

## Project Funding 2014/2015 «OVERDIAGNOSIS»

The award of CHF 50'000.-- is granted to the following project:

### Overdiagnosis of common cancers: a population-based Swiss study

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#### **Abstract**

**Background:** Overdiagnosis occurs when a medical condition or abnormality is diagnosed that will never cause symptoms or death. Greater use of increasingly sensitive tests, incidental findings, mass screening programs and lowering diagnostic and therapeutic thresholds for various conditions are causes of overdiagnosis. It results in unnecessary work-ups and treatments, generates costs, and causes harms. Epidemiological studies from the United States indicate that the incidence of several cancers, notably prostate, thyroid, and kidney cancer, has risen over time without concomitant increase in cancer-specific mortality rates. These patterns are typically caused by overdiagnosis of indolent cancers due to screening activities or incidental findings. Cancer overdiagnosis is a major problem, given its medical, psychological, and economical impact. Currently, studies of cancer overdiagnosis are scarce and no such data exist for Switzerland.

**Aims:** To assess whether incidence rates, specific mortality rates, and surgery rates for 4 common cancer types (prostate, lung, thyroid, and kidney) suggest cancer overdiagnosis in Switzerland between 2000 and 2012

**Hypotheses:** We expect to find an increase in the incidence and cancer-specific surgical interventions without a proportional increase in cancer-specific mortality (prostate, thyroid, kidney) or an increase in early stages, or indolent histological subtypes, without a proportional increase in late stages or aggressive histological subtypes (lung cancer).

**Design:** Swiss population-based retrospective analysis using data from cantonal cancer registries, the National Institute for Cancer Epidemiology and Registration (NICER), and the Swiss Federal Statistical Office (FSO).

**Methods:** To assess cancer overdiagnosis, we will compare trends in incidence and cancer-specific mortality over time for prostate, lung, thyroid, and kidney cancer. Based on data provided by cantonal cancer registries, NICER, and the FSO, we will calculate incidence rates and cancer-specific mortality rate of prostate, lung, thyroid and kidney cancer for calendar years 2000-2012. Using the CHOP codes from the SFO's Hospital Statistics, we will estimate cancer-related surgery rate for these cancers. We will perform analyses stratified by sex, stage (early vs. advanced stages), and histological subtypes.

**Relevance of the project:** The strength of our proposal includes the use of a population-based sample, high data completeness and quality, long observation period of 12 years and the use of established statistical methods. To our knowledge, our proposal is the first to explicitly study cancer overdiagnosis in Switzerland. A rising incidence without any increase in mortality rates (and increasing surgery rates) would be a strong argument for the presence of cancer overdiagnosis and over-treatment. The next step would be to identify potential drivers for overdiagnosis, such as the increasing use of advanced imaging or screening, and to devise potential strategies to lower chances of indolent cancer detection, including avoidance of diagnostic assessments that are not truly necessary, reduction in the frequency of screening examination, screening of the population segment that is at highest risk only, or raising the risk threshold for biopsy.