

Evaluation of cancer screening programs by means of population based cancer registries

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Introduction

A screening program for colorectal cancers using colonoscopy was introduced in the year 2002 in Germany under legal conditions. Women and men aged 55 years or older now can claim a screening colonoscopy every ten years.

In January 2004 the “Bundesrichtlinie” for mammography screening was published. Mammography screening has to be implemented now in all areas of Germany until the year 2006. Women aged 50 to 69 years will be invited population based (per mail) to participate in this screening program.

A model project for a population based skin cancer screening, addressing to women and men older than 20 years, is going on in Schleswig-Holstein.

The further implementation of this program will depend on the analysis of the effectiveness of the screening method.

Further screening programs have to be analysed in the next years.

Effectiveness of these programs, especially in the context of German public health system, is uncertain or unknown. A broad evaluation is necessary to justify the immense expenditure of these programs.

Population based cancer registries can help to evaluate important epidemiologic indicators rather easily.

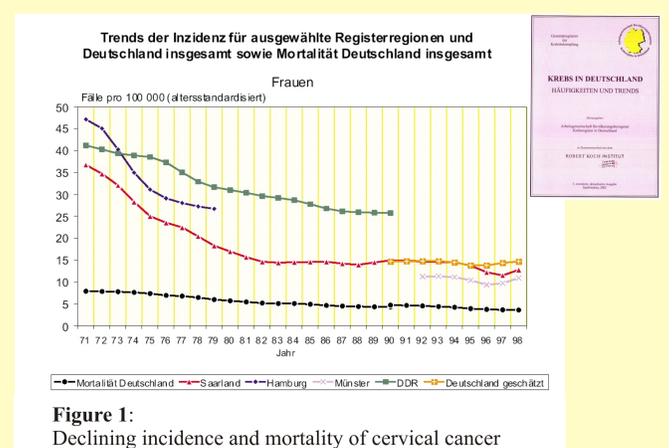
Three methods for the evaluation of cancer screening programs using population based cancer registries can be identified:

Use of epidemiological data

Analysis of cancer registry data can give first hints on the effects of a screening program. At the beginning of screening rising incidence should be seen. E.g. for mammography screening a 3-fold incidence is expected in the screened age group. This effect should also be seen in cancer registry data. When screening can detect carcinomata in situ in a relevant frequency, as screening for cervical cancer can,

incidence should decrease (fig. 1). In the long term mortality should also decline.

Further changes in tumour stage can be analysed. Effective programs should lead to a prognostic better tumour stage distribution. Additional areas with and without screening can be compared regarding epidemiological variables to assess the screening programs.



Matching with cancer registry data

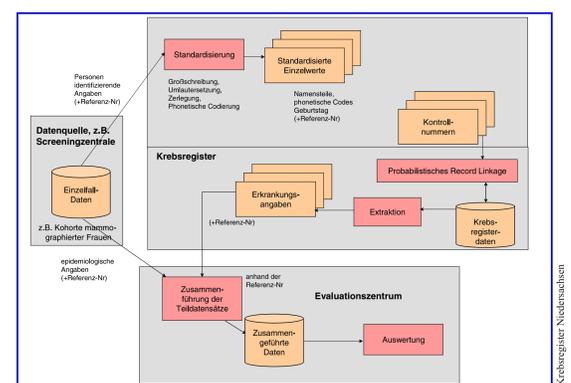
Members of a screened cohort can be matched to cancer registry data on an individual base (fig. 2). This procedure is the only way to estimate the extent of false negative diagnosis and interval cancers with sufficient accuracy.

Use of matching with cancer registries would also enable the comparison of a screened with a non-screened cohort, on a

randomized basis ideally.

Matching of cancer registry data will be done for the model projects breast cancer screening (Bremen and Wiesbaden) and skin cancer screening (Schleswig-Holstein).

In the “Bundesrichtlinie” mammography screening the matching process is described as part of the evaluation.



Access to cancer patients

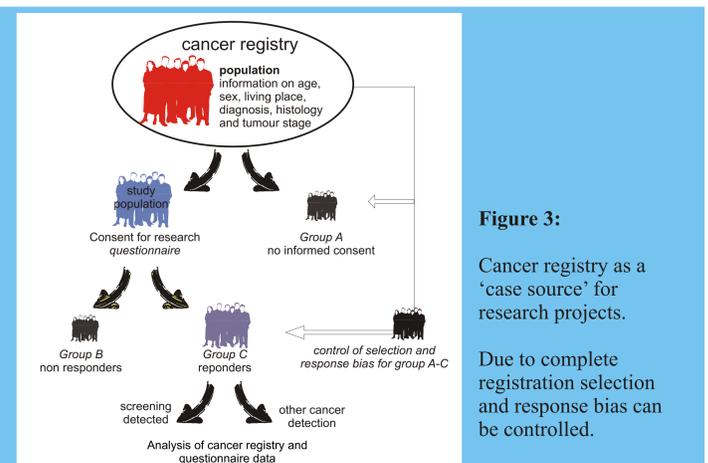
Patients recorded in a cancer registry can be contacted by researchers under specific conditions. This procedure opens several possibilities for evaluation.

For example cancer patients can be asked retrospectively whether their tumour was identified by screening or not (fig. 3). This method could be important for non systematic screening programs as colonoscopy

screening.

Data of screened and non-screened patients can be compared on basis of cancer registry data and additionally collected individual variables.

This method is well proven in several studies.



Discussion

In the examples given above mainly routine data of cancer registries are used. Therefore epidemiological evaluation of mass cancer screening could be realized together with the population based cancer registries without big expenditure. But this is only possible if the main condition, area covering and well operating population based cancer registries, is fulfilled.

The legal conditions for the matching of cancer registry data with screening data are unclear right now. The situation is complicated by

Different federal laws. In some federal countries the matching procedure seems to be allowed, in others corresponding paragraphs are missing. A national harmonization of the legal conditions, not only for matching procedure but also for cancer registration and usage of this data for research, is absolutely necessary. Otherwise risk is high, that data and evaluations will not be comparable.

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