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Health workforce planning and service expansion during an economic crisis: A case study of the national breast screening programme in Ireland

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ABSTRACT

This article aims to estimate the workforce and resource implications of the proposed age extension of the national breast screening programme, under the economic constraints of reduced health budgets and staffing levels in the Irish health system. Using a mixed method design, a purposive sample of 20 participants were interviewed and data were analysed thematically (June–September 2012). Quantitative data (programme-level activity data, screening activity, staffing levels and screening plans) were used to model potential workload and resource requirements. The analysis indicates that over 90% operational efficiency was achieved throughout the first six months of 2012. Accounting for maternity leave (10%) and sick leave (3.5%), 16.1 additional radiographers (whole time equivalent) would be required for the workload created by the age extension of the screening programme, at 90% operational efficiency. The results suggest that service expansion is possible with relatively minimal additional radiography resources if the efficiency of the skill mix and the use of equipment are improved. Investing in the appropriate skill mix should not be limited to clinical groups but should also include administrative staff to manage and support the service. Workload modelling may contribute to improved health workforce planning and service efficiency.

1. Introduction

Ireland was one of the countries worst affected by the global economic crisis. In particular, the Irish health system experienced the largest reduction in health spending of 53 countries in the World Health Organisation's (WHO) European region [1]. Between 2009 and 2013, the healthcare budget in Ireland declined by 22% and the public share of total health spending fell well below the European Union (EU) average [1,2]. One of the primary measures to curb spending was the introduction of an embargo on recruitment and promotions in the public sector. Between 2009 and 2013 staffing in healthcare fell by over 12,000, 10% of total staffing from the peak in 2007 [2]. Other saving measures included sustained salary cuts and incentivised retirement schemes. In 2011 the incumbent government proposed a number of commitments to improve healthcare including the expansion of the national breast screening service, a significant health workforce challenge in the context of severe human resource restrictions.

While many European countries offer screening to women between the ages of 50 and 69, in Ireland screening

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is currently offered to women aged 50–65 years [3]. In 2006 the National Cancer Forum recommended that the upper age limit of the Irish screening programme be extended to 69 years [4]. Ireland's programme is similar to international screening models in many other respects; it is coordinated nationally but organised locally utilising fixed and mobile screening units to provide an accessible service to a dispersed population. Appointments are issued with a prespecified time and location to maximise uptake. As in most European countries with the exception of the United Kingdom (UK), women are invited for breast screening every 2 years [3,5].

At present, the National Health Service Breast Screening Programme (NHSBSP) is being extended to women aged 47–73 years. Due to resource and capacity implications it was not possible to extend the programme across the whole country at the same time. Consequently, the age extension will be phased in over a number of years and a pilot study is underway to examine the feasibility and acceptability of randomising this process [6]. Studies of the impact of age extension of screening have largely focused on outcomes and cost-effectiveness [7,8]. There is a dearth of research examining the health workforce and resource implications of age extension.

In light of cost-saving measures in the health system, which focused on health workforce recruitment restrictions, this article examines the feasibility of plans to extend the national breast cancer screening service in line with our European counterparts. We conducted a mixed methods evaluation of the screening service in 2012 to assess the scope for operational efficiency within the existing service and to estimate the workforce and resource implications of extending the upper age limit of the service from 65 to 69 years. Some operational inefficiencies arise due to the direct service delivery process, while others are related to administrative, logistical and operational aspects of the healthcare delivery system [9]. We examined how to maximise capacity from a set of resources, namely radiographers' time and digital X-ray machine capacity, by analysing current operational processes and personnel required for the delivery of the service using a workload model approach, a potential addition to the ratio-to-population approach currently used to plan service delivery.

2. Materials and methods

A convergent mixed methods study design was used; quantitative and qualitative data were collected and analysed in parallel and brought together during interpretation [10]. This is known as the parallel-databases variant as the strands are conducted almost independently and the two sets of results are synthesized or compared during the interpretation and discussion. Ethical approval for the evaluation was granted by the Clinical Research Ethics Committee for Cork Teaching Hospitals.

In Ireland the national breast cancer screening programme, known as BreastCheck, provides screening at four regional centres (static units) and at 16 mobile units located at specific sites across the country. The service also includes all follow-up assessment procedures, up to and including primary surgery for a detected cancer. All four regional screening sites were included in the evaluation, which was conducted between June and September 2012.

We adopted the Donabedian quality framework of structures, processes and outcomes as the evaluative framework for the study [11]. Quantitative and qualitative data were collected concurrently across each of the dimensions: structures (quantitative data on the number of staff, whole time equivalents (WTE), number of mobile screening units and screening machines), processes (quantitative and qualitative data on the invitation, screening, assessment, treatment processes) and outcomes (number of women screened, costs and resource implications).

Individual in-depth interviews were conducted with a purposive sample of 20 key stakeholders. Internal stakeholders ($n = 15$) were recruited across the four regional screening centres and represented each of the staff categories within the service (Clinical Directors/Consultant Radiologists, Senior Radiographers, Radiography Service Managers/Radiographers, Unit Managers, Clinical Nurse Managers, Nurse, Surgeons). Interviews ($n = 3$) were also conducted with a senior management representative from the National Cancer Screening Service (NCSS), the National Cancer Control Programme (NCCP) and the Department of Health. Two service users who received screening, assessment and treatment through the national screening service were recruited through a patient advocacy group.

A semi-structured topic guide was developed by the research team to explore the processes and practices involved in the delivery of the screening service, perceived efficiencies and inefficiencies in the current model, barriers to optimal utilisation and potential changes to improve utilisation. Stakeholders were also asked for their views on the proposed expansion of the screening service. Interviews were digitally recorded with the participant's informed written consent and transcribed verbatim. Thematic analysis [12] was used to analyse the data using QSR NVivo 8 software. Participant transcripts were assigned a unique identifier and data were fully anonymised including the removal of information on profession within the health service.

Quantitative data were obtained at national and regional service levels. A list of data and documentation were requested from and collated by the National Cancer Screening Service (NCSS) Financial and Human Resources (HR) divisions, the Programme Evaluation Unit (PEU) and the individual regional screening units. The sources and types of data used in the review included financial data, programme-level activity data, screening activity data for mobile and static units in each region, staffing levels and screening plans for the coming year (Supplementary Data Table 1). Where further information or clarification was required during the course of the evaluation, this was requested from stakeholders. In particular, data for modelling were based on information from the 2012 Screening Plan, HR data provided by the NCSS and population estimates from the 2011 census by the Central Statistics Office.

Data were analysed to estimate the potential workload and radiography staff requirements to screen the current eligible cohort of women aged 50–64 years and to extend the screening service to those aged 65–69 years.

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