

## The 'radiographer–referrer game': image interpretation dynamics in rural practice

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### Abstract

**Introduction:** Effective interprofessional communication is intrinsic to safe health care. Despite the identified positive impact of collaborative radiographic interpretation between rural radiographers and referrers, communication difficulties still exist. This article describes the strategies that Australian rural radiographers use for communication of their radiographic opinion to the referring doctor. **Methods:** In a two-phase interpretive doctoral study completed in 2012, data were collected from radiographers working in rural New South Wales, Western Australia and Tasmania using a paper based questionnaire followed by in-depth semistructured interviews. Data were analysed thematically in order to identify, analyse and report the emergent themes. **Results:** The overarching theme was Patient Advocacy, where in the interest of patient care radiographers took measures to ensure that a referring doctor did not miss radiographic abnormalities. Strong interprofessional relationships enabled direct communication pathways. Interprofessional boundaries shaped by historical hierarchical relationships, together with a lack of confidence and educational preparation for radiographic interpretation result in barriers to direct communication pathways. These barriers prompted radiographers to pursue indirect communication pathways, such as side-stepping and hint and hope. **Conclusion:** A lack of formal communication pathways and educational preparation for this role has resulted in radiographers playing the radiographer–referrer game to overtly or covertly assist referrers in reaching a radiographic diagnosis. The findings from this study may be used to plan interventions for strengthening interprofessional communication pathways and improve quality of healthcare for patients.

## Introduction

In rural Australia, undersupply and uneven geographic distribution of the specialist medical workforce has produced an apparent gap between service demand and the availability of radiologists.<sup>1</sup> As a result, the responsibility for interpreting radiographic images often falls provisionally to the referring doctor, commonly a general practitioner. Radiographic image interpretation

involves high-level skills and complex decision making, and there is a risk that errors may compromise patient care.<sup>2–4</sup> Although some degree of error in radiographic image interpretation is unavoidable,<sup>5</sup> these errors may be reduced by interprofessional collaboration<sup>2,6</sup> between the referrer and the radiographer.

Effective communication is integral to interprofessional collaboration and has the potential to positively impact on patient care.<sup>7–9</sup> Radiographers' opinions about the

presence or absence of pathology on a radiographic image could be valuable in a collaborative approach to diagnosis.<sup>3,6,10–12</sup> However, it is often difficult for radiographers to navigate this interprofessional boundary because communication pathways for sharing radiographic interpretations are unclear.<sup>11</sup> In part, this is because radiographic image interpretation was effectively removed from radiographers' scope of practice in 1925.<sup>13</sup> At this time, it was formally decreed that radiographic interpretation was diagnostic work and therefore the responsibility of medically qualified practitioners.<sup>13</sup> Resultantly, few radiographers are now educationally prepared for image interpretation,<sup>14</sup> although they may possess experiential knowledge in recognising abnormalities.<sup>15</sup> Radiographers have attempted to address the communication gap using Radiographer Abnormality Detection Schemes (RADS). One well-documented RADS is the 'red dot system',<sup>16</sup> which was designed as a means for radiographers to alert the referring doctor to an abnormality on a patient's radiographic image. More than 30 years after its introduction, the red dot system is not consistently used across Australia.<sup>17</sup>

Communication difficulties which contribute to adverse events in healthcare may arise from the hierarchy of power that exists between different health professionals.<sup>7,8,18</sup> It seems that historical changes to radiography have set in place a restrictive, hierarchical professional structure in which radiographers now practice.<sup>19,20</sup> A consequence of this structure is that autonomy within radiographer practice is discouraged by paternalism and subordination from medical colleagues.<sup>21</sup> This is a characteristic of medical dominance, where the medical profession holds significant power and authority over neighbouring occupations.<sup>22,23</sup> Whenever issues related to interprofessional boundary delineation come into question, such as radiographic image interpretation and communication of results, historical hierarchical relationships may influence and shape the way the interactions take place. Awareness of the barriers and enablers of communication in rural radiographic practice will enable a move towards stronger collaborative partnerships between radiographers and their medical colleagues.

A two-phase doctoral study was undertaken to examine Australian rural radiographers' and their experiences and perceptions of radiographic interpretation and subsequent disclosure. This article reports the research findings of the interpretive component of the study that answers the research question, 'How do rural radiographers construct ways to negotiate communication and disclosure of their radiographic opinion within their practice world?'

## Method

The study, which employed both descriptive and interpretive research methods had ethics approval from the Human Research Ethics Committee (Tasmanian) Network and was completed in 2012. The inclusion criteria were possession of an Australian Institute of Radiography Statement of Accreditation, or registration with the Medical Radiation Technologists Board of Western Australia (prior to National Registration) and providing radiographic services to an area with a population of less than 100,000.

The first phase of the study employed a postal questionnaire to collect descriptive data for development of a demographic profile of the respondent rural radiographers and to examine the context in which this study was situated. Prior to dissemination, the questionnaire was piloted, and its content and construct validity were established. It was distributed by third parties to radiographers practising in rural New South Wales, Western Australia and Tasmania. The quantitative questionnaire data was analysed using SPSS (MS Windows, Version 15, Chicago, IL, USA) to produce descriptive statistics.

The second phase of the study used semistructured interviews to elicit rich, in-depth qualitative data. Qualitative research methods are well suited to the examination of professional communication<sup>24</sup> and allowed an interpretive inquiry focused on understanding 'meaning, purposes and intentions' in how individuals act and interact with others.<sup>25</sup> The interview cues were developed initially from the key issues arising from the questionnaire data and later from the analysis of the interview data. The qualitative interview data and open-ended questionnaire responses were analysed thematically with cross-comparison assisted by NVivo 8 software (QSR International, Melbourne, Australia) to code, organise, explore and analyse the interrelated themes. The data collection, analysis and interpretation occurred as a continuous process allowing emerging themes to influence further data collection. Themes were derived that illustrate and describe the dynamics of interprofessional communications between rural radiographers and referring doctors.

## Results

The questionnaire achieved a return rate of 32.4% ( $n = 185$ ). Twenty-three of the respondents also volunteered for the in-depth, semistructured interviews via the invitation included with the questionnaire. Convenience sampling led to nine face-to-face or

telephone interviews. The interviewing ceased once the collective experience of subsequent informants confirmed earlier findings rather than leading to a new insight, indicating that theoretical saturation was reached.<sup>26</sup> All interviewees were experienced rural radiographers with an age range of 36–62 (mean 53.4) years and 16–42 (mean 32.9) years' radiographic experience. At the time of the interview, all the radiographers were employed in either private practice or public hospitals in communities with a population of less than 50,000.

*Patient Advocacy* emerged as an overarching theme and the key driver for radiographers to use various communication pathways with referrers. A number of factors shape professional communication and interaction, including the perceived seriousness of the patient's condition, delays in diagnosis, the degree of professional confidence and the relationship between the radiographer and the referrer. Communication pathways were either *direct* or *indirect*, depending upon the various *barriers to communication* encountered. Two key subthemes characterised the indirect communication pathway, *side-stepping* and *hint and hope*.

### Patient advocacy

Interceding on behalf of the patient to maximise healthcare outcomes was an overarching feature of rural radiographer's professional role.

*RR1: That's how I have looked at it, what's best for the patient*

*RR 9: ...going all out and doing what you can to help the management of those patients*

The radiographers clearly regard their role to be more than technicians responsible for image acquisition: patients are central to all of their actions and decision making. It is patient care that incentivises radiographers to ensure timely and appropriate treatment for the patient in the presence of radiographic abnormalities.

*RR 4: ... I feel that it is also inherent in the responsibility of whichever position I am in that should I be aware of something that is an abnormality on a film, particularly after hours if there is no radiologist to refer it to ... I would need to bring that to the attention of the ... referrer.*

*RR 9: I feel that actually as a professional... I feel it is my duty really sometimes to mention things that I see well I think you have to*

Although radiographers are strongly committed to patient welfare, patient advocacy is not easy. Advocacy requires radiographers to navigate the established

historical hierarchy existing between healthcare professionals. Radiographers fulfilled their patient advocacy role by using various communication strategies with referrers. Direct communication pathways are the most transparent and effective means for achieving the best outcome for the patient.

### Direct communication pathways

Recognising the risk of error in radiographic interpretation, the radiographers used direct communication to ensure that the doctors do not miss significant pathology.

*RR 1: ...because they miss so much ... it's only obvious stuff...if I wasn't sure I wouldn't say anything but if there is a definite crack there that I am pretty sure the doctor's going to miss, it might show in one view, I will say something to them ... it's been a few political decisions I've had to make over the years ...*

Strong, collaborative, interprofessional relationships are a conduit for bidirectional communication. Collaborative practice provides an avenue for the referring doctor to actively seek the radiographer's opinion.

*RR 3: I do get ... asked for my opinion quite a few times...*

*RR 6: ... in spite of the fact that we have got tele-radiology and PACS [Picture Archiving and Communication System] in the first instance it is always your own view that is canvassed.*

*RR 9: ... certainly in rural areas ... not only do you feel that you should, you are actually asked if you can.*

In other situations, radiographer's volunteer an unsolicited opinion to the doctor.

*RR 2: I am quite happy to ring them and say look your patient has got a pleural effusion ... I am quite happy to do that or a fracture ...*

*RR4: ... I will always preface it with this is the radiographer speaking the radiologist report will be out shortly but in my opinion they have a fracture ...*

These collegial, open and direct communications are considered as a collaborative approach to reaching an accurate diagnosis, even if the referrer was inexperienced, as one participant describes.

*RR 5: Rather than offering a diagnosis I think it is largely to do with discussion and because a lot of the well a lot of the A&E doctors that come through are locums and a lot of them ... don't necessarily have the experience ...*

Deciding whether to directly and explicitly communicate any radiographic abnormality to the

referrer is influenced by the perceived seriousness of the impending diagnosis and the urgency with which care is required.

*RR 2: A bad fracture or something needs to be treated straight away [whereas] someone with advanced cancer or whatever, even if I told them at four o'clock in the afternoon the doctor can't do anything, can he?*

*RR 1: This guy came in ... and he said my neck's really sore ... I looked at the first film, oh, you've got a fracture here... so I went out to him, and it was really unstable, and I said ... 'I've got to ring the doctor but don't move.'... Within about 5 minutes there were about 12 people in the room trying to get him from sitting up to lying down because we had to put collars on... he had a halo on two days later and was walking around again.*

In situations where a patient required urgent attention and interprofessional relationships allow, radiographers assume a proactive role and communicated directly with the referrer. However, sometimes individual traits became barriers to direct communication pathways.

### Barriers to direct communication pathways

Individual perceptions of role delineation within the health professions influenced radiographer and referrer interaction. For example:

*RR 3: It depends a bit on the ... referrer and their rapport with the radiographer, some will ask our opinions, others ... they look for other ... doctors around the hospital to discuss it with.*

*RR 6: There are those [doctors] that set themselves apart and are just completely unwilling to accept any advice from anybody ...*

Other radiographers spoke about the way in which different referrers react to their disclosure of radiographic opinion. For example, one radiographer stated:

*RR 2: He just wouldn't have it. 'That's an old fracture, that's not new, it's an old fracture.' 'You don't know what you are talking about, I'm the doctor.' So you have no comeback at that because, yes, they are the doctor.*

The radiographers revealed a lack of formal training in recognising and describing pathology on radiographic images.

*RR 6: Well, I suppose you could say it is self-taught really but ... You just accumulate knowledge over a period of time.*

*RR 5: Our interpretations skills came from discussion with colleagues; we had sessions where we would interpret films... ,*

*so most of our training was discussion with colleagues, with seniors over pathologies*

One consequence of limited knowledge in image interpretation is that radiographers are reticent to offer their radiographic opinion to referrers and this worked to impede communication.

*RR 7: I don't feel comfortable with chests so I rarely say much with a chest.*

*RR 8: If it's something that you are unsure of you don't offer*

Despite the lack of formal educational preparation for radiographic interpretation, the radiographers described intuitive recognition of radiographic abnormalities.

*RR 4: The more tricky ones are the abnormal chests and ... so on that you know are abnormal but my knowledge is limited as to why they are abnormal.*

Radiographers' intuitive recognition of radiographic abnormalities could be useful for assisting referrers in reaching a diagnosis but in some instances a lack of a confident radiographic interpretation inhibits their use of *direct* communication pathways. In order to circumvent the barriers to communication the radiographers used *indirect* communication pathways to navigate complex interprofessional boundaries.

### Indirect communication pathways

When circumstances do not support direct communication, the radiographers choose either 'side-stepping' direct communication with the referrer or to use a 'hint and hope' approach in order to ensure timely patient care.

### Side-stepping

One way of side-stepping direct communication with the referrer is for the radiographer to alert a radiologist of the need for an urgent report. In doing so, that particular patient's images move towards the front of the reporting queue and the radiologist's report is provided to the referrer more quickly.

*RR 2: ... I have looked at the films and one of them had a massive pleural effusion on the right side, no air at all... I put a priority on it because, I mean the man couldn't breathe for a start but also you knew that something was happening in there that needed investigation.*

Assigning a radiograph a higher reporting priority, does not necessarily result in faster diagnosis and significant delays can still occur.

*RR 2: The more that you've been in practice, the more that you know that it's not a perfect world. . . even if you put a priority on it, some of them get missed and the doctor's left for the day. . . all those things happen because it's not a perfect world.*

To minimise the potential negative impact on patient care that these delays may create, some of the radiographers used the red dot system to subtly side-step direct communication with the referrers, but still provide radiographic interpretation input.

*RR 1: I got to the stage where I used to put red dots on them, if there was something [abnormal].*

*RR 6: if there is an abnormality in the films then we will red dot them.*

Laudable when first developed, the red dot system is not universally accepted or even well understood by other health professionals. It is therefore flawed as a communication system, as suggested by this excerpt.

*RR 1: But other doctors weren't interested in it and they would send a fractured tibial plateau home and I had a red dot on the film . . . this particular patient with the red dot and the tibial plateau fracture that was missed for 6 weeks . . . his knee is stuffed.*

### Hint and hope

In situations where side-stepping would not result in timely medical intervention and the radiographer and referrer were less familiar with each other, radiographers sometimes take a more subordinate, but supportive role. They avoid direct language, and instead hint their opinion and hope the referring doctor will detect the abnormality.

*RR 8: sort of give . . . the referrer an opportunity by heading them in a direction and quietly saying, 'now don't you think that looks a bit extraordinary' or something like that.*

*RR 7: I wouldn't say it is. I would say that doesn't look right to me, or what do you think about that, does that bulge look normal . . . I would let them make the decision. I would give them a hint there's something wrong.*

The radiographers also allow the referring doctor to initially use their own radiographic interpretation skills, but intercede if the abnormality is overlooked.

*RR 4: So, you would take your films around and you would go, 'I think you'd better look at this', and then you would stand back and let them look at it. And, then if they went round and round whatever what was obviously wrong, I would either say if it was an obvious fracture or something, I*

*would be quite happy to offer an opinion and say, 'what do you think of that?', and then lead them in to it that way.*

The hint and hope strategy appears to be effective when communicating information about the patients' needs, but also works to maintain the historical hierarchical professional boundaries between the radiographer and the referrer.

### Discussion

Radiographers can play a valuable role in helping rural doctors to correctly interpret radiographic images. While this role may be familiar to most rural radiographers,<sup>10</sup> the communication pathways for interprofessional collaboration are not well defined or standardised. This interpretive inquiry has revealed that the evolution of radiography under the medical dominance model<sup>21,23</sup> has influenced both radiographers' preparation for interprofessional radiographic interpretation and impacted on their communication strategies. Radiographic image interpretation is intricately linked to diagnosis, and as a result, radiographers have not historically been formally educated and trained in identifying and describing pathology on radiographs. This leaves a gap in their knowledge, skills and abilities, which leads to a lack of confidence.<sup>14</sup> Furthermore, unequal power relationships may cause those positioned at the base of the hierarchical pyramid, such as radiographers, to remain silent.<sup>22</sup>

A flattened hierarchy enables individuals to voice their opinion,<sup>8</sup> as is evidenced by radiographers' use of direct communication pathways. This study indicates that in some cases, a perceived or evidenced hierarchy remains and, along with a lack of preparation for a role in radiographic interpretation, this has the ability to stifle interprofessional communication. Of concern is that as a consequence radiographers tend to enter into a 'radiographer–referrer game' and use indirect communication pathways, which may compromise patient care.

The radiographer–referrer game may be understood as a variation in the 'doctor–nurse game',<sup>7,27</sup> which is an interprofessional communication strategy where doctors are overtly or covertly guided in their clinical decisions by nurses. In the same way that a nurse may make suggestions to guide the doctor's decision making, the radiographers, within the limitations of their knowledge base, use mechanisms designed to directly or indirectly communicate their radiographic opinion, influencing the subsequent radiographic diagnosis. As a patient advocate, radiographers navigate this contested space by employing various 'work-around' strategies to communicate their opinion to the referring doctor and so engage in the radiographer–referrer game.

## Conclusion

In Australia, the educational preparation of radiographers for the higher level competencies required in image interpretation and communication of their radiographer's opinion is currently ad hoc. This limits radiographers' capacity to contribute to patient care and also limits the capacity of the health system to provide higher quality care through interprofessional teamwork.

It is essential for safe care that communication is open, direct and transparent<sup>7</sup>, so that health professional, such as radiographers, do not feel the need to enter into game playing. Improving radiographers' image interpretation skills, and making the communication pathways between radiographers and referrers more explicit, will positively impact on patient care through the timely collegial sharing of knowledge.

## Conflict of Interest

The authors declare no conflict of interest.

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