

COMPARISON OF COMPLETENESS ESTIMATES IN CANCER REGISTRATION – A SIMULATION STUDY

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Cancer registries usually report completeness as one of their quality indicators. This serves researchers to assess how useful and representative the data is. Several methods have been suggested to estimate completeness (1-4). While some of them are simple, others are based on more complex statistical models. They are used more or less routinely in cancer registries, but so far the only published comparison in a simulation study is by Silcocks and Robinson (5)

Here, it is suggested to describe the process of breast cancer diagnosis and therapy by a multi state model. In principle, every contact with a doctor during diagnosis, treatment, and aftercare can give rise to a cancer registry notification with a certain probability. Therefore the states included in the model are “incident tumour” and “death” but also contacts with doctors such as consultation of a general practitioner or specialised doctor, diagnostic procedures, therapeutic interventions, and aftercare.

Fictitious registry data bases are simulated from this model. Transitions may depend on patient characteristics. E. g. a small solid tumour may be treated by surgery only, so the transition intensity for the transition from surgery to radiotherapy may be zero whereas for a larger tumour adjuvant radiotherapy may be standard treatment, so the probability for the same transition will be close to one. Some of these transition probabilities or transition intensities have been estimated from cancer registry data (6) and other sources e. g. (7). For the other probabilities informed guesses have been used. Several methods were applied to the simulated data. Simulated “true” numbers of new cases and simulated numbers of registrations are both available. So estimated and “true” completeness could be compared. It was observed that all capture-recapture methods studied tend to underestimate completeness.

References

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