

# **REMOTE X-RAY OPERATOR RADIOGRAPHY: A CASE STUDY IN INTERPROFESSIONAL RURAL CLINICAL PRACTICE**

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Submitted in fulfilment of the requirements for the Degree of Doctor of Philosophy in the  
School of Health Sciences, Faculty of Health, The University of Newcastle

April 2006

## **DECLARATION**

I hereby certify that the work embodied in this thesis is the result of original research and has not been submitted for a higher degree to any other University or Institution.

Signed \_\_\_\_\_ Date \_\_\_\_\_  
Anthony Smith

## **ACKNOWLEDGEMENTS AND DEDICATION**

The completion of a PhD research project requires a great deal of personal commitment and dedication on the part of the candidate, but without the surrounding support network it would be an insurmountable task. Therefore, thanks go firstly to my supervisors for their assistance and guidance. In the early stages of the study Doctor Jon Adams demonstrated a great deal of expertise in helping to define the research topic and design the study. He later provided valued input into the data analysis process. With his assistance I have developed my understanding of qualitative research methods, particularly the application of those methods in my own discipline without the need to become a health social scientist as well as a radiographer. Although Professor Peter Jones was not involved in the earliest stages of the study, his input towards the end of the project was invaluable in helping me to maintain my focus and avoid despair when things were not going to plan. I acknowledge his optimism and open friendliness as excellent qualities in a research supervisor, not to mention in a human being.

Without the contribution of the study participants, this project could not have existed. I thank them for their time and patience in making themselves available, in spite of their work commitments. I also offer them my admiration for their dedication to the care of the rural and remote communities they serve, often in isolated and challenging circumstances.

Research higher degree study has its own rewards in the sense of achievement and in the professional development that takes place along the way. However, it is also an often lonely and isolating road, requiring long hours in deep thought in front of a computer monitor. For me, this loneliness was relieved by knowing that my family were not far away and that it would soon be possible for me to edge my way back into their world, sharing the relief of having finished this study. I simply thank them for being there.

Seeing my own hands on the computer keyboard, I have been reminded many times of my father's hands. Therefore, I dedicate this work to my parents, Neil and Rita Smith. Both have passed from this life but I know that they would have taken great pride and joy from my completion of this study. My parents' hands have guided me here and continue to guide me.

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## **ABBREVIATIONS AND ACRONYMS**

Abbreviations and acronyms have been used sparingly in this thesis. Although in most cases they are defined at the point in the text where they appear, the following is a list of those most commonly used.

AIR	Australian Institute of Radiography
ARIA	Accessibility/Remoteness Index of Australia
EPA	Environment Protection Authority
GP(s)	General practitioner(s)
RN(s)	Registered (or rural) nurse(s)
RR(s)	Rural radiographer(s)
RRMA	Rural, Remote and Metropolitan Areas
RXO(s)	Remote x-ray operator(s)

It should also be noted that where an acronym has been used in a citation the meaning is to be found in the list of references.

## **SYMBOLS**

In Chapters 6, 7 and 8 in particular, as well as elsewhere in the thesis, extracts from the interview transcripts have been given. Symbols used in these extracts are as follows:

...	Indicates a pause by the speaker or that the extract has been truncated to exclude irrelevant material.
[     ]	Explanation of a term or replacement of an identifier with a generic term.
‘     ’	A direct quotation of less than two lines included within the text.
“     ”	An indirect quotation.

## **RELATED PUBLICATIONS AND PRESENTATIONS TO DATE**

### **Published Papers**

Adams, J. & Smith, T. 2003, 'Qualitative Methods in Radiography Research: A Proposed Framework', *Radiography*, 9(3):193-199.

### **Oral Presentations**

Smith, T., Jones, P. & Adams, J. 2006, Remote x-ray operator radiography: Exploring the key concepts, presented to 3rd Annual Scientific Meeting of Medical Imaging and Radiation Therapy, Hobart, 27-30 April.

Smith, T. 2005, The relevance of remote x-ray operator practice to the future rural health workforce crisis: Preliminary findings, presented to 2nd NSW Rural Allied Health Conference, Sydney, 28-29 October.

### **Poster Presentations**

Smith, T., Adams, J. & Jones, P. 2005 Investigating the role of NSW remote x-ray operators: Future practice implications, presented to 8th National Rural Health Conference, Alice Springs, 10-13 March.

Smith, T., Adams, J. & Jones, P. 2003 Investigating the role of remote x-ray operators in NSW: A work in progress, presented to 1st NSW Rural Allied Health Professionals Conference, Sydney, 5-6 December.

## **ABSTRACT**

In some rural and remote locations in New South Wales and elsewhere in Australia, a limited range of radiographic examinations may be performed by nurses and general practitioners if there is no radiographer available. These so called remote x-ray operators are licensed under the New South Wales Radiation Control Act 1990. This study aimed to investigate the experiences and perceptions of remote x-ray operator radiography and examine the role of remote operators in New South Wales from the perspective of a cohort of rural radiographers and nurse and GP remote x-ray operators involved in frontline delivery of rural radiographic services.

### **Methodology**

Semi-structured in-depth interviews were performed with twenty rural radiographers, ten rural nurses and seven rural general practitioners from various rural communities in New South Wales. Interview questions explored the informants' knowledge, opinions and values, experience and behaviour, and attitudes and feelings in relation to remote x-ray operator radiography. Interviews were tape-recorded and transcribed. Data analysis was subsequently performed using an iterative process based on a modified grounded theory methodology. Data labelling and comparative analysis were carried out in parallel with data collection, allowing progressive modification of the interview theme list to ensure that theoretical saturation was achieved.

### **Results**

Data analysis led to the emergence of three key concepts, together with their relevant themes and sub-themes. The primary key concept, 'Dimensions of Practice', was inclusive of the central precepts of remote x-ray operator radiography. It includes themes titled 'Licence Conditions and Limitations', 'Competency Requirements' and 'Image Quality and Practice Standards'. The key concept of 'Service Provision and Equity of Access', represents the realities of clinical practice in the rural and remote health care setting. It includes themes of 'Clinical Management and Decision Making', 'Access and Availability', 'Patient Expectations' and 'Commitment to Service'. The third key concept is 'Professional Roles and Relationships', which deals with the interactions that take place between individual practitioners and the factors that influence them. It encompasses the

themes of ‘Boundary Delineation’, ‘Professional Status and Esteem’ and ‘Interprofessional Conflict and Collaboration’. Relationships between the key concepts, via their themes and sub-themes were also explored.

## **Conclusions**

Analysis of the data led to the development of a conceptual model and a single story line that represent the perspectives of the study informants. Remote x-ray operator radiography takes place at the intersection of the occupational worlds of rural radiographers, nurses and general practitioners. Remote operators provide a valuable service that prevents rural residents having to travel to access minor radiographic examinations. However, the quality of the radiography they perform is below the standard expected of radiographers. Improvements in collaborative teamwork could improve the quality of service, although interprofessional communication is stifled by status and hierarchical relationships. The remote x-ray operator experience may inform the development of future models of health care.