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Radiographer managers and service development: A Delphi study to determine an MRI service portfolio for year 2020

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ABSTRACT

Purpose: As high quality CPD courses become increasingly expensive and time off for radiographers progressively limited, it is important that CPD content be aligned to forecasted service portfolio development. When such a portfolio has not been developed locally the CPD planner should carry out an own forecasting exercise. The purpose of the study was to develop a 2020 MRI service portfolio using a Delphi study.

Methods and materials: MRI stakeholder experts participated in a first Delphi round based on semi-structured interviews. The interviews were analysed thematically leading to a series of statements for a second Delphi round. Level of agreement was assessed as the median value on a 6 point Likert scale ranging from 1 (complete disagreement) to 6 (complete agreement), the level of consensus was assessed using the interquartile range (IQR). Consensus was defined as IQR $\leq$ 1.

Results: Very strong agreement and consensus (median 6, IQR $\leq$ 1) was obtained for maintaining current service catalogue and introduction of breast biopsies, cardiac studies, ISO standards, referral guidelines, and departmental policies aligned to EU regulations. Strong agreement and consensus (median 5, IQR $\leq$ 1) was obtained for introduction of tumour assessment, tractography, elastography, enterography. The level of consensus was low (IQR $\geq$ 1) regarding research, 3T MRI, outsourcing, prostate screening and certification for MRI referral privileges.

Conclusion: The multi stakeholder approach adopted ensured that the proposed service portfolio would be suitable for local healthcare needs. Although the methodology has been applied to MRI it could easily be adapted to any imaging modality.

Introduction

Magnetic Resonance Imaging (MRI) is now a leading imaging modality; new applications are constantly being introduced whilst the number of patient examinations is ever on the increase.[1–5] Since 2008, MRI utilization rates in Malta have increased by 96% with new requests contributing towards an ever increasing waiting list.[6,7] The need for high quality continuous professional development (CPD) for local MRI radiographers is therefore expected to become acute over the next years.

This study forms part of a wider project on CPD for MRI senior radiographers in Malta. Underpinning the focus of the study is a situation most radiographer managers will recognise: high quality CPD courses are becoming increasingly expensive and time off for radiographers progressively limited owing to higher workloads. In such circumstances, it is important that CPD time is optimized by ensuring that content reflects more closely the specific learning needs of the particular group of radiographers for whom it is designed and the particular healthcare needs of the local population.[8] CPD content should be aligned to the forecasted future development of the local service portfolio the radiographers would be expected to deliver ('service portfolio' refers to the range of services envisaged to be offered by the service). When such a service portfolio has not been sufficiently developed locally it is

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important that the CPD planner carries out an own forecasting exercise to assess what the service would likely look like on the target date (in this case 2020).

Initial literature review and correspondence with international colleagues indicated that the way services are developed varies widely. One approach involves the development of international or country-wide guidelines set up by groups of experts. Unfortunately, such guidelines often take too long to be formulated and disseminated and frequently require extensive adaptation for use at the local level where service development and device procurement decisions ultimately need to be taken.[9–11] On the other hand, in the case of smaller institutions, decision making is sometimes based on individual physician subjective preference or be excessively vendor influenced. This may lead to decisions which do not always support closely the healthcare needs of local patients.[12–14]

The issue of the direction service portfolio development should take represents a formidable challenge to departmental managers, however, it also offers opportunities for research. This article presents one possible way forward that avoids the pitfalls of the two aforementioned approaches. This study therefore answers the question: how may a radiography manager guided by a patient oriented and inter-professional/multi-stakeholder philosophy and who is faced with a need for forecasting of service development tackle the situation? The authors propose a methodology based on a multi-stakeholder and inter-professional Delphi group. Although the methodology has been applied to MRI it could easily be adapted to any imaging modality.

Service portfolio

Fig. 1 depicts the service portfolio model that guided the study and is a simplified version of that proposed by Brailsford and Vissers.[15] A well-defined service portfolio helps stakeholders understand the services that are/may be offered and hence promotes communication and consensus among stakeholders. A well-managed service portfolio ensures that existing services are maintained and not negatively impacted when any new functionality or service is introduced[16]; it enables institutions to allocate resources to identified healthcare needs, thereby enabling a more effective and efficient service.

Method

The research technique chosen was the Delphi technique as it is suitable when idea generation and exploration, forecasting and expert judgment are indispensable.[17–19] The technique is well established in healthcare and educational research and the search word 'Delphi' in Pubmed currently gives close to five thousand hits. The researcher sought to gather opinions from a purposive sample of key stakeholder experts ($n = 17$) that make the most use of the MRI services. The panel included experts in healthcare policy, diagnostic radiology, imaging unit management, orthopaedics, neurology, medical physics, MRI industry and patient advocates. Gillham[20] refers to this approach as the 'elite interview'. A focus group or a nominal group technique could have been employed in collecting the data. However, considering the diversity of professions and grade levels within the group, the Delphi was most suitable as it ensures maximum participant autonomy and the possibility of opinion modification following successive Delphi rounds.[21–23] The main limitations of Delphi are the wide variation in what is regarded as consensus and the fact that it may be too time consuming for participants, risking participant attrition between successive rounds.[23] In this study the effects of the former limitation were minimized by using objective quantifiable criteria: median for level of agreement/disagreement and inter-quartile range (IQR) for extent of consensus.[24] The criterion for consensus was an IQR less or equal to 1 which is stringent. The latter limitation was addressed by utilizing individual interviews for the first round of the Delphi. Interviews increase participation and the use of face to face interviewing is especially appropriate with participants in leadership positions whose time may be very limited.[25] Although the respondents were known to the researcher, they were kept anonymous to each other. The anonymity of the experts would prevent the dominance of the strongest and most eloquent speakers therefore enabling the study to be informed by the views of the less confident speakers. Ethical approval was granted by the research ethics committee of the University of Malta.

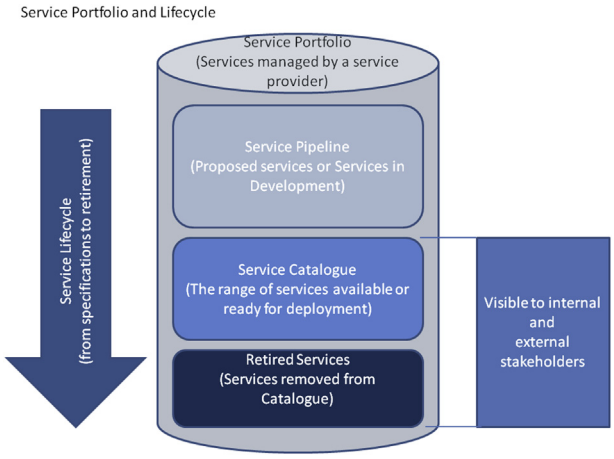

Figure 1. Model of the service portfolio guiding the research study.

Delphi first round

The first round of the Delphi was carried out through semi-structured interviews to provide maximum opportunity for idea generation and elaboration.[26] The interview tool was based on the service portfolio model shown above and was divided into 4 sections. Section 1 focused on the interviewee's role in MRI and potential influence on the MRI service portfolio; section 2 focused on the service catalogue with a list of services that are presently available or ready for implementation; sections 3 and 4 were respectively dedicated to services in the pipeline and those prone to possible sidelining.

A letter of invitation to participants provided an information sheet and consent form. The participants were provided with the interview questions in advance so that they might reflect on the issues prior to being interviewed. Questions were sequenced to lead the discussion towards the key questions of the study.[27] The subsequent qualitative analytical process used was based on Braun and Clarke's six phase framework.[28] Concept maps were created for each interviewee using CMAPTOOLS[29] and subsequently analysed by one researcher for levels of hierarchy, interconnections and repeated concepts to identify emerging themes and elaborate on those previously identified from the literature.[8,30] Each map was sent to the respective participant for correction and verification. An example of a concept map generated during the project can be found in Fig. 2.

Delphi second round

A web based second-round questionnaire was based on the themes generated in the first round. The second round of the Delphi study was conceived as a consensus seeking round in which