Original Research

Cervical cancer screening in Europe: Quality assurance and organisation of programmes

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Abstract **Background:** Cervical screening programmes have reduced cervical cancer incidence and mortality but the level of success is highly variable between countries. Organisation of programmes is essential for equity and cost-effectiveness. However, there are differences in effectiveness, also among organised programmes. In order to identify the key organisational components that determine effectiveness, we performed a Europe-wide survey on the current status of organisation and organised quality assurance (QA) measures in cervical cancer prevention programmes, as well as organisation-associated costs.

Methods: A comprehensive questionnaire was developed through systematic review of literature and existing guidelines. The survey was sent to programme organisers, Ministries of Health and experts in 34 European Union (EU) and European Free Trade Agreement (EFTA) countries. Detailed aspects of programme organisation, quality assurance, monitoring, evaluation and corresponding line-item costs were recorded. Documentation of programme guidelines, protocols and publications was requested.

Results: Twenty-nine of 34 countries responded. The results showed that organised efforts for QA, monitoring and evaluation were carried out to a differing extent and were not standardised, making it difficult to compare the cost-effectiveness of organisation and QA strategies. Most countries found it hard to estimate the costs associated with launching and operating the organised programme.
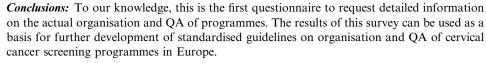
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Conclusions: To our knowledge, this is the first questionnaire to request detailed information on the actual organisation and QA of programmes. The results of this survey can be used as a basis for further development of standardised guidelines on organisation and QA of cervical cancer screening programmes in Europe.

1. Introduction

Cervical cancer screening efforts are underway to varying degrees in most European countries. Evidence from countries where organised screening was implemented early, shows significant decreases in cervical cancer mortality [1]. Also, evidence from England, Finland, Italy and the Netherlands demonstrate decreases in incidence and mortality following implementation of organised screening [2–4]. Organised cervical screening has been shown to reduce cervical cancer mortality by up to 80% at the population level with the level of mortality reduction related to the screening programme coverage [1]. The International Agency for Research on Cancer (IARC) and the 2008 European guidelines for quality assurance in cervical cancer screening recommend that screening programmes should be organised and population-based with a defined target population and screening interval (including organised quality assurance at all levels and organised monitoring and evaluation of programme effectiveness over time) [5,6]. In contrast to opportunistic testing, organised screening programmes can achieve greater equity in screening access and more efficient use of healthcare resources by ensuring that all individuals at risk are targeted within the most appropriate time-frame.

An estimated 54,000 women are diagnosed with cervical cancer and 25,000 women die from the disease each year in Europe [7]. Country-specific age-standardised incidence rates of cervical cancer vary across the European region from 2.1 to 23.9 per 100,000 women per year [7] and mortality rates range from 1.1 to 13.7 [8]. This variation begs further investigation into the current status of screening programme organisation and associated quality assurance efforts.

The first guidelines for quality assurance in cervical cancer screening in Europe were published in 1993 and outlined principles of organising screening, monitoring its impact and ensuring quality of the screening test [9]. A recommendation of the Council of the European Union in 2003 established implementation of screening programmes for the prevention of cancer as a priority for member-states [10]. The updated European guidelines for quality assurance in cervical cancer screening from 2008 were expanded to reflect advances in screening technologies and prevention strategies [6]. Definitions of key performance indicators, as well as recommendations for register-based programme audits

using data on cervical cancer cases and controls were also included. Previous evaluations of the status of screening programme implementation in Europe and the quality assurance within programmes have focused on examining efforts in individual countries and monitoring key indicators outlined in the guidelines [11–14]. Results of these studies have highlighted the differences in programmes between countries and need for more systematic evaluation of how programmes are organised and what quality assurance activities are possible in different countries.

The overall aim of the study was to identify the key components of organisation and evaluation of preventive policies without which the potential health gains of cervical screening would be more difficult to attain, and to estimate the funding required. To further support on-going and emerging cervical cancer prevention efforts, a broader analysis of the organisation and quality assurance activities as well as the associated costs of organisation and QA was conducted. The specific aims were to identify which quality control indices are used by the screening programmes in European countries, to evaluate how the measurement of key components of those quality control indices relate to the cervical cancer protection achieved, to propose guidelines on how to define and measure the quality indices that are most effective for cervical cancer control, and to estimate the financial resources required to monitor them. Establishing a baseline description of how cervical cancer screening is implemented in European countries with regard to organisation and quality assurance is important for being able to evaluate efforts to optimise programmes.

2. Methods

2.1. Survey development and structure

A comprehensive questionnaire was developed through an extensive review of the literature and the current European guidelines and protocols. Four out of seven sections of the questionnaire were dedicated to collecting information about cervical cancer screening efforts. The remaining three sections addressed human papillomavirus (HPV) vaccination programme efforts and are the subject of a separate report [15]. In the cervical cancer screening sections, information on (i) screening programme organisation, infrastructure and