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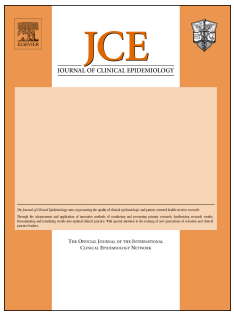

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Methodological Challenges and Time-to-Event Techniques in Register-based Health Services Research

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Figure 1: Illustration of left-truncation: Timescale is 'time until BOT since OAD initiation'. Prospective individuals enter the analysis data set at time origin, i.e., time origin and baseline coincide. Left-truncated individuals enter the analysis data set at some time $t > 0$; thus, baseline information cannot be determined at time origin anymore. (File: Figure 1.pdf)

Figure 2: Competing risks multistate model. Time origin is 'OAD initiation'. An individual enters the initial state 0 when first OAD prescription is recorded, start of observation may possibly be delayed with respect to time origin. BOT initiation is modeled as transition into state 1, EOAD prior to BOT initiation as state 2. No occurrence of these two events leads to right-censoring. Typically unobserved death events are modeled via state 3, but are masked as right-censorings (dashed line). Event-specific hazards $\alpha_{01}(t)$, $\alpha_{02}(t)$, and $\alpha_{03}(t)$ are associated with each transition. (File: Figure 2.pdf)

Figure 3: Estimated probability of BOT initiation in four different scenarios. Scenario I censors all competing events of Figure 2, which leads to the 'false' KME (black). Scenario II falsely censors not observable death events masked as dropouts. Scenario III and IV additionally account for artificially induced mortality in 5% and 95% of the elderly dropouts. These probabilities are estimated with the 'correct' AJEs (gray). 95% confidence intervals included (dashed lines). Black dotted line indicates the binomial estimator $\frac{\#\text{observed BOTs}}{\#\text{patients}}$. (File: Figure 3.jpeg) **Supplementary Material:**

Figure S1: Determination of baseline doctoral visits with respect to the two different timescales: t_0