

# The current status of radiographers as screen readers in breast screening units: applications for Australia

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**Abstract** In the United Kingdom's National Health Service BreastScreen Program, three-quarters of their screening units have radiographers as one of the two independent screen readers. This has been the case since the early 1990s. Multiple studies confirm the capabilities of radiographers as screen readers and the positive outcomes for the stakeholders. This is not the current practice in BreastScreen Australia, despite the chronic and increasing shortage of radiologists in general and in particular radiologists willing to be accredited in BreastScreen. This discrepancy in practice led to a qualitative investigation of the perceptions of radiographers, radiologists and directors involved in BreastScreen Australia and eligible users of the service, regarding the role of radiographers as screen readers. The perceptions of these Australian stakeholders were collected via interviews and personal correspondence. Thematic analysis was conducted on the data and then triangulated with a thematic analysis of the literature. This research demonstrated positive perceptions towards radiographers as screen readers for BreastScreen Australia by the Australian stakeholders. This was supported and reinforced by the literature review, in particular, the UK experience of radiographers as screen readers. Therefore, given the advantages of radiographer role extension and increased career opportunities, in conjunction with the increasing workload of the Australian radiologist, it would seem prudent to commence planning for the introduction of non-radiology screen readers in to BreastScreen Australia. This paper provides an initial basis from which to commence discussion and planning by all the Stakeholders.

**Keywords:** breastscreen, mammography, radiographer reporting, radiographer, radiographer role development, role extension, screen readers

## Introduction

BreastScreen Australia (formerly known as The National Program for the Early Detection of Breast Cancer) was established in 1991 as a joint State and Commonwealth initiative to bring about significant reductions in both the mortality and morbidity of breast cancer.<sup>1–5</sup>

The policy of BreastScreen Australia is double reading of the mammographic screening images, where two screen readers read the breast images independently, resulting in a higher cancer detection rate than a single reading.<sup>6</sup> If the two reports are not concordant then a senior radiologist is required to perform a third reading. Current practice dictates that the two screen readers are radiologists despite the BreastScreen Australia National Accreditation Standards recommending '...specifically trained non-radiologist readers to be employed to read alongside the radiologists'<sup>6</sup>

This is in contrast to the practice adopted in the National Health Service (NHS) Breast Screening Program in the United Kingdom, where radiographers have been successfully employed as one of the two independent screen readers in approximately three quarters of units since the early 1990s.<sup>7</sup>

Radiographers are also employed as screen readers in Canada, Europe and the United States<sup>7–13</sup> with all reported studies confirming the capabilities of radiographers as screen readers in terms of competence and efficiency.<sup>7–9, 11, 13</sup>

This change in the traditional radiographer and radiologist

roles came about in the UK with the introduction of the *National Health Service (NHS) and Community Care Act (1990)*.<sup>14, 15</sup> Financial restraints and the development of new technology contributed to an increase in the range and volume of procedures. These factors, coupled with an increased demand for radiological services from the ageing population<sup>7, 11</sup> put intense pressure on the limited resource of radiographers and radiologists.<sup>14–20</sup>

The radiographers capitalised on the changing professional environment by successfully extending their role into traditional radiology domains, including radiographer reading and reporting,<sup>7–9, 11–13, 19, 20</sup> managerial roles,<sup>21</sup> performing and reporting barium studies,<sup>22</sup> ultrasound reporting, venepuncture and the red dot systems.<sup>23</sup>

At the same time, it is recognised that there is a current shortage of radiologists worldwide that continues to increase,<sup>18, 20</sup> especially those specialising in Breast imaging.<sup>7, 24</sup> Bassett, *et al.*<sup>24</sup> report that breast imaging (including breast screening) is seen as a second rate specialty and is often perceived as mundane by most radiologists. Other reasons nominated by North American radiologists for their disinterest in breast imaging include the fear of litigation, stress/burn out, that the practice is not lucrative enough and that there is the potential of increased regulation and medico-legal liability.<sup>24</sup>

This discrepancy in best practice worldwide and the paucity of literature regarding radiographers as screen readers for BreastScreen Australia, led to this qualitative investigation

considering the perceptions of radiographers, radiologists, directors of breast screening programs and the public regarding the role of radiographers as screen readers in Australia.

### Method

Data were collected from 10 Australian stakeholders via semi-structured focus group interviews, one-on-one interviews and personal correspondence, following ethical approval from both the University and relevant Area Health Service Human Ethics Committees.

The researcher explained that the aim of the research was to explore the different perceptions, ideas, thoughts, concepts and opinions of the group, or individual with regard to the role of radiographers as breast screen readers in Australia. Each participant was provided with an information sheet and given an opportunity to ask questions about the project prior to agreeing to participate, via written informed consent. All interviews were audio taped, with one exception, where the participant declined. The tapes and hand-written notes were transcribed verbatim in preparation for thematic analysis.

The heterogenous group of participants were a purposive and representative sample of those involved in BreastScreen Australia and members of the public. In total, three qualitative one-on-one interviews and two focus group interviews were conducted. These interviews were semi-structured so as to allow for new concepts to be discussed and to encourage sharing of beliefs, attitudes and perceptions. Each participant attended only one interview, with the interactions within the focus group allowing the researcher to note the amount of variation or consensus within the group.<sup>25,26</sup>

A thematic analysis was used systematically to analyse the contents of the transcribed text to find meaning from the information/data collected.<sup>26,27</sup> Initially, the researcher immersed herself in the data by reading and re-reading the personal correspondence, transcripts and notes and then undertaking a process of thematic coding. After further analysis, the significant words, phrases and ideas that had been coded were sorted into 34 clusters, which were then reanalysed and collapsed into eight final themes, resulting in a final report with detailed, thick descriptions of the themes, incorporating examples from the participants' transcripts.<sup>27</sup>

A literature review was used to both inform the research proposal and the project outcomes. This was compiled from peer-reviewed papers based on imperial evidence, discussion papers, reports, editorials and letters to the editor. A thematic analysis was then applied to the literature and triangulated with the themes from the Australian stakeholder participants. Triangulation of the data collected increased the credibility and robustness of the study, whilst also offering a more complete understanding of the underlying concepts and themes.<sup>25,27</sup>

### Findings

The following findings were drawn from the thematic analysis of both the Australian stakeholders and the literature review and showed congruence across all themes upon triangulation. The eight themes are reported below incorporating quotes from the stakeholders' data.

#### Benefits to BreastScreen Units

The perceived benefits for BreastScreen Australia of radiographer screen reading included helping to address the acknowledged shortage of radiologists and reducing their workload. In addition, increased screening capacity, improved reporting efficiency and the freeing up the radiologists for more procedural work resulting in cost savings, thereby contributing to the sustainability of BreastScreen Australia. This theme, despite one

participant doubting the extent of cost savings, was supported by the literature.<sup>7, 8,13,18,20,24,9</sup>

*'...this would speed up reading timeframes, providing faster results for clients.'*

*'...and anything that helps to cut costs whilst maintaining standard should be investigated.'*

*'...and may I point out that the fraction of money that is paid for screen reporting relatively to the overall budget is very small.'*

#### Radiographer status, career and implications

The existing shortage of radiographers, particularly those with breast imaging skills, was discussed and while some perceived that introducing radiographers as screen readers would increase this shortage, others thought there would be minimal change. This was partially due to some radiographers not wanting to take on additional responsibilities. It was felt this would lead to trade offs, partially due to the political negotiations.

*'A likely trade-off would be the introduction of non-radiographer film-takers (as in the UK) – an initiative that I would also support.'*

*'...using radiographers for (reading) screens would reduce the amount of radiographer time for screen taking.'*

*'There would be responsibilities attached to this work and I expect this would limit numbers (of radiographers who wish to read).'*

Many positive outcomes were discussed for radiographers as screen readers, including the opportunity to increase their skills and take on extra responsibilities in the areas of film interpretation and supervision, especially if a radiographer assistant role were to be created. There would be a broadened career path for those with aptitude, motivation and experience who wished to accept the challenge of new skills. A position as a reader would be more readily achievable than that of designated radiographer, who oversees all aspects of the radiography component of each BreastScreen Australia unit. Recognition of the skills and expertise of radiographers would increase as would job satisfaction and staff morale leading to increased retention of radiographers as the following quotes illustrate. There should also be suitable remuneration for the extra responsibilities.

*'I think that there are definite advantages for radiographer (screen) readers, added skills, added interest...'*

*'It would be good for radiographers to have that recognition.'*

*'To take on that responsibility of doing the reads you would have to be rewarded for that extra responsibility...'*

The medico-legal liability of radiographers as screen readers was also a concern for a number of participants.

*'Medicolegal responsibilities should be the same for all readers, and as long as this is the recognised position, I don't foresee any specific problems.'*

*'The fellow with the perceived bigger hip pocket is the one who is going to be done.'*

*'...it would be a concern you would have to make sure (that) you are well covered with insurance.'*

Cook, *et al.*<sup>28</sup> discuss medico-legal responsibility and state 'current legal restraints can be overcome by thorough documentation by the radiologist, radiographer and the employer as to the delegated roles and responsibilities in an endorsed proposal', so while medico-legal issues must be considered it would seem they are not insurmountable.

### Radiographer training and performance

Most participants emphasised the importance of the training and monitoring being to the same standard as the BreastScreen Australia radiologists and that only very experienced breast imaging radiographers with appropriate aptitude be considered as the following quotes illustrate:

*'Standards for testing/certification of non-radiologist readers should be equivalent to that expected of radiologist readers.'*

*'Reading should only be undertaken by senior, experienced radiographers accredited by successful completion of a recognised training program.'*

Postgraduate courses in radiographic image interpretation are currently available in Australia and abroad, with the potential for adding specialisations. There is currently a postgraduate breast image interpretation and analysis course offered in the UK.<sup>7</sup>

### Acceptance of radiographers as screen readers

Every participant supported the concept of radiographers as screen readers for BreastScreen. However, a few participants considered implementation to be a long way off. Some participants' comments also included other health professionals into the non-radiologists reader definition. Most of the health professional participants were aware of precedents already set primarily in the UK and viewed these positively.

*'...clinical studies in England have reported positively on the role of mammographers as screen readers, therefore I believe that a precedent is already in existence and as such there will be a natural progression towards mammographers as readers worldwide.'*

*'In the BreastScreen setting I would welcome the introduction of suitably trained mammography staff as readers for the BreastScreen program.'*

*'I am in favour of the idea of non-radiologist readers be they radiographers or breast clinicians or others.'*

Friedenberg reported in the literature from the United Kingdom 'the Royal College of Radiologists has therefore given tacit approval to the concept of radiographer reporting' based on their report into unmet demand for radiological services.<sup>8</sup>

### Radiologist shortages

The radiologist shortage was discussed by seven of the participants, with the perceived reasons including a lack of personnel, high workload, lack of government funding, low pay and also that rural radiologists have difficulty meeting the minimum requirement of 2000 reads per year for BreastScreen.

*'So what you are looking at is a place where there is diminishing funding (and) a place where there is increasing work load...'*

*'... and if they were paid correctly then you would have as many radiologists as you want..'*

The literature provided additional reasons for the world shortage of radiologists including new technology,<sup>19</sup> the increasing demand from the ageing population<sup>7,10,15</sup> and that breast imaging was perceived to be uninteresting and too stressful.<sup>24</sup>

### Solutions to radiologist shortage

Comments and suggestions were made about current and future solutions for the BreastScreen radiologist shortage, including improvements in technology that may assist in reducing workload constraints, for example computer aided diagnosis (CAD). Another suggestion was to salary radiologists similar to the UK,

instead of fee for service payments. This would lead to radiologists' being more supportive of radiographer screen readers as it would lessen the radiologists' workload for the same salary.

All participants supported the concept of radiographers as screen readers, with three participants suggesting using two radiographers and/or non-radiology screen readers, for example:

*'...if you can accept one non-radiology reader why is it not also acceptable to have two non-radiology readers and perhaps only have the radiologist as a third reader. Or perhaps remove the radiologist altogether and just have mammography specialists trained to review mammograms in the BreastScreen setting.'*

Another suggestion was to use breast physicians as screen readers or to run assessment clinics, as this would free radiologists for other duties.

The 2000 Australian Radiology Workforce Report<sup>29</sup> supported using other medical providers. Sumkin, *et al.* referred to a study that trained physician assistants to interpret mammograms in the United States.<sup>12</sup>

### Competition between radiographers and radiologists

There were comments from both radiologists and radiographers perspectives that competition between the two professions needed to be avoided and endeavours should be made to build an environment based on mutual respect, with a team approach that focused on the best outcomes for the clients and the public purse.

*'...there is always the danger of them and us, between the Doctors and the radiographers occurring, I don't want to go there, but it is always a possibility.'*

The literature confirmed competition between the professions but this competition was seen as a positive outcome because it resulted in improved reporting quality by the radiologists leading to better outcomes for the clients.<sup>13</sup> In contrast, the participants in this study viewed competition as a negative outcome to be avoided.

### Medical dominance and politics

There was a strong perception that the Royal Australian and New Zealand College of Radiologists (RANZCR) and individual radiologists would feel threatened by any changes to the current *status quo*, specifically that radiographer role extension as screen readers would be seen as 'turf invasion' and setting of a precedent. This is despite there being well-documented positive precedents in the UK. The RANZCR was seen as being very strong and powerful in the political arena and perceived as acting like a 'trade union', due to the domination of the delivery of imaging services in Australia by private practice radiologists, therefore politics are expected to play a major role in any changes. Political negotiations will be needed to smooth the pathway for radiographer screen readers with the appropriate political bodies such as the Australian Institute of Radiography (AIR), RANZCR, BreastScreen Australia and relevant Government bodies.

*'...(radiologists are the) biggest unionists in the country, they are, even though they don't like unions and don't like their staff to be in unions.'*

*'I therefore suspect that opposition to the introduction of mammographers as screen readers is more about the preservation of position rather than concerns about ability.'*

*'Radiologists would like their workload lessened, but would probably see radiographer reading as turf invasion.'*

In the literature, Reed states that in the UK there was '...a political determination to reform the health service to make it



more effective...<sup>15</sup> thus providing the impetus for change. In Australia, the medical profession was viewed as the only professionals having the required expertise to achieve optimal patient care. The public and private health systems, government bodies and the private health funds<sup>30,31</sup> perpetuate this idea.

Additional concerns for radiologists included accreditation<sup>29</sup> and loss of power and status if radiographers start reading images.<sup>20,32</sup>

The RANZCR policy on breast cancer screening is that it requires all screening mammography films to be read by radiologists and this is reinforced in the radiology literature.<sup>33-35</sup> This is in conflict with both the BreastScreen Australia policy and that of the *2000 Radiology Workforce Report*.<sup>29</sup>

## Discussion

This study has demonstrated that the perceptions of the stakeholders are supportive across all of the eight themes regarding the role of radiographers as screen readers for BreastScreen Australia.

The triangulation of results with published literature provided this study with credibility and reliability<sup>25,27,36</sup> and it is the resultant congruence between the worldwide experience as reported in the literature and the Australian stakeholders perceptions that encourages the potential wider application of these findings across BreastScreen Australia.

Radiographer role development has been constrained by factors including medical dominance and the privatised health system,<sup>31,37,38,39</sup> Smith and Lewis state 'radiology services are increasingly delivered by private providers who work in vast and powerful radiology conglomerates'<sup>39</sup> where radiographer autonomy is neither required or valued. Furthermore, 'Government bodies involved in health care are acutely aware of the need for improved efficiency in the delivery of health care'<sup>31</sup> Within Australia the domestic demand for radiologists has outstripped supply and it is predicted that the demand will only increase leading to increased workloads.<sup>28,29</sup>

Given the increasing radiologist shortages and an increased need for efficiency in the health system, it would seem appropriate to commence the introduction of non-radiologist screen readers for BreastScreen Australia.

Radiographers have been evaluating images as part of their work since radiography began and have, with time and experience, developed a great depth of knowledge as to normal/abnormal presentations. For breast imaging in particular, where a large volume of mammograms are assessed by radiographers as part of quality assurance measures, there is also interaction with the radiologist at the assessment clinics.<sup>9,12</sup> Thus, radiographers with extensive experience in breast imaging would make an ideal choice for non-radiologists screen readers.<sup>12</sup> Application of knowledge and experience, in conjunction with formalised film interpretation skills at a post graduate level would offer great advantages for BreastScreen Australia and the women to whom they provide a service, given the UK experience.

In the literature, concern was expressed by Smith and Lewis that in Australia, people entering medical imaging courses are mostly in the top 20% of high school graduates '...who are looking for a challenging and rewarding career...' but find when in the workforce that '...they are not challenged, are generally undervalued and unappreciated'.<sup>37</sup> This leads to loss of experienced and knowledgeable radiographers either overseas or to other professions.<sup>37</sup> Concern was also expressed that if radiographers do not

take on such tasks, there is the potential for other, more astute professions to embrace them.<sup>8</sup>

Cook, *et al*<sup>28</sup> recommend that a formal approach to radiographer reporting be taken with accredited training of experienced radiographers. Emphasis must be put on the continuation and the expansion of formalised ongoing education at post graduate level to gain professional recognition<sup>40</sup> as cited by Egan and Baird 'There is little doubt that Australian graduates are equally capable of assuming advanced radiographer roles (as in the United Kingdom)'.<sup>31</sup>

One way for the radiography profession to be in control of their future direction is to be actively involved in the changes taking place in the medical imaging field.<sup>37,39</sup> Planning and negotiation for these changes in the status quo must be commenced with representatives of all the stakeholders, taking into account all the appropriate factors and issues. Strategies for improvements in teamwork and communication between radiographers and radiologists must be incorporated to enable the setting of common goals with a client orientated approach.<sup>13,15,16,40</sup>

## Conclusion

This study has demonstrated that the perceptions of the stakeholders involved in this study were favourable towards radiographers as screen readers for BreastScreen. The triangulation of the perceptions of the stakeholders with the literature supported and confirmed the findings. The UK experience of radiographers as screen readers for the NHS Breast Screening program has been positive, therefore it would seem prudent to commence planning for the introduction of radiographer screen readers into BreastScreen Australia, providing an opportunity for radiographer role extension, the reduction in radiologist workload and providing a more efficient screening service for Australian women.

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