ALTERNATIVE SCREENING METHODS WITHIN THE ORGANISED SCREENING PROGRAMME FOR CERVICAL CANCER IN FINLAND

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Summary
In Finland the organised screening programme to prevent cervical cancer has been in action since early 1960s. The programme has effectively reduced cervical cancer burden in our country. There are needs still to evaluate potential uses of novel technological alternatives within the programme. A large-scale randomised public health policy trial on primary sole HPV screening is ongoing. This enables random allocation of sophisticated screening tests, and also follow-up of cancer rates after screening episodes, in order to evaluate and plan for optimal screening policies (e.g., testing ages and intervals) in the future. Improving screening attendance in the organised programme is another key to further prevent cervical cancers in our country. Efforts are needed also to reduce overuse of screening services, taking place in spontaneous or opportunistic screening; in order to decrease potential adverse effects and to improve overall cost-effectiveness.

Key words: cervical cancer, incidence, mortality, organised screening, cytology, HPV-DNA screening

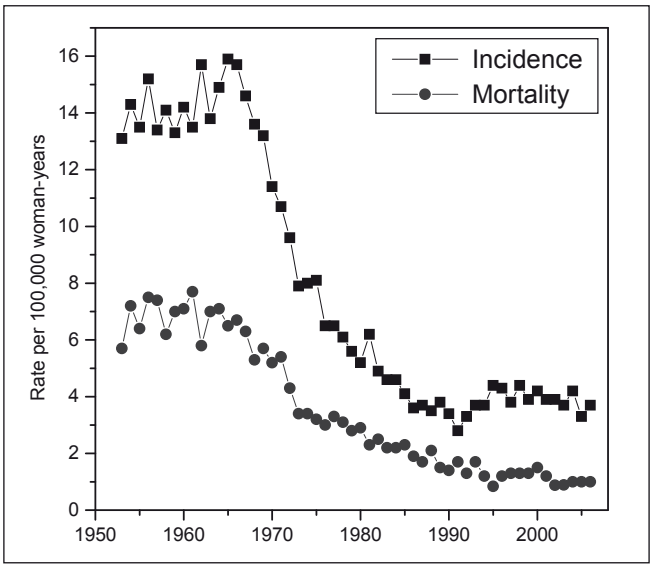

Fig. 1. *Cervical cancer incidence and mortality rates in Finland in 1953–2006, adjusted for age to the World standard population (Finnish Cancer Registry, 2008).*

INTRODUCTION

In Finland (population 5 million) organised cervical screening with conventional pap smear tests was introduced in the early 1960s. From the early 1970s onwards, the registered invitational coverage of the screening programme has been almost complete within the centrally targeted screening ages (1, 2, 3).

Subsequent to nation-wide implementation of organised screening, there has been a remarkable decrease in the invasive cervical cancer incidence and mortality rates reaching 80% of even more over the decades (2, 4, 5). In addition to population-based trend studies, screening effectiveness has been demonstrated by a very large-scale cohort follow-up study among women invited in the implementation phase of the programme (5, 6). Currently the age-adjusted incidence rate is below 4 and mortality rates about 1 per 100,000 woman-years (Fig. 1).

SCREENING POLICY WITH CONVENTIONAL CYTOLOGY

Over the decades the screening programme has become an integral part of the health care system. Women aged 30 to 60 years are actively invited with help of population registry, in five-year intervals when screening results are normal. There are thus seven invitations during lifetime. Some municipalities invite also women in ages 25 and/or 65 years. In 2005, the coverage of invitations was 98% (3). There were about 270,000 invitations and 190,000 screening visits in the programme. The attendance rate was 71%. Further details on screening policy, organisational details, and registration and data collection of the programme can be found elsewhere (3, 7, 8).

EVALUATION OF NOVEL SCREENING METHODS

The main purpose of evaluating alternative screening techniques within the organised programme is to assess screening effectiveness, i.e., comparing incidence of subsequent cervical cancers as the outcome and screen-detected pre-cancers as surrogates (9). Also performance of screening can be evaluated and monitored. It is important to verify patterns in test positivity rates; follow-up screening recommendations; and on the referral, confirmation and treatment rates. If the treatment rates, for example, would increase, does it reflect its better efficacy and effectiveness? Modifications on the screening policy need also

to be considered, for example, to verify proper testing ages and intervals for various tests in the programme.

Since 1999, approximately 860,000 women have been allocated to automation-assisted cytology, human papillomavirus (HPV) DNA testing, or to conventional cytology within the organised screening programme (9, 10, 11). In the HPV-DNA screening arm, run within a restricted area, sole primary HPV test is used, instead of a pap smear; After a positive HPV test results cytological triage is performed in order to assess needs for referrals for confirmation and treatments. About 100,000 women will be invited altogether during the course 2003-2008. This comprises almost 10% of the national target population.

First reports on the cross-sectional detection rates are available (10, 11, 12). The detection rates as well as cross-sectional specificity estimates in automation-assisted screening are very similar to conventional screening. There is variation between laboratories in the performance of cytology – seen both in the conventional and automation-assisted screening – which does not reflect effectiveness (12). This is likely to indicate variation in the local cost-effectiveness. Based on results from the first two years of the HPV screening arm, the detection rate of mild pre-cancerous lesions has been in excess in the HPV screening protocol, compared with conventional cytological screening; suggesting some increase of over-diagnosis of mild lesions. The CIN3+ detection rates were about the same or only in a slight excess. Considering referral to colposcopy after cytology triage, cross-sectional specificity and positive predictive value estimates seem to closely resemble those of conventional screening. Results on subsequent cervical cancers will become available during 2008–2015.

DISCUSSION AND CONCLUDING REMARKS

Historically, organised screening using conventional cytology has been effective; consequently the current burden of the disease has become low in our country. Over the last decade, the biologic background risk has been likely increased, however. This warrants improvements in the attendance rate, particularly among younger targeted ages of women of 25 to 39 years. Interventions testing reminders (13) or self-sampling tests (14) among non-responders of the programme are required.

In parallel with improving the population-based coverage and access to the services, decrease and stopping of unnecessary actions should take place also. It is a special challenge to optimise effectiveness of the health care with novel tests – e.g. if a woman was tested negative with the HPV test there is no need to take opportunistic tests (see reference 15 for further discussion). This, as well as the recent recommendations of the European guidelines for quality assurance in cervical cancer screening (16) calls for introduction of novel methods within organised programmes, avoiding a spontaneous manner.

Alternative methods in screening, such as HPV-testing, have shown promising cross-sectional findings. We propose speeding up the use of modern technological alternatives in strictly organised programmes and in parallel with the European recommendations and guidelines. Follow-up information upon efficacy and effectiveness on cervical cancers screening is still required, to acquire best available evidence for the possible modifications of future screening policies.

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