Managing Multimorbidity in Everyday Dilemma Situations

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Potential conflicts of interest

- Board of Directors RehaClinic AG, Switzerland
- Different non-governmental unpaid Foundations
- Different mostly national Advisory Boards during the last 10 years: Anticoagulation, hypertension, heart failure, lipids, iron-substitution.
- Speakers honoraria from different organisations and companies
Austrian law asks for continuity in Multimobidity.

§ 4. Die Primärversorgungseinheit hat mit dem Ziel eines für die Patientinnen und Patienten sowie die Gesundheitsdiensteanbieter/innen optimierten Diagnose- und Behandlungsprozesses jedenfalls folgenden Anforderungen zu entsprechen:

1. etc.

6. Sicherstellung der Kontinuität in der Behandlung und Betreuung insbesondere von chronisch kranken und multimorbiden Patientinnen und Patienten, etc....
Multimorbidity is the most prevalent constellation in healthcare.

- 19% of the population was monomorbid
- 23% of the population was multimorbid

70 – 90% of Medical Inpatients are multimorbid

Kaplan et al., *Swiss Med Wkly* 2012;142:w13533
Let's calculate!

• About 68’000 ICD 10 CM „Codes“
• Assumption: 3 Codes = 68‘000 * 67‘999 * 67‘998 potential combinations yields > 3 x 10^{14} possibilities
• Different extent of diseases
• Different Patient wishes
• Organizational complexity
• However: In reality much less combinations because of clustering of diseases
Most prevalent Triads in Outpatients

1. Hypertension + Dyslipidemia + Chronic Back Pain
2. Hypertension + Chronic Back Pain + Osteoarthritis
3. Hypertension + Dyslipidemia + Coronary Heart Disease
4. Hypertension + Dyslipidemia + Diabetes mellitus
5. Hypertension + Dyslipidemia + Osteoarthritis
6. Dyslipidemia + Chronic Back Pain + Osteoarthritis
7. Hypertension + Dyslipidemia + Gout
8. Hypertension + Chronic Back Pain + Coronary Heart Disease
9. Hypertension + Chronic Back Pain + Diabetes mellitus
10. Hypertension + Diabetes mellitus + Coronary Heart Disease

Disease-Disease-Medication Interactions (DDI‘s) in Internal Medicine

- 176 patients admitted from the Emergency to medical ward
- 166 suitable for final analysis: 8 subjects excluded due to monomorbidity, 2 aged <18 year
- 59% male, mean age: 63 (±19) years
- Mean number of diagnoses: 6.6 (±3.4)
- 239 therapeutic conflicts encountered (in 49% of all patients)
- 29% of all patients *major* therapeutic conflicts
- 41% of all patients *minor* therapeutic conflicts

Markun et al., *PLOS one*, 2014
Examples of potential “Killer”-Combinations: A few examples from daily hospital practice

- Gastrointestinal, cerebral bleeding, immediate need for operation and need for anticoagulation
- Kidney disorder with clearance <30ml/min or < 15ml/min and ...
- Psychiatric disorder and …
  - Psychosis and …
  - Dementia and …
  - Depression, mania and any disorder with necessity for regular drug intake
  - etc.
- Aging (frailty, cognitive decline, depression, etc.) and …
## Gastrointestinal Bleeding and Anticoagulation because of the heart

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<tbody>
<tr>
<td>Dan Soc Gastroenterol Hepato</td>
<td>Yes, but add a PPI</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes, 24 hours after bleeding stops, but add a high-dose PPI</td>
<td>Yes, 3 days after bleeding stops</td>
</tr>
<tr>
<td>American College Gastroenterol</td>
<td>Yes, but add a PPI</td>
<td>Not discussed</td>
<td>Yes</td>
<td>Yes, 1–7 days after bleeding stops</td>
<td>Not discussed</td>
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<tr>
<td>International Consensus Guidelines</td>
<td>Yes, but add a PPI</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes, as soon as possible after bleeding stops</td>
<td>Not discussed</td>
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<tr>
<td>British Soc Gastroenterol</td>
<td>Not discussed</td>
<td>Not discussed</td>
<td>Yes</td>
<td>Not discussed</td>
<td>Yes, 5 days after bleeding stops</td>
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Akutely exacerbed COPD and Depression

- Systematic Review: Articles with AECOPD and Depression according to PRISMA statement
- 1,494 Original Papers screened, 35 included
- Prevalence of Depression in AECOPD between 9.5% and 85.6%
- Some studies suggest higher mortality for depressive AECOPD patients.
- No Study suggests screening for Depression or treatment ...
- Do we „care“? Outcomes that matter to patients....
Patients with non-insulin-dependent Type 2 Diabetes started on systemic glucocorticoids

- We screened 1’966 and included eleven articles. All articles on hospitalized patients, no data on outpatients available.
- Only 4 of 11 identified articles were original research articles.
- Experts prefer anticipatory insulin when starting glucocorticoids.
- They do not consistently recommend a specific insulin treatment strategy except discouraging Sliding Scale Insulin.
- Basis Bolus Insulin with long- or intermediate-acting (NPH) insulin is equally effective with no clear advantage for either, even though similar pharmacodynamics of NPH insulin and glucocorticoid-induced hyperglycemia would support NPH.
Interactions and Complexity
Disease-Disease Interactions graphically evaluated in a single patient with MISI

The Multimorbidity Severity Index (MISI)
Gassmann et al., Medicine 2017 96:8(e6144)
Disease-Disease Interactions graphically evaluated in a single patient with MISI
Disease-Disease Interactions graphically evaluated in a single patient with MISI
Recognition of „Gestalt“: Clusters of conditions and multimorbidity
Guidelines and multimorbidity

- Only limited evidence-based guidelines for MM
- Treatment heavily reliant upon clinical guidelines intended for the treatment of single diseases.
- However, these guidelines do not adequately address disease-disease, drug-disease and drug-drug interactions, due to multiple drug regimens, i.e., polypharmacy
Multimorbidity: clinical assessment and management

Multimorbidity: assessment, prioritisation and management of care for people with commonly occurring multimorbidity

NICE guideline NG56
Methods, evidence and recommendations
September 2016
## Depression: Screening and Diagnosis

**Significance**
- Higher prevalence of depression reported in HIV-positive persons (20-40% versus 7% in general population)
- Significant disability and poorer treatment outcomes associated with depression

### Screening and diagnosis

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<th>Who?</th>
<th>How to screen?</th>
<th>How to diagnose?</th>
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<tr>
<td>Screening of all HIV-positive persons recommended in view of the high prevalence of depression</td>
<td>Screen every 1-2 years&lt;br&gt;Two main questions:&lt;br&gt;1. Have you often felt depressed, sad or without hope in the last few months?&lt;br&gt;2. Have you lost interest in activities that you usually enjoy?&lt;br&gt;Specific symptoms in men:&lt;br&gt; - Stressed, bum out, angry</td>
<td>Symptoms – evaluate regularly&lt;br&gt;A. At least 2 weeks of depressed mood OR&lt;br&gt;B. Loss of interest OR&lt;br&gt;C. Diminished sense of pleasure PLUS 4 out of 7 of the following:&lt;br&gt;1. Weight change of ≥ 5% in one month or a persistent change of appetite&lt;br&gt;2. Insomnia or hypersomnia on most days</td>
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*Important. Ask: "Over the last two weeks, how often have you been bothered by any of the following problems? 1. Little interest or pleasure in doing things; 2. Feeling down, depressed or hopeless." Answers: Not at all (0) / Several days (1) / More than half the days (2) / Nearly every day (3). If the person scores 2 or more, seven additional questions, see [5]*
A quarterback’s view of care coordination

Press *N Engl J Med* 2014;371:489-491
Our Research in the Department focusses on Multimorbidity, specifically disease-disease interactions.

• Problematic and relevant DDI’s (Use Cases) and their clinical management
• Big Data Analysis to identify problematic clusters and Disease-Disease-Interactions (DDI’s)
• Behavior, well-being and decision-making of medical doctors in DDI’s and problematic situations in dependence of personality traits (Virtual Reality Lab)
Conclusions

• Multimorbidity is the most prevalent situation confronting medical doctors. It is very prevalent, especially in aging persons and populations.

• Multimorbidity occurs in specific clusters, cardiovascular, pain-depression, drug addiction, in elderly especially in connection with cognitive decline and frailty.

• Problematic Disease-disease Interactions (DDI‘s) are a challenge and need to be better investigated.

• We need to better coordinate treatments and to trace and understand the decision-making process of medical doctors and the effect this has on themselves, in dependence of their psychological structures.
Thank you!