HOW CAN EUROPEAN COUNTRIES IMPROVE CERVICAL CANCER PREVENTION FOR WOMEN?

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BACKGROUND:

Screening programmes to identify cervical cancer and treat it at an early stage can be implemented in different ways. This makes it difficult to interpret the impact of disparate screening algorithms, given a difference in the underlying epidemiology of HPV infection in various countries. In creating a model to estimate the number of women currently screened and the impact of including HPV testing in the screening algorithm, we needed to identify comparable data from across Europe to parameterise the model.

AIMS:

1) To gather data for a model that estimates the number of women screened for cervical cancer across Europe.
2) To summarise and compare cervical screening programmes, prevalence of HPV, and incidence of cervical cancer across Europe.
3) To develop evidence for policy-makers in charge of cervical screening programmes.

METHODS:

1) Conducted a pragmatic rapid review of the published grey literature from select Northern and Western European countries on cervical cancer incidence, HPV prevalence, and screening programme implementation (screening intervals, age at first screen, coverage/uptake rates).
2) Extracted and synthesised data from literature.

RESULTS:

We found significant heterogeneity in how cervical screening is implemented, and in the epidemiology of HPV infection and cervical cancer rates across Europe.

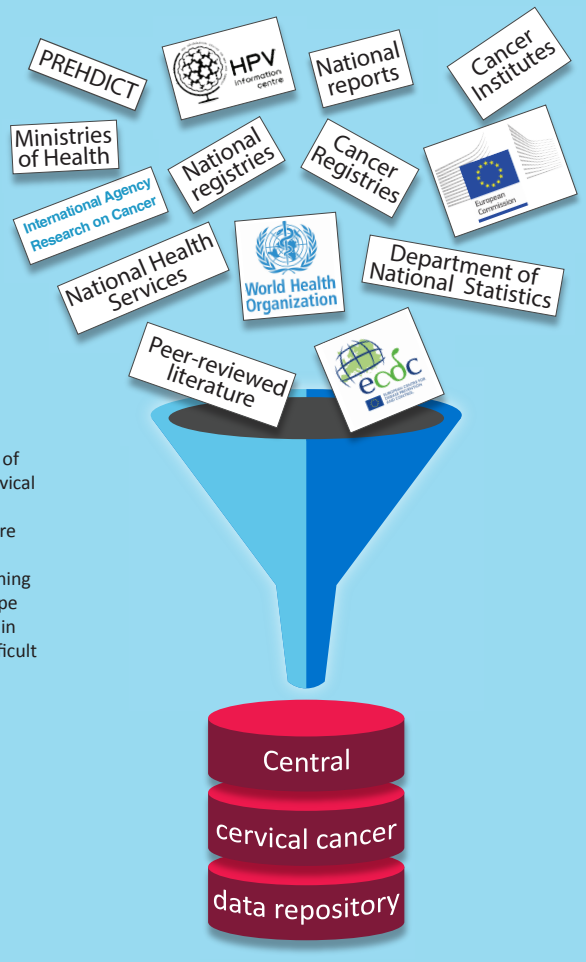
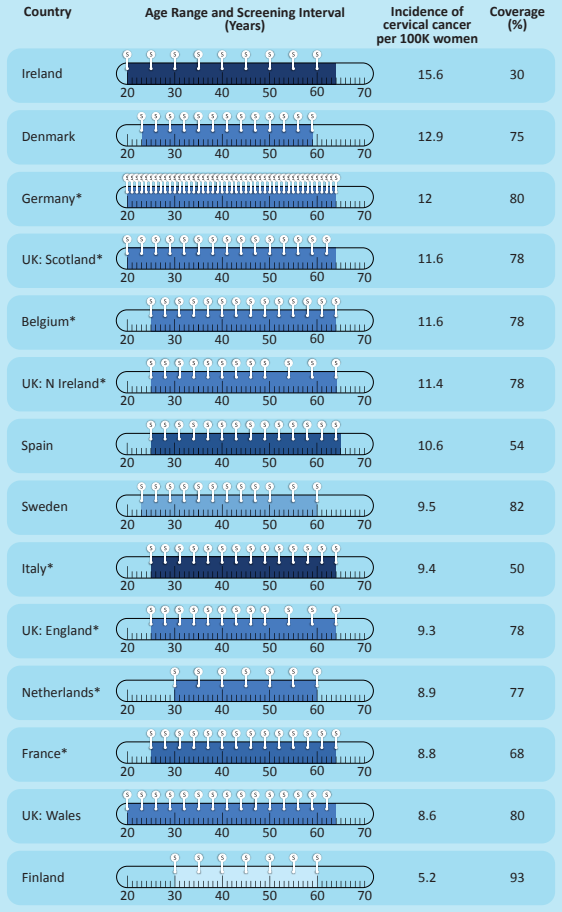


Figure 1: Many sources of information.

It was difficult to identify a central repository of information about the implementation of cervical screening across Europe; some sources of information are given in Figure 1. We also were unable to find comparable information about funding and reimbursement of cervical screening in each country. 6 out of 23 countries in Europe (Dowling et al., 2010) have regional variation in the way screening is implemented, so it is difficult to interpret the national data.



Sources for this figure: HPV information centre, 2015; IARC, 2015; NHS, 2013; PHA, 2013

Figure 2: European countries, by incidence of cervical cancer, and the age range and cervical screening interval.

We extracted data on screening implementation and cervical cancer incidence for each country, in an attempt to explore the impact of the programme on disease. Figure 2 shows countries in order of highest to lowest annual incidence of cervical cancer. Screening coverage in the screened age groups are reported on the right and visually represented by the colour gradient within the screening age band. Screening frequency is indicated by a marker, though these screenings are only indications, as most countries stagger entry into their programmes.

There appears to be no significant tendency on cancer incidence based on:

1) Age at first screen
2) Screening coverage
3) Frequency of screening

DISCUSSION:

1) A lack of comparable data on screening implementation across Europe makes it challenging for researchers and policy-makers to draw conclusions about screening effectiveness and what is most beneficial for women. As new ways of early detection and prevention for cervical cancer are becoming available, including rapid HPV tests, a single repository of data for cervical cancer screening programmes and outcomes across Europe would be beneficial for evidence-based policy. Such a data source could facilitate effectiveness and cost-effectiveness analyses to support the adoption of the best screening algorithm by country.
2) The relationship between screening programme implementation and its impact on the incidence of cervical cancer by European country is difficult to interpret. It is equally challenging to know what the impact will be of introducing HPV testing either as a triage or a primary screening method, and the additional impact of a rapid test for HPV.
3) We have not attempted to assess the cost-effectiveness of different programmes by country. Therefore we are unable to say if there may be evidence for why screening is different and if the cost-effectiveness varies much by country.
4) Several countries have both public and private healthcare delivery through which screening may be offered. It is unclear if screens that are done as part of private visits are included in the national statistics. We may be underestimating the screening coverage in some counties, such as England. If this is the case, it becomes challenging to compare coverage rates and programme effectiveness across countries.
5) We have not considered the effect of vaccination on HPV prevalence and cervical cancer incidence. The hypothesised trend as more women and girls take up the HPV vaccine is one of decreasing oncogenic HPV prevalence across the continent. However, it is conceivable that there might be a shift in oncogenic strains of HPV. The way screening is delivered may change in the future to an HPV primary screening model. HPV vaccination could become the norm. This may lead to opportunities for reducing the frequency and age range of screening. It may also increase opportunities for rapid testing or other options such as self-collected swabs.
6) One complication in understanding and interpreting the national data is that there may be variation in screening and disease incidence at a local, provincial, district, or sub-national level. This is not always reported or easy to find. For example, there is little data on HPV prevalence by constituent countries within the UK, however we know that coverage does vary by region. Policy makers, who are trying to optimise cervical cancer screening in their respective countries, may currently have difficulty given the lack of data and its heterogeneity and would benefit from improved reporting.

FURTHER STEPS:

1) Additional quantitative analyses (e.g. regression models) might help to further understand the relationship between screening modality and incidence of cervical cancer. Such a model in conjunction with cost-effectiveness analyses, may provide evidence to demonstrate the efficacy of screening programmes, the optimal intervals between screening, and the best age to begin screening.
2) A central repository of data would be very useful for anyone considering the comparative efficacy of different cervical cancer interventions across Europe. Whilst information is available in different sources, it would be useful to compile this in one place and ensure it is updated as changes in screening implementation and vaccination occur.

We conclude by strongly advocating for a centralised and standardised repository for cervical screening and HPV vaccination data across Europe.

The information presented here is based the authors independent views.

References: Dowling EC et al. 2010. J. Med. Screen. IPO HPV information centre. 2015. IARC. 2015. NHS cervical screening programme, 2013. Cervical screening programme, PHA. 2013.

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