Epidemiology for clinicians

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Bendix Carstensen Steno Diabetes Center, Gentofte, Denmark
& Department of Biostatistics, University of Copenhagen
bxc@steno.dk
http://BendixCarstensen.com

Program outline

The following is a very general outline of the topics that will be covered in the 2-hour session on clinical epidemiology by Bendix Carstensen. Since this is still preliminary (at least till the end of February 2015), comments and suggestions are very welcome.

- Two broad classes of epidemiological investigations:
  - Population-based — a form of medical demography
  - Clinical epidemiology — the main topic of this talk
- Medical demography
  - Population presence of diabetes and complications
    - Prevalence
    - Incidence
    - Mortality
    - Complications
  - Requires registers or surveys:
    - Registers available in Nordic countries, Scotland, Canada, Australia, ...
    - Surveys in the remaining part of the world, if at all
- Diabetes epidemiology in a clinical setting
  - Data availability and problems
    (the Chinese people know much more than me here):
    - Hospital records
    - Follow-up possibilities
    - Completeness of ascertainment of disease
    - Ascertainment of outcomes (complications, death)
  - Analytical possibilities
    - Descriptives of the patient population:
      - Entry criteria — why are the patients in the ward in the first place
      - Patient population representative of all patients in the area — selection towards more ill persons in specialized wards
      - Demographics: sex, date of birth, place of birth, ...
      - Clinical characteristics: glucose, HbA_{1c}, lipids, ...
    - Follow-up of patients:
      - Outcomes: Death, ESRD, CKD, — may be derived from clinical variables
      - Determinants: The clinical variables
      - Aim: How does clinical status influence outcomes?
      - Timing: Determinants measured *before* outcomes
- Technical aspects of clinical records:

  - Everything comes with a date
  - Everything comes with a reason:
    severe disease, frequent visits / measurements
  - Analyses are perceived *conditional* on current clinixscal status
  - Analyses are really *conditional* on currently *measured* clinical status

- Statistical models for analysis of clinical data
  - Continuous outcomes (*e.g.* GFR):
    trajectory analysis - a function of time, taking the repeated measures into account
  - Event outcomes (*e.g.* ESRD events):
    survival / rate type analysis

- Examples from Steno patient records:
  - Mortality in T1 and T2 patients
  - Medication adherence
  - ESRD in CKD patients, complex follow-up scheaes