dropped at the 4:00 PM nurse desk round, and then decreased until the end of the day. Even low (4%), 1373/35,065 logs) EHR activity began early before official shift, sometimes since 5:31 AM. We recorded a higher activity after clinic hours (8% of the day 2675/35065), sometimes until 2:50 AM. At night, logs were mainly consultation (58%, 1557/2675). 13% of after clinic activities were remote. Thus, 66% of physicians worked after the end of their day shift, for an average of 47 mins 58 min per day, with a maximum of 4 h 17 observed after clinic hours.

The number of logs after clinic hours was higher among men (59.5±69.7 vs. 42.0±62.9, p = .000), and physicians with a Swiss diploma (52.4±71.1 vs. 42.3±54.7, p = .000). It decreased with age (Spearman’s rho -0.15, p = .000) and years after graduation (-0.26, p = .000). The number of discharges (rho 0.25, p = .000) and admissions (0.13, p = .000) was more strongly correlated with extra activity than with the number of patients in charge (0.06, p = .000).

Conclusion: While residents heavily use the EHR during clinics hours, it tends to overflow before and after into social activity and rest time. This unrecognized activity after clinic hours differs a lot among residents and may increase the risk of burnout. This observation should lead to consider EHR best practices, and allow better supervision of physicians in training, especially the youngest.

P32

Improved agreement of a cuffless 24 hour blood pressure measurement device compared to cuff-based standard measurement
Philipp Krisai1, Thenral Socrates2, Andrea Meienberg2, Michael Mayr2, Annina Vischer2, Thilo Burkard2
1Department of Cardiology, 2University Hospital Basel, Medical Outpatient and Hypertension Clinic, ESH Hypertension Centre of Excellence, Basel, Switzerland

Introduction: A cuffless blood pressure (BP) measurement device using pulse-transit time (PTT) for beat-to-beat calculation of BP is currently used in clinical settings. This device was certified according to the ESH validation protocol over a period of 25 minutes. Recently, we published data, demonstrating a significant difference between this cuffless PTT device (TestBP) and a cuff-based standard 24 h BP device (RefBP) with significantly higher BP values measured by the TestBP. In May 2018, the TestBP device software was updated from version 1.4 to 1.5 implementing a new algorithm for the calculation of asleep BP values. The aim of our current study was to evaluate the impact of the new software on BP results.

Methods: From May-December 2017, 71 individuals were prospectively enrolled and categorised into three groups according to mean awake systolic RefBP (<135, 135-149, > = 150 mmHg). Main exclusion criteria were age <25 years or an interarm BP difference >10 mmHg. Cuffless measurements were performed on either arm. Calibration of the TestBP was done using initial cuff-based measurements. We analysed all measurements of TestBP with software V1.4 and V1.5 and compared the systolic and diastolic mean 24h, mean awake and mean asleep BP values to RefBP.
Results: Mean (±standard deviation) age was 49 (±15) years and 51% were male. Mean (± SD) 24 h systolic BP for the RefBP, TestBP V.1.4 and TestBP V.1.5 were 134.0 (±17.3), 140.8 (±20) and 139.1 (±20) mmHg, respectively (p-values: RefBP vs TestBP V.1.4 <0.0001, RefBP vs TestBP V.1.5 <0.001, Test BP V.1.4 vs. TestBP V.1.5 0.0002). Corresponding mean diastolic BP values were 79.3 (±11.7), 85.8 (±14.1) and 83.5 (±13.0) mmHg with p-values <0.0001 for all comparisons. The mean differences (±SD) for mean, awake and asleep BP values stratified by awake BP groups are shown (Table 1). Intraclass correlation coefficients for mean systolic 24h, awake and asleep BP were 0.88, 0.91 and 0.70 for TestBPV1.4 and 0.89, 0.91 and 0.75 for TestBPV1.5, respectively. Bland-Altman plots illustrating mean systolic and diastolic 24h-BP values of the two devices and software versions are shown (Figure 1).

Conclusion: The current study shows that the software update significantly improved the agreement of the cuffless TestBP in comparison to the RefBP, especially regarding asleep values. Best agreements were found with awake systolic and diastolic BP values in the range of 135-149 mmHg.

Table 1. Test characteristics at different TestBP Cut Off Values for Mean Systolic and Diastolic 24h

<table>
<thead>
<tr>
<th>BP Value</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>130/80</td>
<td>95%</td>
<td>65%</td>
<td>74%</td>
<td>92%</td>
</tr>
<tr>
<td>140/90</td>
<td>90%</td>
<td>85%</td>
<td>93%</td>
<td>93%</td>
</tr>
<tr>
<td>150/100</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>67%</td>
</tr>
<tr>
<td>160/110</td>
<td>30%</td>
<td>92%</td>
<td>32%</td>
<td>92%</td>
</tr>
</tbody>
</table>

Conclusions: TestBP showed good-excellent accuracy for detecting 24 h and awake systolic and diastolic hypertension BP values. Highest Youden’s index for mean systolic and diastolic 24 h BP was at systolic 133 and diastolic 87 mmHg.

Table 1. Mean Differences RefBP vs. TestBP V.1.4 and V.1.5

<table>
<thead>
<tr>
<th>BP Value</th>
<th>Mean Difference</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic</td>
<td>135/85</td>
<td>10</td>
</tr>
<tr>
<td>Diastolic</td>
<td>145/95</td>
<td>15</td>
</tr>
</tbody>
</table>

P33

Diagnostic accuracy of a cuffless blood pressure device for the detection of elevated blood pressure

Thenral Socrates1, Philipp Krüsi2, Andrea Meienberg1, Michael Mayr1, Anmna Vischer1, Thilo Burkard1
1Medical Outpatient and Hypertension Clinic, ESH Hypertension Centre of Excellence, 2University Hospital Basel, Department of Cardiology, Basel, Switzerland

Introduction: A cuffless blood pressure measurement device (TestBP) using pulse transit time for beat-to-beat calculation of blood pressure (BP) values is currently being used in clinical practice and has been compared against a standard cuff-based device (RefBP) over 24 hours (h) by our group, showing significantly higher BP values by the TestBP. However, diagnostic accuracy for the detection of hypertension in comparison to RefBP over 24h remains unknown. Here, we evaluate the ability of the TestBP device to differentiate between normo- and hypertension determined by RefBP

Methods: From May-December 2017, 71 individuals were prospectively enrolled. TestBP and RefBP 24h BP measurements were simultaneously performed on either arm. Main exclusion criteria were age <25 years and interarm BP difference >10 mmHg. TestBP calibration was based on initial RefBP measurements. Participants were classified into normotensive and hypertensive using standard mean systolic and diastolic 24h, awake and asleep cut-offs (130/80, 135/85, 120/70 mmHg) measured by RefBP. Receiver operating curves for TestBP, sensitivity, specificity, positive predictive values (PPV) and negative predictive values (NPV) for different cutoffs were calculated.

Table 2. Mean Differences RefBP vs. TestBP V.1.4 and V.1.5 for all Subjects and Over Different Systolic and Diastolic Awake and Asleep CutOff Categories

<table>
<thead>
<tr>
<th>BP Value</th>
<th>Mean Difference</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic</td>
<td>135/85</td>
<td>10</td>
</tr>
<tr>
<td>Diastolic</td>
<td>145/95</td>
<td>15</td>
</tr>
</tbody>
</table>

Results: Mean (±standard deviation) age was 49.3 (±15) years and 51% were male. Using RefBP systolic 24 h, awake and asleep hypertension was detected in 37 (52.1%), 35 (49.3%) and 35 (49.3%) subjects, and diastolic hypertension in 31(44%), 27(38%), 30(42%) respectively. The area under the curve (95% confidence interval) for TestBP hypertension detection versus RefBP was 0.92 (0.86; 0.99), 0.94 (0.88; 0.99) and 0.97 (0.86; 0.96) for systolic and 0.92 (0.86; 0.99), 0.92 (0.85; 0.99) and 0.84 (0.74; 0.94) for diastolic 24 h, awake and asleep BP respectively (Figure 1). TestBP characteristics for different mean systolic and diastolic 24 h cutoff values are shown (Table 1). TestBP had 95% sensitivity and 65% specificity applying standard systolic cutoffs, and 90% sensitivity and 70% specificity applying standard diastolic cutoffs. Highest Youden’s Index for mean systolic and diastolic 24 h BP was at systolic 133 and diastolic 87 mmHg.

Conclusions: TestBP showed good-excellent accuracy for detecting 24 h and awake systolic and diastolic hypertension BP values. Highest Youden’s indices were at higher BP values than standard cutoffs for systolic and diastolic measurements. For the derivation of device specific cutoffs, larger studies are needed.
Introduction: Multimorbidity and polypharmacy has become the norm for general practitioners (GPs). Ideally, GPs search for inappropriate medication and, if necessary, deprescribe. However, it remains challenging to deprescribe given time constraints and little backup from guideline lines. Further, barriers and enablers to deprescribing among patients have to be accounted for.

Method: Our goal was to identify barriers and enablers to deprescribing in older patients with polypharmacy. We conducted a survey among patients 70 years of age, with multimorbidity (>2 chronic conditions) and polypharmacy (>4 regular medicines). We invited Swiss GPs to recruit eligible patients each who completed a paper-based survey on demography, medications and chronic conditions. We applied the revised patients’ attitudes towards deprescribing (rPATD) questionnaire and added twelve additional questions and two open questions to assess barriers and enablers towards deprescribing. The study received ethical approval and was funded by the SGAIM foundation.

Result (preliminary): We analyzed the first 221 responses received so far and full results will be presented at the conference. Participants were 79.3 years of mean (SD 5.8), 48% female, 31% lived alone, and 85% prepared their medication themselves, all others required help. 76% of participants took 5-9 regular medicines and 24% took ≥10 up to 22 medicines. 76% of participants were willing to deprescribe one or more of their medicines and 78% did not have any negative experience with deprescribing. Age and gender were not associated with their willingness to deprescribe. Important barriers to deprescribing were satisfaction with drugs (96%), long-term drugs (56%) and noticing positive effects when taking them (92%). When it comes to deprescribing, 89% of participants wanted as much information as possible on their medicines (96%). Having a good relationship with their GP was further key to them (85%).

Conclusions: Most older adults are willing to deprescribe. They would like to be informed about their medicines and want to discuss deprescribing to achieve shared decision making with the GP they trust.
of individuals receiving PPIs and those fulfilling criteria for PIPPI on a yearly basis throughout the observation period. Results: Among 1,337,722 eligible individuals, the proportion of individuals with PPIs increased from 19.7% (2012) to 23.0% (2017), (p = <0.001). The proportion of PIPPIs among PPI users increased from 22.6% (2013) to 27.8% (2017), (p = <0.001). Conclusion: At the end of the observation period, more than one in five individuals was prescribed a PPI. Among PPI users, every fourth received a cumulative dose exceeding maximal guideline recommendations. Thus, more than one in twenty Swiss residents might be exposed to inappropriate use of PPI and this rate might continue to increase.

P37

Does a tailored intervention to promote adherence in patients with chronic lung disease affect exacerbations? A randomized controlled trial

Claudia Gregoriano1,2, Thomas Dieterle1,3, Anna-Lisa Breitenstein1, Selina Dürr1, Amanda Baum1, Stéphanie Giezendanner1, Sabrina Maier1, Anne Leuppi-Taegtmeier1,3, Isabelle Arneg1, Kurt E. Hersberger1, Jörg D. Leuppi1,3
1Cantonal Hospital Baseland, University Clinic of Medicine, Liestal, 2Department of Neuro- and Paediatrics, University of Basel, 3Faculty of Medicine, University of Basel, Centre for Primary Health Care, University Hospital Basel, Department of Clinical Pharmacology and Toxicology, Basel, Switzerland

Background: Poor medication-adherence is common in chronic lung patients, resulting in reduced health-outcomes and increased healthcare-costs.

Objective: To investigate the impact of an acoustic reminder and support calls on adherence to inhaled therapy in asthma and COPD patients and to determine their effect on exacerbations.

Methods: This single-blinded randomized trial investigated patients during 6 months. Exacerbations were recorded and adherence to inhaled medication was monitored using electronic data capture devices. Cox and Poisson regression were used to determine intervention effect on time to exacerbation and frequency of exacerbations, respectively.

Results: Of 149 eligible patients, 75 participants were assigned to the intervention group and 74 to usual follow-up care. During follow-up, 22% and 28% in the intervention and control groups respectively, experienced at least one exacerbation. Intervention had no effect on time to first exacerbation (HR 0.68, 95% CI 0.20 to 1.91, p = 0.20), but showed a trend toward a 39% decreased frequency of exacerbations (RR = 0.61, 95% CI 0.35 to 1.03, p = 0.07). The intervention group had significantly more days with 80-100% taking adherence regarding puff inhalers (82±14% vs. 60±30%, p = <0.001) and dry powder capsules (90±10% vs. 89±21%, p = 0.01). Timing adherence in participants using puff inhalers was higher toward a 39% decreased frequency of exacerbations (RR  = 0.61, 95% CI 0.39 to 0.98, p = 0.03) compared with the control group (RR  = 0.78, 95% CI 0.47 to 1.29, p = 0.31).

Conclusion: Patients in the intervention group had significantly better timing and adherence of inhaled medication resulting in a trend towards a decreased frequency of exacerbations. However, no effect on time to next exacerbation was observed.

P38

Value-based PCSK9-inhibitor prices derived from fixed QALY-based and individual LDL based models

Michel Romanens1, Ansgar Adams2, Walter Warmuth3
1Vascular Risk Foundation (Varifo), Otten, Switzerland, 2BAD Gesundheitsvorsorge und Sicherheitstechnik GmbH, Bonne, 3Gesundheitsforsen, Leipzig, Germany

Background: Value-based personalized drug prices (PEP) instead of fixed price models (QALY) may avoid rationing of expensive drugs.

Method: We compare a value-based admitted for gains in quality of life (QALY) using a fixed price model and for potentially avoidable events based on expected LDL effects in a personalized price model (PEP) applied to a primary care population with prognostically relevant carotid atherosclerosis applied to LDL lowering drugs including PCSK9-inhibitors.

Results: In the average Fourier or Odyssey patient, Evolocumab and Alirocumab were overpriced by 80% and 83% respectively according to the PEP model. Ex-3 Expected benefits from population-wide lipid lowering with statins and PCSK9 inhibitors combinations in those with high CVD risk (20% or more) based on posttest-calculations derived from carotid atherosclerotic burden and their observed LDL at baseline (4.14 mmol/l) would avoid 7371 cardiovascular events per year in Switzerland.

Conclusion: PCSK9-inhibitors are overpriced by 68% to 83% in Switzerland. The potential impact of LDL lowering in high-risk primary and secondary care patients would avoid 7371 cardiovascular events in Switzerland annually. New financing concepts should be developed in order to avoid rationing of these highly effective drugs. One way would be a world-wide concept regarding a statal sales guarantee for a certain period at value-based costs per drug unit. This might prevent that pharmaceutical companies do establish toxic prices at the beginning of new product sellings, in order to protect them from income losses.

P39

An unexplained case of acute kidney injury: would you consider orellanine?

Marie Baeriswyl1, Eric Descombes2, Juan-Vinh Nguyen2
1Médecine Interne, 2HFR Fribourg, Néphrologie, Fribourg, Switzerland

Learning objective: The diagnosis of out-patient acute kidney injury (AKI) can often be made rapidly with clinical and laboratory investigations. Sometimes, however, the etiology remains unclear even after a complete workup including a kidney biopsy. We report a case of severe AKI in which the etiology could be identified only one year after admission when the patient finally confessed that she had consumed Cortinarius mushrooms in a suicidal attempt.

Case report: A 46-years woman previously investigated for suspected multiple sclerosis was admitted end-September for nausea and vomiting with dizziness and stupor. A relapse of MS was suspected but a complete neurological workup (LP, MRI, EEG) was normal. An oliguric AKI was also present (Table 1). Renal morphology was normal. The patient was not taking any treatment at admission and repeatedly denied the consumption of non-prescribed medications or drugs. A toxic screening in urine was negative (benzodiazepine, opioid). In the following days the renal function worsened (CrCl 4 ml/min) and hemodialysis (HD) was started. A kidney biopsy showed signs of acute tubular necrosis suggesting a toxic origin; the glomeruli were normal (with few mesangial IgA deposits and a single osmiophophilic deposit on EM). With supportive care, the mental status normalized but the patient developed anxiodepressive symptoms. The renal function also improved and HD could be stopped after 6 weeks. The creatinine stabilized thereafter at <200 µmol/l. Only one year later the patient finally admitted that in order to suicide she took 3 Cortinarius orellanlus (CO) mushrooms 5 days before hospitalization.

Table 1: laboratory data at admission

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Normal Value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>154.4-412 mmol/l</td>
<td>315.4</td>
</tr>
<tr>
<td>Cr</td>
<td>414-721 µmol/l</td>
<td>410.5</td>
</tr>
<tr>
<td>Sodium</td>
<td>138-150 mmol/l</td>
<td>139.5</td>
</tr>
<tr>
<td>Potassium</td>
<td>4.5-5.5 mmol/l</td>
<td>5.0</td>
</tr>
<tr>
<td>Ionized calcium</td>
<td>0.98-1.28 mmol/l</td>
<td>1.10</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>1.84-4.2 mmol/l</td>
<td>3.96</td>
</tr>
<tr>
<td>Total proteins</td>
<td>70.4-150 g/l</td>
<td>95.6</td>
</tr>
<tr>
<td>Albumin</td>
<td>39-89 µmol/l</td>
<td>42.3</td>
</tr>
<tr>
<td>CRP</td>
<td>≤3 mg/l</td>
<td>6.8</td>
</tr>
<tr>
<td>CK</td>
<td>≤111 µmol/l</td>
<td>144</td>
</tr>
<tr>
<td>LDH</td>
<td>≤487 µmol/l</td>
<td>298</td>
</tr>
<tr>
<td>GGT</td>
<td>≤32 µmol/l</td>
<td>118</td>
</tr>
<tr>
<td>GPI</td>
<td>≤27 µmol/l</td>
<td>47.0</td>
</tr>
<tr>
<td>gamma GT</td>
<td>≤21 µmol/l</td>
<td>21.0</td>
</tr>
</tbody>
</table>

Discussion: Every year in Switzerland, ≈500 cases of accidental - or sometimes voluntary - mushroom poisoning are reported, only rarely due to CO. Cortinarius orellanus can be found from August to October and contains orellanine that can cause delayed nephrotoxicity by targeting the tubular epithelium. Three to 10 mushroom's hats are sufficient to induce irreversible renal failure. The 3 phases of the orellanus-syndrome are reported in Table 2. Therefore intoxication with Cortinarius mushrooms should be considered in the differential diagnosis of otherwise unexplained AKI, especially when occurring in late summer and autumn. Once dialysis has to be instituted the prognosis is rather poor: 50% of these patients develop chronic renal failure. Some of them will need chronic HD or kidney transplantation. So far there is no causative therapy.
Lyme neuroborreliosis: four patients - no rash
Aresh Farokhnia, Marco Frank, Alexander Turk
See Spital Horgen, Innere Medizin, Horgen, Switzerland

Learning objective: Lyme neuroborreliosis may present with a wide range of neurological symptoms. There are no neurological and imaging findings specific for it. Clinical symptoms, inflammation of the cerebrospinal fluid (CSF) and the specific intrathecal Borrelia burgdorferi antibody index are used for the diagnosis. A lumbar puncture should be considered in unilateral facial nerve palsy.

Cases: Four patients presented to our hospital during the summer of 2018. Patient 1 (P1) was a 19 year old male presenting with fever, emesis, headache and unilateral facial nerve palsy. The second patient (P2) was a 30 year old female experiencing fever, severe headache with nuchal rigidity and photophobia. Our third patient (P3), a 65 year old female, initially complained of headache and emesis with diarrhea. She developed vertigo, dysphonia, hypacusis and dysphagia by the time of presentation. Patient 4 (P4) was an 82 year old male presenting with headache, somnolence, low fever and confusion. The past medical history of the patients were unsuspicious. Peripheral blood tests came back normal. Cranial imaging of the patients were unsuspicious. Antibody index IgM

We treated them with intravenous ceftriaxone and none displayed lasting neurological deficiencies.

[Table 2]

[Patients' CSF characteristics]

Discussion: It has been reported that up to 12% of all Lyme disease patients have signs of a neurological involvement. The most common presentation in adults is Barnette’s syndrome, which comprises of radicular pain, asymmetric paresis of the limbs and often a bilateral facial nerve palsy. A lymphocytic meningitis commonly appears in children with headaches and occasional nuchal rigidity. More rarely, neuroborreliosis might only cause a myelonecrophlitis. P1 showed symptoms of Barnette’s syndrome with a facial nerve palsy, P2 had a lymphocytic meningitis, P3 had Barnette’s syndrome with 3 cranial nerve palsies and P4 presented with an encephalitis. None of the patients had skin or joint involvement. These cases highlight that the characteristic erythema migrans do not always precede this disease.

P41

Does electronic health record improvement mean usability improvement? The internists’ perspective
Coralie Galland-Decker1, François Bastardot1,2, Vanessa Kraege1, Antoine Garnier1, Mathilde Rochat1

Results: Out of the 286 participants, 256 returned the questionnaire (89.5%). In both surveys, most participants self-reported being comfortable with computers. ‘Ease to find information’ and ‘Fewer steps to achieve a task’ were the most frequently designated usability features and were considered relevant by a significantly higher number of participants in 2018 compared to 2014 (Figure). Overall, users’ perception of EHR usability improved from 2.9 (± 0.6) to 3.3 (± 0.7, p < 0.001), mainly because of the highly rated new CPOE module (3.9 ± 0.1, Table). The largest increase in scaling was in the ‘Planning patient’s discharge’ group, explained by the development of a dedicated planning interface. Except for one item in the group ‘Getting an overview’ (‘View paramedical information’), whose usability decreased significantly from 2.6 ± 1.1 to 2.3 ± 0.7, p < 0.001), all EHR-related tasks showed unchanged or improved usability (data not shown).

Conclusion: Close collaboration between physicians and IT specialists leads to significant progress and better usability perception of EHR, even if our survey highlights potential for improvement. While clinical data to be handled keeps increasing massively, physicians expect EHR to keep information seamlessly and easily available.

[Figure]
Primary hyperparathyroidism due to an ectopic adenoma at an atypical age

Lea Slapar1, Corinna Wicke2, Alfred Leiser3, Klaus Strobel2, Christoph Henzen2

1Division of Endocrinology, Department of Medicine, 2Thyroid Center, 3Division of Heart and Thoracic Surgery, 4Department of Radiology and Nuclear Medicine, 5Division of Endocrinology, Department of Medicine, Luzerner Kantonsspital, Lucerne, Switzerland

Learning objectives: We report the case of a young patient diagnosed with a mediastinal parathyroid adenoma after an episode of nephrolithiasis. Although less common in younger patients, primary hyperparathyroidism should be suspected at any age. Especially when typical complications, such as urolithiasis, are present. New techniques in preoperative imaging not only determine an ectopic localisation, but also help to guide the parathyroidectomy.

Case: A 23-year-old woman presented with a first episode of nephrolithiasis. Further evaluation showed a PTH-mediated hypercalcemia (calcium 2.83 mmol/l, ref.range 2.15-2.50), parathyroid hormone (PTH) 105 pg/ml (ref.range 15-65), hypophosphatemia (0.70 mmol/l, ref.range 0.87-1.15) and hypercalcuria. These laboratory findings confirmed the diagnosis of primary hyperparathyroidism. Negative personal/family history, no concomitant endocrinopathies and negative genetic analysis for multiple endocrine neoplasia type 1 supported a sporadic form. A parathyroid adenoma could not be localized with neck ultrasonography, whereas 99mTc-pertechnetate sestamibi scintigraphy revealed hyperthyroidism with a suppressed thyroid-stimulating hormone (TSH 0.0006 mU/l) and elevated free thyroxine (fT4 77.9 ng/l) and a normal creatine kinase. Echocardiography revealed left ventricular systolic dysfunction (LVEF 40%) with apical hypo- to akinesia. Acute myocardial infarction was suspected. However urgent coronary angiography ruled out significant coronary stenosis (Fig. 2C-D). Thyroid function tests obtained before angiography revealed hyperthyroidism with a suppressed thyroid-stimulating hormone (TSH 0.0006 mU/l) and elevated free thyroxine (fT4 42.2pmol/l). Thyroid ultrasound showed a cystic nodule (4cm) in the left thyroid lobe suggesting a toxico adenoma. Thyroid suppressive therapy was initiated with carbimazole alongside with the usual heart failure medication. The rapid resolution of dyspnea and tachycardia. Echocardiography 8 days after admission showed complete normalization of left ventricular systolic dysfunction (Fig. 2B).

Discussion: This report illustrates an unusual case where the “zebra” (takotsubo syndrome) could be ascribed to an underlying endocrine trigger. The initial diagnosis of myocardial infarction could not be confirmed by coronary angiography. The rapid resolution of regional wall motion abnormalities supported the diagnosis of takotsubo syndrome. The exact pathogenesis of thyrotoxicosis-associated takotsubo syndrome is not yet fully understood but may involve overactivation/hypersensitivity to adrenergic signaling. The case highlights that hyperparathyroidism may trigger takotsubo syndrome mimicking ST-elevation myocardial infarction.

Clinical chemistry was significant for an elevated NT-pro-BNP (2.892ng/l), a dynamic elevation of troponin T (baseline 21 ng/l, peak 77.9 ng/l) and a normal creatine kinase. Echocardiography revealed left ventricular systolic dysfunction (LVEF 40%) with apical hypo- to akinesia and left ventricular thrombus (Fig. 2A). Acute myocardial infarction was suspected. However urgent coronary angiography ruled out significant coronary stenosis (Fig. 2C-D). Thyroid function tests obtained before angiography revealed hyperthyroidism with a suppressed thyroid-stimulating hormone (TSH 0.0006 mU/l) and elevated free thyroxine (fT4 42.2pmol/l). Thyroid ultrasound showed a cystic nodule (4cm) in the left thyroid lobe suggestive for a toxic adenoma. Thyroid suppressive therapy was initiated with carbimazole alongside with the usual heart failure medication. Over the following 5 days, the clinical status significantly improved with regression of dyspnea and tachycardia. Echocardiography 8 days after admission showed complete normalization of left ventricular systolic dysfunction (Fig. 2B).

Discussion: This report illustrates an unusual case where the “zebra” (takotsubo syndrome) could be ascribed to an underlying endocrine trigger. The initial diagnosis of myocardial infarction could not be confirmed by coronary angiography. The rapid resolution of regional wall motion abnormalities supported the diagnosis of takotsubo syndrome. The exact pathogenesis of thyrotoxicosis-associated takotsubo syndrome is not yet fully understood but may involve overactivation/hypersensitivity to adrenergic signaling. The case highlights that hyperparathyroidism may trigger takotsubo syndrome mimicking ST-elevation myocardial infarction.
An elderly man with a history of chronic venous insufficiency and a chronic malleolar ulceration presented with a painful swelling and erythema of the lower limb surrounding the malleolar ulceration. Otherwise he was in a good condition with normal vital signs. Laboratory results showed increased CRP and leukocyte count. Erysipela was diagnosed and after drawing of blood cultures, an intravenous empiric antibiotic treatment for generally well known clinical syndromes that may have an unexpected causative etiology.

**Case report:** A 71 year old man with a history of chronic venous insufficiency and a chronic malleolar ulceration presented with a painful swelling and erythema of the lower limb surrounding the malleolar ulceration. Otherwise he was in a good condition with normal vital signs. Laboratory results showed increased CRP and leukocyte count. Erysipela was diagnosed and after drawing of blood cultures, an intravenous empiric antibiotic treatment for generally well known clinical syndromes that may have an unexpected causative etiology.

**Discussion:** With severe anemia had multiple reasons for their anemia and need therefore a more extensive evaluation.

**Learning objective(s):**
- The deleterious potential of the microbubbles depends on their size and the length of exposure. The port entry, therefore, must be detected. In our case, it seemed to be the colonic adenoma. Microbubble invade the portal system through gastric ulcers, but, as a rule, must be detected. In our case, it seemed to be the colonic adenoma. Microbubble invade the portal system through gastric ulcers, but for the moment can lead to potentially curable diseases like gastric ulcer or tumors.
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- Microbubbles, or Microcavitations are a rare, but distinct echocardiac finding.
- The search for a port of entry can be difficult, but can lead to potentially curable diseases like gastric ulcer or tumors.
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No association of functional deficiency of complement mannose-binding lectin with cardiovascular disease in patients with systemic lupus erythematosus

Andrea Klinger-Grätlich 1, Severin Vogt 1, Camillo Ribi 2, Chiara Zizzolini 1, Uyen Huynh-Dor 3, Michael Odsho 4, Martin Trendelenburg 1

"Division of Internal Medicine and Clinical Immunology Lab, Department of Biomedicine, University Hospital and University Basel, Basel, "Department of Immunology and Allergy, University Hospital, Lausanne, "Department of Internal Medicine, Specialties, Clinical Immunology and Allergy, University Hospital and School of Medicine, Geneva, "Department of Nephrology and Hypertension, University Hospital, Bern, Switzerland

Introduction: Cardiovascular (CV) morbidity is the major cause of death in patients with Systemic Lupus Erythematosus (SLE). Previous studies on MBL gene polymorphisms in SLE patients suggest that low levels of complement mannose-binding lectin (MBL) are associated with cardiovascular disease (CVD). However, as large studies on functional MBL deficiency based on resulting MBL plasma concentrations were lacking, the aim of our study was to analyze the association of MBL concentrations with CVD in SLE patients.

Methods: Plasma MBL levels of 373 SLE patients included in the Swiss SLE Cohort Study (SSCS) were quantified by Enzyme-Linked Immunosorbent Assay. CV organ manifestation (cerebrovascular ischemia, coronary artery disease, myocardial infarction, peripheral artery disease, mesenteric insufficiency), occurring after the diagnosis of SLE, were documented using the Systemic Lupus International Collaborating Clinics (SLICC) damage index. Patients were selected based on the availability of complete disease activity index, SLICC index and plasma samples at the time of study visit.

Results: Of 373 included patients 319 (85.5%) were female and 54 (14.5%) male. The median (IQR) age at enrollment was 44.8 (34.8-57.5) years, the median SLE duration since first clinical SLE manifestation was 9.5 (5.2-18.1) years and the median MBL level was 1131 (335-2344) ng/ml. 129 patients (34.6%) showed levels below 500 ng/ml and 175 patients (46.9%) showed levels below 1000 ng/ml. In total, 62 patients (16.6%) had at least one CV manifestation, 20 (5.3%) had more than one. Patients with functional MBL deficiency were defined as plasma concentrations below 500 ng/ml had no significantly increased frequency of CVD (19.4% vs. 15.2%, P = 0.3). Similarly, MBL levels below 500 ng/ml were not associated with an increased rate of CVD (17.7% vs. 15.7%, P = 0.7).

In addition, functional MBL deficiency was not associated with the occurrence of any subcategory of CVD. Adjusting the risk of CVD for traditional CV risk factors, MBL levels and positive antiphospholipid serology (APL+) (n = 162/371, 43.7%) revealed a significant association of CVD with age (P <0.001), hypertension (P <0.005) and APL+ (P <0.003), while there was no association with MBL levels, sex, diabetes mellitus, smoking or body-mass-index.

Conclusion: In our large cohort of patients with SLE, we could not confirm previous studies suggesting functional MBL deficiency to be associated with an increased risk for CVD.

Association between mobility and functional decline in elderly patients hospitalized in a Swiss University hospital. A monocentric observational cohort study (Next Step)

Plamena Tasheva, Vanessa Kraege, Guillaume Roulet, Pedro Marques-Vidal, Marie Mean

Chuv, Department of Medicine, Internal Medicine, Lausanne, Switzerland

Introduction: Low mobility during hospitalization is associated with in-hospital functional decline and other negative outcomes, but few studies have objectively assessed mobility among hospitalized patients. Hence, we aimed to examine to which extent low mobility was associated with hospital-associated functional decline and other adverse outcomes at discharge in elderly patients hospitalized in a medical ward.

Methods: Monocentric observational study conducted from February to November 2018 in an internal medicine ward of the Lausanne university hospital, Switzerland. Patients aged ≥65 years (n = 200) had their physical activity levels assessed using a 3D wrist accelerometer. Based on a previous report, we considered patients as sedentary if their average daily physical activity was <12 milli-g (units of acceleration, 1g = 9.8 m/s²). Nighttime was not considered in the analyses. The primary outcome was patients’ evolution of functional status between admission and discharge, measured using the modified Barthel index (BI). Functional decline was defined as BI worsening by five points at discharge. Secondary outcomes were in-hospital falls, length of stay, risk of bedsores (Braden score ≤18) and inability to return home at hospital discharge (i.e. need of rehabilitation or new institutionalization).

Results: Of the initial 200 patients, 124 (62%) had accelerometry data for at least 2 days. Median patient age was 83 (interquartile range [IQR] 74-97), 60% were male, 30% had a cognitive impairment. Forty five percent of patients were considered sedentary. Their median daily time of inactivity was 762 minutes (~12.7 hrs) per day. Median daily activity time was 1.8 minutes (IQR: 0.8-3.4) for sedentary patients vs. 15.2 minutes (IQR: 9.5-26.5, p <0.01) for ambulatory patients (Table). Changes in functional status between admission and discharge are shown in the figure. Overall, 50 patients (40%) presented hospital-associated functional decline. Sedentary patients had a higher change in BI, a higher risk for bedsores at discharge and were less frequently able to return home directly after discharge than ambulatory patients, but both bivariate and multivariable analyses (Table). Similar findings were obtained when the analysis was expanded to all patients with valid accelerometry data (n = 160).

Conclusion: Almost half of elderly hospitalized patients are sedentary. Being sedentary was associated with a worse outcome.

Association between mobility and functional decline in elderly patients hospitalized in a Swiss University hospital. A monocentric observational cohort study (Next Step)
Low antibiotic resistance patterns in urinary tract infections in Swiss primary care: active surveillance study

Andreas Plate1, Andrea Kroneberg2, Martin Risch3, Yolanda Mueller4, Stefania Di Gangi1, Thomas Rosemann1, Oliver Senn1

1Institute of Primary Care, University and University Hospital of Zurich, Zurich, 2Swiss Center for Antibiotic Resistance, Institute for Infectious Diseases, University of Bern, Bern, 3Laboratorium für medizinische Mikrobiologie und Chemotherapie, University of Bern, Switzerland, 4Department of Family Medicine, General Medicine and Public Health Centre, University of Lausanne, Lausanne, Switzerland

Introduction: Urinary tract infections (UTI) are one of the most common reasons for prescribing antibiotics in primary care. In Switzerland, the Swiss Center for Antibiotic Resistances (www.anresis.ch) provides resistance patterns for uropathogens by passive surveillance. In clinical practice, a microbiological urine analysis is not recommended in most cases of uncomplicated UTI. Therefore, national resistance data overestimate the true resistance patterns. The aim of this study was to provide actual data of the antimicrobial resistance patterns in patients with UTI in Swiss primary care.

Methods: From June 2017 to August 2018, we conducted a cross-sectional study in 163 practices in Switzerland. Urine specimen, epidemiological, and medical data were obtained in all patients with a diagnosis of UTI (complicated or uncomplicated). Exclusion criteria were age <18 years, pregnancy and patients with a pyelonephritis. All microbiological analyses were centralized (Dr. Risch) and analyzed according to current EUCAST guidelines.

Results: 1,352 patients were included in the study. 94.9% of the patients were female with a mean (SD) age of 53.8 (20.8) years. 1,210 cases (89.4%) were classified as uncomplicated UTI. E. coli was the most frequent pathogen (74.6%). Susceptibility proportions of E. coli to Ciprofloxacin (88.89%, 88.82%-88.96% CI 95%) and Trimethoprim/Sulfamethoxazol (TMP/SMX) (85.66%, 85.58%-85.74% CI 95%) were significantly higher than the proportions reported by Anresis (78.4% and 77.8% for Ciprofloxacin and TMP/SMX, respectively in 2017) (p <0.001 for both). Susceptibility for Ciprofloxacin and TMP/SMX ranged from 84.6% to 90.9% and 76.5% to 90.9% across regions. We found high susceptibility to the recommended first line antibiotics Nitrofurantoin (99.48%, 99.47%–99.5% CI 95%) and Fosfomycin (99.35%, 99.34%-99.37% CI 95%).

Discussion: In this study, we report actual data on the resistance patterns of uropathogens in the Swiss primary care setting. E. coli was the most common pathogen for UTI, showing low resistance rates to the recommended first line antibiotics. Resistance to Ciprofloxacin and TMP/SMX, respectively in 2017) (p <0.001 for both).

Evaluation of the online doctor-consultancy in dermatology- evidence of a fast and high-quality service

Petra Ferrari Pedrini1, Katharina Gut-Fischer2, Eugen Paul Scheidegger1, Jürg Hans Beer2,3

1Kantonsspital Baden, Department of Internal Medicine, 2Kantonsspital Baden, Consultant for Dermatology, Baden, 3Universitätsspital Zürich, Molecular Cardiology, Zürich, Switzerland

Introduction: There is an ever increasing demand for dermatologic services for patients as well as health professionals. Especially for in-hospital patients with a high incidence of drug interactions, allergies and sometimes life-threatening events a fast and professional answer is required and crucial for treatment decisions. Withholding vital medications can be detrimental.

For most institutions a 7/24 dermatological service is rarely available. Our aim was to evaluate quality and timing of the web based online doctor-consultancy (Dr. Risch) in 2018. Follow up consultations were provided to ensure a high quality service.

Methods: We analysed anonymously the data of all requests submitted from a 400-bed Swiss teaching hospital in 2018. Follow up consultations or need for biopsy were analysed. The turnaround times were recorded.

Results: 1,352 patients were included in the study. 94.9% of the patients were female with a mean (SD) age of 53.8 (20.8) years. 1,210 cases (89.4%) were classified as uncomplicated UTI. E. coli was the most frequent pathogen (74.6%). Susceptibility proportions of E. coli to Ciprofloxacin (88.89%, 88.82%-88.96% CI 95%) and Trimethoprim/Sulfamethoxazol (TMP/SMX) (85.66%, 85.58%-85.74% CI 95%) were significantly higher than the proportions reported by Anresis (78.4% and 77.8% for Ciprofloxacin and TMP/SMX, respectively in 2017) (p <0.001 for both). Susceptibility for Ciprofloxacin and TMP/SMX ranged from 84.6% to 90.9% and 76.5% to 90.9% across regions. We found high susceptibility to the recommended first line antibiotics Nitrofurantoin (99.48%, 99.47%-99.5% CI 95%) and Fosfomycin (99.35%, 99.34%-99.37% CI 95%).

Discussion: In this study, we report actual data on the resistance patterns of uropathogens in the Swiss primary care setting. E. coli was the most common pathogen for UTI, showing low resistance rates to the recommended first line antibiotics. Resistance to Ciprofloxacin and TMP/SMX, respectively in 2017) (p <0.001 for both).
[Picture submitted via web.app The dermatologist approved the suspected diagnosis of purpura Schoenlein Henoch, which was then confirmed by a biopsy]

Results: In 2018 we had 86 formal requests for a dermatological assessment for hospitalized patients. The most frequent diagnoses were eczema (48%), adverse drug reaction (12%), infections (12%) and others including auto-immune disease (28%). 75% of all cases did not require the physical presence of a dermatologist. 25% of the patients received a biopsy to establish a definitive diagnosis. In 73% of the cases the response was received within 24 hrs, the remaining 27% were answered within 48 hrs. Reasons for follow up visits were case complexity, need for dermatoscopy or biopsy or insufficient quality of pictures.

Conclusions: The OnlineDoctor is a protected and safe digital service which allows patients and health professionals to receive a rapid advice from an experienced dermatological specialist. It provides a reliable tool for an institution without a continuous in-house consultancy service. Our experience encourages teledermatological services by an experienced online specialist. By educating internists in the basics of dermatology and training them in dermatoscopy and skin biopsies the procedures are optimized and provide a rapid and high-quality medical service.

P52

Differential diagnosis assessment in ambulatory care with an automated medical history-taking device: a pilot randomized study

Adrien Schwitzguebel, Roberto Gavinio, Clarisse Jeckelmann, Cécile Levallois, Charles Benaim, Hervé Spechbach

Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne, Geneva University Hospitals (HUG), Geneva, Université de Lausanne, Faculté de Médecine, Lausanne, Geneva University Hospitals (HUG), Geneva, Geneva University Hospitals (HUG), Geneva, Switzerland

Background: Automated medical history-taking devices (AMHTD) are emerging tools with the potential to increase the quality of medical consultations by providing physicians with an exhaustive, high-quality, standardized anamnesis and differential diagnosis (DD).

Objective: This study aims to assess the effectiveness of an AMHTD to obtain an accurate DD in an outpatient service.

Methods: We conducted a pilot, randomized controlled trial including 59 patients presenting to an emergency outpatient unit and suffering from various conditions affecting the limbs, the back and the chest wall. Resident physicians were randomized into two groups, one assisted by the AMHTD and one without access to the device. For each patient, physicians were asked to establish an exhaustive DD based on the anamnesis and clinical examination. In the intervention group, residents read the AMHTD report before performing the anamnesis. In both groups, the senior physician had to establish a DD, considered as the gold standard, independent of the resident’s opinion and the AMHTD report.

Results: In 2018 we had 86 formal requests for a dermatological assessment for hospitalized patients. The most frequent diagnoses were eczema (48%), adverse drug reaction (12%), infections (12%) and others including auto-immune disease (28%). 75% of all cases did not require the physical presence of a dermatologist. 25% of the patients received a biopsy to establish a definitive diagnosis. In 73% of the cases the response was received within 24 hrs, the remaining 27% were answered within 48 hrs. Reasons for follow up visits were case complexity, need for dermatoscopy or biopsy or insufficient quality of pictures.

Conclusions: The OnlineDoctor is a protected and safe digital service which allows patients and health professionals to receive a rapid advice from an experienced dermatological specialist.
P = 0.1). Subgroup analysis showed a between-group difference of 3.3% for low complexity cases (1-2 DDs possible), 31.1% for intermediate complexity (3 DDs), and 23.7% for high complexity (4-5 DDs), all in favor of the AMHTD. The AMHTD was able to determine 72.6 ± 30% of the correct DDs. Patient satisfaction was good (4.3/5) and 26 out of 29 patients (89%) estimated being able to accurately describe their symptoms. In eight of 29 cases (28%), the residents considered that the AMHTD helped in DD establishment.

Conclusions: The AMHTD allowed physicians to make more accurate DD, particularly in complex cases where the diagnosis is not evident. This could be explained not only by the ability of the AMHTD to make the right diagnoses, but also by the exhaustive anamnesis provided.

P53
Clinical practice guidelines of medical societies in Switzerland: analysis of the current state

Luukas Bachmann, Agne Ulyte, Holger Dressel
Universität Zürich, Institut für Epidemiologie, Biostatistik und Prävention, Zürich, Switzerland

Introduction: In Switzerland, not much is known about the availability and overall quality of clinical practice guidelines (CPGs). By conducting a comprehensive systematic search, our aim was to identify and describe the characteristics of current CPGs developed or endorsed by Swiss medical societies.

Methods: A systematic search was conducted in two medical literature databases, two major non-indexed Swiss medical journals, Swiss medical societies' websites, and the FHM guidelines platform. Inclusion criteria for the retrieved documents were that they: 1) contain recommendations for patient care provided by physicians; 2) define specific clinical circumstances; 3) are developed, adapted or endorsed by one of the Swiss national medical specialty societies. Documents with publication date before 2008/01/01 or containing only public health recommendations were excluded. Retrieved documents were screened by two reviewers in parallel. Data on the reported methods as well as transparency and quality indicators of the CPGs were extracted in a standardised way.

Results: A total of 295 CPGs were included in the analysis, 199 of which were found only on the societies' websites. 159 (54%) of guidelines had at least one predefined keyword in the title, most frequently “Empfehlung” or “Guideline”. Health areas with the highest number of CPGs were cardiovascular (55) and infectious diseases (52). Most CPGs were developed in Switzerland (212), in cooperation with German and/or Austrian societies (29), or by other international organisations (54). At least one author and the date of publication were reported in 83% and 94% of guidelines, respectively. Conflicts of interest were stated in 44% and financial support documented in 29% of the guidelines. Any method of guideline development was mentioned in 56% of CPGs.

Conclusions: Numerous CPGs provide recommendations for clinical practice in Switzerland. The majority are published on medical societies' websites only. The quality of reporting is extremely heterogeneous, ranging from documents without reported authors, methods of development and publication date, to guidelines using a grading of recommendations and being based on a systematic review of evidence. CPGs could potentially be improved by using a standardised development and reporting framework. We hope that this first overview of CPGs in Switzerland will foster further discussions on this topic.

P54
Pseudo or spurious hypertension among male youths in Southern Switzerland

Franco Mugoli1, Giacomo Simonetti2, Andreas Stettbacher1, Mario Bianchetti1
1Swiss Federal Department of Defence, Bern, 2Pediatric Department of Southern Switzerland, Bellinzona, 3University of Southern Switzerland, Faculty of Biomedical Sciences, Lugano, Switzerland

Objective: There is a debate about prevalence and significance of isolated systolic hypertension in the young (ISHY). Frequency and type of ISHY were therefore investigated among Swiss male citizens, who undergo a medical examination for recruitment into the army in the year they turn 18 to 19.

Design and method: Among males, who underwent the examination for recruitment between 2014 and 2016 in Southern Switzerland, 1027 accepted to participate in a research protocol addressing their cardiovascular health including among others blood pressure (BP) measurement.

A single high BP reading does not mean hypertension and the average of several readings provides a more reliable estimate of BP. Consequently, more readings were taken with the average mode technology (Microlife® BP3AC1-1) in volunteers with an initial reading = or >140/90 mmHg. Further readings with the same technique were obtained 24 hours later in subjects with an average reading = or >140/90 mmHg. Central BP (Aterogard Plus) was measured in subjects with isolated Systolic Hypertension (ISH) to identify pseudo or spurious hypertension.

Results: Among the 1027 participants, the first blood pressure reading was = or >140/90 mmHg in 357. Average mode blood pressure was still = or >140/90 mmHg in 276 subjects. Twenty-four hours later, BP was = or >140/90 in 78 subjects. ISH (BP = or >140/ <90 mmHg) was observed in 57 of the mentioned 78 subjects. A reliable central BP determination was obtained in 47 of the subjects with ISH. Pseudo or spurious hypertension (central BP <130 mmHg) was noted in 25 cases.

Conclusions: Among males 18 to 19 years of age living in Southern Switzerland, ISH is found in approximately 5%. The determination of central BP indicates that pseudo or spurious hypertension accounts for approximately half of the cases.

P55
Are patients with subclinical thyroid dysfunction at risk of depressive symptoms? An individual participant data analysis of prospective cohort studies

Lea Widisen1, Martin Feller-2, Elisavet Moutzouri3, Shanthi Beglinger1, Cinzia Del Giovanie1, Anne Cappola2, Bjørn Asløvd2, Steinar Bakker4, Grégory Detry5, Roberta Giugliano6, Hans Graben7, Matthias Nauck8, Stella Trompet9, Henry Völzke8, Rudi Westendorp10, Jacobin Gussekklo11, Robin Peeters12, Drahomir Aujeysky12, Douglas Bauer13, Nicolas Rodondi1,2
1Institute of Primary Health Care (BIHAM), University of Bern, 2Department of General Internal Medicine, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland, 3Division of Endocrinology, Diabetes, and Metabolism, Department of Medicine, University of Pennsylvania School of Medicine, Philadelphia, United States, 4Department of Public Health, Norwegian University of Science and Technology, Trondheim, Norway, 5Department of Internal Medicine, University Medical Center Groningen, University of Groningen, Groningen, Netherlands, 6Department of Clinical and Experimental Medicine, Geriatric Endocrine Unit, University Hospital of Parma, Parma, Italy, 7Longitudinal Studies Section, Translational Gerontology Branch, National Institute on Aging, Baltimore, United States, 8Institute for Community Medicine, Clinical-Epidemiological Research, University Medicine, Greifswald, Germany, 9Section Gerontology and Geriatrics, Department of Internal Medicine, Leiden University Medical Center, Leiden, Netherlands, 10Department of Public Health and Center for Healthy Aging, University of Copenhagen, Copenhagen, Denmark, 11Department of Public Health and Primary Care, Leiden University Medical Center, Leiden, 12Department of Medicine, Erasmus Medical Center, Rotterdam, Netherlands, 13Departments of Medicine and Epidemiology & Biostatistics, University of California, San Francisco, United States

Introduction: Subclinical thyroid dysfunction may be associated with several negative health outcomes; including depressive symptoms. However, evidence for this association is conflicting across a large number of studies, in part due to inconsistencies in definitions and cut-offs. Further research is required to inform clinical practice and guidelines.

Methods: We conducted a systematic review of cohort studies to assess the association between subclinical hypothyroidism (Shypo) or subclinical hyperthyroidism (Shyper) and depressive symptoms. We requested individual participant data (IPD) from cohorts identified through a search of EMBASE and MEDLINE and through the Thyroid Studies Collaboration (www.thyroid-studies.org). The outcome was depressive symptoms at first follow-up, measured on any validated depression scale. We calculated a pooled relative risk estimate across all selected cohort studies using a generic inverse variance Weighted Peto Odds Ratio (WOR) analysis. In each cohort, we estimated the mean difference (MD) in depressive symptoms scores between those with Shypo or Shyper and euthyroid controls adjusted for depressive symptoms at baseline. Further, we adjusted the multivariable linear regression model for age, sex, and length of follow-up. We pooled the study effect estimates using a random effects model. Heterogeneity was assessed by I².

Results: Among six cohorts, we analyzed data from 24,962 participants (65% female, mean age 61±13.3 years, Shypo N = 2,534, Shyper N = 684). At baseline, there was no difference in BDI scores between Shypo (10.67), Shyper (10.78) and controls (10.25). After a mean follow-up time of approximately half of the cases.
of 7.8±4.6 years BDI scores did not differ between SHypo participants and controls (pooled MD 0.07, 95% CI -0.25 to 0.40, I² 0.0%) nor between SHyper and controls (pooled MD -0.004, 95%CI -0.57 to 0.56, I² 2.5%). The results remained robust in sensitivity analyses, excluding participants taking thyroid medication (N = 23,602).

Conclusion: In this large study of prospective cohorts, neither SHypo nor SHyper were associated with an increase in depressive symptoms. Depressive symptoms do not seem to be a good indication for thyroxine therapy if no overt thyroid dysfunction is present. PROSPERO ID: CRD42018091627

<table>
<thead>
<tr>
<th>Study</th>
<th>Mean Difference in BDI Score (95%CI) Between SHypo and Control</th>
<th>Weight</th>
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<tr>
<td>LEIDEN</td>
<td>2.84 (-0.30, 5.98)</td>
<td>1.08</td>
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<tr>
<td>PROSPER</td>
<td>-0.01 (-1.87, 1.86)</td>
<td>3.09</td>
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<tr>
<td>HANC</td>
<td>0.32 (-0.48, 0.92)</td>
<td>21.82</td>
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<tr>
<td>CHS</td>
<td>0.11 (-0.40, 0.63)</td>
<td>40.83</td>
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<tr>
<td>InCHANTI</td>
<td>-0.55 (-1.95, 0.74)</td>
<td>6.00</td>
</tr>
<tr>
<td>HUNT</td>
<td>-0.05 (-0.67, 0.57)</td>
<td>27.48</td>
</tr>
<tr>
<td>Overall</td>
<td>0.07 (-0.25, 0.40)</td>
<td>100.00</td>
</tr>
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</table>

Less depressive symptoms > More depressive symptoms

[X-Ray with cardiomegaly and bilateral pleural effusions]

Later in the course, cardiac magnetic resonance imaging showed late gadolinium enhancement (fibrosis) in the septum and lateral epicardial wall (arrows).

<table>
<thead>
<tr>
<th>Study</th>
<th>Mean Difference in BDI Score (95%CI) Between SHyper and Control</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEIDEN</td>
<td>3.56 (-2.4, 7.56)</td>
<td>23.18</td>
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<tr>
<td>PROSPER</td>
<td>0.37 (-2.53, 3.17)</td>
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<tr>
<td>HANC</td>
<td>0.27 (-1.03, 1.57)</td>
<td>18.02</td>
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<tr>
<td>CHS</td>
<td>-0.00 (-2.18, 1.19)</td>
<td>10.31</td>
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<tr>
<td>InCHANTI</td>
<td>0.75 (-1.09, 2.59)</td>
<td>9.21</td>
</tr>
<tr>
<td>HUNT</td>
<td>-0.00 (-0.99, 0.43)</td>
<td>55.93</td>
</tr>
<tr>
<td>Overall</td>
<td>0.00 (-0.07, 0.56)</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Less depressive symptoms > More depressive symptoms

[X-Radiograph with late gadolinium enhancement (arrows)]

Later in the course, cardiac magnetic resonance imaging showed late gadolinium enhancement (fibrosis) in the septum and lateral epicardial wall (arrows).

P56

A rare cause of dilated cardiomyopathy in a young woman in Switzerland

Regula Fankhauser1, Deborah Schild2, Nisha Arenja2, Jan Novak2, Volker Maier1, Rolf Vogel1
1Department of General Internal Medicine, Solothurner Spitäler AG, Bürgerspital Solothurn, 2Department of Cardiology, Solothurner Spitäler AG, Bürgerspital Solothurn, Switzerland

Learning objective: In times of increasing migration and mobility, physicians should be aware of rather exotic differential diagnosis to ensure a qualitative high and contemporary medicine.

Case: A 45-year-old woman was admitted to the emergency room because of progressive dyspnea and chest discomfort. The medical history was unremarkable. The patient was born in Brazil and grew up on a farm. Physical examination showed a hemodynamically stable patient with signs of volume overload and respiratory distress. Laboratory examination revealed a BNP value of 815 ng/l. ECG showed sinus rhythm with left bundle branch block and peripheral low voltage. Chest X-ray revealed cardiomegaly and bilateral pleural effusions and in the echocardiography we found a dilated left ventricle with severely impaired left ventricular function (ejection fraction, EF 25%), hypokinesia and thinning of the septum.

We assumed heart failure NYHA IV due to dilated cardiomyopathy of unknown etiology and the patient was admitted to the ward for further diagnostics and initiation of heart failure therapy. In the clinical reasoning process we could exclude the most common cardiomyopathy causes. Owing to the patient's ethnicity, Chagas disease was considered at an early stage in the investigations and tests for IgG against Trypanosoma cruzi were positive, confirming Chagas disease. The patient was received heart failure treatment, which improved the EF from 25 to 40%. Due to late stage of chronic Chagas disease, antiparasitic therapy was not indicated.

Discussion: Chagas disease is a major cause of cardiovascular death in areas where it is endemic. Although rarely observed in Switzerland, increased awareness of the disease is important in times of migration and travel. Chagas disease is caused by T.cruzi, which is transmitted by triotamine bugs. Acute infection is often asymptomatic and resolves...
spontaneously in most cases, but it may lead to chronic Chagas disease. The chronic disease is diagnosed by the corresponding clinical presentation and detection of antibodies against T.cruzi. Chagas disease is treated with benznidazole or nifurtimox. Drug treatment can be offered to patients with acute infection and to adults with chronic infection without severe hepatic/renal insufficiency or advanced Chagas heart disease.

P57

A paralyzing abdominal pain with “red flags”
Alessia Proietti1, Petra Ferrari Pedrini1, François Fontana2, Anna E. Minder2, Elisabeth I. Minder3, Markus Schwendinger4, Alexander A. Tarnutzer5, Jürg H. Beer1,7
1Department of Internal Medicine, 2Cantonal Hospital Baden, Intensive Care Unit, Baden, 3Stadtspital Triemli, Clinic for Endocrinology, Diabetology and Porphyria, Zurich, 4Emergency Department, 5Cantonal Hospital Baden, Division of Neurology, Baden, 6University of Zurich, Faculty of Medicine, 7Universitätsspital Zurich, Molecular Cardiology, Zurich, Switzerland

Learning objectives: To illustrate how abdominal pain can be the initial symptom of the rare, serious and often life-threatening porphyria followed by severe paralyses. Porphyria as a differential diagnosis should be considered in any case of unclear abdominal discomfort, especially since the analysis of urine is specific and noninvasive.

Case: A 29y old woman presented to the ER with abdominal pain. She reported absent bowel movements with severe constipation. She had gone through psychological stress recently, felt otherwise well; medication consisted of hormonal contraceptives. Previously, similar episodes had been assessed by gastro- and colonoscopy without reaching a diagnosis. An abdominal CT, a gynecological examination and even a diagnostic laparoscopy on day 3 were negative. A reddish colored urine led to nitrofurantoin prescription for suspected urinary tract infection.

The pat. condition worsened within a week and she developed severe hepatic/renal insufficiency or advanced Chagas heart disease. The pat. was discharged after 3 weeks for rehabilitation, levels normalized. The tetraparesis was progressive, sparing only finger motion and avoidance of triggers the abdominal pain improved and sodium turn out to be highly positive, confirming the diagnosis of acute hepatic porphyria. Under intravenous administration of hemin, glucose application.

Discussion: Intermittent acute porphyria is a rare disease (prevalence 5:100’000). It typically presents after puberty with attacks of abdominal pain, constipation, hyponatremia, neurological symptoms. In our case we identified several triggers: fasting for endoscopies and laparoscopy, medication (barbiturates, nitrofurantoin, metamizol, gestagens). An at least 5-times increased urinary porphobilinogen during an attack (with typical urin darkening upon light exposure) is highly sensitive and specific. Recovery is usually good within weeks/months, including the paralyses. Our case emphasizes the importance of considering even rare diseases as differential diagnosis, especially if they have significant therapeutic consequences.

P58

Recombinant human C1 esterase inhibitor (Conestat alfa) in the prevention of contrast-induced nephropathy in high-risk patients (PROTECT): a randomized, placebo-controlled, double-blind single-center trial
Annea Panagioutou, Stephan Moser, Tobias Breithardt, Ingrid Heijnen, Christoph Kaiser, Leo Bonati, Marten Trendelenburg, Raban Jeger, Michael Osthoff
Universitätsspital Basel, Basel, Switzerland

Introduction: Contrast-induced nephropathy (CIN) is a leading cause of acute kidney injury and is caused by renal tubular toxicity and ischemia/reperfusion (IR) injury. Experimental data support the concept that recombinant human C1 esterase inhibitor (conestat alfa) may be effective in the prevention of CIN.

Methods: In this randomized, placebo-controlled, double-blind single-center trial, we recruited patients aged 18 years or older with chronic kidney disease (eGFR of <50 ml/min/1.73m²), at least one additional risk factor for CIN, and who underwent an elective coronary angiography. Patients were randomly assigned (1:1) to receive 50 IU/kg conestat alfa immediately before and four hours after angiography or placebo. The primary outcome was the peak increase of urinary neutrophil gelatinase-associated lipocalin (NGAL) within 48 hours after angiography. This trial is registered with ClinicalTrials.gov, number NCT02869347.

Results: Between January 2017 and May 2018, 77 patients were randomized to either the conestat alfa group (n = 38) or the placebo group (n = 39). Baseline renal function (median eGFR 40.3 (conestat alfa) vs. 39.9 (placebo) ml/min/1.73m²), amount of contrast media administered (median 110 vs. 112 ml) and baseline urinary NGAL levels were similar. A median increase of 91.7% in serum C1 inhibitor levels was observed after conestat alfa administration. Median peak increase of urinary NGAL was lower in the conestat alfa group (4.7 vs. 22.5 ng/ml, p = 0.04) in the entire population and in a pre-specified subgroup (patients with a percutaneous coronary interventions; median 1.8 vs. 26.2 ng/ml, p = 0.04 corresponding to a median percent-age peak change of 11 vs. 205%, p = 0.001).
The incidence of a cystatin C increase ≥10% within 24 hours was lower in the conestat alfa group (15.8% vs. 36.1%, p = 0.04), whereas the frequency of CIN and the peak change in troponin T within 48 hours were comparable. Cardiac and renal events during a three month follow-up were similarly distributed as were adverse events.

**Conclusion:** Administration of conestat alfa before and four hours after coronary angiography attenuated the rise in urinary NGAL, a marker of acute kidney injury, and decreased the incidence of a relevant cystatin C increase, in particular in patients undergoing more invasive procedures requiring higher volumes of contrast medium. In addition, the safety profile of conestat alfa was favorable in a patient population with multiple comorbidities.

**Results:** All measures showed moderate to good discriminatory power, with AUC of 0.60-0.71.
suspected diagnosis of EF. Treatment with high dose intravenous corticosteroids (1000mg prednisone for 3 days) followed by prednisone 1mg/kg per day and methotrexate (MTX) 20mg subcutaneous once weekly was initiated and the patient was referred to physical therapy. Symptoms diminished within weeks and after 2 months of treatment the patient was no longer limited in his daily activities.

Discussion: EF is rare, often misdiagnosed, resulting in an average delay of almost one year between onset of symptoms and diagnosis. Etiology is unknown. In up to 46% of all patients, excessive physical exertion was postulated as a possible trigger, which might apply for our athletic patient. Diagnostic criteria were proposed in 2014, but are still awaiting validation. Data on treatment of EF is generally derived from case reports and case series. Prospective, randomized studies are lacking. Evidence from a few retrospective studies favor the combination of systemic corticosteroids and MTX as the initial treatment of choice and there is consensus that early treatment of EF is critical since the initial inflammatory or edematous phase is more treatment responsive than the late phase characterized by severe fibrosis.

P61

The impact of PCSK9-inhibitors on platelet structure and function
Lisa Pasterk1, Nicole Bonetti1, Sara Gobberto1, Simon Meier2, Marcel Frick3, Giovanni G Camici1, Thomas F Lüscher1, Pascal Köpfli4, Michael Egloff1, Hans-Ruedi Schmid1, Jürg Hans Beer1
1Center for Molecular Cardiology, University of Zurich, Schlieren, 2Cantonal Hospital of Baden, Department of Internal Medicine, Baden, Switzerland

Introduction: PCSK9 inhibitors, a novel class of lipid lowering agents, may reduce plasma LDL-C levels to ultralow levels of less than 0.4mmol/l in 9% of the treated study population. Although “the lower, the better” is a guideline approved and welcome concept in preventing cardiovascular complications, pleiotropic effects of PCSK9-inhibitors remain to be investigated.

Aim: Since recent studies suggest that elevated LDL-C levels may activate platelets and PCSK9 might function as a positive modulator of platelets, we hypothesize that PCSK9-inhibitors interfere with platelet reactivity.

Methods: In this pilot study, citrated blood from patients on PCSK9-inhibitor therapy (n = 16) and matched controls (n = 16) was collected in order to investigate platelet numbers, structure and functional aspects. Platelet rich plasma (PRP) was analyzed for aggregation using ADP, collagen and TRAP as stimuli. In addition, the platelet receptor GPIb and the activation dependent glycoproteins P-selectin and GPIIb/IIa were quantified by flow cytometry.

Results: Platelet aggregation to a low concentration of TRAP (5pM) is decreased by almost 50% in patients on PCSK9-inhibitor therapy compared to controls (P = 0.0381), while no significant differences could be observed in ADP and collagen induced platelet aggregation. In line with these results, the early platelet activation marker P-selectin was downregulated ~30% (P = 0.0186) in TRAP stimulated platelets of patients on PCSK9-inhibitor therapy. Activation of the major platelet integrin GPIIb/IIIa was not significantly affected with stimulation using ADP, collagen or TRAP. Of note, the PCSK9 inhibitor therapy did not affect the expression profile of the fibrinogen receptor GPIb as well as the total number of platelets.

Discussion/Conclusion: Our data support the hypothesis that platelets from patients treated with PCSK9-inhibitors show a reduced reactivity. This is particularly evident in platelet aggregation and P-selectin expression upon TRAP stimulation, indicating an important mechanistic role for the platelet PAR receptors. Whether these pleiotropic effects result from LDL-C reduction and/or different plasma levels of PCSK9 needs to be further investigated in the ongoing study.

P62

Hyperammonemic encephalopathy - a case series of a rare but life-threatening complication after bariatric surgery
Heléne Singerstein1, Simone Krähenmann-Müller1, Mike Vidovic2, Sarah Sigrist2, Michael Brändle1, Stefan Bilz2
1Kantonsspital St. Gallen, Division of General Internal Medicine, Department of Internal Medicine, 2Kantonsspital St.Gallen, Division of Endocrinology and Diabetes, Department of Internal Medicine, St. Gallen, Switzerland

Learning objective: Roux-en-Y gastric bypass (RYGBP) is the most commonly performed bariatric procedure. Hyperammonemic encephalopathy (HE), due to a functional deficit of the urea-cycle after RYGBP, could lead by irreversible brain damage to a potential life-threatening condition. Thus, the early recognition of hyperammonemia even in the absence of a liver disease and the immediate initiation of a specific therapy is crucial in postbariatric patients with neurologic alterations.

Cases: Three females with psychiatric disorders (two with depression and ADHS, one with borderline syndrome and polytoxicomania), who had undergone RYGBP 10-11 years ago, were hospitalized (reason for admission were malnutrition, pneumonia, and psychiatric disorder, resp.). All had severe protein malnutrition. High-protein, thiamine, multivitamins and trace elements supplementation were established. In the further course, neurological deterioration with impaired consciousness and status epilepticus occurred, with normal findings in neuroimaging. In all cases, hyperammonemia was found without any laboratory evidence for an underlying liver disease. An extensive biochemical work-up failed to detect urea-cycle defects, organic acids, and fatty acid oxidation disorders. Immediate withdrawal of any protein supply, substitution of intermediates of the urea cycle (arginine, citrulline) and removal of ammonium from the intravenous solution were performed to rapidly declinig plasma ammonium levels and neurological improvement.

Discussion: Ammonium is a neurotoxic product of protein catabolism that is converted to urea prior to renal excretion in the urea-cycle. The pathophysiology of hyperammonemia after RYGBP may be multifactorial. A functional deficit of the urea cycle is hypothesized in patients with nonalcoholic liver function. The cause is currently described in many ways: X-linked partial ornithine transcarbamylase (OTC) deficiency has been implicated. Additional zinc deficiency and hyperinsulinemia may decreases the expression and function of OTC and therefore unmask partial previously clinically silent OTC deficiencies. Bacterial overgrowth of the intestinal flora after RYGBP may lead to higher ammonium production. RYGBP can interfere with citrulline synthesis in the intestinal wall and consequently lead to depletion of urea cycle components. HE is a rare but life-threatening complication after RYGBP in patients with severe malnutrition receiving protein supplementation.

P63

Impact of adrenal insufficiency on patient-centred health care out- comes in adult medical inpatients
Andrea Widmer1, Fahim Ebrahim1, Ulrich Wagner1, Beat Mueller2, Philipp Schuetz3, Mirjam Christ-Crain1, Alexander Kutz3
1Division of Endocrinology, Diabetes, and Metabolism, University Hospital Basel, Basel, 2Division of Health and Social Affairs, Section Health, Swiss Federal Office for Statistics, Neuchâtel, 3Division of General Internal and Emergency Medicine, University Department of Medicine, Kantonsspital Aarau, Division of Endocrinology, Diabetes, and Metabolism, University Department of Medicine, Kantonsspital Aarau, Aarau, Switzerland

Introduction: Patients with adrenal insufficiency suffer from increased morbidity and mortality. Quantitative evidence on the health-care burden of either primary (PAI) or secondary adrenal insufficiency (SAI) among hospitalised medical patients is scarce.

Methods: In this observational cohort study, we analysed nationwide acute care hospitalizations from patients with PAI or SAI, respectively, between 2011 and 2015 using prospective administrative data. Patients with either PAI or SAI were compared with propensity score-matched (1:1) controls, based on age, gender, citizenship, hospital volume, year of admission, Charlson Comorbidity Index, and relevant medical diagnoses. The primary outcome was in-hospital mortality. Secondary outcomes were intensive care unit (ICU) admission, intubation rate, length of hospital stay, and 30-day-readmission.

Results: We included 594 patients with PAI and 4 880 patients with SAI. Compared with matched controls, in-hospital mortality was comparable among patients with PAI (odds ratio [OR] 1.12 [95% CI 0.65 to 1.95]) and SAI (OR 1.14 [95% CI 0.88 to 1.24]), respectively. Patients with adrenal insufficiency were more likely to be admitted to the ICU (PAI: OR 2.56 [95% CI 1.69 to 3.90], and SAI: OR 3.03 [95% CI 2.60 to 3.54]). The risk for intubation was 3.6-fold higher in SAI patients (OR 3.04 [95% CI 2.40 to 3.84]), whereas there was a trend in PAI patients (OR 1.77 [95% CI 0.93 to 3.37]). The mean length of hospital stay was 1.8 days longer in PAI patients (8.9 vs. 7.1 days; difference 1.83 [95% CI 0.81 to 2.86]) and 4.6 days longer in SAI patients (12.1 vs. 7.5 days; difference 4.62 [95% CI 4.20 to 5.04]). The risk for 30-day hospital readmissions was increased in SAI patients (OR 1.48 [95% CI 1.33 to 1.64]) but not in PAI patients (OR 1.34 [95% CI 0.93 to 1.91]).

Conclusions: Among medical inpatients, adrenal insufficiency was associated with significant health-care burden, leading to higher rates of ICU admission, intubation and prolonged length of hospital stay.
Conclusions: The six scores had very similar C-Statistic with the area under the curve (AUC) ranging from 0.63 (Charlson Comorbidity Index) to 0.70 (Walter Index). The calibration curves showed moderate calibration for all scores. No single score was superior in this multimorbid, elderly population.

Methods: This prospective cohort study was conducted in four European university hospitals. Included participants were multimorbid (≥3 coexisting chronic diseases), aged ≥70 years with polypharmacy (≥5 long-term medications), and admitted for an acute medical condition. The Burden of Illness Score for Elderly Persons, the Caring Criteria, the Charlson Comorbidity Index, the Gagné Index, the Levine Index and the Walter Index were the six scores assessed. The outcome was 1-year all-cause mortality. Overall performance (Brier score, 0 is perfect), discrimination (C-statistic, 1 is perfect) and calibration (calibration curves) was assessed for each score.

Results: We included 555 participants with 1-year follow-up. The mean age was 81 years (standard deviation (SD) 7), 46% were women, and the mean number of diagnoses was 12 (SD 7). Within one year, 106 participants died (19.1%). Brier scores ranged from 0.15 (Gagné Index) to 0.22 (Burden of Illness Score for Elderly Persons), the C-Statistic had a very similar C-Statistic with the area under the curve (AUC) ranging from 0.63 (Charlson Comorbidity Index) to 0.70 (Walter Index). The Calibration curves showed moderate calibration of the six scores.

Conclusions: The performance of all six 1-year mortality scores was moderate. Our external validation showed moderate discrimination and moderate calibration for all scores. No single score was superior in this multimorbid, elderly population.

A qualitative study of outpatient clinical teachers’ pedagogical skills in Switzerland - a call for targeted training

Anne Catherine Pereira Miozzari1, Johanna Sommer1, Virginie Muller-Juge1, Jennifer Hasselgard-Rowe1, Alain Birchmeier2, Luc Côté3, Marie-Claude Audétat1

1Université de Genève/Faculté de Médecine, Unité des Internistes Généralistes et Pédiatres, Genève, 2Société Vaudoise de Médecine/Internal General Practitioners, Lausanne, Switzerland, 3Faculty of Medicine, Department of Family and Emergency Medicine, Laval, Canada

Introduction: Combining two roles, that of a clinician and of a teacher, remains a challenge for clinical teachers receiving students in their outpatient practices. During clinical supervision sessions, clinical teachers (CECs) need to be able to rely on solid pedagogical tools. They also need to commit themselves to a process of continuous pedagogical training in order to evaluate the acquisition and use of the tools. Observing clinical teachers in clinical supervision combined with feedback provided by peers represents an established model for encouraging efficient learning. Sommer et al. created and validated a pedagogical skills’ assessment grid that can be applied to clinical teachers during supervisions with the objective of developing their competencies.

Methods: The data used came from the MEDTEACH study carried out in 2015 among 41 clinical teachers in four university institutes of primary care in the German and French speaking parts of Switzerland with the initial objective of better understanding the teaching methods of clinical teachers in outpatient settings. Our study undertook a qualitative and descriptive analysis of the quality of the process and the pedagogical content of the supervisions of standardised students carried out by 20 clinical teachers in an outpatient context in the French speaking part of Switzerland, through the use of Sommer et al’s pedagogical skills’ assessment grid.

Results: The results reveal that the clinical teachers know how to create a supportive environment for learning, but have difficulties in providing specific pedagogical answers to the students’ needs. They present gaps in using clinical supervision as a pedagogical tool and still need to develop their teaching scripts in order to reinforce their pedagogical role.

Conclusions: These results will help academic sectors to adapt their pedagogical training programs to the identified needs of the clinical teachers. Acquiring targeted pedagogical tools through an adapted teaching format will help clinical teacher develop their pedagogical stance and thereby train tomorrow’s leaders in outpatient medicine.
any health hazard at the workplace. Overall, life satisfaction level amounted to 7.4 (SD 2.2) out of 10.

Conclusion: The initial results show a contrast between good self-reported health and wellbeing and frequent comorbid health conditions notably of mental origin, health-adverse working conditions and economic constraints in the ability to respond to their health care needs. While access to health insurance is limited, migrants are able to navigate the healthcare system.

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Self-reported screening practices of family physicians participating in the colorectal cancer screening program of the canton of Vaud: a cross-sectional study

Camille Ducrey1, Jacques Cornuz1, Alexandre Gouveia1, Cyril DUCROS2, Kevin Selby3

1 Policlinique Médicale Universitaire (PMU), 2 Cancer Screening Foundation of the Canton of Vaud, Lausanne, Switzerland

Background: An organized colorectal cancer (CRC) screening program was implemented in the Canton of Vaud in Switzerland in 2015, offering the choice of the fecal immunochemical test (FIT) or colonoscopy via a visit with a family physician (FP). Given the central role of FPs in the program, this study aimed to compare the FP’s preventive practices with the objectives of the program, namely “informing patients of the program” and “presenting the choice of colonoscopy and FIT”, and to raise factors associated with FPs presenting the choice of colonoscopy and FIT.

Methods: A mixed-methods study using an online survey and semi-structured interviews. Participants were FP from the Canton of Vaud who had included at least one patient in the screening program. Multivariate logistic regression was used to compare physicians who offered primarily colonoscopy to those who offered a choice of tests.

Results: The participation rate was 40% (177 respondents / 443 eligible). The majority of physicians (68%) reported informing more than 75% of their eligible patients about the CRC screening program. Regarding the screening method offered by FP, 20% (n = 36) of physicians presented colonoscopy only and FIT for 35%, both while indicating their preferred test, 21% (n = 37) both screening methods on an equal basis and 9% (n = 16) both methods using a decision support tool. Lack of time (n = 86, 32.8%) was the principal reason cited for not informing patients. Predictors of offering only colonoscopy rather than a choice of screening tests included: first, FP reporting that they had chosen/would choose colonoscopy for his or her own screening (0.12 (0.02 - 0.54)*); second, having more than 20 years of experience (0.21 (0.05 - 0.76)*); and third, seeing 300 or more patients per month (0.33 (0.13 - 0.81)*). When asked what could improve the program, 17% (n = 31) wanted that patients should be informed in advance about the program by postal mail and large-scale communication campaign.

Conclusion: The majority of FPs reported CRC screening practices consistent with the objectives of the program. However, in order to obtain equal information and to gain time, patients should be informed in advance.

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"More time for patients": a reorganization of medical wards at the University Hospitals of Geneva

Pauline Darbellay Farhoumand1, Léa Costaz1, Sophie Le Du1, Jean-Luc Remy2, Thomas Agoritsas1

1 Geneva University Hospitals (HUG), Service Interne Générale, Département de Médecine, 2 Université de Genève/Faculté de Médecine, Geneva, Switzerland

Introduction: As part of 9 priority projects identified by staff and patients, the University Hospitals of Geneva designed the "More time for patients", a multidisciplinary projects that used Design Thinking and Lean methodology to simplify the organization of a health care unit.

Methods: We conducted 5 phases: (1) field observation (i.e. "gembra"); (2) definition of objectives; (3) design and testing of solutions; (4) implementation in a go-live session; (5) continuous improvement (i.e. “kaizen”). The objectives identified by the team were to (a) increase the quantity and quality of the time spent with patients and relatives; (b) enhance patient involvement and shared decision making; (c) improve interdisciplinary collaboration by making processes more visible. We designed solution and tested before implementing them simultaneously as a new system the very same day.

Results: During the last 2 years, we reorganized 8 general internal medicine wards. For each unit, we issued 20 actionable standards, covering...
Postmenopausal women at high risk of osteoporosis consume high amounts of fruits and vegetables but too little dairy products.

The CoLaus/OsteoLaus cohort

Audrey Lanyan, Pedro Marques-Vidal, Elena Gonzalez Rodriguez, Didier Hans, Olivier Lamy, Master arbeit

Bone Unit, Lausanne, Switzerland

Introduction: the burden of osteoporosis (OP) in terms of health, human and economical impact is spreading in Switzerland. A healthy lifestyle, especially diet, plays a major role in the prevention of chronic diseases like OP. We aimed to evaluate the link between nutrients, diet patterns or compliance to dietary guidelines and bone health among postmenopausal women. We also evaluated for the first time the influence of nutrition on trabecular bone score (TBS), a surrogate marker of bone microarchitecture.

Method: we assessed 1475 women aged 50 to 80 years participating in the CoLaus/OsteoLaus cohort. Exclusion criteria were OP treatment and extreme energy intake. Bone mineral density (BMD), TBS and vertebral fracture were evaluated with dual x-ray absorptiometry; OP risk factors, calcium supplements, and prevalent major OP fractures were evaluated via questionnaire. Dietary intake was assessed using a validated, self-administered, semi-quantitative food frequency questionnaire.

Results: 1057 women (age 63.9±7.5 years, BMI 25.8±4.4 kg/m²) met the inclusion criteria; 126 had OP according to BMD, 67 a low TBS (<1.23) and 110 prevalent OP fractures. In multivariate analysis, women taking calcium supplements had a higher compliance to dietary guidelines, less fiber (18.8±0.6 vs 17.1±0.2 g/d, p = 0.01), less animal proteins (40.1±1.3 vs 43.9±0.5 g/d, p = 0.007), and less calcium (914±36 vs 1057±74 mg/d, p = 0.005), more fiber (18.8±0.6 vs 17.1±0.2 g/d, p = 0.01), less animal proteins (40.1±1.3 vs 43.9±0.5 g/d, p = 0.007), and less calcium (914±36 vs 1057±74 mg/d, p = 0.002). Women with OP had a higher compliance for the vegetables guide: odds ratio (95% CI): [1.188; 1.03-4.3, p = 0.041], and a lower compliance for the dairy guide: [0.34: 0.14-0.82, p = 0.016]. Women taking calcium supplements had a higher compliance to dairy products [1.72: 1.11-2.66, p = 0.015]. Dietary pattern “fruits and vegetables" was more prevalent in OP women: 1.77 (1.10-2.84), p = 0.019. No association was found between TBS values and nutrients, dietary patterns or compliance to dietary guidelines.

Conclusion: Postmenopausal women with OP consume a high amount of dairy products and animal proteins. The negative effect of vegetables on BMD may be due to the lower value of protein and calcium and higher calcium absorption due to fibre. TBS does not seem to be influenced by diet, but further studies are needed to evaluate the influence of diet on TBS.

P70

Are thyroid hormones in the normal range associated with bone mineral density, microarchitecture or incident fractures in postmenopausal women? The 5-years follow-up CoLaus/OsteoLaus cohort

Colin Vendrami1, Pedro Marques-Vidal1, Elena Gonzalez Rodriguez2, Didier Hans3, Gerhard Waeb3, Olivier Lamy4

1Bone Unit, 2Bone Unit, 3Internal Medicine, 4University Hospital, Internal medicine, Lausanne, Switzerland

Introduction: Several studies found that subclinical hyperthyroidism is associated with low bone mineral density (BMD) and increased fracture risk. In healthy postmenopausal women, the results regarding an association between TSH levels in the normal range and BMD are contradictory. The Trabecular Bone Score (TBS), a surrogate marker of bone microarchitecture, is often deceased in secondary osteoporosis. The aim of this study was to determine the association between the thyroid hormones (TSH and fT4) in the normal range and bone health, assessed by BMD, TBS, and incident fractures at 5 years.

Method: We assessed 1475 women aged 50 to 80 years participating in the CoLaus/OsteoLaus cohort. Exclusion criteria were treatment for OP, diabetes, hypothyroidism/iodism, with hormonal replacement therapy or prednisone, and TSH or fT4 outside the normal ranges. We evaluated BMD at lumbar spine, femoral neck and total hip, TBS, and vertebral fracture with Dual X-ray Absorptiometry (DXA). Incident major OP fractures were evaluated 5-years later by questionnaire and DXA.

Results: 710 women (age 68.7±7.5 years, BMI 25.9±4.6 kg/m², TSH 2.31±1.3 mU/l, fT4 15.45±2.00 pmol/l) met the inclusion criteria. There was no significant association between TSH and fT4 in the normal ranges, neither BMD, nor major OP fractures incidence were associated with TSH or fT4 values. This is the first study showing a correlation between TSH and TBS. Lower TSH may lead to a weaker bone structure without affecting BMD, but further studies are needed to evaluate the influence of thyroid hormones on TBS.

P71

Can we modify internal medicine residents’ extra hours? The MED2DAY study

Julien Castioni1,2, David Gachoud1,2, Pedro Marques-Vidal1, François Bastardot1,4, Nathalie Wenger1, Matteo Monti1, Marie Mèan1, Olivier Lamy5, Peter Vollenweider6, Gérard Waeb2, Vanessa Kraege2, Antoine Garnier8

1Internal Medicine Department, 2University Hospital of Lausanne, Human Resource Department, 3University of Lausanne, Unit of Medical Education, School of Medicine, Lausanne, Switzerland, 4Brigham and Women’s Hospital, Division of General Internal Medicine and Primary Care, 5Harvard Medical School, Boston, United States, 6University Hospital of Lausanne, Medical Directorate, Lausanne, Switzerland

Introduction: Extra hours (EH) are common for residents, associated with burnout and remain under-reported in many hospitals. In 2016, our department management implemented a new regulation reducing weekly working hours (excluding lunchtime) from 47:30 to 47:00 from July 2017 on. We addressed EH burden by initiating major reforms in daywork organisation (Table). Our aims were to: 1) assess how reforms and regulation changes impacted EH; 2) observe if residents reported EH reliably.

Methods: We conducted two time-motion studies in 2015 and in 2018, respectively. Trained observers followed residents and recorded their activities during dayshifts. Observed EH were defined as hours worked at the hospital after planned daily schedule. The lunchtime (0:30 in 2015 and 1:00 in 2018) was excluded from the official hour count according to labor regulation but was recorded in the study mostly as personal time activity. Monthly EH reported by residents were collected and aggregated with the POLYPPOINT-PEP software. We compared reported and observed EH in both studies. If reported EH were missing, we considered no EH and allocated a zero.

Reform designation

Secretary allocation to residents

To increase the administrative support available for residents: each residents’ secretary works in the same office as the residents to facilitate communication, collaboration and tasks delegation.

Interprofessional decision meeting

To discuss daily each patient’s therapeutic plan, orientation after acute care and the discharge date. The 30 minutes meeting gathers all the medical staff (attending physician; chief resident; residents; students), the head nurse of the ward, the transition nurse and the residents’ secretary and replace both (1) the daily handoff meeting and (2) the twice-weekly interprofessional meeting.

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EMHHMedia
Day and week schedule reorganization
To limit work fragmentation and task switching with setting up interprofessional decision meeting at 8:00 AM, post-graduate teaching at 1:00 PM and postponing the start of the daily ward rounds at 10:00 AM to allow for preparation time.

Institutional project Gestion Proactive des séjours
To prepare the transition to hospital discharge better and shorten length of stay by early identification of the senior physician responsible for the patient's therapeutic plan.

Improvement of discharge summaries
To continuously improve the process of writing, correcting and dispatching the hospital discharge summaries.

Coordination with the Emergency Room (ER)
To speed up the transfer of patients from the ER to the hospital units. The target time spent in the ER was <6 hours.

Results:

PT2
Twelve-year trends in diabetes prevalence according to sociodemographic and health indicators in the canton of Geneva

Carlos de Mestral1,2, Silvia Stringhini1,2, Idris Guessous1, François Jornayvaz2

Introduction: It is well known that the prevalence of diabetes differs widely across sociodemographic groups in populations of high-income countries. To date, however, no study has assessed the sociodemographic patterning of diabetes in the canton of Geneva. We thus aimed to assess the trends in prevalence of diabetes according to a series of demographic, socioeconomic and health indicators.

Methods: Annual population-based cross-sectional study of adults residing in the canton of Geneva. We included data from 2005 to 2016, including 8574 participants (51% women; mean age (SD) = 49.2 (13.5)). We defined a diabetes case as having a previous diagnosis or having fasting plasma glucose ≥7 mmol/L. We categorized age into 18-44, 45-64, and ≥65 y; educational level into mandatory, secondary/apprenticeship, and tertiary; household income in CHF/month as <3000, 3000-6999, 7000-9499, and ≥9500; health insurance deductible as 300, 500, 1000-1500, and 2000-2500; body mass index (BMI) into 18.5-24.9, 25-29.9, and ≥30; high blood pressure was defined as having a previous diagnosis or blood pressure ≥140/90 mmHg; hypercholesterolemia was defined as having a previous diagnosis or having total cholesterol >6.2 mmol/L. We grouped survey years into five categories: 2005-2008, 2009-2010, 2011-2012, 2013-2014, 2015-2016.

Results: Over the twelve-year period, the prevalence of diabetes remained largely constant overall and across most sociodemographic groups (Table 1) and health indicators (Table 2). In 2015-2016, the prevalence of diabetes was 2.6% (1.6 - 3.6) in the younger age group and 16.8% (12.5 - 21.2) in the older age group. Men had a higher prevalence than women: 8.3% (6.6 - 10.1) versus 5.0% (3.7 - 6.1). Participants with the lowest level of education had a prevalence of 23.1% (19.3 - 32.2), while those with the highest educational level had a prevalence of 4.7% (3.4 - 6.1). Participants with the lowest income had more than double the prevalence of those with the highest income: 11.4% (8.1 - 14.6) versus 4.2% (2.7 - 5.7). Participants with BMI between 18.5 and 25 had the lowest prevalence without those with BMI≥30 had the highest: 3.4% (2.3 - 4.5) versus 19.7% (14.6 - 24.9).

| Table: Main 2016-2017 reforms |

| Table 1. Diabetes prevalence in Geneva canton by to sociodemographic factors, Bus Sante 2005-2016 |

| Table: Main 2016-2017 reforms |

| Figure: Observed vs. reported extra hours in 2015 (n = 49) and 2018 (n = 67). |
[Table 2. Diabetes prevalence in Geneva canton by health indicators, Bus Santé Study 2005-2016]

**Conclusion:** The prevalence of diabetes differs across sociodemographic groups in the canton of Geneva; however, over a twelve-year period, the prevalence of diabetes has remained stable overall and across sociodemographic strata.

**P73**

Pronostic value of precipitating factors in acute heart failure
Lucie Botti1, Jérôme Stimma1, David Carballo1, Philippe Musso1, Jean-Luc Serraf2, Nicolas Garin1, 2, Bastien Collard1
1Hôpitaux Universitaires de Genève, Service de Médecine Interne Générale, Département de Médecine, Genève, 2Hôpital Riviera-Chablais, Service de Médecine Interne, Rensaz, Switzerland

**Introduction:** Etiology of cardiac decompensation often dictates early management of acute heart failure (AHF). Whether the precipitating factor predicts outcome of the hospitalized patient is poorly studied. We aimed to clarify if the trigger of AHF is in itself a prognostic factor.

**Method:** Prospective register of AHF at the Geneva University Hospital. Consecutive hospitalizations for AHF in 667 patients with clinical presentation, lab tests, imaging, medical history, treatments and follow-up (18 months) were included. Patients were classified according to the precipitating factor of heart failure, and the most common were compared in a survival analysis. The primary outcome was overall mortality. Secondary outcomes were cardiovascular death and rehospitalization.

**Results:** The six most frequent precipitating factors were: new or poorly controlled atrial fibrillation (18.5%), hypertensive emergency (15%), bronchopneumonia or COPD decompensation (13%), poor medical or diet adherence (10.2%), acute coronary syndrome (6.4%), valvular disease (5.3%). A precipitating factor was not identified in 19% of patients. Valvular disease was associated with significantly increased mortality and morbidity: death of all causes (hazard ratio = 2.3, 95%CI 1.23 to 4.3, p = 0.00872), death related to cardiovascular cause (hazard ratio = 3.93, 95%CI 1.8 to 8.5, p = 0.000538), death and rehospitalization due to cardiovascular cause (hazard ratio = 1.99, 95%CI 1.2 to 3.3, p = 0.00671). There was no significant difference of prognosis between the other factors, with HR for overall mortality ranging from 1.19 to 1.22.

**Conclusion:** Amongst precipitating factors for AHF, valvular disease is associated with the poorest outcome. This was the case for both the primary and secondary outcomes. The other identified triggers were associated with a similar and slightly better prognosis. These results, suggest that in the management of AHF, particular attention has to be given to patients with worsening valvular disease. Recent advances and effective and targeted management of AHF due to ischemic, rhymic, hypertensive or non-cardiac triggers may explain the slightly better prognosis of these patients.

**P74**

Do residents flip around as they now run faster? The medical day study
Antoine Garnier1, 2, Pedro Marques-Vidal1, Vanessa Kraege1, Julien Castioni1, 3, François Bastardot1, 4, Matteo Monti1, 6, David Gachoud1, 6, Olivier Lamy1, Nathalie Wenger1, Peter Vollenweider1, Gérard Waeber1, Olivier Lamy1, Nathalie Wenger1, Peter Vollenweider1, Gérard Waeber1, Olivier Lamy1, Nathalie Wenger1, Peter Vollenweider1, Gérard Waeber1, Olivier Lamy1, Nathalie Wenger1, Peter Vollenweider1, Gérard Waeber1, Olivier Lamy1, Nathalie Wenger1, Peter Vollenweider1, Gérard Waeber1, Olivier Lamy1, Nathalie Wenger1, Peter Vollenweider1, Gérard Waeber1
1Internal Medicine Department, ‘Medical Directorate, 2University Hospital of Lausanne, Direction of Human Resources, Lausanne, Switzerland, 3Brigham and Women’s Hospital, Division of General Internal Medicine and Primary Care, ‘Harvard Medical School, Boston, United States, 4University of Lausanne, Unit of Medical Education, School of Medicine, ‘University Hospital of Lausanne, DFMEMC, Lausanne, Switzerland

**Introduction:** Medical work organization has become a major concern on internal medicine wards due to more complex patients and administrative burden. In a 2015 time-motion study, our internal medicine residents switched tasks 15 times per hour. Since then, we initiated various reforms in our division designed to increase residents’ work continuity and efficiency and observed a decrease of the average shift duration. We therefore aimed to assess whether a reduction of shift duration and the new work organization impacted the task switching rate among internal medicine residents.

**Methods:** We repeated the same time-motion study between May and July 2018. All residents were followed during two days by trained observers recording 22 predefined activities and context (with a patient; using a computer). Task-switching was expressed in mean number of switches per hour and 95% confidence interval. We also adjusted results for the number of patients cared for per resident.

**Results:** We recorded 49 shifts in 2015 and 67 shifts in 2018, summing 1289 hours of observation. The department activity grew dramatically between 2015 and 2018: admissions increased from 89 to 102 a week (+14.5%). Day shift duration decreased from 11.6 to 10.7 hours (95% CI 11.3 – 12.0 and 10.5 – 11.0, p < 0.001). On average, residents switched from one task to another 20 times per hour in 2018 (95% CI 19 – 21). They switched more frequently during activities indirectly related to the patient (+25%, p < 0.001) but less during personal time (dedicated to residents’ needs, +42%, p = 0.001). Tasks directly related to the patient (e.g. patient rounds) remained at the lowest rate, i.e. 7 switches per hour. Task-switching rate also varied across the day and was lower during the newly introduced morning meeting (08:00 to 08:30), medical rounds (10:00 – 11:00), lunchtime and teaching rounds (12:30 to 13:30), but higher during admissions and office work (after 14:30, Figure).

**Conclusions:** While shift duration has decreased and overall activity of the department increased, residents change task every 3 minutes (vs. every 4 minutes in 2015). High variations in task-switching rates during residents’ working day may be a marker of efficiency rather than a risky attitude towards medical practice.

**Table:**

<table>
<thead>
<tr>
<th>Data</th>
<th>2015</th>
<th>2018</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directly related to the patient</td>
<td>6 [6 – 7]</td>
<td>7 [6 – 8]</td>
<td>0.38</td>
</tr>
<tr>
<td>Indirectly related to the patient</td>
<td>16 [14 – 17]</td>
<td>20 [19 – 21]</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Administrative tasks</td>
<td>6 [5 – 12]</td>
<td>10 [7 – 13]</td>
<td>0.41</td>
</tr>
<tr>
<td>Academic and training</td>
<td>29 [25 – 32]</td>
<td>37 [34 – 40]</td>
<td>0.001</td>
</tr>
<tr>
<td>Personal time</td>
<td>26 [21 – 31]</td>
<td>18 [17 – 20]</td>
<td>0.001</td>
</tr>
<tr>
<td>Transit to the next activity</td>
<td>57 [51 – 63]</td>
<td>59 [54 – 64]</td>
<td>0.51</td>
</tr>
<tr>
<td>Overall</td>
<td>15 [14 – 17]</td>
<td>20 [19 – 21]</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

**Intra-daily task-switching rate in 2015 and 2018**

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**P75**

Identification of genetic determinants for central pain sensitization in fibromyalgia patients
Yvonne Gloor1, Médréquie Moutarde2, Alain Matthey3, 4, Estella S. Poloni3, 4, Jocelyne Chabert2, Aurélie Simon1, Luc Bovet1, Marie Besson1, Valérie Piguet1, Christine Cedraschi1, Gisèle Pickering1, Eva Koscek1, Erich Gerthel2, Jules Desmaules1, 3, 4
1Geneva University Hospitals (HUG), Division of Clinical Pharmacology and Toxicology and Multidisciplinary Pain Center Department of Anesthesiology, Pharmacology, Intensive Care and Emergency, 2University of Geneva, Anthropology Unit, Department of Genetics and Evolution, 3Geneva University Hospitals (HUG), Clinical Investigation Unit, Clinical Research Center (CERC), Institute of Genetics and Genomics in Geneva (iGE3), Geneva, Switzerland, 4University of Clermont Auvergne, Clinical Pharmacology Center, CIC Inserm 1405, Faculty of Medicine, Clermont-Ferrand, France, 5Karolinska University Hospital, Department of Clinical Neuroscience, Osher Centrum, Karolinska Institutet, Stockholm, Sweden, 6Geneva University Hospitals (HUG), Division of Cardiology, Department of Specialties of Internal Medicine, Geneva, Switzerland

**Introduction:** Fibromyalgia syndrome (FMS) covers a spectrum of chronic pain conditions characterized by widespread pain and increased intensity.
Results: All samples call rates exceeded 99% and the genotype completeness exceeded 99% in 97.8% of the SNPs. The SNPs were evaluated at Illumina cluster quality score and all SNPs with GenTrain score <0.700 were discarded. Following data quality control (CR >95% and HWE p >10^-5), 544'729 SNPs (98.1%) were cleared for further analysis, combining genome-wide and candidate gene approaches and using the nociceptive flexion reflex as a primary stratification determinant.

Conclusion: The characterization of our cohort will be used to confirm susceptibility genes, medical history, and identify new genetic determinants of FMS based on objective measurements of central sensitization. Follow-up work combining genomic, transcriptomic and proteomic techniques will aim to gain a better understanding of the various pathophysiological mechanisms underlying the disease and allow the development of personalized treatments for FMS patients. International collaborations will allow replication of our findings in two independent cohorts.

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The ABC of primary care for university students: a three-step structured approach at the Geneva University Hospitals

Thomas Perrin1, Melissa Dominique Dao1, Yves Jackson1, Boris Cheva2, Delphine Courvoisier1, Anne Meynard1, Dagmar M Haller1, François Narring2, Tiziana Farinelli1, Jean-Michel Gaspoz1, Idris Guessous1

1Service de Médecine de Premier Recours, Hôpitaux Universitaires de Genève, 2Hôpitaux Universitaires de Genève, Service Qualité, Unité des Internistes, Généralistes et Pédiatres, Université de Genève, Centre Médical Universitaire, 3Hôpitaux Universitaires de Genève, Unité Santé Jeunes, 4Service de Santé Social de l’Université de Genève, 5Clinique des Grangettes, Genève, Switzerland

Background: University and college students represent a population of 18,000 people in Geneva, Switzerland. They present specific health issues with vulnerabilities related to mental health, sexual health, risk-taking behaviors and social climate. A new consultation structure for a clinic for students was created in September 2016 at the Geneva University Hospitals with the aim of responding to student’s health needs. With this paper, we present our clinical management framework for a consultation with students.

Methods: A three-step approach (ABC) was designed using different sources involving literature reviews, guidelines and achieving an expert consensus from the Geneva University Hospitals and its network. A post-consultation satisfaction survey was conducted with students attending our services.

Results: The approach proposes 3 steps: general information (reason for consultation, medical history, and identify new genetic determinants of FMS based on objective measurements of central sensitization), follow-up work combining genomic, transcriptomic and proteomic techniques will aim to gain a better understanding of the various pathophysiological mechanisms underlying the disease and allow the development of personalized treatments for FMS patients. International collaborations will allow replication of our findings in two independent cohorts.

Disclosure: This work is supported by the SNF grant n°320030_182686. The authors declare no conflict of interest.

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Typing skills in medicine: how fast are physicians?

François Bastardot1,2, Vanessa Kraege1, Julien Castioni1,4, Alain Petter5, Antoine Garnier1,6

1Centre Hospitalier Universitaire Vaudois (CHUV), Department of Medicine, Lausanne, Switzerland, 2Harvard Medical School, Boston, United States, 3Human Resources Direction, 4Department of Information Technology, 5Centre Hospitalier Universitaire Vaudois (CHUV), Medical Direction, Lausanne, Switzerland

Introduction: The electronic health record has become the primary tool of the internist physicians: during a time-motion study in our Department, residents spent 5.1 hours a day in front of a computer screen. In comparison with data consultation and order prescription, documentation entropy represents the most time-consuming burden. We explored the typing skills of residents, chief residents, and attending physicians. Are typing skills limiting in the daily work of physicians?

Methodology: We included all physicians of the Department of Medicine, in the Lausanne University Hospital (Switzerland) between July and October 2018. We used the one-minute TAKI test available on www.in- tersteno.org, that consists in reproducing a random text in French as faithfully and quickly as possible. A medical secretary led the test in a quiet environment. Contestants had the opportunity to repeat the test a second time; the best result was used for analyses. The outcomes were the typing speed expressed in characters per minute and words per minute (WPM, calculated as one word equals 5 characters). A WPM ≥50 was considered as a professional level. We also recorded the number of
that the Professor in charge of the ENT service of HUG saw an insect in an ear, but the junior doctor, who had a former experience as ENT in a military hospital in Algeria told us that she removed quite frequently alive insects from the ears of soldiers who camped out during military exercises.

The social welfare responsible of the centre where the patient was living with his three children was informed of the situation. The answer was that many cockroaches infested the building, and that the patient had a responsibility, because he did not clean enough his rooms. Finally eradication was performed.

This case shows that, even in western countries, living conditions and social context of vulnerable patients can have a direct impact on their health, leading to developing countries pathologies. Health care professionals, should be aware of that, and advocate on patients’ social determinants of health.

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Visual AIDS: experiences, representations and needs of patients and caregivers

Catherine Hafer1, Julie Schneider, Méline Schindler, Olivia Brailard

1Hôpitaux Universitaires de Genève, 2Atelier Graphique Julie Schneider, Genève, Switzerland

Introduction: Visual aids are increasingly used in medicine. Most of the studies on this subject demonstrate the clinical efficiency of a specific visual aid in a defined context and purpose. Our study aims to explore how visuals are integrated in the medical daily practice and also the representations and needs of caregivers and patients.

Method: A research group composed of two doctors, one graphic designer and one sociologist, have led a qualitative study based on Focus Groups (FG). A semi-structured FG guide and examples of visuals aids were used to stimulate discussions. The participants were health professionals working in Geneva in ambulatory practice and French-speaking outpatient. Inductive thematic analysis was carried out by two members of the group. The code list and the coding were systematically analyzed and modified if necessary, to find a consensus within the research group.

Results: Six FG gathered twenty-one caregivers from seven different professions and fifteen patients. Five themes emerged: 1. Tool identification, 2. Quality and access, 3. Usefulness, 4. Co-construction and reference, 5. Caregiver-patient relationship. Caregivers reported a wide variety of formats, sources and areas of use of visual aids. They questioned their quality and underlined the lack of easy access to referenced visuals. Patients had difficulty identifying what is a visual aid and its usefulness. They worried that the tool would replace the therapeutic relationship and communication with their caregiver. Both parties, caregivers and patients, agreed that while it can replace or supplement text, a good visual aid must be flexible during the medical consultation so that it can be adapted to the specific needs of the patient and to the message it conveys.

Conclusion: Visual aids in the field of care cannot substitute verbal explanation and the therapeutic relationship. They can create an opportunity of interaction and education, especially when the patient co-constructs the visual during the consultation. Future clinical research needs to be reoriented from « which » visual aid to choose, to « how » to use it in the most efficient way and integrate it into medical practice.

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Anticoagulant therapy for acute venous thrombo-embolism in cancer patients: a systematic review and network meta-analysis

Anne Rosset1,2, Hélia Robert-ebadi1,2, Christophe Combescreure, Olivier Gros gum1,3, Jérôme Stirmann1,3, Alfredo Adddeo, Thomas Agoritssas1,2, Jean-luc Renyi1,2, Christophe Marti1,2

1Hôpitaux Universitaires de Genève, Division of General Internal Medicine, 2Faculty of Medicine, Geneva University Hospitals, 3Division of Angiology and Haemostasis, Division of Clinical Epidemiology, Hôpitaux Universitaires de Genève, Division of Oncology, Genève, Switzerland

Background: Low-molecular-weight heparin (LMWH) is usually recommended for the treatment of cancer-associated thrombosis (CAT) but this treatment requires burdensome daily injections. We did a systematic review to compare the efficacy and safety of direct oral anticoagulants (DOAC), vitamin K antagonists (VKA) and LMWH in patients with CAT. Previous network meta-analyses were conducted for venous thromboembolism (VTE) recurrence and bleeding complications.

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Results: We identified 14 studies, including 4,661 patients. In pairwise comparison, DOAC were superior to LMWH to prevent VTE recurrence (HR 0.63; 95% CI 0.42-0.96) and LMWH was superior to VKA (HR 0.53; 95% CI 0.40-0.70). The rate of major bleeding was higher with DOAC compared to LMWH (HR 1.78; 95% CI 1.11-2.87). In the network meta-analysis, DOAC had a lower, but non-significant, rate of VTE recurrence compared to LMWH (HR 0.74; 95% CI 0.54-1.01). Both DOAC (HR 0.42; 95% CI 0.29-0.61) and LMWH (HR 0.57; 95% CI 0.44-0.75) were associated with lower rates of recurrence compared to VKA. No significant difference in major bleeding rate was observed in the network meta-analysis. Inconsistency was observed between pairwise and NMA comparisons for major bleeding.

Conclusions: DOAC are effective to prevent VTE recurrence in patients with CAT but are associated with an increased risk of bleeding compared to LMWH. The choice of anticoagulant should be personalised, taking into account the patient’s bleeding risk, including cancer site, and patient’s values and preferences.

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Standing up with an hemoglobin at 18gl: yes migrants patients can!
Sophie Durieux, Mihaela Martinvalet, Alexandre Bochatay, Frederique Jacquerez
Service de Médecine de Premier Recours, Hôpitaux Universitaires de Genève, Geneva, Switzerland

Learning objectives:
- Identify barriers to care for migrants
- Acknowledge the extraordinary resilience of migrants towards illness

Case:
A 36 year-old man consulted the HUG “outpatient clinic” for an undocumented migrants (UM), complaining of thoracic pain, severe dyspnoea and extreme tiredness since one week. Physical exam showed a tachycardia at 100, a 3/6 systolic murmur and a major asthenia, reason why he was referred to the emergency room for further examination. Investigation highlighted an extremely severe anaemia with haemoglobin at 18 gl (normal 12 to 16 gl). Acute myocardial ischaemia was ruled out and thoracic pain was considered secondary to the anaemia. He was hospitalized, received 4 blood transfusions and IV iron, without complications. The aetiology of the anaemia was a combination of chronic blood loss due to severe haemorrhoids (a proctology surgery was later performed), heterozygote sickle cell anaemia and iron deficiency. Psychosocial context: In 1999 aged of 18th, he fled civil war in Sierra Leone after the death of his parents and went to Guinea. Then, he reached Italy by boat and after a few weeks, applied for asylum in Switzerland. 3 years later, his demand was rejected because peace agreement where just signed in his home country. Since 1999, he has been living from intermittent jobs and avoiding contact with authorities and public services -health services included- in the fear of being checked. After the hospitalization, he was reintegrated in the asylum procedure due to his medical condition, and housing, minimal social assistance and medical insurance were re-activated.

Discussion: This case illustrates the incredible resiliency of the migrants towards illness, in particular UM. Such a severe anaemia, even if gradually established, has a huge impact on quality of life, and severe haemorrhoids too. But UM often wait the last moment before seeking care and support advanced illness and suffering. From a more philosophical point of view, this story also questions the beliefs of what is compatible with life and is a learning lesson for physicians as health professionals, but also as citizens.

And finally, it highlights the barrier to health care for people living “invisibly” in the society, in particular rejected asylum seekers who choose to live clandestinely. Unless specific health care facilities are offered, like in our hospital, they often self-limit their access to care.

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An unusual cause of torticollis
Claire Otterström1, Aline Schmit1, Hania Burgan1, Giulia Ranzanici-Grado1, Sebastian Carballo1, Jean-Luc Reny1, Jacques Serratrice1, Antonio Leidl1, Matteo Coen1,2
1Hopitaux Universitaires de Geneva, Service de Médecine Interne Générale, Département de Médecine Interne, de Réhabilitation et de Gériatrie, Geneva, 2Université de Genève, Faculté de Médecine, Département de Pathologie et Immunologie, Genève, Switzerland

Learning objective: Rappel sur le diagnostic différentiel à prendre en considération devant des cervicalgies fébriles.

Case: Un homme de 82 ans, connu pour un cancerome urothelial métastatique, est hospitalisé pour une bactériémie à Escherichia Coli multisensible associée à un violent torticollis apparu 3 jours auparavant et d'étiologie peu claire. Hormis une limitation de la mobilisation cervicale dans tous les axes, l'examen physique est normal. Les examens paracliniques révèlent un syndrome inflammatoire. Une ponction lombaire ne peut pas être effectuée en raison d'une anticoagulation thérapeutique. Sur le plan infectieux, l'éruption est rapidement favorable sous antibiotique, avec néanmoins persistance des cervicalgies malgré un traitement symptomatico-conseignant (AINS, morphine). Nous ouvrons un diagnostic différentiel varié. Médecine thoracique, rhumatologie, métabolisme ou tumeur rachidienne. Le CT du cou une inflammation aigue rachidienne ; lIRM conclut à une migration des dépôts calciques entre C1 et C2 avec une importante réaction inflammatoire autours de la dent de l’axis (syndrome de la dent couronnée). Nous débutons un traitement antinfiammatoire par anti-IL-1 (abatecept) avec évolution favorable.

Discussion: Le torticollis aigu fébrile est un symptôme fréquent chez l’enfant, qui impose la recherche d’un abcès rachidien, complication d’une angine à Streptocoque. Chez l’adulte, il est souvent secondaire à une origine infectieuse telle qu’une méningite, une spondylodiscite ou un abcès épidermial. Une origine rhumatologique, comme le syndrome de la dent couronnée chez notre patient, doit être évoquée.

Le syndrome de la dent couronnée est un diagnostic rare et difficile, radioclinique (douloureux cervico-occipital et limitation de la mobilité du rachis cervicale associées à une hyperdensité arémoïde du ligament cruciforme entourant le processus odontoïde). [1]

Les cliniciens doivent connaître ce diagnostic afin de limiter le recours à une ponction lombaire ou une biopsie non nécessaire. Le traitement repose sur la prise d’anti-inflammatoires (AINS, corticoides ; colchicine ou anti-IL-1 dans les cas résistants).


P84

A de Winter’s tale
Aline Schmit1, Agathe Py2, Thierry Grandjean3, Jean-Luc Reny1, Sebastian Carballo1, Matteo Coen1,3
1Service de Médecine Interne Générale, Département de Médecine Interne, de Réhabilitation et de Gériatrie, Hopitaux Universitaires de Geneva, Service de Cardiologie, Geneva, 2Université de Genève, Faculté de Médecine, Département de Pathologie et Immunologie, Genève, Switzerland

Learning objective: Recognize the STEMI-equivalent de Winter pattern

Case: A 56-year-old hypertensive man was admitted to the emergency department for typical chest pain. EKG showed upsloping ST-segment elevation parasagittal with tall R wave in lead aVR, and downsloping ST-segment depression in the precordial leads and slight ST-segment elevation in lead aVR. High sensitivity troponin T was 70 ng/l. A diagnosis of non-ST elevation myocardial infarction (NSTEMI) was done. He was treated accordingly and referred for non-urgent (6-hours later) coronary angiography which showed an acute occlusion of the left anterior descending artery (LAD). Percutaneous transluminal coronary angioplasty with thromboaspiration and stenting was performed. The patient recovered well. The initial EKG was re-read which led to a final diagnosis of the STEMI equivalent de Winter pattern.


Faut-il rechercher l’Helicobacter pylori après une chirurgie bariatrique?

Matteo Coen1,2, Léa Iten1, Jerôme Stirnemann1, Jean-Luc Renny3, Pauline Darbellay4, Jacques Serratrice

1Hôpitaux Universitaires de Genève, Service de Médecine Interne Générale, Département de Médecine Interne, de Réhabilitation et de Gériatrie, Genève, 2Université de Genève, Faculté de Médecine, Département de Pathologie et Immunologie, Genève, Suisse

Learning Objectives: l’Helicobacter pylori (HP) peut favoriser le processus hémolytique intramédiérateur qui révélatrice d’une maladie de Biermer.


Discussion: Nous pensons que l’infection à HP a favorisé le processus d’hémolyse intramédulaire qui révélateur d’une maladie de Biermer. L’infection à HP est cause reconnue de carence en B12,[1] qui borait un aortentre intramédulaire prématuré des précurseurs érythroïdes, avec hémolyse intramédulaire.[2] La chirurgie bariatrique a pu jouer un rôle dans la précipitation de l’anémie puisque la dérivation gastrique peut elle aussi affecter la stabilité de la membrane globulaire.[3] Ainsi nous pensons que la triple conjonction de la chirurgie bariatrique, de la gastropathie auto-immune et de l’infection à HP est à l’origine de l’anémie sévère de la patiente. Le patient PAS le HP pourrait être discuté dans le bilan pré-opératoire d’une chirurgie bariatrique, ou en cas d’apparition d’une hémolyse après chirurgie bariatrique,


Tolerance to nifurtimox and benznidazole in patients with Chagas disease: a retrospective study

Baptiste Wyssa1, David Parra2, Francois Chappuis3, Yves Jackson4

1Université de Genève, Faculté de Médecine, Service de Médecine de Premier Recours, 2Hôpitaux Universitaires de Genève, Service de Médecine Tropicale et Humanitaire, Genève, Suisse

Introduction: Nifurtimox and benznidazole are the only drugs available for the treatment of Chagas disease fifty years after their introduction. Few studies have compared their respective tolerance in clinical setting. We compared the completion rate and the frequency of side effects in a cohort of patients treated with benznidazole or nifurtimox following a standardized protocol at the Geneva University Hospitals.

Methods: We analyzed the data of all adult patients treated from 2008 to 2017. In absence of validated recommendations, drug availability was the main determinant in the choice of the first-line drug. Patients received benznidazole (5mg/kg/day, maximum 300mg/day) or nifurtimox (10mg/kg/day) for 60 days with clinical follow-up at 7, 21 and 60 days or in case of side effects. When the initial treatment had to be prematurely stopped, efforts were made to relay with the second drug to complete the 60-day therapy.

Results: Of the 176 patients, 92 (52.3%) received benznidazole and 84 (47.7%) nifurtimox as first-line therapy. Hundred forty-three (81.3%) were female, 173 (98.3%) were Bolivians, the mean age was 39.6 (SD 8.4) years and 142 (80.7%) were at the indeterminate phase of the chronic stage. Age was the only significant difference between groups (benznidazole group: 41.3, nifurtimox group: 37.7 years, p <0.005). The median duration of the first-line therapy was 46 (SD 20.3) days and 110 (62.5%) patients completed the 60-day therapy with no difference between groups (p = 0.571 and 0.533, respectively). When combining first and second-line drugs, the rate of completion reached 64.8%. We found no predictive factor for treatment completion. Treatment was interrupted in 90 (51.1%) patients due to side effects, significantly more frequently with nifurtimoz (59.5%) than with benznidazole (43.5%) (p = 0.036). The main side effects with benznidazole were anemia (40.8%), headaches (40.2%), pruritus (37%), nausea (35.9%), mood change (31.5%) and rash (29.3%). Anorexia (73.8%), headaches (71.4%), asthma (69.4%), nausea (54.8%) and insomnia (50%) predominated with nifurtimox.

Discussion: This pragmatic study highlights the high rate of treatment interruption and non completion due to poor drugs tolerance. We found no significant difference between drugs in terms of treatment duration and completion rate but nifurtimoz entailed more frequent interruptions. This stresses the need for the development of better tolerated drugs for adults with Chagas disease.
lack of preparation time before ward rounds. This led us to postpone the start of rounds by one hour. We sought to assess the impact of increased preparation time on (1) the rounds’ duration and (2) the allocation of residents' time during rounds.

Methods: We repeated the same protocol as in 2015. Between May and July 2018, trained observers followed residents and recorded 22 predefined activities, including patient rounds. All residents were included and observed twice. Only day shifts were considered. Endpoint was the total time dedicated to ward rounds. To capture the impact of our intervention, we focused on how residents’ time was allocated to the contexts in which the round was conducted. With the patient, with another colleague and with the computer. Results were expressed as mean (95% confidence interval) or percentage. We adjusted results for number of patients cared for and for admissions/discharges per shift.

Results: We recorded a total of 49 day shifts in 2015 and 63 day shifts in 2018. On average, ward round duration was reduced by 25 minutes (95% CI 99 - 11; p < 0.001), from 118 minutes in 2015 to 93 minutes in 2018. Table 1 illustrates how residents allocated their time to the various contexts. Time allocated to patients decreased by 18 minutes, while the percentage of round time allocated to patients remained stable, corresponding to about half of the round. The most important evolution relates to computer use: the time spent with a computer was reduced by 25 minutes. A limitation of the study is that quality indicators of rounds were not measured.

Conclusions: We found a 25 minute-reduction in both round total duration and time spent with a computer. This is certainly a gain in efficiency for residents and nurses, both of which are better prepared and less likely to look for information on the computer during rounds. However, we observed a reduction of the time spent with patients, an unintended consequence of our reform. Further improvements should target the round process itself.

Table 1 - Allocation of the ward round time to the various contexts

<table>
<thead>
<tr>
<th>2015</th>
<th>2018</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>With the patient, all occurrences</td>
<td>60 (53 - 66)</td>
<td>42 (36 - 48)</td>
</tr>
<tr>
<td>% ward round time</td>
<td>52 (44 - 56)</td>
<td>48 (40 - 52)</td>
</tr>
<tr>
<td>With the patient, exclusively</td>
<td>51 (45 - 53)</td>
<td>49 (43 - 54)</td>
</tr>
<tr>
<td>% ward round time</td>
<td>51 (45 - 56)</td>
<td>47 (41 - 52)</td>
</tr>
<tr>
<td>With the computer, all occurrences</td>
<td>10 (7 - 13)</td>
<td>9 (5 - 16)</td>
</tr>
<tr>
<td>% ward round time</td>
<td>10 (8 - 13)</td>
<td>21 (15 - 26)</td>
</tr>
<tr>
<td>With another colleague, all occurrences</td>
<td>5 (3 - 7)</td>
<td>6 (4 - 8)</td>
</tr>
<tr>
<td>% ward round time</td>
<td>11 (7 - 15)</td>
<td>12 (9 - 15)</td>
</tr>
<tr>
<td>With another colleague, exclusively</td>
<td>11 (7 - 15)</td>
<td>12 (8 - 16)</td>
</tr>
<tr>
<td>% ward round time</td>
<td>11 (7 - 15)</td>
<td>12 (8 - 16)</td>
</tr>
</tbody>
</table>

[Table 1 - Allocation of the ward round time to the various contexts]

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Primary prevention of sexually transmitted infections in Switzerland: practices of family physicians and their determinants

Hanna Vautrin1, Christine Cohidon2,3, Nicolas Senn2,3

1Universität Lausanne, Faculté de Biologie et de Médecine, 2Département de Médecine de Famille, Centre Universitaire de Médecine Générale et Santé Publique, 3CHUV, Département Universitaire de Médecine et Santé Communautaires, Lausanne, Switzerland

Introduction: Sexually transmitted infections (STIs) remain an important public health issue in Switzerland. General practitioners (GP) are key actors in the healthcare system and should play an important role against those diseases through primary prevention. The objective is to describe the prevention practices of GPs against STIs, as well as highlighting some predictive factors associated with them.

Methods: The study was carried out in 2015-16 using the Swiss Primary Care Active Monitoring general practitioners network (277 GPs). GPs answered an online questionnaire about their opinions, attitudes and practices regarding preventive care. Answers to the questions about providing counseling regarding STIs, as well as providing immunization against hepatitis A, B or HPV were analyzed through their links with the doctors’ sociodemographic characteristics, their offices features and their thoughts about STI prevention.

Results: 167 GPs answered the questionnaire. About 80% of GPs consider prevention in the area of affective and sexual life as part of their job, and find discussing it easy. Most of them spontaneously give advice regarding STIs during a routine consultation. Regarding HPV immunization in adults, almost half of the GPs report never doing it, while almost 75% of them often or always immunize their adult patients against hepatitis B. Less than half systematically or often vaccinate children against hepatitis B. Opinions about hepatitis B immunization in babies are diverging (1/3 GP not in favor of it).

GPs who consider prevention of affective and sexual diseases as part of their duty are more likely to provide advice on the subject during a routine consultation ("totally" OR 2.79 [1.08-7.23]). GPs performing a higher number of consultations in a day seem to be weakly associated with administering more HPV vaccines to adults (OR 1.13 [1.05-1.25]) and vaccinating adults against hepatitis A (OR 1.17 [1.05-1.31]). Vaccinating children against hepatitis B is associated with practicing in rural area (OR 4.64 [1.20-17.98]). Having longer consultations is associated with giving advice on the topic of affective and sexual life during a first consultation (OR 1.08 [1.01-1.14]).

Conclusion: This study showed that many GPs in Switzerland are already involved in primary prevention against STIs and think of it as their responsibility. Opinions towards vaccinations are more mixed. Prevention practices are also associated with GPs’ favorable opinions on prevention.

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Screening and assessing psychological intimate partner violence against women: a new role for primary care physicians

Emmanuel Escard1, Mélinée Schindler1, Véronique Jaquier Erard1

1Hospitaux Universitaires De Genève, UIMPV, Genève, 2Centre Romand de Recherche en Criminologie, Neuchâtel, Switzerland

Background: Intimate partner violence (IPV) against women is frequent in Switzerland, with 1 in 7 women experiencing physical/sexual IPV, 2 in 5 psychological IPV. In our medical charts review (2011-2017), 96% of help-seeking women (n = 764) reported emotional or verbal abuse, controlling behaviours or threats of violence, with 4 in 5 women experiencing it alongside physical or sexual IPV. Psychological IPV has deleterious effects on women’s mental, physical and sexual health, yet remains critically underexamined. Identifying severity thresholds, documenting consequences, and assessing risks in relationships marked with asymmetry are some of the issues that preoccupy PCPs.

Methods: Combining a documentary analysis and a series of focus group discussions, interviews with professionals (n = 68) in the health, social work, and criminal justice sectors, this ongoing research examines the relevance of guidelines and tools to assess psychological IPV. We address (1) types and categories of psychological IPV, including those fostered by technology; (2) underpinnings of abusive dynamics and perpetrators’ motivations, and how these contribute to women’s entrapment; (3) how IPV increases health, safety and risk behaviours; and (4) promising avenues and gaps in screening and assessment across professional fields.

Results: Better understanding women’s trajectories is critical to develop appropriate protocols. PCPs need to consider the logics of social workers who set up protective measures, and of criminal justice professionals who translate individual experiences into legal provisions. A process that requires time and “horizontal” case management, both interdisciplinary and intersectoral.

Categorizing highly personal experiences of abuse requires us to confront our experience with the women’s discourse, the one of their significant others, and the one of our colleagues. And how we apprehend these situations is undeniably subjected to community and sociocultural influences. Common risks include secondary victimization and the instrumentalization of professionals, both in the clinical relationship and during the procedure, as well as the trivialization of psychological violence given its occurrence in various types of relationships (family, friendship) and across living environments (work, school). And though we focus on the role of PCPs at the bedside of women victims, let’s not forget their responsibility confronting perpetrators and protecting children victims.
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Should we expand the eligibility for health insurance reimbursement of protein convertase subtilisin/kexin-9 inhibitors?
Audrey Butty1, Basir Gencer2, Konstantinos C. Koskinas3, David Carballo4, Lorenz Räber5, Roland Klingenberg5,6, Christian M. Matter7, Thierry B. F. Lüscher5,6, Stephan Wendelbrink5, Olivier Muller7, Nicolas Rodondi8,9, François Mach2, David Nanchen2
1University of Lausanne, Department of Ambulatory Care and Community Medicine, Lausanne, 2Faculty of Medicine, Geneva University Hospitals, Division of Cardiology, Geneva, 3University Hospital Bern, Department of Cardiology, Bern, 4University Heart Center, University Hospital Zurich, Department of Cardiology, Zurich, Switzerland, 5Kerrick Heart and Thorax Center, Department of Cardiology, Bad Nauheim, Germany, 6Royal Brompton & Harefield Hospital Trust and Imperial College, London, United Kingdom, 7Lausanne University Hospital, Service of Cardiology, Lausanne, 8Inselsepital, Bern University Hospital, University of Bern, Department of General Internal Medicine, 9Institute of Primary Health Care (BIHAM), University of Birmingham, Birmingham, UK

Purpose: Discussions are ongoing to expand the eligibility for protein convertase subtilisin/kexin-9 inhibitors (PCSK9i) to all patients with cardiovascular disease and low density lipoprotein cholesterol (LDL-c) levels above 1.8 mmol/l. The cardiovascular benefit of such strategies remains unknown. We aimed to compare the control of cardiovascular risk factors according to Swiss health insurance reimbursement criteria for PCSK9i among patients with acute coronary syndrome (ACS).

Methods: We analyzed a prospective Swiss cohort of patients hospitalized for ACS between 2009 and 2016 with available data for LDL-c at 1 year. We defined three mutually exclusive groups of patients at 1 year according to Swiss health insurance reimbursement criteria for PCSK9i: "well-controlled" for LDL-c <1.8 mmol/l, "not eligible for reimbursement" for LDL-c between 1.8 and 2.6 mmol/l, or between 2.6 and 3.5 mmol/l for patients who had experienced only one cardiovascular event, and "eligible for reimbursement" for LDL-c >3.5 mmol/l, or >2.6 mmol/l for patients who had several cardiovascular events. The well-controlled group was used as a reference for comparison.

Results: At 1 year, 3,025 patients were alive and had available LDL-c values: 1,071 (35.4%) were well controlled, 1,539 (50.9%) were not eligible for reimbursement, and 415 (13.7%) were eligible for reimbursement. Mean LDL-c levels were 1.4 mmol/l for well-controlled patients, 2.4 mmol/l for those not eligible, and 3.7 mmol/l for those eligible. The proportion of patients with systolic blood pressure >140 mmHg in the well-controlled group was similar to the group not eligible (27.6% vs 28.2%, p = 0.73), and lower compared to the group eligible (33.6%, p = 0.02). The proportion of current smokers in the well-controlled group was similar to the group not eligible (21.2% vs 22.4%, p = 0.52), and lower compared to the group eligible (28%, p = 0.02). The proportion of diabetics with glycated hemoglobin >7.5% in the well-controlled group was similar to the group not eligible (25.9% vs 24.2%, p = 0.72), and lower compared to the group eligible (35.7%, p = 0.2).

Conclusion: More than half of patients with high LDL-c after their ACS will not be eligible for PCSK9i. The control of cardiovascular risk factors other than LDL-c among patients currently not eligible for PCSK9i than among those eligible. Expanding the eligibility for PCSK9i based on LDL-c levels may therefore increase the prescription to patients at lower cardiovascular risk.

P92
How internal medicine residents’ experience their daily work: the MED2DAY qualitative study
Céline Bourquin1, Matteo Monti1,2, Friedrich Stiefel1, Michael Saraga1, David Gachoud1, Marie Meán1, Vanessa Kraege2, Julien Castioni1,3, François Bastardot2, Nathalie Vingerin2, Pedro Marques-Vidal1, Olivier F. Lamy1, Gérard Waeber1,2, Peter Vollenweider2, Antoine Garine2,3
1Psychiatric Liaison Service, 2University Hospital of Lausanne, Department of Internal Medicine, 3Unit of Medical Education, School of Medicine, FBM, 4University Hospital of Lausanne, Human Resources Department, Lausanne, Switzerland, 5Brigham and Women’s Hospital, Division of General Internal Medicine and Primary Care, Harvard Medical School, Boston, United States, 6University Hospital of Lausanne, DFME, 7University Hospital of Lausanne, Medical Direction, Lausanne, Switzerland

Introduction: In a 2015 time-motion study, we showed that internal medicine residents spent a large amount of their time performing administrative tasks and using computers. Moreover, they switched tasks 15 times an hour. This prompted major reforms aimed at increasing residents’ work efficiency and satisfaction. We introduced medical secretaries, specifically allocated to residents, and a new daily organisation in an attempt to reduce non-added value tasks and unnecessary interruptions. In this study, we explore how internal medicine residents experience their daily work organization.

Methods: 40 residents participated in four focus groups (FG). Each FG lasted about 90 minutes and was conducted by two experienced moderators (CB, FS) with no professional link to the participants. FG discussions were audio-recorded and transcribed verbatim. Data were analyzed with qualitative content analysis.

Results: Residents expressed positive attitudes towards work organization in their Department. Initial analyses indicate that residents’ experience is concurrently characterized by (1) a sense of individual agency - referring to how residents come to alter, though not necessarily intentionally, the general structure and organization of work through their interpretation and understanding as well as their practical actions -, and (2) a sense of constraint or restricted agency. For instance, with regard to the sense of individual agency (1), a number of residents do not take the opportunity to delegate tasks to the medical secretary, arguing that they tend to rely on themselves or find the added value of the delegated process to be low as well as time consuming. As another example, some residents use a significant part of the time planned for the preparation of the ward round to take a coffee break with their colleagues. Conversely, a sense of restricted agency (2) was manifest in narratives of residents feeling pressured and constrained by the daily schedule, with an experienced of being overwhelmed by the tasks to accomplish and the looming danger of unforeseen incidents as the day progresses.

Conclusion: Beyond the intended goal of increasing work efficiency and satisfaction, the consequences of a change in work organization in a medical Department have profound effects on residents’ experience and feeling towards their work.

P93
Identifying patient-important practical issues for shared decision-making
Thomas Angrisas1, Per Vandvik2, Victor Montori3, Lyubov Lytvyn4, Gordon Guyatt5, Anja Heen6
1Hopitaux Universitaires de Geneve, Department de Medicine, Genève, Suisse, 2University of Oslo, Oslo, Norway, 3Mayo Clinic, Rochester, United States, 4McMaster University, Hamilton, Canada

Introduction: To help patients and clinicians engage in collaborative decision-making, tools for shared decision-making (SDM) usually include evidence on the nature and likelihood of patient-important outcomes associated with management alternatives. However, patients face practical issues when implementing the chosen option in their daily life. Evidence summaries typically include the former but overlook the latter. Our objectives were to map and categorise patient-important practical issues related to treatment for hypertension and develop a generic framework for their incorporation into SDM tools.

Methods: We systematically reviewed and mapped two main sources (HealthTalk.org registry and Option Grids), which included a large sample of conditions and applied a rigorous methodology in identifying patient experience and questions. We systematically screened every topic, abstracting all practical issues relevant to management options. Two independent reviewers grouped the issues into themes, compared results, resolved discrepancies, arriving at final a set of themes. We tested the applicability of this framework in identifying specific practical issues when creating 34 SDM tools. We incorporated this framework in a the MAGICapp, and authoring and publication platform for evidence summaries and decision aids.

Results: Thematic analysis identified 15 categories from 967 issues across 297 topics in HealthTalk.org and 29 Option Grids: five care-related (medication routine, tests and visits, procedure and device, recovery and adaptation, co-ordination of care); five related to daily life (food and drink, exercise and activities, social life and relationships, work and education, travel and driving); and five related to miscellaneous issues (adverse effects, interactions and antidote, physical well-being, emotional well-being, pregnancy and nursing, costs and access) - see Figure. We created 34 decision aids - published along our BMJ Rapid Recommendations (www.bmj.com/rapid-recommendations). All categories of practical issues were applicable and used to support SDM.

Conclusions: We identified 15 overarching themes of patient-important practical issues. This generic framework can complement trustworthy evidence summaries from systematic reviews and thus help create tools that are more helpful when discussing with patients the issues that matter to them.
Fatigue is a highly prevalent symptom in clinical practice, but few studies have assessed its prevalence and determinants in the general population. We aimed to assess the prevalence and determinants of fatigue in a Swiss population-based sample. The CoLaus Study (Centre Hospitalier Universitaire Vaudois, Médecine Interne, Lausanne, Switzerland) was a population-based cohort study (n = 2848) of 53.2% women, age range 45-68 years, from the general population of the city of Lausanne, Switzerland. Fatigue was defined as a score ≥4 using the Fatigue severity scale (FSS). We used a population-based cohort study of 5131 participants (55% women, age range 35 to 75 years) living in Lausanne, Switzerland. The baseline survey was conducted between 2003 and 2006 and average follow-up was 10.9 years. Five clinically-based (Balkau, Kahn clinical, Griffin, Swiss diabetes association and Findric) and two clinically and biologically based scores (Kahn CB and Wilson) were tested.

Methods: The prevalence of fatigue was 21.9% (95% CI: 20.4% - 23.4%) in the total sample. On bivariate analysis, participants with fatigue were younger, had a higher BMI, a lower handgrip strength, and lower ferritin consumption of anti-histaminics, antidepressants and hypnotics, and rated more frequently their health as bad or very bad. Multivariate analysis showed that obesity [odds-ratio (OR) and 95% confidence interval: 1.40 (1.03-1.91)], insomnia categories (p-value for trend <0.001), depression [3.26 (2.38-4.46)], anemia [1.70 (1.00-2.89)] and low self-rated health status (p-value for trend <0.001) were positively associated, while older age (p-value for trend 0.002) was negatively associated with fatigue. Conversely, no association was found for diabetes, TSH levels, anti-histaminics or hypnotics.

Conclusion: In a population-based sample aged 45 to 86, fatigue was present in one out of five subjects. The major determinants of fatigue were obesity, insomnia, depression, anemia and antidepressant medication.

P94
Validation of seven type 2 diabetes mellitus risk scores in a population-based cohort. The CoLaus Study
Janko Fabecic, Pedro-Manuel Marques-Vidal, Gérard Waeger, Marie-Mélanie Manus
CHUV/Université de Lausanne, Médecine Interne, Lausanne, Switzerland

Objective: Assess the validity of seven type 2 diabetes mellitus (T2DM) risk scores in predicting the 10-year incidence of T2DM in a Swiss population-based study.

Methods: Prospective study including 5131 participants (55% women, age range 35 to 75 years) living in Lausanne, Switzerland. The baseline survey was conducted between 2003 and 2006 and average follow-up was 10.9 years. Five clinically-based (Balkau, Kahn clinical, Griffin, Swiss diabetes association and Findric) and two clinically and biologically based scores (Kahn CB and Wilson) were tested.

Results: 405 (7.9%) participants developed T2DM. The overall prevalence of participants at high risk ranged from 13.7% for the Griffin score to 43.3% for the Balkau score. Prevalence of participants at high risk among those who developed T2DM ranged from 34.6% for the Griffin score to 82.0% for the Kahn CB score. The Kahn CB score had the highest area under the ROC [value and 95% confidence interval: 0.866 (0.849-0.883)], followed by the Findric [0.818 (0.798-0.838)] while the Griffin score had the lowest [0.740 (0.718-0.762)]. Except for the Griffin and the Kahn C scores (for sensitivity) and the Balkau score (for specificity), sensitivities and specificities were above 70%. The numbers needed to screen ranged between 15.5 for the Kahn CB score to 36.7 for the Griffin score.

Conclusion: The Kahn (CB) and the Findric performed best of all clinically-based scores (Kahn CB and Wilson) were tested.

P95
Prevalence and determinants of fatigue in the Swiss population
Coralie Galland-Decker, Pedro Marques-Vidal, Peter Vollenweider
Centre Hospitalier Universitaire Vaudois (CHUV), Médecine Interne, Lausanne, Switzerland

Introduction: Fatigue is a highly prevalent symptom in clinical practice, but few studies have assessed its prevalence and determinants in the general population. We aimed to assess the prevalence and determinants of fatigue in a Swiss population-based sample.

Methods: We used a population-based cohort (n = 2848) of 53.2% women, age range 45-68 years) from the general population of the city of Lausanne, Switzerland. Fatigue was defined as a score ≥4 using the Fatigue severity scale (FSS).

Results: The prevalence of fatigue was 21.9% (95% CI: 20.4% - 23.4%) in the total sample. On bivariate analysis, participants with fatigue were younger, had a higher BMI, a lower handgrip strength, and lower ferritin levels. Participants with fatigue were more frequently women, had a lower educational level, and presented more frequently with clinical insomnia, diabetes, anemia, depression, low TSH values, had a higher consumption of anti-histaminics, antidepressants and hypnotics, and...
Activities performed by general practitioners during home visits between 2006 and 2015: a billing-based observational study

Joachim Lutula, Nicolas Senn, Stephane David, Yolanda Mueller Chabloz
Department of Family Medicine, University of Lausanne, Lausanne, Switzerland

Introduction: In the context of an aging population, home visits made by GPs may contribute to maintaining elderly patient at home. The aim of the study was to describe the diversity of GPs activities during home visits and analyze the evolution of these activities.

Method: This was a descriptive observational retrospective study. We used billing data collected by the cantonal trust center for home visits made by GPs of the canton of Vaud from 2006 to 2015. We separated billed items from the Tarmed catalogue (Swiss tarification system for medical services), laboratory catalogue, medication, medical material and vaccines. We compared billing patterns between emergency and routine visits.

Results: From 2006 to 2015, for a total of 451'634 visits, there were 3'880 different items billed. GPs billed a median of 5 items per visit (range 2 - 95).

Regarding Tarmed catalogue, travelling expenses were billed in 417'733 visits (92.5%), physical examinations in 66'229 visits (14.7%), medical-surgical acts in 25'522 visits (5.7%), reports in 4'547 visits (1.0%) and additional investigations in 2'084 visits (0.5%). Laboratory tests were performed in 43'197 visits (9.6%), the most frequent ones being coagulation tests (in 22'450 visits, 5%), blood counts (in 13'742 visits, 3%) and chemistry tests (in 10'051 visits, 2%).

Treatment acts were performed in 13'742 visits (3.0%) and chemistry tests (in 10'051 visits, 2.2%).

Conclusion: The proportion of treatment and material use is higher in emergency visits (0.1% vs 0.7%, p <0.001). Main alternative diagnoses were non respiratory infections, viral lower respiratory tract infections, heart failure and exacerbation of chronic obstructive pulmonary disease. Cough, male gender, urea and C-reactive protein (CRP) were independently associated with the presence of pneumonia (Table).

Identification of pneumonia in elderly patients by the CT-scan was not independently predictive of the presence of pneumonia. We built a score assigning one point for the presence of cough, gender, and dichotomized continuous variables (urea <7 mmol /L, CRP >70 mg/l). Prevalence of pneumonia increased from 33% (0 point) to 87% (4 points). The area under the receiving operating curve was 0.68 (95% CI 0.60-0.76). Performing a CT-scan in patients with <3 points (accepting a diagnosis of pneumonia in patients with 3 or 4 points) would result in a sensitivity of 95% and a specificity of 48%.

Conclusions: In a cohort of elderly patients hospitalized for suspected pneumonia, prevalence of the disease according to a reference diagnosis including CT-scan was only 67%. Though a few clinical and biological characteristics of the patients were independently associated with the presence of pneumonia, their combination in a score had low discrimination power.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odd ratio (95% CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male gender</td>
<td>2.23 (1.12-4.44)</td>
<td>0.022</td>
</tr>
<tr>
<td>Cough</td>
<td>3.77 (1.51-9.40)</td>
<td>0.004</td>
</tr>
<tr>
<td>CRP (mg/dl)</td>
<td>1.01 (1.00-1.01)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Urea (mmol/L)</td>
<td>0.92 (0.86-0.98)</td>
<td>0.007</td>
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</tbody>
</table>

Quitting smoking in detention facilities

Francesco Meach
Hôpitaux Universitaires De Genève, Genève, Switzerland

Introduction: Although smoking remains a preventable cause of death and one of the main risk factors for several chronic diseases, including cardiovascular and lung disease, it remains widespread throughout the world. In prisons, smoking prevalence is much higher than in the general population and can reach 90%, while intervention actions are much rarer than providing care for other addictions. We conducted a qualitative survey that showed an interest in quitting smoking. In addition to this, it shows a lack of knowledge of the different methods and treatments for stopping smoking. A literature search shows the absence of a specific counselling tool for smokers in detention.

Objective: The goal is to create a tobacco counselling tool adapted to the prison environment and to test its feasibility and acceptability.

Methodology: We created a first version with the participation of patients who smoke and the various caregivers according to an iterative process of evaluation and improvement until finalization.

Result: The tool consists of an A4 flipchart with illustrations on the patient side and clinical information and advice on the provider (caregiver) side. It can be used for brief or sustained intervention. The qualitative
results suggest that the tool is easily understandable, easy to use, relevant and useful in providing information in a systematic way not only on smoking, but also on cardiovascular diseases and risk factors.

**Conclusion:** The tool is innovative and allows a systematic approach to weaning management that we would like to present to all fellow caregivers.

**P100**

Medication safety: a tool for a novel and complementary approach to CIRS in a Swiss university hospital

Monica Cosme Rochat, Jérémi Bulleth, Pierre Voiron, Joachim Rapin, Isabelle Lehn, Mirela Caci

**Chuv, Lausanne, Switzerland**

**Introduction:** Medication error is an important factor of morbidity and mortality. Numerous guidelines and recommendations exist to enhance patient safety. One fundamental component of risk management in health care system is the critical incident reporting system (CIRS), which offers an a posteriori approach, without identifying a priori the risk zones in drug processes.

**Method:** In order to bridge this gap, we performed a systematic review and identified English, French and German tools used to assess the medication safety practices in hospitals. One tool met our pre-defined requirements. Initially developed in France, InterDiag® is used in more than 300 hospitals in several countries. We needed to adapt the original, French tool, for our Swiss health care system, according to legal and local settings. The remodelled tool includes 167 items (38 original and 129 new). It is introduced since 2018 as an additional and complementary process to our CIRS. A multidisciplinary team from each clinical unit (doctors, nurses, pharmacists, risk managers, quality managers) are invited for a 2 hours workshop in order to map the risks in their medication processes.

**Results:** Three main themes (security policy, medication practices, storage safety) and nine security axes (prevention, leadership, patient admission/transfer/discharge, drug prescription, dispensing, preparation, administration, storage, emergency trolley management) are explored with this tool. The results are shown as radar (figure 1), but also as a precise map of the unit’s drug safety related risks, of its strengths and vulnerabilities. A prioritized and specific action plan is generated in order to secure failures in medication processes. Our tool also provided pooled vulnerabilities. A prioritized and specific action plan is generated in order to secure failures in medication processes.

**Conclusion:** Our tool allows a precise risk mapping of medication processes and permits to design and implement concrete actions in order to improve medication safety, with a shared priority assessment. This novel approach in medication risk management involves interprofessional teamwork for patient safety and promotes a strong safety culture.

**Fig. 1: Rates of risk assessment expressed as percentage of risk control per security axis.**

**P101**

A cannabis use reduction program: content, concepts and organisational aspects

Thierry Favrod-Coung, Hélène Simoneau, Joël Tremblay, Jean-Félix Savary, Barbara Broers

1Geneva University Hospital, Dpt de Médecine de Premier Recours, Genève, Switzerland, 2Institut Universitaire sur les Dépendances, 3Recherche en Substances Psychoactives Québec (RISQ), Montreal, Canada, 4Groupement Romand d’Etude des Addictions (GREA), Lausanne, Switzerland

**Introduction:** In the field of substance use disorders, abstinence is not the exclusive objective of treatment anymore since the 80s (Van Amsterdam et al.). In particular with regard to alcohol use, there are increasing scientific arguments that controlled drinking is a valid alternative to abstinence, for excessive and moderate dependant drinkers not ready to abstain. The GREA (Groupement romand d’étude des Addictions) has implemented in 2007 the “Alcochoix” program in the French speaking part of Switzerland. Its purpose is to promote controlled drinking in excessive drinkers and prevent alcohol dependence (Simoneau et al). In 2009, this program to help people to reduce their cannabis use was developed in Montreal, based on the experience with the “Alcochoix” program.

Its implementation was hampered by the fact that cannabis was illegal and that health professionals could not recommend a “controlled use” of a forbidden substance.

However, recently, in several countries, cannabis legislation has changed from to legalisation with strict regulations (e.g. USA, Uruguay, Canada). In Switzerland several experimental programs are planned (e.g. Bern, Geneva). In this context interest is growing to offer a tool for people who consider their consumption is problematic and who wish to reduce.

**Result:** Description of the program:

The recently updated programme contains 6 steps which can be used by the user alone, with the help of a professional or in a group setting. The basic principles are: to know more about cannabis and the measures of harm reduction, to learn how to count own use, to be able to make self-observations, to determine personal objectives, recognize at risk situations and adopt personal strategies. This cannabis use reduction program is a part of a global set of “use reduction” programs for other substances and gambling, called « My Choices (Mes Choix) ». The programmes are developed in an international collaboration of French speaking countries, Canada (Quebec), Switzerland, France and Belgium.

**Conclusion:** Based on the positive experience with “controlled drinking programs” similar approaches for problematic cannabis (and other substances) have been developed. Future studies should include patient and provider satisfaction as well as effectiveness of these interventions.


**P102**

Drinking rubbing alcohol in Switzerland, does it exist? A case-report

Déborah Lidsky-Haziza, Barbara Broers

Hospitaux Universitaires de Genève, Service de Médecine de Premier Recours, Genève, Switzerland

**Learning objective(s):** To understand the importance of assessing the risk of drinking house-hold alcohol in an atypical alcohol history

To be able to give advices on treatment in case of alcohol dependence

**Case:** A 60-year-old-man, with no significant comorbidities, consulted in our unit, because of an excessive alcohol consumption since 13 years. The patient revealed that since 7 years he drank 0.5 L of household alcohol (“Migros spiritus”) corresponding to 400 grams (40 units) of ethanol per day. The reason of the choice of this […] house detergent containing alcohol was the absence of smell, so he could “hide” his consumption. He presented an Alcohol Use Disorders Identification Test (AUDIT) test of 25 points (above 13 points, a high risk of alcohol dependency is to consider), and a diagnosis of dependence (3 on 6 criteria according the International Classification of Diseases and Health Problems (ICD-10).
His liver tests showed elevated GGT 231 UI/l, PAL 354 UI/l, but AST, ALT and bilirubin amounts were normal, as were other lab tests. He initially refused to fully abstain from drinking as we suggested, and asked for a “controlled consumption”. We proposed a switch to consumable alcohol in a controlled drinking program (Alcochoix+) and prescribed thiamine.

**Discussion:** The chemical analysis of the household alcohol in the School of Chemistry of the University of Geneva, showed a methanol concentration of 1g/l: 0.13%, which is less than the European legal limit for alcoholic beverage. Nevertheless, the household alcohol also contained heavy metals. Because of the risk of methanol toxicity: neurological (seizure, coma), renal failure, metabolic acidosis, ophthalmological (retinal toxicity) and gastrointestinal, we did an extended medical evaluation which consisted of a neurolgic examination, kidney function, ophthalmoscopy, and gastroscopy, all were normal. The “Alcochoix+ program” enabled the patient to stop his household alcohol consumption and switch to regular alcohol (wine), but also to decrease his total alcohol intake from 400 grams to 20 grams per day, 4 days per week. Still, after a few months, the patient realized it was too difficult to try to limit his consumption and lost control again; he finally choose to stop successfully during a prolonged period.

**P103**

**Diagnostic value of adenosine deaminase in ascites**

Raquel Taddei, Antonio Leidi, Jacques Schrenzel
Hôpitaux Universitaires de Genève, Geneva, Switzerland

**Learning objective:** To appreciate the diagnostic value of adenosine deaminase (ADA) in low albumin gradient ascites.

**Case:** A 38 year-old woman presents with diffuse abdominal pain and ascites. She reports a loss of 5kg in the last 3 months, along with nocturnal sweats. She originates from Mozambique, where she lived until the age of 21, when she moved to Switzerland. She has no personal or recent history of contact with active tuberculosis. Laboratory testing showed a small inflammatory syndrome, and her HIV-status is negative. Ascites workup showed a leucocytosis with lymphocytic predominance, low serum ascsites albumin gradient (SAAG), elevated ADA value but negative *M. tuberculosis* Nucleic Acid Amplification Tests (NAAT).

**Discussion:** Tuberculosis is the worldwide leading cause of death from a single infectious agent. In high income countries, the incidence of pulmonary tuberculosis is gradually decreasing with a relative rise in the incidence of extrapulmonary manifestation, probably due to migration, HIV spread and use of immunosuppressive drugs. ADA is an enzyme highly abundant in active T-lymphocytes. Its concentration is markedly increased in tuberculous infection in contrast to non-tuberculous aetologies. A recently published meta-analysis found a sensitivity of 95% and specificity of 94% for peritoneal tuberculosis with a positive likelihood ratio of 13.37 and a negative likelihood ratio of 0.11. In contrast NAAT has low sensitivity rates in non-respiratory samples with wide variations reported in the literature and no validated test for peritoneal liquid in Switzerland. The ADA test was positive for this patient; assuming a TB prevalence for non- cirrhotic ascites ranging from 30 to 45% in low-income countries, the post-test probability is 85-92%, strongly suggesting the diagnosis of a peritoneal TB. It is important to note that this value falls to 69% if considering the USA prevalence of 14%. The diagnosis was supported by the results, 3 weeks later, of a positive MTB culture in ascites.

**Conclusion:** ADA, an old, easily available and inexpensive test, has been reported by the results, 3 weeks later, of a positive MTB culture in ascites. It is important to note that this value falls to 69% if considering the USA prevalence of 14%. The diagnosis was supported by the results, 3 weeks later, of a positive MTB culture in ascites. In conclusion ADA, an old, easily available and inexpensive test, has better diagnostic accuracy than expensive new generation NAAT. It can contribute to the diagnosis of abdominal tuberculosis and replace the necessity for an invasive test for histological sample, particularly in patients rising from low income countries.

**P104**

**Participatory approach with a citizen advisory group: an iterative evaluation and adaptation of patient decision aids**

Requita Cardinaux, Beatrice Metry, Reto Auer, Jacques Cornuz, Kevin Selby

*1Centre Université de Médecine Générale et Santé Publique, Lausanne, 2Ber- ner Institut für Hausarztmedizin (BIHAM), Universität Bern, Bern, Switzerland* 

**Introduction:** Guidelines for the development of patient decision aids (DAs) recommend involving the target population throughout the creative process. We are developing cancer screening decision aids (DAs) for colorectal, prostate, and lung cancer. We wanted a pool of citizens who could participate in repeated meetings and contribute to the iterative, user-centered evaluation and adaptation of DAs. However, it can be challenging to recruit asymptomatic citizens aged 50 to 75 years, our target population. Further, there is little literature reporting on methods for the creation and maintenance of such groups.

**Methods:** We recruited a participatory group of citizens without previous cancer diagnoses using contacts with: a consumer association, a state association for elderly people, patients from our academic practice, and standardized patients from the medical school. We planned two qualitative evaluation cycles for each DA, each time with two in-person meetings of 10 people lasting 2 hours, and an evaluation by mailed questionnaire to remaining group members.

**Results:** We successfully recruited 50 citizens, though we had to adapt and intensify our communication strategy. For the DA on colorectal cancer screening, we have had 2 meetings with 8 and 9 of 10 people invited attending. Twenty-three of 28 participants mailed the questionnaire responded. We found that simultaneous in-person meetings and questionnaires provided complementary information and allowed us to reach more participants. For the prostate cancer DA, we had one meeting with 4 of 10 men invited. Eight of 8 mailed questionnaires were completed. Evaluation of that DA is ongoing. We are beginning development of the DA for lung cancer screening. Participants were very appreciative of our participative approach. We have made numerous changes to our processes along the way, like optimizing the timing and length of questionnaires.

**Conclusion:** Our participative approach with a citizen group to evaluate patient DAs has provided us with valuable information and been evaluated positively by participants. The involvement of citizens on a volunteer basis has required extensive personalized communication. The creation of an initial pool of available people has resulted in a high participation rate. These results could help other research groups perform participative research in a way that is informative and feasible.

**P105**

**Ten-year trend in polypharmacy in the Lausanne population**

Nazanin Abolhassani, Peter Vollenweider, Gérard Waeber, Pedro Marques-Vidal

*1Lausanne University Hospital, Department of Medicine, Internal Medicine, Lausanne, Switzerland*

**Introduction:** Ageing and associated morbidities place individuals at higher risk of polypharmacy and drug-drug interactions (DDIs). How polypharmacy and DDIs change with ageing is important for public health management. This study aimed to assess the ten-year trends in prevalence of polypharmacy and potential DDIs in a population-based sample.

**Methods:** Baseline (2003-06) and follow-up (2014-16) data were obtained from a sample of 4512 participants (baseline age range: 55-75 years, 55.1% women) from the population of Lausanne, Switzerland. Polypharmacy and polyactive drug use were defined by the regular use of ≥5 medications and ≥5 pharmacologically active substances, respectively. DDIs were defined according to the criteria of the Geneva University Hospital.
[10.9-year trends in drug (panel A) and pharmacologically active substances (panel B) use in the over]

Results: The percentage of participants taking at least one drug increased from 56.1% to 79.5% (p <0.001). Among participants taking drugs, number of medications increased from 2.6±1.9 (average±standard deviation) to 3.8±2.9 after 10.9 years follow-up (p <0.001); the corresponding values for active substances were 2.7±2.0 and 4.0±3.0 (p <0.001). The prevalence of polypharmacy and polyactive substance use increased from 7.7% to 25.0% and from 8.8% to 27.1%, respectively (p <0.001). The presence of at least one potential DDI increased from less than one percent to almost one sixth of all participants.

Conclusion: In a community-dwelling sample, the prevalence of polypharmacy and polyactive substance use more than tripled during a 10-year follow-up, with an even greater increase in the prevalence of po-

Methods: We interviewed senior program leadership and key informants from regional laboratories, primary care offices and gastroenterology departments to create a detailed model of the outreach program, beginning with the identification of eligible health-plan members to completion of diagnostic colonoscopies. We identified all inputs of material, infrastructure and personnel. We then classified costs as related to start-up, programmatic and clinical activities, with programmatic costs being program management, service delivery and patient support, quality tracking, on-going staff training, and similar activities.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Associated resources / costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core program management team</td>
<td>Clinical lead physician; Project manager; Information technology support; Liaison with outreach vendor; Customer support hotline; Health education department</td>
</tr>
<tr>
<td>Centralized outreach for all of KPNC</td>
<td>Automated generation of list of patients eligible for screening; Outside vendor paid to mail pre-letter, FIT kit, reminder letter, and administer robo-call</td>
</tr>
<tr>
<td>Local in-reach based in primary care</td>
<td>Medical assistants remind patients of FIT when they arrive for appointments in any department (electronic health record trigger); Medical assistants provide FIT kit to patients who do not have one available; Medical assistants contact patients by telephone or secure e-mail to remind about FIT</td>
</tr>
<tr>
<td>Central laboratory management of completed FIT</td>
<td>Manual verification of patient information; Follow-up of FIT tubes with missing information; Labeling of FIT tubes; Processing of FIT by automated machine (Go-Sensor Dianal®)</td>
</tr>
<tr>
<td>Follow-up of test results</td>
<td>Mail notification of patients with negative tests; Primary care provider notifies patients of positive results; Gastroenterology department contact and reminders for colonoscopy scheduling; Performance of diagnostic colonoscopy</td>
</tr>
</tbody>
</table>

Results: We identified five key program activities: a core management team; centralized outreach with automated generation of patient lists and an outsider vendor that mails FIT kits, reminders, and performs robo-call reminders; primary-care based, local in-reach activities, including personalized phone and in-person reminders by medical assistants during office visits; large-scale laboratory intake, analysis, and storage of completed tests; and finally, gastroenterology department-based management of patients with positive FIT results, including personalized instructions and reminders, and the completion of diagnostic colonoscopy. Table 1. A specific electronic health record add-on provides real-time lists of eligible patients and contacts to date.

Conclusions: This work provides the framework for detailed accounting of resources required for a systematic FIT-outreach program. These data and further quantification of staff efforts and system resources can inform cost-effectiveness analyses and the development of comprehensive, integrated cancer screening programs in different settings.

P107

Statin-induced autoimmune necrotizing myopathy: fatal issue due to oro-pharyngeal muscles involvement

Nicolas Mirlesse1, Marine Baumberger2, Kristof Egenvari3, Aurélie Bornand4, Johannes Alexander Lobrins4, Julien Lecluse1, Virginie Prendki1, Clémence Cuvelier1

1Policlinique Médicale Universitaire (PMU), Centre de Médecine Générale, Lausanne, Switzerland, 2Kaiser Permanente Northern California, Oakland, 3Stanford University, Palo Alto, 4Kaiser Permanente Southern California, Pasadena, 5University of Pennsylvania, Philadelphia, United States

Background: Strong evidence supports the use of mailed fecal blood tests and patient navigation to increase colorectal cancer (CRC) screening rates, particularly among underserved populations. However, few models exist for the scale-up of these interventions. Between 2006 and 2016, the implementation of the Kaiser Permanente Northern California fecal immunochemical test (FIT) outreach program coincided with a doubling of the proportion of members up-to-date with screening (from 40% to >80%), a 26% decrease in CRC incidence, and a 52% decrease in CRC mortality. We created a framework to assess the resources and costs needed for the functioning of this large-scale, mature, mailed-FIT outreach program.

Learning objectives: Identification, diagnosis and early treatment of statin-induced autoimmune necrotizing myopathy (SiNAM).

Case: A 77-year-old man, known for statin-treated hypercholesterolemia, Parkinson’s disease, depression and lumbago, was hospitalized due to generalized pain and diaphoresis since two days. Physical examination found arterial systolic hypertension at 180 mmHg, tetraparesis, lower limbs muscle contracture, myoclonus and swallowing disorder. Creatinine kinase (CK) were at 5000 IU/L, troponin T >200 ng/ml, aspartate amino-transferase (AST) at 574 IU/L, alanine amino-transferase (ALT) at 464 IU/L and lactate dehydrogenase (LDH) at 899 IU/L. Venflaxin, tramadol were removed in suspicion of serotonin or neuroleptic malignant syndrome (day 1), but in the absence of improvement, this hypothesis
was excluded. ECG and cardiac ultrasound excluded myocardial infarction. Immunological testings (C3, C4, cryoglobulinemia, ANCA, antinuclear antibody), panel for myositis and viral infection (viral hepatitis and HIV) were negative. Contrast-injected thoraco-abdominal CT scan found no sign of malignancy. Despite discontinuation of statins, CK reached a peak at 7500 IU/L (day 5) and then decreased. Calf MRI showed signs of inflammatory myositis (day 12) but muscle biopsy was not performed due to the patient’s deterioration. Despite intravenous immunoglobulin and methylprednisone (day 16), the patient died (day 20). Serology for the anti 3-hydroxy-3-methylglutaryl coenzyme A reductase (HMGCR) antibody was positive. The autopsy found necrotizing myopathy of the oro-pharyngeal muscles and to a lesser extent the quadriceps, an old transmural infarction in the heart and bilateral inhalation pneumonia lesions.

[Pharyngeal muscle necrosis]

[Membrane attack complex C5b-9 marking]

Discussion: Statin, lowering cholesterol by inhibiting HMGCR, is frequently prescribed in the elderly. Five to 10% of treated patients present myalgia and weakness but only 3/100,000 develop SINAM, which can occur many years after the beginning of statin. In the elderly, diagnosis is challenging because of multiple co-morbidities and polymedication. To our knowledge, involvement of oro-pharyngeal muscles is uncommon. In this case, the differential diagnosis of SINAM was paraneoplastic myositis. Furthermore, muscle biopsy and anti-HMGCR antibody were delayed because of recurrent inhalation pneumonia and to the peculiar localization, postponing treatment initiation. This case is a good example of a rare but fatal side-effect of statin.

**P108**

Cannabinoid hyperemesis syndrome: a challenging differential diagnosis

Katerina Mandralis, Evangelos Gravanis, Fabienne Chevaux, Jean-Philippe Zuber

Etablissements Hospitaliers du Nord Vaudois, Médecine Interne St-Loup, Pom- pâpiles, Switzerland

Learning Objective: Cannabinoid hyperemesis syndrome (CHS) is defined by cyclic episodes of nausea and vomiting and the learned behavior of hot bathing in individuals who have been consuming large doses of cannabis for several years. The differential diagnosis of this syndrome is challenging as it can be masked by symptoms typical to other diseases and can often lead to unnecessary and expensive medical investigations.

Case: A 43-year-old man, long term cannabis consumer, with a history of lower back pain and depression was transported by the paramedics to the emergency department of Saint Loup Hospital for an episode of heavy nausea, vomiting, and abdominal pain. His personal medical history revealed degenerative disc disease resulting in chronic pain treated with NSAID and opioids, a pulmonary emphysema, and a sliding hiatal hernia resulting in gastroesophageal reflux disease. An esophagostroduodenoscopy with biopsies of gastric tissues performed 10 months before admission revealed mild chronic H. pylori-positive gastritis, despite treatment for eradication of H. pylori infection nine years earlier. Upon admission to the emergency department he described episodes of cyclic nausea and vomiting for the past year that were alleviated by hot bathing. The patient reported cannabis consumption three times a day for over 10 years. Clinical examination and lab workup were unremarkable. In view of the typical clinical picture, we concluded that the nausea, vomiting and abdominal pain were due to CHS and the patient was advised to completely stop his cannabis consumption. Cessation of cannabis use resulted in alleviation of symptoms and the patient reported to be asymptomatic two weeks after diagnosis.

**Discussion:** Cyclic nausea, vomiting and abdominal pain in patients with a history of long-term cannabis consumption can lead to a differential diagnosis of CHS. It is important that physicians, based on detailed anamnesis concerning cannabis consumption and relief by hot impulsive showers, recognize this syndrome to avoid unnecessary medical testing and to help their patients understand that the only long-term treatment is complete cessation of cannabis use.

**P109**

Open complaints and compliments about electronic medical records: internists' top five

Antoine Garnier2, François Bastardot1,3, Mathilde Rochat1, Coralie Galland-Decker1, Vanessa Kraege1

1 Internal Medicine Department, University Hospital of Lausanne, Medical Directorate, Lausanne, Switzerland, 2 Brigham and Women’s Hospital, Division of General Internal Medicine and Primary Care, 3 Harvard Medical School, Boston, United States

Introduction: The electronic health record (EHR) is the internists’ first tool for consultation, documentation, and prescription. Despite evolving over decades, EHR does not meet physicians’ expectations because of the diversity of needs and the challenge of rendering huge amounts of clinical data apprehensible. Usability is therefore of outmost importance for clinicians. We aimed to identify critical topics for internists, needing prioritization in future EHR developments.

**Methods:** We assessed the local EHR (Cerner Soarian®, USA) usability twice, in 2014 and 2018, using a survey addressed to all junior and senior physicians of our internal medicine department. Eligible participants were all physicians working on the internal medicine ward for at least 3 months. In 2018, we added the assessment of the prescription module recently developed. Alongside quantitative Likert-type scaled questions, we invited participants to add free commentaries about major topics: admission, prescription, follow-up and discharge, administrative tasks and general comments. We listed all free-text comments of both surveys and classified them according to mentioned topics. In case of multiple topics, we split the comment into quotes. After ranking topics according to frequency, we selected the top-5 positive comments and the top-5 complaints.

**Results:** Out of the 286 participants, 256 returned a survey (89.5%). We collected 342 comments and split them into 625 quotes. Among these, 22 (3.5%) were positive, 603 (96.48%) negative, and 35 (5.6%) miscellaneous. We identified 10 compliment and 20 complaint topics. The top 5 compliments represented 2.1% and the top 5 complaints 54.2% of the 625 quotes. Tables 1 and 2 present the results.

**Outcomes:**

- Of the 286 participants, 256 returned a survey (89.5%).
- We collected 342 comments and split them into 625 quotes.
- Among these, 22 (3.5%) were positive, 603 (96.48%) negative, and 35 (5.6%) miscellaneous.
- We identified 10 compliment and 20 complaint topics. The top 5 compliments represented 2.1% and the top 5 complaints 54.2% of the 625 quotes. Tables 1 and 2 present the results.
Conclusions: Internists give high priority to how data are accessed and presented. While IT departments have to deal with the technical constraints, we physicians should reinforce the necessity of medical informatics physicians, helping to develop future reliable and innovative EHRs.

Mismatch between resident schedule and reality: the MED2DAY study

Antoine Garnier1,2, Marie Méan1, Julien Castioni1,3, François Bastardot4,5, Matteo Monti4,6, David Gachoud4,6, Pedro Marques-Vidal1, Olivier Lamy1, Peter Vollenweider1, Gérard Waebert1, Vanessa Kraege1

1Internal Medicine Department, 2Medical Directorate, 3University Hospital of Lausanne, Direction of Human Resources, Lausanne, Switzerland, 4Brigham and Women’s Hospital, Division of General Internal Medicine and Primary Care, 5Harvard Medical School, Boston, United States, 6University of Lausanne, Unit of Medical Education, School of Medicine, Lausanne, Switzerland

Introduction: Typical residency schedule is organised as such: patient rounds in the morning, supervision and admission in the afternoon. Work organisation is usually described in a week schedule of the department. In a 2015 time-motion study, we observed that residents carried out unexpected activities during the corresponding period less than two thirds of the time. As we identified this as a stress factor, we then reshaped the timeframe. Presented as mean percentage [95% CI]

<table>
<thead>
<tr>
<th>Topic</th>
<th>Number of quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Improvement ability of the EHR</td>
<td>3</td>
</tr>
<tr>
<td>2. Usefulness of reinforced medical-IT collaboration</td>
<td>3</td>
</tr>
<tr>
<td>3. Order prescription possibilities</td>
<td>3</td>
</tr>
<tr>
<td>4. Helpful specialist-focused result screens</td>
<td>2</td>
</tr>
<tr>
<td>5. Effortless daily note documentation</td>
<td>2</td>
</tr>
</tbody>
</table>

[Table 1: Top 5 compliments]

Results: We conducted a time-motion study in 2015 and 2018 in a tertiary internal medicine department. We included all residents, whom experiences are not well recognized yet. Our aim was to identify if time allocation is different between genders. We repeated the 2015 time-motion study between May and July 2018. Trained external observers followed the residents and collected their activities using a dedicated tablet application. Based on the official department work schedule, we identified which activities were expected or not, for each timeframe of the week. Mismatch was defined as an activity observed but unexpected in the related timeframe. Presented as mean percentage [95% CI]

<table>
<thead>
<tr>
<th>Topic</th>
<th>Number of quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Poor information accessibility</td>
<td>154</td>
</tr>
<tr>
<td>2. Technical limitations of some item documentation</td>
<td>75</td>
</tr>
<tr>
<td>3. Lack of automated processes</td>
<td>40</td>
</tr>
<tr>
<td>4. Too many clicks for a task</td>
<td>40</td>
</tr>
<tr>
<td>5. Word processor rudimentarity</td>
<td>30</td>
</tr>
</tbody>
</table>

[Table 2: Top 5 complaints]

Methods: We repeated the 2015 time-motion study between May and July 2018. Trained external observers followed the residents and collected their activities using a dedicated tablet application. Based on the official department work schedule, we identified which activities were expected or not, for each timeframe of the week. Mismatch was defined as an activity observed but unexpected in the related timeframe. Presented as mean percentage [95% CI]

<table>
<thead>
<tr>
<th>Activity</th>
<th>2015 (n = 49)</th>
<th>2018 (n = 67)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directly related to patient</td>
<td>36.4 [31.8 - 40.9]</td>
<td>28.2 [24.4 - 32.1]</td>
<td>0.009</td>
</tr>
<tr>
<td>Indirectly related to patient</td>
<td>44.6 [41.1 - 48.1]</td>
<td>36.1 [33.1 - 39.1]</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Academic and training</td>
<td>25.2 [14.8 - 35.5]</td>
<td>30.9 [22.1 - 39.6]</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Administrative tasks</td>
<td>36.8 [31.8 - 41.7]</td>
<td>30.7 [28.4 - 35.0]</td>
<td>0.071</td>
</tr>
<tr>
<td>Personal time</td>
<td>20.7 [15.1 - 26.2]</td>
<td>35.0 [30.3 - 39.8]</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Transe to the next activity</td>
<td>11.0 [7.2 - 14.9]</td>
<td>7.8 [4.3 - 10.9]</td>
<td>0.19</td>
</tr>
<tr>
<td>Overall</td>
<td>38.6 [35.9 - 41.3]</td>
<td>31.9 [29.6 - 34.2]</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

[Table: Proportion of unexpected activities in the corresponding timeframe. Presented as mean percentage [95% CI]]

Figure: rate and distribution of mismatch between the residents’ official work schedule and the observed activities over the week. More red means more unexpected activities according to the timeframe. n: obs., number of observation.

Is there a gender difference in resident self-organization on the internal medicine ward? The MED2DAY study

Vanessa Kraege1, Marie Méan1, Pedro Marques-Vidal1, François Bastardot2,3, Julien Castioni1,4, Nathalie Wenger5,6, David Gachoud4, Matteo Monti4,6, Olivier Lamy1, Peter Vollenweider1, Gérard Waebert1, Antoine Garnier1

1University Hospital of Lausanne, Internal Medicine Department, Lausanne, Switzerland, 2Brigham and Women’s Hospital, Division of General Internal Medicine and Primary Care, 3Harvard Medical School, Boston, United States, 4University Hospital of Lausanne, Human Resources Department, 5University Hospital of Lausanne, DFME, 6University of Lausanne, Unit of Medical Education, School of Medicine, FBM, 7University Hospital of Lausanne, Medical Directorate, Lausanne, Switzerland

Introduction: Female internists keep increasing in proportion over the years. Studies suggest the presence of differences in practice patterns between male and female physicians that could influence important patient outcomes such as mortality or readmissions. Such practice differences are not well recognized yet. Our aim was to identify if time allocation of internal medicine residents differed according to gender.

Methods: We conducted a time-motion study in 2015 and 2018 in a tertiary internal medicine department. We included all residents, whom trained observers followed during dayshift. We recorded 22 predefined activities grouped into six categories, and four contexts (with a patient;
The influence of patient’s gender in low back pain management

Lea Violette Schilter¹, Olivier Hugli², Philippe Staeger³, Vincent Ribordy⁸, Yvan Fournier⁹, Dumeng Decosterd¹⁰, Carole Clair³

Primary care interventions to reduce cardiovascular risk behaviors in adolescents: a systematic review

Hervé Tissot, Eva Pfarwaller, Dagmar M. Haller

Unité des Intermèdes Généralistes et Pédiatres (UIJP), Faculté de Médecine, Université de Genève, Genève, Switzerland

Introduction: Adolescence is a key period for the adoption of health-related behaviors. This offers a window of opportunity for the primary prevention of the main cardiovascular risk behaviors, i.e. smoking, low physical activity and unhealthy diet. Family doctors are well placed to individualize the key public health messages in relation to these behaviors and help adolescents reduce their health-compromising behaviors. Yet to date little is known about the effectiveness of primary care interventions targeting the three main cardiovascular risk behaviors (smoking, low physical activity and unhealthy diet) in adolescents.

Methods: We conducted a systematic review of studies documenting the effects of cardiovascular interventions targeting smoking, low physical activity and/or diet in adolescents (10-19 years). We followed PRISMA reporting guidelines and searched five electronic databases and ISRCTN registries. Primary outcomes were objective and self-reported measures of smoking, physical activity and diet, whereas secondary outcomes included measures such as body mass index or insulin resistance. Two independent reviewers screened articles, extracted relevant data and assessed study quality using the Cochrane risk of bias tool. A third reviewer was involved in case of disagreement.

Results: We scanned 5387 records and eventually took 34 records describing 21 studies into consideration in the narrative synthesis of the results. A large heterogeneity in outcome measures precluded conducting meta-analyses. Overall, the quality of the evidence in favor of effective preventive interventions was limited. Three of five interventions addressing smoking behavior were to some extent effective, mostly on the uptake of smoking. Although some interventions targeting physical activity and diet reported statistically significant reductions in anthropometric outcomes, they were often of limited clinical significance and were not associated with significant effects on self-reported adolescent behaviors. Features associated with the most effective interventions were the addition of technology-based modules and short boosters to the initial intervention by a family doctor.

Conclusions: Researchers and practitioners should join forces to develop more effective primary care interventions to limit the development of health-compromising behaviors in adolescents.
Burden of treatment in multimorbid patients: a cross-sectional study of patients' and GPs' assessments in primary care

Lilli Herzig1, Andreas Zeller2, Jérôme Pasquier3, Sven Streit4, Stefan Neuner-Jehle5, Sophie Excoffier6, Dagmar M. Haller6

Introduction: Higher treatment burden is associated with lower treatment adherence, worse health outcomes and higher health care costs. Our aim was to assess treatment burden in multimorbid patients from the perspective of patients and of GPs, and to identify the factors associated patients' and GPs' assessment of this burden in multimorbid patients in primary care.

Methods: We used data from MMFM, a cross sectional study involving 100 GPs and 888 multimorbid patients across Switzerland. We used the Treatment Burden Questionnaire (TBQ, possible score 0-150) to measure self-perceived treatment burden from the patients' perspective, whereas GPs evaluated the treatment burden on a VAS from 1-9. Linear regressions were used to examine the association between patient or GP reported treatment burden and medical, social and psychological factors.

Results: Patients reported a median TBQ score of 20. GPs median assessment of the treatment burden on the VAS was 4. Both patients' and GPs' assessment of the treatment burden were inversely associated with patients' age and quality of life. Patients' reported treatment burden was higher if they had a lower deprivation score, a lower health literacy, of had diabetes or atrial fibrillation. GPs' assessment of the treatment burden was associated with the patient having a greater number or severity of chronic conditions and drugs.

Conclusion: Treatment burden appears to be higher in younger patients, both from a patient and a GP perspective. GPs' assessments of the treatment burden appears to be more strongly related to medical factors, whereas for patients the treatment burden is associated with socioeconomic and psychological factors. It could be interesting for GPs to confront their evaluation of the treatment burden with that of their patients to favor shared decisions about actions aimed at reducing patients' burden of treatment.

Severe nephrotic syndrome as initial manifestation of type 2 diabetes mellitus

Laura Hollenstein, Johannes Wechselberger, Walter Arnold, Daniel Vogel

Introduction: Starting in 2015, the role of the Swiss Nurse Practitioner (SNP) was established on an acute medical ward of a large teaching hospital affiliated with the University Hospital of Zurich. This study analyzed the added value of SNPs for doctors and nurses in the daily patient management.

Methods: In June 2018, a survey was conducted among MDs and nurses involved, to detect whether the SNP role meets the required needs of the aforementioned professionals to ensure a successful interprofessional patient management. The scope of practice of an SNP in this project includes admission and discharge management, targeted physical examinations, focused assessments and coordination of treatments as well as transitional care.

42 questionnaires were delivered to MDs and nurses who collaborated with the SNPs. The response rate was 69%. 29 questionnaires were analyzed (MDs: 15, nurses: 14). The survey consisted of 21 items on a Likert Scale from 1 (not true) to 6 (true). The 21 items were summarized in 5 categories: patient safety, acceptance of the role, discharge management, added value for patients and professionals, process management. The SNP is perceived as an additional support in the patient care. d) Conclusions: a) SNPs have an excellent acceptance withing the interprofessional team. b) There is a consensus on their added value for patients, process and quality. c) The close interprofessional exchange enables the residents to actively transfer and supervise specific tasks thus the SNP is perceived as an additional support in the patient care. d) Continuity of care is guaranteed by their presence and specific knowledge from Monday through Saturday all year long on the same ward. e) Attendings and head nurses considered the value of SNP as superior to an additional position of a fellow or nurse. f) SNP is a new position that provides synergisms and will not replace MDs nor nurses.

Results: The SNP was highly accepted among doctors (5.85, ± 0.39) as well as nurses (5.78, ± 0.45). Both groups reported a high impact on patient safety (5.73, ± 0.51 resp. 5.12, ± 0.71) and an improvement on discharge management (5.49, ± 0.64 resp. 5.32, ± 0.66). Likewise they considered the SNP as an added value for their own work (5.80, ± 0.40 resp. 5.18, ± 0.88) as well as for patients (5.93, ± 0.25 resp. 5.43, ± 0.73). A clear improvement of process management was observed (5.68, ± 0.55 resp. 5.29, ± 0.72).

Conclusions: a) SNPs have an excellent acceptance withing the interprofessional team. b) There is a consensus on their added value for patients, process and quality. c) The close interprofessional exchange enables the residents to actively transfer and supervise specific tasks thus the SNP is perceived as an additional support in the patient care. d) Continuity of care is guaranteed by their presence and specific knowledge from Monday through Saturday all year long on the same ward. e) Attendings and head nurses considered the value of SNP as superior to an additional position of a fellow or nurse. f) SNP is a new position that provides synergisms and will not replace MDs nor nurses.

Survey results after three year project period. None of the differences between doctors and nurses reached significance.
Cumulative marijuana use and carotid intima-media thickness at middle age: the coronary artery risk development in young adults (CARDIA) study

Roman von Wytw1, Odile Staedler1, Julian Jakob1, Mark Fletcher1, Eric Vittinghoff1, Kati Tai1, Jamal Rana1, Stephen Sidney1, Jared Reis2, Reto Auer2

1Berner Institut für Hausarztmedizin BiHAM, 2Universität Bern, Institut für Sozial- und Präventivmedizin, Bern, Switzerland, 3Department of Epidemiology and Biostatistics, UCSF, San Francisco, 4Kaiser Permanente Northern California, Department of Cardiology, Oakland, 5National Heart, Lung, and Blood Institute, Bethesda, United States

Background: Long-term cardiovascular health effects of marijuana are understudied. Carotid intima-media thickness (CIMT) is an established parameter for subclinical atherosclerosis, but no one has determined the potential effect of marijuana smoke on CIMT. We thus studied the association between CIMT in mid-life and lifetime exposure to marijuana and tobacco use.

Methods: We used data from the CARDIA Study, a cohort of 5115 black and white women and men, aged 18-30 years at baseline, with up to 6 follow-ups over 20 years. We computed cumulative years of exposure to marijuana (marijuana-years) and to tobacco (pack-years) and to tobacco (1 pack-year = smoking 20 cigarettes/day for 365 days) using multiple assessments. We computed normalized composite CIMT by carotid ultrasound assessed at Year 20 by combining the maximal CIMT of the bilateral carotids. We calculated the odds ratio (OR) of CIMT at the 80th percentile of all examined CARDIA participants. We estimated the association between cumulative marijuana and tobacco use in multivariate adjusted logistic regression models, with the main exposure modeled using restricted cubic splines, and controlled for age, sex, race, serum lipids, and other risk factors.

Results: At Year 20, 3549 participants were examined; 3257 had data on carotid ultrasound. 2722 (84%) reported past marijuana use; 1539 (47%) reported ever tobacco smoking. Among marijuana users, 12% reported ≥5 marijuana-years; 6% reported daily marijuana use. Among tobacco smokers, 46% reported ≥10 pack-years. We found a significant interaction between never- and ever-tobacco users on the association between cumulative marijuana use and CIMT (p = 0.02). Multivariate adjusted models showed no significant association with cumulative marijuana exposure. Among never smokers, the odds ratio (OR) of CIMT at the 80th percentile at 1 marijuana-years compared to no marijuana exposure was 0.81 (95% CI:0.56 to 1.17, p = 0.2) and 1.26 (95% CI:0.93 to 1.71, p = 0.2) among ever tobacco smokers. Cumulative exposure to tobacco was strongly associated with high CIMT (OR:2.00 at 20 pack-years compared to never smoking [95% CI:1.20 to 3.36, p <0.02]). Sensitivity analyses with CIMT modeled as a continuous outcome showed similar results.

Conclusion: Tobacco, not marijuana use was associated with CIMT-measured carotid atherosclerosis.

Hydroxyurea induced pneumonitis in a patient with primary myelofibrosis

Seraina Egli, Thomas Hess, Jeroen S. Goede

1Kantonsspital Winterthur, Departement Medizin, 2Kantonsspital Winterthur, Klinik für Pneumologie, 3Kantonsspital Winterthur, Klinik für Medizinische Onkologie und Hämatologie, Winterthur, Switzerland

Learning objective: Drug induced pneumonitis is a rare though potentially life-threatening side effect of Hydroxyurea (HU) and can easily be misinterpreted as bacterial pneumonia. 

Case: A 70 years old man presented with asthenia, dyspnea and dry cough since a few days. His medical history included primary myelofibrosis (MF) diagnosed 1.5 month earlier, treated with HU since 1 month due to thrombocytopenia of 77 G/l. The patient had stopped the HU-treatment 4 days before because he suspected a causative association with the HU-therapy.

CT-scan ruled out pulmonary embolism but showed apical predominant patchy ground-glass opacities (pic.1). Elevated inflammatory markers were found in the serum (CRP 155 mg/l). Bacterial pneumonia was suspected and antibiotic treatment with Co-Amoxicillin and Clarithromycin was started with prompt remission of symptoms and inflammatory markers. On discharge, the therapy with HU was resumed. 2 day later the Patient returned with aggravation of dyspnea, cough and fever (39.9°C). Chest X-ray showed pronounced infiltration of the upper lobes (pic:2) with small bilateral pleural effusions. Neither in the blood culture nor in the bronchoalveolar lavage (BAL) an infectious cause was found. BAL showed a multinodular pattern compatible with hypersensitivity pneumonitis. 


Case report: A 43 year old patient presented with a two week history of fever, chills, fatigue and general malaise without improvement despite antibiotic therapy (amoxicillin-clavulanic acid). The patient reported no previous illnesses but personal history was remarkable for intermittent arthralgias the last 5 years. Physical examination at admission was remarkable for febrile temperature (40°C) and cervical lymphadenopathy. The clinical findings where consistent with “febris uveoparotidea” (Heerfordt syndrome). Blood analysis showed leucocytosis with neutrophilia and high levels of C-reactive protein >300mg/dl (<5 mg/dl). All other laboratory tests were normal (liver enzymes, creatinine, rheumatoid factor, ANA, ANCA, double strand DNA, SSA and SSB, complement proteins, protein electrophoresis). Serologic results were negative for EBV, CMV, mumps and syphilis. The Quantiferon test was negative. Culture analysis of blood and urine samples remained sterile. Computed tomography of chest and abdomen demonstrated diffuse lymphadenopathy of abdominal, mesenterial, mediastinal and cervical lymph nodes. Biopsy of a cervical lymph node showed an unspecific epithelioid cell granuloma with sporadic giant cells precluding a definitive diagnosis. Subsequent larsapotocic excision of a mesenterial lymph node showed granulomatous inflammation with giant cells and PAS positive macrophages. PCR-analysis was positive for Tropheryma whippellii. There was no evidence for disease activity in duodenal biopsies, cerebrospinal fluid analysis and transthoracic echocardiography – indicating that no other organs were affected. After 4 weeks of treatment (ceftriaxone for 14 days) followed by indefinite oral therapy (trimethoprime/sulfamethoxazole) complete clinical remission was achieved promptly.

Discussion: The differential diagnosis of disseminated granulomatous lymphadenopathy is broad including various infectious and many non-infectious entities. Heerfordt syndrome is commonly considered pathognomonic for acute sarcoidosis. In the clinical context of our patient, empirical treatment with corticosteroids – as in sarcoidosis- would have been fatal. This case demonstrates the importance of obtaining biopatic analysis in unclear situations. Atypical Whipple’s disease should be considered in patients presenting with febris uveoparotidea.
Offering patients a choice for colorectal cancer screening: a quality improvement pilot study in a quality circle of primary care physicians

Yonas Martin1,2, Alexander Leonhard Braun1, Marc-Andrea Janggen1, Kali Tal1, Nikola Biller-Andorno1, Cyril Ducros4, Kevin Selby5, Reto Auer1,5, Adrian Rohrbarser6

1Berner Institut für Hausarztmedizin (BIHAM), 2Department of General Internal Medicine, 3Clinic for Infectious Diseases, 4Cantonal Hospital of Baden and Molecular Cardiology, University of Zurich, Baden, Switzerland

Learning Vignette: Side-Effects in treatment of Tbc are common and represent the most challenging aspect in a developed country. Side-effects need to be addressed rapidly as they are harmful to compliance and can jeopardize treatment success.

Tuberculous aortic graft infection is a rare entity which has to be considered in patients with a migration background.

The Case: A 54-year-old women with a history of migration from the Philippines, underwent surgery for mechanical valve replacement and supra coronary aneurysm repair in 2017. One year later she presented with fever, weight loss, nausea and supraclavicular swelling. Initial imaging showed lymphadenopathy and biopsy revealed necrotic cell debris and lymphoma was suspected.

Laboratory test showed non-specific signs of inflammation. CT-imaging showed possible infection around the implanted aortic valve and graft replacement. Microbiology samples obtained from BAL and blood showed mycobacterium tuberculosis in PCR and culture and diagnosis of miliary Tbc with aortic graft-infection was established.

Therapy was initiated with RIF, INH, PZA and ETB. During the first two months the initial regimen had to be changed multiple times due to drug induced liver - and renal failure. Furthermore the patient complained of nausea and dysphagia which made medication difficult and could not always be guaranteed. Unfortunately, the patient suffered from non-traumatic brain haemorrhage shortly after and died after about four months. The preliminary autopsy results did not show evidence of cerebral Tbc.

Discussion: Tbc in Switzerland is a rare disease, but the diagnosis has to be considered in any patient with migratory background. Pulmonary Tbc is the predominant presentation. 15% have extrapulmonary involvement and only 1-2% show haematologic dissemination with miliary tuberculosis. Infection of a vascular graft is exceedingly rare. An aggressive surgical approach is usually not necessary, although no treatment guidelines exist. Tubercostatic drugs are associated with a broad array of adverse effects; in this case ranging from hepatotoxicity, severe renal impairment to haematologic toxicity. Patients should be counseled regarding frequent and/or severe adverse effects and ways to minimize such reactions.

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Consumption today - A case of disseminated tuberculosis (Tbc) with aortic graft infection

Ramon Sager1, Benedikt Wiggli2, André Friedli3, Juerg Hans Beer3
1Department of Internal Medicine, 2Clinic for Infectious Diseases, 3Cantonal Hospital of Baden, Department of Internal Medicine, Cantonal Hospital of Baden and Molecular Cardiology, University of Zurich, Baden, Switzerland

Introduction: Guidelines on colorectal cancer (CRC) screening recommend primary care physicians (PCPs) offer patients a choice between colonoscopy and fecal immunochemical test (FIT). Patients offered both tests tend to divide almost evenly between them, but in Switzerland, only a minority of eligible patients have been screened for CRC, and most are tested with colonoscopy. We trained PCPs in shared decision-making (SDM) within a quality circle (QC) to increase the likelihood they would offer CRC screening and FIT along with colonoscopy as a screening option. This quality improvement pilot study systematically assessed CRC screening status of eligible 50-75 y.o. patients and determined if SDM implemented within a QC increased the proportion of patients offered a choice of CRC screening and which test patients chose.

Methods: Working through 4 Plan-Do-Study-Act (PDSA) cycles in their QC, 9 PCPs adapted tools for SDM, implemented them in their practice, and surmounted organizational barriers by involving practice assistants (PAs). In the first data collection, each PCP included 20 consecutive 50-75 y.o. patients; in the second, they included 40. They reported CRC status, the proportion of eligible patients with whom they discussed CRC screening, and their patients decisions.

Results: Qualitative results indicated that participating PCPs found it easier to use SDM communication tools for CRC screening than they had anticipated. PAs helped PCPs note patients CRC screening status in the electronic medical record, and CRC screening was implemented in daily routine for eligible patients, thus increasing their chance to be offered screening: 176 patients were included in the first data collection and 320 in the second. CRC screening rates trended upwards over the course of a year, from 37% to 40%; FIT use increased from 2% to 7% (p = 0.008). Initially, 7/9 PCPs had no patients ever tested with FIT, but after the intervention the proportion dropped to 2/8.

Conclusions: PCPs in a QC systematically collected data on CRC screening status, made significant organizational changes, and implemented SDM tools in their daily routine after participating in a series of data-driven-PDSA cycles. The intervention increased the proportion of patients who received a discussion on CRC screening and brought the expected proportion of patients who chose FIT and colonoscopy more into balance, suggesting that patients values and preferences were better respected.

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(Marked)
Adherence to treatment can be particularly challenging; the duration of treatment is usually six months or longer and side effects may be relevant. DOT therapy is an established way to enhance compliance.

P122

Persistent fever and cervical lymphadenopathy in a young woman - Kikuchi disease?
Alina Bosshard, Urs Karrer, Dorothea Horschik
Kantonsspital Winterthur, Departement Medizin, Medizinische Poliklinik, Winterthur, Switzerland

Case: A previous healthy 28-year-old woman with Turkish origin presented at our outpatient clinic with a 6-week history of high fever, night sweats, cervical lymphadenopathy, arthralgia and reduced general condition. Physical examination was normal besides cervical lymphadenopathy with multiple, painful, enlarged lymph nodes on both sides. Routine blood tests showed mild leukopenia and inflammation (C-reactive protein: 12 mg/l). Active infections with HIV, CMV, EBV, Bartonella, Toxoplasma, Brucella, Francisella and mumps virus were excluded serologically. Thorako-abdominal CT-scan did not show involvement of additional lymph nodes or other organs. The punch biopsy of an enlarged cervical lymph node showed histiocytic cellular infiltration with necrosis, follicular hyperplasia and plasmocytosis, typically seen in Kikuchi disease. However, there was no evidence for malignancy, lymphoma, sarcoidosis or tuberculosis and mycobacterial diagnostics remained negative. Within a month, lymphadenopathy, pain and fever had resolved spontaneously and the patients’ general condition was back to normal.

Discussion: Kikuchi’s disease is a rare, benign disorder of unknown cause characterized by cervical lymphadenopathy and fever, typically affecting previously healthy young patients. Most common additional symptoms and signs include rash, arthralgia, fatigue and hepatosplenomegaly. Laboratory findings are unspecific and often mild or absent, and may include cytopenia, inflammation, abnormal liver function tests and increased lactate dehydrogenase. Histology of affected lymph nodes is the best diagnostic modality to distinguish Kikuchi disease from other causes of lymphadenopathy. The pathogenesis is unknown, but clinical and histological features suggest an ongoing immune response dominated by T cells and histiocytes possibly to a previous infection with viruses (Herpesviruses, Parvovirus and others), bacteria (Yersinia) or parasites (Toxoplasma). Since symptoms usually resolve spontaneously within months, specific treatment is not required for Kikuchi disease.

Learning objective: Kikuchi disease is a rare, self-limiting cause of fever and cervical lymphadenopathy of unknown aetiology and pathogenesis. After exclusion of more frequent infectious causes, a biopsy of an enlarged lymph node and histological features suggest an ongoing immune response dominated by T cells and histiocytes possibly to a previous infection with viruses (Herpesviruses, Parvovirus and others), bacteria (Yersinia) or parasites (Toxoplasma). Since symptoms usually resolve spontaneously within months, specific treatment is not required for Kikuchi disease.

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Active inclusion of the target group’s perspective through continuous quality improvement cycles. Experiences from the Bern Participatory Accompanying Group (BPAG)
Beatrice Metry1, Yonas Martin1, Julia Scheidner2, Nikola Biller-Andorno3, Regula Cardinaux4, Kevin Selby5, Ralf Auët6
1Berner Institut für Hausarztmedizin (BIHAM), Universität Bern, 2Department of General Internal Medicine, Inselspital, Bern, University Hospital, University of Bern, Bern, 3Institute for Biomedical Ethics and History of Medicine, UZH, Zürich, 4University General Medicine and Public Health Centre, Lausanne, Switzerland

Introduction: Guidelines recommended shared decision-making (SDM) for CRC screening decisions for people between 50 and 75 years old. Primary care physicians (PCPs) need patient decision aids (PDAs) and training if they are to include SDM in routine primary care encounters. The International Patient Decision Aid Standards (IPDAS) recommend a participatory approach, working with the target audience to develop and adapt PDAs. We report on our experiences with the new Bern Participatory Accompanying Group (BPAG), which includes representatives of the target population for CRC screening initiatives, tests PDAs and communication material and discusses how to implement SDM in primary care.

Methods: We invited simulated patients between 50- to 75-year-olds already involved in training medical students at the Universities of Bern and Fribourg, to participate in the BPAG. We chose simulated patients because they are experts in receiving care. We excluded people with a history of CRC, but they could have had experienced CRC screening before. Participants were considered paid employees who received CHF 30 per hour; through a Swiss National Science Foundation grant. We scheduled two-hour sessions every 3 months.

Results: Of 55 invited simulated patients, 10 participated in the BPAG (18%); 7 to10 members of the BPAG participated in 4 sessions. The PBAG helped adapt a PDA and communication material developed for the CRC screening program in Vaud for use in Bern, where there is no organized screening program for CRC, and highlighted the need to ensure PDA messages are in harmony with the CRC outreach initiatives in pharmacies. The group also took a practical approach to the question of how to best discuss CRC screening with a PCP. For example, they felt that it would be best if PCPs talked about CRC at the end of an urgent visit. Participants felt physicians, pharmacists and gynecologists were the people they most trusted to discuss CRC screening.

Conclusion: It is feasible to adapt patient decision aids in consultation with members of the target population of CRC screening. Researchers and developers can benefit from feedback they might not have otherwise received and about problems they may have overlooked. We will continue to work with the BPAG to develop and adapt solutions that facilitate SDM in primary health care.

P125

Metal fume fever - a rare explanation for a flu-like syndrome
Joel Düschi1, Frédéric Lagger2
1Kantonsspital St.Gallen, 2Kantonsspital St. Gallen, St. Gallen, Switzerland

Learning objective(s): During welding pollutants are usually produced. One of these particulate pollutants is zinc oxide (ZnO). The inhalation of high concentrations of zinc oxide (ZnO) can cause a “metal fume fever”, a usually self-limiting systemic illness with flu-like symptoms.

Case: The 56-year old patient was seen in the emergency room due to fever (38.7°C), chills, strongest body aches, headaches, non-productive cough, hypersensitivity of the skin to touch and vomiting. The patient worked in a waste facility and had to cut galvanized steel sheets for 7
hours (07:00 - 14:00). The patient was protected with a standard protective mask and glasses. Around 17:30 on the same day the patient developed above-mentioned symptoms. In the clinical examination the patient had a normal blood pressure and was tachycardic. The oxygen saturation was 94% breathing ambient air. The auscultation of the heart and lungs, as well as the examination of the integument, abdomen and neurologic system was inconspicuous. In the blood chemistry the c-reactive protein, electrolytes, liver- and kidney function test were all within normal limits; the blood count showed a leucocytosis. The arterial blood gas showed a slight respiratory partial insufficiency (paO2 8.9kPa). In the chest x-ray showed a normal finding, in particular there was no indication of a pneumonic infiltrate. After consultation with toxicology Suisse we postulated a "metal fume fever" due to zinc oxide inhalation and treated the patient with NSAID and acetaminophen. The symptoms improved promptly and we could discharge the patient on the same day. In a telephone interview on the following day the patient reported to be symptom-free.

Discussion: The metal fume fever (MFF) is an acute systemic fever syndrome, resulting from the inhalation of metal oxide fumes (e.g. ZnO) and was first described in the mid-1800. It is estimated that a minimum of 1500 - 2000 cases of MFF occur each year in the United States. The MFF is characterized by flu-like symptoms and sometimes a metallic taste that begin 3 - 10 hours after exposure. The diagnosis is based on clinical findings and the occupational history. The pathogenesis is not fully understood but it seems to be caused by the release of endogenous pyrogens and the production of metal proteinases. The treatment is symptomatic, there is no specific treatment. The clinical course is usually benign and the symptoms usually resolve within 24 - 48 hours spontaneously.

P126

Why a MRI-scan cannot replace clinical judgement

Karín Grimm1, Stefano Venturini2, Matthias von Rotz3, Andrea Katja Amstäd4, Marius Treusch5, Ulrich Walker5, Parham Sendi1, Stefano Bassetti1, Martin Weber1

1Division of Internal Medicine, 2Division of Infectious Diseases and Hospital Epidemiology, 3University Hospital Basel, Basel, Switzerland

Learning Objective: One should always re-evaluate a seemingly conclusive diagnosis if the clinical course does not fit the original assessment. Particularly imaging results need to be interpreted in the clinical context and with caution.

Case: A 90-year old patient presented with acute exacerbation of chronic low-back pain. The back pain had been present after a fall at home 10 months ago, but within a few days suddenly became immobilizing. No new trauma had occurred. Physical examination revealed pain on palpation of the sacrum. No motor or sensory deficits were evident. Lab studies showed elevated inflammatory markers (leukocytes 10.5 x10⁹/l, C-reactive protein 86.3 mg/l). The patient had no fever.

A CT-scan revealed inflammatory and erosive changes in the L5/S1 vertebral segment and an older fracture of the sacrum, most likely associated with the aforementioned fall 10 months ago (picture 1a). In order to investigate the inflammatory changes further, a MRI-scan was performed, showing the typical, radiological features of acute spondylodiscitis (picture 1b). In the context of substantially elevated inflammatory markers (table 1) we suspected an infectious etiology. However, we were not able, neither with a CT-guided, nor an open biopsy, to confirm this hypothesis.

The patient’s clinical condition deteriorated further while being treated with basic antibiotic treatment post-biopsy (amoxicillin/clavulanate iv 2.2 gr tid). Eventually, the patient developed a painful swelling of his left knee, which prompted us to re-consider our initial hypothesis of an infectious etiology in favour of a possible crystal arthropathy. Subsequently, the biopsy specimens of the spine were re-examined and the presence of CPPD crystals was confirmed. We initiated a steroid therapy, which led to a rapid pain relief and general clinical improvement.

Discussion: Despite seemingly conclusive radiographic and laboratory evidence we had to revise our initial assessment of infectious spondylodiscitis after the patient developed novel clinical symptoms. Non-infectious processes such as chondrocalcinosis or erosive osteochondrosis can mimic infectious spondylodiscitis in MRI-imaging, therefore need to be considered as potential differential diagnoses particularly when biopsy cultures are negative. Overall, CPPD arthropathy in the spine is rare. Usually it is located in the cervical spine ("crowned dens"), but a lumbar manifestation is also possible.

(a) CT-scan lumbar spine showing edema and contrast media enhancement b) MRI lumbar spine (T2) }

Inflammatory markers during hospitalisation

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Clinical research from multi-modality data sources - the CREATE project

Gregor Leibundgut1, Stefan Hubeli2, Alexander Souza3, Hansjörg Lehner4, Stefanie Brighenti-Zogg5, Claudia Gregorliano6, Frederick Bierr6, Paul Hasler7, Angelika Hammerer-Lercher7, Michael Brändle7, Luca Gabutti8, Anne Leuppi-Taegtmeyer8, Jürgen Muser7, Christian Schraner9, Jörg Leuppi10, Thomas Dieteler1


New computational and mathematical methods have made it possible to analyze thousands of data points associated with an individual patient. Along with the "omics" technologies, this development has fueled personalized approaches to disease diagnosis and treatment in recent years. A limiting factor, however, is the collation of clinical data in a format that can be harmonized with other data, such as the results of genetic and other laboratory tests and used in large-scale data analyses. Furthermore, linking and merging data between individual hospitals and institutions remains a big challenge. Patient medical data are usually stored in a multitude of heterogeneous systems and proprietary formats, making interoperability between systems and formats complicated, cost- and labor-intensive. Lack of flexibility and the difficulties involved in current data systems impede and limit
the quality of health care and the ability to deliver personalized health (PH) care. It is, however, technically possible to assimilate paper documents through digitization and optical character recognition and to directly index existing electronic documents and data files to make them searchable and algorithmically addressable.

To tackle this problem, we have developed and implemented the "Clinical REsearch from multi-modality big daTa sourcEs (CREATE)" system, enabling interoperability between systems and organizations. In the CREATE architecture, data are not copied into other systems or policy spaces via interfaces. Rather, they are referenced at their original location in the existing storage system to make them addressable for searches and algorithmic evaluation. Thus, the data remain in their corresponding policy spaces and need not be moved to archives or data warehouses. Using search engines, data can be linked and exchanged between systems and organizations. With the large volume of data that will become available for PH research, we also anticipate being able to meaningfully study rare conditions and events.

The architecture and function of the CREATE System will be described in detail and preliminary clinical study data presented demonstrating the potential applicability of the CREATE system for the purpose of clinical research and/or quality management as well as the potential feasibility of analyses of large amounts of difficult-to-access data.

P128

Successful pain control with bisphosphonates in bone marrow edema of the knee
Livia Küchler, Thomas Fehr, Raphael Jeker
Kantonsspital Graubünden, Innere Medizin, Chur, Switzerland

Introduction: Bone marrow edema is a disabling disease characterized by severe bone pain with or without prior trauma and insufficient response to analgetics and reduction of weight bearing. Several studies showed promising results by using bisphosphonates to inhibit the osteoclast activity. The aim of this study was to investigate if bisphosphonates (ibandronate) may relieve pain in patients with bone marrow edema of the knee and furthermore to precisely describe its presentation in magnetic resonance imaging (MRI). Moreover we aimed to identify subgroups who benefitted most of bisphosphonates by determining clinical and radiological criteria.

Methods: This is a single-center, retrospective study of 18 patients who received bisphosphonates due to a bone marrow edema of the knee between April 2012 and February 2016. Information has been extracted from our clinical database and a questionnaire. Furthermore, all MRI diagnoses were reassessed by an experienced radiologist.

Results: Our results showed a significant reduction of pain overall (p = 0.0001, Fig. 1) as well as in the non-trauma group (p = 0.004). Results were not significant in the trauma group (p = 0.06) as the patient number was too small. Furthermore the disability in daily life also significantly decreased (Fig. 2): 55.6% of the patients stated to be pain-free in the follow-up and about the same amount didn’t use alternative therapies after completed therapy with bisphosphonates (e.g. regular use of analgetics, operation, local infiltration). However, there was no significant correlation between pain and radiological findings.

Conclusions: Patients with bone marrow edema of the knee profitted from administration of bisphosphonates independently of the severity showed in MRI.

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Necrotizing pneumonia due to macrolide resistant Mycoplasma pneumoniae in an adult
Lara Muralt1, Sieghart Filippi2, Markus Hofer2, Urs Karrer3, Peter Balmer1
1Kantonsspital Winterthur, Innere Medizin, 2Kantonsspital Winterthur, Klinik für Pneumologie, 3Kantonsspital Winterthur, Klinik für Infektiologie, Winterthur, Switzerland

Learning objective(s): Mycoplasma pneumoniae is responsible for about 4 to 8% of community-acquired bacterial pneumonias. Usually, the infections follow a rather mild clinical course even in the absence of an antibiotic therapy. Severe necrotizing pneumonia has been described as a rare manifestation of M. pneumoniae infection in children but not in adults.

Case report: A 46-year old woman presented with productive cough, low grade fever and chills since 7 days without improvement despite the treatment with cefuroxim per os for 4 days. Clinically rales were still present in the basal section of the left lung. Routine blood tests were normal besides a c-reactive protein (CRP) of 114 mg/L. The CT-scan of the lung demonstrated an infiltrate in the left inferior lobe. Suspecting a bacterial pneumonia, we intensified antibiotic therapy with amoxicillin/clavulanic acid iv. and clarithromycin per os, which was stopped after legionella was tested negative. The patient was discharged after some clinical improvement. However, 9 days later she presented again with persistent cough, fever and pleuritic chest pain. The repeat CT-scan showed a dense infiltrate with abscess formation (figure 1). Polymerase chain reaction (PCR) of the bronchoalvelar lavage was positive for mycoplasma and molecular resistance testing indicated a macrolide resistance. Therefore, the patient was treated with oral doxycycline for 17 days, which finally led to definitive clinical and radiological improvement.

Discussion: 1) Invasive diagnostics with bronchoscopy and BAL followed by molecular microbiology should be considered in patients with severe CAP not responding to appropriate empiric therapy.

2) Macrolide resistance is increasingly prevalent in M. pneumoniae in Switzerland approaching 10% of clinical isolates. Therefore, molecular resistance testing or targeted treatment with doxycycline are options for rational management.

3) Also in adults severe, necrotizing pneumonia may be caused by M. pneumoniae.
Discussion: was initiated and the patient is followed by regular surveillance. Approximately 10% of all amyloidosis present with a localized form, most frequently from the AL type. However, extremely rare and the prognosis is excellent. A strategy consists usually in regular surveillance and local measures like patients, no other underlying disease can be detected. The treatment of the lung was performed for thoracic pain and multiple disseminated lung nodules were detected. Back in Switzerland, a diagnostic bronchoscopy was performed and astonishingly, amyloidosis from type AL kappa was demonstrated by immunohistology. Further diagnostic evaluation including bone marrow biopsy, panendoscopy and a complete CT scan did not demonstrate any systemic lymphoproliferative disorder or disease progression during the last 12 months. The role of lupus erythematodes in the development of amyloidosis remains unclear. No specific treatment is initiated and the patient is followed by regular surveillance.

Case report: Here we report the case of a 55 year old woman of Chinese origin living in Switzerland for more than 20 years. She was known to have lupus erythematoses for several years and was treated with chloroquine with no disease activity. While travelling in China, a CT scan of the lung was performed for thoracic pain and multiple disseminated lung nodules were detected. Back in Switzerland, a diagnostic bronchoscopy was performed and astonishingly, amyloidosis from type AL kappa was detected by immunohistology. Further diagnostic evaluation including bone marrow biopsy, panendoscopy and a complete CT scan did not demonstrate any systemic lymphoproliferative disorder or disease progression during the last 12 months. The role of lupus erythematoses in the development of amyloidosis remains unclear. No specific treatment is initiated and the patient is followed by regular surveillance.

Learning objective: Nodular pulmonary amyloidosis is a rare localized form of amyloidosis and is mostly associated with immunoglobulin light chains (AL type). The most common underlying diseases are marginal zone lymphomas (e.g. MALT lymphoma) and autoimmune disorders, but in 1/3 of all cases no other condition can be identified. Careful surveillance and selected local therapies are the treatment of choice.

Case report: Here we report the case of a 55 year old woman of Chinese origin living in Switzerland for more than 20 years. She was known to have lupus erythematoses for several years and was treated with chloroquine with no disease activity. While travelling in China, a CT scan of the lung was performed for thoracic pain and multiple disseminated lung nodules were detected. Back in Switzerland, a diagnostic bronchoscopy was performed and astonishingly, amyloidosis from type AL kappa was detected by immunohistology. Further diagnostic evaluation including bone marrow biopsy, panendoscopy and a complete CT scan did not demonstrate any systemic lymphoproliferative disorder or disease progression during the last 12 months. The role of lupus erythematoses in the development of amyloidosis remains unclear. No specific treatment is initiated and the patient is followed by regular surveillance.

Discussion: Amyloidosis is usually a systemic disease with the deposition of misfolded proteins, most frequently from the AL type. However, approximately 10% of all amyloidosis present with a localized form, most often in the respiratory and urogenital tract or the skin. The amyloidogenic protein is usually deposited at the site of production and most patients are asymptomatic. In one third of all patients an autoimmune disorder can be detected, while another third are diagnosed with a lymphoproliferative disease, mostly MALT lymphoma. However, in one third of the patients, no other underlying disease can be detected. The treatment strategy consists usually in regular surveillance and local measures like surgical excision or radiotherapy. Progression of the disease is extremely rare and the prognosis is excellent.

The NEW CATCH-Project: a new curriculum for attendings in internal medicine in Switzerland (CH)
Katharina Gut-Fischer1, Petra Ferrari Pedrini1, Annett Ehrentraut1, Veronika Gerhards1, Nadine Meyer1, Jana Efe1, Jürg H. Beer1,2
1Cantonal Hospital Baden, Department of Internal Medicine, Baden, 2University Hospital of Zürich, Molecular Cardiology, Zürich, Switzerland

Introduction: There is a general and increasing unmet need for well trained and experienced attendings in internal hospital medicine including emergency medicine while attractiveness and appreciation appear to decline given the demanding workload including frequent night and weekend shifts. The aim of our study was 1) to show the increasing case load and case complexity which our attendings are exposed to and 2) to generate pilot data for our structured, modular educational program for attending internists. 3) a first quality rating of the curriculum was obtained from 13 attendings on a Likert scale.

Methods: This study was conducted within a Department of Internal medicine of a 400-bed Swiss teaching hospital affiliated with the University of Zürich. To achieve aim 1: we have analyzed the number of hospitalized internal medicine patients on the wards and in the emergency room (ER), the case complexity (CMI) and the mean length of stay (LOS) for a period of 9 years from 2010 to 2018 and transformed them into a patient-exposure index per attending (APEX). For aim 2, we have established an individualized modular educational curriculum which appears equally attractive for our future attendings in training as well as for the institution, since it should attract high quality medical leaders and teachers.

Results: Fig1 depicts the inpatient data over the observed period of time from 2010 to 2018. The patient number in the ER increased by 45% from 9362 to 13'500. In-patient numbers on the ward went from 4894 to 6214 (+27%). The APEX on the ward increased from 1224 to 1554 patients per attending per year, whilst the LOS decreased from 8.8 days to 7.9 days and the CMI (case complexity index) increased from 0.976 to 1.147.

Fig. 2 depicts the educational program in a concise structure which can be maximally individualized. Cornerstones include the first year as a common core curriculum, followed by specific modules of emergency medicine, CTU, ICU, ultrasound, specialties, experience abroad, etc. The curriculum was extremely well rated by our attendings with a score of 8.9 on a Likert scale from 1 to 10 (SD 1.44).

Conclusions: 1) Our attendings are exposed to a higher number and more complex patients over time. 2) The new educational concept may attract more well qualified future attendings in internal medicine.
Serum Acyl Carnitines (ACs), a biomarker of beta oxidation and energy metabolism, have been associated with risk for cardiovascular events. We evaluated the association of 39 AC species with outcomes in a well-characterised cohort of OHCA patients.

Methods: Adult OHCA patients were included in this prospective observational study upon intensive care unit (ICU) admission. ACs were measured using mass spectrometry at admission. The primary endpoint was 30-day-mortality. The secondary endpoint was neurological outcome using Cerebral Performance Category (CPC) scale.

Results: A total of 180 patients were included. 5 patients were lost to follow-up. 97 (55.4%) died after 30 days of admission and at hospital discharge 105 (58.3%) suffered from a bad neurological outcome. While most ACs were associated with the primary and secondary endpoint, the highest prognostic information was derived from AC C5DCC6OH with area under curve (AUC) of 0.71. After adjusting for age, gender and comorbidities, it remained a strong predictor for outcomes with AUC 0.82.

Conclusion: The ACs have high potential to predict outcome in patients after OHCA and may help to improve the pathophysiological mechanism behind this severe event. Serum ACs measured at admission may provide additional prognostic information with high potential to predict long-term mortality and functional outcome in OHCA patients.
Invasive pulmonary aspergillosis and neutropenic sepsis. Due to unfavorable progression, therapy was escalated to liposomal amphotericin B and meropenem. Unfortunately, 5 weeks after admission the patient died and autopsy of the lungs established the diagnosis of disseminated angioinvasive pulmonary mucormycosis and aspergillosis.

**Discussion:** Pulmonary mucormycosis is increasingly diagnosed over the past years. Especially patients with hematologic malignancies and concomitant neutropenia, poorly controlled diabetes, high-dose steroid therapy and a history of transplantation are at risk. Diagnosis is primarily based on histopathology. Galactomannan and beta-D-glucan tests are generally negative and in the bronchoalveolar lavage the typical hyphae of mucormycosis can be found in only 25%. Clinical discrimination between pulmonary mucormycosis and invasive pulmonary aspergillosis remains a challenge; indicators of the former are a previous prophylaxis or ineffective therapy with voriconazole, the inverse halob sign, cavum without a sickle sign, pleural effusions, and >10 pulmonary noduli. Our case illustrates that a) a high index of suspicion for mucormycosis in risk populations is required, b) further research on serum markers of mucormycosis is necessary and c) autopsy remains an important tool for quality control.

**P137**

Rolle der Hausarztpraxis bei einem Grossereignis mit einem Massenfall von Verletzten

Rommel Jadaan

PMO'S Praxis Mall of Switzerland-Academy, MedCenter, Eikon, Switzerland

**Ziel:** Entlastung der Notfallstation und Spitäler bei einem Grossereignis mit einem Massenfall von Verletzten durch ein Netzwerk von Hausarztpraxen die die Betreuung von Patienten der Triagekategorien GRÜN (T3,III) und GELB (T2,II) übernehmen.

Nach der präklinischen Triage (Sichtung) die bei einem Grossereignis mit einem Massenfall von Verletzten durch vom Rettungsdienst durchgeführt wird, werden die Patienten der unterschiedlichen Triage-Sichtungskategorien Spitälen der Umgebung zugute und abtransportiert. Eine Grundstrategie bei der Verteilung dieser Patienten besteht darin die am Schadensort geographisch nächsten bzw. durch die Transportmittel am einfachsten zu erreichten Spitäler für die Kategorie ROT Patienten (sofortiger Handlungsbedarf - Dringender Handlungsbedarf - Übergewicht - Urgent) freizu halten und in zweiter Linie für die Kategorie GELB-Patienten (Dringender Handlungsbedarf - Überwachung - Urgent).

Es müssen diese dem Grossereignis "nahen" Spitäler auf keinen Fall durch die GRÜN-kategorisierten Pat. (nicht dringend) "vorzeitig besetzt bzw. überfüllt" werden, weil dies mit dem Eintreffen von Patienten einer kritischen Kategorie (ROT und GELB) die Infrastruktur und personellen Ressourcen einer Notfallstation sprengen können. Da Hausarztpraxen im Territorium der Gemeinden gut verteilt sind, können sie eine entscheidende Rolle spielen um die Spitäler zu entlasten in dem sie anhand ihrer jeweiligen technischen - (Geräte) und Personellen (Fachgebiete und Erfahrung) - Infrastruktur, GRÜN kategorisierte und ev. auch Kategorie GELB Patienten (abhängig von dem Verletzungsbzw. Krankheitsmuster) betreuen. Da gerade die Kategorie GRÜN Patienten (Leichtverletzte), noch mobil sind, können sie sich individuell und „auf eigene Faust“ in die nächste medizinischen Betreuung begeben, was normalerweise in einem Grossereignis das Spital ist.

Obwohl vielen Patienten dieser Kategorie GRÜN bewusst ist dass sie auch bei ihrem Hausarzt, Apotheke oder auch in manchen Fällen sogar Alleine manche kleine Verletzungen beheben können, fühlen sie sich psychologisch durch die Wucht und Intensität des Ereignisses sehr betroffen und schätzen subjektiv ihre Übertragung überproportional „schlimmer“ ein. Interessierte Hausärzte und MPAs können in diesem Bereich fortgebildet werden; ihre Praxen werden dementsprechend gekennzeichnet und an der EinsatzNotruZentrale der 144 bekannt gegeben damit sie nach Alarmierung und Anmeldung durch den Rettungsdienst bei einem Grossereignis angefahren werden können.

**P138**

An enteric souvenir from India

Noëlle Salome Eliza Moser-van der Geest1, Adrian Schibli2, Lars Christian Huber1

1Klinik für Innere Medizin, Department Innere Medizin, Stadtspital Triemli, Abteilung für Infektiologie, Department Innere Medizin, Stadtspital Triemli, Zürich, Switzerland

**Ankereignis:** Erklären Sie am Beispiel der Mukormykose die Bedeutung der Autopsie in den Folgen einer tödlichen Erkrankung.

**Illustration 1.**

Pulmonary mucormycosis and aspergillosis: a diagnostic challenge

Kevin David Hofer1, Nina Durisch1, Lorenz Buser2, Martina Haberecker2, Esther Brigitta Bächli1

1Spital Uster, Klinik für Innere Medizin, Uster, 2Universitätsspital Zürich, Institut für Pathologie und Molekularpathologie, Zürich, Switzerland

**Learning objective:** Recognize indicators and limitations of diagnostic work-up for pulmonary mucormycosis in patients at risk for this life-threatening fungal infection. Appreciate the importance of autopsy studies to gain insight in this disease.

**Case:** A 67-year-old man presented with fever and malaise. He was diagnosed 6 years earlier with myelodysplastic syndrome with excessive blasts (MDS-EB-1) and required regular transfusions for anemia and thrombocytopenia. A previous trial of azacitidine was not tolerated. On admission, the patient had a high output of blood and mucus, pleural effusions, and >10 pulmonary noduli. Our diagnostic procedures were not possible due to bleeding and plateau count. Voriconazole was initiated with cefepime for suspected
Learning objectives:
Thyphoid fever is a common tropical febrile illness
Typical clinical presentation includes fever, abdominal pain, relative bradycardia and eosinopenia
Diagnosis by blood cultures and specific antibiotic therapy
Case: A 58-year old woman was referred to our emergency department with a history of headache, fever up to 39°C and reduced general condition over the last days. Medical history was unremarkable; but the patient had returned from a trip to India 18 days ago. The travel conditions had been rather basic. Malaria prophylaxis and preventive measures against mosquito bites were denied. During the trip, the patient had self-limiting diarrhoea for about 10 days. On admission to our ED the patient was found in a reduced condition. Vital signs and physical examination were unremarkable. Laboratory tests showed elevated levels of C-reactive protein (259mg/l), blood creatine, conjunctivitis, myalgia and headache) were less frequent in cases. PTA (peritonsillar abscess) are more common than immunological complications and their incidence can be lowered by the use of antibiotics. The performance of clinical scores such as the Centor score and of laboratory tests such as C-reactive protein (CRP) to assess the risk of PTA in GAS negative tonsillitis remain unclear.
The aim of this study was to identify risk factors for development of PTA in acute GAS negative tonsillitis and to test the performance of existing clinical scores and laboratory tests to identify patients at risk for PTA in GAS negative tonsillitis.

Conclusions:
A clinical score to predict PTA as a complication of GAS negative tonsillitis might include absence of symptoms of the common cold, presence of symptoms typical for PTA, unilateral symptoms and low temperature.

P139
The risk of peritonsillar abscess in group a streptococcus negative tonsillitis - a case-control study
Lia Helfenberger, Roland Fischer, Stephanie Giezendanner, Andreas Zeller
Universitätsklinikum für Hausärztmedizin beider Basel, Liestal, Switzerland
Introduction: Clinical guidelines recommend against prescription of antibiotics for Group A β-hemolytic streptococcus (GAS) negative tonsillitis. Suppurative complications from tonsillitis such as peritonsillar abscess (PTA) are more common than immunological complications and their incidence can be lowered by the use of antibiotics. The performance of clinical scores such as the Centor score and of laboratory tests such as C-reactive protein (CRP) to assess the risk of PTA in GAS negative tonsillitis remain unclear.
The aim of this study was to identify risk factors for development of PTA in acute GAS negative tonsillitis and to test the performance of existing clinical scores and laboratory tests to identify patients at risk for PTA in the setting of acute GAS negative tonsillitis.
Methods: In a retrospective case-control study, we identified all cases with peritonsillar abscesses at two regional hospitals in Northwestern Switzerland from January 2015 to June 2018. We used propensity score matching using age, gender and date of presentation to select 2 controls per case from all patients who had a rapid antigen GAS test in the emergency room. Exclusion criteria were age <18 years, negative consent and positive test for GAS. We abstracted data including age, gender, patient history, physical examination and results of laboratory testing.
Results: Preliminary results are shown in table 1. We identified 141 cases of PTA, matched with 282 controls. The Centor score was significantly higher in cases, but had a low performance for predicting PTA (see ROC curve in figure 1). Symptoms of the common cold (cough, conjunctivitis, myalgia and headache) were less frequent in cases. The presence of classical symptoms of PTA (difficulty swallowing, trismus and dysphagia), unilateral signs and symptoms (unilateral sore throat, earache, headache and swelling), tonsillar hyperplasia, tonsillar exudate and cervical and abdominal pain were more frequent in cases. Cases had higher CRP levels, leucocyte, granulocyte, monocyte and platelet counts than controls (see ROC curves in figure 1).

P140
An unexpected risk factor for tuberculosis: a case report
Alexandra Kundiyr, Nina Duris, Esther Bächli Spital Uster, Innere Medizin, Uster, Switzerland
Learning objectives: This case report intends to awaken physicians to an unusual but possibly underestimated risk factor for tuberculosis in healthy young people: Smoking water pipe.
Case: An otherwise healthy 20-year old man presented with a two month history of cough and hemoptysis with subfebrile temperatures. The patient’s medical history was unremarkable and he is originally Swiss. On admission, the physical examination was except from slightly elevated temperature normal. The chest x-ray showed a probable infiltrate in the left anterior lobe which was confirmed in the computed tomography as multiple caverns, highly suspicious of pulmonary tuberculosis. Eventually, the sputum PCR and culture determined Mycobacterium tuberculosis with a low level Isoniazid monoresistance. In this healthy young man, initially, no typical risk factors for tuberculosis could be found. He had no travel history, no exposure to tuberculosis and there were no implications for immunosuppression. However, it turned out that the patient used to smoke water pipe regularly, which we considered the major risk factor in our case. As can be found in literature, the practice of sharing a water pipe can result into the spread and transmission of the disease. The patient was discharged from hospital with Rifampicin, Isoniazid, Pyrazinamid and Ethambutol for two months and Isoniazid, Rifampicin and, because of the low level Isoniazid monoresistance, additionally with Moxifloxacin for four more months. Daily-observed therapy in collaboration with the family doctor and the pharmacy took place.
No other active tuberculosis cases were found by contact investigations, conducted by the Lungenliga and the hospital hygiene team.

**Discussion:** This case emphasizes that water pipe smoking might be an additional risk factor for tuberculosis. Asking about smoking water pipe should be part of the anamnesis, especially, if tuberculosis is suspected.

### P141

**Chologenic diarrhea - a case of chronic diarrhea after ileum resection**

**Anita Joos,** May Ruthlin, Peter E. Ballmer

*1Ernährungstherapie-beratung, 2Kantonsspital Winterthur, Departement Medizin, Innere Medizin, Winterthur, Switzerland*

**Case:** We present an 87-year-old patient with a moderately differentiated neuroendocrine tumor of the small intestine who was admitted to our hospital. The patient had a history of imperative defecation and diarrhea since a right-sided hemicolectomy including a resection of 80 cm terminal ileum in 2015. Despite the tinkture opii (4 to 5 x 10 drops a day) and octreotide (30 mg subcutaneously per month), he had five to six daily watery stools shortly after food intake. The diarrhea was even worse after intake of food rich in fat and protein. He presented with an unintentional loss of 7 kg of body weight during a time period of 1 year. Because of the history of ileum resection, chologenic diarrhea (CD) was considered and a treatment with cholestyramine (Quantalan®) was started with a dose of 2 x 2 grams (morning and evening) per day. Shortly after cholestyramine was initiated the patient reported formed stool consistency. Five days later he even complained symptoms of constipation.

**Discussion:** Secondary CD, also called «bile acid diarrhea», may occur in different conditions, e.g. after ileum or gall bladder resection or in different diseases with malabsorption such as inflammatory bowel disease. The leading symptom is chronic watery diarrhea. Severe CD eventually leads to steatorrhea. In the present case treatment with the bile acid sequestrant cholestyramine immediately stopped the diarrhea with lasting effect.

**Learning Objectives:** Ileum resection of 30 to 100 may lead to CD, whereas a resection of more than 100 cm additionally leads to steatorrhea. Bile acids increase colonic motility, cause water and electrolyte secretion in the colon, thereby increasing transit time of faeces resulting in diarrhoea, i.e. osmotic diarrhoea. Cholestyramine, a bile acid binder (sequestrant), is very effective in reducing CD. However, to avoid gastroentero-testinal side effects such as flatulence, nausea, vomiting and fullness the drug has to be dosed carefully.

**Literature:**

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### P142

**A pseudoaneurysm of the cystic artery as a rare cause of haemobilia, a case report**

**Nicolas Güttler,** Stephan Moser, Michael Ochoth

*University Hospital Basel, Division of Internal Medicine, Basel, Switzerland*

**Learning Objectives:** Gastrointestinal (GI) bleeding is a common problem in hospitalized patients and a variety of diseases has to be considered. Upper GI bleeding from a biliary source is usually associated with a surgical or endoscopic procedure, whereas haemobilia as a result of a cystic artery pseudoaneurysm is rare. In patients presenting with epigastric pain, jaundice and GI bleeding (Quincke’s triad) a bleeding biliary source should be actively sought. Computer tomography (CT) angiography remains a preferred method of investigation, as it is easily available and noninvasive.

**Case:** A 75-year old male patient was admitted for the treatment of postherpetic neuralgia. On day four, he spiked a fever, and blood cultures were positive for Klebsiella pneumoniae. A MRI scan showed a 3cm liver abscess and multiple common bile duct stones. The patient was started on ceftriaxone followed by a sonographic guided drainage of the liver abscess and an ERCP with stone extraction. Four days later, he was switched to oral ciprofloxacin and discharged. Only four hours later, he suddenly developed severe abdominal pain in the right upper quadrant, which was followed by massive rectal bleeding. On presentation in the emergency department, laboratory findings were significant for a substantial drop in the hemoglobin (from 138 g/L to 93 g/L) and markedly elevated liver function tests with a mixed hepatobiliary injury pattern.

(IST 1068 U/L, GGT 1270 U/L). A CT scan demonstrated a small residual liver abscess. A bleeding source was not evident on gastroscopy. Due to the markedly elevated liver function tests, the abdominal pain and the bleeding of unknown origin, we suspected a biliary bleeding as a complication of the liver abscess.

A repeat CT scan with angiography confirmed the presence of an aneu-rysm of the cystic artery with evidence of bleeding into the gallbladder and the common bile duct. (Fig 1) In order to prevent repetitive bleedings, a laparoscopic cholecystectomy was performed some days later. Histopathology was consistent with chronic cholecystitis and a mural hema-toxa. Ciprofloxacin was continued as treatment for the liver abscess for three more weeks.

**Discussion:** Haemobilia due to a bleeding cystic artery pseudoaneu-rysms is rare and associated with trauma and infection. Clinicians need a high index of suspicion in particular in the presence of GI bleeding, abdominal pain and elevated liver function tests. Treatment may consist of arterial embolization or surgery.
Seasonality of hyponatremia in hospitalized medical patients - data from a nationwide cohort study

Clara Sailer1, Alexander Kutz1, Fahim Ebrahimi1, Ulrich Wagner2, Philipp Schuetz2, Beat Mueller2, Mirjam Christ-Crain3
1University Hospital Basel, Division of Endocrinology, Diabetes, and Metabolism, Basel, 2Swiss Federal Office for Statistics, Division of Health and Social Affairs, Section Health, Neuchâtel, 3University Department of Medicine, Kantonsspital Aarau, Division of Endocrinology, Diabetes, and Metabolism, Aarau, Switzerland

Introduction: Hyponatremia is the most prevalent electrolyte disturbance in hospitalized patients. Seasonal variation with higher incidence of profound hyponatremia during summer months has been described for patients in the emergency department setting. Whether this observation is also true among hospitalized medical is unknown. We therefore analyzed the seasonal in-hospital incidence of hyponatremia and explored sex and age specific differences.

Methods: In this nationwide cohort study, we analyzed medical inpatients with hyponatremia diagnosed between January 2009 and December 2015 using prospective administrative data. The primary outcome was the monthly alteration in in-hospital hyponatremia incidence. Secondary outcomes were the impact of the outdoor temperature on hyponatremia incidence and differences among sex and age groups.

Results: Of the 2,426,722 medical patients included in this study, 84,210 (3.5%) were diagnosed with hyponatremia with a 61% (n = 51,262) incidence in females. While we found the highest overall incidence of hyponatremia in July (9.2%), it was lowest in December (5.5%). Whereas the overall incidence of in-hospital hyponatremia was lower by 37% (OR 0.63 [95 CI 0.62 to 0.64]) in men compared to women, it was most reduced in the warmest (mean temperature 20.1°C) month of July (OR 0.57 [95 CI 0.54 to 0.59]). The association between seasonality and hyponatremia was even stronger in older female inpatients admitted during summer.

Conclusions: The incidence of diagnosis of hyponatremia in medical inpatients increases during warm summer months. Associations were most pronounced in women and elderly inpatients.

Prevalence and management of chronic insomnia in Swiss primary care: evidence from the Sentinelia practice-based research network

Micheline Maire1, Stefanie Linder1, Charles Dvořák2, Christoph Merlo2, Stefan Essig1, Kali Tal1, Cinzia Del Giovane1, Simone Duss1, Raphael Heinzer1, Christoph Nissen3, Claudio L Bassetti4, Reto Auer1,7
1Berner Institut für Hausarztmedizin (BIHAM), 2Sentinella Network, Bern, 3Institut für primär- und Gemeinde- medizinpraxis, Winterthur, Switzerland

Learning objective: Soft tissue infections due to Mycobacterium (M.) marinum are uncommon. History of a trauma, contact to a fish tank and lack of response to empiric antibiotic therapy should raise awareness.

Case: We report two cases of fish tank granuloma in immunocompetent patients.

Patient 1 - a 36-year old man - presented with multiple abscesses on his right hand and forearm weeks after a deep cut to his right small finger. Despite successive antibiotic treatment trials with amoxicillin/clavulanic acid, clindamycin and trimethoprim/sulfamethoxazole and surgical incision and suction infection was progressive with formation of multiple new abscesses along the patient’s forearm.

Patient 2 - a 34-year old man - reported a persisting wound for two months after a cut injury to his left index finger with development of additional papules on the back of his hand despite antibiotic therapy with amoxicillin/clavulanic acid. On physical examination, both patients had a hardened erythematous plaque on the dorsum of the injured finger and further ascending lesions showing a sporotrichoid distribution along the respective lymphoid drainage. On specific interrogation, both patients reported to take care of fish tanks. Skin biopsies demonstrated necrotizing granulomatous inflammation without acid-fast bacilli. Based on history, clinical presentation and histopathological findings we diagnosed fish tank granuloma and initiated combination therapy with rifampicin, clarithromycin and ethambutol. Mucocutaneous culture remained negative in patient 1 but became positive after 4 weeks with Mycobacterium marinum in patient 2. Ethambutol was stopped after clinical response was obvious and treatment was continued for a total of 6 months in patient 1 and 3 months in patient 2 according to the severity and extent of their disease. Both patient made a full recovery with some remaining scars.

Discussion: M. marinum is an environmental mycobacterium that lives in aquatic environments causing ‘tuberculosis’ of the zebra fish. Occasionally, it may cause granulomatous skin and soft tissue infections in humans, called fish tank granuloma. Diagnosis is based on clinical presentation, history of exposure, histopathology and detection of mycobacteria by culture or PCR. Treatment, based on expert opinion, usually comprises 2-3 active drugs (most often rifampicin, macrolide and/or ethambutol) for 3-6 months until resolution of symptoms.

FOREI - golf holidays may be dangerous

Lisa Spitzer, Urs Karrer, Kyoshi Sugimoto
Medizinische Poliklinik und Infektiologie Kantonsspital Winterthur, Winterthur, Switzerland

Learning objective: Cutaneous leishmaniasis - transmitted by female sand flies - is the most common form of Leishmania infection. Old World leishmaniasis is endemic in countries bordering the Mediterranean Sea.
The booming travel industry and refugee migration have led to an increased number of sporadic cases of cutaneous leishmaniasis in non-endemic areas.

**Case:** A 57-year-old patient detected a skin lesion on his right shoulder a few weeks after returning from a golf vacation in Mallorca. The initial lesion appeared as a small nodule but grew considerably in the following months. On admission, the patient was in excellent general health without fever, weight loss or night sweat. Physical examination including local lymph nodes and spleen size was normal besides a solitary oval plaque of 6x3cm with a slight central cavity on erythematous surface located on the right shoulder (Figure 1).

**Discussion:** Human leishmaniasis should be subdivided in visceral, mucosal and cutaneous forms to guide intensity and form of treatment. However, a clear differentiation may sometimes be difficult due to geographical and clinical overlap. Cellular immunocompetence is critical to prevent spreading of localized (cutaneous) infection to visceral organs. Diagnosis of leishmaniasis is confirmed by detection of parasites in smear specimens or biopsies of skin, lymph node, bone marrow, spleen or cerebrospinal fluid. Today, Leishmania-specific PCR is the most sensitive specific detection method. Serology is useful for visceral disease but mostly negative in localized infection.

**Table 1. Laboratory data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Patient</th>
<th>Reference values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin</td>
<td>153 g/L</td>
<td>135-172 g/L</td>
</tr>
<tr>
<td>Leucocyte count</td>
<td>9.0 G/L</td>
<td>3.9-10.2 G/L</td>
</tr>
<tr>
<td>Platelet count</td>
<td>158 G/L</td>
<td>150-370 G/L</td>
</tr>
<tr>
<td>Aspartatinaminotransferase</td>
<td>55 U/L</td>
<td>0.55 U/L</td>
</tr>
<tr>
<td>Gamma glutamyltransferase</td>
<td>69 U/L</td>
<td>&lt;60 U/L</td>
</tr>
<tr>
<td>Lactate dehydrogenase</td>
<td>168 U/L</td>
<td>0.250 U/L</td>
</tr>
<tr>
<td>Creatinine</td>
<td>82 µmol/L</td>
<td>58-104 µmol/L</td>
</tr>
<tr>
<td>C-reactive Protein</td>
<td>2.7 mg/L</td>
<td>0.00-5.0 mg/L</td>
</tr>
<tr>
<td>High sensitive Troponin T</td>
<td>&lt;3.0 ng/mL</td>
<td>0.00-14.0 ng/mL</td>
</tr>
<tr>
<td>D-Dimers</td>
<td>0.63 µg/L</td>
<td>0.00-0.50 µg/L</td>
</tr>
</tbody>
</table>

**Reference:**

We diagnosed an atraumatic splenic rupture. Without any intervention, the patient stayed hemodynamically stable, and a conservative treatment strategy with intensive care was carried out. Serology showed past Epstein-Barr virus infection. The patient was dismissed from the hospital two days after the splenic rupture without any complications. On the day of discharge, a contrast enhanced ultrasound located the source of bleeding in the mid-part of the spleen without any sign of active bleeding. Unfortunately, the patient was lost to follow-up.

**Discussion:** Atraumatic splenic rupture is rare. The main reasons for atraumatic splenic ruptures are due to infection (e.g. EBV) or neoplasia. Splenic rupture with hematoma is an uncommon but severe complication in patients using cocaine. In patients consuming cocaine presenting with thoracic or abdominal pain, a splenic rupture must be ruled out. Misjudgement of the clinical situation (i.e. ischemia or embolism) would lead to a deleterious situation. Finally, in the present case, conservative treatment was possible.
Hippocratic fingers in a patient with recurrent pneumonia

Matthias Diebold, Sabine Kuster, Michael Osthoff

Universitätsspital Basel, Innere Medizin, Basel, Switzerland

Learning objectives: Clubbing is an old clinical sign which is associated with a number of diseases. Its detection in a patient should prompt further diagnostic steps to detect the underlying etiology.

Case report: A 41-year old man with recurrent pulmonary infections was evaluated at our hospital after a computer tomography scan (CT scan) obtained by his family doctor showed a cavitating right upper lobe lesion.

The patient reported a chronic cough accompanied by a weakness for 4 months. Pulmonary auscultation was significant for rales in the right upper lobe. Of note, the inspection of his hands showed the typical signs of clubbing with an increased angle of the nail projections from the nail bed and an increased interphalangeal depth.

An unresolved but successfully treated case of macrophage activation syndrome

Salome Schiesser1, Miriam Hofmann1, Reinhard Imoberdorf1, Sabrina Gfeller1, Jeroen Goede2, Urs Karrer2
1Department of Medicine, Kantonsspital Winterthur, 2Department of Hematology, Kantonsspital Winterthur, 3Department of Infectiology, Kantonsspital Winterthur, Winterthur, Switzerland

Learning objective: The macrophage activation syndrome (MAS), an often life-threatening condition, is based on an uncontrolled inflammatory followed by an overproduction of inflammatory cytokines which leads to an excessive activation of macrophages. Primary (genetic) forms are differentiated from various secondary forms that are most often triggered by viral and other infections, hematologic neoplasms and autoimmune diseases.

Diagnosis in adult patients follows the HScore. It was elaborated 2014 by Fardet et al. to replace the HLH-2004 Criteria for MAS in pediatric patients that was used in adults to date.

Considering MAS in any febrile patient with hepatosplenomegaly and typical laboratory findings (hyperferritinemia, bi- or pancytopenia, hypertriglyceridemia, hypofibrinogenemia) can promote early diagnosis which is crucial for timely treatment.

Case: A 53-year-old Portuguese man with known arterial hypertension presented himself to the emergency department because of abdominal pain sustained for several hours.

Physical examination revealed tachycardia and tenderness of the right upper abdomen without fever. A severe hepatopathy with elevated transaminases and cholestasis parameters, progressive pancytopenia and subsequent splenomegaly were found. The exceptionally elevated ferritin (311 905ng/ml) and high triglycerides lead to the diagnosis. MAS was confirmed with 220 points in HScore (96% probability of having MAS), even though no typical hemophagocytosis could be found in the bone marrow cytology.

Despite extensive investigations including anamnesis for triggering medication or intoxication, chest and abdomen CT Scan, MRI of the brain, blood and urin cultivation, testing for tuberculosis, for viral diseases such as HIV, acute Hepatitis, HSV, CMV, EBV, VZV, Parvovirus and other pathogens (Leishmania, T. pallidum, B. henselae, C. burnetii, F. tularemia, Leptospirosis, T. gondii), and screening for autoimmune diseases no possible etiology could be found.

A treatment with intravenous methylprednisolone (1g/day) that was initiated on the second day of admission and was followed by a tapering regime of oral glucocorticoids showed a rapid effect. After 9 weeks the steroid therapy could be stopped and the patient went on his planned holidays to Portugal.

Discussion: An immediate start of therapy is associated with a higher success of therapy. Because no reversible related cause could be found this patient is thought to be at a higher risk of relapse.
A rare sonographic finding: latticed pancreatic ascites
Katharina Gelling1, Alexander Pöllinger2, Vanessa Schuler1, Baumgartner Christine1
1Klinik für Allgemeine Innere Medizin, 2Inseelspital, Bern University Hospital, University of Bern, Institut für Diagnostische, Interventionelle und Pädiatrische Radiologie, Bern, Switzerland

Learning objective: recognizing a unique sonographic manifestation of pancreatic ascites as a rare complication of pancreatitis

Case: A 53-year-old man with a history of alcohol abuse presented with weight loss and epigastric pain. Physical examination revealed diffuse abdominal tenderness with guarding. Lab tests showed elevated lipase and CRP. Abdominal CT demonstrated a diffusely enlarged pancreas, multiple pre-existing pancreatic cysts, calcifications and small amounts of intra-abdominal fluid. A diagnosis of alcohol-induced acute-on-chronic pancreatitis was made; hydration and analgesics were established. Abdominal ultrasound on hospitalization day 28 revealed four-quadrant ascites without special features. Paracentesis confirmed spontaneous bacterial peritonitis that was treated with targeted antibiotics. Neither ascitic fluid cytology nor ultrasound revealed any specific cause of ascites.

Learning objective: recognizing a unique sonographic manifestation of pancreatic ascites as a rare complication of pancreatitis

Case: A 53-year-old man with a history of alcohol abuse presented with weight loss and epigastric pain. Physical examination revealed diffuse abdominal tenderness with guarding. Lab tests showed elevated lipase and CRP. Abdominal CT demonstrated a diffusely enlarged pancreas, multiple pre-existing pancreatic cysts, calcifications and small amounts of intra-abdominal fluid. A diagnosis of alcohol-induced acute-on-chronic pancreatitis was made; hydration and analgesics were established. Abdominal ultrasound on hospitalization day 28 revealed four-quadrant ascites without special features. Paracentesis confirmed spontaneous bacterial peritonitis that was treated with targeted antibiotics. Neither ascitic fluid cytology nor ultrasound revealed any specific cause of ascites.
cytology, nor MRI, nor biopsy of a questionable pancreatic lesion four months earlier, revealed malignancy. The hospital stay of the patient was further complicated by three pseudocysts, one of which was drained into the stomach. On the 50th day of hospitalization the patient showed a sudden onset of acute abdominal pain, clinical signs of peritonitis, fever and rising CRP levels. A CT -scan showed peritoneal enhancement, shrinkage of two remaining pseudocysts and large amounts of ascites. Ultrasound revealed multiple septate latticing the ascites into numerous compartments not visualized on CT (see picture 1). Drainage of one compartment revealed 150 ml of clear yellowish liquid containing high amounts of pancreatic enzymes (pancreatic amylase: 417 U/L, lipase: 2274 U/L), a serum -albumin ascites gradient (SAAG) <1.1 g/dL and a total protein level of 58.9 g/L without evidence for malignant cells or microbiological growth, suggestive for pancreatic ascites.

Discussion: This case shows an uncommon form of ascites that was attributed to a leakage of pancreatic fluid into the peritoneal cavity. Pancreatic ascites is a rare complication of pancreatitis that is characterized by amyrase or lipase >3 times the plasma level, and high protein levels in the ascitic fluid, in combination with a SAAG <1.1 g/dL. The occurrence of septae dividing the ascites into numerous compartments not visualized on CT (see picture 1). Drainage of one compartment revealed 150 ml of clear yellowish liquid containing high amounts of pancreatic enzymes (pancreatic amylase: 417 U/L, lipase: 2274 U/L), a serum -albumin ascites gradient (SAAG) <1.1 g/dL and a total protein level of 58.9 g/L without evidence for malignant cells or microbiological growth, suggestive for pancreatic ascites.

[A picture showing latticed pancreatic ascites]

Discussion: This case shows an uncommon form of ascites that was attributed to a leakage of pancreatic fluid into the peritoneal cavity. Pancreatic ascites is a rare complication of pancreatitis that is characterized by amyrase or lipase >3 times the plasma level, and high protein levels in the ascitic fluid, in combination with a SAAG <1.1 g/dL. The occurrence of septae dividing the ascites into numerous compartments not visualized on CT (see picture 1). Drainage of one compartment revealed 150 ml of clear yellowish liquid containing high amounts of pancreatic enzymes (pancreatic amylase: 417 U/L, lipase: 2274 U/L), a serum -albumin ascites gradient (SAAG) <1.1 g/dL and a total protein level of 58.9 g/L without evidence for malignant cells or microbiological growth, suggestive for pancreatic ascites.

P154

Case report: a rare case of dysphagia due to arteria lusoria

Stefan Ruf1, Serguei Martinovitch2, Reinhard Imoberdorf1

1Kantonsspital Winterthur, Departement Medizin, 2Kantonsspital Winterthur, Klinik für Radiologie und Nuklearmedizin, Winterthur, Switzerland

Learning objective: Dysphagia is a common symptom in the general population. While most cases of oropharyngeal dysphagia are of neurologic origin, esophageal dysphagia may imply malignancy and need further investigation. In addition there are rare causes of swallowing disorders. The arteria lusoria is an aberrant right subclavian artery and occurs in about 0.5% to 2.5% of the population. Although in the majority of cases arteria lusoria is an incidental finding, the constitution may lead to swallowing difficulties. In our patient esophagogastrroduodenoscopy showed normal mucosa after bariatric gastric bypass surgery performed in 2011. Computed tomography and endoscopy showed slight compression of the esophagus as a possible cause of the patient's symptoms. According to current recommendations we discussed dietary measures to improve swallowing. In cases of severe esophageal compression vascular reconstruction should be considered.

A case of Whipple's disease in a 58-year-old woman with marked systemic inflammation and a history of seronegative rheumatoid arthritis for more than 10 years

Max Schüremann1, Jürg Vosbeck2, Michael Osthoff3

1Division of Internal Medicine, 2University Hospital Basel, Institute of Pathology, Basel, Switzerland

Learning objectives: Whipple's disease (WD) is a rare, systemic condition, which classically presents with arthralgia, weight loss and diarrhoea. Because of its rarity, there typically is a long delay until diagnosis. We present the case of a 58-year-old woman with an undetermined general inflammation (since ca. 2016), who was ultimately diagnosed with WD.

Case presentation: The patient was referred to our department in September 2018 with elevated inflammatory markers and progressive anaemia. Her chief complaints were progressive weight loss and decreased appetite, as well as recurrent oral aphthos, dysphagia on evolution and intermittent fevers. She denied any diarrhoea or arthralgia. In 2005 she was diagnosed with seronegative rheumatoid arthritis. Her past medical history was also significant for a restrictive pulmonary disorder of unknown aetiology and an episode of polyserositis in 2008. Antirheumatic treatment with biologics was discontinued in 2015 due to drug intolerance, and steroid monotherapy was maintained. Consequently, inflammatory markers were mildly but consistently elevated. In November 2017, markedly elevated C-reactive protein (150-200 mg/l) and neutrophilia (up to 32 G/l) were first noted and persisted over the course of the following year. Abdominal imaging from January and June 2018 was significant for ascites and minimal wall thickening of the colon. In May 2018, histology from upper and lower endoscopies, however, did not disclose any pathology. On admission, physical examination revealed marked peripheral oedema and jugular vein distention. There was no evidence of arthritis. Bone marrow biopsy was consistent with reactive inflammatory changes. 18-FDG PET-CT and abdominal MRI confirmed progressive pancolitis and serositis (Fig. 1).
However, biopsies only revealed a mild inflammatory infiltrate of PAS-positive macrophages in the terminal ileum, judged as non-specific as the *Tropheryma whipplei* PCR was negative. It was not until a *T. whipplei* stool PCR was positive, that the patient was readmitted to hospital. At that point, duodenal biopsies were consistent with WD (Fig. 2), and PCR of cerebrospinal fluid was positive for *T. whipplei*. The patient was started on intravenous penicillin which led to an immediate decrease in inflammatory markers.

**Discussion:** WD should be considered in any patient with a chronic inflammatory state and unclear joint symptoms not responding to disease-modifying antirheumatic drugs.

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**P156**

What shall we do with the drunken sailor- a modern presentation of an ancient disease

Betty Wohlrab1, Thomas Hodel1, Dominique Criblez2, Christoph Henzen1

1Allgemeine Innere Medizin, 2Luzerner Kantonsspital, Gastroenterologie/Hepatologie, Luzern, Switzerland

**Learning objectives:** Scurvy is meant to be a historical disease, however it’s an emerging diagnosis especially in patients with heavy alcohol use. Clinical features and diagnosis of scurvy are discussed.

**Case:** Rare case of a 26-year-old female with a history of alcohol-induced liver cirrhosis and scurvy: The patient was admitted to our hospital because of exacerbating pain caused by hemorrhagic blisters of the feet and tension of the lower limb caused by massive edema. Patient’s history revealed significant alcohol abuse for 13 years in combination with a personality disorder and depression. The main food source was reported to be white bread, beer and rice cakes, but no fruits and vegetables at all over the last years.

On clinical examination multiple subcutaneous hemorrhages of the upper extremities, as well as palpable ecchymosis of the breast without reported adequate trauma could be found. Additional clinical findings were an opportunistic cystitis caused by Proteus mirabilis and Citrobacter freundii, as well as a fulminant genital candidosis with Staphylococcus aureus superinfection. A diagnostic hemostasis workup on presentation and 4 years-earlier, showed no pathological results, except for low Vitamin-K-dependent factors in the most recent evaluation. On day three of admission the patient suffered from gingival bleeding and angular cheilitis, which led to the suspicion of scurvy. The serum Vitamin C level after 3 days of intravenous substitution of 100 mg ascorbic acid per day showed a still low level of 16 umol/L (normal range >26 umol/L). In combination with the distinct clinical features a case of scurvy was confirmed. After a week of intravenous supplementation of Vitamin C symptoms started to improve and oral bleeding as well as limb hemorrhages ceased.
Discussion: Scurvy is a well-known historical disease characterized by an insufficient collagen synthesis, which leads to brittle vessels and immune deficiency. Vitamin C is also involved in several biochemical reactions as an electron-donator, acting as an antioxidant. It was classically seen in sailors on long boat trips during several months aboard naval ships until the 19th century. It was Dr. James Lind’s (1716-1794) merit to conduct the first ever clinical trial and to find out that citrus fruits cured scurvy. However, it is important to be aware of scurvy even today, particularly when the clinical signs are present in Vitamin C malnourished patients.

P157
The off guideline decision making: macrothrombocytopenia, thrombosis of the hepatic artery, E. coli sepsis with acute kidney failure and a positive test for heparin induced thrombopenia
E.-M. Müller1, H.-R. Räz2, M Nägele1, H.-R. Schmid3, H.-J. Beer1,4
1Department of Internal Medicine, 2Institute for Nephrology, 3Cantonal Hospital Baden, Central Labor, Baden, 4University Hospital of Zürich, Laboratory for Platelet Research, Zürich, Switzerland

Teaching point: Balancing the risks of hemostasis and bleeding can be difficult in multimorbid patients with pre-existing coagulation disorders. An interdisciplinary approach may be helpful alongside with a careful management of anticoagulant therapy.

Case: A 60 y/o male presented with sepsis due to E. coli originating from an infected liver cyst which was treated with metronidazuole and ceftriaxone. He had a history of macrothrombocytopenia (Fig. 1) of 35 k/µl due to Bernard Souliers Syndrome (GPIIX homozygous mutation) without prior bleeding episodes. Abdominal CT imaging, used for finding the infectious focus, revealed an asymptomatic thrombosis of the common hepatic artery (Fig. 2), which was interpreted as an incidental finding associated with the infection. After a single donor platelet transfusion due platelet counts of 18 k/µl, the liver cyst was drained by ultrasound-controlled puncture. Local bleeding from an intercostal artery could be controlled by compression, and low-dose anticoagulation (heparin 10.000 IU/24 h) was initiated after stabilization.

[Fig 1, manuel smear - macrothrombocytopenia]

The clinical course was complicated by sepsis-associated prerenal acute kidney failure (creatinine peak 442 µmol/l). After rehydration, renal recovery occurred. During recovery, livedo reticularis was noticed with unspecific elevation of cytoplasmic antineutrophil cytoplasmic antibodies. Further abnormal findings were low platelet counts (18 k/µl), high risk constellations for both bleeding and thrombosis. Low platelet counts, thrombocytopathy, thrombosis at unusual sites, kidney failure and a positive test for heparin induced thrombopenia (HIT; intermediate pre-test probability) was positive and heparin was switched to danaparoid. Anticoagulation was controlled using Anti -Xa.

Platelet Resaerch, Zürich, Switzerland

Acute necrotising encephalopathy in a patient with influenza B - a rare complication in a common infectious disease
Benjamin Stettler, Katharina Gruntz, Daniel Eschle, Georg Mang
Kantonsspital Uri, Innere Medizin, Altendorf, Switzerland

Learning objectives: Seasonal influenza is a common infectious disease. In Switzerland, consultations due to flu-like symptoms peaked in 2017/2018 with 3'950 cases per 100'000 inhabitants. However, rare neurological complications with varying severity from mild altered mental status to status epilepticus are described in association with influenza infections and summarised as influenza-associated encephalopathy (IAE). Acute necrotizing encephalopathy (ANE) is a specific neurological presentation described mainly in paediatric patients in Asia with bilateral symmetricthalamic, midbrain and/or hindbrain lesions occurring within days of an acute viral infection with influenza A, B or other viruses such as enteroviruses.

Case: A 40-year-old man presented with progressive headache for two days. He tested positive for influenza B in a nasopharyngeal swab. Laboratory findings demonstrated a slightly increased C-reactive protein (24 mg/L [<5]). A lumbar puncture revealed no abnormalities. The following night, the patient developed neurologic symptoms, i.e. altered mental status and unsteady gait. Contrast CT showed discrete symmetric hypodensities in the basal ganglia. The patient’s neurological condition rapidly deteriorated. We observed bilateral facial nerve paralysis, gaze palsy, increased muscle tone, abnormal flexion to stimuli to the extremities and bulbar symptoms (dysphagia, dysarthria). MRI revealed multiple necrotic lesions of the brain stem and the diencephalon (Fig. 1). These lesions combined with the clinical signs suggested ANE. The patient was treated with high-dose oseltamivir and, additionally, with aciclovir, corticosteroids and i.v. immunoglobulins. Cerebrospinal fluid analysis obtained in a second lumbar puncture showed negative results in a meningitis/encephalitis PCR panel. One month later, an MRI detected partial regressive necrotic lesions symmetrical in both thalami and the pons (Fig. 2). Two months later, only dysarthria and logomhoreia persisted in neurologic clinical examination.

Discussion: We present a rare case of an acute necrotizing encephalopathy in an adult patient in Europe with headache, rapidly progressive neurological deterioration and pathognomonic neuro-imaging. This case emphasises the importance of early diagnosis with MRI and exclusion of
other causes with lumbar puncture. Treatment with neuraminidase inhibitors should be initiated. The case underscores the importance of influenza vaccinations in all age groups.

A breathtaking competition

Stefan Pezl¹, Till Hauffe², Irène Laube², Patricia Fodor², Lars Huber¹

¹Klinik für Innere Medizin, Department Innere Medizin und Spezialdisziplinen, Stadtpital Triemli Zürich, ²Institut für Anästhesiologie und Intensivmedizin, Department Transversale Disziplinen, Stadtpital Triemli Zürich, ³Abteilung für Pneumologie und Schlafmedizin, Department Innere Medizin und Spezialdisziplinen, Stadtpital Triemli Zürich, Zürich, Switzerland

Learning objectives: Swimming-induced pulmonary edema (SIPE) is a rare but important cause of acute respiratory distress in swimmers. The diagnosis is challenging since clinical manifestations are non-specific (haemoptysis, coughing and crackles). Management is usually support some studies suggested a benefit by oral sildenafil prior to the competition. Despite excellent prognosis, patients with SIPE should undergo extensive cardiopulmonary investigation should be informed about the likelihood of recurrence.

Tuberculous meningitis

Svensa Leibnitz¹, Lauri Fordin², Alexander Turk¹, Adrian Schibli²

¹see-Spital Horgen, Clinic of Internal Medicine, Horgen, ²Stadtspital Triemli, Clinic of Internal Medicine, Department of Infectiology, Zürich, Switzerland

Learning objectives: Tuberculous meningitis (TBM) is the most severe form of tuberculosis leading to death in almost 100% if left untreated. Particularly amongst elderly people the symptoms are nonspecific and was initiated and the patient was observed at our intensive care unit. The next day her condition had significantly improved: Vital parameters had normalized, coughing was absent and the X ray findings had vanished. On day 3 she was asymptomatic and could be discharged home.

Discussion: SIPE is a type of immersion edema with a prevalence of 1-2% in triathletes. Its physiopathology is not yet completely clear, but it is suggested that immersion in water (extrinsic pressure) and cold exposure (peripheral vasoconstriction) result in an increase in central venous blood pooling and a subsequent elevation in cardiac preload. Recent studies have shown that these hemodynamic alterations -and not the consequence of altered permeability within the pulmonary capillary bed- result in fluid accumulation within the lungs. Acute treatment consists of oxygen supplementation, inhaled beta-2 agonists and diuretics. Full recovery is usually expected within 48 hours. Recurrence rate is rather high and found to be around 30%. In order to reduce pulmonary vascular resistance some studies suggested a benefit by oral sildenafil prior to the competition. Despite excellent prognosis, patients with SIPE should undergo extensive cardiopulmonary investigation should be informed about the likelihood of recurrence.

P160

Treatment patterns of acute migraine medication and migraine prophylaxis: a pharmacoepidemiological analysis prior to the introduction of calcitonin gene-related peptide antagonists

Carola A. Huber¹, Reto Agosti², Markus Nápflin¹, Eva Blozik¹,²

¹Department of Health Sciences, Helsana Group, Zürich, ²Headache Center Hirslunden, Hirslunden Hospital Group, Zollikon, Zürich, Switzerland, ³Division of General Practice, University Medical Centre Freiburg i.B., Freiburg i.B., Germany

Introduction: Migraine is one of the most common and highly disabling neurological disorders, which is often treated in primary care settings. Treatment with acute and prophylactic drugs is frequently associated with adverse effects or intolerances. Switzerland is the second country worldwide, where the newly developed calcitonin gene-related peptide (CGRP) antagonists -a novel treatment option for severe migraine- were recently launched on the pharmaceutical market. The present study quantifies the current burden and depicts associated treatment patterns of migraine drug use in daily practice, prior to the introduction of CGRP antagonists, which will impact current treatment strategies of severe migraine.

Methods: We used healthcare claims data from a large health insurance group in Switzerland, covering one million persons, to identify an adult cohort of migraine drug users, who received ≥1 triptan prescription in 2015/2016. Treatment patterns were defined by calculating subsequent triptan and prophylactic use (such as beta-blockers (BB) and topiramate) in 12 months (by quarter, Q1-4) after index-prescription.

Results: The patient sample comprised 10,090 triptan users (prevalence of 1.3%), with 82.6% using triptans only, 12.9% changing the therapy between triptans and prophylactics, and 4.5% combining both. For patients using prophylactics in addition to triptans in Q1, 48.6% received BB only, 40.7% other prophylactics than BB, and 10.7% combined both (BB, other prophylactics). About half (54.8%) of these “combi-users” had the drugs continuously across all quarters; among the BB users it was almost a third (30.2%). Among “combi-users”, 63.8% switched from one prophylactic drug to another multiple times within 12 months.

Conclusions: This population-based cohort study quantifies the population in potential need for new approaches for the management of migraine therapy. Patients who stopped prophylactic treatment shortly after prescription, indicate that the acceptance, benefit, or tolerance of these drugs may be limited in these patients. In contrast, users of combined prophylactics concurrently over a year, emphasizes the strong need for preventive medications. Describing the current treatment patterns in triptan and prophylactic use is important for future comparative evaluations after the introduction of CGRP antagonists. This may be helpful for developing future treatment recommendations of migraine patients in the primary care setting.

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heterogeneous. Due to the low bacterial load in the cerebrospinal fluid (CSF) Ziehl-Neelsen staining demands a large volume of CSF and culture results are often negative and delayed. Therefore, a high index of suspicion is required to diagnose TBM.

**Case:** An elderly but sprightly female patient was referred to our hospital for treatment of a symptomatic urinary tract infection. Despite empiric antibiotic therapy with ceftriaxone vigilance decreased progressively followed by an epileptic seizure. Cerebrospinal fluid was clear containing 126/µl white blood cells with relative monocye predominance (85%). Serum levels of lactate, glucose and protein were 7.7 mmol/L, 1 mmol/L and 2097 mg/l, respectively, indicating a serious barrier disturbance (Tab. 1). PCR analysis and blood culture of eligible pathogens were all negative. A second liquor examination showed significantly increased cell count and lactate levels strongly suggesting a bacterial infection.

We expanded the broad-spectrum antibiotic therapy by adding acyclovir and amoxicillin to concomitant epileptic therapy. Brain imaging showed a hydrocephalus and an acute subcapsular ischemic stroke in the left hemisphere. The EEG results were abnormal. Blood laboratory exhibited a newly occurred hypoosmolar hyponatremia. Extended pathogen diagnostics finally identified Mycobacteria tuberculosis in a PCR-based analysis. There was no coinfection with HIV. Pulmonary tuberculosis was suspected and subsequently diagnosed via suggestive CT scan followed by bronchoscopy with a positive PCR-result in the tracheal secretion. We established a combined therapy with Rimstar® via gastric tube in combination with vitamin B6 and high doses of dexamethasone intravenously. Unfortunately, vigilance of the patient did not improve and she died.

**Discussion:**

TBM remains a fatal disease with increased risk of irreversible neurological damages and high mortality even with appropriate therapy. Early detection is challenging as culture results from the CSF are insensitive. Use of DNA amplification techniques by multiplex and nested PCR exhibit high grades of sensitivity (98%) and specificity (92%) with a positive predictive value of 88% and should be recommended to facilitate early diagnosis and treatment.

**P162**

**Chronic diarrhea caused by Zollinger-Ellison syndrome**

Miro von Rott¹, Denny Lunke², Bernd Yuen², Boehm Stephan¹

*¹Innere Medizin, ²Spital Büach, Büach, Switzerland*

**Learning objectives:** Zollinger-Ellison syndrome (ZES) is a rare neuroendocrine tumor that secretes gastrin resulting in gastric acid hypersecretion and consecutive severe acid-related peptic ulcer disease and diarrhea. It most frequently occurs sporadically but in 20–30% it is diagnosed in association with multiple endocrine neoplasia type 1 (MEN1).¹

**Case report:** A 55-year-old male patient was referred to our hospital due to acute kidney injury, diarrhea and vomiting. The patient has had a ten year history of diarrhea. The etiology remained unclear despite of prior broad diagnostic evaluations (normal stool levels of calprotectin and elastase, unremarkable stool cultures, normal colonoscopy five years ago). Solely an upper endoscopy 5 years ago had shown minimal gastric and duodenal erosions and hypolactasia. The patient received Pantoprazole 40mg qd since 2011 which was discontinued shortly prior to admission. The upper endoscopy revealed severe, necrotic ulcerations located in the jejunum, the duodenal bulb and the oesophagus and Zollinger-Ellison syndrome was suspected. Fasting-gastrin-level was 1330 ng/l. (Reference <115ng/l). On hospital day eight the patient had emergency surgery for perforated proximal jejunum ulcerations. High dose PPI (esomeprazole 40mg tid) was administrated and led to almost complete healing of intestinal ulcers and complete remission of diarrhea. Endoscopic ultrasound revealed a hypoechojenic lesion of approximately 10 mm diameter in the cauda of the pancreas. A Ga-DOTATATE PET-CT showed positivity adjacent to the duodenum pars two and in the splenic sinus, interpreted as lymph node metastasis. There was no evidence of liver metastasis or for MEN I. In summary we diagnosed a sporadic case of ZES with lymph node metastases.

**Discussion:** Patients with severe peptic ulcers and especially with ulcers distal to the duodenum and/or chronic diarrhea that can’t otherwise be explained should undergo evaluation for ZES. Fasting gastrin level >10 times the upper limit of normal in the presence of a gastric pH <2 is diagnostic for ZES. Measurement of the gastric pH is important to exclude secondary hypergastrinemia due to achlorhydria. In patients with elevated gastrin levels that are not diagnostic secretin stimulation test is recommended². Symptoms can often be controlled with high-dose PPIs and prognosis can be improved relatively as up to 50% of patients with sporadic, non-metastatic ZES can be cured by surgery.²
Conclusions: The unbound plasma fraction of flucloxacillin is substantially higher in MSSA-SAB patients (range 3-65%) than reported for healthy individuals (range 2-8%), in particular in patients with impaired renal function and more severe disease. The proportion of patients not achieving the optimal pharmacological target was significant, as was the proportion with excessive flucloxacillin concentrations. Therefore, therapeutic drug monitoring of unbound flucloxacillin concentrations in MSSA-SAB is desirable.

Figure 1. Unbound flucloxacillin plasma concentrations during the first week of treatment.

Bilateral Horton’s arteritis
Agnese Vella1, Jean-Luc Chevallier1, Jerôme Burnand1, Jerôme Aellen2, Micheal Chilcott3, Uwe Schiemann1
1Service de Médecine Interne, HFR-Riaz, 2Service de Radiologie, HFR-Riaz, 3Service de Chirurgie, HFR-Riaz, Riaz, Switzerland

Learning objective: Atypical clinical case lead to use alternative exams to help for Horton’s arteritis diagnosis.

Case: We report the case of a 81-year-old man sent to the emergency unit for new frontal headache, jaw pain and persistent fever >38.5° since 3 weeks, associated with tiredness and anorexia. At admission neurological examination was normal. Laboratory investigations: leukocytes 12 G/L (neutrophils 9.7 G/l, lymphocytes 1.0 G/L, eosinophils 0.02 G/l), CRP 154mg/l, elevated sedimentation rate (ESR) 82 mm/h, Hb 121 g/l, ASAT 21 U/l, ALAT 29U/l, creatinine 72µmol/l, urine sediment with non glomerular hematuria and proteinuria. Symptomatic treatment was introduced with clinical observation. Because of persistent headache with fever and high CRP and ESR, cerebral IRM was performed, showing bilateral inflammation of temporal arteries, occipital arteries and subcutaneous soft tissues with parietal contrast enhancement. This result, associated with clinical symptoms and high value of ESR, lead to the suspicion of bilateral Horton arteritis, reflected by a positive ACR (American College of Rhumatology) score of 3/5 points (1). Ophthalmic neuropathy was ruled out. Rheumatoid factor and Lyme serology were negative. The histology of left temporal artery biopsy showed a florid arteritis. Negative ANCA measure, non glomerular hematuria and absence of arteritis signs on chest-abdominal CT angiography ruled out systemic vasculitis. We retained the diagnosis of bilateral Horton arteritis. Oral corticotherapy 0.5mg/Kg was started. The evolution was characterized by the regression of headache, loss of fever and normalization of CRP value.

Discussion: Horton syndrome is the most common arteritis in men aged >50 ans. Because of the broad spectrum of clinical and laboratory abnormalities, diagnosis is often difficult. Even if temporal artery biopsy has long been the gold standard for reliable diagnosis, contrast-enhanced brain IRM allows noninvasive assessment for inflammation of blood vessels in Horton’s arteritis with good diagnostic certainty (2).


Stroke awareness in eastern Switzerland - The STRAW-II-survey
Telemachos Hatziisaak1, Julia Walch2, Christian Berger3, Urs Keller4
1PizolCare Praxis Wartau, Trübbach, 2Kantonsspital St. Gallen, Department of Neurology, St. Gallen, 3Spital Grabs, Department of Neurology, Grabs, 4PizolCare Praxis Sargans, Sargans, Switzerland

Stoke awareness in eastern Switzerland - The STRAW-II-survey
Telemachos Hatziisaak1, Julia Walch2, Christian Berger3, Urs Keller4
1PizolCare Praxis Wartau, Trübbach, 2Kantonsspital St. Gallen, Department of Neurology, St. Gallen, 3Spital Grabs, Department of Neurology, Grabs, 4PizolCare Praxis Sargans, Sargans, Switzerland
Introduction: Today there are efficient therapeutic options available leading to good functional outcomes and quality of life for patients suffering ischemic stroke. As “time” is one of the most relevant factors for a successful treatment, knowledge about stroke symptoms and immediate measures in case of an emergency situation is crucial for patients. The aim of STRAW-II was to assess the knowledge about stroke symptoms and treatment in a rural population in Eastern Switzerland after a public campaign aiming at improvement of stroke awareness.

Methods: The survey was conducted from April to June 2017 in 12 different local GP offices. The questionnaire consisted of exactly the same 9 questions as in the 2015 survey. The distribution of age and educational level was comparable to 2015. Our results show quite a good knowledge in a randomly chosen population as far as common stroke symptoms are concerned, except for eye symptoms. The intention to call the ambulance is fairly high. On the other hand, knowledge about acute stroke treatment is rather poor. The results differ only slightly from those obtained in 2015.

Conclusion: Despite public campaigning to improve people’s knowledge about stroke symptoms and the need for a quick referral to a specialized stroke center, the 2017 results show no improvement compared to those obtained in 2015. These findings are sobering and question the effectiveness of public campaigning.

Methods: After obtaining informed consent from 100 participants we asked their GP’s to report the current values for fasting blood glucose, HbA1c, body weight, blood pressure, LDL and HDL cholesterol one year after the participants concluded KOMEKON. The response rate was 70%. We then performed a statistical analysis using MS Excel for Mac version 15.33 and the Omni Calculator (www.omnicalculator.com) to compare the different parameters before and one year after KOMEKON.

Results: The baseline characteristics are described in Table 1. Mean fasting glucose levels and HbA1c changed from 9.7mmol/l to 7.3mmol/l (CI 95%: 1.02, 0.54; p <0.0001), respectively. The mean BMI initially amounted to 32.0kg/m². One year after KOMEKON it was at 31.5kg/m² (CI 95%: 1.14, 1.44; p = 0.53, ns). Mean blood pressure changed from 137/83 to 136/80 mmHg (CI 95% for diastolic BP: 1.6, 2.1; p = 0.03). The mean HDL and LDL levels were at 1.3mmol/l and 3.0mmol/l before KOMEKON. One year after they remained unchanged at 1.3mmol/l, 2.8mmol/l (p >0.05, ns), respectively.

Conclusion: Participating in a structured educational program for patients with recently diagnosed type-2-diabetes led to a significant improvement of fasting blood glucose and HbA1c-levels, as well as diastolic blood pressure. However, body weight, systolic blood pressure, LDL and HDL cholesterol levels were unaffected. In conclusion training type-2-diabetics within the KOMEKON education program showed a very promising outcome regarding glycemic control and blood pressure and a trend towards lower body weight after one year.

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<td>LDL (mmol/l)</td>
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P166
Changes of metabolic parameters in participants of a structured T2DM education program (KOMEKON)
Telemachos Hatzisaak1, Nicolas Hatzisaak1, Urs Keller2
1PizolCare Praxis Wartau, Trübbach, 2PizolCare Praxis Sargans, Sargans, Switzerland

Introduction: Since 2011 the PizolCare managed care network is delivering an education program to patients with recently diagnosed type-2-diabetes mellitus in a rural, partly urban type settlement region of Eastern Switzerland. This program called KOMEKON consists of 12 hours of practical group education and - for reasons of sustainability - consecutive refresher courses, which are held three times per year. We wanted to know, how blood sugar levels, HbA1c, body weight, blood pressure and cholesterol levels developed in participants one year after they attended KOMEKON.

Methods: After obtaining informed consent from 100 participants we asked their GP’s to report the current values for fasting blood glucose, HbA1c, body weight, blood pressure, LDL and HDL cholesterol one year after the participants concluded KOMEKON. The response rate was 70%. We then performed a statistical analysis using MS Excel for Mac version 15.33 and the Omni Calculator (www.omnicalculator.com) to compare the different parameters before and one year after KOMEKON.

Results: The baseline characteristics are described in Table 1. Mean fasting glucose levels and HbA1c changed from 9.7mmol/l to 7.3mmol/l (CI 95%: 1.02, 0.54; p = 0.0007), and from 8.1% to 6.6% (CI 95%: 0.40, 0.14; p <0.0001), respectively. The mean BMI initially amounted to 32.0kg/m². One year after KOMEKON it was at 31.5kg/m² (CI 95%: 1.14, 1.44; p = 0.53, ns). Mean blood pressure changed from 137/83 to 136/80 mmHg (CI 95% for diastolic BP: 1.6, 2.1; p = 0.03). The mean HDL and LDL levels were at 1.3mmol/l and 3.0mmol/l before KOMEKON. One year after they remained unchanged at 1.3mmol/l, 2.8mmol/l (p >0.05, ns), respectively.

Conclusion: Participating in a structured educational program for patients with recently diagnosed type-2-diabetes led to a significant improvement of fasting blood glucose and HbA1c-levels, as well as diastolic blood pressure. However, body weight, systolic blood pressure, LDL and HDL cholesterol levels were unaffected. In conclusion training type-2-diabetics within the KOMEKON education program showed a very promising outcome regarding glycemic control and blood pressure and a trend towards lower body weight after one year.

P167
Combined hypopuitarism caused of an acute myelocytic leukemia
Curdin Flurin Furrer1, Raphaela Hausammann1, Niklaus Kamber2, Raphael Jeker3
1Innere Medizin, 2Kantonsspital Graubünden, Chur, Switzerland

Learning objective: Case history and clinical examination are still the keys to diagnosis. However, even if a syndrome is found and the patient is getting better with acute treatment, it is worth finding out the possibility of an underlying disease.

Case report: A 72 year old male patient was assigned by his family doctor with acute polydipsia and polyuria. He drank 6l per day and lost 6kg weight. All this started 3 days ago with explosive frontal headache, which is no longer present. In his past history there was an unprovoked pulmonary embolism half a year ago. Apart from that the patient was never in a hospital and always healthy. The clinical examination revealed a dry patient with viscous sputum and enoral coverings as part of an oral fungal infection. In the laboratory blood analysis especially a bizytopenia (anemia and thrombocytopenia), hypernatremia (152 mmol/l) and a low TSH in normal range (0.4-4.0mIU/l). A water deprivation test was carried out, which was compatible with this diagnosis.

A targeted picture of the pituitary gland with better resolution revealed an process of an underlying disease. An initial MRI of the entire neurocranium was unremarkable. A targeted picture of the pituitary gland with better resolution revealed an process of an underlying disease. Further we saw blasts in the blood smear, a bone marrow puncture revealed an acute myelocytic leukemia, ongoing from a myelodysplastic...
syndrome. Later on, in the patient with increased fatigue and fever without a focus a deep morning cortisol was observed, so we found a secondary adrenal insufficiency and a secondary hypothyroisim. Summarized the findings revealed a combined pituitary insufficiency involving the ADH, thyroid and adrenal axis. After hormone replacement the patient was asymptomatic. If the pathogenesis of the pituitary insufficiency is a direct infiltration of the blast-cells or an autoimmune reaction to the leukemia has to be discussed. We didn’t perform a biopsy of the pituitary gland.

Discussion: The pituitary insufficiency of both glands is very rare. It is very important to look for haematological malignancy or autoimmune processes. This case illustrates the workup of such patients is important. Furthermore initially independent diagnosis are in relationship in the evolution of a disease.

P168 Disseminated intravascular coagulation as a complication of invasive meningococcal infection - a case report

Katharina Gruntz, Benjamin Stettler, Constantine Bloch-Infanger
Kantonsspital Uri, Innere Medizin, Altdorf, Switzerland

Learning objectives: Septic shock with disseminated intravascular coagulation (DIC) is a frequent complication of meningococccemia and coincides with high lethality. Effective treatment of DIC is discussed controversially in the literature. However, early initiation of antibiotic treatment is the major determinant of a good outcome in underlying infective disease.

Case: A 18-year-old patient presented with sudden onset of acute vomiting, abdominal pain, headache and altered mental status. Clinical examination showed hypotension (78/52 mmHg), tachycardia (100/min), normal temperature (36.4 °C), cyanotic and poorly perfused extremities with petechia and nuchal rigidity. After obtaining blood cultures, antibiotic treatment with ceftriaxon was immediately started. Laboratory findings revealed normal tests for coagulation and the clinical status of the patient improved.

Further treatment included dexamethasone, aggressive fluid replacement, platelet transfusions and coagulation factors to reduce the risk of bleeding. Nevertheless, the patient had microthrombotic lesions in his toes and fingers (see Figure 1). Subsequently, positive blood cultures for Neisseria meningitidis (serogroup W) confirmed the diagnosis of Waterhouse-Friederichsen syndrome due to meningococccial infection. Within days of treatment laboratory findings revealed normal tests for coagulation and the clinical status of the patient improved.

Discussion: We report a case of a invasive meningococcal disease with disseminated intravascular coagulation (DIC) and multi-organ failure. Early initiation of antibiotic treatment in patients with suspicion of meningococcal infection is essential and should not be delayed by diagnostic testing. Clinical features of meningococcal infections range from classical meningitis signs and symptoms (fever, headache, photophobia, nuchal rigidity) to the cutaneous lesions as seen in the present case due to coagulopathy. Subsequent to a invasive meningococcal infection, evaluation of immunodeficiency and vaccination are recommended.

[Figure 1: Microthrombotic lesions on toes and fingers.]
psychosocial domain. On the condition-specific instruments, namely the MPI interference with pain and the ODI (function), the simultaneous inclusion of responses about pain blurs the construct of specific function content. In contrast to those, the generic SF-36 (physical functioning) showed highest functional specificity and construct overlap to the functional performance tests.

P171

Treatment of rhabdomyolysis: curative role of the surgeon?
Sandra Hunziker1, Markus Weber2, Lars Huber1
Klinik für Innere Medizin, Department Innere Medizin, Stadtpital Triemli, Klinik für Viszeral-, Thorax- und Gefässchirurgie, Department Chirurgie, Stadtpital Triemli, Zürich, Switzerland

Learning objective: to recognize the association between malignancy and immune-mediated necrotizing myopathy

Case: A 80-year old male patient was admitted to our emergency department with painless jaundice, recent weight loss and asthenia. Examination showed a patient in reduced physical condition and with yellowish pigmentation of skin and sclerae. Laboratory tests were remarkable for an elevation of alkaline phosphatase, gamma-glutamyltranspeferase and total bilirubin. Computed tomography and subsequent brush cytology of the common hepatic duct confirmed the presence of an adenocarcinoma of the pancreatic head. After placement of a biliary stent, cholestatic parameters declined to normal. Few days later, the patient developed symmetrical, proximal muscle weakness and myalgias. Blood analysis showed highly elevated levels of aminotransferases (AST 1763 UI, normal <40 UI; ALT 955 UI, normal <41 UI) and creatine kinase (92'573 U/l, normal <40 U/l), consistent with the diagnosis of rhabdomyolysis. Transabdominal ultrasonography was unremarkable. Muscle biopsy from the left thigh (M. vastus lateralis) showed necrotizing myopathy with necrotic muscle fibers suggesting immune-mediated necrotizing myopathy, probably of paraneoplastic origin. Treatment with glucocorticoids resulted in prompt clinical improvement. CK levels, however, remained persistently elevated. Complete resolution and sustained clinical response of immune-mediated necrotizing myopathy was achieved by surgical resection of the primary tumor.

Discussion: Immune-mediated necrotizing myopathy in the context of malignant diseases is rare but has been described as paraneoplastic disorder. In our case, complete resolution of symptoms and signs of rhabdomyolysis following resection of the primary tumor is suggestive for paraneoplastic rhabdomyolysis. Highly elevated levels of aminotransferases remit that both AST and ALT can be released from extrahepatic muscle tissue.

P172

Diabetic ketoacidosis with normal blood glucose in fasting patients treated with SGLT-2-Inhibitors while in hypovolaemic state
Michael Weisseneb, Daniel Ribeiro
SRRWS - Spital Walenstadt, Innere Medizin, Walenstadt, Switzerland

Learning objectives: Patients with regular medication of SGLT2-Inhibitors could develop a severe ketoacidosis with normal blood glucose especially in patients with hypovolaemia and reduced intake of glucose.

Case: A 85-year-old woman was transferred to an acute geriatric unit under perioperatively ongoing SGLT2-inhibitor therapy in an orthopaedic surgery. Several cases of diabetic ketoacidosis with normal blood glucose in patients with type 2 diabetes and SGLT2-inhibitors while starving and/or in hypovolaemic state have been described. The pathomechanism is not fully understood today but could be related to lowering of the blood glucose and subsequently low insulin and increased glucagon levels which induces lipolysis and ketonemia. Therefore patients with SGLT2-inhibitors in particular has the risk factor of severe hypovolaemia due to blood loss and low glucose intake are at risk for this severe complication. There is need for further research, in the meantime it is prudent to withhold this medication in situations with the described risk factors.

Unstable angina pectoris due to hyperviscosity syndrome testosteroner induced secondary polycythemia
Isabelle Panne1, Sabine Kuster1, Desiree Wussler1, Beatrice Drexlern, Tobias Breithardtn
1University Hospital Basel, Department of Internal Medicine, 2University Hospital Basel, Department of Hematology, Basel, Switzerland

Learning Objective: Unstable angina pectoris can be seen in the context of an hyperviscosity syndrome as a complication of long-term testosterone substitution

Case report: A 58-year old, active smoker (18 pack years) presented to the emergency department with unstable angina pectoris and dizziness on exertion as well as hypossensibility of his left hand. His medical history was positive regarding valvular heart disease but negative regarding coronary artery disease. Otherwise liver transplantation had been performed in 2007 due to hepatocellular carcinoma. The initial laboratory assessment showed a slightly elevated troponin T without relevant dy-namic (@presentation 14ng/l, @3hours 18ng/l), and a hemoglobin level of 182g/l. The electrocardiogram showed no ST-elevation. Exercise testing revealed an impaired left ventricular ejection fraction of 39% and relevant diffuse ischamia. However, coronary arteriography did not show a relevant stenosis as an explanation of ischemia. Pulmonary workup showed only mild obstruction with normal HbCO. In consequence, we assumed that polycythemia was the main driver of myocardial hyperperfusion/ischamia. Further workup on the cause of polycythemia revealed a normal level erythropoietin (EPO). JAK2-V617F (exon 14) a driver mutation of polycythemia vera was negative. Neoplasms with autonomic EPO production and renal disease as secondary causes could be excluded, however the patient eventually confessed to self-substituting testosterone subcutaneously for better performance at sports and treating signs of depression. Testosterone level was elevated at 33.5nmol/l (norm 6.7 - 25.7nmol/l). Chest pain and dyspnea quickly resolved after several phlebotomies.

Discussion: Hyperviscosity syndrome with pulmonary or coronary symptoms can occur from changes of cellular or protein fractions of the blood such as it is found in polycythemia. Latter can be caused by primary or secondary causes, and a systematic workup including a detailed drug history is essential. Polycythemia after long-term testosterone substitution is a known side effect and well described . It is believed that testosterone leads to an elevated EPO-level that induces polycythemia but there might be an EPO independent stimulation as well. One should keep in mind that testosterone substitution is increasing, and is also used outside professional sports. Hence, testosterone use should be actively enquired in the medical history, even in non-athletic patients.
Successful treatment of cryptogenic inflammatory bowel disease with corticoids, pentasa (5-aminosalicylic acid) and entocort

Luan Malushaj1, Jean-Luc Chevallier1, Jerôme Aellen2, Uwe Schiemann1

1Service de Médecine Interne, HFR-Riaz; 2Service de Radiologie, HFR-Riaz, Riaz, Switzerland

Introduction: Young 46 year old patient in good health, active smoker. Clinical presentation with asthenia, inappetence, diarrhea of several episodes per day associated with mild cramp-type abdominal pain and weight loss of 7 kg in 3 weeks without other associated symptoms. Progressive symptoms for about three months. Clinical condition mild diffuse abdominal pain with defense without relaxation. Abdominal noise decreased in frequency and tone.

Additional tests: Blood test: CRP 344 mg/l, and leukocytosis 16.8 g/l, fecal calprotectin more than 18.000 µg/g , and negative stool PCR. MRI-abdominal: small ileus interesting especially the ileum with dilated loops about 3.6 cm in diameter and an impression of a stenosis at the junction ileocecal possibly responsible for part of the ileus. Clear contrast of the last ileal loop that can be part of an inflammatory bowel disease. Large amount of free liquid in this context, no visual air. Image of a gastroparesis in this context with a stomach filled with Mannitol.

Colonoscopy: strong suspicion of Crohn’s disease with multiple ulcerations between 70 and 20 cm from the anal margin.

Colon biopsy: histological appearance that may be compatible with Crohn’s disease, but it is not specific.

US-abdominal control during hospitalization for clinical and radiological follow-up avoiding irradiation of the patient showing moderately stenosing inflammatory thickening of the last ileal loop with some dilated loops, measured at 27mm in diameter. Ascites of very low abundance in inter-anse and at the cul-de-sac of the Douglas.

Conclusion: Under Solumedrol a clinical evolution is favorable. Then introduction of Pentasa and Entocort the patient presents a rapidly favorable evolution with stool formed, more abdominal pain and starts to feed well. The patient leaves our service under Pentasa and Entocort very satisfied. An outpatient follow-up is to be performed regularly at the gastroenterologist’s consultation.
Association between prolonged current and cumulative marijuana use and heart rate. The coronary artery risk development in young adults (CARDIA) study

Introduction: Lower heart rate has been associated with lower risk of cardiovascular disease (CVD) in prospective cohort studies. While heart rate increases with current tobacco smoking, the association between marijuana use and heart rate is unclear. Studies conducted with laboratorial settings around 1970 suggested that heart rate rises shortly after marijuana use, but that prolonged current use lowers heart rate. We set out to determine the association between heart rate and prolonged current and cumulative exposure to marijuana and tobacco smoking in a large prospective cohort study.

Methods: We used data from the Coronary Artery Risk Development in Young Adults (CARDIA) Study, a cohort of Black and white women and men aged 18-30 years at baseline in 1985-86 followed over 20 years. ECGs were recorded at baseline, at the Year 7 and 20 examinations and abnormalities were coded as major or minor according to the Minnesota Code Manual of Electrocardiographic Finding. We computed lifetime cumulative years of exposure to marijuana and assessed current exposure in the last 30 days with repeated assessments of marijuana use collected at 2-5-year-intervals. We explored the association between ECG abnormalities at Year 0, Year 7, and Year 20 and current and cumulative marijuana use in separate multivariate adjusted logistic regression models, accounting for demographics, cigarette and alcohol use, physical activity and BMI.

Results: Of the 5,115 participants at baseline, 5,081 had an ECG at Year 0, 3,708 at Year 7, and 2,586 at Year 20. At Year 20, 1,867 (72%) reported past marijuana use and 282 (11%) current use. Major abnormalities were present in 171 (7%) and 936 (36%) had minor abnormalities. In multivariate-adjusted models, we found no association at any exam between lifetime cumulative or current marijuana use and ECG abnormalities. Results did not change after stratifying by sex and race.

Conclusion: In a middle-aged population, lifetime cumulative and current marijuana use are not associated with major or minor ECG abnormalities.

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Bacteremia due to chromobacterium violaceum: a new entity in Switzerland?

Matta Lepori1, Bianca Elena Panfili1, Rosario Valenti1, Luigia Elzi2
1 Medicina Interna Faido, 2 Ospedale Regionale Bellinzona e Valli, Infeziologia, Bellinzona, Switzerland

Learning objective: Chromobacterium violaceum is a rare gram-negative facultative anaerobe bacillus, associated with waterborne infections in tropical and subtropical regions. The clinical presentation usually starts with a localized skin and lymphadenitis after contact with stagnant water or soil and may progress to severe sepsis with up to 60% case fatality rates, particularly among immunosuppressed children or adults. We describe the case of a 83-year-old woman with blood stream infection due to Chromobacterium violaceum after a minor injury of the leg in the Southern part of Switzerland.

Case: A 83-year-old immunocompetent woman presented in July 2018 with a 2-day history of fever without other complaints. She reported a minor injury resulting in a small wound on the right pretilial region that occurred by doing gardening 9 days before. The day after the injury she went swimming in a private pool. On admission, the patient was in poor general conditions and had high fever (39.2°C). Blood pressure was 153/67 mmHg, and heart rate was 86 beats/min. On the pretibial region of the right leg, a wound of 3 cm of diameter was surrounded by local inflammatory reaction and lymphadenitis. Leucocyte count was 10.4x10^9 cell/L, platelet count 221x10^9 cell/L, and C-reactive protein was 155 mg/L (normal <5). X-ray of the chest was normal.

Empirical antibiotic treatment with amoxicillin-clavulanate was started. As the patient remained febrile with high C-reactive protein (159 mg/L), antibiotic treatment was switched to piperacillin-tazobactam 48 hours later. All blood cultures (4/4 bottles) yielded growth of Chromobacterium violaceum, resistant to ampicillin, amoxicillin-clavulanate and ceftriaxone. Under Piperacillin-tazobactam the clinical course was rapidly favorable with resolution of fever and soft tissue infection of the leg with lymphadenitis. Antibiotic treatment was then switched to Ciprofloxacin for 14 days.

Conclusions: Chromobacterium violaceum is very rare microorganism in Europe and, to our knowledge, this is the first documented case in Switzerland. Potential effects of the global climate change include new geographical distribution of infectious diseases. Clinicians should be aware and promptly recognize these entities because a delayed adequate treatment may be associated with high fatality rates.

P178

Noro-Virus/Campylobacter- coinfection - a rare coincidence

Yvon Stüve, Lorenz Bärlocher
Kantonsspital St. Gallen, Departement Allgemeine Innere Medizin, St. Gallen, Switzerland

Case 1: We report a 41 year old, afebrile man with watery diarrhea for about 4-5 weeks and acute renal insufficiency AKIN 3 (underlying kidney transplantation insufficiency after IgA nephropathy). His working colleagues also had enteritis in the past few weeks. He was under immunosuppression with cyclosporin and mycophenolat-mofetil. A rehydration therapy was started with additional bicarbonate substitution and he was isolated.

Surprisingly the stool sample showed both a Noro-Virus and a Campylobacter. Because of his immunosuppression an antibiotic therapy with ciprofloxacin for 7 days was given by our colleagues.

Case 2: A few days after admission of patient 1, a 41 year old man was referred by the general practitioner due to acut on chronic renal insufficiency AKIN I and diarrhea and emesis like his grandchildren. He had a known kidney transplantation insufficiency after chronic renal insufficiency of unknown origin. He was under immunosuppression with tacrolimus and mycophenolat-mofetil.
We started a rehydration therapy with additional bicarbonate substitution and isolated him. The stool sample showed also both a Noro-Virus and a Campylobacter. An antibiotic therapy with ciprofloxacin for 7 days was given by our colleagues. After ending of the diarrhea he could be dismissed to outpatient care. **Discussion:** Noro-Virus is globally prevalent and is responsible for a large majority of gastroenteritis in children and adults. They are usually transmitted via contact and smear infection and quickly trigger epidemics due to high infectivity and short incubation period. The disease is self-limiting. Nevertheless the infection endangers especially elderly patients and young children due to excessive loss of water.

Campylobacter is one of the most common bacterial diarrheal pathogen and is transmitted via contact and smear infection. The origin is mostly contaminated water or meat. The therapy is symptomatic. In severe cases or under immunosuppression an antibiotic therapy is indicated. In the literature there is no association between Noro-virus and Campylobacter.

Both patients just had a misfortuned co-infection due to high risk time in the winter season for Norovirus and Christmas time for Campylobacter infection due to increased intake of Fondue Chinoise. The antibiotic therapy with ciprofloxacin has to be discussed because of known High-Level Quinolone resistance of Campylobacter.

**P179**

The use of ultrasound in Swiss general practice: a mixed method study

Dima Touhami, Christoph Merlo, Stefan Essig

Institut für Hausarztmedizin & Community Care, Luzern, Switzerland

**Background:** Because of its diagnostic value, ultrasound use by non-radiologists has increased widely in the last years among general practitioners (GPs) in both developed and resource-limited settings. Ultrasound is used in Swiss primary care, however there is variation in use between language regions and scarce data on how it is applied. Hence, we aim to understand how often ultrasound is utilized in primary care, characterize types of ultrasound exams and patients, and explore the views of GPs and pediatricians on its current and future use.

**Methods:** It is a mixed method study, using data from (1) billing data in Central Switzerland, (2) questionnaires completed by physicians attending courses offered by Swiss Society of Ultrasound in Medicine (SGUM) throughout Switzerland, and (3) face to face interviews with course participants.

**Results:** **Billing data:** 249 GPs and pediatricians consented to share their data, whereof 117 (47%) physicians were using ultrasound. A total of 138,443 ultrasound exams were done over 15 years, examining 73,211 patients. On average, 121 exams were done per physician-year. 64% of all exams were abdominal, and 41% of all patients had at least two scans during that period. 43,570 (60%) of patients with ultrasound had at least two morbidities.

SGUM courses: 140 physicians attending 17 out of 33 courses have completed the survey. 54 of the participants were GPs, 56% were females, 50% practicing in middle urban areas and mostly in German speaking regions. Ultrasound is used as standard of practice and for faster diagnosis among 65% of the physicians. 67% of pediatricians use ultrasound for the diagnosis of hip dysplasia. More than 50% of GPs use ultrasound for conditions in the upper abdomen (mostly free fluid, kidney congestion and gallbladder stones). 70% of physicians expressed interest to seek further ultrasound certification.

**Interviews:** 6 GPs and 4 pediatricians were interviewed. 5 physicians received ultrasound training as part of their medical education. Lack of training, time, skills and the certification procedure are common barriers for ultrasound use. Easy, convenient, interesting, faster diagnosis and financial reward are common incentives for using ultrasound.

**Conclusion:** Use of ultrasound in Swiss general practice is broad and will grow based on many physicians expressing interest in ultrasound, especially if training and certification are efficient. Using ultrasound seems equally important to patients and physicians.

**P180**

Better look twice! Not every flutter wave in the ECG means atrial flutter

Christian Leissing, Philip Speicher, Simon Andreas Müggler

Spital Zollikerberg, Klinik für Innere Medizin, Zollikerberg, Switzerland

**Learning objectives:** Atrial flutter (AFL) is a fast atrial arrhythmia due to a macro-reentrant mechanism, often seen with typical flutter waves in the electrocardiogram (ECG). Although less frequent than atrial fibrillation, ischemic stroke is a severe complication of AFL. Hence correct diagnosis and therapy of AFL is important.

**Case:** A 66-year old male patient was admitted to our emergency department with loss of sensibility and strength isolated in the left arm since 4.5 hours. Symptoms spontaneously decreased and disappeared completely, so diagnosis of transient ischemic attack was made. Upon admission, ECG was performed and showed flutter waves in leads I, II, aVR, aVL, and aVF (figure 1), suspicious for typical AFL. The patient denied chest pain or shortness of breath, cardiac history was uneventful. Upon closer inspection of lead III and precordial leads V1 to V6, a regular P wave was identified with the same frequency as the subsequent QRS complex. Additionally, flutter wave cycle length was not stable (figure 1, arrows), so diagnosis of AFL was refused. A second ECG, written 30 minutes later, showed normal sinus rhythm P waves in all leads; with no flutter waves anymore (figure 2). The reason for the artifact flutter waves in the initial ECG was either a technical problem of the electrocardiograph or trembling of the arms and legs due to known restless legs syndrome.

![Figure 1](image-url)
Atrial flutter is a fast atrial arrhythmia due to a macro-reentrant mechanism, typically with atrial rates of 240 to 300 bpm. Ventricular rate response is limited by the atrioventricular node conduction, usually presenting a 2:1 or 3:1 response during AFL. Atrial rhythm in AFL is regular and organized, so atrial cycle length is stable. The most common type of AFL is called typical AFL and is located in the right atrium, involving the cavitricuspid isthmus. The ECG in typical AFL shows a saw tooth’s pattern in the inferior leads (constant flutter waves); this saw tooth’s appearance could be easily registered when the ventricular rate response is controlled. If flutter wave cycle length is unstable or additional P waves are seen, diagnosis of AFL should strongly be reconsidered.

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Swiss primary care physicians’ interest in and knowledge about evidence-based insomnia treatment

Stefanie Linder1, Charles Dvorkik2, Christoph Merlo3, Stefan Essig4, Kali Tal5, Cinzia Del Giovane6, Simone Duss6, Raphael Heizner6, Christoph Nissen6, Claudio L Bassetti5, Reto Auer1,2, Micheline Maire1
1Berner Institut für Hausarztmedizin (BIHAM), Universität Bern, 2Sentinella Network, Bern, 3Institute of Primary and Community Care Lucerne, Luzern, 4Sleep-Wake-Epilepsy Center, Department of Neurology, Inselspital, Bern, 5University General Medicine and Public Health Centre, Lausanne, 6University Hospital of Psychiatry and Psychotherapy, Bern, Switzerland

Introduction: According to European guidelines, cognitive behavioral therapy for insomnia (CBT-I) should be the first-line treatment for chronic insomnia, before prescribing drugs. But studies from other countries indicate that primary care providers (PCPs) are often unfamiliar with CBT-I and usually prescribe medication instead. Since PCPs play a central role in managing insomnia, we wanted to find out if Swiss PCPs are interested in learning about insomnia management and explore their familiarity with CBT-I.

Methods: We invited 820 Swiss PCPs from all regions to complete an online or paper-based survey. We asked them how interested they were in learning about non-pharmacological and pharmacological treatments of insomnia. Answers were scored on a 5-point Likert scale (“no interest” to “very strong interest”). We also asked them to rate their knowledge about CBT-I (“no knowledge” to “very knowledgeable”). To evaluate their perception of access to CBT-I treatment, we asked if they knew of a local specialist who offered CBT-I.

Results: Our response rate was 48%; 394/820 PCPs participated. Most (70%) were men; average age was 56 years. Their practices were evenly distributed across city, suburban and rural areas. Most said they had varying knowledge about CBT-I (“no knowledge” to “very knowledgeable”). To evaluate their perception of access to CBT-I treatment, we asked if they knew of a local specialist who offered CBT-I. The results showed that 48% had some knowledge about CBT-I, 28% had some knowledge about CBT-I. Only 23% were aware of local specialists who provided CBT-I.

Discussion: CJ is one of the most common causes of bacterial gastroenteritis worldwide and mainly causes abdominal cramps, diarrhea, and fever. CJ infection is often self-limiting, antibiotic treatment is rarely indicated. Post-infectious complications are arthritis, meningitis, PM, endocarditis, and Guillain-Barré syndrome. CJ PM is a rare complication and affects mainly younger men; overall incidence is unknown, up to now only 32 items about CJ PM in PubMed exist (mostly case reports). Diagnosis is made of typical symptoms, ECG (PQ segment depression, ST segment elevation, or normal ECG), elevated cardiac biomarkers (troponin), exclusion of ischemic heart disease (coronary angiography), echocardiography, cMRI and evidence of CJ infection. Pathophysiology of CJ PM is still unclear, bacterial toxin or immunological mediated mechanisms rather than direct bacterial infection are assumed. Therapy of CJ PM includes antibiotic treatment, assessment for and therapy of arrhythmias, and management of heart failure, if present. Prognosis is good; most patients will fully recover.

A souvenir from Marrakech - Campylobacter jejuni-associated perimyocarditis

Carmen Del Prete, Annina Baumgartner, Simon Andreas Mügler
Spital Zollikerberg, Klinik für Innere Medizin, Zollikerberg, Switzerland

Learning objective: Perimyocarditis (PM) is a rare complication of Campylobacter jejuni (CJ) infection. Since CJ is one of the most common causes of bacterial gastroenteritis, PM should not be missed considering the risk of heart failure and arrhythmias.

Case: A 54-year old man was admitted due to acute onset of chest pain radiating to the left arm. Along he suffered from febrile diarrhea since his return from Marrakech (Morocco) one week ago. Beside of a painful abdominal clinical examination and electrocardiogram (ECG) were normal. Blood testing revealed elevated CRP (35 mg/l) and cardiac biomarker levels with distinct rise in troponin I after two hours (3996 ng/l to 9673 ng/l). Coronary angiography showed normal coronary arteries and left ventricular function, while reduced global longitudinal strain, particularly in inferior and anterior segments (figure, *), was seen by echocardiography. Microbiological analysis of the stool detected CJ. Thus diagnosis of CJ-associated PM was made. After antibiotic treatment (ertapenem, azithromycin), the patient’s symptoms declined. Because of non-suspected ventricular tachycardia, beta-blocker therapy was added. The patient was discharged from the hospital and advised to avoid intense physical activity for 6 months. Cardiac magnetic resonance imaging (cMRI) two weeks later confirmed diagnosis with almost complete resolution of myocardial inflammation.
Conclusions: Swiss PCPs were poorly informed about CBT-I, but were very interested in learning more about insomnia treatment. This highlights the need to offer dedicated training in evidence-based insomnia management and treatment to Swiss PCPs and help them make connections with local specialists who provide CBT-I or inform them about existing online CBT-I offers to refer patients.

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Persistent headache in migrants - Think TB! Benedikt Altermatt, Simon von Gunten, Rein Jan Piso, Lukas Zimmerli, Matthias Hofmann Kantonsspital Olten, Innere Medizin, Olten, Switzerland

Learning objectives: In migrant populations, patient history is often difficult to obtain because of language barriers. Symptoms reported may be misleading and minor complaints are of importance to establish diagnosis. Tuberculosis infection should be considered in migrants from high endemicity regions even years after entry, and immediate treatment initiated to disrupt transmission chains.

Case report: A 24-year old male presented in the emergency department with severe headache and vertigo that started only a few days ago. In addition, he reported a weight loss of >14 kg over 2 months, cough since several weeks with haemoptysis, and general malaise. He originates from Somalia and migrated to Switzerland by the Mediterranean route 4 years ago. His medical history is unremarkable. Clinical examination was without pathological findings, in particular neurological examination was unremarkable. He was afebrile. Initial laboratory results were normal apart from an elevated C-reactive protein level (170 mg/L). Chest X-ray showed a small irregularity in the upper left lobe. A sputum sample was positive for few acid-fast bacteria and Mycobacterium tuberculosis specific PCR (Xpert MTB/RIF and additional INH) with no genotypic resistances detectable. A CT scan confirmed a cavernous pulmonary tuberculosis. TB treatment with the standard 4-drug regimen was initiated. Because of a persistent headache, a brain CT scan was performed that demonstrated multiple tuberculomas. The consecutive lumbar puncture demonstrated an elevated leukocyte count with 96% polymorphonuclear cells. Liquor microscopy and PCR testing was negative. Additional serological and bacteriologic tests to exclude other possible causes remained negative. The TB treatment was complemented with steroids, and the patients' condition improved rapidly with a respective sputum conversion on treatment.

Discussion: The incidence of TB infection in migrant populations is increasing. TB disease often arises several years after immigration. Diagnosis of active TB is often delayed, and a high suspicion in vulnerable population is mandatory for fast and reliable diagnosis to disrupt transmission chains. Additional symptoms may be unspecific and difficult to grasp because of language barriers. Additional diagnostic procedures to guide TB treatment duration are needed dependent on the patient history because TB infection may be disseminated.

Hepatitis E as cause of fatal acute-on-chronic liver failure in a patient with cirrhosis

Lasse March1, Bernd Yue1, Christoph Ganter2, Mario Keller2, Stephan Böhm1

1Spital Büach, Klinik Innere Medizin, Büach, 2Universitätsspital Zürich, Institut für Innemedizin, Zürich, Switzerland

Learning objectives: Acute-on-Chronic Liver Failure (ACLF) is a syndrome characterized by acute decompensation of underlying chronic liver disease, extrahepatic organ failure and a high short- and medium-term mortality rate of 50-90%. At the time 20-45% of the triggers of ACLF remain unknown. Hepatitis E infection is a rare but increasingly important cause and preventive measures are needed to reduce mortality.

Case report: A 59-year-old man presented with painless jaundice. Liver function tests demonstrated signs of hepatic injury (AST 145x upper limit of normal (ULN), Bili 364μmol/L, INR 2.6). Tests revealed acute hepatitis E infection. A past history of alcohol abuse was not disclosed. A work-up for hyperferritinaemia in conjunction with diabetes mellitus 2 years ago ruled out HFrE. His medical history was unremarkable. Hepatitis E infection was diagnosed. After admission transaminases improved rapidly, while INR and creatinine remained stable and bilirubin increased slightly. The prognostically important CLIF-C AD Score was 5 at day 7 with a probability of dying at 1 month of 4%. The patient was released on day 9 in good condition and managed in the outpatient clinic. On day 22 with Bilir and INR strongly elevated Ribavirin was started but hepatitis E RNA was already negative. On day 24 the patient was admitted to the emergency department with multigorgan failure including brain, kidney and coagulation most likely caused by upper GI bleeding. Despite transferral to the university hospital and listing for liver transplant the patient died from complications on day 28.

Discussion: Acute-onchronic hepatitis E is a zoonotic infection of increasing importance in Switzerland. The majority of patients with symptomatic hepatitis E infection are men ≥ 50 years old, infections are mostly caused by genotype 3 and are most likely transmitted by undercooked meat from pork or game. Hepatitis E is a rare trigger of ACLF with a bad prognosis (mortality > 50%). Preventive measures are needed to protect patients with liver injury. Patients should be advised not to consume meat products unless heated to at least 71°C. A vaccination would be desirable. Hecolin® developed in China is not available in Europe and may not protect against genotype 3. Once patients carry hepatitis E infection risk stratification is necessary.

Cerebral venous thrombosis complicated by pulmonary embolism - are novel oral anticoagulants the optimal choice? Michael Stolzer, Sedat Yıldırım, Robert Escher Spital Burgdorf, Medizin, Burgdorf, Switzerland

Learning objectives: Pulmonary embolism (PE) secondary to cerebral venous thrombosis (CVT) is an uncommon form of venous thromboembolism. Here, 2 cases highlight the diagnostic and therapeutic challenge, and in this context, the choice of anticoagulation has to be carefully considered.

Case 1: 55 y/o male presented to the ED with pleuritic chest pain and self-limited calf pain a week before following immobilisation after minor surgery. CT pulmonary angiography (CTPA) showed lower left lobe PE. Rivaroxaban (RXB) was initiated and the patient discharged the next day after an unremarkable observation. Twelve days later, cranial MRI performed due to position-dependent headache showed partial left-sided thrombosis of the transverse and sigmoid sinus and the internal jugular vein. RXB was switched to LMWH and clinical follow-up at 2 months was unremarkable.
Heart rate.

some but has recently shown the best performance in correcting QT for

the QT at higher heart rates. Its use is discouraged in favour of newer

QT correction formula. The commonly used Bazett's formula was derived

Furthermore, our case highlights the crucial role of choosing the correct

prolongation.

normokalemia suggests that risperidone may have contributed to QTc

prolongation, which leaves uncertainty in linking risperidone to QTc pro-

presence of other risk factors. Hypokalemia itself may cause severe QTc

reports associated risperidone with QTc prolongation, most often in the

idazine), risperidone and olanzapine produced the least change in QTc,

(VKA) and do not recommend using NOAC, especially during the acute

phase. However, the recommendation on anticoagulation is based on a

low quality of evidence and NOAC would present obvious advantages in

terms of ease of administration. Compared to VKA, NOAC also have a

lower risk for intracranial haemorrhage. Among the pathophysiological

mechanisms, the lower permeability of the blood-brain barrier for NOAC

may constitute a special situation regarding their antithrombotic efficacy in

the cerebral sinusoidal veins.

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QT interval prolongation with new generation antipsychotics - it's time to use the new formula!

Michael Stoller, Robert Escher

Spital Burgdorf, Medizin, Burgdorf, Switzerland

Learning objectives: QT interval (QT) prolongation predisposes to torsade de-pointes and is a well-known side effect of older antipsychotic
drugs. However, new-generation antipsychotics may also prolong QT, particularly in the presence of QT prolonging risk factors, such as low serum
potassium. Tachycardia is also a common side effect of antipsychotic drugs, which highlights the importance of using QT correction formulae other
than Bazett's, such as the Framingham or spline QTc formula.

Case: A 39-year-old male with paranoid schizophrenia presented with a

one-week history of recurrent vomiting. Medication on admission consisted

of risperidone at a daily dose of 3 mg. Serum potassium was 2.5 mmol/L.
ECG showed sinus rhythm at 87 bpm with normal QRS duration and a

QT interval of 453 ms. Using Framingham and Bazett's formulae, cor-

rected QT interval (QTc) was prolonged at 501 ms and 545 ms, respec-

tively. Intravenous and oral potassium and magnesium substitution was

begun and the patient admitted under remote telemetry monitoring. Risperidone was continued. Two days later magnesium was normal and

serum potassium had normalised at 3.8 mmol/L. Repeat ECG showed

sinus rhythm at 97 bpm and QT of 386 ms, with QTc at 445 ms by Fram-

ingham and 491 ms by Bazett.

Discussion: QT prolongation by the new-generation antipsychotics was

studied in the Pfizer 054 study. For the six antipsychotic drugs studied

(haloperidol, ziprasidone, quetiapine, olanzapine, risperidone, and thior-

diazine), risperidone and olanzapine produced the least change in QTc,
at up to 3.9 ms for risperidone. In the post-marketing phase, several case

reports associated risperidone with QTc prolongation, most often in the

presence of other risk factors. Hypokalemia itself may cause severe QTc

prolongation, which leaves uncertainty in linking risperidone to QTc pro-

longation in our case. Nevertheless, the high normal QTc during

normokalemia suggests that risperidone may have contributed to QTc

prolongation.

Furthermore, our case highlights the crucial role of choosing the correct

QT correction formula. The commonly used Bazett's formula was derived

in 1920 on the basis of 39 young subjects and dramatically overestimates the

QT at higher heart rates. Its use is discouraged in favour of newer

QT correction formulae, such as Framingham, which is available in online

calculators. Handling of the new spline QTc formula is cumbersome

but has recently shown the best performance in correcting QT for

heart rate.

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Secondary Hemochromatosis as a rare cause of diabetes

Marco Seneghini1, Kataryzna Keller1, Lars C. Huber1, Benjamin Pedrazzini2, Anna Minder3

1Innere Medizin, 2Onkologie und Hämatologie, 3Stadtspital Triemli, Endokrinolo-

ge und Diabetologie, Zürich, Switzerland

Learning objectives: Hemochromatosis is an inherited or acquired dis-

order caused by excessive iron storage. Secondary Hemochromatosis usually
develops in patients who have received multiple red blood cell-transfusions. Excessive iron accumulation can cause progressive dam-
age to multiple organs. Endocrinopathies such as hypogonadotrophic-

dygonadism and osteoporosis are commonly associated with hemochro-

matosis. Diabetes is the most frequently encountered problem.

Case: A 21-year-old female refugee from Syria was admitted to our Emergency Department with polyuria and polydipsia and involuntary weight loss of 4 kg in two weeks. The clinical picture was not suggestive for a Bar Thalas-

semia model. The patient underwent splenectomy and received regular

blood transfusions since early childhood. Physical examination revealed a

slim patient (BMI 19.5 kg/m²) with a greyish skin tone and localized hyper-

pigmentation, hepatomegaly, as well as testicular hypertrophy, geni-

talia pubertal stage Tanner II and very little facial hair growth.

Laboratory analysis showed: Hb 8.4 g/dl, transferrin saturation of 95 %, 
ferritin levels of 4321 ng/ml and hyperglycaemia of 34 mmol/l without ac-
idosis (HbA1c 10.9%). Iset cell antibodies and glutamic acid decar-

boxylase antibodies were negative. MRI scan revealed iron-overload in the

pancreas, heart, and liver.

Pulmonary function tests confirmed hypogonadotropic hypogonadism. The patient was hospitalized for treatment of new-onset diabetes with a ba-

sal-bolus insulin regimen and has refused testosterone supplementation

so far. He is undergoing periodic transfusions with iron chelation.

Discussion: In our case, multiple blood transfusions (>100) caused sec-

ondary hemochromatosis with skin hyperpigmentation, diabetes mellitus, and thereby involvement leading to secondary hypoglycemia due to

haltered puberty development. Diabetes mellitus is due to the pancreatic

iron overload, additionally, iron overload in the liver with insulin re-

sistance may have contributed to the diabetes manifestation. Transfu-

sions >15-20 units of RBC can cause clinically significant iron overload.

This case illustrates the importance of evaluating secondary causes for

diabetes mellitus with a careful history and clinical examination.

P189

Substitution for hypothyreosis can be life threatening - a case re-

port

Ladina Erhart, Christine Schmid, Esther B. Bachli

Spital Uster, Medizinische Klinik, Uster, Switzerland

Learning objectives: To learn in which clinical circumstances thyroxine

substitution might be dangerous. To recognize the features of autoim-

mune polyendocrine syndrome type 2 (APS-2) and interpretation of the

laboratory values due to the disease and the implications for treatment

of such patients.

Case: A 33-years old woman presented with progressive fatigue and

weight loss over 2 years. In the past Hashimoto's thyroiditis was diag-

nosed and treated with levothyroxine without improvement of her fatigue.

Additionally she developed abdominal complaints. Further investigations revealed delayed TSH suppression. Despite the diagnosis of new-onset diabetes mellitus and the abdominal complaints worsened over 2 months. She also observed darkening of her skin. On admission she suffered from abdominal cramps, vomiting and profound weakness. On examination her blood pressure was 110/67 mmHg, temperature was 35.9° centigrade. Blood analysis revealed hyperglycaemia (34 mmol/l), in upper normal (4.92 mmol/l; n: 3.6-5.5 mmol/l), decreased basal cortisol (22 mmol/l; n: 145-619 mmol/l), elevated ACTH (532 pmol/L; n: <10.3 pmol/L), elevated 21-hydroxylase antibodies, elevated TSH (10.56 µE/ml; n: 0.27-4.20 µE/ml) and elevated T4 (24.67 µmol/l; n: 12-22 µmol/l), and FT3 3.65 µmol/l (n: 3.1-6.8 µmol/l). These values confirmed the suspected diagnosis of autoimmune adrenalitis with acute adrenal crisis. Intrave-

uous therapy with hydrocortisone 400mg daily was started and changed to oral substitution when retained oral medication. The dose was subse-

quently reduced to 20mg daily. A mineralocorticoid substitution was added. The adrenal crisis was triggered by oversubstitution with levothy-

roxine, confirmed by high fT4. TSH was elevated due to loss of inhibition

of fT3 5.65 pmol/l (n: 3.1-6.8 pmol/l). These values confirmed the suspected

diagnosis of autoimmune adrenalitis with acute adrenal crisis. The add-

ditional antibodies were negative. MRI scan revealed iron-overload in the

pancreas, heart, and liver.

P198

Secondary Hemochromatosis as a rare cause of diabetes
levothyroxine can trigger acute adrenal crisis, exclusion of adrenal insufficiency is crucial before introducing therapy with levothyroxine if there is clinical suspicion.

P190

Role clarification of advanced practice nurses and medical practice coordinators in Swiss primary care: a qualitative study

Muriel Odermatt1,2, Stefan Essig1, Stefan Gysin1,2

1Institute of Primary and Community Care Lucerne, 2University of Lucerne, Department Health Sciences & Health Policy, Lucerne, Switzerland

Introduction: A multimorbid, ageing population and a lack of general practitioners (GPs) in rural areas are challenges of today’s Swiss primary care. Advanced practice nurses (APNs) and medical practice coordinators (MPCs) are two new professions implemented with the goal to tackle these challenges and to improve skill-mix in primary care. The two roles are slowly emerging in pioneer projects. Hence, our aims were to explore the APNs’ and MPCs’ scope of practices, potential role distinctions, and factors for effective collaboration in Swiss family practices where both roles are present.

Methods: We conducted 16 semi-structured interviews with APNs (n = 2), MPCs (n = 4) and GPs (n = 5) from two ongoing pilot projects in rural family practices located in German-speaking Switzerland. One APN, two MPCs and two GPs were interviewed twice. We also interviewed one APN working in a hospital with previous experience as a MPC. Data was analysed using a hybrid approach of thematic analysis, guided by the Canadian National Competency Framework for Interprofessional Collaboration.

Results: Four main themes emerged from the analysis: Firstly, the participants stressed the importance of understanding each others’ roles as well as the roles of other team members in terms of tasks, competencies, responsibilities and boundaries (role clarification). Secondly, both APNs and MPCs cited potential conflicts, such as overlapping tasks and responsibilities if communication is poor or role clarity has not been established (conflict potential). Thirdly, GPs are expected to provide leadership and be role models in collaborative teamwork. They should be open to new processes, ideas and have confidence in the new roles’ abilities (collaborative leadership). Finally, the size and setting of the family practices as well as the team-mix influenced whether the new roles were successfully implemented; appropriate caseload and enough workspace for each team member emerged as particularly important (practice setting).

Conclusions: Our study highlights the pioneer character of APNs and MPCs working together in Swiss family practices. Clear job profiles with well-defined scope of practices for both roles appear essential in order to achieve role distinction and to avoid conflicts. Moreover, the practice setting and the processes towards interprofessional teamwork seem to be crucial for efficient collaboration.

P191

The “bluewhale challenge” - a life-threatening medical emergency

Claudio Acevedo, Christian Trachsel, Esther B. Bachli
Spital Uster, Medizinische Klinik, Uster, Switzerland

Background: The “bluewhale challenge” is an online game in which the participants have to complete a series of tasks assigned to them by a so-called “curator” over a period of 50 days. One task daily has to be fulfilled. Participants have to complete a series of tasks assigned to them by a so-called “curator” over a period of 50 days. One task daily has to be fulfilled. Initially the tasks are harmless. Over time the requirements change and the potential life threatening online game. These threats to public health affect mostly vulnerable populations and are a real danger which has to be known and reported to the legally responsible institutions such as the police and forensic medicine.

P192

58-year-old patient with immune checkpoint inhibitor-mediated perimyocarditis, myositis and hepatitis

Houman Azam-Zangenreh1, Niklas Ehl1, Christian Weissbeu1, Markus Dietthem1, Mark Gumpert2
1Kantonsspital St. Gallen, Klinik für Allgemeine Innere Medizin, 2Kantonsspital St. Gallen, Klinik für Kardiologie, 3Kantonsspital St. Gallen, Klinik für Hämatologie und Onkologie, St. Gallen, Switzerland

Learning objectives: To illustrate the potential risks of modern anti-tumor therapy (esp. checkpoint-inhibitor-therapy), the importance of interdisciplinary collaboration and the possibility of the therapeutic approach to immune checkpoint inhibitor induced autoimmune side effects.

Case: 58-year-old patient with malignant melanoma (initially pT4b, N0) and recurrence with progressive pulmonary metastases who presents with increasing dyspnea and muscle weakness six weeks after initiation of antitumor therapy with pembrolizumab (PD-1-inhibitor). Evaluation demonstrated three concomitant organ involvements: 1. HS-Tropomin 1 of nearly 3800 ng/l suggested a cardiac issue. A gradually decreasing echocardiographic ejection fraction of 45% two weeks after admission (compared to 65% at admission time) with an nt-BNP of 2450 ng/l combined with leftventricular wall motion abnormalities entailed a coronary angiography showing significant - but non-critical - stenosis in the distal left main stem and right coronary artery. Cardiac MRI additionally confirmed suspected perimyocarditis. 2. CK of close to 3700 UI in combination with positive findings in the electromyogram as well as in the quadriceps muscle biopsy proved myositis. 3. Newly developed GPT of ten times the upper limit of normal without evidence of infection or sonographic abnormalities was suggestive of immune-mediated hepatitis. Soon after admission the patient received corticosteroids that improved symptoms and laboratory values (Troponin, CK and GPT). To taper off steroids and avoid a potentially deadly recurrence of symptoms we began an immunosuppressant therapy with mycophenolate. However, the course was complicated by agranulocytosis, septic shock with successful resuscitation and critical illness polyneuropathy under mycophenolate and high dose steroid treatment. Finally, the patient died and so far autopsies showed an ascending pyelonephritis as one potential cause. Other organs are still under investigation.

Discussion: As checkpoint-inhibitor therapy is an indispensable part of today’s antitumor treatment, patients and treating physicians must be aware of the potentially life-threatening side-effects. Interdisciplinary approach and reasoning is an essential part of modern medicine.

P193

Persistent seizures due to cerebral nocardiosis

Annia Gutzwiller1, Peter Ballmer1, Urs Karrer2, Denis Pfohl3, Sabine Sartoretto-Schefer4
1Klinik für Innere Medizin, 2Medizinische Poliklinik und Infektiologie, 3Institut für Pathologie, 4Institut für Radiologie und Nuklearmedizin, Kantonsspital Winterthur, Winterthur, Switzerland

Learning objectives: Management of pyogenic brain abscess includes size dependent neurological drainage, microbiologic and histologic in depth analysis of intraoperative samples, appropriate empiric followed by targeted antimicrobial therapy and a thorough search for risk factors and underlying conditions (particularly immunosuppression).

Case: In September 2017 a 76-year old man was admitted to our ICU with severely reduced consciousness (GCS = 5) caused by persistent focal-complex seizures. Previously, the patient was an independently liv-
ing nursing home resident with COPD, chronic atrial fibrillation and possibly alcohol overconsumption. Beside GCS, vital signs were normal, he was afebrile and cardiopulmonary stable. After seizures were blocked with Levetiracetam CT-scan followed by MRI of the brain revealed a cerebral lesion in the frontal cortex with substantial perifocal edema suspicious for pyogenic brain abscess. Routine blood tests showed macrocytosis without anemia, slightly elevated liver enzymes and a C-reactive protein of 11 mg/L. After normalization of Rivaroxaban-inhibited coagulation, neurosurgical abscess aspiration was performed and empirical treatment with ceftriaxone, metronidazole and dexamethasone was initiated. Microscopy of the abscess showed Gram-positive rods and culture became positive with Nocardia species that were later identified as Nocardia farcinica by 16S-rRNA-sequencing. Treatment was adjusted to Imipenem and Trimethoprim/Sulfamethoxazole (TMP-SXT). Additional workup excluded immunosuppression and other foci of nocardiosis. Since the patient developed loss of appetite, nausea, weight loss and renal impairment TMP-SXT was stopped. Nevertheless, the patient's condition deteriorated with development of a protracted delirium and he died 10 days after admission. An autopsy was not performed.

**Discussion:** Cerebral nocardiosis is a very rare condition in immunocompetent individuals. Most patients with systemic nocardiosis have profound cellular immune deficiency. Despite neurosurgical drainage and intravenous antimicrobial therapy mortality of CNS- nocardiosis remains at 30-50%.

P194

**Dyspnoea, anemia and renal failure in a 17-year old adolescent. Looking for the rare**

Michaela Kramer1, Tanja Kunz2, Theresa Spiess1

1Kantonsspital Uri, Innere Medizin, Altoldorf, 2Luzerner Kantonsspital, Hematologie und Nephrologie, Innere Medizin, Luzern, Switzerland

**Learning points:** The onset of an anti-BM-antibody syndrome may present with unspecific symptoms (e.g. cough, flu-like symptoms) and can progress rapidly. Crucial signs are renal and pulmonary affection.

**Case report:** Diagnosed with a simple bronchitis, the general practitioner initiated symptomatic therapy for his 17-year old patient. Within 7 days the adolescent developed a bloody tinged sputum, recurrent vomiting, left sided flank pain and oliguria. In addition to the deterioration of his state of health, the laboratory results showed anemia (Hb 76 g/l) and signs of new onset renal failure with creatinine serum levels of 675 umol/l.

At the patient's referral to the emergency department, we saw an ill-looking, pale tachypnoeic, hypertensive adolescent (34 breaths per minute and SpO2 of 82%, RR 144/75 mmHg). The urin analysis showed a significant proteinuria and no signs of hemolyisis. Post renal failure could be ruled out in the abdominal ultrasonography. The chest x-ray showed diffuse, multiple alveolar bilateral infiltrates, coherent with signs of alveolar hemorrhage. Due to these findings, we suspected a vasculitis with pulmonary and renal affliction. The patient was referred to the Luzerner Kantonsspital (LUKS) for further treatment, where he received regular plasmapheresis, hemodialysis and immunosuppressive therapy with prednisolone and cyclophosphamide. Together with the emergency room (ER) - Team of the Kantonsspital Uri (KSU) and the Department of Hematology and Nephrology (LUKS) an anti-BM-antibody associated syndrome with pulmonary affliction, was confirmed early.

**Discussion:** Although anti-BM-antibody associated syndromes are a rare condition, good communication between the general practitioner, the ER-Team and the departments of hematology and nephrology can lead to finding the diagnosis swiftly. A rapid initiation of treatment may lead to a favorable outcome regarding survival and kidney function.

P195

**High altitude emergency medicine - tourists presenting to a mountain hospital in Nepal**

Victor Speidel1,2, Martin Müller1,2, Aristomenis Exaktyákos1, Monika Brennermaeder1,2

1Kantonsspital Aarau, Clinic of Infectious Diseases and Department of Internal Medicine, Aarau, 2Inselspital, Bern University Hospital, Department of Emergency Medicine, Bern, Switzerland, 3University Hospital of Cologne, Institute of Health Economics and Clinical Epidemiology, Cologne, Germany, 4Institute of Mountain Emergency Medicine, EURAC Research, Bolzano, Italy

**Introduction:** The majority of trekkers coming to the Khumbu region plan to ascend to an altitude between 4860m above sea level (Gokyo) and 5380m (Everest Base Camp). As they often arrive badly acclimatized and experience important altitude differences, they are more susceptible to altitude-related illnesses than the local population. Acute mountain sickness (AMS) affects more than 25% of individuals ascending to 3500 m and more than 50% of those above 6000 m. When suffering from medical problems, they rely on local healthcare facilities like the HRA healthposts in Pheriche and Manang and the hospitals in Khunde, Lukla or Namche Bazaar. The hospital in Khunde and the Pasang Lhamu Nicole Niquille (PLNN) Hospital in Lukla are the only hospitals that are open year-round providing basic health care for the local community and tourists alike.

**Methods:** In this retrospective cohort analysis, we wanted to assess the prevailing medical problems of all non-Nepalese patients seeking medical help in PLNN hospital over the year coinciding with the main tourist seasons with up to 72 consultations per month.

**Results:** 227 foreign patients presented to PLNN hospital in the study period, with a median age of 44 years. The analysis shows two peaks of presentation over the year coinciding with the main tourist seasons with up to 72 consultations per month.

![Figure 1: 24.7% of patients presented with high altitude pulmonary edema.](image)

**DIAGNOSIS BY NUMBER OF PATIENTS**

<table>
<thead>
<tr>
<th>Altitude Illness</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAPE</td>
<td>56</td>
</tr>
<tr>
<td>HACE</td>
<td>15</td>
</tr>
<tr>
<td>URTI</td>
<td>45</td>
</tr>
<tr>
<td>Trauma</td>
<td>25</td>
</tr>
<tr>
<td>Gastroenteritis</td>
<td>23</td>
</tr>
<tr>
<td>Other</td>
<td>55</td>
</tr>
<tr>
<td>ALTIMETRICS</td>
<td>27</td>
</tr>
</tbody>
</table>

![Figure 2: Diagnosis by number of patients.](image)

43.2% arrived by helicopter. Almost 20% of patients suffered from serious medical problems. 253 diagnoses were made with multiple possible diagnoses per patient. Of all diagnoses, 25 (10%) were trauma-related, 97 (38%) altitude-related, 45 (18%) upper respiratory tract infections (URTI) and 23 (9%) gastroenteritis [Fig.1; HAPE: high altitude pulmonary edema, HACE: high altitude cerebral edema]. 11.1% were admitted to the hospital ward, while 15.1% were transferred to Kathmandu for further management. 43.1% of patients presented with high-altitude illnesses, making this the most common diagnosis of all. 24.7% of patients presented with HAPE, of which 51.8% (n = 29) had a chest x-ray [Fig.2].
Conclusion: Our data indicate that altitude-related health problems largely contribute to the burden of disease of tourists in the Nepal Himalayas. Further education of tourists and guides is necessary to prevent this main cause of morbidity among trekkers in the region.

P196

A pimple on the valve
Lara Schneider1, Michael Greiner1, Pascal Köpfli1, Jürg H. Beer1,2
1Kantonsspital Baden, Innere Medizin, Baden, 2Laboratory for Platelet Research, Molecular Cardiology, Universitätsspital Zürich, Switzerland

Learning objectives: Atypical presentation and rare bacterial etiology of endocarditis; importance of blood cultures for therapy.

Case: A 64 y.o. male presented to the emergency room with acute onset of fever (39.5°C) and shivering. He also reported lower back pain. The pain first occurred after lifting a heavy trunk 3 weeks before. The clinical examination was without pathological findings. Laboratory tests demonstrated a slightly elevated C-reactive protein (12.9 mg/l) without leucocytosis. MRI of the spine showed a fracture of the 11th thoracic vertebra, without signs of spondylodiscitis. Past medical history included replacement of the mitral valve with a biologic prosthesis. An echocardiography revealed a vegetation of 14mm on the mitral valve, leading to the diagnosis of endocarditis. Septic embolisms were ruled out by further diagnostics. After a 5 day incubation period, blood cultures showed growth of *Cutibacterium acnes* (former *Propionibacterium acnes*). A psoriatic rash behind both ears, which the patient had been scratching, was found to be a possible entry site. The infection was treated with ceftriaxone (2 grams/day i.v.) and rifampin (450mg p.o. BID). Under antimicrobial treatment, the vegetation decreased in size (12mm) and the fever stopped. The psoriatic rash dissolved with topical application of Halometasone. After 2 weeks, the patient was well enough to be discharged from the hospital. The antibiotics were continued for a total of 6 weeks.

Discussion: Most of the time, Staphylococci or Streptococci are the bacteria responsible for endocarditis. *C. acnes* is only isolated in approximately 0.9% of the cases. The bacteria typically infects prosthetic valves and blood cultures have to be incubated for up to 15 days to reveal its growth. There is very little data on how to treat an infective endocarditis with *C. acnes*. In the cases documented up to date, a surgical approach was often necessary. As repeated echocardiography showed preserved function of the mitral valve and decreasing size of vegetation, we were fortunately able to follow a conservative treatment with antibiotics over the course of 6 weeks. After determination of the minimal inhibitory concentration, we chose ceftriaxone and rifampin. Both antibiotics show excellent activity against *C. acnes*. Ceftriaxone has the advantage of an OD application and rifampin has a good activity against microbial biofilms. Currently (day 28 of treatment), the patient has recovered well without complications.

P197

The rare case of the board examination- not so rare after all? (Case Report)
Andrea Fisler, Erwin Grüter
Kantonsspital Baden, Nephrologie und Dialyse, Baden, Switzerland

Case: A 48 year old female patient (BMI of 18kg/m2) without relevant medical history was admitted to the hospital with increasing swelling and pain over the last 2 weeks and acute redness affecting the upper ankle joint. An infectious arthritis was assumed (CRP 120mg/l, leucocytes 10.5Tsd/µl). A diagnostic puncture of the upper ankle joint was obtained and antibiotic treatment with Amoxicillin-Clavulanic was applied (3x2.2g intravenously). While the kidney function was initially normal (serum creatinine (sCr) 69µmol/l, correlating with a eGFR of 90ml/min/1.73m² by the CDK-Epi formula), the sCr rose to a maximal value of 160µmol/l (day 5) accompanied by macrohematuria. This resulted in a nephrological consult.
There was no history of NSAR or COX-2-Inhibitor use, nor had there been an examination with radiographic contrast. The blood pressure was low (90/55mmHg), but without signs of sepsis. Sonographically the kidney presented normal in size and structure. In the urinary sediment crystals of thin needleshape were seen, isolated and in bunches. They proved to be birefringent; additionally many non-glomerular erythrocytes were seen. The examiner remembered having seen a similar sediment at the nephrology board exam, where she had to admit to not have seen this picture during the 3 years of training. The literature review showed only case reports; never the less we diagnosed crystalluria due to amoxicillin.

Discussion: Amoxicillin crystals in the urinary sediment were first described in a healthy volunteer, to whom amoxicillin was given intravenously to investigate amoxicillin excretion. Several case reports have described crystalluria since, in some cases crystals were the only renal manifestation, in some concomitant hematuria occurred and in some cases the situation was complicated by acute renal insufficiency. In all cases the renal manifestation was reversible after cessation of amoxicillin.

Conclusion: Amoxicillin crystalluria is a rare but sometimes severe complication, at risk are patients with high amoxicillin doses, low diuresis and acidic urine. An urinary sediment is necessary to find the right diagnosis.

P198

Sensitization for peer handovers and its impact on working hours and job satisfaction: an observation

Elisabeth Weber, Sabine Dinges, Nina Vadasz, Lars C. Huber
Stadtspital Triemli, Department Innere Medizin, Zürich, Switzerland

Introduction: Efficient handover at shift end is essential for patient safety and the work-life balance of physicians. Hospitals in Switzerland provide a 24/7 service while being restricted by a maximum of 50 physicians' working hours per week. This requires timely handover at shift end. In this observation, we focused on handovers between resident physicians and report here the analysis of working hours and personal experience during a pre-defined observational period.

Methods: Structured handover tools for the communication between peers are already established in our clinic and include the acronyms ÜBERGABE (Übersicht - er ist in-/stabil - generell - aktuell - Befunde - Ereignisse/Plan) and SOBP (Subjektiv - Objektiv - Befund - Prozedere). Following an “information month”, during which the team was repeatedly reminded to focus on structured and efficient peer handover. In October 2018 was defined as “awareness month”. For the analysis of personal experience each resident completed a questionnaire at the end of the observational period. Working hours were compared between October 2018 and October 2017.

Results: 29 of 50 questionnaire were returned and analyzed. 21 team members reported a successful handover in more than 50% of handover situations as compared to only 8 that experienced the handover in more than 50% as not satisfactory. This is in line with the fact that the majority (23) reported positive feelings when leaving the hospital. Although we discharged more patients in the observational period than in the comparison period (726 in 10/2018 compared to 706 in 10/2017), fewer overtime working hours accumulated (0 hrs. 10/2018 compared to 62 hrs. in 10/2017). These results indicate efficient peer handover with the opportunity to leave the shift on time. The most critical point reported was the lack of defined general conditions during peer handover (i.e. specified time point and defined team member). Conversely, it was acknowledged that the mere awareness and encouragement already facilitated the initiation of handover between peers.

Conclusions: This observation shows that encouragement and sensitization for peer handover help to reduce the accumulation of overtime and supports team members to leave work with positive feelings. Our data emphasize that encouragement for timely peer handover at shift end might contribute to team motivation. Further investigations are required to analyze patient safety and the long-term effects of such an intervention.

P199

A refractory atypical pneumonia

Regula Graf1, Markus Hofer2, Reinhard Imoberdorf2, Vineeta Bansal Zweifel1
1Department of Medicine, 2Division of Pneumology, Kantonsspital Winterthur, Division of Infectious Diseases, Winterthur, Switzerland

Learning objective: Refractory atypical pneumonia caused by macro-lide-resistant Mycoplasma pneumoniae

Case: A 58 year old female patient presented with cough and exertional dyspnea for twelve days during holidays in Salzburg, Austria. She had already been treated with amoxicillin/clavulanic acid for six days and additionally azithromycin for two days. Except a smoking history until 1998 (10py) and pneumonia at the age of eleven, her pulmonary history was unremarkable.

Clinical examination revealed subfebrile temperature (38.0°C), tachycardia (111 bpm) and bibasilar crackles predominantly on the right side. Laboratory findings included a leucocytosis with neutrophilia and a C-reactive protein of 134 mg/L. Chest X-ray showed an infiltrate in the right posterobasal lower lobe and diffuse smaller infiltrates. We started an intravenous treatment with amoxicillin/clavulanic acid and oral clarithromycin.

On this therapy the patient’s condition worsened, signs of inflammation were increasing and a computed tomography showed bibasilar consolidations, infiltrations in both upper lobes and bilateral pleural effusion. The bronchoscopy revealed oedematous mucosa and unspecific inflammatory cells. We changed antibiotic therapy to levofloxacin. Because of respiratory insufficiency, the patient was transferred to the intensive care unit for respiratory support. Polymerase chain reaction in the bronchoalveolar lavage fluid was positive for Mycoplasma pneumoniae with a point mutation in the ribosomal rL-gene, standing for high-grade macrolide-resistance. Under the treatment with levofloxacin, the patient’s condition improved. After three days on intensive care unit and 18 days of hospitalization, she could be discharged to pulmonary rehabilitation. Eight months after Mycoplasma pneumonia the patient is still suffering from a mild exertional dyspnea, has a mild obstructive ventilation disorder with normal diffusion capacity and the computed tomography shows mild residual ground-glass opacities matching a prolonged course.

Discussion: Mycoplasma pneumoniae is the most common pathogen for atypical pneumonia and responsible for up to 20% of all community acquired pneumonias. If treatment is required, Macrolides are first-line antibiotics for treatment of Mycoplasma pneumoniae. However cases with macrolide-resistant Mycoplasma pneumonia are increasing and should be considered in a patient not responding to the antibiotic treatment.

P200

Ich stelle mir eine Medizin vor... Ich imagine a medicine...

Lisa Bircher1, Bruno Kissling2
1None at this Time, Basel, 2ElfenauPraxis, Bern, Switzerland

Introduction: In our modern medicine with its impressive innovations of medical-technical possibilities there is a strong risk that the patient with its individual and contextual needs gets lost. To strengthen the quality of medical examinations and therapies and to reduce overdiagnosis and overtheraphy a person centred approach may be an effective way. This means for the physician, to understand the patient with his / her inner pictures and the reality he / she constructs about his /her suffering, to balance it with the medical evidence and to co-create a common reality as base for a person-centred bio-psycho-social healing process.

Methods: Workshop: readings of passages of the book ‘Ich stelle mir eine Medizin vor...’, Lisa Bircher and Bruno Kissling, rüffer&rub, 2018 as impulses for an interactive exchange of the participants about their personal doctor-patient experiences in their daily professional activities within hospitals and private practices.

Results: Awareness on the needs of the patient will foster a person centred approach to the patient leading to shared decision making with a more appropriate and meaningful medicine and in consequence to a better quality.

P201

Fever and elevated liver values: it is not always a calcule cystitis cholezystolithiasis

Sandra Müller1, Alexia Cusini2, Jan-Olaf Wolffhard Gebbers3, Simon Brunner1
1None at this Time, Basel, 2ElfenauPraxis, Bern, Switzerland, Switzerland

There was no history of NSAR or COX-2-Inhibitor use, nor had there been an examination with radiographic contrast. The blood pressure was low (90/55mmHg), but without signs of sepsis. Sonographically the kidney presented normal in size and structure. In the urinary sediment crystals of thin needleshape were seen, isolated and in bunches. They proved to be birefringent; additionally many non-glomerular erythrocytes were seen. The examiner remembered having seen a similar sediment at the nephrology board exam, where she had to admit to not have seen this picture during the 3 years of training. The literature review showed only case reports; never the less we diagnosed crystalluria due to amoxicillin.

Discussion: Amoxicillin crystals in the urinary sediment were first described in a healthy volunteer, to whom amoxicillin was given intravenously to investigate amoxicillin excretion. Several case reports have described crystalluria since, in some cases crystals were the only renal manifestation, in some concomitant hematuria occurred and in some cases the situation was complicated by acute renal insufficiency. In all cases the renal manifestation was reversible after cessation of amoxicillin.

Conclusion: Amoxicillin crystalluria is a rare but sometimes severe complication, at risk are patients with high amoxicillin doses, low diuresis and acidic urine. An urinary sediment is necessary to find the right diagnosis.
well, liver enzymes had decreased to normal values. *Coxiella burnetii* in the CBD mislead us to the diagnosis of a calculous cholecystitis. Fitted if signs and symptoms persist. In our case the presence of a stone his overall well-being improved rapidly. After 8 weeks of hospital stay he were performed. After intervention the liver enzymes did not decrease drainage of the gallbladder was performed. Despite gallbladder drainage bilirubin continued to rise, so a liver biopsy was performed. The histology showed a marked subacute interstitial hepatitis with intrahepatic cholestasis and fibrin-ring granulomas, which are typically seen in patients with acute Q-fever. The diagnosis of an acute infection with *C. burnetii* was proven by highly-positive anti-phase II IgG (10240/DIL) and IgM (640/DIL). Doxycycline was started. The patient's fever decreased and the overall well-being improved rapidly. After 8 weeks of hospital stay he was dismissed to rehabilitation. At the 3-month-follow-up the patient did well, liver enzymes had decreased to normal values.

**Discussion:** This case illustrates that initial diagnosis has to be re-evaluated if signs and symptoms persist. In our case the presence of a stone in the CBD misled us to the diagnosis of a calculous cholecystitis. Finally the liver biopsy, which showed typical fibrin-ring granulomas, led to the diagnosis of *Coxiella burnetii* hepatitis in line with acute Q-fever.

**Initial symptoms are not pathognomonic; hence it is often misdiagnosed. Immediate recognition and emergency surgical treatment are essential to improve survival, since untreated NF rapidly evolves into septic shock and multiple organ failure (MOF). Antibiotics and in some cases intravenous immunoglobulin play an important role but have little value in managing NF as an isolated intervention.

**Case:** Patient A (60 y, history of congestive heart failure, hypertension and atrial fibrillation) was admitted to our emergency department with 2 weeks history of worsening left leg pain and dizziness. Patient B (74 y, history of alcohol-abuse with no other known comorbidity) presented with rapidly progressive left leg pain, confusion, dizziness and anuria for 48 h and a history of a domestic fall. Both patients showed erythema, swelling and tenderness of the affected leg. Patient B also displayed a subcutaneous hemorrhagic collection of the thigh, initially interpreted as a post-traumatic hematoma. Both presented symptoms of general toxicity including metabolic acidosis, coagulopathy and rapidly developed hemodynamic instability. Both were admitted to the intensive care unit (ICU), received antibiotic and inotropic therapy, continuous renal replacement therapy, intravenous immunoglobulin and hydrocortisone. Relatives of patient A opposed amputation; she underwent repetitive surgical debridement and recovered after a long ICU hospitalization. Patient B underwent proximal left femur amputation during the night of admission with early surgical revision because of progressive stump necrosis. Despite these procedures, she died of MOF 59h after admission.

**Discussion:** Patient A, though having an indication for amputation (septic shock requiring >1 inotrope), only underwent simple debridement and recovered, whereas patient B died in spite of broad leg amputation, challenging the concept that lack of radical intervention associates with increased mortality. The degree of metabolic imbalance appeared to be predictive: Patient B showed more severe hypernatremia, renal and liver impairment, lower platelet and higher white blood cell counts compared to patient A. Early diagnosis and intervention is key to improve survival. The virulence of pathogenic agents (S. dysgalactiae in A and S. pyogenes in B) may also play a role.
Indications for POCUS use: In total, 1341 POCUS reports were identified and analyzed. Main indications were kidney and urinary tract-, soft tissue- and pleura examinations, accounting for >70% of all examinations. Table 1 summarized all indications. Indications with less than 1% occurrence were categorized as miscellaneous.

Conclusions: It is feasible to implement a POCUS service in IM clinics in a tertiary hospital. Suspicion of post-void residual urine and pleural effusion were common indications for POCUS and were simple and fast to diagnose when present. We observed that this had a valuable impact on patient management without the need of advanced technical skills.

How emotional stress impacts your heart and brain

Eveline Daetwyler, Andreas D. Kistler, Michael Neuhaus, Philip Siebel
Cantonal Hospital of Frauenfeld, Department of Internal Medicine, Frauenfeld, Switzerland

Learning objectives: Stress (Takotsubo) cardiomyopathy (TS) is an acute cardiomyopathy characterized by (transient) wall motion abnormalities. These can lead to intracardiac mural thrombus and consequently to thromboembolic complications such as ischemic stroke. Incidence of TS is often associated with previous emotional or physical stress. Here, we report the case of an elderly woman who, after being exposed to emotional stress, showed symptoms of TS and developed an ischemic stroke.

Case:
A 76-year-old woman was hospitalized due to sudden onset of sensory disturbances in the left side of the body. Initially, the patient displayed only mild symptoms, which deteriorated over the next hours resulting in left-sided sensorimotor hemisindrome, left-sided facial palsy, tactile neglect to the left and a dysarthria. The ECG showed T-segment depression in the inferolateral and anterior leads. Moreover, levels of hs troponin T and CK were increased. Brain MRI detected multiple acute ischemic areas in the vascular territory of the right middle cerebral artery (fig. 1). Transthoracic echocardiography revealed antero-apical akinesia and apical ballooning. This finding was confirmed in the laevo-cardiogram (fig. 2), whereas coronary angiography was without evidence of coronary thrombosis or relevant stenosis. In the work-up for stroke, we found no evidence for another embolic source, no signs of atherosclerosis or of vasculitis. Medical history revealed the recent death of her husband as a strong emotional stress. Therapy with ACE inhibitors and beta-blockers was initiated according to guidelines provided by the European Heart Journal. Due to persistent akinesia in the echocardiography, anticoagulation with rivaroxaban was started 7 days after acute ischemia.

Discussion: TS is often linked to physical or emotional stress and emphasizes the need for a comprehensive medical history. Furthermore, in our patient, TS was likely complicated by an embolic stroke, given the close temporal association and the fact that cerebral ischemia followed an embolic pattern with no other embolic source or stroke etiology identified. The development of thrombus and subsequent stroke has also previously been reported in TS. Our case thus highlights this potential severe complication of an otherwise benign and reversible cardiac disease. Monitoring for neurological complications and follow-up echocardiography to detect intracardiac thrombi in the course of TS is therefore advisable.

Wasser auf dem Herz - Quelle im Darm

Michael Küngli, Philippe Rochat
Klinik für Innere Medizin, Kantonsspital Frauenfeld, Frauenfeld, Switzerland


Konklusion: Nach multiplen Rezidiven der Pleuropankarditis und Nachweis einer gastrointestinalen Stummen, histologisch aktiven Colitis ulceroasa bei Erstmanifestation der Colitis ulcerosa.

Diskussion: Chronisch inflammatorische Darmerkrankungen können auch bei gastrointestinal symptomatik in der extraintestinalen Beschwerden, darunter auch Perimyokarditiden, verursachen.

Discussion: Paradoxical IRIS is a diagnosis of exclusion. This case highlights the different clinical manifestations, which impede prompt diagnosis and onset of treatment.

P207

Can pancreatic enzyme replacement therapy prevent severe kidney damage?

Julian Biggel1, Emmanuelle Landmann2, Argyrios Georgalis3, Thomas Menter2, Samyut Shrestha1, Clemens Winterhalder1, Tobias Breidhardt1

1Innere Medizin, Universitätsspital Basel, 2Transplantationsimmunologie & Nephrologie, Universitätsspital Basel, 3Institut für Medizinische Genetik und Pathologie, Universitätsspital Basel, Basel, Switzerland

Introduction: Acute oxalate nephropathy is a severe complication of chronic pancreatitis.

Case: A 71 yo male patient presented with weeklong history of nausea, vomitus and diarrhea. His past medical history was remarkable for chronic pancreatitis (primary diagnosis >10 yrs ago), secondary diabetes mellitus and exocrine pancreatic insufficiency. He admitted to self-terminating his pancreatic enzyme replacement therapy 14 days earlier.

Physical examination: blood pressure 185/98 mmHg, heart rate 99/min, respiratory rate 18/min, SpO2 100%, neck veins collapsed at 0°, dry mucous membranes and uremic fetor.

Laboratory results: Renal failure (creatinine:1065 µmol/L), hyperkalemia (potassium: 6.1 mmol/l), metabolic acidosis (pH 7.28 [N:7.38-7.42], bicarbonate: 12.2 mmol/l [N:21-26 mmol/l]).

Kidney biopsy was performed showing extensive acute tubular damage and severe oxalosis with multiple calcium oxalate crystals both in the renal cortex and medulla. The diagnosis of severe oxalate nephropathy was made. Oral calcium and pancreatic enzyme supplementation was started. The serum oxalate was elevated (25.55 µmol/l [N: 4.31-8.55 µmol/l]), although the patient was already dialysed.

Despite withdrawing pre-existing ACE-Inhibitor therapy and administering crystalloid infusions, the patient remained oliguric and intermittent hemodialysis was initiated. One month after the initial renal failure persist and the patient remains on chronic outpatient hemodialysis.

Discussion: Acute tubular damage and birefringent oxalate crystals in polarized light (left), HE-stain (right)
Anticoagulant-related nephropathy: myth or reality?

Gisela Marcelino1, Ould Maouloud Hemetti2, Eric Descombes2

1HFR Fribourg, Service de Médecine Interne, 2HFR Fribourg, Service de Néphrologie, Fribourg, Switzerland

Introduction: The new oral anticoagulants (NOACs) have become very popular in medical practice since their appearance in the market, and are frequently the molecule of choice for the prevention of systemic embolization or stroke due to atrial fibrillation, for the treatment of venous thromboembolism or even due to their simpler use in comparison to warfarin. However, recent literature recognizes an increased risk of renal failure with both NOACs and warfarin.

Methods: We researched VigilAccess database for any evidence associating renal injury with all the NOACs as well as with warfarin, phenprocoumon, acenocoumarol, heparin and enoxaparin. VigilAccess database is an international pharmacovigilance database from 134 countries from all around the world that are members of the World Health Organization Programme for International Drug Monitoring. Results: This data show that all anticoagulants can induce renal failure but particularly NOACs, as out of a total of 235,457 cases reported since 2003, 7,725 cases were renal side effects, the majority being an acute kidney injury (49.1%) or an unspecified type of renal failure (36.3%), see table 1. In addition, dabigatran and rivaroxaban were the drugs more frequently associated with renal injury: 4.4% and 3.3%, respectively, compared to 1.5% for apixaban and 1.7% for edoxaban. Of note, since the first case reported for both antivitamin K and heparin in 1968 only 2,145 and 2,263, respectively, of renal side effects have been reported, see table 1.

Conclusion: All anticoagulants can induce renal injury, being NOACs the most concerned. Therefore, medical doctors should be aware of this risk when prescribing a long-term anticoagulation to their patients.

Table 1 – Frequency and type of renal side effects for NOACs, antivitamin K and heparin retrieved from VigilAccess database from WHO Programme for International Drug Monitoring, Available in: http://www.vigilaccess.org/

<table>
<thead>
<tr>
<th>NOACs</th>
<th>AVKs</th>
<th>Heparin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of reported side effects</td>
<td>N=235,457</td>
<td>N=117,015</td>
</tr>
<tr>
<td>First case reported</td>
<td>2003</td>
<td>1968</td>
</tr>
<tr>
<td>Renal side effects, n(%)</td>
<td>7,725 (3.3)</td>
<td>2,145 (1.8)</td>
</tr>
<tr>
<td>AKI</td>
<td>3,796 (49.1)</td>
<td>904 (42.1)</td>
</tr>
<tr>
<td>Renal failure unspecified</td>
<td>2,802 (36.3)</td>
<td>704 (32.8)</td>
</tr>
<tr>
<td>Renal haemorrhage</td>
<td>533 (7.2)</td>
<td>147 (6.9)</td>
</tr>
<tr>
<td>CKD</td>
<td>205 (2.7)</td>
<td>75 (3.5)</td>
</tr>
<tr>
<td>TIN</td>
<td>55 (0.7)</td>
<td>36 (1.7)</td>
</tr>
<tr>
<td>Other</td>
<td>310 (4.0)</td>
<td>279 (13.0)</td>
</tr>
</tbody>
</table>

All NOACs (rivaroxaban, apixaban, edoxaban and dabigatran) were included. Aacenocoumarol, warfarin, phenprocoumon were regrouped as AVKs. AKI, acute kidney injury; AVKs, antivitamin K; CKD, chronic kidney disease; NOACs, new oral anticoagulants; TIN, tubulointerstitial nephritis.

Background: Decisions to admit patients to intensive care (ICU) should be based on patients’ need for life-sustaining therapies, and long-term survival and functional prognosis. However, physicians’ decisions are mostly influenced by the expected probability of improving patient survival in the short term. How long-term survival benefit and quality of life influence the ICU admission decisions is unclear.

Aim: Assess the influence of the estimated 6-month survival and functional status on ICU admission decisions.

Methods: Requests for ICU admission for medical in-patients were identified from a prospective cohort of hospital physicians. The working groups were asked to estimate patient survival if admitted in the ICU and if staying on the ward (<10%, 10-40%, 41-60%, 61-90%, >90%), and 4 longer-term outcomes on a Likert scale. Advanced disease was determined based on diagnoses in the medical record. The admission decision and survival at 28 days were recorded.

Results: Among 201 patients, 105 (52.2%) had an advanced disease, and 140 (69.7%) were admitted to the ICU. The oldest patients (>80 years) were less likely to be admitted. There was no difference between patients with or without advanced disease (p = 0.97). Physicians’ estimates of patient survival at 6 months, functional recovery, and cognitive recovery were not associated with the admission decision. In the multivariate logistic regression models, only predicted short-term survival and older age were associated with the decision, for the whole population and for patients with advanced disease. Fifty-eight patients (28.9%) had died by day 28. Mortality was higher in patients with advanced disease (39.0% vs 17.7%).

Conclusions: ICU admissions were determined by short-term survival benefit, and not by long-term survival or functional prognosis, including for patients with advanced disease.

Funding: Swiss National Science Foundation, NRP 67 “End-of-life”
Subacute cutaneous lupus erythematosus induced by omeprazole: a second effect to keep it mind

Caroline Schuhler1, Chloé Alberto2, Virginie Prendki1, Michael Luslin2, Laurence Toutous-Trellu2, Astrid Malézieux-Picard1

1Geneva University Hospitals - Trois-Chêne, Service de Médecine Interne de l’Âgé, Thonex, 2Geneva University Hospitals (HUG), Service de Dermatologie, Clinique, Genève, Switzerland

Learning objectives: Identification, diagnosis and treatment of Subacute Cutaneous Lupus Erythematosus (SCLE) caused by Proton pump inhibitors (PPIs).

Case: A 81-year-old woman was admitted for pneumonia. Physical examination found erythematous-squamous lesions on the lips. During hospitalization, patient developed fever and erythematous-squamous plaques, evolving to greyish and telangiectatic depigmentation on the face, trunk and external side of members (Figure 1 &2). We also noted two erythematous macules on hard palate. Biological inflammation persisted despite treatment with Piperacilline Tazobactam and good pulmonary evolution. Differential diagnosis was toxidermia, subacute lupus or undetermined viral rash. Skin biopsy was performed and histological examination found atrophic epidermis with abundant basal and suprabasal keratinocytes necrosis. Upper dermis showed an inflammatory cell infiltrate with mostly perivascular and interstitial lymphocytes with a lichenoid dermo-epidermal junction and mucine deposits. Direct immunofluorescence was negative. Drug induced SCLE was therefore suspected. Omeprazole was started few months ago for epigastralgia. The diagnosis of systemic lupus erythematosus (SLE) was excluded because of the absence systemic organ failure. Omeprazole was stopped and patient was treated with topical corticosteroids and hydroxychloroquine. Two weeks after drug discontinuation we noticed that biological inflammatory syndrome and skin lesions decreased.

Discussion: To our knowledge, about 30 cases of SCLE induced by PPIs were reported. Pathophysiology can be explained by several mechanisms such as activation of specific drug’s lymphocytes mimicking lupus biological and clinical presentation. The average delay between the introduction of PPIs and the onset of SCLE symptoms varied between 3 days and 4 months and the clinical recovery occurred within 4-12 weeks. A new diagnostic of SCLE is rare in the elderly. Therefore, clinicians have to think of drug-induced SCLE. Hydralazine, quinidine, isoniazid have been associated to systemic lupus. Because of co-morbidities requiring polymedication, elderly population is subject to a high risk of drug interaction and to side effects. SCLE induced by PPIs is a good example of a rare cutaneous side effect induced by a frequently prescribed drug.

Multiple myeloma treatment induced DRESS syndrome

Agnes Vella, Stojan Todorov, Sophie Schaller, Christoph Blank, André Laszlo

Service de Gériatrie Aiguë, HFR Riaz, Riaz, Switzerland

Learning objective: Drug reaction with eosinophilia and systemic symptoms (DRESS) should be suspected in a febrile erythrodermia with eosinophilia and systemic involvement. Diagnosis is usually made only by the way of exclusion after exhaustive clinical investigations.

Case: We reported a case of a 77-year-old woman, treated since 3 weeks for Multiple Myeloma by chemotherapy of Lenalidomide and Bortezomib, taking Trimethoprim-Sulfamethoxazole as prophylaxis. After the 2nd dose of chemotherapy our patient developed progressive fatigue, fever, dyspnea with oxygen requirement and a pruritic maculopapular rash, involving total body and worsening in erythroderma with periorbital edema. Laboratory investigations showed leukocytosis 15.1 G/L with eosinophilia 3.58G/L (23.7%), high serum C-reactive protein (44mg/l) and acute renal injury (creatinine 121µmol/l) with proteinuria (0.45g/l). Liver and pancreatic enzymes were normal. The differential diagnosis included an exanthematous drug eruption, viral infection, para-neoplastic reaction and vasculitis. Blood cultures were declared sterile; the serology tests for hepatitis (HAV-HBV), CMV, EBV and HHV-6 acute infection were negative. Because of low rate of plasmocytes for chemotherapy treatment, paraneoplastic reaction was unlikely. The clinical manifestations of maculo-papular rash, fever and eosinophilia, with a Regiscore of 7 points in favor of a definitive DRESS diagnosis and Japanese group score of 5 points for atypical DRESS, suggested a DRESS syndrome.

All medications were suspended and oral corticotherapy 1mg/kg was started. The evolution was marked by regression of rash, loss of fever and resolution of hyper eosinophilia. The histology of skin biopsy was consistent with drug eruption. The eosinophilia kinetic and clinical manifestations 3 weeks after initiating chemotherapy suggested that Lenalidomide, Bortezomib and Trimethoprim-Sulfamethoxazole could be responsible for DRESS onset. Lymphocyte stimulation test was planned 4 weeks after cessation of corticotherapy in order to identify the casual drug. Meanwhile, the treatment of Multiple Myeloma was replaced by second line treatment.
Discussion: DRESS syndrome is a rare (1/1000-1/10000) delayed hypersensitivity reaction, that can be triggered by many drugs and can potentially lead to life threatening (mortality rate of 10%). Meticulous drug history and cessation of the causal drug are crucial for early diagnosis and prognosis.

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Pharmacokinetic and tolerability profile of sultiame in healthy volunteers with in vitro characterization of its uptake by red blood cells

Kim Dao1, Paul Thoueille1, Laurent Arthur Decosterd2, Thomas Mercier1, Monia Guidi3, Carine Bardinet1, Arnaud Castang4, Catherine Guittet4, Luc-André Granier4, Thierry Buclin2, Adeline Mathieu3, Monserrat Fraga1

1Clinical Pharmacology, CHUV, 2Laboratory of Clinical Pharmacology, CHUV, Lausanne, 3School of Pharmaceutical Sciences, University of Geneva, University of Lausanne, Geneva, Switzerland, 4Advicenne Pharma SA, Nimes, France

Introduction: Sultiame (Ospolot®), an inhibitor of carbonic anhydrase, is a first choice treatment in several countries for benign epilepsy with centrotemporal spikes, a non-lesional epileptic syndrome of childhood. Its pharmacokinetic (PK) profile was scarcely studied in humans. It represents a suitable candidate for paediatric formulation optimization, as the current formulation of coated tablets of 50 or 200 mg allows neither precise and adapted dosing, nor convenient administration to young children. In that context, a pilot study aiming at specifying sultiame’s PK was conducted using a non-compartmental approach accordingly showed a tenfold increase, while doses were doubled. Sultiame’s PK is described in details for the first time, in children.

Methods: Single oral doses of 50, 100 and 200 mg of sultiame (Ospolot®) were administered in open-label study during periods 1, 2 and 3 respectively, at 3-4 weeks intervals in four healthy volunteers. On each period, serial plasma, whole blood and urine samples were collected. A validated high performance liquid chromatography coupled to tandem triple quadrupole mass spectrometry method was used for the quantification of sultiame in whole blood, plasma and urine. A spiking experiment was also performed to characterize sultiame’s PK parameters were evaluated using standard non-compartmental calculations and non-linear mixed effect modelling.

Results: The plasma concentration results showed striking non-linear responses between plasma and erythrocytes observed in vivo. Very quick uptake of sultiame into erythrocytes was observed in vivo and in vitro with minimal efflux. Plasma, whole blood and urine PK parameters computed using a non-compartmental approach accordingly showed dose-related variations. A three-compartment model (NONMEM®) incorporating a saturable ligand to receptor binding best described the data.

Conclusions: Sultiame’s PK is described in details for the first time, including estimations of clearance and volume of distribution that were so far unpublished. Plasma-to-blood concentration ratio confirms sultiame’s strong affinity for red blood cells, with saturable binding. This non-linear is attributed to a strong affinity for carbonic anhydrase abundant in erythrocytes. Further studies and therapeutic monitoring interpretation should take this peculiarity into account.

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Therapeutic monitoring of direct-acting antivirals for the treatment of hepatitis C

Yulia Evsyutina1, Thierry Buclin2, Adeline Mathieu3, Monseff Fraga Christinet4, Darius Moradpour5, Haithem Chitou2

1University of Lausanne, 2Service de Pharmacologie Clinique, 3Centre Hospitalier Universitaire Vaudois, University of Lausanne, Service de Gastroenterologie et Hepatologie, Lausanne, Switzerland

Introduction: Standard therapy of chronic HCV infection is currently based on direct-acting antivirals (DAAs), which are significantly more effective than pegylated interferon-alfa and ribavirin, have a good tolerance, and allow for short treatment durations. It is common practice to monitor treatment efficacy with measurements of blood HCV viral load. However, we do not have clear recommendations for this monitoring, based on viral kinetics under DAA-based treatment. The additional usefulness of DAA concentration monitoring is uncertain.

Methods: We conducted a retrospective observational study in chronic HCV infected patients. All patients were > 18 years old, treated in our hospital from 2013 to 2017 with sofosbuvir-based DAA combinations. We included 202 patients (71% men, mean age 55 years). A sustained virologic response (SVR) was achieved in 193 (95.5%) patients, 9 (4.5%) patients had a post-treatment relapse. Patients in response and relapse groups differed for the rate of history of hepatocellular carcinoma (HCC) (10% vs. 56%, p = 0.002) and the prevalence of Child-Pugh scores B and C (11% vs. 33%, p = 0.045). Treatment levels of total bilirubin, prothrombin time, alkaline phosphatase, and creatinine were significantly higher in the relapse group (all p < 0.05), possibly as markers of a more advanced liver disease. We did not find any relationship between therapy outcome and either HCV RNA or alanine transaminase (ALT) at baseline, week 2, week 4, or at the end of treatment. None of these markers appeared of monitoring interest for response prediction. Plasma concentrations of the major sofosbuvir metabolite GS331007 and of daclatasvir tended to be lower in patients with relapse. However, the limited number of patients precludes any firm conclusion.

Conclusions: Beyond known pre-existing prognostic factors, confirmed in this study, there is no indication that regular follow-up of HCV RNA or ALT during DAA treatment could help to predict treatment outcome in HCV infected patients. The potential role of DAA plasma concentration monitoring deserves to be evaluated in a larger study.
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Pharmacokinetics and subjective effects of a novel oral LSD formulation in healthy subjects
Friedenike Holze1, Urs Duthaler1, Patrick Vizeli1, Felix Müller1, Stefan Borgward2, Matthias Liechti2
1Universitätsspital Basel, Department of Clinical Pharmacology and Toxicology, Department of Biomedicine and Department of Clinical Research, University Hospital Basel, University Basel, 2Department of Psychiatry (UPK), Basel, Switzerland

Background and Purpose: The aim of the present study was to characterize the pharmacokinetics and exposure-subjective response relationship of a novel oral solution of lysergic acid diethylamide (LSD) that was developed for clinical use in research and patients.

Experimental Approach: LSD (100 µg) was administered in 27 healthy subjects using a placebo-controlled, double-blind, cross-over design. Plasma levels of LSD, nor-LSD, and 2-oxo-3-hydroxy-LSD (O-H-LSD) and subjective drug effects were assessed up to 11.5 h. Key Results: First-order elimination kinetics were observed for LSD. Geometric mean maximum concentration (Cmax) values (range) of 1.7 (1.0-2.9) ng/ml were reached at a Tmax (range) of 1.7 (1.0-3.4) h after drug administration. The plasma half-life (T1/2) was 3.6 (2.4-7.3) h. The AUC∞ was 13 (7.1-28) ng·h/ml. No differences in these pharmacokinetic parameters were found between male and female subjects. Plasma O-H-LSD but not nor-LSD (<0.01 ng/ml) concentrations could be quantified in all subjects. Geometric mean O-H-LSD Cmax values (range) of 0.11 (0.07-0.19) ng/ml were reached at a Tmax (range) of 5 (3.2-8) h. The T1/2 and AUC∞ values of O-H-LSD were 5.2 (2.6-21) h and 1.7 (0.85-3.6) ng·h/ml, respectively. The subjective effects of LSD lasted (mean ± SD) up to 11.5 h. Conclusions and Implications: The present study characterized the pharmacokinetics of LSD and its main metabolite O-H-LSD. The subjective effects of LSD were closely associated with changes in plasma concentrations over time. The study was registered at ClinicalTrials.gov (NCT03019822).

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Drug safety screening at a tertiary care hospital - evaluation of a pilot phase
Irene Scholz1,2, Katharina Geiling3, Manuel Haschke1,2
1Clinical Pharmacology and Toxicology, Department of General Internal Medicine, Inselspital, University of Bern, 2Institute of Pharmacology, University of Bern, 3Department of General Internal Medicine, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland

Introduction: Preventable medication errors are frequent causes of adverse drug events (ADE) and present a major public health burden. Drug safety screenings (DSS) can help to detect risk constellations and optimize drug treatment.

Methods: Retrospective analysis of weekly DSS of patients on internal medicine wards. Diagnoses, medication list and lab results in electronic patient charts were screened by a clinical pharmacologist. We scanned safety screenings (DSS) can help to detect risk constellations and optimize drug treatment.

Results: During the 54-week pilot phase, 1091 screenings were performed on 871 patients resulting in 265 (24%) findings. The median age was 63 years (range 16-97 years). 148 (56%) of the findings were PD measurements per patient. We found a sigmoidal relationship improving CL predictions for infants. Scaling was applied to account for weight effects on CL and V (power exponent of 0.75 and 1, respectively). Influence of age was best described by a sigmoidal relationship improving CL predictions for infants. Output from simulations revealed that that pediatric doses of 5 mg/kg in children <1 year and 10-20 mg/kg in children >1 year of age, respectively, are required to reach similar median exposure as observed in adults receiving an absolute dose of 500-1000 mg. Conclusions: Observed age effect on clearance indicated that the MAA elimination process undergoes maturation during the first two years of life. Taking this into account, we propose a lower weight-based intravenous dose for infants younger than one year. In older children, thereby completing the dose recommendation for the labeled age bands and providing a rationale for dose harmonization. The effect of food on the pharmacokinetics of oral ivermectin
Urs Duthaler, Claudia Suenderhauf, Stephan Krähenbühl, Felix Hammann
Universitätsspital Basel, Basel, Switzerland

Introduction: The antiparasitic ivermectin (IVM) has been widely used since the 1980s for the treatment of conditions such as river blindness or scabies. It inhibits synaptic transmission by binding to glutamate-gated chloride channels in invertebrates. The human safety profile of ivermectin is considered excellent, but pharmacokinetic (PK) variability is high and still poorly understood.

For this analysis, we looked at the influence of fasted vs. fed dosing on the oral PK of IVM because published data so far are ambiguous. Guzzo et al. (2002) reported a 2.6x increase in the area under the curve (AUC) with high-fat meals. Miyajima et al. (2016) saw a 1.25x increase in AUC. Fed state dosing can enhance bile secretion, lead to better dissolution.
Results: In total, 348 post-dose measurements were available for analysis. The final model added a relative bioavailability term (F1), estimated at 0.82 for fasted dosing.

Conclusions: We estimated the availability of fasted-state dosing to lie at 82% of that of fed-state dosing, or, conversely, a food effect of 0.18. This is almost identical to data recently published by Miyajima et al. (2016) but much lower compared to Guzzo et al. (2002). This may be due to the high doses administered by Guzzo et al. (30 mg), whereas Miyajima et al. used 12 mg. An important shortcoming of this analysis is the small number of volunteers, esp. for the fasted-state condition. Overall, however, no considerably larger trials have addressed food effect in ivermectin. Aside from increase in sample size, it would be desirable to more thoroughly investigate the oral absorption of ivermectin by, for instance, increasing the number of samples taken in the first few hours after dosing.


P220

Crossover pharmacokinetics of the “Basel” phenotyping cocktail combination capsule with its individual components in healthy male adults

Claudia Suenderhaus1, Benjamin Berger1,2, Maxim Puchkov2, Yasmin Schmid1, Sabine Müller1,4, Jörg Huwyler3, Manuel Haschke4,5, Stephan Krähenbühl1,2, Urs Duthaler1,2

1University Hospital Basel, Clinical Pharmacology and Toxicology, 2Department of Biomedicine, University of Basel, 3University of Basel, Department of Pharmaceutical Sciences, Basel, 4Clinical Pharmacology and Toxicology, Department of General Internal Medicine, Inselspital, Bern University Hospital, University of Bern, 5Institute of Pharmacology, Bern, Switzerland

Introduction: Cytochrome P450 (CYP) enzymes are responsible for the metabolism of endogenous and xenobiotic drugs. Drug interactions and disease states can alter CYP function substantially, regardless of the underlying genotype. Therefore, estimates of CYP activity are relevant for clinical decision making in drug therapy. We selected and tested six CYP isoform-selective probe drugs, which were administered in a single capsule at either low or sub-therapeutic doses. The aim of the present study was to compare the phenotyping metrics of a combination capsule formulation to its individual components. Moreover, a reduced sampling regimen was elucidated to facilitate clinical applications.

Methods: We performed a crossover pharmacokinetic study in twelve healthy male subjects to compare the “Basel” phenotyping cocktail capsule containing six probe drugs with individual administration of the same drugs. Parent compounds and selected metabolites were quantified by liquid chromatography tandem mass spectrometry. Metabolic ratios at 6h correlated to different serum concentration profiles of the test compounds, phenotyping ratios correlated well with the corresponding AUC ratios. However, due to the small capsule formulation size, 2 and 6 hours after intake.

Results: Data was taken from Duthaler et al. (2018, n = 12 with fed state dosing) and an unpublished pilot trial (n = 3, fasted state). Trials were performed in healthy volunteers with a single oral dose of 12 mg IVM. Population pharmacokinetic analysis was done using NONMEM. We used our previously published two-compartment model with transit compartment absorption. We attempted to improve the model by accounting for changes in oral bioavailability, transit compartments, and distribution volumes.

Conclusions: We estimated the availability of fasted-state dosing to lie at 82% of that of fed-state dosing, or, conversely, a food effect of 0.18. This is almost identical to data recently published by Miyajima et al. (2016) but much lower compared to Guzzo et al. (2002). This may be due to the high doses administered by Guzzo et al. (30 mg), whereas Miyajima et al. used 12 mg. An important shortcoming of this analysis is the small number of volunteers, esp. for the fasted-state condition. Overall, however, no considerably larger trials have addressed food effect in ivermectin. Aside from increase in sample size, it would be desirable to more thoroughly investigate the oral absorption of ivermectin by, for instance, increasing the number of samples taken in the first few hours after dosing.


P221

Influence of genetic polymorphisms within the serotonin system on the acute effects of 3,4-methylenedioxyamphetamine (MDMA) on human neutrophils

Patrick Vizeli1, Henriette E. Meyer zu Schwabedissen2, Matthias L. Liechti3

1Universitätsspital Basel, Klinische Pharmakologie und Toxikologie, 2Universität Basel, Basel, Switzerland

MDMA (Ecstasy) even if recreationally used can lead to adverse events such as sympathomimetic toxicity or hyperthermia. Most of the acute effects of MDMA including its mood, cardiovascular, and thermoregulatory effects can be attributed to the MDMA-induced release of serotonin (5-HT). Accordingly, we hypothesized that genetic variants including single-nucleotide polymorphisms and polymorphic regions in the 5-HT system genes influence the acute responses to MDMA in humans. We characterized the effect of common genetic variants within genes coding for the 5-HT system genes influence the acute responses to MDMA in humans. We characterized the effect of common genetic variants within genes coding for the 5-HT system (5HT1, 5HT2, 5HT3, 5HT7) at 6h after dosing.

References: Guzzo et al., Clin Pharmacol 2002; 42: 1122-1133. Duthaler et al., Br J Clin Pharmacol 2018; accepted

P222

The susceptibility to the metazolime metabolite MA could depend on the differentiation state of myeloid progenitor cells

Deborah Rudin1,2, Manuel Haschke3,4, Stephan Krähenbühl1,2,5

1Division of Clinical Pharmacology & Toxicology, University Hospital Basel, Basel, Switzerland

Introduction: Metazolime, an analgesic and anti-pyretic drug widely used due to its good tolerability and favorable overall safety profile, can cause life-threatening neutropenia in susceptible patients. Since previous results indicated that metazolime cytotoxicity may be limited to neutrophil precursor cells (unpublished data), our objective was to investigate the change in sensitivity of neutrophil precursors during differentiation and the accompanying enzymatic changes.

Methods: We initiated differentiation of promyelocytic HL60 cells into neutrophils and assessed the change in susceptibility of the cells to the cytotoxic combination of the main metazolime metabolite N-methyl-4-aminoantipyrine (MAA) with the hematoglobin breakdown product heroin. We monitored the differentiation process morphologically by light microscopy and by expression of the cellular surface marker CD66a. We assessed the expression of anti-oxidative and heme degrading enzymes during neutrophil differentiation by PCR and Western blots. Accompanying susceptibility to cytotoxicity was determined by MTT, measuring cell viability by detection of apoptosis and necrosis by Annexin V/PI staining.

Results: HL60 cells differentiated by around 45% into band and mature neutrophils within 5 days. At day 3 of the differentiation process, the cells consisted predominately of metamyelocytes and became significantly resistant to the combination of MAA and hemin, which was cytotoxic for
less differentiated promyelocytic HL60 cells. The expression of the anti-oxidative enzyme superoxide dismutase 2 (located in the mitochondrial matrix) increased significantly during differentiation, whereas the superoxide dismutase 1 expression (located in the mitochondrial intermembrane space and cytosol) decreased. Heme oxygenase-1, which degrades heme, was progressively expressed during differentiation. Interestingly, the expression of cytochrome c reductase, which is needed for heme oxygenase-1 function, increased to a maximum at day 3 and decreased again with further differentiation. Further, the cellular glutathione content, an important anti-oxidant, increased during differentiation.  

Conclusion: We showed that HL60 cells become resistant to the cytoxic combination MAAn/hemin on the metamyelocyte state of differentiation. We suppose that the increasing cellular anti-oxidative capacity and/or the ability to degrade heme are responsible for the observed change in susceptibility.

P223  
Implementation and outcomes of pharmacogenetic testing for evidence-based indications and screening using a panel with 16 target genes  
Stefan Rüssmann1,2, Markus Bächler3, Karl-Dietrich Hatz4, David Niedrig5, Katja Ludlins6, Kai Heib4, Andreas Serra7, Kir õI7,8, Christiane Buclin9, Thierry Buclin9  
1DrugSafety.ch, Kämnauch, 2Klinik Hirslanden Zürich, Institut für Allgemeine Innere Medizin und Nephrologie, Zürich, 3Hirslanden Klinik Aarau, Zentrum für Innere Medizin, Aarau, 4SONOGEN AG, Zürich, 5Labor Risch, Medizinische Genetik, Bern, Switzerland  
Introduction: There is an increasing number of evidence-based indications for pharmacogenetic (PGx) testing with expert-based specific recommendations for PGx-based patient management, as well as a growing demand for PGx screening tests. We report our experience from the implementation of PGx testing in routine clinical practice.  
Methods: Inpatients and outpatients with either evidence-based indications for PGx testing or patient-driven demand of PGx screening were identified in two departments of general internal medicine with collaborating experts in clinical pharmacology, clinical pharmacy, molecular biology and seamless integration of the SONOGEN XP expert system. After obtaining written informed consent we analyzed blood samples by using a 16-gene PGx panel (ABCB1, COMT, CYP1A2, CYP2B6, CYP3A4, CYP3A5, CYP3A7, CYP3B1, CYP2D6, CYP4F2, DYPD, OPRM1, POR, SLC01B1, TPM1, VKORC1). Results were analyzed by SONOGEN XP, evaluated by experts in clinical pharmacology and pharmacology, and subsequently used by PGx-based pharmacotherapy decision-making.  
Results: We analyzed 66 patients that underwent PGx testing; 45 men, 21 women, and 47 with evidence-based indication vs. 19 with patient-driven PGx screening. Primary indications were treatment with clopidogrel in 48%, oxycodone in 5%, tamofoxifen in 5%, other medications in 6%, statin-induced myopathy in 6%, and PGx screening in 30%. In the 47 patients with an evidence-based indication we found actionable variants of the primary target genes in 23 patients (49%). The analysis of all 16 genes in all 66 patients identified at least one actionable variant in 100% of patients, yet naturally not all patients were currently taking drugs affected by these variants.  
Conclusions: Comprehensive PGx-based personalized patient management requires specialized multidisciplinary networks and patient care. For evidence-based single target genes identification of variants had a clinically relevant impact on patient management in 49% of our patients, and cost-efficiency is mainly driven by the prevalence of actionable variants in the tested population. In contrast, the use of a 16-gene PGx panel led to the identification of actionable variants in 100% of the tested population without substantial additional costs vs. single gene tests. Traditional single target gene cost-benefit calculations tend to underestimate this likely high efficiency of multigene PGx panels over the whole life-span.

P224  
Pharmacokinetics, safety, tolerability and palatability of an innovative ethosuximide granule formulation designed for paediatric use  
Léonore Diezi1, Kim Dao1, Vincent Jullierr2, Caroline Rouselle-Maupetit3, Ingrid Burtron1, Pascal André1, Carine Bardinet4, Chantal Csajka5, Marie Manslo5, Catherine Guittet6, François Brunnert-Verberb7, Françoise Vandenhende8, Catherine Chiron9, Gerard Pons10, Luc-André Granier11, Thierry Buclin9  
1CHUV, Service of Clinical Pharmacology, Department of Laboratories, Larreny, Switzerland, 2Necker Enfants Malades, European Hospital Georges Pompidou, Pharmacology Department, Paris Descartes University, Sorbonne Paris Cité, Inserm U1129, Paris, 3Advicenne Pharma SA, Pharmaceutical Development Department, Nîmes, France, 4BIOZOLL, Innovative Pharmacology SA, Nîmes, France, 5Brunner Nagna, Paul-Flechting Zürich, Switzerland, 6Necker Enfants Malades, APHP, Department of Paediatric Neurology and Reference Center for Rare Epilepsies, Inserm U1141, 7Groupe Hospitalier Cochin-Brèze-Hôtel Dieu, APHP, Paris Descartes University, Clinical Pharmacology, Inserm U1129 Paediatric Epilepsies and Brain Plasticity, Paris, France  
Introduction: Ethosuximide is a first line therapy for treating childhood absence epilepsy, but the currently available syrup formulation has an unpleasant bitter taste and high sugar content, not adapted to the needs of paediatric patients. The aim of this collaborative European FP7 project named KIEKIDS was to develop an innovative sugar-free, tasteless and convenient ethosuximide formulation for paediatric use. This dual Phase I study evaluated two granule formulations (A, B) based on Lipid Multi-Particulate technology.  
Methods: Panels A and B followed a randomised, placebo controlled, partly double-blind, 3-way crossover design containing placebo granules, ethosuximide granules A or B, and the marketed syrup Zaronint® at a single dose of 10 mg/kg. The plasma pharmacokinetic profile and relative bioavailability of ethosuximide were compared, as well as palatability, safety and tolerability. Twelve healthy adult volunteers were enrolled (6 per panel). Ethosuximide concentrations were determined by high-performance liquid chromatography and UV detection. Visual analogue scales (VAS) were applied to assess palatability and neurological and digestive tolerability.  
Results: The granules A in Panel A had a marked bitter taste and adhered to container walls. In contrast, the optimised granules B developed for Panel B were presented as a patient palatable formulation not different from placebo granules and were easy to administer. The relative bioavailability of granule formulations compared to Zaronint® was based on dose-normalised Cmax and AUC0-∞. Its mean estimate for granules A was 93.7 [90% CI: 76.3 - 115.1] and 96.1 [91.0 - 101.5], respectively. For the optimised granules B it reached 87.6 [81.6 - 94.0] and 92.5 [88.5 - 96.6], respectively. Interestingly, granules B displayed a delayed Tmax 0.75 h [0.5 - 4.0] compared to syrup 0.5 h [0.3 - 0.8]. VAS assessments for tolerability revealed slight transient dizziness, sedation, and anxiety, more pronounced and more frequently after syrup than after active granules. Other neurological and digestive VAS assessments were similar between treatments.  
Conclusion: This innovative granule formulation of ethosuximide has achieved the target profile for paediatric use, including a favourable palatability profile and a pharmacokinetic bioequivalence within range 80 - 125%. A slightly slower absorption rate might explain the lower dizziness degree transiently reported after granule intake.

P225  
Statins and insulin resistance  
Gerda Mavuduzi Sanyele, Miljenko Panajatovic, Dr. Jamal Boulbirt, Dr. Med. Stephan Krähenbühl  
Universität Basel - DBM - Klinische Pharmakologie und Toxikologie, Basel, Switzerland  
Statins are drugs used to decrease serum LDL-cholesterol and contribute to reduce morbidity and mortality associated to cardiovascular diseases. They are well tolerated but are associated with skeletal muscle disorders and were reported, more recently, to induce insulin resistance and new-onset diabetes in treated patients, with an incidence close to 30% (Crandall et al., 2017). However molecular mechanisms underlying statin-induced insulin resistance are not fully elucidated to date. Goals of the study were to characterize the effects of simvastatin on glucose metabolism in vitro and in vivo and to unravel processes leading to simvastatin-induced insulin resistance in skeletal muscle cells. C2C12 myotubes were treated with 10 µM simvastatin and/or 10-100 ng/mL insulin for 24 hours. Glucose uptake assays were performed. Insulin receptor pathway activation and GLUT4 translocation were analyzed by western blotting. Male C57BL/6J mice were treated with water or 10 mg/kg simvastatin twice daily for 21 days. Baseline insulin levels were measured in fasted mice. Intraperitoneal glucose tolerance test (ITT) and glucose uptake were performed. Insulin concentrations at different time points were also measured. Simvastatin reduced the glucose uptake by half in myotubes and insulin stimulation restored the glucose absorption rate. The insulin receptor phosphorylation was unaffected by treatment with simvastatin. Investigation of GLUT4, an insulin-sensitive glucose transporter, showed a significant decrease of its translocation to the cell membrane, explaining the impaired glucose uptake inside the cells. While fasting plasma

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glucose and insulin were similar between water and simvastatin treated mice, glucose plasma concentrations were higher in mice treated with simvastatin during the IGTT. Insulin levels were higher in simvastatin treated mice, which showed also a higher HOMA-IR, indicating insulin resistance. Accordingly, the glucose uptake in gastrocnemius of simvas-
tatin-treated mice was impaired.

Simvastatin disturbed glucose homeostasis, reduced glucose uptake and elicited insulin resistance in mice and C2C12 myotubes. Mech-
isms involved were a defect of the insulin receptor activation and a de-
creased amount of glucose transporters at the cell membrane. Insulin prevented these adverse events when used in co-treatment. Future stud-
ies are needed to show if these mechanisms lead also to the develop-
ment of diabetes in patients treated with statins.

P226

Presentations related to acute paracetamol intoxication in an ur-
ban emergency department in Switzerland
Natalia Piotrowska1, Jolanta Klukowski-Rötzer1, Beat Lehmann1, Gert Krummery1, Manuel Haschke2,3, Aristomenis K Exadaktylos1, Evangelia Lia
koni2
1Department of Emergency Medicine, Inselspital, University Hospital Bern, Uni-
versity of Bern, Bern, 2Department of Internal Medicine, Inselspital, University Hospital Bern, University of Bern, 3Institute of Pharmacology, University of Bern, Bern, Switzerland

Introduction: Paracetamol is the most commonly used drug worldwide for treatment of pain and fever. Although generally considered safe in recommended dosage, severe hepatotoxicity and fatalities have been reported in cases of overdose. The aim of this study was to analyze Emergency Department (ED) presentations related to acute paracetamol intoxication, in order to investigate prevalence, patterns, and susceptible groups.

Methods: Retrospective study of patients presenting to the ED of the University Hospital of Bern between May 2012 and October 2018 due to paracetamol overdose (defined as intake of >=4g/24h). Cases were identi
tified using the full-text search of the electronic patient database (E.care) and were grouped in intentional (suicidal/parasuicidal) and unintentional intoxications (e.g. patient unaware of maximal daily dose and/or risks of overdose).

Results: During the study period, 181 cases were included, of those 143 (79%) were intentional intoxications. In the intentional compared to the unintentional group patients were more often female (85% vs 45%, p < 0.001), younger (mean age 28 vs 43 years, p < 0.001), had more often documented psychiatric comorbidities (93% (among them 49% border-
line personality disorder) vs 24%, p < 0.001), and paracetamol was more often taken as a single dose (80% vs 13%, respectively, p < 0.001). Al-
though the mean daily ingested dose was lower in the unintentional com-
pared to the intentional group (9.9g vs 16.1g, p < 0.001), patients in the unintentional group presented later to the ED (29% vs 84% within 24 h after ingestion, p < 0.001), had more cases of acute liver failure (nine (24%) vs six (4%), p < 0.001) and were more often hospitalized (24% vs 52% treated as outpatients, p = 0.002). There were no significant differ
dences between the groups regarding drug induced liver injury (seven cases (5%) in the intentional and one (3%) in the unintentional group) or fatalities (one in each group).

Conclusions: The majority of ED presentations due to paracetamol poi
soning were intentional, most commonly in female patients with border-
line personality disorder. Patients with unintentional paracetamol intoxication also appear to be a vulnerable group with worse outcomes regard-
ing acute liver failure and hospitalization. Future preventive measures should raise awareness regarding paracetamol toxicity in the general population and encourage particular attention and frequent follow-ups when prescribing paracetamol for vulnerable groups.

P227

Neutropenia associated with metamizole: a case-control study
Deborah Rudin1,2, Stephan Krähenbühl1,2,3, Manuel Haschke1,5
1Division of Clinical Pharmacology & Toxicology/ University Hospital Basel, 2De-
partment of Biomedicine/ University of Basel, 3Swiss Centre for Applied Human Toxicology (SCAH), Basel, 4Clinical Pharmacology and Toxicology/ Bern Uni-
versity Hospital, Department of General Internal Medicine, 5Institute of Pharma-
cology, University of Bern, Bern, Switzerland

Introduction: Metamizole is a widely prescribed non-opioid analgesic prodrug, which rarely causes life-threatening neutropenia. Besides met-
amizole dose and treatment duration, various factors, including comedi-
cation, comorbidities, and allergic predisposition, may influence the risk
to develop neutropenia during metamizole treatment. The aim of this study was to identify possible risk factors for developing neutropenia as-
sociated with metamizole use.

Methods: An observational, multi-center case-control study was per-
formed. Cases of metamizole-associated neutropenia attended at the University Hospitals Basel and Bern between 2005 and 2017 were char-
acterized and compared to 100 age- and sex-matched controls who took metamizole for at least 28 days without developing neutropenia, and with gender-
and age-matched metamizole-naive healthy controls. Medical data and blood samples of all study participants were collected.

Results: Forty-eight cases, 39 tolerant controls, and 161 metamizole-
naive healthy controls were included. Mean metamizole intake and me-
dian duration among cases was 1800 mg (± 1250 mg) for 17 days (1-
382) until onset of the neutropenia compared to 1600 mg (± 1000 mg) for 177 days (30-5480) among tolerant controls without any adverse drug reaction. The median number of concomitant medication was higher among tolerant controls (n = 8) than cases (n = 5). Among both groups over 40% of patients additionally received drugs with reported risk to in-
duce neutropenia according to a review of Anderssohn et al. [1]. Accompany-
ing infections were significantly more frequent among cases (50%) than among tolerant controls (26%). Conversely, tolerant control patients had more often preexisting autoimmune diseases 18% than neutropenia patients. The majority of drugs were almost equally fre-
quent among cases (2.1%) and tolerant controls (2.6%) and absent among unexposed healthy controls.

Conclusion: Accompanying infections seem to be a possible risk factor for metamizole associated neutropenia. There was no association be-
tween concomitant medication, autoimmune diseases or drug allergy history and the development of neutropenia. A genetic association study is currently running analyzing the collected blood samples to identify po-
tential genetic markers for metamizole associated neutropenia.

References:
Development of a new generation of integrin targeting drugs for the treatment of immune-mediated diseases.

Riccardo Vincenzo Mancuso, Urs Duthaler, Gisbert Schneider, Marianne Hürzeler, Stephan Krähenbühl, Gabrielle Weitz-Schmidt

1Universität Basel - DMB - Klinische Pharmakologie und Toxikologie, Basel, 2ETH Zürich - Department of Chemistry and Applied Biosciences, Zürich, 3FHNW Basel - Institut für Chemie und Bioanalytik, 4Alloctype Pharmaceuticals AG, Basel, Switzerland

Integrins are a family cell surface receptors which mediate cell-to-cell or cell-to-extracellular matrix interactions. They have been recognized as important therapeutic targets for immune-mediated, malignant and cardiovascular diseases. Despite their well-characterized roles in key disease processes, only six integrin therapeutics are approved to date, targeting four of the 24 known human integrins. The limitations of current integrin inhibitors reflect the challenges associated with integrin targeting pharmacologies. These include paradoxic agonism (i.e. elicitation of effects the inhibitors were designed to prevent), lack of selectivity as well as limitations related to antibody or peptide mimetic. New pharmacologic strategies are needed to overcome these limitations and to exploit the potential of integrins as therapeutic targets. Here we report the discovery and development of a new generation of small molecule inhibitors targeting the integrin lymphocyte function associated antigen-1 (LFA-1), an attractive therapeutic target for immune-mediated inflammatory diseases.

A virtual screening approach was utilized to identify allosterically acting compounds which stabilize LFA-1 in its inactive, non-ligand binding state. LFA-1-mediated cell adhesion was quantified by measuring leukocyte binding to ICAM-1. Downstream effect profiles were assessed in human PBMCs treated with novel LFA-1 inhibitors, monoclonal antibodies (mAbs) and ligand mimetic inhibitors. The micromolar hits identified by virtual screening were turned into potent, orally available LFA-1 inhibitors by a chemical derivatization program. Selected compounds are currently profiled in appropriate models of immune-mediated diseases. Moreover, the novel allosteric LFA-1 inhibitors have been demonstrated to be truly selective over other members of the integrin family, in contrast to previous mAbs or ligand mimetic-based LFA-1 pharmacologies. Further, they do not induce unwanted paradoxic agonistic effects as associated with other LFA-1 targeting modalities.

The differential effects observed at cellular and molecular levels to date indicate that the newly discovered class of allosteric, non-peptidomimetic small molecule LFA-1 inhibitors may have the potential to resolve unwanted effects associated with previous LFA-1 targeting pharmacologies and may allow to fully exploit the potential of LFA-1 as a therapeutic target for immune-mediated diseases.

Red flags in the use of Etoricoxib (Arcoxia®): a case report

Irene Scholz, Sarah Banholzer, Manuel Haschke

1Clinical Pharmacology and Toxicology, Department of General Internal Medicine, Insekt, Bern University Hospital, University of Bern, Institute of Pharmacology, University of Bern, Bern, Switzerland

Learning objectives: Recognize patient characteristics as possible red flags for the treatment with COX-2 inhibitors ("coxibs").

Case: A 77-year old patient with known hypertension and dyslipidemia presented to the emergency department with new onset of dyspnea and over a 4 days, his weight had increased by 10 kg in the last week. Clinically, a hypertension (224/94 mmHg) patient presented with severe leg edema and attenuated respiratory sounds. Blood results revealed an increased troponin level with no change in dynamics, which was interpreted as part of the cardiac decompensation and hypertensive deterioration. Chest X-ray showed beginning transudation and pleural effusion on the right side. Echocardiography showed pulmonary hypertension with an RV/RA gradient of 48 mmHg and normal left ventricular function. The definite cause of cardiac decompensation remained unclear. Prior to admission, the patient had been taking Etoricoxib (Arcoxia®) 60mg twice daily for approximately one month for symptomatic treatment of painful bilateral coxarthrosis. After admission, treatment with Etoricoxib was stopped and the patient rapidly recovered under optimized antihypertensive treatment.

Discussion: Etoricoxib is a selective cyclooxygenase 2 (COX-2) inhibitor, indicated for the treatment of patients with painful arthritis. Clinical effects of COX-2 inhibitors range from intentional pain reduction to unwanted increase in blood pressure, increase of atherothrombotic events as well as reduction of renal blood flow. One of the potential cardiotoxic effects of coxibs is the occurrence of heart failure, due to a combination of fluid retention and increased blood pressure. Preexisting risk factors for COX-2 inhibitor associated adverse events in our case were: 1.) Dosage: the risk of cardiovascular events increases with treatment duration and dose. Our patient took twice the maximum recommended daily dose of 60mg 2.) Age: In patients over the age of 65 years, coxibs should only be used with caution because of the increased cardiovascular comorbidities associated with age 3.) Comedication: with ACE inhibitors increases the risk for adverse renal effects, 4.) Pre-existing renal disease: pre-existing chronic renal insufficiency, which was present in our patient increases the risk of NSAID-induced acute renal failure 5.) Pre-existing cardiovascular disease: Coxibs are contraindicated in patients with coronary, cerebral or peripheral vascular disease.

Modification of the institute for healthcare improvement medication module trigger tool to enable its implementation in a Swiss university hospital

Amira El Sayegh, Miriam Scholer, Patrick Heinrich, René Schwindemann, Stephan Krähenbühl, Anne Leuppi-Taegtmeyer

Universitätsspital Basel, Basel, Switzerland

Introduction: Determining the incidence of adverse drug events (ADEs) in hospitals is challenging. The Institute for Healthcare Improvement Medication Module Trigger Tool (IHI TT) helps health care institutions identify and monitor ADE occurrence in an efficient and consistent manner so that drug safety issues can be identified and corrected early.

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<thead>
<tr>
<th>IHI Trigger</th>
<th>Modification</th>
<th>Tools</th>
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<td>M1 C &amp; stool*</td>
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<td>M2 PTT &gt; 100 s</td>
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<td>M3 INR &gt; 3*</td>
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<td>M4 Glucose &lt; 50 mg/dL</td>
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<td>M5 Urea or creatinine &gt; 2x baseline</td>
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<td>M6 Vitamin K administration</td>
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<td>M9 Natrium administration</td>
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<td>M10 Aminotic administration</td>
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<td>M11 Over sedation/hypothermia</td>
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<td>M12 Abruption medication stop*</td>
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* non-digital triggers
** as per German IHI TT version

Methods: An investigator-driven, single-centre study using retrospective clinical data to develop and implement a modified IHI TT is currently underway. The IHI TT cannot be implemented directly because it utilises some laboratory tests and medication which are not used at our institution (Table). We have therefore modified the IHI TT accordingly, while also taking the accessibility of the clinical data in our institution into consideration and have developed a 9-trigger model (Tool B - using digitally extractable data only) and an 11-trigger model (Tool B - using digitally and manually extracted data) (Table). The performance of the two tools in correctly identifying ADEs will then be assessed by comparing their sensitivity and specificity.

Results: Based on the results of previous similar studies, we expect our modified TT to have a high specificity and a moderate sensitivity in detecting ADEs. If Tool B does not have a significantly higher specificity and sensitivity than Tool A, Tool A will be promoted for routine use at our hospital.

[Table. IHI medication module triggers, their modifications and inclusion in tools A and B.]

Red flags in the use of Etoricoxib (Arcoxia®): a case report

Irene Scholz, Sarah Banholzer, Manuel Haschke

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institution. This tool will then be used prospectively to assess 20 randomly chosen case records per month to determine ADEs per 1000 patient hospital days, ADEs per 100 admissions and the percentage of admissions with an ADE.

### P232
Transfers from suburban hospitals: do we repeat too much exams? A retrospective study

Jérôme Bertrand1, Christophe Fehlmann1, Olivier Grosgeur1,2, François Sarasini1, Omar Kherad3
1Hôpitaux Universitaires de Genève, Service des Urgences, 2Hôpitaux Universitaires de Genève, Service de Médecine Interne Générale, Genève, 3Hôpital de La Tour, Service de Médecine Interne, Meyrin, Switzerland

Introduction: Depending on the availability of specialized medical resources and specialist consultations, smaller hospitals often transfer patients to tertiary care emergency departments (ED). The receiving hospital may repeat laboratory and radiographic tests despite receiving the data from the sending facility. The aim of this study was to identify patients who were transferred to a tertiary care ED, and to calculate the frequency and inappropriateness of repeated procedures.

Methods: We conducted a retrospective chart review of patients transferred from one primary emergency center to our tertiary emergency department from January 2016 to December 2016. We considered as redundant a procedure repeated during the 8 hours following the transfer despite the availability of the results. Two authors independently assessed the appropriateness of the redundancy. The inter-observer agreement was measured with a Kappa-coefficient. Factors predicting repetition of procedures were identified through a logistic regression analysis.

Results: During the year 2016, 432 patients were transferred from the primary emergency center to the tertiary center. 251 procedures were repeated: 179 patients had a repeated laboratory tests, 34 a repeated radiological procedure and 19 both. The only risk factors for a repeated blood test was an advanced age (>65 years old) (aOR = 1.8, 95% CI 1.2-2.7) and for a radiological procedure a surgical (versus a medical) profession (ETI) and ICU admission rates.

Conclusion: With a validated TT which has been modified for our institution, we aim to establish an efficient system for monitoring ADEs and therefore to enhance patient safety.

### P233
Prehospital non-invasive ventilation decreases the need for field intubation and intensive care admission in acute cardiogenic pulmonary edema: a retrospective study

Birgit Gartner, Christophe Fehlmann, Laurent Suppan, Marc Niquille, Olivier Rutschmann, François Sarasini
Hôpitaux Universitaires de Genève, Service des Urgences, Genève, Switzerland

Background: The effectiveness of Non-invasive Ventilation (NIV) has been largely validated in the Emergency Department (ED) and in the Intensive Care Unit (ICU). Its usefulness in cases of acute cardiogenic pulmonary edema (ACPE) occurring in the prehospital setting has been less well studied.

The aim of this study was to review the evolution of ACPE management in a physician-staffed medical mobile service following NIV implementation, and to determine whether its use had reduced endotracheal intubation (ETI) and ICU admission rates.

Methods: This was a retrospective “before-after” study based on patients treated for ACPE from 01.04.2007 to 31.03.2010 (control period) and from 01.04.2013 to 31.03.2016 (NIV period). It took place in the emergency medical mobile unit of Geneva ED admitting 65,000 patients annually. Adult patients were included if they were diagnosed with ACPE in the prehospital field. Exclusion criteria were a Glasgow coma scale less than 9 and any other concomitant respiratory diagnosis. NIV was performed using the Hamilton T1 ventilator (Hamilton Medical, Bonaduz, Switzerland). All prehospital physicians had received specific training for this device. Patients for whom NIV was available were compared with patients for whom NIV was not available (control period) using univariate and multivariate logistic regression models. The primary outcome was the prehospital ETI rate and secondary outcomes were admission to an ICU during the 48 hours following ED admission and length of intervention in the prehospital field.

Results: This study included 1491 patients, 689 in the control period and 802 in the NIV period. During the latter period, 287 patients (35.8%) were treated by NIV. NIV was associated with a decrease in ETI rate, which dropped from 2.6% (n = 18) during the control period to 0.7% (n = 6) during the NIV period (p = 0.004) with an adjusted OR of 0.3 (95% CI 0.1-0.7, p = 0.009) after adjustment for abnormal oxygen saturation and abnormal respiratory rate. NIV implementation was associated with an absolute decrease of 5.6% in ICU admission (18.6% to 13.0%) with an adjusted OR of 0.6 (95% CI 0.5-0.9, p = 0.003). There was no difference in length of field intervention between the intervention and the control period (43.6 versus 42.2, p = 0.06).

Conclusion: In a physician-staffed prehospital system NIV for ACPE is a safe technique that decreases the need for ETI and the rate of ICU admissions.

### P234
Non-specific reversal of DOAC at the emergency department compared to reversal of VKA: indications, patient characteristics and clinical outcomes

Martin Müller1, Jonathan Eastline1, Michael Nagler2, Aristomenis Exadaktylos1, Thomas Saul1
1University Hospital, Inselspital, Emergency Department, 2Department of Haematology and Central Haematology Laboratory, Bern, Switzerland

Background: According to current guidelines prothrombin complex concentrate (PCC) is used for non-specific reversal of anticoagulant activity in patients on direct oral anticoagulants (DOACs) in analogy to the reversal of Vitamin-K antagonists (VKA). While there is an increasing prevalence of DOACs and specific reversal agents are coming on the market, there is still a lack of evidence and clinical experience with DOAC reversal.

Methods: Our cohort study explores patient characteristics and indications for reversal of all DOAC patients receiving PCC at our university emergency department from 01.06.2012 to 01.07.2017 and compare them with patients on VKA and reports clinical ED outcomes.

Results: Out of 199,982 consultations, we included 346 patients which received PCC for reversal of DOAC (n = 74) or VKA (n = 272). The most common reason for reversal was bleeding in 86.7% without a group difference (p = 0.245). 37.3% of bleeding was traumatic (p = 0.066). The most frequent bleeding location was intracranial (61.6%, p = 0.881). Gastrointestinal bleeding was found more often in the DOAC group (18.9% vs. 8.8%, p = 0.014). More erythrocyte concentrates (EC) were given to DOAC patients (p = 0.014). Tranexamic acid was used more often (28.4% vs. 7.4%, p < 0.001) in DOAC patients compared to VKA. No significant group differences were found for the patient outcomes in-hospital mortality, ICU stay, and length of stay at the ICU or in hospital.

Conclusion: Most of anticoagulant reversals were done because of acute bleeding incidences, most often for intracranial bleeding; about a third in trauma patients. Reversal of GIB was more common in DOAC compared to VKA. The reason for this as well as for the higher amounts of ECs needed in DOAC patients remains unclear. A better understanding of DOAC reversal especially in the light of new reversal agents is important and needs further research.