



MONASH University

Implementing Radiation Therapy Advanced Practice: A Grounded Theory Study

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Abbreviations

AIR – Australian Institute of Radiography

APWG – Advanced Practice Working Group

ASMIRT – Australian Society of Medical Imaging and Radiation Therapy

ASRT – American Society of Radiologic Technologists

CAMRT – Canadian Association of Medical Radiation Technologist

CSRT – Clinical Specialist Radiation Therapist

ESTRO - European Society of Radiotherapy and Oncology

IPAT – Interprofessional Advisory Team

MPRBA – Medical Radiation Practice Board of Australia

NHS – National Health Service

NZIMRT - New Zealand Institute of Medical Radiation Technologists

PAWP – Professional Advancement Working Party

RANZCR – Royal Australian and New Zealand College of Radiologists

RO – Radiation Oncologist or Radiation Oncologists

ROMP – Radiation Oncology Medical Physicist or Radiation Oncology Medical Physicists

RT – Radiation Therapist or Radiation Therapists

RTAP – Radiation Therapy Advanced Practitioner or Radiation Therapy Advanced Practitioners

SoR – Society of Radiographers

UK – United Kingdom

VMRPET – Victorian Medical Radiation Practitioner Education Trust

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Abstract

The objective of radiation therapy advanced practice is to streamline the provision of care and enhance the patient experience through radiation therapy. This is facilitated by a redistribution of clinical activities to a newly defined work role for the radiation therapist: the radiation therapy advanced practitioner. Successful implementation of radiation therapy advanced practitioners performing advanced practice activities has been reported from the United Kingdom and Ontario, Canada during the last two decades. Comparatively, implementation in Australia has been sporadic with little evidence of functional radiation therapy advanced practice outcomes. There is apparent impetus to implement radiation therapy advanced practice according to multiple government and professional body discussion papers, but wide scale, systematic implementation is yet to be observed. If progress is to be made in this area and the anticipated benefits to service delivery realised, it is vital to better understand the factors that may be surrounding the tenuous implementation of radiation therapy advanced practice in Australia.

Informed by constructivist grounded theory methodology and situated within an interpretivist theoretical framework, the aim of this research was to understand the influencing factors shaping the implementation and process of radiation therapy advanced practice in Australia. Data collection occurred during two phases. The first phase utilised online (video mediated) focus groups to enable national participation. The second phase was a case study investigation at five radiation therapy centres in Australia, using interviews, participant observation, and document review as data collection methods. Research participants during both phases were the practitioners who may be influencing decisions and actions around the implementation of radiation therapy advanced practice, namely the radiation therapists, radiation oncologists, radiation oncology medical physicists, and self-reported or contextually recognised radiation therapy advanced practitioners.

According to this research, the overarching multi-dimensional grounded theory process influencing the implementation of radiation therapy advanced practice in Australia was one of *Navigating*

Uncertainty. Uncertainty arises because of the radiation therapy advanced practitioner being different from the radiation therapist, in functionality, fit, and role meaning. Navigating uncertainty refers to the process whereby practitioners, individually and collectively, interpreted and attempted to reconcile the perceived or actual impact and influence – personal, functional, structural, and cultural - of radiation therapy advanced practice implementation within their local context. Navigating uncertainty was a continual process, present from the first consideration of the possibility of radiation therapy advanced practice implementation through to and including achieving an established position. Strategic and purposeful actions to implement radiation therapy advanced practice while experiencing ongoing uncertainty were necessary to achieve a successful implementation outcome. Three interrelated and contextually defined key categories explain the grounded theory of navigating uncertainty in relation to the implementation of radiation therapy advanced practice in Australia: *Conceptualising radiation therapy advanced practice; Integrating radiation therapy advanced practice; and Becoming the radiation therapy advanced practitioner.*

The grounded theory of navigating uncertainty situated within this research illustrates the challenges accompanying the implementation of radiation therapy advanced practice within Australia. Uncertainty associated with contextually defined conceptual, practical, and social concerns was shown to influence the capacity for implementation to progress, and practitioners needed to apply continuous strategies to navigate uncertainty to achieve desired outcomes. Leaders with power – namely the radiation oncologists and radiation therapist managers - were critical to establishing creative strategies to actively manage uncertainty, as well as granting a legitimate professional identity for the radiation therapy advanced practitioner. It is suggested the current state of radiation therapy advanced practice implementation in Australia is reliant on the creative capacity of leaders to progress despite ambiguous and sometimes conflicting expectations. There is a need for advocacy and a consistent national framework to enable the implementation of radiation therapy advanced practice if substantial progress is to be observed in this area.

Publications during enrolment

Peer reviewed publications

Matthews, K; Baird, M; Duchesne, G. (2018). Using online meeting software to facilitate geographically dispersed focus groups for health workforce research. *Qualitative Health Research*, 28(10), 1621–1628. <https://doi.org/10.1177/10497323187821>

Matthews, K; Duchesne, G; Baird, M. (2021). Navigating uncertainty: The implementation of Australian radiation therapy advanced practitioners. *Technical Innovations & Patient Support in Radiation Oncology*, 17, Pages 82-88. <https://doi.org/10.1016/j.tipsro.2020.12.002>

Peer reviewed oral presentations

Matthews, K; Duchesne, G; Baird, M. Australian Radiation Therapy Advanced Practice: A Focus Group Study. ‘Leading the Way’: 1st International Radiography Advanced Practice Conference. Sheffield, UK. Sept 2016

Matthews, K; Duchesne, G; Baird, M. Conceptualising Radiation Therapy Advanced Practice: Findings from a National Focus Group Study. Australian Society of Medical Imaging and Radiation Therapy National Conference. Canberra, AUS. Mar 2018

Matthews, K; Duchesne, G; Baird, M. Becoming an Advanced Practitioner: The Changing Identity of the Radiation Therapist. ‘Leading the Way’: 2nd International Radiography Advanced Practice Conference. Toronto, CAN. Oct 2018.

Matthews, K; Duchesne, G; Baird, M. Implementing Radiation Therapy Advanced Practice: An Uncertain Process. Australian Society of Medical Imaging and Radiation Therapy National Conference. Melbourne, AUS. June 2021.

Additional oral presentations

Matthews, K; Duchesne, G; Baird, M. The Implementation of Radiation Therapy Advanced Practitioners: A Grounded Theory Study. Department of Medical Imaging and Radiation Sciences Research Seminar, Monash University. Clayton, AUS. Feb 2018.

Matthews, K; Duchesne, G; Baird, M. Implementing Advanced Practice. Australian Society of Medical Imaging and Radiation Therapy Tasmanian Branch Winter Weekend. Coles Bay, AUS. July 2018.
(Invited speaker)

Matthews, K; Duchesne, G; Baird, M. Evaluation of the Implementation of Australian Radiation Therapy Advanced Practitioners. Odette Cancer Centre Research Seminar, Sunnybrook Hospital. Toronto, CAN. Oct 2018. (Invited speaker)

Matthews, K; Duchesne, G; Baird, M. Managing Transition: Becoming the Radiation Therapy Advanced Practitioner. Monash Centre of Scholarship in Health Education Graduate Research Seminar, Monash University. Clayton, AUS. Oct 2019.

Thesis including published works declaration

I hereby declare that this thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

This thesis includes two original papers published in peer reviewed journals. The core theme of the thesis is radiation therapy advanced practice. The ideas, development and writing up of all the papers in the thesis were the principal responsibility of myself, the student, working within the Department of Medical Imaging and Radiation Sciences under the supervision of Professor Marilyn Baird and Professor Gillian Duchesne.

The inclusion of co-authors reflects the fact that the work came from active collaboration between researchers and acknowledges input into team-based research.

In the case of Chapters 3 and 4 my contribution to the work involved the following:

Thesis Chapter	Publication Title	Status	Nature and % of student contribution	Co-author name(s) Nature and % of Co-author's contribution	Co-author(s), Monash student Y/N
3	Using Online Meeting Software to Facilitate Geographically Dispersed Focus Groups for Health Workforce Research	Published	90% Concept development, data analysis, key ideas, and writing manuscript	5% Marilyn Baird Manuscript input and editing 5 % Gillian Duchesne Manuscript input and editing	No
4	Navigating Uncertainty: The Implementation of Australian Radiation Therapy Advanced Practitioners	Published	90% Concept development, data analysis, key ideas, and writing manuscript	5% Marilyn Baird Manuscript input and editing 5 % Gillian Duchesne Manuscript input and editing	No

I have not renumbered sections of published papers in order to generate a consistent presentation within the thesis.

Student name: Kristie Matthews

Student signature: Date: 30/04/2021

I hereby certify that the above declaration correctly reflects the nature and extent of the student's and co-authors' contributions to this work. In instances where I am not the responsible author I have consulted with the responsible author to agree on the respective contributions of the authors.

Main Supervisor name: Marilyn Baird

Main Supervisor signature: Date: 30/04/2021

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Chapter 1 Background to the Research

1.1 Introduction

This chapter presents the background to this study including the context of the research area and the genesis of interest to the researcher. The research aim, guiding questions and data collection strategies are stated, followed by a brief discussion of what this research contributes to the study area. The chapter will close with a summary of the thesis structure.

1.2 Research Context: A New Way of Working

Workforce redesign as a strategy of health reform has prompted national commentary during the last two decades in Australia.(1-7) As the population ages and lives longer, the health system is under pressure to respond to the increased burden of chronic disease. The costs of health care provision are growing while predictions indicate the health workforce is comparatively shrinking.(2,8-10) Access to health services in remote and regional areas is an additional inequity burdening the health of the community.(2,4,5) Health workforce redesign has received attention globally as a mechanism of health reform,(2,11-13) and continues to be identified as a matter of interest to the current Australian government.(14)

Health workforce redesign means conceptualising and implementing new work roles with the intent of providing the most appropriate level of knowledgeable care in response to the patient's health care needs – "right care, right place, right time."(6 p2) New work roles are represented by registered health professionals performing an extended scope of practice, or assistant health professionals completing less skilled activities under supervision. The objective is to achieve a more cost effective and sustainable health service that meets the health needs of the community.(1,7)

Evidence of broad scale health workforce redesign initiatives in Australia demonstrates the positive outcomes that may result. A cost benefit analysis of nurse practitioner implementation nationwide reported reduced attendance to emergency departments and improved access to health care in

remote and regional communities.(15) A Health Workforce Australia report of extended scope of practice roles for physiotherapists, paramedics and nurses demonstrated improvements to waiting lists, shorter emergency department length of stay, and reduced hospital admission rates.(16) Similarly, improved outcomes to patient access, throughput, and patient and staff satisfaction were observed in a number of extended scope and assistant roles implemented in the States of Queensland and Victoria.(17,18)

However, despite evidence of successful outcomes, progress towards health workforce redesign is slow as “regulations, culture, tradition and vested interests stand in the way.”(9 p1) Issues such as a lack of willingness to delegate due to confidence or trust,(19) want of support from powerful stakeholders and champions,(20,21) and ambiguity around role definition or structures(21,22) have each been identified as contributing factors. Furthermore, the complex influence of Commonwealth and State funding arrangements for health services and training providers has been acknowledged as an additional difficulty.(23) Strategies to address workplace behaviours and culture as well as regulation and infrastructure are seen as key to making progress in this area.(9)

1.2.1 The Case for Radiation Therapy

The need for health reform in radiation therapy is no different to the wider health sector and has been discussed for several decades.(24) Radiation therapy is the use of high energy x-rays to treat malignant disease and can be very effective in the management of patients with a cancer diagnosis. Radiation therapy services require expensive equipment that is supported and operated by specific infrastructure and workforce, and are generally concentrated in metropolitan areas on the East coast of Australia.(25) It is recommended that half of all patients diagnosed with cancer should receive radiation therapy to help manage their disease and yet much less than this actually do, influenced by access to available infrastructure and resources as well as referral patterns.(25-31) The consequential impact of underutilisation on patient outcomes is profound,(32,33) and the issue is anticipated to magnify with an increasing cancer incidence not matched by an enlarged workforce or infrastructure,

compounded by rapidly evolving practices and technologies.(25,34,35) It has been proposed that reconceptualising the way in which the radiation therapy workforce collectively functions is one strategy to help meet the challenges of today, and better prepare for the future.(25,34,36)

The radiation therapy workforce in Australia consists of a tripartite group of health professionals, namely the radiation oncologist (RO), the radiation therapist (RT) and the radiation oncology medical physicist (ROMP). Each profession has a discrete but essential role to play in the delivery of quality radiation therapy treatments to cancer patients. The RO is a specialist medical doctor responsible for cancer patient assessment, diagnosis, and prescription of an appropriate course of treatment, as well as patient review and follow-up. The RT is an allied health professional responsible for the planning and delivery of the radiation therapy, which requires profession specific technical knowledge applied with patient supportive care throughout the course of treatment. The ROMP is responsible for the quality assurance of equipment and techniques ensuring accuracy of radiation delivery. A radiation therapy service requires all three professionals to be actively engaged with a patient's treatment as a team to deliver the best quality care, with the additional support of radiation oncology nurses, medical engineers, and other allied health professionals.(37) Arguably, the collaborative nature of the radiation therapy workforce with respect to the shared approach to patient care should be well positioned to transition to a redesigned workforce. However, despite several publications identifying the necessity to do so,(24,25,38) impetus for change is not broadly apparent in Australian radiation therapy services.

An objective of workforce redesign within radiation therapy is the implementation of radiation therapy advanced practitioners (RTAP). Advanced practitioners are radiation therapists who work beyond the usual boundaries of practice and may have a delegated authority to engage in tasks normally the remit of other radiation oncology professionals. The professional body representing radiation therapists and radiographers in Australia, the Australian Society of Medical Imaging and

Radiation Therapy, ASMIRT (formerly the Australian Institute of Radiography, AIR), defined advanced practice as occurring:

“when a practitioner is regularly performing beyond the core practice boundaries of the profession on a regular basis with appropriate availability of resources, educational underpinning and professional mentorship”(39 p4, 40 p3)

Similar to other workforce redesign initiatives, the aim of advanced practice is to improve patient access and care by enhancing the capacity of the system through enabling a more broadly skilled and less siloed workforce.(36,38) Internationally the introduction of RTAP as a workforce redesign strategy has been clearly described,(41,42) and practice based evidence suggests service enhancements in relation to patient access and timeliness of care have been achieved.(43,44)

For two decades advanced practice has been described as an improvement strategy desired for the provision of radiation therapy in Australia, including in the 2002 ‘A Vision for Radiotherapy’ report from the Baume inquiry;(24) the 2012 Tripartite National Strategic Plan for Radiation Oncology;(25) and more recently in the 2020 Royal Australian and New Zealand College of Radiologists (RANZCR) guidelines for regional and rural radiation therapy centres.(36) Despite this, reports of radiation therapy advanced practice implementation and outcomes in Australia are scarce,(45,46) and of 2555 registered RT reported in 2019(47) there remains only four RTAP nationally who have been accredited by ASMIRT. It is essential to better understand why the wide-scale introduction of radiation therapy advanced practice has not yet been achieved in Australia.

1.2.2 Radiation Therapy Advanced Practice in Australia

ASMIRT consideration of advanced practice for radiation therapy and radiography commenced in 2002, coinciding with the implementation of similar initiatives in the United Kingdom (UK).The ‘Future Directions Working Party’ was established by ASMIRT that year to investigate what models of practice may be necessary ten years on.(48) The report from this group indicated an urgent requirement to investigate new models of work for RT and radiographers. This resulted in the establishment of a new

group, the 'Professional Advancement Working Party' (PAWP), to describe a possible pathway for extended scopes of practice.(49) Immediately following the submission of the PAWP report in 2006, the 'Advanced Practice Working Group' (APWG) was convened to determine a model for advanced practice, with a greater emphasis on stakeholder consultation to inform the model than was presented in the earlier iteration.(48) The APWG report in 2009 provided a comprehensive analysis of the rationale for RTAP and proposed potential models of practice, and made further recommendations for consultation and a formal accreditation pathway. The 'Inter-Professional Advisory Team' (IPAT) was convened in 2011, with cross-discipline representation from professional body, clinical, regulatory, and academic stakeholder groups.(38) IPAT was tasked with collaboratively identifying the opportunities and issues associated with advanced practice implementation, and to define a framework of expected standards. The result of this group was the recommendation that a status of advanced practice be introduced as a distinct element of radiation therapy and radiography practice. An ASMIRT based 'Advanced Practice Advisory Panel' (APAP) was then convened to establish the necessary mechanisms to achieve this.

A framework for recognition of advanced practitioner status of RT and radiographers by ASMIRT was released in 2014, with an update in 2017.(39,40) Radiation therapists applying for recognition as RTAP are required to provide evidence of study at Masters level (Australian Qualifications Framework Level 9 (AQF9)(50)) or higher. The initial iteration of the pathway also enabled a temporary 'champions pathway' for RT to be recognised via portfolio submission for work they may already be performing as advanced practitioners at AQF9 equivalence. In addition to academic learning, RT applying for advanced practitioner status are required to demonstrate capacity across seven pillars of practice:(40)

- Professionalism
- Collaboration
- Communication
- Scholarship and Teaching

- Clinical Expertise
- Evidence Based Judgement
- Clinical Leadership

Unlike the previous iterations of ASMIRT reports,(48,49) the authors of the framework indicated they intentionally defined domains of practice rather than specific skills to enable flexibility of application across the radiation therapy and radiography workforces.(51) In comparison, the Society of Radiographers (SoR) advanced practitioner accreditation framework in the UK describes four domains of practice: expert practice; professional leadership and consultancy; education, training and development; and practice and service development, research and evaluation.(52) Further contrast is apparent in the Canadian Association of Medical Radiation Technologists (CAMRT) certification framework for RTAP (i.e., not radiographers) that describes 16 competencies, including 9 clinical and technical competencies and 7 under the domains of research and evidence based practice, leadership, and education.(53,54) Interestingly, some debate followed the release of the Australian recognition framework regarding the omission of an explicit 'research' domain, which was viewed as a core capability of an advanced practitioner.(55-59)

The first RT to receive recognition of their status as an advanced practitioner by ASMIRT was in 2014, with an additional three recognised in 2017. At the time of writing, no RT has been recognised as an advanced practitioner since and only two RTAP appear to have sustained their accredited status.(60) Although it is clear that considerable work has been done by the professional body to support the implementation of advanced practitioners, it is worth noting several factors that may be influencing the limited outcomes to date. Firstly, although ASMIRT is the representative professional body for RT, only a proportion choose to be members: it is not known if a lack of awareness or perhaps lack of perceived value of the recognition framework is an influencing feature. Additionally, workplace employment structures are informed by State based frameworks that do not readily enable the classification of RTAP and are not influenced by professional body accreditation. Furthermore, the

national registration entity, the Medical Radiation Practice Board of Australia (MRPBA), is legally responsible for defining the practice standards to which all RT must comply, not the professional body. The MRPBA is clear that their remit is describing a minimum threshold for safe practice,(61) not advanced practice, thus there is no current requirement for RT performing at an advanced level to be formally sanctioned as doing so.

Although it is evident that formally recognised RTAP in Australia are few, the lack of published evidence of radiation therapy advanced practice investigations and outcomes indicate informal implementation of RTAP is also sparse. Three feasibility studies have explored the potential for RTAP across several areas of practice,(62-64) but there have been no follow up reports to suggest subsequent implementation. Examples of advanced practice implementation in palliative care, treatment review, and breast cancer have been reported at conferences,(65-68) but only one has since reported evidence based outcomes in the literature.(45) The development of an advanced practice curriculum was published by me several years ago,(69) but clinical outcomes following such training have not been reported. Several review articles and commentary on a range of RTAP issues are available,(70-73) but none have reported practice-based outcomes. A recent scoping review reinforced the lack of radiation therapy advanced practice evidence in Australia and confirmed the need for more research.(46)

The paucity of literature in Australia surrounding radiation therapy advanced practice is of concern. It is apparent that radiation therapy advanced practice roles are not broadly implemented, although workforce redesign in radiation therapy is encouraged and the professional body has provided a framework. The lack of clinical exemplars from local services may be influencing the slow rate of implementation as it can be challenging to implement change processes without an effective vision of future outcomes.(74) Furthermore, recent studies have highlighted work environment issues for RT and ROMP that may be influencing a lack of opportunity for career progression.(75,76) It is also not known if prohibitive commentary from RANZCR about similar radiographer advanced practice

initiatives may be influencing forward progress,(77-79) as doctors have been previously acknowledged as key enablers or barriers to change in health services.(74) Alternatively, the dearth of evidence may indicate a lack of reporting, where radiation therapy advanced practice has been implemented in isolated workplaces and without reference to initiatives elsewhere. If this has occurred, it could imply national variation in practice expectations and outcomes, which may be problematic for standardisation of the new professional role. Either way, there remains a lack of clear understanding why the implementation of radiation therapy advanced practice in Australia has not yet achieved the expectations recommended by the Baume report and Tripartite Strategic Plan.(24,25) It is evident that an investigation of the factors influencing radiation therapy advanced practice implementation in Australia is of crucial importance to better inform progress in this area.

The following section will describe international radiation therapy advanced practice to further contextualise the Australian experience.

1.2.3 Radiation Therapy Advanced Practice Internationally

Arguably, the most comprehensive evidence of the implementation of radiation therapy advanced practice comes from the UK. In response to a policy shift in the National Health Service (NHS) in 2000,(12,80) a workforce restructure was recommended to enable blurring of traditional role demarcations to better support a patient-focused approach to care.(42,81) The introduction of the 'four-tier structure' provided a model whereby the radiography and radiation therapy workforce consisted of:

- Assistant Practitioner: a trained non-registered addition to the health care team intended to perform discrete tasks with the oversight of a registered practitioner.
- Practitioner: a registered professional who performs autonomous clinical activities within the usual scope of a radiation therapy or radiographer practitioner.
- Advanced Practitioner: a registered professional who has undergone additional training to perform autonomous extended scope activities and supports clinical service developments.

- Consultant Practitioner: a registered professional who provides autonomous clinical leadership, research and education in a specialist area and who may be responsible for their own clinical case load and decision making.(42)

Several discussion papers in the early 2000s presented a commentary around the practice and professional characteristics required to achieve radiation therapy and radiography advanced practice, including the legal and education ramifications.(81-85) However, it has been argued that an inconsistent understanding of terminology and role expectations, and variation in the application of the four-tier framework into services have been problematic for standardised implementation.(82,83,85,86) Kelly and colleagues(86) highlighted the influencing factors associated with the implementation of advanced practice as being government policy and legislative changes, including support for a restructured career framework; medical workforce skill shortages; and the provision of effective education and training. Stakeholder support and effective leadership were also seen as key factors. Lack of standardisation of implementation was observed as an issue however, as “role developments have not occurred systematically but have frequently been opportunistic, pragmatic and championed locally.”(86 pe75) In addition, a 2012 report of a national survey of radiation therapy centres in the UK indicated that full implementation of the model across the NHS was yet to be realised.(87) Of note, there is evidence that consultant and assistant practitioner implementation within radiation therapy in the UK has also occurred,(88-92) with some reported outcomes of practice impacts.(93,94)

Experiences from a number of RTAP roles have been reported from the UK, including in treatment review,(44,95-100) palliative care,(43) and breast cancer.(101,102) Broadly, the authors have reported improved patient throughput and positive staff and patient satisfaction, although primarily evidenced from data collected at a single service or a commentary from experience. A systematic review in 2016 demonstrated the need for more robust evidence around the quality impact of advanced practitioner roles.(103)

Advanced practice first evolved in Canada in 2003, primarily instigated in Ontario by a provincially based radiation therapy professional working group.(104,105) It was proposed that advanced practice roles for RT were a natural progression influenced by professionalisation and increased entry level qualifications, a desire for job enrichment, and exemplars from other health professions.(106) An advanced practice role, the Clinical Specialist Radiation Therapist (CSRT) was piloted across several services in Ontario, intended to support an extended scope of practice for professionals and improve patient access to services.(105,107) It was reported in 2018 that 24 CSRT were operating within 10 radiation therapy services, and collectively they had demonstrated improvements to patient wait times and throughput while maintaining staff and patient satisfaction.(108) Examples of CSRT practice have been reported in breast cancer,(109-111) treatment review,(112) palliative care,(113-115) and skin, stereotactic body radiation therapy, and brachytherapy.(114) CAMRT published a framework to support the implementation of radiation therapy advanced practice across other Canadian provinces,(41) however a single reported feasibility study from outside of Ontario implies this has not yet occurred.(116)

In the United States of America, an American Society of Radiologic Technologist (ASRT) white paper published in 2007 explored the possibilities for advanced practice in radiation therapy.(117) According to the document some RTAP roles have evolved in the region, but standardisation of practice, territoriality between professional groups and the definition of advanced practice were challenges to be overcome. A radiation oncologist workforce study in 2013 indicated that little has eventuated in the anticipated implementation of advanced practitioner type roles,(118) and a later commentary paper identified billing and regulatory issues as ongoing hurdles.(119) A recent publication has proposed that lack of an education and career framework enabling advanced practice is also a contributing factor.(120) Arguably, inconsistencies in terminology and educational approach in reports of physician assistants, nurse practitioners, and advanced practitioners all performing extended activities in radiation therapy(121-124) further confounds effective progress.

Discussion of advanced practice in New Zealand commenced in 2005 with the establishment of a New Zealand Institute of Medical Radiation Technologists (NZIMRT) working party to explore opportunities for RT and radiographer role development. The resultant report from this group indicated strong support to engage in advanced practice to benefit career progression and patient care, but suggested barriers to change included medical resistance, medico-legal issues, and remuneration.(125) A radiation therapy focussed study indicated similar support and benefits, although it was suggested the small number of RT in New Zealand may be a limiting factor to wide-ranging implementation.(126) A later publication proposed a series of profiles for RTAP and outlined the necessary education requirements,(127) however although isolated examples of RTAP have since been reported in treatment review and palliative care,(128,129) broader scale implementation is not apparent. A recent publication identified that a career framework including advanced practice was necessary in New Zealand to provide a development opportunity to the RT workforce to reduce attrition and enhance service sustainability.(130)

Other discrete examples of advanced practice investigation have been reported from Hong Kong(131) and Singapore,(132,133) with more recent publications suggesting the implementation of RTAP at one centre in Singapore is progressing.(134,135) Elsewhere, a European Society of Radiotherapy and Oncology (ESTRO) position paper released in 2019 conceptually supported the implementation of RTAP across European countries to benefit patient care.(136) However, evidence of implementation is not discernible, arguably influenced by the variability in baseline RT training and practice across regions.(137) It is important to acknowledge that global variation in education and professionalisation of RT and radiographers may be an inhibitor to advanced practice progress in many countries.(138, 139)

The following section will explore the context of the RT in Australia to better understand how a transition to advanced practitioner may be articulated.

1.2.4 Context of the Australian Radiation Therapist

The RT in Australia is a registered health practitioner who is responsible for the accurate planning and delivery of radiation therapy to individuals with cancer. The RT requires highly technical skills and knowledge of radiation physics to operate radiation emitting equipment, in combination with the professional and communication skills necessary to deliver safe and compassionate care to their patients. The capacity of the RT to consistently provide an interpersonal human element to a machinery dominated patient experience is a particular attributional expectation that is a unique feature of the profession.(140-143) This paradoxical scenario between humanistic and technological capabilities(144) is further accentuated by the RT only being able to perform the work activities that define their profession when attached to highly specialised equipment. It could be argued that the professional identity of the RT is intertwined with, and difficult to separate from, the equipment that frames the work.

The work of the RT is informed by the minimum threshold capabilities for practice defined by the registration board, the MRPBA, under the remit of the Australian Health Practitioner Regulation Agency.(61) All RT in Australia are required to maintain registration with the MRPBA, currency of practice and evidence of professional development, and be fit-to-practice to work in an Australian radiation therapy service. National registration enables RT to work in any State in Australia, however career structure, remuneration, and radiation use licensing requirements vary in each State and Territory.(145) Additionally, RT can be employed in public or private settings in all regions except the Northern Territory. As a result, although national registration defines a standardised minimum practice expectation and enables worker portability, State and service variations can influence nuanced differences in the work of RT between centres. Furthermore, high performance expectations of RT can vary greatly given the MRPBA does not attempt to frame the capabilities for advanced practice(61) and State industrial award structures do not readily support the clinical expert.

The nature of the RT as a professional may further be informed by understanding the historical constructs that have influenced the current state.(146) In the early 1900s, radiation therapy in Australia may have been performed by nurses, physicists, engineers or photographers trained on the job, with training for RT as a distinct job role not commencing until the late 1940s. The professional body, then the AIR, enabled certificate or diploma training from 1952 as part of a Conjoint board, with the first University degree program commencing in 1986.(147) If the nature of the RT as a professional is aligned with the traditional expectation of “legitimacy accorded to expert knowledge obtained from university-based formal education,”(148 p277) it could be argued that this point in time was the genesis: if this is the case, the RT is a relatively recent professional designation. It is also of value to acknowledge that the radiation therapy workplace context would encompass cross-generational individuals with contrasting formative experiences of how their professional identity has evolved.(149) Of interest, Merchant’s reported history of the profession(147) is aligned with the evolution of technology, with the introduction of the linear accelerator, computer tomography (CT) scanner, and computer assisted planning viewed as key moments for the profession – the RT is consciously aligned with the machinery.

Several authors have highlighted conceptual challenges associated with the Australian RT being labelled a professional. Reflecting on the radiation therapy and radiography professions collectively, Sim and Radloff proposed limited engagement in research and development, a low public profile, and professional apathy were potential issues for professionalisation.(150) Access to time, funding and legitimate collaborative opportunities for research, as well as low uptake of higher research degrees from RT have also been explored as contributing factors.(151) Sale and colleagues have described a lack of clarity in describing the role of the RT, and a “portrayal of RT practice [limited] to technical skills without autonomy.”(152 p105) Similarly, the lack of autonomy, medical dominance, and a subordinate work role have been expressed as features in other studies.(153,154)

Disparagingly, RT have been referred to as “button pushers,”(155 p125) and as one who “turns on the beam.”(156 p543) Yelder has argued that for advanced practice to progress, “it is time for radiographers and radiation therapists ... to stand up and insist on being seen, respected and having a profile as health professionals rather than being conceptualised as allied health technicians.”(157 p64) But, until RT are active co-producers of their expert knowledge and act with greater autonomy(148) this may be inhibited.

1.3 Researcher Background and Contextual Interest

Making visible the background of the researcher is an important strategy to support a reflexive approach to the research, to acknowledge potential biases, recognise a cultural position, and force introspection about the researcher position during data collection and analysis.(158,159) This is particularly pertinent for insider-research - where the researcher is a member of the group being researched - to enhance the trustworthiness of the research process.(160) What follows is an account of my background and the genesis of interest in the research topic. Strategies used to achieve a reflexive approach to the research are discussed further in Chapter 3.

My first conceptual awareness of advanced practice radiation therapy came during 2004. I was employed as a senior RT at a large cancer hospital and had accepted a part time lecturing position for a radiation therapy program at a University. The recently appointed director for radiation therapy at the cancer hospital had emigrated from the UK to Australia and had been involved in the roll out of the four-tier framework in the NHS several years earlier. Similarly, my new colleague at the University had also been involved in the development of academic modules for advanced practice at a UK University. During this period, a radiation therapy academic from the UK was visiting both the University and the cancer hospital and I had the opportunity to engage in several discussions with them around their experiences with advanced practice.

In 2004, there was not a visible national conversation around advanced practice. The PAWP report from ASMIRT was still two years away. To me, it seemed like an opportunity that needed to be pursued

– I believed RT were educated professionals, and I could see slow points in the clinical workflow where advanced practitioners could make a difference. A visit to UK clinical centres and a University to explore advanced practice outcomes shortly afterwards further reinforced to me the possibilities for improvements to patient care and practitioner satisfaction. I was keen to try and support it happening, although my interest has always been to facilitate education and implementation – to try and make it happen for my profession and for our patients, not to pursue advanced practice for myself.

As I was working across both the clinical and academic spaces concurrently at that time, it seemed the perfect opportunity to explore what might be possible. In a collaborative venture between the University and the cancer hospital, I led the development of pilot short course material to facilitate the implementation of advanced practitioner radiation therapists at the cancer hospital. Surveys, focus groups, and process mapping were conducted to inform the design, and stakeholder engagement strategies were a key feature. In late 2005 we implemented breast focused advanced practitioners (partially funded by a Victorian Department of Human Services health workforce innovation grant), and in 2008 imaging focused roles in lung, head and neck, and pelvis. An annual intake of training after the pilot roles continued up until 2012. Presenting our experiences at national conferences and engaging with peers at other centres seemed to indicate that we were pioneers in progressing the advanced practice concept into a tangible outcome during much of this period.

An unpublished evaluation of the cancer hospital advanced practitioner roles completed by me in 2011 indicated that they were not functioning as effectively as intended. Some positive outcomes were demonstrated in the areas of patient throughput, quality improvement, and staff education, however practitioners in the roles were not always satisfied and were finding it challenging to perform advanced activities alongside other regular clinical tasks. Variation in expectations of ‘normal’ clinical throughput, role utilisation and outcomes, and local structures were evident. Recommendations were implemented following the evaluation, but they did not effectively change processes or outcomes – local team interpretation and application appeared to be the dominant features.

Shortly after the evaluation at the cancer centre, I commenced a two-year project role at the University to develop a national curriculum framework for radiation therapy advanced practice, funded by the Australian Department of Health and Ageing. An early component of this project was to initiate a research strategy to determine the national need for advanced practice to inform the curriculum design. The research outcome identified mixed sentiment towards advanced practice, with some respondents questioning the capability of RT to perform in an advanced capacity, even to the point of expressing derogatory statements within the anonymity of a national survey. Furthermore, although others expressed a desire to progress towards advanced practice, uncertainty around how to go about this was apparent in the data.

These experiences were the trigger to commence this research in 2014. At that stage I had spent a decade working towards advanced practice strategies in clinical and academic arenas and had been actively involved in trying to make it happen. I had observed in the cancer hospital that despite consistent implementation strategies, outcomes were not as effective as anticipated and local variations across the service were visible. Additionally, the research associated with the curriculum framework project indicated that some RT, RO, and ROMP practitioners did not believe advanced practice worth pursuing and were even antagonistic towards the idea of it. Furthermore, at that point there were three advisory documents from the professional body(38,48,49) as well as the Tripartite Strategic Plan(25) making it clear that advanced practice was desired, and yet there was still a lack of national progress in this direction. Exploratory visits to England in 2016 and Ontario in 2018 further reinforced to me the benefits that could be gained for patients and the profession through the introduction of advanced practice, albeit with associated practical and social challenges. Resultantly, the questions I was fundamentally seeking to be answered by this research were 'why wasn't it happening in Australia?' and importantly 'how can we make it better?'

1.4 Research Aim and Strategy

This section provides a brief account of the research aim and strategy, where further examination of procedures is discussed in Chapter 3.

It was of interest to the researcher to situate this study within the context of the radiation therapy workplace within which advanced practice implementation and actions may be occurring. As a result, this research used a constructivist grounded theory methodology guided by an interpretivist theoretical framework through a symbolic interactionist lens.(161-163)

The aim of this research was:

To understand the influencing factors shaping the implementation and process of radiation therapy advanced practice in Australia.

In addition, guiding questions were framed to assist the research process:

- *What are the perceptions and assumptions surrounding radiation therapy advanced practice?*
- *What are the perceptions and assumptions surrounding radiation therapy advanced practitioners?*
- *What are the perceived factors influencing the implementation of radiation therapy advanced practitioners?*
- *What is the lived experience relating to the implementation and actions of radiation therapy advanced practitioners?*

Data collection occurred during two phases:

- Phase 1: National online (video mediated) focus groups with RT, RO, ROMP, and self-identified RTAP. Six focus groups were facilitated, which included 14 contextually and professionally representative participants.

- Phase 2: Case study investigation at five purposively selected radiation therapy centres in Australia who had an interest in, or experience with, advanced practice implementation. Contextually situated data collection included 39 semi-structured interviews and observation of interprofessional interactions with RT, RO, ROMP and RTAP, and document review.

Of note, practitioners from the cancer hospital in which the researcher was employed were actively excluded from research processes to minimise any potential biases.

In line with a constructivist grounded theory approach,(161) data analysis occurred iteratively across the collective dataset from both phases and applied constant comparison strategies to data elements. Principles of action-described coding, memo writing, and post-analysis theoretical integration resulted in a process describing the implementation of advanced practice in Australia, underpinned by a contextually defined grounded theory of *Navigating Uncertainty*.

1.5 Significance of the Research

Radiation therapy advanced practice is not happening in Australia despite clear reasons why it should. Frameworks for education and recognition are available, as well as international examples of outcomes, but they do not appear to be influencing progress. There is a lack of understanding why, after two decades of discussion, there is still a want of development in this area.

This study contributes to further understanding the factors that may be influencing the implementation, or lack of implementation, and practise of radiation therapy advanced practice in Australia. The study has been situated in the context of the radiation therapy workplace as implementation itself is a social action as well as a practical one - individuals act implementation strategies, and act in response to implementation outcomes, within the socially constructed workplace. By making such features visible, it is anticipated stakeholder dialogue of this topic will gain a new perspective. Additionally, further understanding provides the opportunity to explore where advocacy and structural support from practitioners and workplaces that have implemented advanced practice, the professional bodies, governments, and regulatory bodies may aid progress.

1.6 Structure of the Thesis

This thesis contains five chapters. Chapter One has presented the context of the research area and outlined the research aim, research strategies, and significance. A narrative literature review of evidence reporting the implementation and outcomes of radiation therapy advanced practice is described in Chapter Two. Chapter Three explains in detail the research paradigm, methodology and methods used for this research, and includes a peer reviewed publication. Chapter Four describes the results of this research, presenting in detail the grounded theory of Navigating Uncertainty and the process in which it is expressed. A peer reviewed publication is included in this chapter. Chapter Five is an integrated discussion of the research findings in the broader context of practice and includes practice implications and recommendations.

All data quotes presented in this thesis are verbatim, as expressed by the participants. Where necessary to enhance the narrative or sustain anonymity, truncation and alternate words are indicated by standard punctuation norms. Peer reviewed publications are integrated in chapter narratives, however as they are presented in their published form there is repetition of introductory material to provide context for the standalone work. Additionally, references within each publication are separate to referencing in the rest of the thesis.

1.7 Conclusion

This introductory chapter has presented the context of radiation therapy advanced practice in Australia and internationally, and the nature of the Australian RT. The genesis of interest and justification for this research has been discussed. An overview of the research aim, guiding questions, and data collection strategies have been stated, with elaboration to be described in Chapter 3. The next chapter will further analyse the practice generated evidence of radiation therapy advanced practice implementation and outcomes as a narrative literature review.

Chapter 2 Literature Review: The Implementation of Radiation

Therapy Advanced Practitioners

2.1 Introduction

A literature review was undertaken to determine what has been researched and reported in relation to the implementation of RTAP, within Australia and around the world. The focus of the literature review was both national and international as literature from within Australia is scarce, and although health systems may be different in each jurisdiction, the context of radiation therapy practice is similar. However, even with an international focus, studies reporting the implementation and evaluation of radiation therapy advanced practice are not consistent in their research approach or methodology, and hence a systematic literature review as such was not feasible. As a result, a narrative literature review was undertaken using a systematic approach to search and analytic strategies.(164-166)

The primary intent of the literature review was to analyse research papers reporting the experience of RTAP, in relation to implementation or outcomes, to establish a deeper understanding of the context for this research. As radiation therapy literature in this area is scarce, advanced practice implementation in other health disciplines was also explored to complement contextual understanding. In line with a grounded theory methodology,(161,167,168) although an overview of the literature was undertaken prior to study commencement to establish the purpose of the research, a thorough literature search and analysis was completed after data collection to limit any potential personal bias in the way in which research data was collected or interpreted. The latter approach forms the basis of this literature review.

2.2 Search Strategy

A systematically approached literature search was undertaken in January 2019. The aim of the literature review was to analyse the reported evidence associated with the implementation of RTAP

(i.e., one practitioner, or more than one practitioner) into clinical practice, nationally and internationally. In relation to this review, 'implementation' can mean prior to introducing RTAP into a clinical centre; or the process of introducing RTAP into one or more clinical centres; or an evaluation of outcomes as a result of the introduction of RTAP. The focus of the review was peer reviewed literature reporting a research based – quantitative or qualitative – investigation of RTAP, to understand what was happening within the field. As a result, although professional body reports and published commentary contribute to the context of RTAP, these were not included within this literature review and have instead been discussed elsewhere in this thesis.

Characteristic	Inclusion criteria	Key words
Population	Radiation therapy	Radiation therapy Radiation therapist Therapy radiographer Radiation therapy technician Radiotherapy Radiotherapist
Intervention	Advanced practice	Advanced practice Advanced practitioner Role development Role extension Clinical specialist Extended scope
Comparison	Standard practice	Not searched
Outcome	Implementation	Implementation Outcome Evaluation
Study design	Qualitative and/or quantitative	Not searched

Table 2.1: Key words used during data base searches, guided by a PICOS framework. A combination of Population and Intervention key words were searched using Boolean operators "AND"/ "OR" to maximise inclusion accounting for regional and changing nomenclature.

Searches within databases CINAHL, Ovid Medline and Scopus were carried out using key words presented in Table 2.1. A PICOS (Population; Intervention; Comparison; Outcome; Study Design) framework was used to help guide saturation of key words.(166,169) The search terms were applied to paper title, abstract and key words. In addition, a manual search of reference lists and citation hits of the identified papers; of advanced practice associated papers already collected during the study; and of peer reviewed radiation therapy professional journals (*Radiography; Journal of Medical Imaging and Radiation Sciences; Journal of Medical Radiation Sciences; and Journal of Radiotherapy in Practice*), was completed. Reference lists of published review papers associated with radiation therapy advanced practice were also consulted. Table 2.2 presents the inclusion and exclusion criteria applied during the search.

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"> • English language • 1999*-Jan 2019 • Full text evidence reported in peer review journals • Radiation therapy advanced practice feasibility studies prior to implementation • RTAP evaluation of implementation, or outcomes of implementation, within one or more clinical services • Readily identifiable research method, quantitative and/or qualitative • Clearly defined ethics review 	<ul style="list-style-type: none"> • Advanced practice studies from other professions, including other medical radiation professions • Studies associated with consultant and assistant practitioners • Professional body reports associated with RTAP • Radiation therapy advanced practice described in discussion paper, commentary or letter, or review paper • Radiation therapy advanced practice reported in abstract form only (i.e., conference abstracts within peer review journals) • Radiation therapy advanced practice not in clinical role (i.e., education or research)

Table 2.2: Inclusion and exclusion criteria of the search strategy. *Start year to correlate with implementation of radiography and radiation therapy advanced practice in the UK.(42)

A total of 946 papers were collected during data base and manual searching, which reduced to 769 after duplicates were removed. Through screening of title and abstracts, 677 were excluded as pertaining to different health professions (primarily nursing and medical imaging), as well as discussion papers or editorials. The full text of the remaining 92 were critiqued according to the inclusion and exclusion criteria presented in Table 2.2, resulting in a further 65 exclusions. 27 papers were included in the final analysis. A flow diagram summarising the search outcome, informed by the PRISMA statement,(170) is presented in Figure 2.1.

The full text of each of the 27 papers included in the final analysis was evaluated using the following criteria:(165,166)

- validity of research methods against purpose,
- relationship to RTAP implementation,
- relationship of results to key findings and conclusions, and
- any limitations defined by the author or derived from analysis.

The papers were clustered into broad categories to better enable synthesis of purpose, generalisability, and key themes across disparate research methods. Categories were defined after analysis as representing common themes across clusters of papers. The categories were:

- Feasibility (i.e., pre-implementation) studies of non-specific RTAP within a region, such as province or country (7 papers).
- Feasibility studies of a specific RTAP role within a clinical centre or region (6 papers).
- Evaluation studies of RTAP outcomes within a specific scope of practice, in one or more clinical centre (13 papers).
- Evaluation studies of RTAP outcomes across varied roles, in more than one clinical centre (1 paper).

A summary of the papers within each category has been provided in Appendix A.

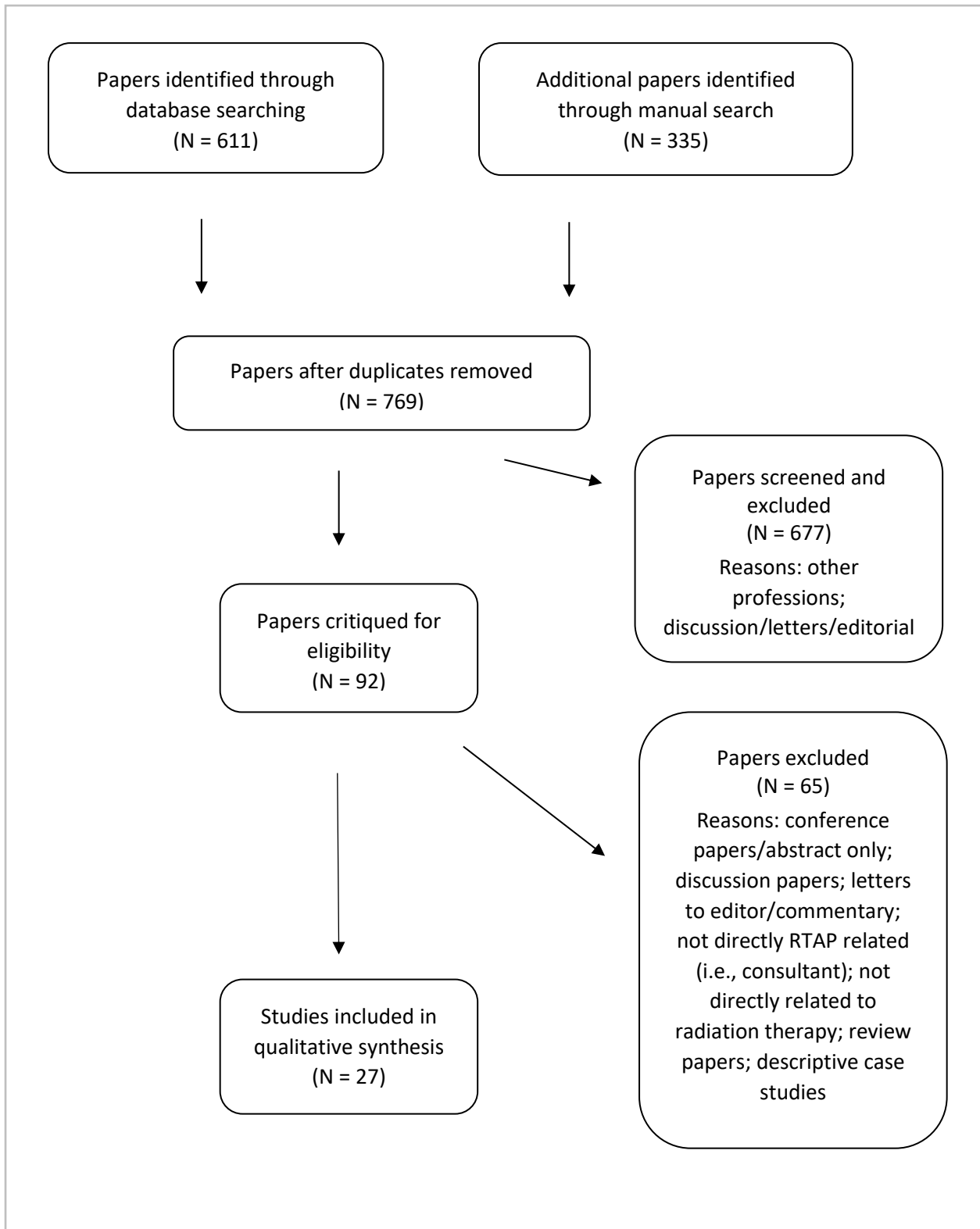


Figure 2.1: Search strategy summary, based on PRISMA flow diagram. N=number of papers.

The following discussion presents a synthesised analysis of the papers under key themes derived from the collective analysis, and with reference to the category type where necessary.

2.3 Results of the Literature Review

2.3.1 Defining Radiation Therapy Advanced Practitioner Scope of Practice

A common element across the papers included in this analysis was the theme of defining or describing the scope of practice of a RTAP. In general terms, an advanced practitioner is a RT performing beyond the usual scope of practice, either as an extended element of the RT role, or in a delegated capacity from another health professional. Although the general concept may be readily recognisable, the nuances of how this may be interpreted or applied within regional jurisdictions, or even across health services, can vary. This is most telling in the feasibility category of studies, where the concept or potential practice of a RTAP was explored prior to local or regional implementation.

The earliest reported exploration of RTAP perceptions was from Hong Kong.(131) Using a mixed methods approach with surveys of stakeholder professions and interviews with RT, the authors determined general support for the implementation of RTAP, however uncertainty regarding the impact of role delegation from RO and ROMP stakeholders was reported. At a similar time in Canada, Bolderston(104) investigated perceptions of RTAP within the province of Ontario and also discovered a degree of support, but not without fears of interprofessional resistance from medical and RT colleagues. In a follow up survey of radiation therapy managers(171) these findings were confirmed, with additional concerns raised about providing funding and training for RTAP. Similar concerns were voiced from multi-disciplinary participants in two national studies undertaken in New Zealand.(126,127) Additionally, surveys of RT in the Canadian provinces of British Columbia(116) and Alberta(172) highlighted similar perceptions around barriers and enablers to RTAP, although the survey method applied was self-limiting due to pre-determined closed ended responses.

In summary, although these studies were undertaken over a period of 14 years, the key findings associated with RTAP scope of practice were:

- Education and training are essential components to inform RTAP scope of practice, to better enable the completion of any delegated activities, to support professionalisation, and to be autonomous in the provision of effective patient care.
- It is accepted that advanced practice requires a change to the existing scope of standard practice. However, there is a perception that shifting professional boundaries from the current scope to a new scope, or even into the scope of another professional, may have an impact both inter- and intra-professionally. Fears of medical dominance, professional inertia, and professional protectionism are represented across the studies. Involvement of all professional stakeholders to inform RTAP implementation was highlighted in several studies(104,126,131,171) and could be a mechanism to overcome such concerns.
- The professional body in each jurisdiction has a role in defining RTAP scope of practice and providing effective frameworks to enable implementation into clinical centres, however, local funding limitations and local clinical need for RTAP will determine the outcome.

Several studies have further investigated the feasibility of RTAP using a specific scope of practice as the context for the research. The role of the RTAP in patient review has been the most represented in the literature, which is where the RTAP undertakes autonomous weekly radiation therapy patient review and/or follow up, independently or as part of the multi-disciplinary team. An early study in Singapore(132) explored the feasibility for such a role, as well as the perceived capability of RT to undertake treatment review activities. Using the two major hospitals in Singapore as study sites, the authors conducted an observational audit of RO led treatment reviews over a four-week period to determine the rate of medically necessary intervention. In addition, they surveyed RT and RO on the perceived capabilities required to perform the review activity. The authors found the rate of medical intervention was 35%, indicating a potential role for non-medical reviews in the centres. Furthermore, respondents to the survey were supportive of the concept, although education would be necessary to build appropriate capability. Monk and colleagues(64) replicated the Singapore study in a single clinical centre in Australia, and although medical intervention rates from the audit were similar, they

found conversely that RO support to proceed with RTAP patient review was not apparent despite a willingness to proceed from the RT respondents. Respondents were also at odds in relation to the perceived capability required to perform patient review, with the RT perceptions of existing skills being higher than that indicated by the surveyed RO. Capability to perform patient review was explored in another Australian study,(62) where RT skill to assess skin toxicity on the breast was compared against the RO gold standard. Although photographic simulation was used as opposed to actual patient assessment, concordance between RT and RO participants was high, indicating RTAP review associated with breast toxicity assessment could be feasible. In a more recent UK study, Hetherington and colleagues(173) used patient satisfaction as the benchmark in which to measure RT capability in follow up reviews. In this study, prostate patients were reviewed by either the RTAP or one of five RO, and although patient satisfaction was indicated to be equivalent, the paper does not make clear the existing skillset of the RTAP nor consider the many variables that may be present across the six alternate cohorts.

Other studies have explored the feasibility of an extended RTAP scope of practice more aligned with existing RT activities. Dempsey and Burr(63) explored RT confidence to authorise treatment plans in lieu of the RO in Australia, and determined the highest perceived confidence was with basic palliative plans. The authors concluded this indicates the potential for a RTAP role in expediting palliative radiation therapy, however, given the study was undertaken more than a decade ago it may not reflect changes to modern practice. Lee and colleagues(111) investigated the potential for a breast RTAP to delineate seroma cavities on behalf of the RO to expedite planning activities in a single Canadian centre. The authors found that following a period of training of the RTAP, correlation between RTAP and RO contours was high, particularly where visualisation of the cavity was clear. Following this study, the RTAP seroma contouring role was introduced within the clinical centre and validated through a prospective concordance study.(109)

Further conclusions can be elucidated from these studies, elaborating the earlier summation:

- Education and training remain at the forefront of effective RTAP activity. Validation of RTAP skills is vital to ensure safe patient care.
- Although professional protectionism was a perceived challenge with the more broadly conceptual feasibility studies, it appears less of a challenge when a specific scope of practice is considered. This may be because the hypothetical concept of a RTAP presents greater uncertainty than when defined by a discrete scope, or it may be that the validation process within each study makes it more acceptable. Only one study highlighted continued professional tensions.(64)
- Further to this, all studies other than Dempsey and Burr's(63) included RO in the study design as direct participants in the proposed change, again reiterating the concept that stakeholder buy-in is essential for any move towards RTAP implementation.(104,131) Interestingly, all studies were undertaken as a matter of professional interest, not resulting from a defined needs assessment for a RTAP role.

2.3.2 Validating Radiation Therapy Advanced Practitioner Skills

The concept of validating the skill set of the RTAP was represented as a key theme in the evaluation papers where the RTAP was already in place. For the RTAP to undertake elements of work that may belong to another profession, or to work effectively beyond the usual scope of the RT, it is important that the skill set required to perform such activities is validated. Validation may be through education and training, and evaluation of practical clinical activities. Reported studies have generally approached skills' validation through comparative performance assessment between the RTAP and the RO, either through discrete task concordance or audit of workflows.

An early published study from Blyth and colleagues(43) presented an audit of a RTAP run rapid access palliative radiation therapy clinic in the UK. Using a mixed methods approach including a review of patient waiting times before and after the clinic was implemented, validation of RTAP field delineation compared to the RO, and patient and staff satisfaction, the authors concluded the success of the RTAP

run clinic. Waiting times had reduced from 11.5 to 3.6 days, patients and staff were satisfied, and RTAP skills were acceptable to perform the required activities. Similarly, Casson and colleagues(128) conducted a retrospective review of a RTAP, RO and nurse run palliative rapid access clinic data base four years after implementation at a New Zealand site and showed improvement in patient access times. Job and colleagues(45) also evaluated a RTAP palliative rapid access pathway at a centre in Australia and reported significant improvement in patient waiting times and compliance with national care pathway guidelines from a cohort of 150 consecutive patients.

Validation of RTAP skills has also been reported in other types of RTAP roles. Bristow and colleagues(174) reported 84% accuracy of RT delineation of pre-planning breast tissue at a centre in Canada. However, expectations of RTAP capacity and autonomy are not clear in the paper making definitive conclusions difficult. As discussed earlier, a Canadian study(109) evaluated the accuracy of RTAP seroma delineation in a prospective setting and achieved a high conformity index. Additionally, in an associated investigation Lee and her colleagues(112) validated RTAP skills in breast toxicity scoring by reviewing the same cohort of patients as the RO over a four-week period and reported a high concordance.

In summary, although the studies described explore different RTAP scopes of practice and use varied methods, they highlight:

- Validation of skills against the RO 'gold standard' is an important facet of proving the value of RTAP implementation.
- Education and training were elaborated in most reports, usually provided by the RO, and are most effective when supported by defined expectations of practice and clinical guidelines.
- All studies describe elements of interprofessional collaboration and interprofessional working, where the RTAP is part of the clinical team providing care. This is notable given the fears expressed in the earlier feasibility studies around professional boundary challenges, that this has not been realised in practice.

2.3.3 Radiation Therapy Advanced Practitioners Improving the Patient Experience

Arguably one of the key reasons for pursuing advanced practice in any profession or jurisdiction is to better support the needs of patients. This is demonstrated in studies showing improved patient waiting times to access care, as previously described in the palliative care setting,(43,45,128) or through achieving an equivalent degree of patient satisfaction with a modified service. The latter metric has been investigated by several authors, although choice of research approach has not always presented valid or translatable outcomes.

As discussed earlier, Blyth and colleagues(43) measured patient satisfaction via a survey with 50 consecutive patients attending the RTAP palliative clinic and achieved positive outcomes to perceived wait time and service delivery. Similarly, patient satisfaction surveys were used to evaluate a team based (RTAP and other health professionals) palliative rapid access clinic in Canada.(113) The authors concluded the patients were satisfied with the RTAP service when compared to the other health professionals, but the positive statement bias of survey questions, the small patient cohort, and survey distribution on the last day of radiation therapy treatment to reflect an earlier appointment may have influenced the data. Treeby(98) also used patient surveys to evaluate satisfaction in a RTAP delivered urology treatment review clinic at a centre in the UK. The author reported satisfaction with the care provided by the RTAP from the 34 patient respondents. However, similar to the Canadian study,(113) surveys distributed on the last day of radiation therapy treatment may have introduced a positive recall bias. Cameron and colleagues(44) selected an alternate approach to surveying patient satisfaction during a breast treatment review clinic at a centre in the UK, whereby patients were provided a survey to complete after each review appointment, on multiple occasions. As the review clinic was team based, with care provided by the RTAP, nurse or RO, it provided the opportunity to compare the patient experience across various time points and with different care providers. From analysis of 389 completed surveys, the authors concluded patients reported high satisfaction with the RTAP, and further that patients felt they could ask more questions of the RTAP than RO or nurse. Ellis and colleagues(96) selected an interview based method in their study, and interviewed 11 patients

who had participated in a RTAP treatment review clinic at a single centre in the UK. The authors reported satisfaction with the care provided by the RTAP from patients interviewed on their final day of treatment. However, as the authors were non-specific about disease primary and related toxicities seen within the one day per week RTAP clinic, this makes transferability of findings difficult.

In summary, the patient experience of care provided by the RTAP is an important feature of the implementation of such roles, with regards to improving timeliness of care and maintaining or enhancing patient satisfaction. The studies reporting objective measures associated with improving timeliness of care are more readily synthesised to demonstrate the potential for practice enhancement following the implementation of a RTAP. However, definitive conclusions based on the patient satisfaction studies are challenging given:

- The cohort numbers vary considerably (range 11-389), and some studies report data collected over a period of many months.
- The approaches to data collection alternate between surveys and interviews, and very few papers elaborate if survey tools have been previously validated.
- There appears to be a high potential for bias with positive survey statements and survey provision on the final day of treatment.
- The scope of practice of the RTAP is not always well defined, including underpinning training.
- All studies, including the timeliness of care studies, report the experience within a single clinical centre, with a single RTAP.

Suffice to say, enhancing the patient experience should be a key function of RTAP capacity, but the current disparate evidence is not seemingly positioned to readily influence practice change towards RTAP implementation.

2.3.4 Being a Radiation Therapy Advanced Practitioner

The introduction of the RTAP not only has influence on the patient, but also the RTAP and the team working alongside the RTAP. The experience of being a RTAP has been explored in several qualitative studies.

One of the earliest reported RTAP studies, shortly after health workforce redesign initiatives in the UK were introduced, was Colyer's(95) phenomenological exploration of the experience of the treatment review RTAP. Colyer conducted unstructured interviews with three RTAP at different clinical centres, presenting a range of educational and clinical experiences. Although small in scale, the study highlighted several key issues associated with the implementation of RTAP including the value of education and training; the need for personal motivation and drive for the RTAP role to function effectively; and overcoming inter- and intra-professional challenges when introducing a new role. Colyer's study was the only one identified from this review to clearly explore the transitional change of the RT becoming the RTAP. Several years later, Lees(97) also explored the role of the treatment review RTAP, using Colyer's study as a baseline. Lees conducted interviews with 7 RTAP across three clinical centres in the UK, using a grounded theory approach. Her findings indicate the RTAP roles were more embedded into clinical services and challenges associated with professional boundaries had dissipated. Transitional identity elements remained, but more so with the perception that general RT skills were being lost while becoming more of a RTAP. Although the study demonstrated the change in the RTAP experience some time after implementation, Lees reported potential bias given her own role as a RTAP in treatment review, and the closed nature of the interview questions were not indicative of a grounded theory methodology. A treatment review RTAP role was also explored in a more recent study in New Zealand.(129) The authors interviewed the RTAP, nurse and a senior RT who ran the treatment review clinic in the centre, and discovered features of transitional change in skill development, interprofessional collaboration, and perceived improvement of patient care. Professional boundary issues were not apparent. Finally, Eddy(175) explored the experience of being a RTAP across a number of roles within a region of the UK. All seven RTAP participants worked at

different clinical centres, although all were associated with the author's higher education institute, and the focus of the study was on the experience of work-based learning in becoming a RTAP. Eddy conducted semi-structured interviews with participants, informed by grounded theory principles, and concluded the key features of an effective RTAP experience are quality education and training, organisational resources and support, and competence development. Although professional protectionism did not feature as a finding in this study, elements of role confusion between the RO and RTAP were an issue.

In summary, the experience of being a RTAP, and what makes that more effective and valuable, is a key element in the implementation of such roles.

2.3.5 Summary of the Literature

Although the studies described range in purpose, scope and methods, key findings can be summarised associated with the implementation of RTAP:

- It is important that the scope of practice of the RTAP is clearly defined and recognised by all key stakeholders, particularly RT, RO, and patients. The feasibility studies suggest the professional bodies in each jurisdiction have a role in helping to inform this, however local clinical need and local interpretation are also influential.
- The provision of education and training is essential to develop the competence of the RTAP, and to validate the skills expected of the RTAP.
- Providing an equivalent standard of care, and/or improving the timeliness of care is justification for sustaining the RTAP activity, which is supported by interprofessional collaboration.
- All studies imply that the activities of the RTAP are a discrete and specific part of their role, and although general radiation therapy may be performed on other days – for example, if the RTAP is in role part-time – while the RTAP is functioning at capacity, advanced practice outcomes are the focus.

- Relatedly, the experience of being a RTAP is different from being a RT. The RTAP is a new role and sits alongside the other RT, which suggests a transitional process of change within the individual working towards the RTAP role, as well as a transitional process of acceptance for the team working with the RTAP. Inter- and intra- professional protectionism may be a feature of this experience.

2.3.6 Limitations of the Literature

There are several gaps and limitations highlighted by the literature reviewed in this chapter:

- None of the papers analysed for this review have explored the factors around RTAP implementation. Papers report either feasibility studies prior to implementation or evaluate elements of practice post implementation. One Canadian group have reported their experience implementing RTAP in a regional 10-year project,(107) and although the implementation framework provided may be a useful template, specific strategies and outcomes have not been explicitly described. Similarly, the implementation experience from a single centre in Canada has been reported,(114) however, the commentary style paper does not provide a clear evaluation of the strategies used. None of the papers identified have presented an evaluation of RTAP implementation, which further emphasises the need for this research study.
- Although several of the feasibility studies may be broad in the exploration of regional or national concerns, the evaluation studies reported are primarily single centre and single RTAP role, with two exceptions. Harnett and colleagues(108) reported a regional case study of RTAP activities across Ontario, however the paper has not been explored in this review as the research methods and outcomes were not clearly aligned and definitive conclusions are difficult to interpret. As discussed earlier, Eddy(175) compared several RTAP roles across services with a particular focus of work based learning, but all participants were attached to one education institution in which the author was employed and any potential limitation in

sampling or bias has not been addressed. A cross comparison of like roles across different centres has not yet been reported in the literature. Further, participant cohorts in many evaluation studies are small, which suggests an opportunity to build evidence further across sites, roles, and with larger cohorts.

- Particularly influential on this research, evidence from within Australia is scarce. Several feasibility studies have been reported in the last decade(62-64), however there is only one report of RTAP role validation in practice.(45) A recent Australian focused scoping review additionally explored published and grey literature and confirmed the lack of evidence, and reiterated the need for reported outcomes data to inform national strategies for RTAP implementation.(46)

2.4 Additional Literature Published Since the Review

Since the review presented here, an additional seven articles discussing radiation therapy advanced practice initiatives have been identified. Of these, two have explored the feasibility of RTAP; two have reported validation studies after RTAP implementation; and three have uniquely reported commentary on RTAP implementation strategies.

In an Australian study, Oultram and colleagues(176) retrospectively analysed the accuracy of 4 RT contouring breast seroma cavities in 50 patients when compared to the RO. Similar to an earlier Canadian study,(111) the authors reported a high degree of reliability and indicated the study validates the potential for task redistribution. Although the research does contribute to the evidence for RT role extension, it is unclear if the intent of the study was for the purpose of advanced practice implementation as such. Li Hoon and colleagues(133) reported an exploratory study from Singapore. The authors surveyed 17 RO and 58 RT in a single centre to investigate their perceptions of RTAP and feasibility of specific role types. The study identified positive correlation between RT and RO perceptions of RTAP value, needs and potential challenges, and highlighted several potential roles for RTAP within the service. The authors reported that since the survey was conducted in 2013, the data

were utilised to inform the implementation of five site specific RTAP roles within the centre. A later paper by Wong and colleagues⁽¹³⁵⁾ described the implementation of the five roles in the centre, which included developing an evidence-based training and competency assessment framework, mechanisms for routine task validation and reporting, and collaborative working with the RO. The authors reported successful outcomes to date but proposed that a national regulatory and training framework was necessary to support expansion beyond the single service. Although the evidence underpinning the outcomes reported by the authors was not transparent in the article, it does provide a useful contribution with respect to a well-defined implementation strategy that could be applicable to other jurisdictions.

Following an earlier publication demonstrating a reduction in patient waiting times with the implementation of a palliative RTAP in an Australian centre,⁽⁴⁵⁾ Job and colleagues have reported a concordance field-marking study from the same cohort of 150 patients.⁽¹⁷⁷⁾ The authors reported that of 92 radiation therapy treatment fields marked by the RTAP, only 10 were adjusted by the RO to align with patient related clinical decisions, and from the overall cohort there was an insignificant difference between RO and RTAP field borders. Combined with the previously reported evidence of improved waiting times, the authors concluded the palliative RTAP role is a justified inclusion in the service. Similarly, a UK study⁽¹⁷⁸⁾ retrospectively analysed a two-year cohort of patients triaged to a RTAP led palliative service compared to the RO led service. The authors reported a significant improvement in patients with bony metastases starting treatment in less than 7 days through the RTAP led pathway.

Two commentary papers have recently reported the experience of RTAP implementation in Canada, and although each provides a novel contribution to the literature, unfortunately the evidence supporting their reported outcomes has not been made explicit. The narrative review presented by Linden and colleagues⁽¹¹⁵⁾ outlined the training and implementation of a RTAP role in a single centre. The authors reported a defined scope of practice, personalised training, and effective support and

mentorship relevant to the role and centre were necessary for the successful implementation of RTAP. However, the review has not clearly evaluated the effectiveness of implementation or subsequent outcomes. Following from their earlier papers,(107,108) Harnett and colleagues(179) have presented a commentary on the implementation strategies associated with a regional RTAP project in 2005. The authors describe the mechanism used to establish the competency profile for RTAP, and the two-year feasibility study that involved integrating 7 RTAP in training across 4 clinical centres. Data collected during the feasibility study included stakeholder surveys, audit, and validation of skill development. However, although the authors report that service enhancement justified further integration of the roles, it is difficult to determine the validity of data collection strategies as they are not explicitly reported in detail.

The additional literature further demonstrates the value of stakeholder engagement and validation when implementing a RTAP role, and in validating outcomes once a role has been introduced. The commentary papers have provided a novel perspective around implementation strategies, both locally and regionally, however, the validity of the reported approaches remains unclear.

2.5 Literature from Other Health Professions

Although the radiation therapy literature has not thoroughly explored the implementation of advanced practitioner roles, other health professions have reported implementation strategies that may be transferable.

In 2004, Bryant-Lukosius and colleagues(180) reported several factors influencing the inconsistent implementation of advanced nurse practitioners, including variable understanding of terminology and role definitions, environmental interdependence, and a lack of systematic implementation according to patient-centred need. The authors also highlighted there was a lack of evidence and evaluation of the implementation and outcomes of advanced nurse practitioner roles. They recommended implementation strategies should include the following:

- Collection of data to support the need for a role, using a patient-centred approach.

- Role definitions that promote functionality across broad domains to the full extent of practice.
- Creation of an environment to support implementation, reflecting on local, social, service, and broader contextual policies.
- The establishment of ongoing and rigorous evaluation of the roles, which are outcomes focussed.

In a subsequent paper, Bryant-Lukosius and DiCenso(181) proposed a framework for the implementation of advanced nurse practitioners. The authors developed a participatory action-research based framework to support a patient-centred, systematic approach to implementation, promoting wider stakeholder engagement and evidence-based outcomes. Labelled the PEPPA framework by the authors, the underpinning steps are as follows:

- Define the patient cohort and map the current model of care.
- Identify broad stakeholders and engage key implementation participants.
- Identify the need for a new model of care, including establishing priority problems and goals.
- Define the new model of care, with stakeholder engagement and input.
- Plan the implementation strategy, including stakeholder education, evaluation plan, and anticipated outcomes.
- Initiate implementation, including providing education, developing the role, and developing policies and procedures to inform the role.
- Evaluate role outcomes early, and apply a longer term continuous strategy for evaluation.

Similarly, a Canadian physiotherapy advanced practitioner implementation study(182) reported an adaptation of the PEPPA framework and identified the key steps as engaging stakeholders; identifying barriers and enablers; developing appropriate education and role descriptions; and implementing an evaluation framework.

Using an implementation strategy may enable a systematic approach, however other literature reports the influence social integration may have on outcomes. In 2005, Jones(183) reported a systematic review and meta-synthesis of international specialist and advanced nursing practice roles in hospital settings and identified relationships with others and role ambiguity as highly influential to implementation success. Later, Sangster-Gormley and colleagues(184) conducted an integrative review of advanced practice nursing roles implementation in Canada and added that prior experience of the practitioner and role acceptance were also influential. The authors summarised that the concepts of intention (i.e., role definition), involvement (i.e., of others in the design and implementation), and acceptance were the key features to address for successful implementation. However, they further demonstrated that the complexity of different work and social contexts imply that addressing these concepts as a strategy for advanced practice implementation may require a varied approach.(185) A ten-year longitudinal study of a consultant radiographer framework in the UK has also highlighted that situational flexibility is required for successful implementation of an advanced role.(186)

2.6 Conclusion

The radiation therapy literature reviewed in this chapter have primarily explored the feasibility of RTAP implementation, with some exploration of perceived need and stakeholder engagement, as well as reports of early outcomes after implementation. However, there is a lack of evidence demonstrating a systematic implementation strategy underpinned by data, or evidence of longer-term outcomes. Only one paper reports a larger scale systematic approach to RTAP implementation,(107) but as a summary report that acknowledges the challenges collating aggregate outcomes data across unique clinical roles and environments, transferability to other services may not be always appropriate or achievable. Furthermore, although social integration has been acknowledged as a potential issue in some of the feasibility papers, none of the reported studies have explored this factor in practice. Reports from other health professions have clearly identified the gains to be had using a systematic approach to implementation, while concurrently acknowledging and

addressing features of social understanding and acceptance that are context dependent. If RTAP implementation is going to be successful in Australia, arguably there is a need to take a similar strategic approach. These findings will be explored further in Chapter 5, where the results of this study will be integrated with the literature review.

This literature review has further reinforced the need for additional research in this area, to inform the systematic implementation of radiation therapy advanced practice and address the challenges identified in Chapter 1. The next chapter will explain in detail the research paradigm underpinning this study and the research methods used.

Chapter 3 Research Methodology, Aim and Methods

3.1 Introduction

This chapter provides an account of how the research methods I worked with were implemented within a non-positivist methodological framework to illuminate the complexity of human interaction within a socially constructed workplace. The research aim, study design, and data collection methods introduced in Chapter 1 are further explained, with elaboration of the methodological congruence achieved throughout the research process. Analytic methods and strategies supporting research quality are also discussed. A published paper analysing the novel video-enabled online focus group method applied in this research is included in this chapter.

3.2 Research Paradigm

The operationalisation of radiation therapy practice is shaped by the social context of the workplace and the intentions, perceptions and values of the actors involved. To unravel the nature of the implementation of advanced practitioners within this context, this research has been situated within a non-positivist world view. Approaching a study with a non-positivist world view facilitates understanding of “the complex world of lived experience from the point of view of those who live it.”(162 p221) This position aligns with the epistemological standpoint that there is not an objective truth waiting to be discovered, but that meaning is constructed and co-constructed, sustained and modified, within a social context.(162,187-189) The aim of this type of inquiry is not to predict human behaviour nor generalise findings across contexts; rather its focus is upon understanding human action within particular culturally defined social contexts.(189) Traditions associated with a non-positivist position vary between scholars (i.e., constructionist,(187) constructivist,(189-191) and interpretivist(162)), however each is consistent in philosophical focus towards individual and socially constructed meaning within a particular context. In concordance with Schwandt’s(162) position that each tradition shares “a common intellectual heritage,”(p222) the term ‘interpretivist’ will be used to describe the theoretical paradigm that informs this research.

The interpretivist theoretical paradigm acknowledges the importance of the social context in shaping the interpretation of meaning by those who interact within that context, both the participants who reside there and the researcher engaging with them.(162) In accordance with an interpretivist approach, this research was designed to explore the 'lived experiences' of the professionals who create the radiation therapy social context, and who may be directly impacted by and influence decisions regarding the implementation of radiation therapy advanced practice: namely the RT, RO, ROMP, and RTAP.

Alignment of the overarching theoretical paradigm, or epistemological standpoint, and the theoretical framework through which the research methodology and data are viewed is important to better enable quality processes in data collection and interpretation.(167,187,189) Accordingly, the theoretical perspective selected as most appropriate to make explicit the social context of the radiation therapy environment within which RTAP operate was symbolic interactionism. Symbolic interactionism emphasises the crucial role played by language, human agency and community in shaping our social reality and acknowledges the temporal and evolving nature of social life.(161-163,187) The key premises of symbolic interactionism – that actions arise from interpretive meaning of objects, language, and social interactions - align with the overarching interpretivist paradigm(162,187) and enable a suitable lens to view the radiation therapy context within which advanced practice is implemented. This is achieved through data collection processes and interpretation of findings that allow openness to participant expressed meaning. Further congruence is supported by the selection of constructivist grounded theory as the methodological approach within this research, which has evolved from the symbolic interactionist sociological perspective.(161) Given I had an interest in exploring the social and cultural influences of advanced practice implementation in addition to the practical, the use of an interpretivist position with a symbolic interactionist lens was perceived to align with the intention of this research.

3.3 Research Methodology

Grounded theory was first described by Glaser and Strauss in the 1960s as a method to generate a theory emergent from the data, to provide “modes of conceptualisation for describing and explaining”(192 p3) what is occurring in an area or study. The authors defined methods to engage in inductive abstract theory generation where theory is discovered within data, as opposed to deductive hypothesis testing where data are gathered specifically to prove or disprove a proposed theory. Although the intent of classic grounded theory was to move away from positivist approaches to sociological research, the original Glaser and Strauss proposition and later publications by Glaser have been criticised as not offering a clear philosophical position(161,167,193,194) and some authors have suggested continued alignment with a realist paradigm.(195) This has arguably influenced the evolution of alternate grounded theory methodologies by several key researchers, including Strauss himself.(168,196,197) According to Charmaz,(161) grounded theory variants share “helpful strategies for collecting, managing, and analysing qualitative data”(p15) however differ in underlying paradigmatic assumptions. Of the differing approaches, constructivist grounded theory as described by Charmaz(161,198) was selected for this study to achieve methodological congruence in the pursuit of the research aim, as it accorded with the position that the social world is constructed in the context of and embedded within the cultural norms and structures of social life.

Constructivist grounded theory acknowledges and clearly aligns with symbolic interactionist and interpretivist perspectives in relation to socially derived meaning and actions,(161) and is concordant with a research intent to make visible participant perceptions and experiences.(199) Although some authors(199) suggest a constructivist grounded theory approach “in no way correspond[s] to what we consider the core aspects of constructivism in general,”(p50) Charmaz(161) argues the defining term was selected to acknowledge the contrast to traditional grounded theory’s objectivist stance. Constructivist grounded theory acknowledges that social reality and personal understanding are constructed by the study participants as they are relayed to the researcher, and that the research act itself influences the constructed meaning.(161,167,198) The constructivist grounded theory approach

is of relevance to this research as it provides an opportunity to uncover an explanation of the implementation of radiation therapy advanced practice in the social context of the workplace according to the perspectives of individuals involved.(190,200,201) In addition, constructivist grounded theory acknowledges that the researcher's interpretation of participant reality and meaning is also a construction, hence reflexivity is important to sustain research integrity.(161,167) This is particularly pertinent given my many years of engagement in radiation therapy advanced practice initiatives. In summary, constructivist grounded theory was perceived to be a natural fit to explore the social meaning associated with advanced practice implementation, as well as a means to actively acknowledge and manage my own professional history.

3.4 Methodological Congruence

It is acknowledged that the ontological and epistemological position within which the researcher interprets the social world and its reality can have an impact on the research process.(195,202-204) As proposed by Crotty,(187) a clearly aligned framework of theoretical paradigm, theoretical lens and methodology should be utilised to inform the research aims, data collection and analytic processes to ensure credibility and veracity of the findings. Figure 3.1 makes explicit the close alignment between the research paradigm, theoretical perspective, methodology, and methods, to demonstrate how methodological congruence was attained within this study.

3.5 Research Aim and Strategy

In keeping with the tenets of a constructivist grounded theory methodology, the inquiry was initially given direction through the following research aim:

To understand the influencing factors shaping the implementation and process of radiation therapy advanced practice in Australia.

The openness of the aim was intentionally framed to avoid any preconceived hypothesis or conjecture as to what may be occurring in the study area, and to allow participant experiences and processes to

inform the research outcome.(161,167,168,198) Equally, the use of the words ‘influencing factors’ aligns with the symbolic interactionist assumption that people respond to action-interaction, and the meaning that action has to them: ‘influencing factors’ in itself indicates the stimulation of a process and a response action.(161,163)

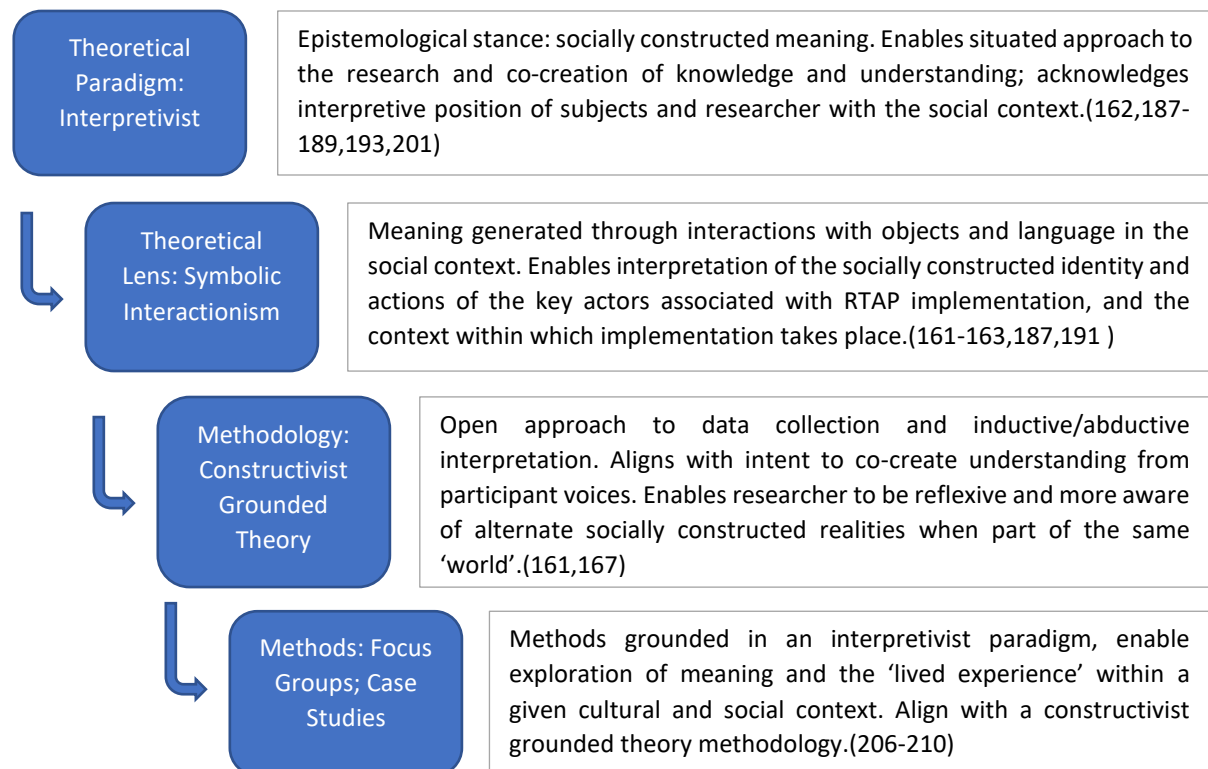


Figure 3.1: Diagram of methodological congruence.

In addition to a research aim that enabled an openness towards the interpretation of participant experiences, guiding questions were defined to help structure the collection of data. It has been suggested that qualitative research questions in general should be tentative, and open to modification as the research process progresses.(211) As a result, guiding questions were designed to frame the exploration of the context and construct of radiation therapy advanced practice and RTAP within and between the participant professions; within the individual workplace; and across the national radiation therapy landscape. These guiding questions also assisted me to maintain an openness

towards the research process despite being an 'insider' of the radiation therapy profession and radiation therapy advanced practice proponent. The guiding questions that were used are:

G1: What are the perceptions and assumptions surrounding radiation therapy advanced practice?

G2: What are the perceptions and assumptions surrounding radiation therapy advanced practitioners?

G3: What are the perceived factors influencing the implementation of radiation therapy advanced practitioners?

G4: What is the lived experience relating to the implementation and actions of radiation therapy advanced practitioners?

The research strategy included two phases to fulfil the research aim:

- Phase 1: National online focus groups that included RT, RO, and ROMP. Self-reported RTAP also participated as a subset of the RT. Phase 1 was informed by guiding questions G1, G2, and G3. The preliminary findings of Phase 1 informed the direction and data collection strategy within Phase 2.
- Phase 2: Purposively selected radiation therapy centre case studies that represented alternate stages of advanced practice implementation. Processes were informed by Phase 1 findings, and all guiding questions. Data collection within each case study site included participant interviews and interprofessional observation with RT, RO, ROMP, and contextually described RTAP, and radiation therapy advanced practice associated document review. Additionally, in line with an iterative constructivist grounded theory methodology, data collection methods (i.e., interview questions and subjects) were modifiable within and between each case study site, informed by a process of constant comparison between data and tenets of theoretical sampling.(161,167,198)

A pictorial representation of how data collection Phases were operationalised sequentially and interactively to meet the research aim is shown in Figure 3.2. Each data collection Phase will be elaborated in later sections of this chapter, as will the data analysis strategy.

3.6 Ethical Approval Process

As required by the National Statement on Ethical Conduct in Human Research(212) and Australian Code for Responsible Conduct of Research(213) ethical approval was sought for each Phase of this research from the Monash University Human Research Ethics Committee (MUHREC). Furthermore, selected case study sites required additional approval with locally based ethical review and governance boards. The ethical approval process for each Phase of the research is described in later sections of this chapter.

3.7 Phase 1: Focus Groups

The first phase of the research was six online focus groups conducted with RT, RO and ROMP. Self-described RTAP participated as a sub-set of the RT cohort but were not intentionally recruited. The objectives of the focus groups were to identify the perceptions and assumptions associated with radiation therapy advanced practice and RTAP, as well as to identify perceptions associated with the implementation of RTAP. Focus groups as a strategy was selected for the first phase to maximise data collection expediently, with greater depth of exploration intended during the second phase case studies. This section of the chapter will analyse the utilisation of focus groups within this study and includes a peer reviewed paper published in the journal *Qualitative Health Research*.

3.7.1 Background and Relevance

Focus groups as a data collection method allows for interaction between group participants, where data comes from the interaction and information shared by group members. It is suggested greater insight into an issue can be gained as meaning is generated as a result of the discourse and interaction between group members, allowing exploration of knowledge within a given cultural context.(206,207,214,215) Utilising focus groups within an interpretivist framework provides the

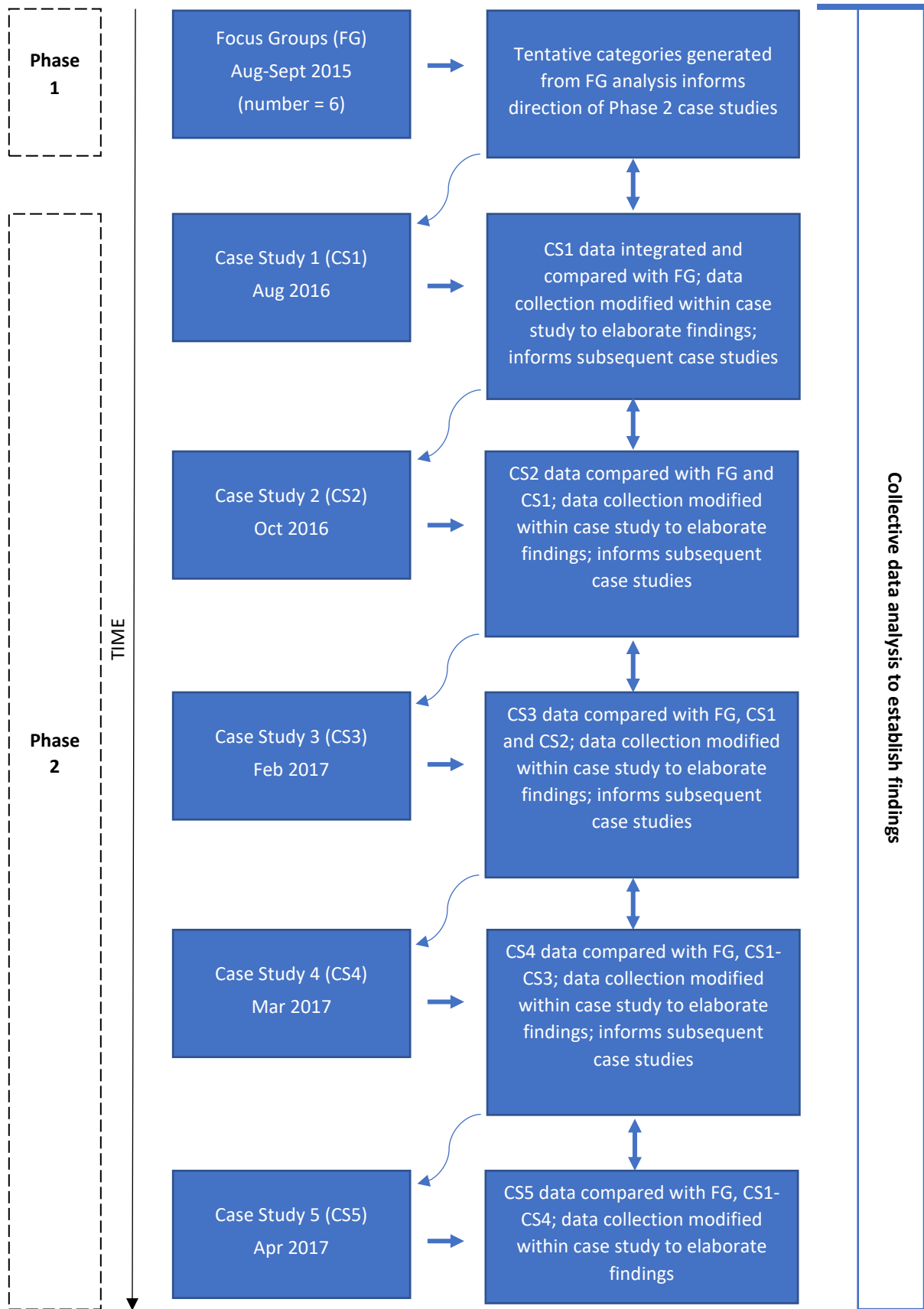


Figure 3.2: Sequential and interactive data collection and analysis processes.

opportunity “to observe how people engage in the process of collective sense-making: how views are constructed, expressed, defended and (sometimes) modified within the context of discussion and debate with others.”(215 p186) Clavering and McLaughlin argued focus groups are useful in health workforce based research as they can allow “exploration of deeper aspects of health professionals’ work, and the cultural and social dynamics within health care settings.”(205 p400) It has also been suggested focus groups can be useful as the first phase of a research study to guide data collection in later phases,(207,214,215) as has been the case in this research. Advocates for the use of focus groups traditionally recommend homogenous participants to avoid the potential for power dynamics.(207,215) In this study however, the inclusion of heterogeneous participants was indicated as it is more reflective of the real world multi-disciplinary dynamics within the radiation therapy workforce, and provides a more legitimate exploration of the group context.(205)

The use of focus groups was a relevant data collection method in the first phase of this research as it provided the opportunity to establish a baseline understanding of the perceptions associated with advanced practice from related radiation therapy health professionals, in line with the broad research aim. Additionally, it enabled a strategy of active minimisation and acknowledgement of my personal biases that may unwittingly influence the research direction. As a radiation therapy practitioner of many years working towards the implementation of radiation therapy advanced practice initiatives in academic and clinical arenas, it was a valid strategy to use focus group participant data to inform the second phase case studies strategy instead of emphasising my own pre-conceived ideas. This is closely aligned with the philosophy of a constructivist grounded theory methodology, where participant voice and the co-construction of meaning are intended to direct the research outcomes.(161)

3.7.2 Method: Video Enabled Online Focus Groups

Traditional face to face focus groups were considered prohibitive for this study given the dispersed location of potential participants: focus groups would have otherwise been confined to metropolitan

locations on the East Coast of Australia. As a result, online video-enabled focus groups were used to facilitate data collection from nationally representative RT, RO, and ROMP. Online text-based focus groups have been demonstrated as an effective mechanism to gather data from geographically distant participant populations,(216-218) however at the time of data collection the application of online video-supported focus groups were underreported in the literature.(219) Consequently, my experience of implementing the video enabled focus group method was published in a peer-reviewed paper in *Qualitative Health Research* (2018; 28(10): 1621-28. <https://doi.org/10.1177/1049732318782167>). It is acknowledged that since publication, particularly with Covid-19 limiting capacity to travel and meet physically, the application of video-supported focus groups appears likely to have become more prevalent.(220)

The publication that follows provides a description of the Phase 1 recruitment strategy, procedure, ethical considerations, and outcome. In addition, an analysis of the video enabled focus group method is the core focus of the paper. To comply with journal copyright expectations, the accepted version of the publication has been reproduced here.

Title

Using online meeting software to facilitate geographically dispersed focus groups for health workforce research

Authors

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Abstract

Focus groups as a data collection method in qualitative research have been used for several decades with great effect. Recent developments in online mechanisms for communication have prompted several researchers to explore alternate means of facilitating focus group participation. However, much of the online focus group literature has explored the use of text based communication; there are few reports on the application of real-time online video enabled software. In this article, we seek to inform the growing use of online meeting software mediated focus groups by reporting and analysing its application within the context of a health workforce study amongst geographically dispersed radiation therapy professionals.

Key words

Online focus group; online research; qualitative methods; radiation therapist; advanced practice; health workforce redesign; grounded theory; Australia

Focus groups have been expansively reported as allowing exploration of an issue within a given cultural context, most traditionally with group interactions occurring in the same physical location (Kitzinger, 1995; Morgan & Krueger, 1993). The use of online internet based mechanisms to support the conduct of focus groups has been reported over the last decade, primarily through the application of text based chat room facilities to conduct focus groups to research sensitive issues or to capture

data from populations dispersed by geography (Fox, Morris, & Rumsey, 2007; Kenny & Duckett, 2005; Stewart & Williams, 2005; Synnot, Hill, Summers, & Taylor, 2014). More recently, expansion on the availability and stability of web-cam supported online interactions has provided the opportunity to facilitate focus group participation with physically distant subjects in a manner more closely aligned with traditional face to face focus groups (Tuttas, 2015). That being said, there are few reported studies that have utilised video software to support online focus group participation (Abrams, Wang, Song, & Galindo-Gonzalez, 2015; Kalmakis, Chandler, Roberts, & Leung, 2017; Kite & Phongsavan, 2017; Tuttas, 2015) and of these studies, only Tuttas (2015) and Abrams et al (2015) have provided analyses of an online video-enabled focus group method. The potential to use online mechanisms to support research activities is growing as the functionality and accessibility of internet technologies increases, hence it is important to contribute to the available evidence in this field.

Video enabled online focus groups were used as a data collection method for a qualitative research study to explore the factors influencing the national implementation of advanced practitioner radiation therapists within Australia. Radiation therapy professionals are geographically dispersed across the Australian continent, and conducting traditional in-person focus groups would have been more costly, confined to metropolitan areas, and may have impacted on participation opportunities. Equally, alternate methods to capture data from dispersed populations, such as online surveys, would not have provided the richness of data sought in line with the qualitative study objectives.

This article will report on the use of video enabled online focus groups conducted for a qualitative research study into the implementation of radiation therapy advanced practitioners in Australia. This article intends to add to the scarce literature on this topic, and provide an overview of the application, effectiveness and limitations of video enabled online focus groups in the context of a health workforce redesign research study. The perceptions of participants in relation to the effectiveness of this style of focus group method will also be explored.

Background

Workforce redesign in radiation therapy, in particular the implementation of radiation therapy advanced practitioners, has been a feature of international services for over a decade, but the impetus to change in Australia has been slower to eventuate despite the strategic importance (Radiation Oncology Tripartite Committee, 2012). The aim of the research study was to explore the influencing factors around the implementation of radiation therapy advanced practitioners according to the health workforce most impacted: namely radiation oncologists, radiation oncology medical physicists and radiation therapists.

Focus group methods have been demonstrated to provide valid research outcomes in a number of health professional studies, with both traditional (Coyle & Gill, 2017) and online chat based methods being reported (Kenny & Duckett, 2005). Clavering and McLaughlin (2007) argue focus groups are useful in health workforce based research as they can support exploration of “deeper aspects of health professionals’ work, and the cultural and social dynamics within health care settings” (Clavering & McLaughlin, 2007, p. 400). Traditional proponents of focus group methods recommend homogenous type participants to avoid the potential influence of power (Morgan & Krueger, 1993; Wilkinson, 1998), however the inclusion of heterogeneous participants in a health care study is indicated to be more representative of the multi-disciplinary dynamics within the health care workforce (Clavering & McLaughlin, 2007; Wright, Schneider-Kolsky, Jolly, & Baird, 2012).

Given the geographically dispersed nature of radiation therapy services across Australia and the small number of radiation therapy professionals relative to other health professions, the use of electronic means to enable broad participation in the research was desirable. Equally, radiation therapy professionals engage with computerised technologies as a part of their daily practice and have a history of familiarity with web conferencing and online communicative tools. As a result, video enabled online focus groups were selected as an appropriate means for data collection in the first stage of the study. However, given the lack of literature exemplifying such a method, the process was

developed and evaluated against traditional focus group methods, and participant perceptions were recorded as further validation.

Method

The study was approved by the Monash University Human Research Ethics Committee (MUHREC) in July 2015.

As little evidence was available to support the use of video enabled online focus groups at the time the study commenced, testing of software functionality was undertaken by the researcher (Kristie Matthews) prior to initiating data collection. The University provided two options for online meeting software, namely Go2Meeting™ and Zoom Video Communications®, which both met the storage and privacy requirements necessary to fulfil ethical expectations (Gaiser, 1997). The researcher tested the alternate software options prior to participant recruitment with volunteers excluded from the study. Testing revealed Zoom® as the more desirable option, as it enabled instant recording of both video and voice of participants; sound quality was stable despite multiple concurrent participants; the software was accessible via multiple platforms; and video and audio file storage was direct to the researcher computer immediately after the session.

Study participants were recruited via known professional networks, including radiation therapy service managers and professional bodies within Australia. Professions to be included in the study were radiation therapists, radiation oncologists and radiation oncology medical physicists, as all deliver complementary components of the radiation therapy care pathway, and therefore each are able to provide a perspective on workforce redesign initiatives. The recruitment email included a brief letter outlining the study objectives and the explanatory statement. Interested professionals were requested to respond to the researcher via email, at which point they were provided with the consent form, which were returned to the researcher via email if they chose to continue. Although it is recognised email communication for research purposes may have an associated privacy risk (British Psychological Society, 2017), this mechanism was approved by MUHREC as the topic under discussion

was not considered to be sensitive, and delivery was to a secure workplace email account with the capacity for immediate download of consent documents to a secure workplace computer. However, all participants were provided an alternate posting address if they chose to return hard copy consent forms in preference. Participants were also provided with an online survey link to collect basic demographic information – name, profession, and geographical location of workplace – and to indicate their preferred meeting time by day of the week, and time of day. The researcher maintained a spread sheet during recruitment to assist in the focus group allocation process, which were organised according to the availability of participants and to be professionally heterogeneous.

Once allocated to a focus group session, participants were provided with an information guide that included a digital link to the allocated video enabled online focus group, and a method to test the online meeting software functionality - that is, internet stability, vision and sound - on their local device with the researcher in the days preceding the allocated focus group. In addition, the guide provided an overview of the anticipated conduct of the focus group session, several links to technical support options, and information regarding the digital security of Zoom®. Participants were also reminded within the guide that their involvement was voluntary and that they could choose to withdraw from the study via email request at any time until data reporting.

Each focus group was moderated by the researcher, visible to the participants via web cam. Participants joined the focus group using desktop computers with webcams, video enabled mobile phones, or telephone. Participants using telephone access were able to concurrently view the video meeting, and resultantly the other participants and moderator, via a desktop computer. Although the Zoom® software recorded each focus group as a video file with audio and an audio file alone, a digital tape recorder was positioned next to the researcher during each focus group to record a back-up audio file. During each focus group, the departmental research assistant (RA) was on standby to provide technical support, and contact details of this individual were provided to the participants within the information guide. As recommended by others, the duration of each focus group was limited to one

hour to better enable participation during a working day (Williams, Clausen, Robertson, Peacock, & McPherson, 2012). Each focus group audio discussion was transcribed verbatim for analysis, with non-verbal responses integrated as observed on the video recording. Focus group transcripts were provided to participants for validation.

A private text based online chat room was created to provide participants the opportunity to continue the discussion asynchronously during the weeks following each focus group. This was established as a complementary data collection method in anticipation that one hour may not be adequate to explore all possible elements of the research topic, and given much of the online focus group literature reports text based methods. Alternate chat room providers were tested to determine which was the most accessible and functional, while equally meeting online security expectations and the capability to download a transcript of discussion. As a result, a private chat room using Chatzy® was established and an online link provided to each participant following the focus group period. Participation in the chat room was as a collective, and not defined by a particular focus group allocation, anticipating that this may encourage broader discussion within a larger group. The focus group questions were again presented to participants in text form within the chat room to stimulate further discussion.

An online survey using Qualtrics® was provided to all participants following the focus group period to measure their perceptions of the video enabled online focus group environment. The post-focus group survey tool presented a series of statements and requested participants indicate agreement to each on a four point scale (Strongly Disagree, Disagree, Agree, and Strongly Agree). Survey statements were developed to determine if the online environment provided an effective and accessible social environment for participants to freely converse. A free text response opportunity was also provided for further elaboration. Although this element did not directly inform the study on radiation therapy advanced practitioners, given the lack of literature relating to the conduct of video enabled online focus groups it was viewed as an important validation exercise.

Results

Nineteen health professionals responded to the recruitment email, including radiation therapists, radiation oncologists, and radiation oncology medical physicists. Of these, sixteen completed and returned the consent form, and fourteen participated in the focus groups. Participants were allocated to focus groups to best suit their availability indicated in the demographic survey, taking into account time zone differences across Australia.

Six focus groups were facilitated between August-September 2015. There was a high rate of attrition with each allocated focus group, and although four to six participants were invited to each session, actual participant numbers were small - four groups had two participants, and two groups had three. One participant also experienced a technical issue relating to local internet instability in the opening minutes of a focus group and was required to reallocate to a later session. Only five participants chose to test the functionality of the online meeting software with the researcher prior to their allocated session.

Participants accessed their focus group via a desktop computer with web-cam or video enabled phone, or telephone if they did not have access to a video supporting device. The Zoom© software provided accurate recording of video and audio, which was verified by an independent voice recorder, and was stable throughout the focus groups. The RA was available offline for each focus group, but was not contacted by participants during the focus group period.

Only two of fourteen focus group participants accessed the private chat room established after the focus group sessions. According to the chat room transcript, the two participants accessed the chat room three weeks apart, and neither added any contribution. It could perhaps be assumed that the lack of engagement indicates a majority of participants perceived the focus group provided adequate opportunity to share ideas relating to the research topic.

Nine of the fourteen focus group participants responded to the post-focus group online survey (64% response rate). Of the nine respondents, only one had not participated in some form of focus group in the past. Descriptive results have been provided in Table 1 and Table 2. Although five respondents (56%) responded positively (agree/strongly agree) to the statement *'I felt uncertain if an online focus group would work for me'*, 100% agreement was achieved to statements relating to the accessibility of the online focus group in geography and time; capacity to share ideas with others; and the role of the moderator in facilitating the online focus group. Conversely, four respondents (44%) indicated disagreement to the statement *'Conversation flowed as easily as it would have in a face to face discussion'*.

Focus group data was analysed using a grounded theory approach (Charmaz, 2014), and a preliminary process defining the factors influencing the implementation of radiation therapy advanced practice was generated. Further elaboration of the results of this research will be reported elsewhere.

	<i>Response</i>	<i>Number of Participants</i>
Previous Focus Group Participation	Face to Face	4
	Online	4
	None	1
Mechanism used to participate	Telephone only	1
	Telephone and computer	2
	Computer with webcam	5
	Mobile phone/tablet with webcam	1

Table 1: Post-focus group survey results: participant prior focus group experience and mechanism used in current study.

<i>Statement</i>	<i>% Agreement</i>
SOCIAL ENGAGEMENT	
I was able to readily express my ideas during the focus group	100
I felt engaged with the other participants	89
Conversation flowed as easily as it would have in a face to face discussion	56
I felt comfortable communicating in an online environment with people I may not have met before	100
I found it difficult to interact with the other participants in an online environment	22
I felt inhibited being able to express my true opinions during the focus group	11
ACCESSIBILITY	
Accessing the Zoom meeting link was easy	100
I was more able to participate using an online mechanism than if it was a face to face discussion	33
Offering a focus group time to suit my personal schedule made participation easy	100
I volunteered for the focus group because it was facilitated online	67
ONLINE PROCESS	
Communication was more difficult than it would have been in a face to face meeting	56
The moderator was able to keep discussion on track in an online environment	100
I was able to visualise the other participants easily	67
I felt uncertain if an online focus group would work for me	56

Table 2: Post-focus group survey results: participant responses to survey statements. Percentage agreement (agree or strongly agree) presented.

Discussion

The use of video enabled online focus groups provided the opportunity to meet the requirement of this research study in gathering data from geographically dispersed participants. The following

discussion will explore each of the elements required to effectively facilitate a video enabled online focus group, and contrast to both online text based and traditional face-to-face focus groups.

Accessibility

Much of the available literature relating to online, internet mediated mechanisms to support focus group methods describe the use of text based facilities as opposed to video based (Campbell et al., 2001; Fox et al., 2007; Kenny & Duckett, 2005; Synnot et al., 2014; Tates et al., 2009). However, parallels can be drawn in relation to the purpose of using online mechanisms, in contrast to traditional face to face approaches. Radiation therapy professionals are geographically dispersed across Australia, and using online mechanisms to investigate national perceptions around radiation therapy advanced practitioners was essential to obtain data in a more timely and cost effective manner. Equally, reflecting on the response rate of participants where no participant worked in the same radiation therapy service as another participant, providing an online mechanism allowed a broader range of interested individuals to discuss the topic - this may not have been possible even if State based metropolitan traditional face-to-face sessions were offered as an alternative. In addition, providing online accessibility to the focus group allowed the inclusion of regionally based participants who would otherwise have been hours from the nearest metropolitan service. The focus groups were able to be completed within a one-hour time period, which could be achieved during the working hours of the health professional without the need for additional travel time, and telephone connection was an available option for those without video capability. The post-focus group survey results indicated participants supported the ready accessibility of the online meeting environment to facilitate their involvement in the research.

Software Capability

Testing of the software used for the video enabled focus groups was important to validate the accessibility, stability, and recording capability of the software. Equally, confirming the privacy of the software was essential to comply with University ethics expectations, to ensure any access to each

focus group could only be gained by consenting participants and that any recorded data was saved locally and not with a third-party. Such testing may or may not be required for an online text based focus group if University based servers are used (Fox et al., 2007). The software provided the option of recording each focus group with both video and audio, and audio only files, saved immediately to the researcher computer. This provided the opportunity to readily document a transcript of each focus group from the audio file, with the capacity to interject observed non-verbal behaviours from the video and audio recording to complement data analysis.

Participation

Focus group allocation was determined by the availability of participants according to preferences expressed in the demographic survey and to account for time zone differences. This is in contrast to traditional focus groups where participation is generally at a fixed time and location determined by the researcher, but is perhaps not as convenient as an online text based focus group which can be facilitated for a longer period of time. Focus group allocation according to participant professional role was considered secondarily, to facilitate heterogeneous discussions to enable the collective construction of meaning of radiation therapy advanced practitioner implementation in a way that reflects the real-work environment (Clavering & McLaughlin, 2007; Wright et al., 2012). Heterogeneous participation was able to be achieved in four of the six focus groups, although the two homogenous groups were as a result of participant attrition as opposed to planning. Radiation therapy professionals are small in number when compared to other health fields, and there was a risk during each focus group that participants may know each other (Parker & Tritter, 2006), even though no two participants were employed by the same clinical service. Any prior relationship between participants was not perceived to have a likely impact on the data given the non-sensitive topic, however the possibility of this occurring was nonetheless disclosed prior to consent. Ultimately, only one focus group included two radiation therapist participants who knew each other prior, one of which was the former student of the other. This did influence the conduct of the opening stages of the focus group

where the former student deferred to the former teacher in responding to questions, however this resolved through moderated discussion. It is likely this scenario impacted on the data quality during the initial stages of the focus group, however the resultant themes were comparable to other groups.

Attrition

There was a high rate of attrition for each allocated focus group, although most absent participants were reallocated to a subsequent session successfully. Attrition with online focus groups has been previously reported by other authors and is thought to be higher than that expected from traditional focus groups (Fox et al., 2007; Tuttas, 2015). It is feasible that allocating a focus group within the working day may have influenced the participant capacity to attend within the moment. Alternatively, perhaps using online media does not encourage the same degree of commitment as a traditional focus group may do where physical presence is required. Despite this, the small number of participants in each focus group did provide the opportunity for a fluid discussion, as has been validated by the post-survey comment from one participant that *“there were only a small number of participants in my focus group and I feel that this aided in the easy and open conversation that occurred”*. It is anticipated smaller group size may be inhibitive in research of a sensitive nature, or for a topic not of vested interest to the participants, therefore consideration should be given to the over-subscription of participants if using video enabled online focus groups as a data collection method.

Moderator Role

The role of the moderator in facilitating the focus group was similar to that expected of a traditional focus group (Stewart & Shamdasani, 2017). The moderator was able to facilitate a conversation around the research topic, while acknowledging non-verbal cues and pauses of participants to allow continuation of discussion, and co-ordinate turn taking in the situation where phone participants interjected (Bloor, Frankland, Thomas, & Robson, 2001; Morgan, 1997). The moderator was able to be seen by participants, although was consciously positioned a small distance from the webcam to indicate presence without being a part of the discussion as it progressed between participants (Bloor

et al., 2001; Parker & Tritter, 2006). Within the opening statement participants were verbally encouraged to discuss issues with each other rather than with the moderator, acknowledging that the use of online meeting software may naturally incline working professionals to engage more formally.

Given the small number of participants within each focus group, the moderator was readily able to facilitate an open and collective discussion. Equally, the moderator was professionally known to many participants, which may have influenced the ready engagement of the participants to the focus group process. Additionally, this was possibly aided by the professional nature of the topic under consideration as participants did not express negative emotions in response to the discussion, and any contrary views were explored in a collegiate manner.

It is anticipated that in research of a more sensitive nature, the use of video to bring participants together may test the role of the moderator if a participant becomes upset: it may be challenging to facilitate a return to topic with a distressed participant and empathetic others at a physical distance (Bloor et al., 2001). Additionally, traditional focus groups generally suggest a second observer to record proceedings and non-verbal cues (Morgan, 1997) - this was not required as the moderator was able to review the recorded video of each focus group to determine speaker order, and incorporate non-verbal cues into the transcript.

Sharing Ideas

The online meeting setting provided a digitally stable environment to conduct the focus groups in a manner simulating face to face conversation. Ten of the fourteen participants joined a focus group using a web cam via desktop computer or mobile phone, while four joined via phone without being visualised – either because they did not have ready access to a webcam, or through personal choice. The four phone participants were still able to visualise the moderator and other participants via the desktop computer link if they chose to do so. As indicated in the post-focus group survey results, all participants felt they were able to contribute their ideas despite the mode of connection, although it is recognised phone participants had to verbally interject at times given they were unable to indicate

non-verbally that they had a contribution to make. However, although the smaller group sizes were unintentional, this did allow for conversational turn-taking, and ready apology was offered in those situations when two participants inadvertently did try to speak at the same time. Equally, the nature of the topic under discussion, and likely personal professional interest of the participants who volunteered, potentially influenced the willingness to collectively share ideas despite any constraints imposed by the method (Parker & Tritter, 2006).

The fluid contribution of ideas from participants was readily supported by the high sound quality of the software. Unlike circumstances reported by other authors (Kite & Phongsavan, 2017; Tuttas, 2015), microphones were able to be kept on at all times without echo, and phone based participant interjection occurred with no deterioration in overall sound quality or participation. This was likely an outcome of the smaller focus group size, and it is not known that if a greater number of participants were present the sound quality may deteriorate (Tuttas, 2015). The chat room was established as a complementary opportunity for discussion following each focus group, however only two participants logged in and did not leave any comments – it was not perceived to be of value in this study. Overall, it appears the video enabled focus group provided the opportunity for a natural flow of ideas, similar to that achieved in a traditional focus group. This is in contrast to an online text based focus group where participant contributions can be considered and edited more readily, and non-verbal cues if not simulated by text are absent.

Data Richness

Within qualitative research, the data collection method selected is only useful when it provides rich data in response to the research question (Abrams et al., 2015). Gathering rich data is the foundation for effective analysis with a grounded theory study (Charmaz, 2014), and in relation to focus groups, where the objective is the collective construction of meaning, this is best enabled when social dynamics support interactive discussion (Parker & Tritter, 2006). This was achieved across the six video enabled online focus groups as, although numbers were small, participants seemingly engaged

with each other in a collegiate way while discussing the topic of interest. This is evidenced by audio and video recordings interspersed with laughter, nods and shakes of the head, and interjected verbal affirmation when another group member is speaking. Furthermore, comments from participants during a focus group involving only two participants such as *“do you feel like that too? Oh, good, it’s so nice (both laugh)”* and *“you know it’s actually nice to talk to someone else”* indicate that shared understanding was able to be developed regardless of the small group size. Equally, with three primary open questions and little prompting from the moderator, discussion between participants continued for the full hour in all but one group. As a result, it is proposed that the video enabled online environment more closely aligns with traditional focus groups in the generation of shared meaning, although some authors suggest data may be richer with the greater informality of the online environment (Stewart & Shamdasani, 2017). It is suggested the online video environment in turn may encourage greater interaction than text based online focus groups, where elaboration of shared understanding may be more prohibited (Abrams et al., 2015).

Conclusion

Using online meeting software to facilitate focus groups has enabled the effective participation of a dispersed population of health professionals than would have been possible using traditional face to face methods. Although it is acknowledged that the total number of participants within the study is small, the online medium broadened the capacity of the research team to allow national multi-disciplinary participation, which could only enrich the shared understanding generated by participants. Although there were challenges with participant attrition, as appears common to online focus groups, the research has effectively resulted in a preliminary framework of the factors influencing the implementation of radiation therapy advanced practice, as intended. Second stage data from case study observations and interviews have further enriched the framework, adding depth to codes and categories and validating the focus group outcomes. As a result, it is proposed that video enabled online focus groups can provide a useful mechanism for research in geographically dispersed

populations when investigating multi-disciplinary workforce issues. Equally, the outcomes of this study imply the potential application of video enabled online focus groups for health and education research where participants are remote or unable to travel. However, further research is necessary to validate the applicability of the method across a broader range of topic areas, in particular those that may be considered sensitive.

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3.7.2.1 Data Collection Strategy

Participants were provided with a participant guide (see example Appendix H) prior to the allocated focus group, which included necessary details to access the online focus group as well as a platform testing opportunity prior to the session. A moderator's guide was developed to inform the consistent conduct of each session, in relation to introductory material and the questions to be asked. The three key questions and prompts were phrased to inform the research aim aided by the guiding questions. Additionally, in line with a constructivist grounded theory methodology, questions were open ended to enable participant discussion to inform the outcome. Following each focus group, participants were emailed a document enabling access to Chatzy (see Appendix I), the online chat room intended to collect additional data associated with the topic of interest, and a link to the anonymous online survey (see Appendix J) to evaluate their focus group experience.

As described in the publication, 19 professionals responded to the recruitment email. 16 provided subsequent consent, and 14 participated in a focus group session. Table 3.1 provides a summary of participation in each session. A cross-representation of practitioners from all Australian States except the Northern Territory was achieved within the focus groups. However, this has not been clearly defined in the table to preserve the anonymity of those from smaller regions.

Date	Participants by professional role and position		
5 th Aug 2015	RT	ROMP-Man	
17 th Aug 2015	RT-AP	RT-Man	ROMP
25 th Aug 2015	RT-AP	RT-AP	
24 th Aug 2015	RT	ROMP	
4 th Sept 2015	RT	RT	
18 th Sept 2015	RT-Man	RO-Man	ROMP

Table 3.1: Focus group data collection summary. RT: Radiation Therapist; RO: Radiation Oncologist; ROMP: Radiation Oncology Medical Physicist; Man: Manager; AP: Advanced Practitioner (i.e., self-identified).

3.7.3 Ethical Considerations

Ethical approval was granted from MUHREC (CF15/2627 – 2015001077) in July 2015 (see approval letter Appendix B). Participants were recruited to the study via a recruitment email (see Appendix C) including an explanatory statement clearly describing the objectives of the research and processes involved in participation, as well as ethical considerations (See Appendix D). Interested participants emailed in reply and were provided with a consent form (see Appendix E) with covering email outlining requirements for return (see Appendix C). Consented participants were emailed an online demographic survey to complete (see Appendix F). Ethical considerations associated with the study were additionally reinforced verbally with participants in the opening statement of each focus group (see moderators guide, Appendix G).

Storage of all study documentation and data is on a password protected computer, with back up to a secure Monash University server. Paper copy study documents and consent forms are stored in a secure office. All data is stored electronically only. Data storage is for a period of five years after the end of the study, as required by Monash University policies and in accordance with Australian Code for the Responsible Conduct of Research.(213)

Confidentiality within focus group methods can be challenging as group members are introduced to each other for the period of the focus group, and given the small professional field, may interact again in future.(221) However, given the non-sensitive nature of the topic under discussion, confidentiality was addressed with participants via open disclosure within the explanatory statement, and expectations reinforced verbally via the moderators guide. Participants were provided with a coded identity in written data transcripts prior to transcript validation, and for all data analysis. In addition, the online survey to evaluate the video enabled online focus group experience was anonymous.

3.7.4 Limitations

Despite the usefulness of focus groups as a data collection strategy in the first phase of this research, the process did have some limitations. As discussed in the publication, attrition was high with each

allocated focus group, and hence each group size was limited to two or three people. It is not known if a larger group size would have contributed further to data richness, however, given the intent of the focus group phase was to inform the larger volume of contextual data collection during the case studies phase, this was not perceived to be limiting to data quality. Additionally, many participants were perceived to have an existing professional or personal interest in radiation therapy advanced practice, as indicated by statements such as *'whatever we can do to get it up and running,' (FG5P2RT)* and *'there's nothing about it that doesn't make sense.'* (FG2P1MP) This may have introduced a natural bias in the data, whereby participants were naturally inclined towards the implementation of RTAP, and group discussion did not imply at any stage that advanced practice should not be pursued. However, although perceptions of the value of radiation therapy advanced practice were primarily positive, discussion around personal experiences and factors associated with achieving RTAP implementation were more balanced. Additionally, the case studies phase provided the opportunity to explore the key codes and categories elucidated from the focus groups in greater contextual depth.

3.8 Phase 2: Case Studies

The second phase of this research used a multiple site case study approach to gain a deeper understanding of radiation therapy advanced practice within the context of the radiation therapy workplace. Five case study sites were accessed for two to three days to collect data from RT, RO, ROMP, and contextually described RTAP via interviews, interprofessional observation, and document review. Reflective field notes were also recorded as memos. The objective of the case studies phase was to further extend the understanding gained via the focus groups phase by exploring the lived experience of radiation therapy advanced practice: Charmaz(161) suggests the best way to explore social processes is in the actual setting, where study participant actions and processes can be observed in context. This section will provide an analysis of the case study method utilised in this research.

3.8.1 Background and Relevance

Robert Stake,(210) an early proponent of the method in non-positivist research, claimed an appropriately structured case study can support the aim of “understanding, extension of experience, and increase in conviction that which is known,”(p6) and additionally is compatible with an interpretivist research inquiry.(208,209) A case study can reveal individual perceptions and interpretations, as well as shared social processes and response actions related to the lived problem under investigation(190,222): this is congruent with the symbolic interactionist and constructivist grounded theory orientations within this study. In contrast, although popular in the reported literature, case study methods suggested by Yin(223) require a priori theory and are more post-positivist in approach,(209) hence have not been emphasised in this research.

Anthony and Jack(208) suggested that diverse usage of the word ‘case study’ to define the research methodology, the research method, or the research output has led to a degree of ambiguity in the reported literature. As the objective of this research was to understand the perceptions and experiences of RTAP within practice in accordance with the research aim, I have applied ‘case study’ to mean the “bounded system”(210 p7) within which is the context of inquiry.(190,223-225) The bounded system in this research was the radiation therapy centre where the study participants were working, and radiation therapy advanced practice implementation and processes may be in action.

Each individual radiation therapy centre was a single contextual case study, but to gain a more complete understanding of the research aim within different contexts a ‘multicase’ research approach described by Stake(225) was applied. Multicase research involves the selection of multiple case study sites to be studied where broader contextual understanding is sought in response to the research aim. Within this approach, each individual case is studied in depth relative to the research area, intertwined with a collective study of all cases to enhance broader understanding of the myriad of contextual factors that may influence the research area in action.(225,226) It has been suggested a multicase approach may be a step towards a more generalizable understanding of the phenomena of

interest.(192) However, Stake(225) qualified that there can be tension between understanding the particulars of individual cases and seeking interrelatedness across different case contexts. Instead, the objective should be to view the cases as “multiply sequenced, multiply contextual, and functioning coincidentally, rather than as causally determined.”(225 p13) Stake further outlined the selection of cases should be assessed according to the relevance of each case to the research problem, and to assess if cases provide diversity of context and complexity. Each case may be bound to the research problem in a different way, and do not all need to be equivalent: the key objective is “to examine how the program or phenomenon performs in different environments.”(225 p23)

Within the context of this research, five Australian radiation therapy centres were purposively selected as case study sites. Cases were selected to provide the opportunity to observe similarities and diversity in their experiences of radiation therapy advanced practice to gain a broader understanding of contextual factors that may be influencing implementation and actions. Cases included both regional and metropolitan locations; from within public and private sectors; and where RTAP may or may not be currently functioning. In addition, the principles of theoretical sampling were applied to consider which sites would be most appropriate to further explore the tentative categories and processes revealed by the focus groups data.(161)

Data collection within each case study can involve multiple strategies “to obtain a holistic understanding of the phenomenon being researched.”(209 p1270) Multiple data sources are essential to gain a full understanding of the context of inquiry, and the choice of methods should be determined by what is relevant within the specific case.(208,222,223,225,227) Within this research, it was determined that legitimate data collection strategies to meet the research aim would include observation of interprofessional interactions, analysis of practice documents, and individual participant interviews. Additionally, reflective memos were recorded within field notes throughout the case study interactions. Each of these strategies will be further detailed in the next section.

Multicase study methods have been reported in research of a similar nature. Probst and Griffiths(228) used three radiation oncology services as case studies within their grounded theory investigation of radiation therapist job satisfaction in England. They concluded that the contrasting cases provided the opportunity to explore organisational differences that may be influencing the study area. The authors intentionally selected radiation therapy participants for interview within each of the case study sites that represented a range of time in the field, seniority, and work role to aid a broader understanding of the factors that may be influencing job satisfaction. Similarly, Khine(94) engaged with six radiation oncology case study sites in his doctoral work investigating the perceived impact of consultant radiation therapists within the NHS. Khine utilised an extensive range of data collection strategies within each case study including focus groups, semi-structured interviews with a variety of stakeholders, and document review. In a related field, Sangster-Gormley and colleagues(185) used a case study approach to explore the implementation of advanced nurse practitioners into three primary care services in Canada, and utilised interview and document review strategies to obtain data at each site. Each of these examples demonstrates the usefulness of a multicase study approach to explore health workforce issues.

3.8.2 Method: Multicase Study

This section outlines the method applied in the multicase study process within this research. Case selection and recruitment, participant recruitment, and data collection methods will be analysed. MUHREC ethics approval was granted in Feb 2016 (see Appendix K). Additional hospital-based ethics approval was required in some cases to allow on site data collection, which will be elaborated in a later section. A research protocol was documented for this phase of the research to clarify procedures across the multiple case study sites (see Appendix L). Additionally, a Victorian Medical Radiation Practitioner Education Trust (VMRPET) grant was awarded to financially support travel costs associated with case study data collection.

3.8.2.1 Case Selection and Recruitment

Case study sites were intentionally selected as being known instigators of radiation therapy advanced practice type initiatives. Sites were known either through earlier professional conference presentations or publications, or through my previous work in the development of advanced practice curricula. Selected case study sites varied in the perceived outcome of the implementation of any RTAP roles: sites had either implemented advanced practitioner type roles which had been sustained, or had implemented advanced practitioner type roles which had not been sustained, or had an interest to implement advanced practitioner type roles but had not managed to do so. It was pertinent to the research aim to explore why such variation may be apparent. As discussed, sites were also selected to be demographically varied in geographic and service delivery context. Each case study site was recruited via an email request to the radiation therapy centre manager, accompanied by the explanatory statement (see Appendices M and N). Managers agreeing to allow data collection on site were asked to return a letter of permission via email (see template Appendix O). As mentioned, in some cases additional local ethics review and approval was required before data collection could commence. Attendance at the site for data collection was arranged for a period of two to three days, at a time indicated to be most convenient to the radiation therapy manager at the site. All potential participants at each site were emailed a copy of the explanatory statement by the radiation therapy manager or research coordinator a few days prior to data collection commencing.

3.8.2.2 Participant Recruitment

Broadly, the individuals that may influence the implementation and process of radiation therapy advanced practice could include RT, RO, and ROMP. However, the nature of this research also recognises that advanced practice actions occur in the social context of each individual radiation therapy workplace selected as a case study site: perceptions within and across individuals from each professional role may vary depending on the situational context. As a result, identifying individual participants to recruit to the research within each case study site was dependent on the radiation therapy advanced practice role being performed, the interrelatedness between the RTAP and other

professions, as well as the stage of implementation within each local context. As such, targeted recruitment was initially aimed at the RTAP, the radiation therapy manager, and the RO working with the RTAP, as each would be able to contribute to the research aim. Additional senior managers from each role type were recruited as potential influencers of advanced practice initiatives. Furthermore, RO, RT, and ROMP interacting with the RTAP – either directly or experiencing the impacts of the RTAP actions – were recruited on site to further understand social processes and lived experience. Recruitment of participants was guided by the RTAP and radiation therapy manager while on location at each case study site to ensure contextual relevance, as well as theoretically sampled to further extend understanding as data collection within each site progressed. Regardless of the recruitment mechanism, each potential recruit was approached on a voluntary participation basis and consented following review of the explanatory statement prior to data collection. Written consent was obtained for individual interviews (see Appendix P), and verbal consent was sought in situations of interprofessional participant observation.

3.8.2.3 Data Collection Strategies

As mentioned previously, the primary data collection strategies included interviews, interprofessional observation, and document review. Reflective memos were also used as an active strategy to manage analytic insights during data collection procedures.

Interviews were conducted according to a broad interview guide (see Appendix Q) however the direction of discussion was modified to suit the nature of the advanced practice role and the professional role of the participant; to explore previously highlighted discussion points; to theoretically sample elements of the tentative codes and categories to date; and to further explicate any observed interactions. The three primary interview questions were open ended, and generally themed to align with the research aim and guiding questions. Additionally, prompts associated with each question were informed by the overarching categories identified during the focus group phase. Brief hand-written notes of main ideas and topics of interest were documented during each interview

to help guide each discussion as it happened, which were later typed and analysed. Interviews were also audio recorded, to be later transcribed verbatim for formal analysis. Reflective memos were hand-written at the completion of each interview, including reflections on the interview itself, preliminary analysis of key ideas and comparison to codes and categories, and noted comparisons with other cases or points for further investigation. These memos were later typed for further analysis.

Observation of interprofessional interaction between the RTAP and others was documented in hand-written field notes, with additional reflective memos documented following observation periods. Interprofessional in the context of this research was interpreted according to the dictionary definition as interactions “occurring between or involving two or more professions or professionals,”(229) and was not aligned to any particular interprofessional collaboration or education approach. Observation of interactions included formal and informal communication between the RTAP and other professionals within the context of the workplace, relating to any aspect of the work. Any interactions occurring in the presence of a patient were excluded from observation. As an insider to the profession, I actively positioned myself at a physical distance from all interactions and was conscious not to engage in the ‘professional talk’. Equally, maintaining a distance enabled a removal from the direct action and enhanced reflective observational insights. Observational descriptive field notes were documented informed by participant observation processes,(230) and included writing verbal interactions, non-verbal interactions and actions, and description of spaces. Reflections on and interpretation of observations in relation to the research objective and evolving analysis were interwoven with field notes. All hand-written field notes were later typed for analysis. Observations were only recorded at centres where locally defined RTAP activities were in action during the period of the researcher site visit.

Document review was directed towards any departmental RTAP position descriptions and associated advanced practice documentation provided by the radiation therapy manager. Document review in

this research was integrated with interview and observational findings to provide an additional source of insight of advanced practitioner expectations and actions within the case context.(161)

Finally, reflective memos of experiences and analytic insights were documented throughout each day, at the end of each day, and on completion of the case study visit period, to be later typed for analysis.

3.8.2.4 Summary of Cases

A breakdown of case study data collection is presented in Table 3.2 (overleaf). Case study site pseudonyms are applied for anonymity. The number of treatment units have been described as an indicator of departmental size – the greater the number of units, the greater number of working professionals and patient capacity. As noted, interprofessional observations were only feasible at centres where the RTAP was operational during the data collection period. Additionally, document review was only available at centres where documents were available.

3.8.3 Ethical Considerations

Ethical approval following low-risk review was granted by MUHREC in February 2016 (CF16/507 – 2016000247). Although the research involved entering a health service and observing practice, because the focus was entirely interprofessionally related and excluded any patient related interactions, low risk review was deemed appropriate by the ethics review committee. All research documentation associated with the case study phase described earlier was approved for use.

Two of the five case study sites accepted MUHREC approval without further need for local review. The remaining sites required local review procedures to be initiated in addition to MUHREC. As indicated in Table 3.2, one site required a supplementary low risk ethics review (see Appendix R); one site required a supplementary full ethics review with some editing to branding on study documentation (see Appendix S); and one site required an entirely new submission and review process, including identifying a local staff member as principal investigator and significant changes to the appearance of study documents (see Appendix T). The requirement for additional review was anticipated given entry into health services and interactions with health services' staff was being requested as part of the

study, however expectations of operational requirements for additional ethics review varied substantially between jurisdictions.

Case Site (pseudonyms)	Study Site Visit Dates	Centre Features	Ethics Requirements	Interview Participants	Inter-professional Observations	Document Review
Maple Radiotherapy Centre	17-19 Aug 2016	Metropolitan 4 Treatment Units Public provider	MUHREC + additional local full ethics review	RT-AP RT-Man RO-Man RO x 3 RT x 2	Yes	Yes
Elm Radiotherapy Centre	11-13 Oct 2016	Metropolitan 4 Treatment Units Public provider	MUHREC + additional local low risk ethics review	RT-AP x 3 RT-Man RO – Man RO RT ROMP	No	No
Oak Radiotherapy Centre	21-23 Feb 2017	Metropolitan 5 Treatment Units Public provider	New full ethics application and review	RT-AP x 4 RT-Man RO-Man RO RT x 4	Yes	Yes
Willow Radiotherapy Centre	15-16 Mar 2017	Regional 2 Treatment Units Public provider	MUHREC only	RT-AP x 3 RT – Man RO – Man RT x 2	No	No
Poplar Radiotherapy Centre	26-28 Apr 2017	Regional 2 Treatment Units Private provider	MUHREC only	RT-Man RO-Man RT x 3	No	No

Table 3.2: Case studies data collection summary. MUHREC: Monash University Human Research Ethics Committee; RT: Radiation Therapist; RO: Radiation Oncologist; ROMP: Radiation Oncology Medical Physicist; Man: Manager; AP: Advanced Practitioner (i.e., contextually identified, current or past).

Storage of all study documentation and data is on a password protected computer, with back up to a secure Monash University server. Paper copy study documents, hand-written field notes, and consent forms are stored in a secure office. All data are stored electronically only. Data storage is for a period

of five years after the end of the study, as required by Monash University policies and in accordance with Australian Code for the Responsible Conduct of Research.(213)

A professional transcription service recommended by Monash University was used to transcribe audio files to word documents. Audio files were transferred to the transcriber via a secure transfer process and were permanently deleted from the transcriber local storage following documentation. Any identifiers within data documents – interview transcripts, documented observations, and reflections - were recoded to anonymise clinical centres and participants prior to analysis.

The primary ethical consideration within and beyond each case study interaction has been the need to consciously separate my professional role as a RT from that of radiation therapy researcher. As a participant observer aiming for enculturation while embedded in practice,(230) being a RT made this transition easier even if I was not familiar with the specific centre, many of the participants, or workflow: I perceived I was accepted as an insider to their world. This was exhibited by social engagement in tea rooms, over coffee and drinks after work, and workplace related discussions being volunteered although not related to the research question. However, as the researcher within the site, I had to ensure that I remained true to ethical research principals. I found a frequent requirement to restate my role and purpose on the site, and to ensure appropriate understanding and consenting processes had been followed prior to conversations relating to the research topic commenced. Additionally, given the small size of the radiation therapy community, I have naturally crossed paths with some research participants in professional arenas since data collection. It was and continues to be ethically prudent that specific conversations about the research with these individuals are avoided outside of formal processes.

3.8.4 Limitations

It is acknowledged that a limitation of this phase of the research may have been the inadvertent preclusion of a case study site that could have been of value to the research aim. Case study sites were selected according to being professionally known to the researcher; that would be of perceived value

to achieving the research aim; and pragmatically to enable data collection within the limitations of the VMRPET funding grant. The sampling method cannot claim to achieve full representation of the potential cohort of centres with an interest in advanced practice, so generalisation of a national perspective will always be limited. However, this has been overtly addressed using the following strategies:

- Case study sites were intentionally selected to provide contextual breadth to meet the research aim.(225)
- Interviews and observations within each site were representative of the experience of RTAP within each site, and actively followed the grounded theory tenet of theoretical sampling both within and between each site.(161,167)
- Case study data has been collectively analysed with Phase 1 focus group data, enabling variance and repetition in concepts to be observed, and expanding the breadth of properties associated with the key categories.(161,231)

3.9 Analytic Strategy

In line with a constructivist grounded theory methodology and as highlighted in Figure 3.2, analysis throughout the research was integrative during, between, and after each data collection episode. This process has been fundamentally underpinned by the continual documentation of memos, by hand, audio or electronically, for later electronic filing in date order. Memo-writing is pivotal to grounded theory processes as a mechanism to record reflective ideas, observed patterns, preliminary codes, concepts and categories, and analytic linkages within and between data.(161) Writing memos can also assist the researcher to maintain an active reflexive approach towards analysis by recording assumptions, issues and concerns throughout the research process.(167) According to Charmaz,(161) writing memos supports continual analysis and can raise abstract thinking, and “creates an interactive space for conversing with yourself about your data, codes, ideas and hunches.”(p162) Writing memos records the analytic process and provides a trail of increasing conceptual and analytic thinking.

A commonality of grounded theory approaches is the process of moving from coding incidents within data, to developing broader reaching analytical categories representing the variation observed within the context of research.(167) Coding is an active process and fully integrated in the data, as emergent analytic insights lead the researcher to continually compare data in a non-linear fashion across the data set as a whole.(161) However, the intended outcome of each grounded theory approach does differ somewhat, arguably as a result of each underlying epistemological position. The traditional Glaser and Strauss(192) and later Strauss and Corbin(168,197) grounded theory approaches determine that an objective, contextually removed core category or theory is the end point required to define what is occurring in the research area of interest. Alternatively, a constructivist grounded theory approach is more focussed towards developing a contextual, theoretically abstract grounded theory that represents an interpretive understanding of what the research participants are experiencing.(161) As discussed earlier, this approach is more congruent with the interpretivist theoretical paradigm framing this research.

According to Charmaz,(161) the analytic process using a constructivist grounded theory methodology includes the following strategies:

- Initial coding of data, whereby processual codes are assigned to segments of data. Coding requires the researcher to question what is being observed in the data and describe an analytic code that is perceived to align with that observation. Charmaz proposes the use of gerunds as codes to maintain focus on process and action within the data, in line with a symbolic interactionist frame. In addition, a focus on action assists in an emergent understanding of the data, as opposed to applying pre-determined theoretical descriptors. It is suggested initial coding occurs 'line-by-line' with a focus on analysing each sentence and segment of data, to be thorough in critiquing the data. Initial coding of data does not necessarily happen sequentially: as new ideas and codes emerge, constant comparison occurs within and between data segments, participants, and contexts in an integrative

fashion. Integrated with the coding process, memos are used to describe the codes: what the code means, and within which context it applies, and under what circumstances.

- Focused coding follows as the process where initial codes are collapsed, synthesised, and redefined to build analytic focus, while remaining conceptually true to the data. Focused coding advances analytic and theoretical reach by comparing codes with data, refining codes to explain larger data segments, to move towards the raising of tentative categories. Focused coding means “using certain initial codes that [have] more theoretical reach, direction and centrality and treating them as the core of [the] nascent analysis.”(p141) The process is not linear, as analytic insights are continually compared across the data to fully develop the properties associated with each code. Again, reflective memos are used to continually record insights as they occur. Charmaz suggests focused coding enables the researcher to continually assess their own preconceptions as the participant voice remains central to the analytic process.
- As focused coding progresses, key categories become apparent as the most likely explanation of what may be occurring in the data. Categories are conceptually abstract descriptions that represent an understanding of the area of interest and emerge as a result of further synthesis of focussed codes. Categories “may subsume common themes and patterns in several codes”(p189) and may be fully described by several sub-categories of focused codes. Categories should be analytic and abstract, but simultaneously should remain true to explaining the data and be situated in the context of the study area. Memo writing provides a narrative form to the defined categories. Theoretical integration at this stage can help to increase abstraction and develop relationships between categories but should be informed by what fits the data rather than applied to the data.
- Categories and their sub-categories describe the process of participant experience in line with the research aim, and together form a substantive grounded theory representing the field of inquiry. The resultant grounded theory is described as a process, in line with a symbolic

interactionist lens, and may be represented diagrammatically. The grounded theory is situationally defined but may have analytic reach to other fields of study.

- As discussed, memo writing is a fundamental component of the analytic process and enables a continually documented narrative of the researcher integration with the data. Memo writing occurs spontaneously throughout the research process to advance thinking by immediately recording thoughts, reflections, and insights as they occur.

3.9.1 Managing the Data and Analytic Process

Data in this research included audio and video recordings of focus group interactions; audio recordings of interview interactions; de-identified electronic transcribed documents of focus groups and interviews; hand-written observational field notes and reflections that were transcribed electronically; and electronic RTAP position description documents. Data immersion⁽²³²⁾ techniques utilised a combination of listening to audio files, interacting with electronic documents, using QSR NVivo data management software, and creating hand-written concept maps. Data management in line with the analytic process will be further described along the research trajectory.

- Focus group audio files were transcribed electronically as Word documents, enabling immediate immersion in the data. Preliminary reflections and insights were recorded as memos in Word immediately after each focus group and during the transcription process. An electronic 'memo' folder was established, labelling each memo by date, type (i.e., reflection, code, category), and topic or idea. (See example memo Appendix U).
- As my first foray in using a constructivist grounded theory analytic process, focus group transcripts were initially analysed individually using a line-by-line approach in Word – see example Figure 3.3. Insights, reflections, codes, and comparisons were recorded as memos, and highlighted text in the transcript identified key ideas. Coding remained aligned to the data, and with a sensitivity towards symbolic interactionist ideas around interaction, action, and identity. Gerunds were used consistently to describe codes as a process. Audio files were

listened to several times to aid contextual insights. Reflective memos documented during and immediately after each focus group were also coded and compared with the transcript.

Focus group excerpt	Initial line-by-line coding
<p>FG3P1RT: Yeah, I mean I think the collaboration component is... I think part of... is the good thing about our, our job but it's also sometimes a barrier, (FG3P2RT: <i>murmurs agreement</i>) because unless there's a label attached to what an advanced practitioner is, like you said, like the palliative care advanced practitioner, in our daily lives people don't recognise those people in the workforce or within your own workplace unless there's a label that has been professionally attached to that, and it's currently not in our award structure (FG3P2RT: Yep) so that makes it difficult also for other professionals to have, to kind of, view that person as an advanced practitioner as well, so I think its... (FG3P2RT: Yeah, I would agree) yeah</p> <p>FG3P2RT: It's hard, I guess people probably think, you know, from someone in your position would sort of refer to you, I guess, as a resource person as opposed to an advanced practitioner, because that's, I think you know, from up here that's the way people would view it, 'yeah, you know lots', and that's, you know, when I have an issue I will go to that person because I know they have lots of information about it (FG3P1RT: Yeah, Yeah <i>laugh</i>), but don't sort of think of it beyond that to be honest with you, and I've had a couple of discussions with our radiation oncologist about advanced practice and what they see it as, and it gets very funny because they start worrying about their own roles and people taking over too much, and that kind of thing, and that's what, you know, I can definitely one of the barriers, and also within radiation therapists themselves they're quite cautious about what that actually entails</p>	<p>Collaborating can be a barrier Needing a label for advanced practitioner Not recognising RTAP unless there's a label Attaching a professional label to RTAP Not being part of the award <i>Making it difficult for others to see RTAP as legitimate without a label</i> Referring to a resource person Labelling as a resource person, Not labelling as an advanced practitioner Viewing it as 'you know lots' Going to the person who has lots of information Not thinking beyond that RO worrying about own roles RTs taking over too much Role disputes being a barrier RTs being quite cautious about RTAP</p>

Figure 3.3: Example of line-by-line analysis process using Word.

- A line-by-line initial coding approach was repeated using QSR NVivo data management software. I was comfortable using QSR NVivo to support data sorting and coding from other projects, however given this was the first application of grounded theory coding strategies it was not utilised until after I felt more confident in applying the techniques: I did not wish to inadvertently allow the computer software to limit analytic insights.(167,233) Coding of focus group transcripts was repeated in QSR NVivo and compared and verified against the coded focus group transcripts in Word. Any differences were considered and modified if necessary. Reflective memos were not recoded but used for sensitization and confirmation. Each focus group transcript was coded individually in QSR NVivo, then codes merged to observe links and patterns across the transcripts. Rather than using the memo function available in QSR

NVivo, memos were recorded in Word and filed as previously described. The properties of each code were described in QSR NVivo.

- Focused coding was initiated by reviewing codes and memos and sketching concept maps by hand to visualise how codes might be linked and to define a tentative process - see example in Figure 3.4. Using the concept map to sensitise thinking, coding continued in QSR NVivo, enabling further merging of codes within and across the six focus group transcripts to generate a preliminary tentative process. Further memos were recorded to describe the analytic process, including properties of focused codes, relationships between codes, and relationships between focus groups. The focused codes and resulting three preliminary categories helped inform the direction of the case study phase of the research.

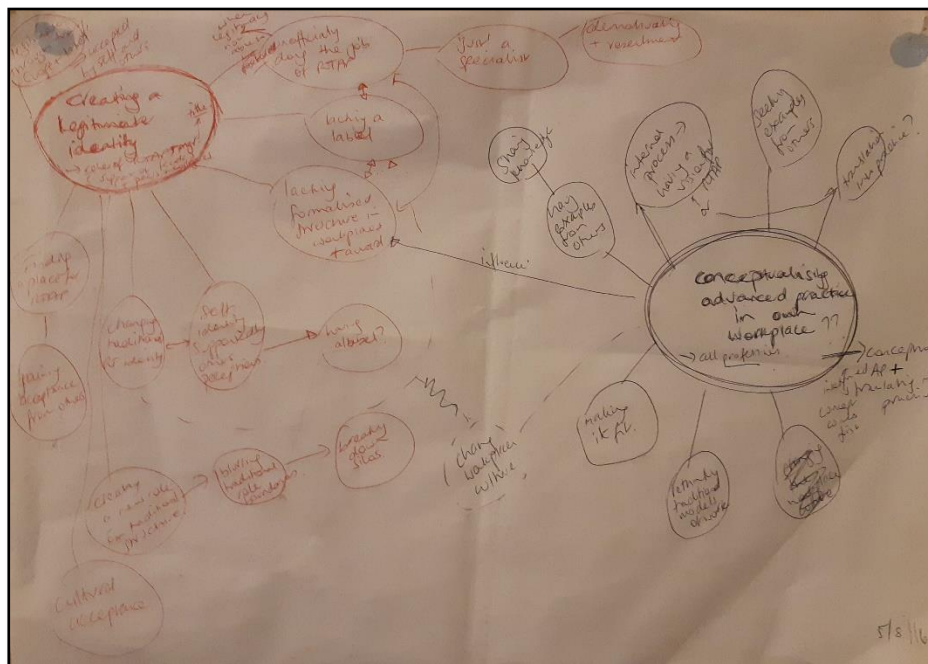


Figure 3.4: Example of a hand-written concept map generated during analysis.

- Initial coding of the case study data – interview transcripts, observational field notes, reflections, and RTAP position descriptions – occurred entirely in QSR NVivo. Rather than isolating cases, I was more confident now to manage the case study data collectively in the one coding file. This also enabled comparison of data from research participants across

different case study contexts more readily. The practicalities of the case study schedule meant that complete initial coding of each case prior to the next case was not possible, however listening to audio files and recording reflective insights as memos enabled continued sensitivity to the data throughout the data collection process.

- Initial coding to focussed coding occurred more fluidly during case study analysis, with merging of codes, reassigning of data to codes, and generation of tentative categories and sub-categories following as a natural transition. Focus group tentative categories, subcategories and data were revisited for merging and comparison. Memos were recorded to fully describe the properties of each focussed code, subcategory and tentative category, with excerpts of data used to exemplify each from across the data set. Theoretical integration was supported by reading of literature relating to uncertainty, professional identity development, identity transitions, and power, when such concepts were observed in the data. Analysing the data, reviewing and writing memos, and mapping relationships between codes and categories by hand and in QSR NVivo continued iteratively throughout. The result was fully developed conceptual categories that represented the data, and a processual, contextually situated grounded theory that met the research aim.

3.10 Quality Considerations

Applying established quantitative criteria to evaluate the quality of a qualitative study has been reported to be problematic, where positivist measures of validity, reliability and generalizability are not readily translated to research from a socially contextual setting.(190,195,234-237) Madill and colleagues(195) proposed that “by implication, all accounts, whether those of participants or researchers, are understood to be imbued with subjectivity and therefore not prima facie invalidated by conflicting with alternative perspectives.”(p19) Strategies to assess quality need to factor that the knowledge and interpretation of the researcher and the researched are socially situated.

Several authors have suggested alternate quality criteria and strategies more in line with a non-positivist epistemological position. The concept of 'trustworthiness' is often represented in the published literature(190,237) and has been described to include criteria of credibility, transferability, dependability, and confirmability.(234) Strategies to achieve such criteria have been described as prolonged engagement in the field(190,238); thick and rich description(190,238); disconfirming evidence, negative cases, and fair dealing (190,236,238); and closeness of the researcher to subjects.(190) The strategy of triangulation is not applied to confirm definitive outcomes using alternate research methods – which aligns with a positivist assumption of a single fixed reality - but instead is used to compare participant views from alternate contexts to reach a completeness in conceptual understanding.(195,235,236) Respondent validation or member checking is also proposed as a quality strategy,(190,234,239) but it can be challenging for a participant from a specific context to interpret the broader conceptual analysis.(235,236) Melia suggests if respondent validation is approached critically however, it can aid researcher reflection about the fit of the analysis across the breadth of the data.(235) Finally, researcher reflexivity is seen as a vital quality strategy to assess the way prior experience, biases and assumptions may have shaped the research process.(236)

Charmaz(161) proposes four quality criteria to be evaluated against a constructivist grounded theory study. These are now presented, with a discussion on how each criterion was applied to this research.

- *Credibility*: Credibility refers to familiarity with the data, data sufficiency, the merit of claims made against the data, and the systematic logic applied to data analysis to reach the theoretical outcome. The credibility of this research is demonstrated through the application of coding methods that are integrated with the data, and that are visible through documented memos. Memos have been recorded to make visible the analytic process throughout the research project. Claims that have been made are presented against participant voice, and 'in-vivo' codes used where applicable. Peer review has also been utilised as a strategy to achieve credibility, whereby samples of de-identified case study transcripts have been shared

with four experienced researchers.(190) This was not used as a strategy to verify coding as such, but in line with an interpretive paradigm to discuss and explore concepts viewed in the data as a way to enhance the analytic process. I would suggest the reflexive process also falls within this criterion, as the credibility of the researcher. Reflexivity has been achieved by recording memos of thought processes, assumptions, and challenges, and by staying true to the data during the analytic process. Additionally, acknowledging my professional position as a RT and how this has influenced my role as researcher and interactions with research participants is particularly vital to address any potential cognitive and emotional biases. Finally, as discussed in the previous chapter, methodological congruence is an important overarching strategy to form the basis of a credible qualitative research project.

- *Originality*: Originality refers to the social and theoretical significance of the research. This research is original and will present new understanding of the implementation of radiation therapy advanced practice. Furthermore, existing theoretical concepts have been explored alongside the findings where the data indicates it.
- *Resonance*: Resonance is apparent when categories portray the full range of experience and have resonance with the study participants. This has been achieved by actively staying true to the data during analysis, as well as engaging in theoretical sampling to collect the full range of experiences within and across the case study sites. The process of respondent validation as a resonance strategy was used during the focus groups phase, where transcripts were confirmed by participants. However, this was not deemed to be a useful exercise - participants implied it was not helpful to re-read the transcripts, and it did not add to the analytic process.(240) During the case studies phase, an alternate approach to respondent validation was utilised whereby tentative categories and the evolving analysis was openly discussed with the RTAP at each case study while on site. This discussion was recorded as a reflective memo and reviewed against the data and was felt to be of more value to the research process. Resonance has also been confirmed more broadly through presenting

tentative results at professional meetings and finding similarity of experiences across contexts and geography.

- *Usefulness*: Usefulness is achieved when the research provides a contribution to knowledge and understanding, and outcomes have reach. It is anticipated this research will further the understanding of radiation therapy advanced practice implementation in Australia, and it is hoped will have the potential to influence practice.

3.11 Conclusion

This chapter has elucidated the research paradigm and methodology used to inform this research. It has presented in detail how the study design and research methods supported investigation of the research aim and demonstrated congruence with the methodological approach. The analytic process has been described, and strategies to achieve a quality outcome discussed. The next chapter will present the results of the research.

Chapter 4 Results: A Constructivist Grounded Theory - ‘Navigating Uncertainty’

4.1 Introduction

The aim of this research was to understand the influencing factors shaping the implementation and process of radiation therapy advanced practice in Australia. The four guiding questions supporting the research aim enabled the exploration of the perceptions, assumptions and lived experience of radiation therapy advanced practice and RTAP. This chapter presents the results of the research study which will demonstrate that the implementation and practise of radiation therapy advanced practice in Australia is informed by three complex and contextually defined multi-factorial processes, influenced by an overarching process of ‘Navigating Uncertainty.’

This chapter will define the grounded theory ‘Navigating Uncertainty’ and explore how this presents in the context of radiation therapy advanced practice implementation. A publication describing ‘Navigating Uncertainty’ and the three key category processes in which it is expressed will follow, including a discussion on the implications of the theory for advanced practice implementation. A detailed explanation of the complex relationship between the three key categories and subprocesses – the influencing factors – will close the chapter.

In line with a constructivist grounded theory approach, the presentation of this theory acknowledges the situational position of the data – in time and context – and that subjective interpretation and analysis of these data are a construction of the researcher. The participant voice has been used liberally to enhance the visibility of the analysis and resultant theory.

4.2 Navigating Uncertainty in the Context of Radiation Therapy Advanced Practice Implementation

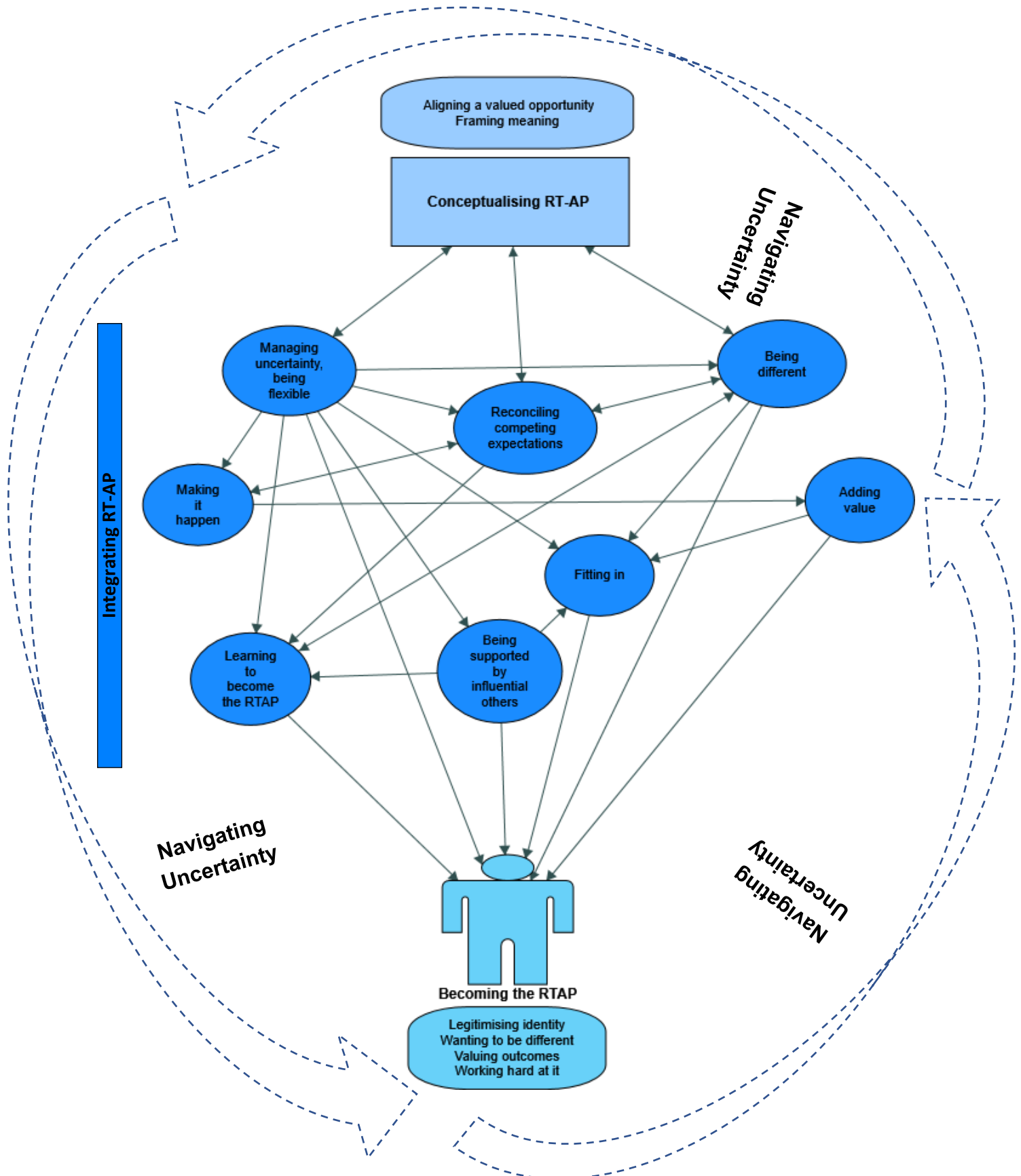
‘Navigating Uncertainty’ is described as the overarching multi-dimensional process influencing the implementation of radiation therapy advanced practice in Australia. Uncertainty arises as a result of

the advanced practitioner being different from the RT, in functionality, fit, and role meaning. 'Navigating Uncertainty' refers to the process whereby practitioners - RTAP, RT, RO, and ROMP - individually and collectively, interpreted and attempted to reconcile the perceived or actual impact and influence of advanced practice implementation within their local context. Impact and influence were understood by practitioners as being personal, functional, structural, and socio-cultural. Navigating uncertainty was a continual process, present from the first consideration of the possibility of RTAP implementation through to and including achieving an established role – the process did not appear to end within these data. Strategic and purposeful actions to implement radiation therapy advanced practice while experiencing ongoing uncertainty were a necessary precondition to achieve a successful implementation outcome.

'Navigating Uncertainty' is represented as a conceptual diagram in Figure 4.1. The process of navigating uncertainty is consistently interwoven throughout and around the three key contextually defined categories that explain the implementation of radiation therapy advanced practice in Australia: *Conceptualising Radiation Therapy Advanced Practice*, *Integrating Radiation Therapy Advanced Practice*, and *Becoming the Radiation Therapy Advanced Practitioner*. Each of these categories is influenced by subprocesses, or factors (represented by circular shapes in the diagram), that are in turn co-influential within and across categories (represented by arrows in the diagram). The complexity of the categories and interrelated factors will be explored in greater detail later in this chapter.

The next sections will define 'Navigating Uncertainty' and describe how it presents within the three key categories. A publication describing 'Navigating Uncertainty' in the context of radiation therapy advanced practice implementation will follow.

Figure 4.1: Diagrammatical representation of Navigating Uncertainty influencing the implementation of radiation therapy advanced practice in Australia, including three key categories and subprocesses. RT-AP = Radiation Therapy Advanced Practice; RTAP = Radiation Therapy Advanced Practitioner.



4.2.1 Defining Navigating Uncertainty

As outlined in the previous chapter, exploration of other research relating to the emergent grounded theory is a mechanism to aid abstraction and help define the theory more explicitly. An overview of the key features of other works will be presented now to help define 'Navigating Uncertainty.' Further analysis of theoretical models and research that provide insight to the implications of the navigating uncertainty process in the context of radiation therapy advanced practice will be discussed in the final chapter.

The verb 'navigate' traditionally means to find a direction across, along or over a body of water or land. The application of navigate in a broader sense aligns with the process being observed within this research, as to:

- "find the right direction to go and travel there,
- move carefully in order to avoid hitting [an] obstacle or hurting yourself,
- manage... a difficult situation [and] deal with it successfully,
- to direct oneself carefully or safely."(241)

Navigating implies using method and caution as part of action, of considering the path to be taken before moving forward. The process of navigating also suggests a passage of time to do so.

Uncertainty as a noun is defined as "a state of doubt about the future or about what is the right thing to do."(242) Such a state of doubt can cause fear, anxiety, and avoidance in some, and curiosity, opportunity and action in others.(243) The meaning of uncertainty and resultant response actions can vary markedly between individuals, influenced by personal, social and contextual moderators.(243)

Broadly, 'Navigating Uncertainty' describes the process of methodically and carefully, over time, choosing a direction or action when experiencing doubt. Influenced by moderating factors, uncertainty can be perceived as a negative or positive experience for the individual, which may inform chosen response actions or inaction. In the context of this research, 'Navigating Uncertainty' can be

defined as the process in which practitioners internalise, appraise, and negotiate a path through the uncertain meaning associated with the implementation of radiation therapy advanced practice. 'Navigating Uncertainty' is an individual process but may be situated within and influenced by a shared social experience. As the meaning of uncertainty may differ between individuals, the resultant responses can vary as action or inaction towards resolving implementation uncertainty.

The following sections will describe how 'Navigating Uncertainty' presents in the three key processes that explain the implementation of radiation therapy advanced practice.

4.2.2 Navigating Uncertainty in *Conceptualising Radiation Therapy Advanced Practice*

Conceptualising radiation therapy advanced practice was the process of defining what it might mean within the context of a given workplace, in terms of place, functionality, and expected outcomes. Conceptualising radiation therapy advanced practice primarily occurred prior to implementation being initiated, and later as integration processes influenced a modification to the concept. Within this process, navigating uncertainty was apparent in the attempts made by practitioners to reconcile the contextual and personal meaning of the RTAP when comparing this to the usual expectations of the RT. The RT is a known concept, socially, structurally, and functionally, whereas the RTAP is "*such a novel concept and people ... just don't know really what it means.*" (MRO1)

Navigating uncertainty was discernible when practitioners reflected on the local context of work and the relationship of the RTAP when compared to other RT roles. The anticipated social structure of the radiation therapy workplace appeared to be a known quantity, as was the place of the RT within it. However, describing the fit of the RTAP as a novel role within this structure was not definitive:

"I would say ... an experienced RT would be able to perform what the advanced practitioner would be able to do anyway. So where do you draw the line with, you know, what they can do, and what just a senior, a more experienced RT can do?" (ERTAP3)

Furthermore, uncertainty was associated in trying to describe the expectations of work from the RTAP, and how this might be different from the RT:

“We have written lots of documentation on scopes of practice for an advanced practitioner and been round and round in circles about what that actually means.” (FG2P3RT)

Similarly, the expected physical staffing structure of the workplace precipitated uncertainty in trying to make the RTAP fit what was often a fixed and pre-determined arrangement:

“And some managers might kind of think, ‘Is that going to take, is that a full-time position? Or what is it that they’re going to do that’s not already being done?’” (MMAN)

The complexity of the changing radiation therapy environment, in terms of technological and practice advances, also added to uncertainty:

“I think one of the challenges this whole concept faces is change, I guess change fatigue, like you’re trying to find a role that keeps changing.” (FG6P3RO)

Managers expressed uncertainty as they reflected on the scarcity of RTAP within Australia that could be used to inform contextual implementation:

“Sure there’s a few positions around but ... within Australia I suppose it was a little bit scarce as far as a model that you could kind of go ‘Oh’ you know, and so that’s been probably part of our challenge.” (MMAN)

Relatedly, the contextual approach to conceptualisation and implementation generated disagreement between some managers:

“Some of the comments from ... one [RT manager] in particular was ‘Oh, well that’s not really an advanced practice role, and we have all these advanced practice roles and you know we’re doing it right.’ So, there was that sort of competition ... rather than a supportive way forward I think.” (EMAN)

Navigating uncertainty in conceptualising radiation therapy advanced practice was apparent as practitioners endeavoured to overcome the perceived contextual social and structural differences of introducing the RTAP.

4.2.3 Navigating Uncertainty in *Integrating Radiation Therapy Advanced Practice*

Integrating radiation therapy advanced practice was the multi-faceted process of implementing the developing advanced practice concept into the local context, with a view to achieve the anticipated outcome. Integrating radiation therapy advanced practice was a disordered and non-linear process that occurred over time, influenced by inter-related practical, social, conceptual, and contextual factors. Navigating uncertainty was intertwined throughout the integration process as practitioners attempted to reconcile complex adjustments to work, relationships, and professional identity as a result of RTAP implementation.

Navigating uncertainty was apparent in defining a label for the RTAP within the context of the usual expectations or existing roles within the workplace. The label of the RTAP, as a grading level or title, was perceived to be associated with expectations of remuneration, responsibilities, and place within the career framework. For some, navigating uncertainty was reflected in their expressed perceptions of the personal meaning of the determined label:

“So, you’ve got your charge and you’ve got your assistant director levels, to have someone promoted above the charge level, would they be the same as them, or in between, or would they answer to each other? Would they be equals? If you’re going to make me equal [as an existing charge], why don’t you just call it another assistant director?” (MRT2)

Managers also expressed uncertainty in trying to make the RTAP fit within the expected career framework. In Australia, each State has a different employment model that informs the RT career structure. However, arguably, radiation therapy advanced practice is being conceptually informed by national and international evidence that may not clearly align:

"I guess the advanced practice role sort of fits into that industrial model ... but I don't think it marries up with the vision of where those advanced practitioners should sit ... so the whole vision of that sort of didn't fit with the structure that we have in place." (EMAN)

For the RTAP, the contextually defined fit within the expected career framework created uncertainty associated with role sustainability – roles are defined according to the context of a single centre and may or may not be transportable across workplaces. This uncertainty created conflict in the RTAP when trying to reconcile the expectations of the usual career framework:

"All these team leader positions are coming up ... and I said I was happy not to apply for them because I'm happy in my role, but I said to [RT manager], 'If you were to leave and another chief came in, would my role, and I've missed the boat with everything else, could my role disappear?'" (ORTAP1)

In addition to identifying a label for the RTAP within the career framework, uncertainty was apparent in practitioners attempting to find a place structurally, socially, and functionally within the workplace, particularly when trying to reconcile the expectations of RTAP outcomes when compared with the RT. This was represented in practical considerations:

"We really, I don't feel, probably looked at that well enough to see how it was going to function once they got through the course as well. How we're going to look at that in the CT? Are the doctors going to be happy for an RT to mark-up the patients?" (ERT1)

and in consideration of the expected social norms:

"If I came to you and said, 'I want you to do this' and you're like, 'Are you authorised to do that? Has the doctor said yes or is it just you thinking what you think should be done?' Um, and then you've got to have that conversation every time ... but therapists are very structured people [laugh]. We like things done a certain way, we're used to certain processes and a lot of us have done it for a long time." (MRT2)

Navigating uncertainty during integration influenced the impetus to move forward and the potential outcomes that could be achieved. As proposed by one manager, national conversations appeared to influence the implementation being initiated, but ongoing uncertainty could in turn influence sustainable momentum to achieve outcomes:

“Because I found, from my personal perspective ... it sort of seems like it was a big thing at one point and then it’s kind of died away a little bit ... perhaps I haven’t read enough about it, but it’s, it’s always been a bit of an enigma.” (WMAN)

Navigating uncertainty in integrating radiation therapy advanced practice was evident as practitioners attempted to reconcile social, conceptual, and practical challenges during the implementation of the RTAP.

4.2.4 Navigating Uncertainty in *Becoming the Radiation Therapy Advanced Practitioner*

Becoming the radiation therapy advanced practitioner was the process whereby each RTAP interpreted and assimilated the personal and professional meaning of their transition from RT to advanced practitioner. The varied conceptual understanding of RTAP function and fit within the local and national context precipitated uncertainty of legitimacy for the RT becoming the RTAP, which resulted in the RTAP continually navigating the uncertainty of a different professional identity.

Navigating uncertainty was expressed by some in the discomfort associated with performing different actions from the normal expectations of the RT:

“And then I felt uncomfortable down there, I felt like I was a bit of an old dog learning new tricks and I wasn’t that comfortable with that side of it.” (ERTAP1)

Uncertainty was also apparent in the perceived difference of no longer being on the usual RT career pathway, and the potential threat to professional identity that this entailed:

“I’d done two things in a row that had taken me out of mainstream practice ... and I’ve recovered from that but only because I pulled out when I did.” (ERTAP1)

However, others embraced the uncertainty associated with being different and saw it as an opportunity for growth:

"I suppose that's a personal thing, but I suppose that's part of being an advanced practitioner I see is you've got to step out of your comfort zone. There's a whole lot of things that we don't like to do or a whole lot of, you know, things that frighten us, but you've just got to do them if you want to get to that level." (MRTAP)

Navigating uncertainty in becoming the RTAP was influenced by the capacity of others in the workplace to navigate their own contextual uncertainty about the meaning of the RTAP. Some advanced practitioners found this challenging to overcome where perceptions of meaning were conceivably at odds:

"So, it's just, I don't know, I just can't get the message out there. I just feel as though they all know I'm an advanced practitioner and we know [name] is an advanced practitioner, and we know [name] is, but nobody utilises us when it comes to the crunch of, 'OK, I've got questions and I need to, I'll probably need someone with a bit more experience than I have to come and help me out with this problem.'" (WRTAP2)

Alternatively, where others were able to validate the actions of the RTAP, uncertainty was easier to overcome:

"So, yeah, that was another thing that we never thought would happen ... I never thought, I just wouldn't have thought them calling me, why would they be calling me, but they do." (MRTAP)

The "nebulous" (FG2P2RT) nature of the advanced practice role when compared to the usual role of the RT required the RTAP to continually navigate uncertainty around transitioning professional identity in becoming the radiation therapy advanced practitioner.

4.2.5 Navigating Uncertainty: The Implementation of Australian Radiation Therapy Advanced Practitioners

A paper describing 'Navigating Uncertainty' in the context of the implementation of radiation therapy advanced practice in Australia was published in a special advanced practice issue of the peer reviewed journal *Technical Innovations and Patient Support in Radiation Oncology* (2021; 17: 82-88. <https://doi.org/10.1016/j.tipsro.2020.12.002>). This paper further details 'Navigating Uncertainty' and the three key categories and subprocesses in which it occurs, and the implications of the findings on the implementation of radiation therapy advanced practice is explored.

For the purposes of this publication the inter-related complexity between processes represented in Figure 4.1 was simplified: this will be explored further in the section following the publication.



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Research article

Navigating uncertainty: The implementation of Australian radiation therapy advanced practitioners

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ABSTRACT

Radiation therapy advanced practice has been implemented in several international jurisdictions; however, it is yet to be systematically integrated into Australian radiation oncology centres. This paper presents the outcomes of a doctoral research study to explore the factors that may be influencing the implementation of radiation therapy advanced practice in Australia. Using a constructivist grounded theory methodological approach to guide procedures, data collection occurred via 6 nationally facilitated online (video mediated) focus groups, and during interviews and observations at 5 purposively selected clinical case study locations. Data analysis led to the development of a grounded theory 'navigating uncertainty' to describe the process influencing the implementation of radiation therapy advanced practice in Australia. Navigating uncertainty is explained by three inter-related contextual processes of conceptualising radiation therapy advanced practice, integrating radiation therapy advanced practice, and becoming the radiation therapy advanced practitioner. The research suggests that the process of actively finding a way to accommodate uncertainty is necessary for advanced practice implementation objectives to be realised.

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Introduction

Implementing extended scope of practice roles for health professionals as a mechanism of health workforce redesign is an opportunity to enhance service delivery and improve the patient care pathway. In radiation oncology centres specifically, radiation therapists (RT) performing advanced practitioner roles were introduced in the United Kingdom at the turn of the century [1], and in the Canadian province of Ontario shortly after [2]. Discussion papers, frameworks elaborating expectations of practice and formal recognition pathways exist across multiple jurisdictions [3–8], and many reports of local practice outcomes as a result of radiation therapy advanced practitioner implementation have been published during the last two decades [9–23].

Health workforce redesign and redistribution of skills across professional groups have been proposed as a viable strategy to support the predicted increase in demand for health services and cancer care in Australia [24–29]. However, despite such recom-

mendations and growing international evidence of successful outcomes, the implementation of radiation therapy advanced practitioners (RTAP) in Australia has been sporadic and isolated to a few discrete centres. Feasibility studies exploring advanced practice opportunities have been reported [30–32], however there is little evidence of RTAP roles functioning in practice [17,18]. During the last two decades the Australian Society of Medical Imaging and Radiation Therapy (ASMIRT) has released several discussion papers and a pathway for the recognition and accreditation of RTAP [5,33–35], however wide scale, systematic implementation across radiation oncology centres is yet to be observed [36]. If progress is to be made in this area and the anticipated benefits realised, it is vital to better understand the factors that may be surrounding the tenuous implementation of RTAP in Australia.

Concern with this issue was the driver to undertake a qualitative research study with the aim to understand the influencing factors shaping the implementation and process of radiation therapy advanced practice in Australia. The research focus was to explore the perspectives and 'lived experience' of those who may be involved in RTAP implementation strategies and outcomes – namely the RT, radiation oncologist (RO), radiation oncology medical physicist (ROMP), and the self-identified or contextually

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recognised RTAP. This article will report the outcomes of this research, with a view to encourage action towards the more systematic implementation of radiation therapy advanced practice in Australia.

Materials and methods

The research was situated in an interpretive theoretical framework and used a constructivist grounded theory methodological approach to guide data collection and analysis procedures [37,38]. Data collection was carried out in two phases, with inductive data analysis and constant comparison of the accumulative data sets occurring throughout the research process. Each research phase was approved by the Monash University Human Research Ethics Committee (CF15/2627 – 2,015,001,077 and CF16/507 – 2016000247). Where required, additional approval was obtained from local hospital ethics review boards prior to Phase 2. All participants were provided with an explanatory statement and completed consent processes prior to engagement in any research activity.

Phase 1: Focus groups

The first phase involved six online, video supported focus groups with national participation from 14 Australian RTAP, RT, RO, and ROMP. Focus groups were selected to establish a baseline understanding of the broader perceptions of RTAP and to guide data collection in the later phase [39]. Their intent was to identify the perceptions and assumptions associated with radiation therapy advanced practice and RTAP, as well as identify perceptions associated with the implementation of RTAP. This phase of the research has been reported in detail by the authors elsewhere [40].

Phase 2: Case studies

The second phase used a multiple site case study approach to gain a deeper understanding of radiation therapy advanced practice within the context of the radiation therapy workplace. This approach enabled the in-depth exploration of each individual case situated within an authentic context, intertwined with a collective analysis of all cases to enhance broader conceptual understanding of the study area [41]. The intent of this phase was to further explore the perceptions and assumptions associated with RTAP implementation and practice, as well as to understand the contextual experience of RTAP implementation and outcomes. The case study sites were 5 purposively selected radiation oncology centres in Australia which were professionally known to have an interest in the implementation of RTAP, and that also represented diversity in location, capacity, referral base and funding mechanism. Data collection occurred with the researcher (first author KM) on-site within each centre for several days and was approached flexibly and opportunistically to suit the needs of the workplace and to extend the emergent analysis using theoretical sampling [38]. Data collection strategies included 39 semi-structured interviews with RTAP, RT, RO and ROMP; observation of inter-professional interactions between the RTAP and others; and RTAP associated document review.

Data management strategies

Focus group discussions were video and audio recorded, and case study interviews audio recorded. Recordings were transcribed verbatim into documents, with all research participants and case study sites described by an anonymous identifier. Researcher hand-written notes of focus group and interview proceedings, case

study observations, documents and researcher reflexive memos were transcribed and de-identified for analysis. Data analysis procedures were aligned with a constructivist grounded theory methodology, and sorting of categories, codes and data was supported by Microsoft Word and QSR NVivo 12. Peer review analysis by experienced qualitative researchers of a sample of de-identified transcripts was actioned periodically throughout the process to support credibility of findings [42]. The emergent categories were also verified and extended through discussion with RTAP and RT manager case study participants whilst on site during data collection. Saturation, as defined by reaching conceptual completeness of categories that form the grounded theory [38], was achieved from the combined data set.

Results

The overarching multi-dimensional process influencing the implementation of RTAP in Australia in this study was one of **Navigating Uncertainty** (see Fig. 1). According to the data, uncertainty arises as a result of the advanced practitioner being different from the radiation therapist, in functionality, fit, and role meaning. Navigating uncertainty refers to the process whereby practitioners (RTAP, RT, RO and ROMP), individually and collectively, interpreted and attempted to reconcile the perceived or actual impact and influence – personal, functional, structural and cultural – of RTAP implementation within their local context. For the RTAP, navigating uncertainty was also apparent in the process of reconciling the change in professional identity, from being the RT to becoming the RTAP. Navigating uncertainty was a continual process, present from the first consideration of the possibility of RTAP implementation through to and including achieving an established role. Strategic and purposeful actions to implement radiation therapy advanced practice whilst experiencing ongoing uncertainty were necessary to achieve a successful implementation outcome.

Three interrelated and contextually defined key categories explain the grounded theory of navigating uncertainty in relation to the implementation of RTAP in Australia: *Conceptualising radiation therapy advanced practice*; *Integrating radiation therapy advanced practice*; and *Becoming the radiation therapy advanced practitioner*. The sub-category processes informing each of these key categories, with defined properties and illustrative data, are presented in Tables 1–3. Generic data identifiers have been described in tables to preserve anonymity. Additionally, sub-categories with quotation marks in the figure and tables have been drawn from in-vivo codes.

Conceptualising radiation therapy advanced practice

Conceptualising radiation therapy advanced practice is the process of defining what advanced practice might mean within the context of a given centre. Broad understanding of radiation therapy advanced practice was apparent in the data, but the perceived impact and influence on a practitioner's own workplace varied. Practitioners initiated a process of contemplating the frame and significance of the RTAP in relation to title, expectations, and fit to other work roles within their local context. The scarcity of RTAP roles in Australia, ill-defined state-based employment frameworks in relation to advanced practice positions, and the absence of a recognised professional title required practitioners to decide what advanced practice might mean to them, individually and in the context of their centre. Broad concordance of meaning was apparent in describing the RTAP as having expert clinical skills and independence in their practice, as well as capacity for leadership, quality improvement and training delivery. However, conceptualising the contextual fit within each workplace was challenging.

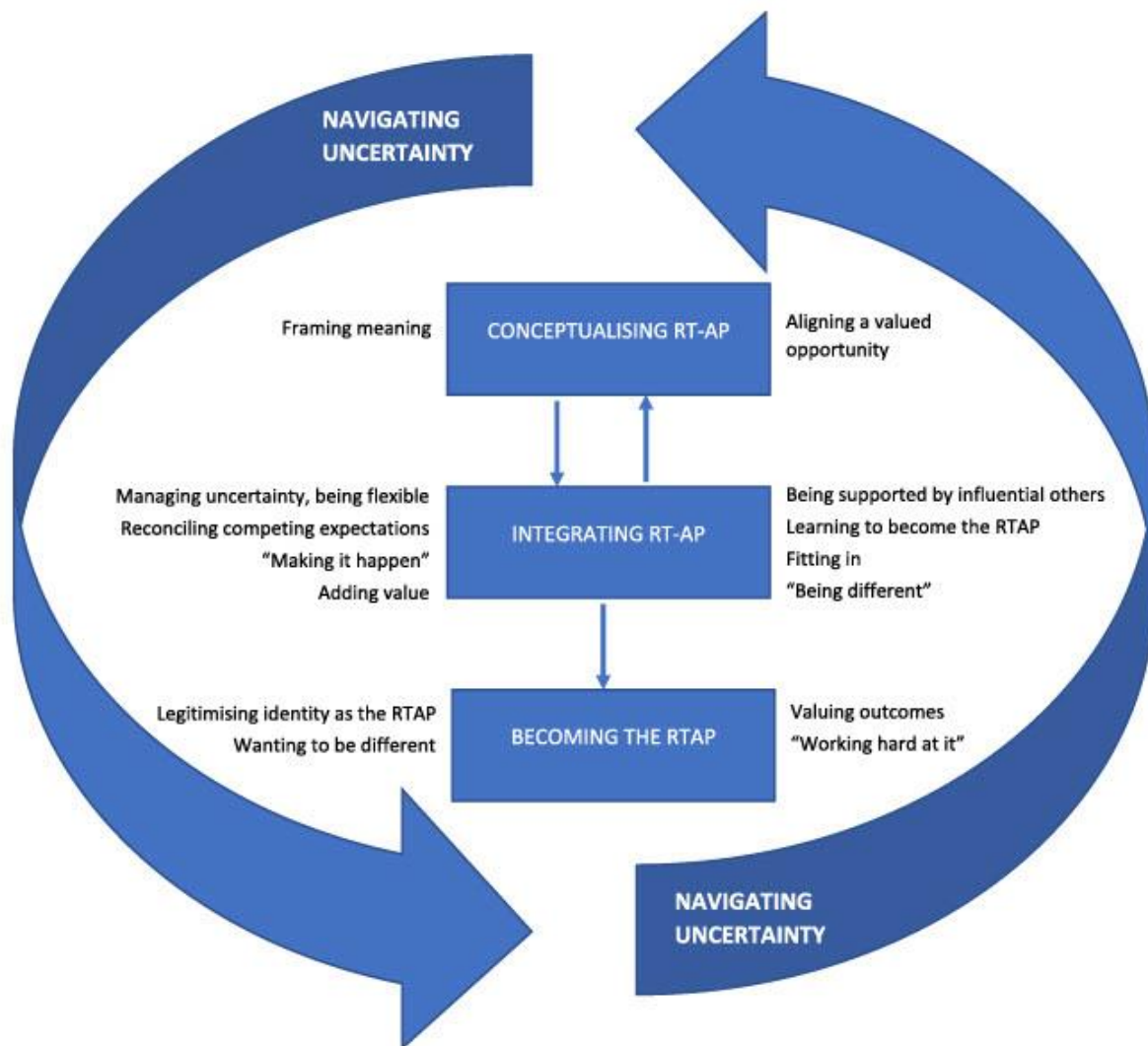


Fig. 1. Conceptual diagram of the grounded theory Navigating Uncertainty that explains the implementation of radiation therapy advanced practitioners in Australia. RT-AP = radiation therapy advanced practice; RTAP = radiation therapy advanced practitioner.

with uncertainty arising in framing a title; determining structure and expectations of role performance; and finding a place among and alongside other radiation therapists. Additionally, uncertainty was compounded trying to assimilate the influence of constant innovation of radiation therapy delivery on anticipated RTAP role outcomes. The diversity in conceptualisation of advanced practice among practitioners in turn created further uncertainty - this was shown to influence conflicting ideals of meaning between individuals, including at times those within the same centre.

Conceptualising advanced practice was assisted when practitioners contextualised how a RTAP might enhance patient access and improve service delivery, as well as augment the radiation therapist career pathway. Practitioners looked to examples from radiation therapy advanced practice internationally, and to other advanced health professional roles within Australia to inform this strategy. Despite this action however, implementation did not always progress as contextual uncertainty of how to achieve the desired end point remained.

The sub-category processes informing conceptualising radiation therapy advanced practice are presented in Table 1.

Integrating radiation therapy advanced practice

Integrating radiation therapy advanced practice is the multi-faceted process of implementing the developing advanced practice concept into the local context, with a view to achieve the anticipated outcome. Integrating radiation therapy advanced practice is a disordered and non-linear process that occurs over time, influenced by inter-related practical, social, conceptual and contextual factors. Navigating uncertainty was intertwined throughout the integration process as practitioners attempted to reconcile complex adjustments to work, relationships and professional identity as a result of RTAP implementation.

Within this data, the process of integrating radiation therapy advanced practice was not demonstrated to reach an end point, irrespective of the outcomes achieved by RTAP implementation.

Table 1

Conceptualising radiation therapy advanced practice sub-category properties and illustrative data. CS = Case Study; FG = Focus Group; RT = radiation therapist; RTAP = radiation therapy advanced practitioner; RO = radiation oncologist.

Sub-Category	Properties	Illustrative data
Framing meaning	Practitioners individually and collectively frame the perceived significance of the RTAP role in relation to title, expectations and fit within their local context. The meaning of advanced practice and the RTAP may be shared between individuals or may be in conflict.	"Because I think, in a way, it's alright them saying, 'Oh, you must do this, this, this, this, this', but how would you actually do [advanced practice]... and I guess every centre is different as well, and how they would... locally kind of adapt to it. I don't know, I guess it's knowing how to implement it in your own practice" (CS - RT)
Aligning a valued opportunity	Practitioners contextualise how a RTAP role may enhance patient access, improve service delivery, and/or augment the radiation therapist career pathway. Examples from elsewhere inform the process.	"I guess depending on the role it can be something that actually... greases the wheels if you like, it makes things more efficient, it might help with, you know, patient access to service, and it just makes the whole system more efficient" (FG - RT)

Table 2

Integrating radiation therapy advanced practice sub-category properties and illustrative data. CS = Case Study; FG = Focus Group; RT = radiation therapist; RTAP = radiation therapy advanced practitioner; RO = radiation oncologist.

Sub-Category	Properties	Illustrative Data
Managing uncertainty, being flexible	Leader practitioners strategically manage their own and others' uncertainty to help position the RTAP role in the workplace. Flexibility is key to managing uncertainty, to actively accept change will be an ongoing facet of implementation, and to adapt conceptually and practically as this occurs.	"I think one of the things that we've also had to develop is even just its place within the radiation therapy group, you know, and where that, and how that role fits. In all honesty I suppose we're still, I don't know that you ever come to a really neat little fence that goes around what the role does" (CS - RT manager)
Reconciling competing expectations	Practitioners individually and collectively attempt to reconcile competing personal, social and practical expectations associated with the RTAP concept, function, title and position; demands of service delivery and funding; and strategies being taken towards advanced practice implementation. The RTAP additionally attempts to reconcile competing expectations around a transitional professional identity. Where unresolved, competing expectations can be problematic for achieving implementation.	"You know, we've been having issues with staffing numbers and... increased demand... increasing waiting lists... so a lot of our focus has been recently just on trying to manage the service and it makes it difficult to then look more strategically about where we want to go [with advanced practice]." (CS - RT manager)
"Making it happen"	Leader practitioners initiate practical and creative strategies to implement a framework for advanced practice into the centre. Active and longer-term investment in such strategies, from leaders and the RTAP, is apparent where implementation has been achieved.	"I actually think it's all about mindset, and it's all about the manager's mindset. You know, if you want something to happen hard enough, you find a way to make it happen... I think it depends on where you place your priorities." (CS - RT manager)
Being supported by influential others	The RTAP needs practical and social support from influential others – primarily leaders and to a lesser degree peer RTs – to have the permission and validation to pursue advanced practice activities. Implementation is less likely to be achieved if support is not present.	"I'd set up a meeting to talk about how it was going... I wanted feedback and I wanted, you know, assurances and I wanted to know that I was doing what was expected, but there was no expectation, you know... It was just a bit up in the air." (CS - RTAP)
Learning to become the RTAP	The RTAP needs a framework for learning, including time (immediate and longer term); access to learning opportunities; mentoring from experienced others; and validation of evolving practice. Clear expectations and supportive relationships are influential to learning outcomes.	"I think that's where... the training is good. Like someone alongside you, when things don't go right, to see if you're making the right decision. And I guess as I get more experienced in that... that's where I will end up, being the person who does that" (CS - RTAP)
Fitting in	Finding and accepting a new way of working where the RTAP is functional among and alongside other practitioners. Fitting in evolves over time as practitioner expectations of the RTAP role and outcomes align. Relationships are influential on this process.	"[The RTAP will] be like a little terrier making sure that it gets through in time, and... sometimes I think that probably has caused friction a little bit. I think there was possibly a little bit of jealousy initially... but it's always clear that [they're] really doing things to get the patient treated faster... and that's always very obvious." (CS - RO)
"Being different"	Practitioners attempt to manage the functional, structural and symbolic uncertainty associated with the RTAP being different from the RT. The perceived personal and professional impact of that difference, and the practical strategies used to reconcile the difference, can influence acceptance and implementation outcomes.	"[A challenge], I would say... keeping currency in the day-to-day. You know, treating patients on the machines and doing all the normal things whilst maintaining all this activity... is a balance. And I can completely see why [the RTAP] needs to spend normal time on the machines and that kind of thing but I think that is, there's always a bit of a tension there about." (CS - RO)
Adding value	Seeing valuable outcomes for service delivery associated with RTAP implementation can influence acceptance from practitioners and facilitate integration. Adding value also supports RTAP professional identity transition.	"Well I think until you see how it works, until you work with it, you probably don't really see the value in it. You can read about it, but I think until you actually do it and get it and you have a good person in the job... that's also key" (CS - RO)

The process of conceptualising advanced practice provided a blueprint for implementation; however, the concept was then required to regularly evolve as practice, expectations, and individuals changed, which in turn influenced integration strategies and outcomes. This resulted in a continual interplay between the processes of conceptualising and integrating radiation therapy advanced practice, albeit with varying outcomes dependent on the capacity of influential leaders (primarily the RT and RO managers) to strategically and actively adapt to ongoing uncertainty.

Leaders were essential to deliver a framework in which advanced practice was to be learned and actioned; actively manage uncertainty associated with conceptual diversity and competing

expectations; and in overtly championing the RTAP as a legitimate member of the radiation therapy team. Peer support from other RTs was not shown to be as important, as where peer support was absent the RTAP could still fully develop with the visible advocacy of leaders. Conversely, implementation of the RTAP in isolation of clear and active leadership strategies, positive relationships, and acceptance of RTAP legitimacy – from the RTAP and others – resulted in a problematic integration process.

The sub-category processes informing integrating radiation therapy advanced practice are presented in Table 2.

Table 3

Becoming the radiation therapy advanced practitioner sub-category properties and illustrative data. CS = Case Study; FG = Focus Group; RT = radiation therapist; RTAP = radiation therapy advanced practitioner; RO = radiation oncologist.

Sub-Category	Properties	Illustrative Data
Legitimising identity as the RTAP	A personal and individual process of transition from being the RT to becoming the RTAP. The process is influenced by the perceived legitimacy of the changing role and actions being performed. External markers of legitimacy in title and validation by others influence the transitional process. Legitimacy is only achieved when the identity transition is accepted by the RTAP and is also conferred by external others.	"I think in my case it may be... this old dog not willing to learn new tricks... I'm really comfortable with my role as an RT and happy to advance within that role and maybe I just wasn't broadminded enough to feel comfortable with the advanced practice idea." (CS – RTAP)
Wanting to be different	The RTAP assimilates the personal meaning of pursuing a different work role, skill set and career pathway to that of the RT. Meaning can change over time influenced by the perceived personal and professional impacts of the integration process.	"I really liked... the new learning more, and, you know, more education. I really like the autonomy of it, too, that I actually could be my own boss... and do what I needed to do." (CS – RTAP)
Valuing outcomes	The perceived value of personal, service and patient related intended or actualised outcomes influence motivation to pursue the RTAP role and sense of legitimacy.	"In the end I didn't really see the point in separating what they do and what I did. I didn't see the point in combining it. I didn't believe in... the advanced practice role... I couldn't see the benefit." (CS-RTAP)
"Working hard at it"	Within the framework of supportive influential others, the RTAP actively and intentionally demonstrates capacity, motivation and drive to perform the advanced practice role.	"I think it's her drive to make it work because there was a lot of anti 'it's not going to work'." (CS-RO)

Becoming the radiation therapy advanced practitioner

Influenced by integrating radiation therapy advanced practice actions, becoming the radiation therapy advanced practitioner is the process whereby each RTAP interprets and assimilates the personal and professional meaning of their transition from RT to advanced practitioner. The nature of a RT in relation to work role, task boundaries and career pathway was commonly understood. In contrast, the varied conceptual understanding of RTAP function and fit within the local and national context precipitated uncertainty of professional legitimacy. For the implementation of advanced practice to be progressed, the RTAP needed to actively integrate and accept their shifting and uncertain professional identity as being legitimate when compared to their identity as an RT.

Although an individual process, the actions of becoming the radiation therapy advanced practitioner were shown to be influenced by and to occur within a framework of perceived workplace structures and symbols, as well as the conferring of permission and acceptance by others. Navigating the uncertainty and discomfort of being in a 'liminal' space between professional roles was enabled by influential leaders overtly permitting legitimacy through advocacy, access and empowerment. Additionally, symbols of legitimacy such as a title and role description as well as the allowance of RTAP activities by peers further facilitated the process of becoming. Inversely, even where a RTAP was able to self-identify as such, in the absence of overt legitimate symbols framed by structural and social integration of advanced practice, complete implementation was not able to be achieved.

The sub-category processes informing becoming the radiation therapy advanced practitioner are presented in Table 3.

Discussion

The grounded theory of navigating uncertainty situated within this research illustrates the challenges accompanying the implementation of radiation therapy advanced practice within Australia. Uncertainty associated with contextually defined conceptual, practical, and social concerns was shown to influence the capacity for implementation strategies to progress, and practitioners needed to apply continuous strategies to navigate uncertainty to achieve desired outcomes. Formal provisions such as the ASMIIR advanced practice accreditation framework [5] and industrial award structures were not demonstrated to inform implementation strategies in a meaningful way, and it could be argued that workplace mod-

elling and funding structures [43] that do not include a place for RTAP contribute to uncertainty. Locally established creative strategies to flexibly and actively manage uncertainty and find a legitimate place for the RTAP, particularly when advocated by leaders, were shown to be critical for achieving the desired implementation outcome. This suggests the current state of advanced practice implementation in Australia is reliant on the creative capacity of centre leaders to progress despite ambiguous and sometimes conflicting expectations - implementation strategies are contextually derived and approached variably between centres, and there is a need for a more informed systematic approach if national implementation is to be achieved.

To date, studies reporting the integration of radiation therapy advanced practice have been primarily directed towards evaluating RTAP skills and outcomes within single centres, with few reporting the implementation strategies used. Two commentary papers [44,45] have presented the implementation experience from single centres in Canada, and although some local contextual elements were explored the effectiveness of implementation strategies on subsequent outcomes has not been analysed. On a larger scale, Harnett and colleagues [46–48] have reported the regional implementation and validation of RTAP across multiple centres. Although the overarching strategies presented in the series of papers is of value to inform similar implementation approaches, considering the contextual challenges expressed within this research the applicability to the Australian environment is unclear.

In regards to other health professions, Bryant-Lukosius and colleagues [49] reported several factors influencing the inconsistent implementation of advanced nurse practitioners, including variable understanding of terminology and role definitions; environmental interdependence; and a lack of systematic implementation according to patient-centred need. In a subsequent paper, Bryant-Lukosius and DiCenso [50] proposed the participatory action-research based PEPPA framework to inform the implementation of advanced nurse practitioners. The framework promotes a patient-centred, systematic approach to implementation, including wider stakeholder engagement and evidence-based outcomes. An adaptation of the PEPPA framework within a physiotherapy advanced practitioner implementation study [51] presented the key steps as engaging stakeholders; identifying barriers and enablers; developing appropriate education and role descriptions; and implementing an evaluation framework.

Using an implementation strategy may enable a systematic approach, however other literature has reported the influence

social integration may have on outcomes. Jones [52] reported a systematic review and meta-synthesis of specialist and advanced nursing practice roles into hospital settings and identified relationships with others and role ambiguity as highly influential to implementation success. Sangster-Gormley and colleagues [53] conducted an integrative review of advanced practice nursing roles implementation in Canada and added that prior experience of the practitioner and role acceptance were also influential. The authors concluded that a defined role, stakeholder engagement and acceptance were the key features to address for successful implementation, however, they further identified that the complexity of different work and social contexts imply that addressing these concepts may require a varied approach [54]. A ten-year longitudinal study of a consultant radiographer framework has also highlighted the flexibility required for successful implementation of an advanced role [55].

The impact of social acceptance and power on implementation strategies has been explored in the health workforce redesign literature. It has been suggested that “even small numbers of key local opinion leaders [can be] major obstacles to change” [56], and that strategic management of professional relationships are vital for effective change implementation [57]. Within this research, the influence of powerful others – although research participants used the term ‘support’ – was demonstrated to impact the viability and sustainability of radiation therapy advanced practice integration, as well as influence the legitimacy of RTAP professional identity. For advanced practice outcomes to be sustained, leaders need to deliver a contextually valid implementation strategy that frames permission and advocacy for the RTAP to function. Furthermore, visible advocacy will grant professional legitimacy to the RTAP which may support the transition of professional identity [58,59], although inter- and intra-professional identity protectionism may still influence integration processes [60].

This research has shown the implementation of radiation therapy advanced practice in Australia is complex, disordered, and precarious, currently dependent on the creativity and flexibility of leaders, resilience of the RTAP, and acceptance of others to progress. In addition to a framework for professional recognition, guidelines from the professional body to inform evidence based advanced practice implementation strategies, similar to that provided in other jurisdictions [61], may go some way to mitigating uncertainty. Advocacy from influencers, particularly the radiation oncology arm of the Royal Australian and New Zealand College of Radiologists, may assist the legitimacy of advanced practice pursuits. Although State based award structures and national funding models are more difficult to change, consideration to include RTAP in radiation therapy workforce models may assist leaders to find a way forward. Furthermore, development of an endorsement category by the Medical Radiation Practitioners Board of Australia to work alongside accreditation from the professional body, similar to that introduced for nurse practitioners [62], may also enable progress. Structural changes aside, the contextual social acceptance of the RTAP is essential to successful integration and must be acknowledged and openly strategised by leaders seeking advanced practice implementation.

Limitations

It is acknowledged that a limitation of this research may have been the inadvertent preclusion of a case study site in the second phase that could have been of value to the research aim. Case study sites were selected according to being professionally known to the researcher; that would be of perceived value to achieving the research aim; and pragmatically to enable data collection within the limitations of a funding grant. The sampling method cannot claim to achieve full representation of the potential cohort of cen-

tres with an interest (or disinterest) in advanced practice, however this was actively managed by seeking centres that represented contextual breadth; comparative analysis with national focus group data; and using theoretical sampling methods.

Conclusion

This research has demonstrated the pathway to radiation therapy advanced practice in Australia is not a clear one. However, the challenges associated with navigating uncertainty presented in this research have been effectively accommodated by some practitioners – this presents an opportunity to share these experiences with others to inform flexible and creative approaches. Although the implementation of advanced practice will always be contextual, there is a need for a national framework of systematic and shared implementation strategies that recognise structural and social necessities if broader outcomes are to be accomplished.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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4.3 Understanding the Factors Influencing the Implementation of Radiation Therapy

Advanced Practice

The aim of this research was to understand the influencing factors shaping the implementation and process of radiation therapy advanced practice in Australia. A grounded theory of 'Navigating Uncertainty' has been described as the overarching influential process which is expressed in the three key categories and factors detailed in the previous section. The remainder of this chapter will further elucidate the complex relationship between these categories and factors introduced in Figure 4.1 to fully realise the research aim.

4.3.1 Influencing Factors of *Conceptualising Radiation Therapy Advanced Practice*

The factors informing the process of conceptualising radiation therapy advanced practice are represented in Figure 4.2. These factors will now be explored with data examples.

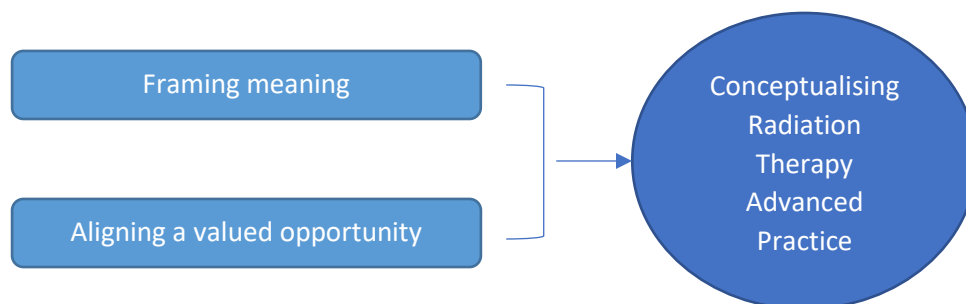


Figure 4.2: Factors influencing Conceptualising Radiation Therapy Advanced Practice

4.3.1.1 Framing Meaning

Framing meaning was the process whereby practitioners individually and collectively described the perceived significance of radiation therapy advanced practice implementation in relation to title, expectations and fit within their local context. Meaning associated with the anticipated functionality and attributes of a RTAP was broadly concordant between practitioners when abstractly contemplating radiation therapy advanced practice. However, framing meaning could be ambiguous and variable when considering contextual impacts and outcomes.

Practitioners expressed the universal meaning of the RTAP as a RT who is *“working on the boundaries”* (FG2P3RT) of traditional practice, possessing expert *“practical and intellectual skills”* (FG3P1RT) supported by additional training and qualifications. The RTAP may autonomously take *“on additional roles and responsibilities”* (FG4P2RT) of work that are usually within the remit of another profession, but only within a defined scope of practice that aligns with competence and skills. The RTAP is required to have qualities of leadership and collaboration, be altruistic and patient focussed, and be driven and passionate in meeting advanced practice goals - *“by definition their practice is always advancing ... the whole definition of advanced practice is that they advance the profession.”* (FG2P2RT) It was agreed that the purpose of introducing advanced practice was *“about plugging [the] gaps in service provision”* (FG2P3RT) and *“streamlining”* (MMAN) the patient care pathway. Additionally, advanced practice could enable an alternate career pathway for the RT, where the RTAP can be *“used as a resource person and as a lead person, but they still are able to remain at the heart of their departments and what happens with their patients.”* (FG3P2RT)

Despite consensus, difficulties arose when aligning abstract meaning to the context of a clinical centre *“given that an advanced practitioner as a broad concept can do anything, and you’re making it up as you’re going along in some respects.”* (FG1P1RT) In a practical sense *“there’s lots of scope for where advanced practice could be defined, and ... trying to narrow those down makes it very hard”* (FG2P3RT) for each individual context:

“I think the premise of a more knowledgeable and more experienced practitioner ... is what an advanced practitioner is, it’s just what does that look like on a day-to-day basis as a formalised role, I’m not sure.” (FG5P2RT)

Additionally, it was acknowledged that the contextual definition of the RT could inform how the meaning of advanced practice is framed:

“I guess it depends on where you’re working as to how the role of an RT is defined, like what you can do and what you can’t.” (ERTAP3)

Similarly, the natural evolution of what is defined as standard practice was also perceived to influence meaning:

“I think for a long time the profession has probably been doing things that we’ve, I suppose we’ve been stretching what becomes standard practice for us ... we start off with a set of skills and then something else gets added to our thing and it may just be the evolution of what’s accepted as normal.” (MMAN)

Furthermore, framing the implications of a role that may cross existing professional boundaries could be complicated by concerns of safety – *“you don’t want to take the scalpel out of a surgeon’s hand” (PRT2)* – and social impacts – *“basically protecting the turf you’re on” (FG1P2MP)* – as well as fit in relation to the work activities of others.

Some practitioners recognised that a RT fulfilling the broad expectations of the RTAP may be adequate to meet the needs of a clinical service, but others recognised the necessity of a label to clarify agreed meaning:

“The identified advanced practice that we have at the moment only sits in the [role] ... I think advanced practice happens all the time in different places, but it’s not identified or ... given a label or structured in that way.” (MRT2)

However, defining the desired label or structure could be problematic, influenced by the unclear *“industrial relations situation” (FG1P1RT)* and lack of a framework for the registration of advanced practitioners.

The social implications of framing meaning by a label was also challenging, where the premise that the RTAP will sit *“in parallel ... with a charge RT... it changes the hierarchy in some respects.” (FG3P1RT)* Nonetheless, having such a label was also viewed as validation of role activities:

“What that name indicates is that you’ve got an individual who has done a number of things to support, you know, they’re working at that particular level.” (MMAN)

Variation in meaning was also expressed with how the RTAP might fit alongside others in the radiation therapy workforce. Some practitioners saw value in the RTAP being different:

“There are some radiation therapists who are only interested in seeing the patient and doing the job day to day, and so being an advanced practitioner is not for everybody.”

(FG1P2MP)

Conversely, other practitioners saw an opportunity to approach advanced practice implementation as a group venture, to not have:

“One person who is singled out as above the rest, or better... and everyone from below sees opportunity rather than an individual that’s shining the most I think.” (FG4P1MP)

Furthermore, it was recognised framing personal meaning is an important feature if advanced practice implementation is to be initiated:

“So, I think part of it might be that some radiation therapists don’t see how an advanced practitioner relates to them personally, how that it would advantage them, or meet what they would see as career goals, or what they’d like to choose.” (FG1P2MP)

Compounding the variability of meaning was “a lack of visibility, and clarity, and perhaps understanding” (WRO) of RTAP impacts and outcomes, or “benchmarks” (ORO1) for what advanced practice should look like. Practitioners were seeking examples from others to assist framing meaning:

“Because you hear about ... the plan for advanced practice, but you don’t hear a lot about what’s happening in other centres, or you don’t always get the feedback on where, where they’re going with their positions and how they’re managing that or whether they’ve, you know, been successful in developing those positions or ... challenges they’ve faced.”

(EMAN)

Equally it was recognised that the scarcity of advanced practice implementation might in turn help to

frame meaning more broadly:

“There’s probably just a couple of people who are working in those sorts of ... areas where you think ‘I wonder if that’s moving towards what we may look at advanced practice being.’” (MMAN)

Framing meaning was a key process of conceptualising radiation therapy advanced practice, but overcoming contextually variable meaning - and interrelated uncertainty explored earlier in the chapter - was formidable for some practitioners. Transparent and shared meaning was desired to initiate implementation strategies, however the nature of advanced practice being *“a bit of that grey area” (PG4P2RT)* made this somewhat challenging.

4.3.1.2 Aligning a Valued Opportunity

Aligning a valued opportunity was the assistive process used by practitioners to link the developing advanced practice concept to a perceived need or opportunity within the workplace. Opportunities were viewed contextually as having a positive impact to self or others.

Opportunities were presented where the implementation of advanced practice could streamline the work of others and improve workflows:

“We thought that this was an area where there was as high volume of work and ... it would relieve pressure off the radiation oncologists attending for CT simulation and things like that which can be quite problematic.” (EMAN)

Similarly, a gain in efficiency or cost effectiveness was important to consider:

“I mean there’s got to be something that’s measurable or some sort of gain that you could say, you know, ‘If I had someone who was doing this ... we’d be more efficient with a, b and c. Our time, our turnaround would be better in these situations.’” (MMAN)

Furthermore, value was perceived with the introduction of advanced practice to enhance the patient pathway:

“We found that it just facilitated the patients getting through the system a lot quicker ... and the patients really liked having that one point of care.” (MRO1)

Advanced practice was viewed as an opportunity for enhancing service development, personal growth, and career development for the RTAP, and supporting the training of others:

“It’s more self-interest, just for the education ... it might be a stepping-stone into doing something different and ... learning new skills and teaching others to do it as well.” (ERTAP3)

Additionally, a RTAP was an opportunity to support the introduction of technical advances in radiation therapy:

“With the changes in technology, you know, the techniques are so highly specialised and conformal treatments, that it is great to have someone with that little bit of extra knowledge ... to pass on to other people.” (ORT1)

Opportunities for implementing advanced practice were contextual, influenced by the size and structure of the centre, referral pathways and location:

“I think it’s definitely an advantage for a regional centre, definitely. I think in [a metropolitan centre] where you have, I don’t know how many ROs you have on site, it’s not maybe as big a problem or a need as in a regional centre.” (PRT2)

Equally, perceived personal impacts influenced the value of the opportunity:

“What I lack in a centre like mine is a registrar, I don’t even have a registrar, so then the nurses and the radiotherapists have had to step up, and that’s exactly one of the roles the advanced practitioners could play in areas of need.” (FG6P3RO)

Practitioners described a valued opportunity to assist conceptualising radiation therapy advanced practice and provide a direction for initiating implementation strategies.

4.3.2 Factors of *Integrating Radiation Therapy Advanced Practice* Influencing and Being Influenced by *Conceptualising Radiation Therapy Advanced Practice*

Although conceptualising radiation therapy advanced practice is the first step towards implementation, as presented in Figure 4.3 (overleaf) the process was shown to influence and be influenced by integrating radiation therapy advanced practice. Conceptualising processes were open to modification and change as they influenced and were influenced by integration processes, particularly those where uncertainty was emphasised. The factors of integrating radiation therapy advanced practice where this was particularly expressed were as follows:

- *Managing uncertainty, being flexible* was influenced by the uncertainty associated with conceptualising radiation therapy advanced practice, in that the contextual label, functionality and fit of the RTAP could be difficult to define. Meaning was in turn influenced and potentially modified as leaders were able to manage uncertainty and progress integration strategies.
- *Reconciling competing expectations* was influenced by conflicting meaning within a specific context, including practitioner expectations of RTAP label and function, as well as structural expectations of fit and place. Relatedly, the capacity of practitioners to individually and collectively reconcile competing expectations throughout the integration process influenced ongoing modification to the advanced practice concept.
- *Being different* was influenced by conceptualising the functional, structural, and symbolic meaning of the RTAP as different to the RT, and conversely influenced meaning as practitioners assimilated such difference during the integration process.

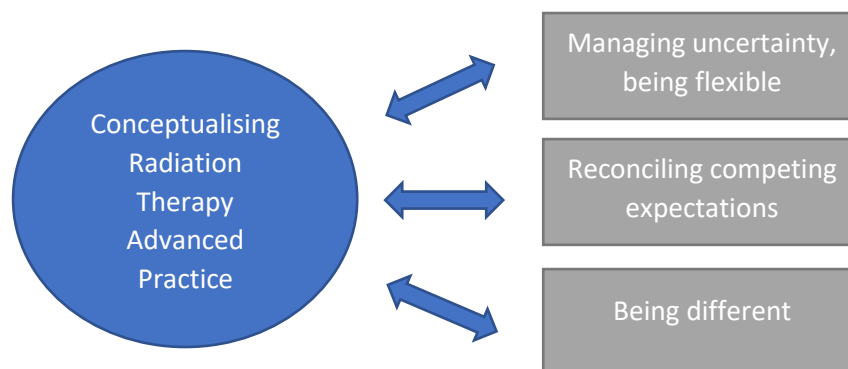


Figure 4.3: Factors of Integrating Radiation Therapy Advanced Practice influencing and being influenced by Conceptualising Radiation Therapy Advanced Practice.

4.3.3 Influencing Factors of *Integrating Radiation Therapy Advanced Practice*

The factors informing the complex process of integrating advanced practice are represented in Figure 4.4 (overleaf). Single directional arrows in blue indicate the direction of influence between factors. Bi-directional arrows in orange indicate factors are co-influential. Each of the factors and the relationship between them will now be described in detail.

4.3.3.1 *Managing Uncertainty, Being Flexible*

Managing uncertainty, being flexible was where leader practitioners (RT managers and RO) strategically managed their own and other practitioners' uncertainty to help position advanced practice within their workplace. As discussed earlier, uncertainty was apparent in finding a label and fit for the RTAP to function within the usual workplace. Flexibility was fundamental to managing this uncertainty, to adapt conceptually and practically to meet anticipated and evolving implementation outcomes. Managing uncertainty, being flexible was a positively influencing factor, where the capacity of leaders to manage uncertainty effectively and act flexibly – to “*just go with the flow*” (MMAN) - enabled integration processes.

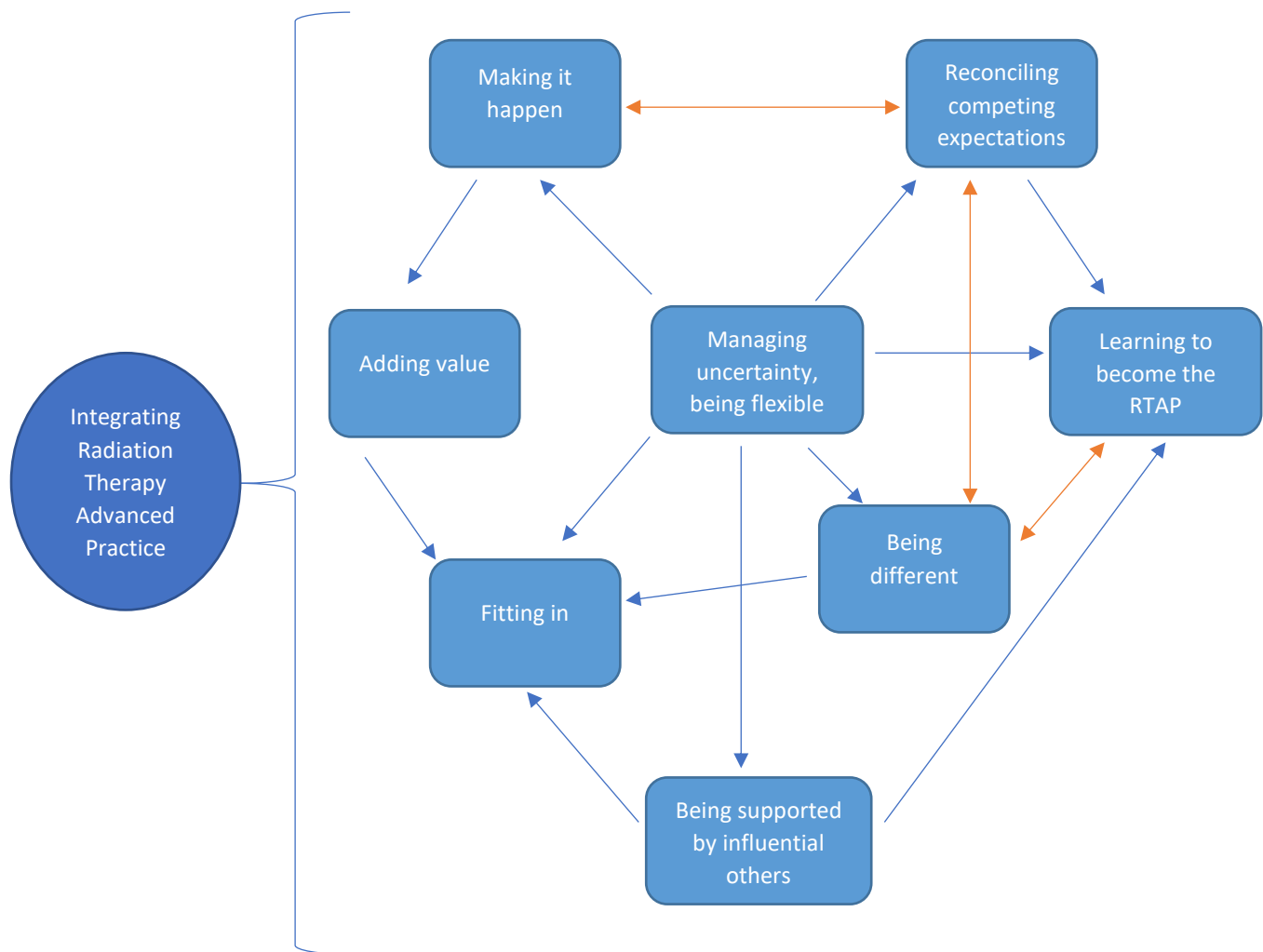


Figure 4.4: Factors influencing Integrating Radiation Therapy Advanced Practice

Managing uncertainty was supported by leaders *“thinking a bit outside the box”* (OMAN) and being flexible towards the anticipated functionality of advanced practice in the service and fit to expected workforce structures – *“you just have to be clever about it.”* (MMAN) In doing so however, there was an element of vulnerability for leaders to:

“Be willing to ... not so much to make mistakes, but you’ve got to be willing to have a go and to really ... open yourself up to correction.” (MMAN)

Determination and “will” (PMAN) from leaders were strategies to manage uncertainty associated with making it happen, allowing advanced practice to develop “*slowly, organically from the ground up*” (OMAN), and:

“Pushing it, and just starting, because ... when we first started, we weren’t really sure exactly how the role was going to go.” (ORO1)

Similarly, flexibility was evident in order to manage the uncertainty of competing expectations, to:

“Maybe getting past that original concept of kind of going, ‘Oh yeah that sounds like a good idea’, to actually take that next step and think ‘Well what does that look like if I’m just trying to test the water with it? If I can’t commit ... how can I try to at least sort of attack that a bit?’” (MMAN)

Furthermore, a willingness to modify expectations was valued to achieve the desired outcome:

“It’s also been very flexible as we’ve gone along, you know, those roles have changed ... and rather than being worried about [it] ... if the role changes, lets change the position description because it’s supposed to be a progressive thing.” (OMAN)

Managing the uncertainty of others in the workplace was a feature, where leaders shared their expectations of advanced practice to establish common understanding and acceptance as integration progressed and the RTAP evolved over time:

“I would be the first put their hand up and kind of go that we fluffed around in the beginning, we were trying to find our way and ... we’ve tried to sort of, you know, be clearer for ourselves and also our staff as to what it looks like ... but I think there’s greater understanding now ... I think we’ve found our way and there’s some greater clarity around what gets done, how it gets done.” (MMAN)

Acknowledging the “*bumpy time initially until you work out what’s going to work*” (MRO2) enabled a flexible approach to integration, and arguably acceptance of fit and difference by others:

"We had a lot of hurdles to jump over and clarify, which made it feel chaotic at first, but I think if you're letting someone do something that has never been allowed ... you're going to have to iron it out as you go." (MRT2)

A flexible approach towards the developing competence and skills of the RTAP in training was applied, where *"as that person gets more and more experience, the expectations grow."* (OMAN) Similarly, if a learning need was identified *"we either make sure that we get them some sort of education to plug that gap, or we talk to them about it."* (OMAN) Communicating flexible performance expectations with others also enabled the RTAP to build their capability and transition their practice while avoiding *"a little bit too much pressure on the person doing the role."* (ORT2)

It was accepted that advanced practice implementation and RTAP development is an *"evolving process"* (MRO1). Overt flexible actions from leaders and collaborative working empowered the RTAP to reach their desired potential:

"Because the positions aren't completely rigid, like we do have expectations of what we need to do as [a RTAP] but ... it gives you the flexibility to make the role how big you want to make the role." (ORTAP1)

Managing uncertainty, being flexible was a necessary process for effective advanced practice integration into a workplace. However, it was acknowledged that the capacity of leaders to enable this may be influenced by the variable conceptualisation of advanced practice:

"I find [advanced practice], like it's kind of evolved and we're trying to catch up with it, or we have been for a while trying to catch up with what it means, I think that's probably one of the challenges." (WMAN)

4.3.3.2 "Making it Happen"

Influenced by managing uncertainty, being flexible, making it happen (an in-vivo code) was the process of leader practitioners using practical and creative strategies to implement a structure for advanced

practice into their workplace. Leader practitioners as influential others were key to translating the concept of advanced practice into a practical realisation, however commitment by the RTAP to engage in defined implementation strategies also assisted.

Practitioners acknowledged the challenges associated with the structural implementation of advanced practice, as *“with the way that the profession is structured ... it’s not designed for that.”* (WRT1). As a result, leaders were required to *“[stand] up there long and strong and very stridently”* (OMAN) to justify progress towards the advanced practice ideal, as:

“In a black and white world ... the patient outcomes seem a long way away, are often hard to argue for and to translate into the here and now when everybody’s got all these, these other sorts of pressures.” (MMAN)

Recognising such difficulties, leaders demonstrated a flexible approach to adjusting workplace structures and work distribution to *“let’s try and make it happen.”* (MMAN) Where available, leaders also took advantage of research funding and project opportunities to *“trial”* (EMAN) preliminary advanced practice implementation strategies and outcomes. However, in the absence of a longer-term plan for sustainability such approaches did not always succeed:

“I think that was the problem, it was an idea, it was started and ... there wasn’t that real strategic overview of where we were going with this and how we were going to sustain it.” (EMAN)

Being *“deliberate [in the] design and desire ... to make it work”* (MMAN) assisted sustainable integration, which included actively recruiting to obtain *“the sort of skills that I’m looking for”* (OMAN) in the RTAP; having *“a follow-up plan for when [the RTAP] goes so there is ... time to facilitate an interest from somebody else”* (MRO1); gathering *“research evidence ... around how [advanced practice] improves patient care”* (MMAN) to justify implementation and outcomes; and aligning the advanced practice intent with service need:

"I have, for example ... a doctor that specialises in lung treatment that wants a [RTAP], but ... we were only treating maybe ten patients a year, radically. And I'm sort of going, 'Well, I actually can't justify that one' which is why we don't have one yet. I think it's coming but we don't have one yet." (OMAN)

Reconciling competing expectations throughout this process could be difficult, sometimes necessitating a solution that *"isn't really very fair, but that's how we have to do it."* (ORO2)

Investment from leaders to commence implementation gradually, with an intentional but flexible approach to actively enable the advanced practice ideal to evolve, appeared to support more sustainable integration. Investment from the RTAP to make it happen was also important for a sustainable outcome, as:

"I think maybe you wouldn't take that step to be an advanced practitioner if you didn't think, 'Hey this is really where I want to focus a lot of my energies for a long time', you wouldn't, it's an investment I think." (ORO1)

Investment from the RTAP was demonstrated as *"a bit of motivation from the person themselves to get it started"* (WRTAP1) which sometimes required flexibility to align with the implementation framework initiated by leaders:

"When the department did implement [RTAP] ... at that stage it was my normal workload plus this on top so it was very busy, and it's just down the track that ... our management's managed to work it so that we can spend dedicated time." (ORTAP1)

Visible leadership was necessary for sustainable outcomes to be realised, to actively manage structural and social expectations and drive implementation strategies forward – *"hoping or thinking it will work"* (WMAN) was not enough. In a scenario where leaders were unable to progress towards a sustainable vision, this resulted in a situation of *"relying on the people who were interested in doing [advanced practice] to maintain that"* (EMAN) and integration was unlikely to be achieved.

4.3.3.3 Reconciling Competing Expectations

Reconciling competing expectations was the process whereby practitioners individually and collectively attempted to reconcile competing personal, social, practical, and structural expectations associated with the actions and outcomes (perceived or actual) of advanced practice implementation. The presence of competing expectations and the process to overcome these was additionally influenced by the conceptual, social, and practical elements of uncertainty discussed earlier in this chapter. Where unresolved, competing expectations often resulted in difficulty making progress, practitioner frustration and a problematic integration process.

Varied expectations of the personal meaning of advanced practice could influence the integration process. This was apparent from managers unable to garner interest from RT to pursue advanced practice initiatives, due to the RT being *“content with where they were sitting,”* (EMAN) or not feeling *“they had the experience,”* (EMAN) or feeling *“fatigue”* (PMAN) with the regular expectations of work.

Competing expectations could also arise with practitioners’ variable perceptions of broader meaning, as advanced practice:

“Doesn’t fit within a nice, neat award position, so they can’t see where, when you start saying ‘I want to do this’, they get a bit frightened about what you’re going to want [laugh].” (FG2P3RT)

Such differences could *“[cause] a little bit of, you know, disagreement between the staff members.”* (ORT2) Additionally, competing conceptual expectations could result in a failed implementation attempt if unable to be reconciled, which was *“disappointing for the staff who were involved”* (ERT1):

“Because I don’t think my RO wanted advanced practice, I think [the RO] wanted a [type] clinic. Yeah, I think that’s what it boils down to.” (ERTAP1)

It was sometimes difficult to separate conceptual challenges and practical challenges however, as *“it’s tricky to know whether it’s the actual idea itself or the fact that workplaces being preoccupied with a million and one other things.”* (FG5P2RT)

Competing expectations were evident in the experiences of RTAP training. Practitioners varied in their perceptions of who was to lead responsibility for training – whether the RT manager, the RO mentor, or the RTAP - and how learning should be framed with associated academic knowledge and clinical skills. Disconnected expectations of responsibility could result in difficulties managing issues that might arise from key practitioners changing focus or departing the service:

“We’ve had issues with progressing it ... the radiation oncologist who was driving that program went on mat leave and there was no real replacement for following up on that, so the radiation therapist involved in [RTAP training] ... didn’t get the support to develop the clinical skills.” (EMAN)

Additionally, competing expectations arose from the RO mentor being *“busy [with] other priorities”* (ERTAP1) and unable to support learning, which impacted on the RTAP capacity to achieve the desired outcomes:

“I did the formal study ... it was nice to know all that stuff, but I didn’t feel it equipped me to do what I was meant to be doing without the mentoring, I suppose ... I never really got a foot in I don’t think.” (ERTAP1)

The impact of the training framework design could also lead to *“frustration”* (ORO2), where conflicting expectations might arise in trying to balance training provision and productivity of outcomes. Additionally, the incidental impact of training design on others was an area of concern:

“Because we’re quite general, because the people are sort of spread out, I don’t want to limit others from going to planning say, so that the breast [RTAP] can always be there.” (WMAN)

Competing expectations around service demands were also apparent, including internal structural expectations of staff and funding, and external influencers such as referral pathways. Reconciling conflicting service expectations required leaders to find creative solutions to progress while acknowledging the influence of *“staff or the patient numbers [which] ... we can’t control really,”* (PRT1) otherwise implementing advanced practice could stall despite the desire to proceed:

“Personally, I’d like to see [advanced practice] happen ... being five staff down at the moment, obviously it’s not gunna happen ... and that’s part of the problem.” (ERT1)

Furthermore, the stability of the service was viewed as a competing interest towards getting started with advanced practice:

“We’ve had people leaving after a year ... and hardly anyone has stayed here for more than three years. That’s what makes it really hard because of the turnover.” (PRT1)

Additionally, where advanced practice integration had been initiated, competing service expectations could impact on the capacity of the RTAP to perform advanced activities:

“We struggle to have on a daily basis enough [RT] to actually treat the patients, so pretty much, for the last three or four months that’s what I’ve been doing, I’ve been treating patients and there’s not the opportunity to use all those extra skills gained.” (FG3P1RT)

Practitioners acknowledged the economic challenges of integrating a RTAP into the usually expected staffing establishment *“and trying to justify them to an organisation that is always trying to come in on budget”* (ORO2) - *“maybe that’s why there’s not a lot of them in the department”* (MMAN):

“I suppose that’s the balance as a manager, you kind of go, am I letting people have holidays or am I supporting – I know it’s extreme – am I supporting an advanced practitioner role? ... Where do we prioritise things?” (MMAN)

Economic expectations could be challenging to overcome though as *“that’s something you can’t really put a cost on to, you can’t really put a price on some of that stuff.”* (PMAN)

External service expectations such as *“trying to establish a different referral process for [advanced practice] was a bit of a challenge” (EMAN)*, which could result in modifications to intended advanced practice outcomes:

“As time went on it became more and more difficult to maintain those treatment spaces on the linac [treatment unit] when they weren’t being utilised, it was very hard to justify that and have people waiting to start treatment.” (EMAN)

Additionally, competing expectations when a centre was required to align with the expectations of a larger organization was expressed as a challenge.

Conflicting service demands were arguably easier to overcome if advanced practice could be aligned with a service need, however it was recognised that the *“reserved time and commitment ... and resourcing” (PRO)* to measure need could be difficult. Unreconciled expectations of need could lead to problematic implementation:

“I feel like in this department perhaps there wasn’t like a proper, ‘Let’s have a look at what we need, how are we going to utilise it, what we’re going to do with it, how we can support it’ and then go from there. It was kind of done backwards maybe ... and so that’s probably why it’s not greatly supported by the team.” (WMAN)

During the integration of advanced practice, competing expectations could arise as a result of different perceptions of the functionality and fit of the RTAP. This was reflected in practitioners trying to reconcile changes to the normal work of the RT, as well as managing the new work expectations of the RTAP:

“It left people going ‘Well I don’t really know what I’m supposed to do now. I know what I do normally so, so what’s [the RTAP] doing, what am I doing?’ ... So, this was something that, I guess you just had to work it out.” (MRT1)

Both the RT and RTAP were required to negotiate work performance expectations, with the guidance of the RT manager and other senior RT, to define scope of practice boundaries of the old and new roles. Equally, practitioners saw the need for balance within this strategy to support *“succession planning and all that sort of stuff”* (MRT1) of the RTAP role, as well to avoid the RTAP *“[losing] your generalist knowledge and therefore you become unemployable elsewhere.”* (OMAN) Additionally, conflicting work expectations could arise if the RTAP was performing another work role at the same time:

“I guess one of the challenges with [the RTAP] is that they’re charges, so you take them out of planning for half a day or something and then they’re not checking and who can help if needed.” (WMAN)

Where conflicting work expectations were unable to be reconciled, this could result in the RTAP expressing dissatisfaction – *“I keep thinking I could be doing more than what I’m doing if people would let me do it”* (WRTAP2) – or even feeling unable to continue in their new role:

“I think where I got to the point where I didn’t want to continue was, we had set out quite strong rules on what was acceptable ... but the expectation just kept growing that we would do more and more and we had already set out what was safe, what was okay, what was manageable and still achievable and satisfying to everyone.” (ERTAP1)

Managers saw the value of being *“clear across the board for everybody”* (WMAN) in relation to the expectations of the RTAP, and to have *“everyone being on the same page about what is advanced practice.”* (EMAN) However, despite acknowledging *“that is important to clarify so that there’s not people that ... have these different expectations,”* (MMAN) if shared understanding was not actively sought and enabled – particularly by leaders - the integration of advanced practice was problematic.

4.3.3.4 “Being Different”

Being different (an in-vivo code) was the process of practitioners attempting to manage the functional, structural, and symbolic uncertainty associated with the RTAP being different from the RT. The perceived personal and professional impact of that difference, and the strategies used to reconcile the difference, influenced acceptance and implementation outcomes.

The functional difference of the RTAP was expressed in specific task requirements within departmental documentation. Practitioners also offered a difference in comparative attributes, such as actioning *“more clinical decision making”* (MRT1), and being *“actually more research-based”* (ORT2), as well as:

“the education role once you’ve got your knowledge base ... then it becomes an advanced practice.” (MRO)

Additionally, difference in departmental fit was contrasted, in that the RTAP *“has [their] own things”* (MRT2) to do, are more autonomous in their practice and patient connections, and that they *“work closer with the doctors than, like a regular RT would do.”* (ORTAP2) However, the uncertain meaning of such differences was apparent given the nature of the RTAP being a former RT - *“I mean, we still identify with [the RTAP] as an RT”* (MMAN), but:

“[The RTAP is] different to the standard RT team as you would expect [pause] ... [they’re] still an RT, [they] can still perform the RT role [pause] ... I would see that role, I see it outside, well, [they’re] not part of our rotation ... doesn’t go in the mix. It’s [pause] ... They don’t see [them] as not an RT.” (MRT1)

For the RTAP, fit was assimilated as being a *“hybrid”* (MRTAP), as the role between RT and RTAP could readily become merged:

“I mean, on the treatment units ... if I’m treating ... patients or whatever and they have some questions, I’m happy to jump in and answer. Whereas I guess the normal radiation

therapist probably wouldn't, they'd probably call [the RTAP] or send them round to clinic."

(ORTAP1)

Managing a structure to frame expected differences could be challenging, to define the "expectations of [the RTAP]'s input into our normal process" (MRTAP):

"How does that person sit? You know, if that person is a charge, you know they probably don't really have time to be doing an advanced practice role, they're spending all of their time in their charge role." (WRO)

If this was unable to be reconciled, perception of fit could be impacted - *"I think we're still seen more for our substantive roles than ... focusing on the advanced practice roles."* (WRTAP1)

The legitimacy of the structural and functional difference of the RTAP was validated through label, pay grading and permitted activities. The RTAP was enabled to focus on a discrete area of practice to develop their expertise, in contrast to the general RT who tends to work across areas. Expertise was useful to *"help teach the rest of the staff"* (ORT1), and that:

"The skills from research, communication and actually leadership can be more advantageous compared to just a base RT." (ORT3)

However, this could also generate conflict as the former RT had *"to be willing to let [RT work] drop away"* (MMAN):

"I think it was always the argument too ... I suppose when, you know, we were down an RT, 'Oh, we'll just get [the RTAP] down'; 'Oh, no, no that's not what [the RTAP] does. This is a different role.' ... and they tried to do that, 'Oh [RTAP], can you just help out in CT?'; 'Well no, I can't.' And I think [we] had to be really strong about that." (MRTAP)

Additionally, finding a balance between roles was necessary as the RTAP was required to *"be, you know, all things to the team basically"* (WRTAP2) and continue to function beyond their area of practice.

As a former RT, defining the “*blurred*” (ERTAP1) practice boundary of the RTAP was challenging. The RTAP could feel they “*let my game down*” (ORTAP1) in areas of practice not of their specialty, and “*had to sort of fight*” (ORTAP3) to sustain the expected general RT skills - “*because it’s so early and [advanced practice is] not well known or well supported across the board in radiation therapy*” (ORTAP1), it was vital to be functional in both roles and not be “*too pigeonholed in what you’ve been doing.*” (ORTAP4)

This expectation was managed by some using a rotational model where the RTAP spent periods of time doing general RT work, to “*maintain, I think, the team dynamics that go with actually treating a patient on the machine.*” (ORO2) Even with this model however, a difference was still evident:

“And the bottom line is, when [the RTAP]’s been ... on the machine for x months and ... on the normal roster, [the RTAP]’s actually still doing all this stuff, because once it’s started, you know, you feel like there’s a big gap if [they’re] not doing it.” (ORO1)

Practitioner acceptance of practical and symbolic difference was necessary for advanced practice integration. Social acceptance of difference came readily to some – “*because they’re a [RTAP], it doesn’t mean they’re any different on the team*” (ORT1) – where for others this evolved over time:

“So [the RTAP] in the role is more accepted, and well I think that’s natural too for establishing something that didn’t exist before ... because it’s a subset, it’s not ... just doing the bread-and-butter work.” (MRT2)

4.3.3.5 Being Supported by Influential Others

Influential others were most impactful in permitting the implementation of advanced practice within a centre. Leader practitioners with influence – RT managers and RO – enabled and legitimised integration strategies and validated the role and activities of the RTAP. Where support from influential others was not granted, or granted and later withdrawn, integration of advanced practice was less likely to be achieved.

Commitment from influential others was necessary to enable the implementation of advanced practice beyond a concept, *“because it’s not something you can just set up from the RT end ... you’ve got to have real buy-in and desire to move it forward.”* (MRO2) RT could initiate conceptual discussions with leaders, but were unable to effectively integrate advanced practice in isolation of their support:

“Your head of department ... needed to be really onside and pushing, and then you needed a clinical person, you know a radiation oncologist, probably, onside and pushing. And I think then that’s sort of the perfect combination to make it work.” (ORO1)

Implementation in the absence of leader commitment created an unofficial advanced practitioner, doing the associated tasks but not being labelled as such *“simply because it’s just not valued as a role.”* (FG2P3RT)

Commitment was enabled by the perceived personal value to the *“clinician driver”* (MRO1), to achieve a return on investment:

“I think that it worked well for that candidate because I was heavily invested, so I wanted to make sure that it was a successful outcome.” (WRO)

With such investment came a willingness to disregard resistance to implementation, *“not caring about the barriers put up in terms of other staff”* (MRO1), however this was a valid strategy only to those with the power to do so: practitioners otherwise faced *“a brick wall.”* (WRTAP2)

Commitment from influential others needed to be sustained throughout integration, as where it was withdrawn:

“It started to fall apart because we couldn’t get any of the oncologists to commit to providing that mentoring support to develop those skills.” (EMAN)

Similarly, conflicting expectations from leaders during integration could influence the perceived legitimacy of advanced practice pursuits:

"Some of them are for it whereas others ... have been quite vocal in saying that quote 'That course could've been a waste of your time. I'm not quite sure why we put you through it.' They didn't, don't see the value in needing an advanced practitioner." (ERTAP2)

The perceptions of advanced practice by RT managers, and *"how management feels about those things," (MRT2)* were viewed as influential to the provision of an effective framework for advanced practice learning and actions. A supportive manager was key to integrating *"a good framework ... for advanced practice." (ORTAP1)* However, where manager support was perceived to be absent, effective integration could be inhibited:

"The last project I tried to get up and running ... it's hit another brick wall ... I'm just a bit frustrated with it at the moment ... [it's] frustrating that I'm not getting any further than submitting it to the top of the department." (WRTAP2)

Managers who preferred *"playing it safe" (ERTAP3)* and being *"super-duper cautious ... [to] not step outside the square" (WRTAP2)* were not viewed as complimentary to supporting advanced practice initiatives. Additionally, unfavourable manager perceptions towards the meaning of advanced practice were not conducive to implementation:

"I've heard people turn around and say 'Advanced practice is a waste of time, it's a load of crap', and if you've got managers that think that way they are never going to support it, and you'll never get it implemented within your department." (FG2P2RT)

The primary supportive influence within a workplace was the RO. RT managers required the support from the RO to pursue advanced practice initiatives, and were challenged if this was not forthcoming:

"It's hard if we're just trying to push it ... from an RT point of view and create something unless you've got that acceptance and that support from, you know, the oncologist and the division." (EMAN)

RT managers viewed *“solid radiation oncologist support, and support to the degree that there’s no games”* (MMAN) as essential to integration, *“a culture where doctors support that [without being] territorial.”* (FG4P2RT) RT managers required validation from the RO to commence advanced practice implementation – *“It was an argument with the rad oncs ... Well, a discussion, it was a discussion”* (OMAN) – however reaching an accommodation was viewed as chance – *“I am very, very, very lucky in that my medical director is extremely supportive”* (OMAN). If the advanced practice opportunity was declined by the RO, implementation would likely not continue:

“If they’re like, ‘Thanks but no thanks, that’s not where we want our service to go currently’ then you’re kind of knocked back from it.” (ERTAP2)

In addition to permitting the initiation of advanced practice into a workplace, the RO influenced ongoing integration by granting permission to the individual pursuing the RTAP role – *“obviously it came down to RO choice of who they would like”* (ORTAP3) – and having *“a big say”* (WMAN) in the structure and function of advanced practice activities and outcomes. The RO individually framed the RTAP scope of practice according to what was permitted, *“once we were happy with [RTAP] ... knowledge”* (MRO1):

“It’s how much leeway or how much responsibility the clinicians are willing to divest ... and then that will be clinician dependent ... once you’ve got the confidence in that person to know that they’re astute and know what they’re talking about and you’ve had that mentorship over a period of time.” (MRO1)

Mentoring and the relationship that is built during this process was also influential to the resultant scope of advanced practice:

“I have a candidate that I’ve worked so closely with, I’ve done so much to ensure that their role has succeeded ... Whereas I haven’t applied the same level of energy to other people that have the qualification that I haven’t worked directly with.” (WRO)

If support from the RO mentor *“was all a bit half-hearted and unstructured”* (ERTAP1), and overt permission for RTAP activities was not forthcoming, the legitimacy of advanced practice and resultant outcomes were negatively impacted.

Where permission was granted and the RO overtly *“championed”* (ORO1) the RTAP, there was a degree of protection against others who may not be supportive of the role:

“It would be difficult for another chief to come into the department and to get rid of the [RTAP] roles without a big uproar from the oncologists because they probably couldn’t do without us now [laugh]. And then when I did speak to my doctors about it, they were like, ‘We wouldn’t have it.’” (ORTAP1)

Support from influential others was key to the perceived success or otherwise of advanced practice initiatives, as *“at the end of the day, no matter how much the general RTs do, it still has to go through management. And I think that’s when everything kind of stops or is on hold.”* (ERTAP3)

4.3.3.6 Fitting In

Fitting in was the process of practitioners establishing and accepting new ways of working where the RTAP is functional among and alongside others. Fitting in evolved over time as practitioner expectations of the RTAP role and outcomes aligned, influenced by the framework established by influential others. Collaborative relationships, communication and trust between practitioners were key to fitting in, and a mutual willingness to work together in a different way.

The process of fitting in was apparent due to the difference of the RTAP from the RT. *“Cultural”* (ERTAP2) disagreement of role boundaries and *“turf disputes”* (MRO1) with other professional groups were expressed as challenges to overcome. *“Anti-sentiment”* (MRO1) and *“disenfranchisement”* (OMAN) could arise from other RT while assimilating the personal impact of the RTAP role:

“I think there was possibly a little bit of jealousy initially, because [the RTAP] was having this special position.” (MRO2)

This changed over time with familiarity and acceptance of new ways of working, facilitated by the engagement of leaders managing expectations and the RTAP actively building positive relationships:

"I had to work all that out because otherwise I was stepping on toes." (MRTAP)

Conversely, conflicted relationships – particularly with leaders – could adversely influence the capacity of the RTAP to fit into the service:

"I tried really hard to stand up to [the RO] along the way and set boundaries and everything but [the RO] still pushed harder, harder, harder ... I think I would have been more willing to have stuck with it ... if I didn't have this feeling that I was just being a bit used." (ERTAP1)

Support from leaders was essential for fitting in, however *"building up that trust relationship with the oncologists" (OMAN)* and being able to demonstrate higher level skills took time:

"I found it very hard to let go and delegate in that first 12 months ... and I think a lot of that delegation comes from feeling confident about what the person is doing." (ORO2)

Building trust was also aligned with an existing working relationship, where leaders could be reluctant to support the RTAP if they were not confident of their capacity to perform as expected - *"I think it's like anywhere, you trust who you work with" (PMAN)*. Additionally, it was proposed that *"you get better buy-in from people if there's a real need, and it's supported and seen as, like, value adding to the department."* (WMAN)

The qualities of the RTAP were viewed as *"absolutely vital [verbal emphasis] in making this work, [in] that you do choose the right people for that role."* (OMAN) Effective attributes of liaison, communication and facilitation were reflected in department documentation, in addition to *"[being] able to have the confidence to put yourself up there at that level" (MRO1)*. The RTAP also saw *"mutual respect" (MRTAP)* and effective communication as important factors for fitting in:

“You have to be careful about how you say things, be careful of how you ask for things, about how you report things ... develop that relationship that they know that I’m going to ... be reliable, and ... if they’re going to hand something over to me, that it’s going to be done.” (MRTAP)

Collaborative working was an important facet for fitting in, as:

“I think if it was imposed on you from outside, I don’t think it would work because it’s change and people don’t like change, and they don’t even look to see whether it’s good or bad or what the positives are, I think they just get bristled up.” (MRO2)

Through collaboration, practitioners were able to find a place where the RTAP could “complement” (MRO4) existing workflows, and where “problem solving and also the continuity of patient care” (ORT4) could be supported with a team approach. However, willingness to collaborate needed to be mutual to be a positive influence on fitting in:

“I think that the key to advanced practice in radiation therapy working is really collaborating within the team of professionals in which we work ... which also makes it hard too I think [laugh].” (FG3P2RT)

4.3.3.7 Learning to Become the RTAP

Learning to become the RTAP was the process of skill, knowledge, and practice transition of the RTAP during the integration process. A framework for learning was required, including time and access to learning opportunities, and mentoring and validation from experienced others.

Enabling actions by influential others were key to supporting the achievement of expected learning outcomes. Academic knowledge may be garnered through an externally provided program, but leaders were essential in providing “some sort of structured program on how [training] was going to be done” (EMAN) within the centre to support clinical learning. Guiding frameworks for clinical learning were available to practitioners, however local interpretation and application were necessary

to establish a structure. Competing expectations and a lack of structure could be inhibitive to learning progress:

"I'm probably really protocol driven and play by the rules and all that ... so maybe that's where it's successful in other areas where they've defined it a bit better, but it all felt a bit at sea." (ERTAP1)

Within the training framework, time for learning was a feature to enable the RTAP to transition from novice to expert – *"that's the nature of doing anything new, no one's an expert of something if it's brand new."* (MRT2) The RTAP was required to learn new knowledge and skills different to that of the RT, which takes time. Active mentoring and support during this period were valued:

"I think you need a good ... two to three years of mentorship to be able to, it's a clinical job so you need clinical mentorship and understanding of all the clinical problems, not only the advocacy and the education and all those sorts of things you know come as a leadership role, but you do actually need some clinical training." (MRO1)

The transitional period of skills application was incorporated into the training framework, where expectations *"started off being a smaller section and it has grown over time to cover a more ... comprehensive role."* (MRT2) Labelling was also utilised to acknowledge the period of transition towards becoming the RTAP:

"We didn't make the role sort of advanced practice for those first couple of years ... but I think once you've got there and you've got that clinical level and you can step up to do all those other ... leadership aspects, then I think then it becomes advanced practice." (MRO1)

Mentoring and validation of skill development was supported by expert others, including the RO and other more experienced RTAP. Mentors facilitated *"on the job training"* (ORT1) in the new area of practice, acting as a knowledgeable resource and support for the RTAP to *"respond to different*

scenarios.” (WRO) Influential others as mentors also provided permission for the RTAP to learn new skills, to have access to areas of practice that may not have been available as the RT:

“I think [the RO] might have encouraged me to start doing that ... ‘You mark-up that patient and see how you go’ ... and we’d talk about it in clinic of what I should mark-up and how I should do it. So, it just ... started from that.” (MRTAP1)

Conversely, a lack of structured mentoring input could lead to the RTAP “*floundering*” (ERTAP1) and integration not being as effective:

“I was good with the academic stuff ... I could smash that out ... I ticked all those boxes. It was the stuff here that just floated around too much for me to feel achievement.” (ERTAP1)

4.3.3.8 Adding Value

Influenced by the capacity of leaders to make it happen, adding value was the process of contributing and assimilating positive outcomes as a result of advanced practice implementation. The process of adding value influenced acceptance of advanced practice initiatives by practitioners and had a positive influence on achieving intended integration outcomes.

Adding value was observed as “*streamlining of things to happen*” (MMAN) by the RTAP expediting workflows in the centre. This occurred by the RTAP being available with the knowledge and skills to “*troubleshoot problems*” (ORO1) associated with radiation therapy delivery, as well as taking responsibility of work activities from others:

“I mean [the RTAP] does a huge amount of stuff that we would otherwise normally do, so it’s great from an RO workload point of view.” (MRO1)

Radiation therapy technical development and research engagement were also viewed as advantageous, as the expert focus of the RTAP in a discrete area of practice “*has allowed them to go to the literature independently, and evaluate it, and be current about best practice around the world.*” (ORO2)

The RTAP was a “valuable role” (MMAN) for patients, aiding their transition through radiation therapy by expediting their treatment journey and provision of information, and acting as liaison between the patient and the RO. The RTAP could also support care coordination on behalf of the patients with external referrers, delivering a clear communication pathway and secondarily enhancing the reputation of the service:

“You know we’ve done clinician surveys of the medical oncologists, they love the fact that [the RTAP] is there as the go-to person for referrals ... occasionally if there’s something clinically tricky they will still ring us directly, but to be honest, very rarely these days, they pretty much just refer to [the RTAP].” (MRO1)

Collecting evidence of anecdotally perceived value was viewed as an important step to justify advanced practice implementation.

Adding value was also observed by the RTAP capacity to share their expert knowledge with others, mainly the RT and trainee RO, and was a reflected expectation in RTAP role documentation - “part of the [RTAP] roles is actually to upskill everybody else as well, and teaching is a major focus” (OMAN). The RTAP was identified as having the experience and knowledge for effective decision making around clinical actions, which inferred an “authority” (ORT3) to be a resource for others:

“It helps us all become a better person because we are actually all learning ... all the problem solving that they help us with, we actually can retain that information and apply it the next time, so ... it’s benefited the whole department.” (ORT1)

Personal satisfaction was also viewed as valuable to the RTAP, where the enhanced autonomy and self-directedness from performing as an expert enabled the RTAP to feel valued. The career development opportunity for RT provided by implementing RTAP roles was also advantageous – “it’s been fantastic for staff retention.” (OMAN)

Where the integration of advanced practice was adding value to the service, patients, and practitioners it was viewed as a positive justification for implementing a RTAP, and in turn further consolidated the integration of the role.

4.3.4 Factors of *Integrating Radiation Therapy Advanced Practice* Influencing *Becoming the Radiation Therapy Advanced Practitioner*

Interpretation of the integration process by the RTAP, including perceptions of professional and social outcomes, was demonstrated to influence the internal transition associated with becoming the radiation therapy advanced practitioner. Equally, practical strategies associated with integrating radiation therapy advanced practice were influential in providing a framework within which becoming the radiation therapy advanced practitioner could occur. Although integrating radiation therapy advanced practice of itself was influential, as shown in Figure 4.5 (overleaf) several factors were determined to directly influence becoming the radiation therapy advanced practitioner. This occurred as follows:

- *Learning to become the RTAP* was influential in relation to the perceived legitimacy associated with learning skills beyond the usual scope of the RT, as well as having access to learning from influential others.
- *Managing uncertainty, being flexible* was influential where leaders supported the RTAP to navigate uncertainty associated with becoming the radiation therapy advanced practitioner by providing a flexible framework in which the transition could occur.
- *Being supported by influential others* was shown to be impactful on the perceived legitimacy of the transitional professional identity, particularly through the overt conferring of legitimacy by influential others.
- *Adding value* to service, self and others influenced the perceived value of becoming the radiation therapy advanced practitioner, and in turn the motivation of the RTAP to pursue the new role.

- *Fitting in* was influential in enabling the RTAP to find their place within the team and to feel legitimate in this place.
- *Being different* influenced the process of transitional professional identity, particularly the perceived value and legitimacy associated with no longer being a RT.

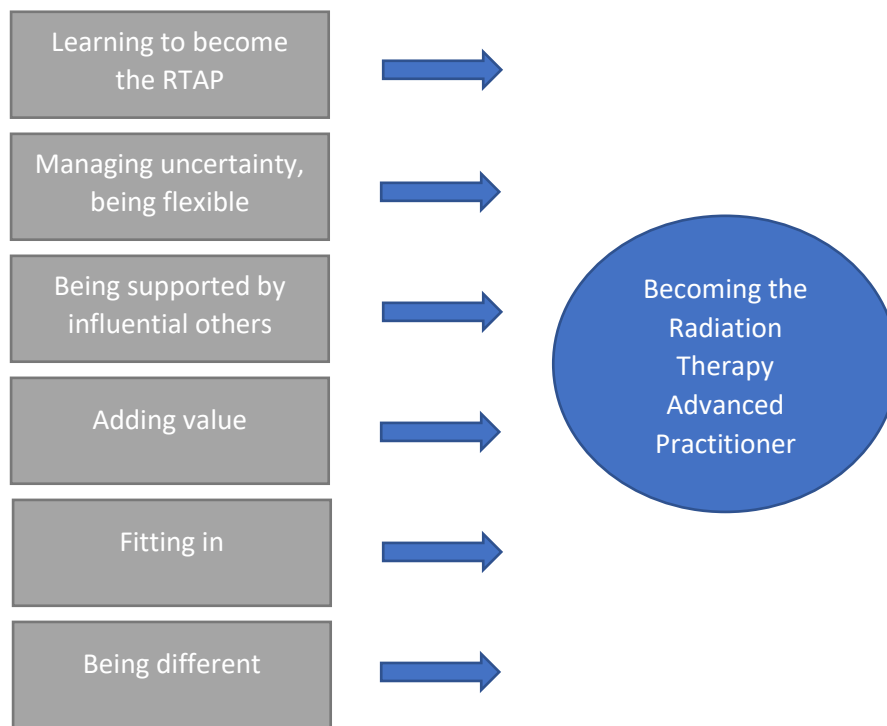


Figure 4.5: Factors of Integrating Radiation Therapy Advanced Practice influencing Becoming the Radiation Therapy Advanced Practitioner.

The factors *making it happen* and *reconciling competing expectations* were indirectly influential in the way they informed and interacted with other processes.

The interrelated and co-influential nature of these processes indicate that no single factor was more influential than another. However, where becoming the radiation therapy advanced practitioner appeared to be successful, all these factors had positive influence; where not as successful, these factors had a negative influence. The latter was demonstrated when learning and practice was not fully enabled by supportive influential others, and/or if the RTAP was unable to completely assimilate functional and social legitimacy, then the process of becoming the radiation therapist was inhibited.

4.3.5 Influencing Factors of *Becoming the Radiation Therapy Advanced Practitioner*

The factors informing the process of becoming the radiation therapy advanced practitioner are represented in Figure 4.6. Each of these factors will now be explained with examples from data.

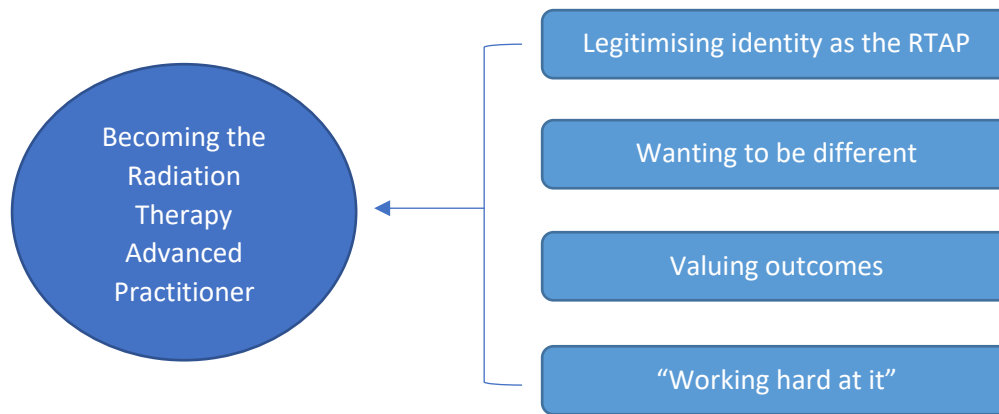


Figure 4.6: Factors influencing *Becoming the Radiation Therapy Advanced Practitioner*.

4.3.5.1 *Legitimising Identity as the RTAP*

Legitimising identity as the RTAP was the personal process of transition from being the RT to becoming the RTAP. Each individual RTAP was required to navigate the personal and professional meaning of the changing role with respect to the perceived legitimacy of the actions and outcomes being performed. External markers of legitimacy in label and symbols influenced perceptions while transitioning professional identity, particularly the overt granting of legitimacy by influential others.

Perceptions of what it means to be a RT compared to an RTAP influenced feelings of legitimacy. As explored earlier, some of this was expressed in the process of navigating uncertainty of the changing role and feelings of discomfort in the transitional liminal space. Additionally, legitimacy was influenced by perceptions of capability associated with doing RTAP actions which were different to the usual scope of practice of the RT. This was particularly expressed during the transitional period of learning to become the RTAP – this takes time, and it was somewhat challenging to tolerate feelings of being less capable as a RTAP compared with the previous experience of being a highly capable RT:

“And I think that was probably just because of me feeling like ... I wasn’t an advanced practitioner because I felt that I didn’t have the knowledge to do that, or the things that I was supposed to have ... then I got more confident and then I sort of did see the benefits to it. But that, that didn’t happen until probably two years ago when I sort of suddenly went ‘Oh this, this is actually really beneficial.’” (MRTAP1)

Similarly, where the actions being performed were not perceived to be an extension of capability towards becoming the RTAP, feelings of illegitimacy could influence the transitional process:

“I’ll mark out a field ... and they’ll come and, you know, slap the edges around a bit ... but I didn’t feel that I was doing anything more in that role than I was doing as a good planner.” (ERTAP1)

Conversely, conflict arose when the RTAP personally perceived capability as a result of training completion, but the framework for recognition as a legitimate identity by others was absent – the RTAP was *“a resource person as opposed to an advanced practitioner.” (FG3P2RT)*

“Unless there’s a label attached to what an advanced practitioner is ... in our daily lives people don’t recognise those people unless there’s a label that has been professionally attached to that ... so that makes it difficult also for other professionals to view that person as an advanced practitioner as well.” (FG3P1RT)

The point at which a legitimate identity is achieved was expressed through symbols of legitimacy such as accepting and using a label, meeting the expectations of the legitimate role in the workplace, and, for some, professional body accreditation. This remained tempered with uncertainty however as to the acceptance of legitimacy by others, and the external recognition of a legitimate role:

“When someone asks me, just someone off the street says, ‘What do you do?’, I say, ‘I’m a radiation therapist’ and I say, ‘I have a special interest in [area].’ So, I do think it does define me a little bit as a radiation therapist ... I don’t tend to say, if it’s someone in the

field, I don't tend to say advanced practitioner because I think it just makes me sound like I am a bit up myself [laugh]. But I mean my signature on my letterhead does say advanced practitioner." (ORTAP1)

This experience was arguably influenced by the broadly expressed expectation that the RTAP was required to sustain their skills as a RT while performing in the new role – the RTAP was still functioning partly as a RT and did not fully evolve into something entirely new. This action was valued to “demonstrate expertise, knowledge and skills in ... [radiation therapy] planning and treatment” (Maple document), and to somewhat mitigate the uncertainty of the different career pathway. However, when the RTAP was required to perform non-expert, general RT activities this created challenges:

“You know, treating patients on the machines and doing all the normal things whilst maintaining all this activity, is, is a balance. And I can completely see why [the RTAP] needs to spend normal time on the machines and that kind of thing, but I think that is, there's always a bit of a tension there about.” (ORO1)

Legitimising identity was informed by the granting or withholding of legitimacy by influential others. As explored earlier, the nature of the RTAP as being different from the RT necessitated the contextual framing of what the new role meant. Influential others were integral to the perceived legitimacy of such difference among the RTAP and their colleagues. Training and expert skills alone were not enough to legitimise identity, and the withholding of legitimate symbols and structures by influential others was expressed as frustration by those who self-identified as a RTAP:

“And the years to get [RTAP] knowledge and that expertise, it's not a short term thing, so it, it would be nice to have the support and the recognition in terms of a defined job role from an employer to say 'This is what you can work on for the next three years and this is what we value you doing'... otherwise there is very little incentive to get it up and going, and I think that's where we've failed, like I've dropped the ball because I'm sick of being the only one that cares.” (FG2P3RT)

Withholding of legitimacy by peers was not as impactful, as where influential others granted legitimacy there was a degree of protection against the “naysayers” (MRO1):

“There could be some underlying, you know, things still. But I think because it’s so well received by the medical staff ... they’re sort of like my force field.” (MRTAP)

It could take time however for the RTAP to validate their actions and build “confidence with the RTs in having those conversations so [they] trust what [the RTAP is] telling [them] ... and that’s come with experience.” (MRT1)

As discussed earlier, the integration of the RTAP into a workplace was in the power of influential others to frame a permitted structure and provide training. The withholding of any of these actions impacted negatively on the capacity of the RTAP to fully realise a legitimate identity and transition beyond the liminal space:

“I wanted feedback and I wanted assurances and I wanted to know that I was doing what was expected, but there was no expectation ... it was just a bit up in the air ... it was not structured enough for me.” (ERTAP1)

Similarly, the impact of withholding legitimacy could not be overturned by endorsement of external others who were not as influential:

“I do say that I’m an advanced practitioner because [external others] have asked me, as an advanced practitioner, to come to present. But within radiotherapy, generally not, I generally sweep it under the carpet because I’m just a bit embarrassed about it, I suppose.” (WRTAP2)

Conversely, the granting of legitimacy by influential others through permitting RTAP actions and access validated the transitional identity:

"I realised there was a ward meeting going on, and I was saying to [the RO] 'What's that?', and [the RO] said, 'Oh well, we'll introduce you to that'. And [the RO] just took me over and said, '[The RTAP] is going to come and sit in.'" (MRTAP)

Additionally, the overt recognition of value in granting legitimacy by influential others was empowering:

"You know, it's all about giving people a responsibility and letting them run with it, basically. If we don't give them the responsibility, they're not going to come and take it."
(OMAN)

The influence of external symbols of legitimacy, such as professional body recognition of advanced practitioner status, was varied. If recognition aligned with contextual expectations of the RTAP role it had "power" (ORO1):

"Being an accredited AP I think there's a lot more respect for [their] level of knowledge ... we actually ask [them] to do a little bit more ... so, I think that, that broader multi-disciplinary recognition, is one of the major advantages of having the accreditation."
(OMAN)

However, if professional body recognition was achieved but contextual granting of legitimacy remained withheld, it was perceived to have limited value:

"I thought it did [have value] until I got one [professional body recognition] and then, oh well, it's a piece of paper now ... and, um, so then when it did come through, I was like, well, that was an anticlimax, I thought I'd be like jumping for joy." (WRTAP2)

Equally, where professional body recognition was not perceived to make a change to the current status of the RTAP in the workplace, negatively or positively, it was not likely to be pursued.

4.3.5.2 Wanting to be Different

Closely related to legitimising identity was the process of the RTAP wanting to be different. Strongly influenced by the factor being different, wanting to be different was the process of the RTAP assimilating the personal meaning of pursuing a work role and career pathway different to that of the RT. This process evolved over time as meaning was influenced by the perceived personal and professional impacts of integration actions.

The uncertainty associated with the perceived RTAP career pathway, when compared with the career pathway of the RT, was influential with not wanting to be different. Some RTAP were hesitant to pursue the unknown and what it might mean to their longer-term prospects:

“Senior roles were coming up and I felt ... like I was de-skilling in more complex planning and checking, and I didn’t want to veer too far off the career path that would be remunerated because there was nothing in the advanced practice.” (ERTAP1)

However, being different was viewed by other RTAP as an opportunity to move away from the usual expectations of the RT:

“I thought I’ve actually got to do something more than just work on the machines, which is, there is nothing wrong with that, but I thought that I had to do something more myself.” (MRTAP)

The RTAP as an endpoint was seen to be fixed and did not cross over or correlate with the endpoint of the usual RT career pathway. This created tension if the alternate endpoint was not valued, the meaning of which could also change over time:

“I looked at it and thought, ‘I’m sidelining here, and this is not the best thing for me long-term.’” (ERTAP1)

Conversely, perceiving the value of being different as positive to the career trajectory was self-affirming:

"For me I'm glad I did it, I like the position more so than a team leader role or anything like that, which we've just had interviews for all those positions so, and I didn't even apply."

(ORTAP1)

Becoming the RTAP was enabled by wanting to be different. The RTAP that viewed the end point of being different as *"somewhere [they] wanted to go"* (ERTAP1) were more likely to be motivated to pursue the new role and transition professional identity.

4.3.5.3 Valuing Outcomes

The process of becoming the RTAP was influenced by the perceived value of intended or actualised outcomes. Outcomes were viewed as having an intrinsic impact on the personal self, or external impact associated with performing actions for others. The RTAP was more likely to assimilate the process of becoming the RTAP if there was perceived value in the anticipated outcomes.

Personal motivation to pursue advanced practice actions was associated with the perceived value of doing so. Where little value was perceived in the role, the RTAP withdrew from the process of becoming one:

"So, um, like what was the point, it was a bit timewasting to try." (ERTAP1)

Conversely, observing valuable outcomes externally was motivating to the pursuit of advanced practice objectives:

"I had that site visit to [country] and I'd seen [RTAP] working which was amazing ... I think I came home from that too just like 'Oh I've got to do this. This is great.'" (MRTAP)

A valuable outcome was also desired as a reward for personal effort in working towards the RTAP position:

"Personally ... because of all of the work that we put into it, I'd really like to see [advanced practice] happening." (ERTAP2)

Equally, personal effort was sustained when valuable outcomes to self and others were achieved:

"I love it, I love treating [area], personally I'm happy doing it ... I don't mind doing the extra study or the extra hours or anything because I'm enjoying what I'm doing." (ORTAP4)

Sustained motivation towards pursuing advanced practice goals was intrinsically linked with the perceived value of outcomes to the self, patients, and service, which in turn aided the transitional process towards becoming the RTAP.

4.3.5.4 "Working Hard at it"

Relatedly, working hard at it (an in-vivo code) was the process of the RTAP actively and intentionally demonstrating capacity and drive to meet advanced practice expectations. The RTAP was required to demonstrate a "higher level" (ORO1) of autonomy, responsibility, understanding and capability than their RT peers, necessitating effort to meet such expectations. Additionally, attributional expectations of the RTAP being "a certain type of person" (FG2P1MP) in relation to leadership, collaboration, and altruism, as well as the "right sort of person with regard to their passion for that sort of role" (MMAN) were broadly expressed as equally valued. The RTAP required intentional actions to align with these views and support becoming the advanced practitioner; however, acceptance of the legitimacy of such actions could only be achieved with the permission of supportive influential others.

Motivation to achieve was recognised by the RTAP as an important facet of meeting expected outcomes:

"I've worked very hard at it and put myself out ... gone over and above to get the respect, to go, you know, 'I will do that. I will do anything that you need me to do.'" (MRTAP)

Conversely, motivation in the absence of outcomes validated by supportive others was challenging to sustain:

"So maybe I could just step back ... It would hurt because I feel I've put a lot of effort into getting as far as I have, and I don't think I could let go all together and say, 'Look, I'm just

going to come to work and collect my pay and go home.’ I’ve been working too long to, you know, go back to that mentality, but if they said, ‘Look, we don’t need an [RTAP]’ then maybe I’d do a different job.” (WRTAP2)

Working hard at it was viewed as having a positive influence on achieving outcomes, sometimes within the context of overcoming resistance to the role:

“To some degree the success of what we see with [advanced practice] has to do with [the RTAP] enthusiasm for it and [their] desire to grow it, and actually [their] desire to learn more about it and to perhaps be more proactive.” (MMAN)

Additionally, active recruitment of extended personal attributes into RTAP roles was viewed as an important feature in meeting RTAP expectations:

“I think [RTAP] positions are always, and I think the way they’ve been established, is that they’re more of a position for someone that is passionate about their career and wanting to do more.” (ORTAP1)

However, motivation to work hard at it was perceived to be of more value to outcomes when done for “altruistic” (WRT1) reasons rather than for a promotional opportunity:

“I think one of the key elements is, you know, that person’s passion for professional development, because a passion for a promotion ... if it’s more like a CV kind of thing, I can’t imagine that you would get that same quality of outcome.” (WRO)

Becoming the RTAP was not a passive action – the RTAP in transition was required to actively engage in the process, demonstrating a high level of motivation and drive to meet the expectations of others and be viewed as a legitimate identity.

4.4 Summary of Findings

Given the complexity of the process described, it is appropriate to synthesise the common features represented within this narrative of results to aid evaluation and inform recommendations. It is apparent that uncertainty is present in framing conceptual, practical, and social meaning and actions, as has been discussed at length. Additionally, the importance of leaders and the influential power they wield is evident throughout integration decisions and actions - a structure for advanced practice within the workplace and permission to perform RTAP activities can only be provided by those with influence. Value is also a common concept in each key process and has influence on the willingness to pursue advanced practice initiatives, as well as acceptance of outcomes. Finally, the meaning of professional identity and identity transitions are apparent in the identity work of the RTAP, and in the enculturation of advanced practice within the workplace. The impact of each of these features on the implementation of radiation therapy advanced practice will be explored in greater detail in the final chapter.

4.5 Conclusion

This research has demonstrated the implementation and process of radiation therapy advanced practice in Australia is highly complex and contextually derived. The three key processes that explain what is occurring – conceptualising radiation therapy advanced practice, integrating radiation therapy advanced practice, and becoming the radiation therapy advanced practitioner – present multiple inter-related and co-influential factors. Overarching and interwoven throughout is the fundamental process of ‘Navigating Uncertainty’, influencing practitioner meaning and actions associated with the implementation of advanced practice.

The aim of this research was to make visible the factors influencing the implementation of radiation therapy advanced practice in Australia, to determine what may need to occur to improve the current state and achieve the goals of health workforce redesign described in Chapter 1. The final chapter will

synthesise the results of this research and present recommendations for the future of this worthwhile endeavour.

Chapter 5 Integrated Discussion

5.1 Introduction

The systematic implementation of radiation therapy advanced practice has not yet been observed in Australia despite the anticipated benefits to service delivery. This research was ventured to understand the factors that may be influencing this situation. The results have demonstrated that the implementation of radiation therapy advanced practice is influenced by a complex process of navigating uncertainty, informed by conceptual, practical, social, and personal meanings. This chapter will synthesise the key findings of the research, particularly the features of uncertainty, power, value, and identity, in the context of radiation therapy advanced practice implementation. The implications will be explored with regards to the contextual situation examined in Chapter 1 as well as the literature review analysed in Chapter 2. Reflections on the reach and limitations of this study will be discussed, along with my personal reflective journey. Recommendations informed by this research will be proposed as an integrated narrative.

5.2 Uncertainty

The process of practitioners' identifying and navigating uncertainty was a key feature of the implementation and process of radiation therapy advanced practice. Uncertainty was apparent in conceptualising what advanced practice means to self and service, and structurally when attempting to integrate advanced practice actions into the workplace. Social and personal uncertainties were also observed when assimilating the meaning of the RTAP to self and others, particularly in the transition between being a RT and becoming a RTAP.

Uncertainty was apparent because the meaning of radiation therapy advanced practice and the RTAP is contextually derived and can be challenging to determine. Defining what advanced practice implementation means to the workplace required contextual consideration of possible influence and impact. Difficulty arose with the ambiguity surrounding such possibilities given the lack of practice

exemplars from Australia. There is no national standard expectation of activities and outcomes for advanced practice, and practitioners were relying on supposition of how the RTAP might fit and what the endpoints might be. Additionally, although advanced practice guidelines from the professional body, ASMIRT, have been promulgated,(38-40) they did not appear to influence meaning, conceivably as they focus on the desired end point without informing practitioners how the end point might be reached. Further contributing to uncertainty, there is a lack of structural guidance in relation to implementing advanced practice into a radiation therapy service, a challenge compounded by workforce models that are framed towards expectations of clinical throughput from traditionally described roles.(244) Moreover, State based industrial award structures and medically directed activity-based funding for health services do not explicitly provide a framework for introducing a RTAP to the workplace. The complexity of disparate Commonwealth and State funding accountabilities to the health care system in Australia has previously been acknowledged as a potential inhibitor to health workforce redesign.(9,23) The uncertainty of defining the RTAP as a distinct professional role is further challenged as there is not a definitive pathway from the mandatory RT capabilities delineated by the registration board, MRPBA,(61) to what might be the expectations of an advanced role. It is evident that there is not yet a clear national picture of how to implement radiation therapy advanced practice, and practitioners are reliant on navigating the uncertainty of this situation to achieve a contextually derived outcome. This is problematic when considering the future growth of advanced practice, as not only are outcomes likely to be variable within each workplace due to contextual interpretation, but they are also contingent on the response actions of practitioners to such uncertainty.

The findings from this research contrasts with the successful implementation of the four-tier structure reported from the UK, purportedly the result of closer ties of accountability between the NHS, hospital services, and education providers when compared with Australia.(23) Similarly, the implementation of RTAP in Ontario, Canada was facilitated by a long term, funded collaborative project between a professional special interest group, hospital services, and the Ministry of Health.(105) Although reports from both regions expressed elements of uncertainty in defining expectations for the

RTAP,(105) professional identity transition,(95,97) and cultural fit,(102,175) arguably the provision of a legitimate structural framework enabled implementation to progress irrespective: uncertainty was present but not a limiting factor. It is desirable to achieve similar connectedness between advanced practice stakeholders in Australia as a strategy to lessen the impact of uncertainty.

The response actions to the experience of uncertainty were shown to be variable in this research. For some practitioners, uncertainty was present but able to be navigated towards a successful outcome. For others, uncertainty was debilitating – it has been suggested uncertainty can provoke “fear, worry and anxiety, perceptions of vulnerability, and avoidance of decision making.”(243 p63) It is understood that individual strategies to manage the negative effects of uncertainty vary, and an individual’s capacity to do so may depend on their tolerance to the uncertain situation.(243,245) Managing the discomfort of uncertainty can be a motivating force to address the unknown features,(246) however it has been proposed that multiple layers of uncertainty in a situation can build on each other and limit individual capacity for action.(247) This is pertinent with respect to the implementation of radiation therapy advanced practice where uncertain features are many. Additionally, the response to uncertainty can be influenced by the perceived threat of the potential outcome of an uncertain situation,(248) of relevance when observing the influence of transitioning professional identity. Significant to the personal and social uncertainty expressed in this research, it has been suggested that a disposition of pessimism,(248) as well as future imagining of a negative or positive possible self(249) may influence actions. It is evident that uncertainty can cause feelings of discomfort, and resultant response actions may depend on the characteristics of the individual, the personal meaning attributed to the uncertain situation, and the number of uncertain features that may be apparent. It is vital that the uncertainty surrounding the implementation of radiation therapy advanced practice is lessened if effective progress is to be made.

The variation in response to uncertainty in the context of the implementation of radiation therapy advanced practice can be further explained by expanding the work of Hillen and colleagues.(243)

Informed by an analysis and synthesis of the multidisciplinary breadth of uncertainty research, the authors proposed a conceptual model that explains the mechanism of response to a perception of uncertainty, presented in Figure 5.1. The authors suggested the perception of uncertainty may be moderated by individual or situational characteristics, or by cultural or social factors. Response actions to uncertainty may be positive or negative, and include cognitive, emotional, or behavioural domains. An adaptation of this model is warranted to explain the observations within this research, as presented in Figure 5.2. This research has shown that interpreted and assimilated meaning was a key feature influencing the perception of uncertainty, building on the compartmentalised stimuli or characteristic moderator factors in the original model. Additionally, although practical and structural external factors may moderate the perception of uncertainty, the meaning of such factors was also influential. The perception of uncertainty can result in a range of cognitive, emotional, and behavioural responses, as described by the original model. However, as the uncertainty associated with the implementation of radiation therapy advanced practice is multidimensional and ongoing, this research has demonstrated that response actions may in turn modify moderator factors and the perception of uncertainty, which may cyclically modify later response actions over time.

The conceptual model presented in Figure 5.2 helps to understand the variation in response to the uncertainty exhibited in this research. It also emphasises the challenge associated with the potential negative impacts of uncertainty on pursuing action towards radiation therapy advanced practice implementation. Concurrently however, it highlights a potential solution, whereby external structural moderating factors may be positioned to lessen the perception of uncertainty. It also demonstrates the value of a supportive workplace culture, and the importance of a visible implementation framework. It is critical that contextual and national strategies are initiated to minimise uncertainty surrounding the implementation of radiation therapy advanced practice if momentum is to be achieved in this area.

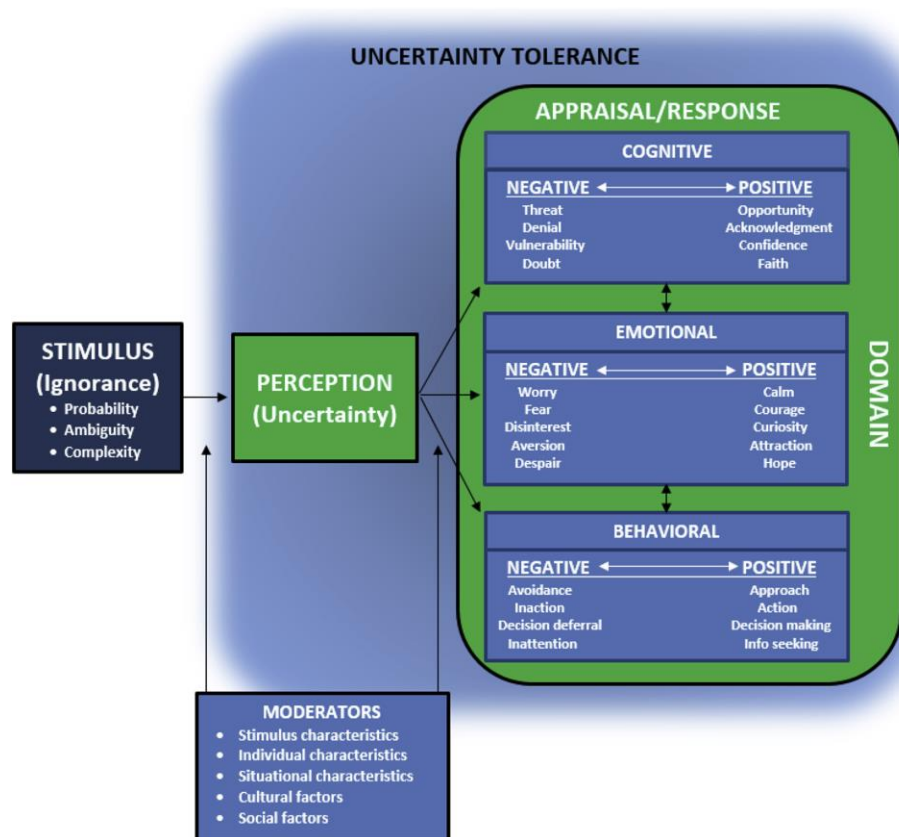


Figure 5.1: Integrative model of uncertainty tolerance reproduced from Hillen et al (243)

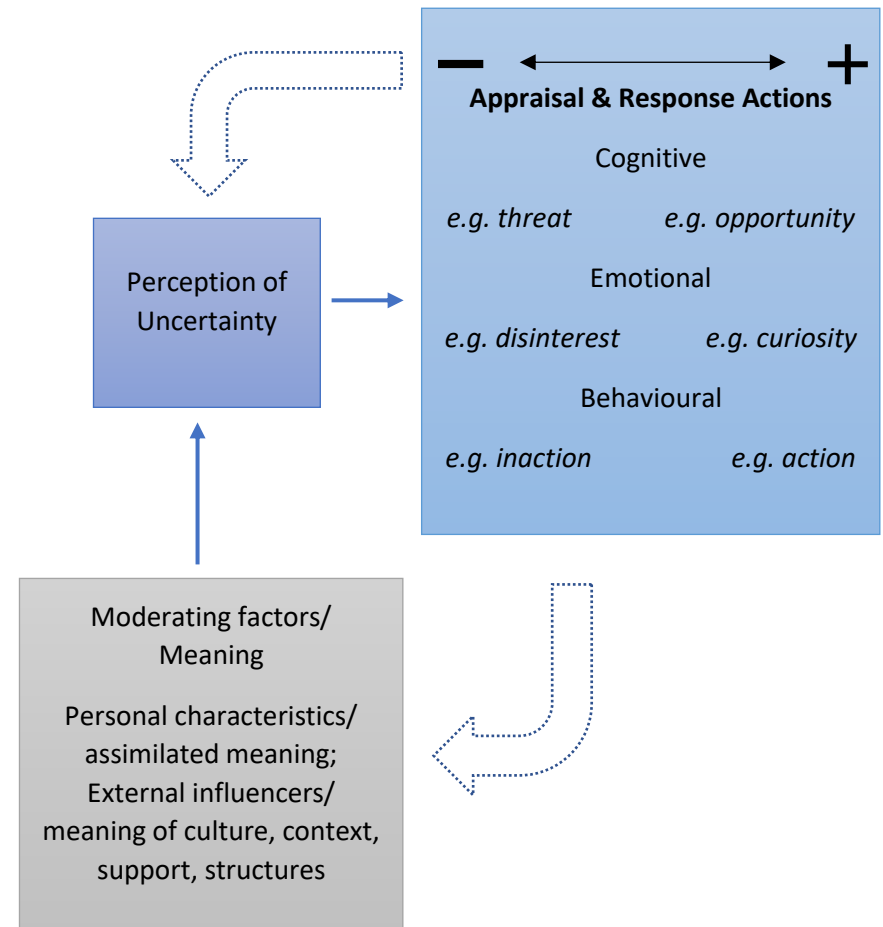


Figure 5.2: Adapted model of uncertainty tolerance applied to the implementation of radiation therapy advanced practice.

To inform the framing of potential strategies, it is of value to explore the organisational change and health workforce redesign literature to observe how uncertainty may have been addressed in other contexts. The need to minimise uncertainty during organisational change is well recognised, as uncertainty that is not managed can induce stress, a lack of trust, and reduce job-satisfaction,(250) impacting the success of the change strategy. Uncertainty during organisational change can include structural (i.e., functional, operational), strategic (i.e., environmental), and job-related (i.e., changing job role) facets, which can evolve to learned helplessness and lower performance at work if not addressed.(250) Effective communication from leaders,(251) shared participation in decision making around the change to enhance the sense of worker control,(246,252) and building trust(246) have each been proposed as uncertainty management strategies. However, perhaps as much of the organisational change literature comes from a human resources perspective, the reliance on leaders to manage uncertainty does not overtly recognise that responses to uncertainty can vary across individuals, including from leaders. Equally, although some literature acknowledges the difficulty of communicating the unknown features of organisational change,(246,251) strategies to manage uncertainty continue to focus on effective communication as the solution. Additionally, job related uncertainty is reportedly managed by effective communication of role expectations and structural features, without acknowledging the potential impact of professional identity transition and feelings of ongoing uncertainty in the liminal period between roles. The uncertainty experienced during the implementation of radiation therapy advanced practice may be somewhat supported by effective communication from leaders, but it is unlikely to be the anticipated panacea proposed in the organisational change literature given the multidimensional unknowns that were observed.

The health workforce redesign literature presents more overtly the complexities associated with the implementation of new work roles within the sector. Nancarrow and colleagues(21) identified that legislative frameworks and codification of work processes were important strategies during the implementation of advanced health practitioner roles in a large-scale Australian study, but unlike this research, providing specific role clarity was found to not be as influential. Similarly, the definition of

role activities and legislation were of value during the implementation of an Australian advanced physiotherapist role at a single service.(253) Bohmer and Imison(22) proposed statutory guidance and regulation were essential to define role boundaries and expectations during England's health workforce redesign strategy, as well as clarity of role activities to address concerns of fit and professional identity transition. As noted earlier, the absence of clear legislation and regulation in the context of radiation therapy advanced practice was contributing to uncertainty and problematic implementation outcomes. Relatedly, lack of national guidance during the implementation of assistant health practitioners in the UK created variability in organisation interpretation and outcomes.(254) Similar to this research, ill-defined role expectations generated ongoing confusion for some services, however others embraced the flexibility to enable opportunistic role development based on local need.(254) Although it is likely beneficial to facilitate the flexibility of contextually relevant advanced practice role outcomes, this research has demonstrated not all practitioners have the capacity to assimilate the opportunity. Additionally, uncertain role boundaries were shown to compound the challenge of changing professional identity, similar to that observed in assistant nurse practitioner research.(255) It is apparent that externally directed guidance through legislation and regulation, including clearly defined role expectations, is essential to address the uncertainty surrounding the implementation of radiation therapy advanced practice.

The continual requirement of practitioners to navigate uncertainty during the implementation of radiation therapy advanced practice needs to be mitigated if progress is to be made in this area. Uncertainty can be debilitating for positive action and acceptance, and lead to a less than successful outcome. The process of navigating uncertainty has not been represented prior to this research in the literature reporting radiation therapy advanced practice implementation, although the early feasibility studies attempting to define the RTAP are indicative of a search for meaning. These earlier studies also acknowledged the role of the professional bodies in aiding role definition, but this research has shown the influence of the professional body is mixed. The organisational change literature outlines the importance of effective communication to manage uncertainty, but this is conceivably challenging

when leaders are also continually navigating complex uncertainty. As proposed by the health workforce redesign literature, legislation and regulation are essential to the effective implementation of new work roles, which is visibly lacking with respect to radiation therapy advanced practice.

There is a need to provide a clearer vision for practitioners to mitigate the uncertainty associated with radiation therapy advanced practice. Strategies to achieve this could include:

- Greater visibility of examples from practice where advanced practice implementation has been deemed successful to facilitate conceptual clarity. Along with this comes a need for increased reporting of evidence-based outcomes, which has been limited in Australia to date.
- National legislative and regulatory change to clarify the expectations of the advanced practitioner as a defined work role. This could include supplementary guidance from the registration board or an alternate endorsement category similar to that provided to nurse practitioners.(256) Synthesis of State based award structures to enable a correlating position would also be necessary.
- Reframed radiation therapy workforce models that describe work roles beyond traditional structures, with the inclusion of advanced practitioner and conceivably assistant practitioner roles as necessary to meet patient needs. This will provide clarity and legitimacy for such roles and will better align models to the recommended inclusion of RTAP to address anticipated barriers to health care in the future.
- A framework clearly defining effective change implementation strategies for practitioners, particularly leaders, to assist minimising uncertainty. This could potentially be an initiative of the professional body given Health Workforce Australia no longer exists to fill this remit. The SoR has developed an implementation framework for managers seeking radiation therapy advanced practice in the UK that could be used as a template,(257) although with modifications to address the contextual needs identified in this research. Effective strategic planning and human resource management have been described as key features for successful workforce redesign in health

services,(258) and the provision of a framework for implementation has informed positive outcomes in other jurisdictions.(13,259)

Although it is acknowledged that some of these strategies may be challenging to achieve, they could contribute towards achieving conceptual and structural clarity for practitioners and could moderate the perception of uncertainty. Social and personal uncertainties are more contextually influenced and perhaps more difficult to address, but arguably clearer pathways for the RTAP to be recognised as a legitimate professional role could assist.

5.3 Power

The perceived power of influential others was evident in practitioner experiences of implementing radiation therapy advanced practice, where it was unlikely to progress effectively without the enabling actions and authorisation of those with power. The influence of powerful others – although practitioners used the term ‘support’ in the research – was demonstrated to impact the viability and sustainability of radiation therapy advanced practice integration. Influential others were the workplace leaders - the RO were the gatekeepers to implementation, training, and permission for advanced practice associated activities, and the RT manager provided the structure in which advanced practice actions could take place. Leaders additionally influenced the perceived legitimacy of the RTAP, by allowing and advocating a place for the new role within the workplace. For advanced practice outcomes to be progressed, leaders needed to deliver a contextually valid implementation strategy that framed permission and advocacy for the RTAP to function. Conversely, if powerful others withdrew permission at any stage, the implementation of radiation therapy advanced practice became unsustainable.

Power in the health workplace is recognised as a social construct, influenced by the cultural and historical boundaries defined by the professions that reside there. Power is exerted on the basis of profession constructed boundaries, framed around specific knowledge and competence and reified by symbols of education and regulation, that enable the autonomy and authority of the

professional.(260-262) Additionally, within organisations negotiations of work between professionals further frame meaning and reinforce the boundaries of each profession.(262) Boundaries enable control of the work to reside with the profession. But, it is also argued that professional boundaries are uncertain and changeable, and require effort from professionals to maintain them.(261) Workforce redesign creates the potential for boundary disputes as traditional boundaries become blurred through diversification of roles and task substitution.(263) Professional boundaries perceived to be impacted by health workforce redesign strategies “may have the effect of further securing patterns of subordination and control.”(262 p1095) It has been suggested that conflict may arise if the perceived interests of professional groups towards changing work roles do not align.(10) The required permission from the RT manager and RO to proceed with advanced practice, and the necessity of the RTAP work to be accepted by others if outcomes were to be achieved, is evident of professional boundary work in the radiation therapy context. Similar inter and intra professional boundary issues were identified during the implementation of nurse practitioners.(264-266)

The power exerted by the medical profession particularly is the “longstanding phenomenon of the culture of medicine exerting sovereign power over other professions.”(267 p25) Medical dominance is observed by the monopoly of doctors on knowledge and work, and through resultant actions of subordination, limitation, and exclusion(153,268) – or alternatively, through the active maintenance of professional boundaries.(269) The move of modern healthcare towards interprofessional working, greater accountability from doctors, economic rationalisation, and patient centred approaches to care has arguably shifted the medical monopoly.(267, 268, 270, 271) However, according to Willis,(270) “boundaries between health occupations have become more fluid and less entrenched, but that does not mean they do not exist.”(p427) The presence of medical dominance is evident in this research where the RO remains the gatekeeper to the success of advanced practice implementation in authorising the RT manager to proceed, and through legitimising the training and actions of the RTAP. Additionally, endorsement from the RO was seen to be a protective factor for the RTAP against intra professional boundary conflicts.

The impact of power on implementation strategies has been explored in the health workforce redesign literature. It has been suggested that “even small numbers of key local opinion leaders [can be] major obstacles to change,”(22 p2027) and that strategic management of professional relationships are vital for effective change implementation.(272) Further challenges arise when those in power counterpoise role redesign initiatives from a position of ‘responsibility’ and argue a patient safety risk with proposed changes.(79) Having powerful allies to champion a new role and building trust between professionals are seen as keys to success.(13,21,74,273) Overt advocacy from leaders will continue to be an important feature for the successful implementation of radiation therapy advanced practice, but this is currently reliant on the contextual will of individuals.

It is challenging to identify a potential enabler to changing this situation given power and hierarchy are socially constructed symbols in the context of each workplace, even though they may be framed by recognisable professional boundaries. Policy change may facilitate a greater voice to the disempowered by framing a legitimate RTAP professional role with defined scope of practice via regulation frameworks – symbolic reification is an aspect of establishing new professional boundaries.(261,269) Advocacy from those in power, particularly the radiation oncology arm of the RANZCR, may also assist the legitimacy of advanced practice pursuits and provide a platform from which implementation could grow. Given the implementation challenges experienced by nurse practitioners following a statement from the Australian Medical Association that they were ‘dumbing down’ medicine,(265) and even more recent commentary regarding radiography scope of practice from RANZCR,(79) such a strategy is an important consideration. It is difficult to argue against the need for ‘permission’ with the conferring of patient responsibility and accountability from RO to RTAP, thus building contextual trusting relationships will likely be an ongoing feature of implementation. This may be enabled by greater breadth of outcomes reporting from RO and RTAP where implementation of advanced practice has been successful.

5.4 Value

Perceiving value to service and self in pursuing radiation therapy advanced practice actions was an enabling feature of implementation and process. Value was viewed as an enhancement to the service delivered to the patient, with respect to timeliness and quality of care. Additionally, value to self was expressed as improved efficiency of work, work satisfaction, and the enhanced career pathway offered by the advanced practice opportunity. Value presented an overall improvement or advantage to the current state – it was enabling when the anticipated value was perceived to be greater than any perceived problems associated with advanced practice initiatives. Proceeding towards implementation was more likely to be considered when practitioners were able to anticipate value to radiation therapy service delivery from planned advanced practice activities. Similarly, if valued activities and outcomes were observed following implementation, this was affirming to social acceptance and further progress. Conversely, if practitioners did not perceive value to self and others in pursuing advanced practice actions, particularly the RTAP, they were less inclined to proceed.

Proving value was a strategy evident internationally in the radiation therapy advanced practice implementation literature. Validation of skills has been utilised as a means to substantiate the value equivalence of the RTAP activities against the RO standard.(111,112,174,177) Measuring improvements to patient throughput was a strategy to confirm value in other studies,(43,45,128,178) as well as evaluating patient satisfaction with the service provided by the RTAP.(43,44,96,98,113) Collectively these studies infer that it is a common expectation to prove the value of radiation therapy advanced practice implementation. Further, this implies that the implementation of radiation therapy advanced practice should not be pursued for its own sake – there needs to be an observable gain to service delivery. Notably, only one Australian study has reported the value gained by the implementation of radiation therapy advanced practice.(45,177) This is problematic as the value sought by practitioners to justify implementation strategies has only been exemplified by one local service focused on a single area of practice. Practitioners were instead reliant on perceived assumptions of value to conceptualise potential outcomes, which is an additional element of

uncertainty to be navigated. There is a critical need to increase the reporting of valued outcomes of radiation therapy advanced practice from Australian services to enhance the visibility of what may be possible.

Compounding the challenge associated with assumption of value, individually perceived value may be variable in the same workplace context influenced by personal and social meaning. Resultingly, it is suggested that “for those with ambitions of change and transformation, establishing legitimacy for one’s ideas and actions becomes critical to realising intended effects.”(74 p40) It is recommended change leaders should emphasise the value of the proposed vision, justified by benchmarking of current performance, to aid legitimacy and acceptance.(74) Acknowledging this point, it is notable that the use of a recognisable value-focussed change implementation strategy was not apparent in this research. Although some leaders referred to the need for active communication to enhance progress, establishing a baseline state prior to implementation was not utilised as a strategy – the anticipated outcome alone was the reason for change, and collective perceptions of value were reliant on the vision shared by leaders. Arguably the absence of a structured approach to benchmarking and change implementation influenced the variable success of outcomes expressed in this research. Practitioners were making assumptions of the anticipated value of radiation therapy advanced practice, and, given the many other uncertainties associated with implementation, this was problematic for consistent progress. Additionally, variable perceptions of value contributed to competing expectations of impacts and outcomes between practitioners. This was particularly influential on the RTAP where advanced practice actions needed to be valued by self and others to enable legitimacy of practice. Although it is acknowledged that choosing a defined change implementation strategy is complex,(274) such a step may assist in making the value of an advanced practice initiative more visible and less uncertain, thereby enhancing personal and social acceptance of anticipated outcomes.

5.5 Identity

The assumed professional identity of the RT was demonstrated to influence the social and personal meaning of the RTAP during the implementation of radiation therapy advanced practice. The professional identity of the RT was a known feature in each workplace, where conversely the RTAP was a role in transition, affected by uncertainty around title, place, and legitimacy. Responses to the transitional professional identity varied in the research. For some practitioners, the transitional RTAP role created conflict, arguably due to contested professional boundaries and threat to personal professional identity. For some RTAP, this was observed as difficulty assimilating their changing professional identity. However, for other RTAP, the transition was viewed as an opportunity for professional and personal growth, although feelings of liminal discomfort during the transitional phase were still evident. The professional identity of the RTAP was unfamiliar, and each practitioner was required to assimilate the social and personal meaning of this circumstance for the contextual identity to evolve. It has been proposed that “unstable, ambiguous, and sometimes contradictory [contexts] ... makes identity constructions precarious.”(275 p194-195)

The challenge associated with the introduction of a new role, and thus new professional identity, was expressed through others’ resistance to the work being undertaken by the RTAP, lack of role acceptance by the RTAP and others, and withdrawal from the implementation process. Literature suggests that the co-construction of professional identity is influenced by the meaning of the work to self-identity and the social rules and norms of the workplace.(276-279) Practitioners engage in contextually influenced identity work to define the (sometimes fluid) boundaries and expectations of their professional identity through actions and symbols, and conflict can arise when boundaries are perceived to be violated.(276,277,280,281) Additionally, inter and intra professional tensions can be apparent when policy maker framing of a new role identity - as exemplified by government or organisational directed health workforce redesign initiatives - is at odds with the contextually established professional boundaries.(282) Practitioners who rejected the implementation of the RTAP through words or actions, including the RTAP, were likely responding to a sense of boundary violation

from the new role – their existing professional identity was conceivably more aligned with their sense of self and position in the workplace, and alteration of this was perceived as threatening. Opposition to a new role and resulting problematic professional relationships have been previously identified as barriers to the implementation of advanced practitioners.(183) Intra-professional identity conflict has similarly been observed in RTAP research internationally.(95)

The experiences of the RTAP during the period of implementation varied in the research, where only some were able to fully transition to a new professional identity. Common to each, however, was the feeling of liminal uncertainty “when a person is in between two identity constructions: when they are neither one thing nor the other.”(279 p286) This was evident in the discomfort expressed during skill development, in building confidence for autonomous practice, and in finding a new place within the workplace. Although personal resilience was a likely feature,(283) of greater influence to the challenging liminal experience was the continual uncertainty associated with title, place, and legitimacy. This suggests the ambiguity of the expected outcome during the transitional phase could influence a potentially protracted and incomplete liminal experience. For some, this experience resulted in a withdrawal from the transition and a return to being a RT; for others, the transition was partial, and although self-identity as the RTAP was apparent, legitimacy was not overtly granted within the workplace. The RTAP most able to successfully navigate the difficult liminal experience and assimilate their new professional identity were socially supported by powerful others and contextually acknowledged with a title.

It is interesting to observe, however, that this latter cohort continued to somewhat identify as a RT and giving up the ‘normal’ work evoked a sense of concern. Although this was expressed primarily in relation to an uncertain career pathway, a similar fear was noted in the experience of treatment review RTAP in the UK.(97) As explored earlier in the thesis, the professional identity of the RT is closely aligned to the performance of technical activities which influences a lack of autonomy in practice.(152-154) Possibly the RTAP in this research are not yet ready to embrace an alternate

viewpoint where their independent work and expertise extends beyond the expectations of tradition. This may be of concern given Khine and Stewart-Lord(284) recently described ownership of professional identity as a valid feature to establish advanced and consultant RT roles.

The context of the workplace was influential to the transitional process as “professional identity is relational, and legitimacy has to be actively constructed and reproduced in relation to others”.(282 p944) Acceptance of the new role by the RTAP and others was observed to be enabled through the provision of a contextually relevant title and grading or remuneration that reified the difference between the RTAP and the RT. Additionally, a shared understanding of place in the workplace was valued, exhibited by clear expectations of the RTAP relationship to others, actions and outcomes. Key to a more successful transitional period for the RTAP were symbols of legitimacy such as a documented role description, in addition to the social endorsement of professional identity(285) through the allowance of autonomous work, and advocacy from powerful others. Space and time in which to transition from RT to RTAP was also vital. It is evident that symbols of social and personal legitimacy can be valuable assets to affirm professional identity.(277) Social and structural strategies to support the transitional professional identity of the RTAP should be actively enabled during the implementation of radiation therapy advanced practice.

5.6 Implications to Stakeholders

This chapter has explored the meaning of the complex factors that were influencing the irregular implementation of radiation therapy advanced practice in Australia and has proposed strategies to improve the current state. This section will present the implications of these findings to the stakeholder groups responsible for implementation outcomes.

5.6.1 Implications to Practitioners

Uncertainty will be a continued feature of radiation therapy advanced practice implementation until a critical volume of practising RTAP is reached and it is accepted as a ‘standard’ option for service delivery. Practitioner tolerance of uncertainty needs to be enabled by making it known that advanced

practice implementation may not be straightforward, and through building a workplace culture where uncertainty is assimilated and not delimiting for action. Initiating a value focused approach to implementation could assist, as too culturally legitimising the actions of the RTAP. Additionally, the research has demonstrated that the RT cannot implement advanced practice independently of the RO. This has implications for each context, inferring the necessity of a shared strategy for action. Furthermore, the RO should be observant of the influence of their power on decisions and outcomes. Interestingly, although the tripartite function of radiation therapy professionals is espoused, the ROMP did not have apparent influence on the implementation of radiation therapy advanced practice within the contextual case studies. A different scenario may arise if workforce redesign strategies cross into ROMP professional boundaries, which highlights the importance of relevant professional stakeholder engagement during implementation initiatives. Finally, this research has emphasised the dearth of Australian evidence of radiation therapy advanced practice outcomes, and the equal importance of such evidence to help mitigate uncertainty and legitimise value. There is a critical need for practitioners to actively change this situation and report their experiences and impacts.

5.6.2 Implications to Leaders

Leader practitioners – particularly the RO and the RT manager – were highly influential on implementation outcomes. For radiation therapy advanced practice implementation to succeed, leaders must actively drive integration strategies. This includes providing an overt framework for legitimate advanced practice actions that fits within the workplace. Also, facilitating a valid professional identity for the RTAP should be enabled structurally with a documented role description, and socially by label and cultural acceptance. Initiating strategic, value focused change management may assist mitigating uncertainty for practitioners, aid legitimacy, and support achieving the desired outcome. Additionally, in the absence of regulatory and legislative change, leaders need to be flexible in their approach to fitting advanced practice into the workplace. Grading of RTAP roles may need to be discretionary to accommodate the constraints of disparate industrial awards. Furthermore, existing workforce modelling requires contextual adaptation to integrate the RTAP. To accommodate the

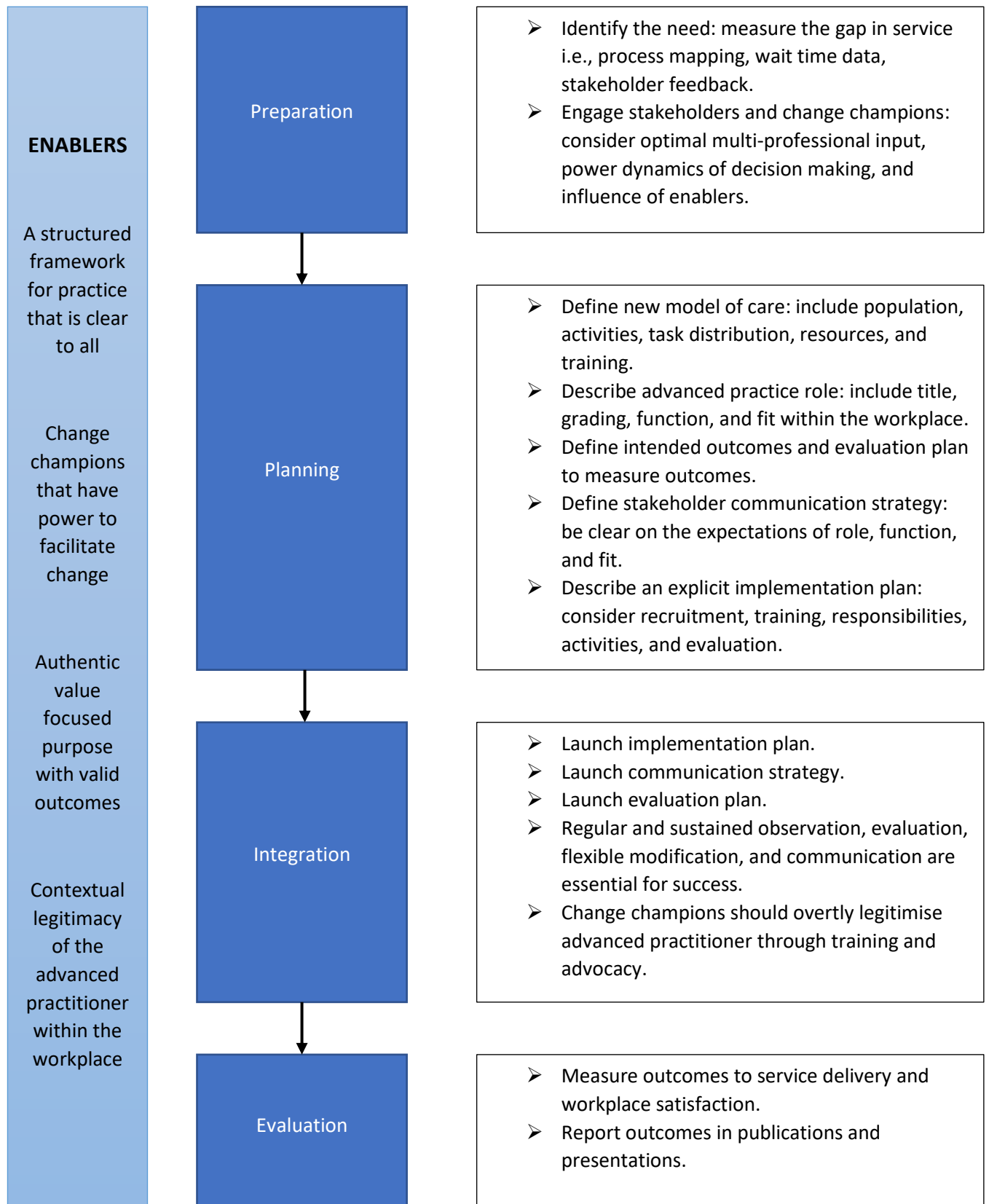
required flexibility, leaders need to prepare to manage uncertainty and modify direction as necessary to meet the intended end point. Finally, advocacy from leaders is paramount for successful radiation therapy advanced practice implementation. Leaders have the power to create the vision of advanced practice and drive towards it in the context of each workplace - equally, it must be acknowledged that a withdrawal from leaders is delimiting for progress. Broader advocacy through sharing successful advanced practice outcomes through presentation and publication will also likely assist national acceptance.

5.6.3 Implications to Professional Bodies

ASMIRT have invested much time espousing advanced practice for radiation therapy and radiography during the last two decades. Nevertheless, this research has demonstrated that the guiding documentation generated by ASMIRT have not influenced action towards implementation. The current ASMIRT strategy is directed towards formally recognising practitioners who meet the ASMIRT defined advanced practice capabilities. However, the expectation of formal recognition of advanced practice status has no regulatory accountability and will only ever be contextually relevant to some individuals and workplaces. Additionally, the difficulties associated with implementing radiation therapy advanced practice are prohibiting practitioners reaching a state where professional recognition of their role may be warranted. Moreover, ASMIRT defined workforce models do not currently enable the integration of the RTAP.(244) Practitioners need guidance for the strategic implementation of advanced practice to fit within their local context, and it could be the remit of ASMIRT to deliver this. Furthermore, as ASMIRT is the national representative professional body, the generation of guiding documentation to support implementation strategies could influence more consistent outcomes across the country. Informed by this research, Figure 5.3 presents a framework example that could influence greater success of radiation therapy advanced practice implementation. The framework makes explicit the social and practical enablers to support effective implementation, outlines a systematic approach to processes, and encourages reporting of outcomes to improve

visibility to others. Examples of each key step would also be necessary to mitigate the uncertainty associated with creating a flexible strategy to suit the nuances of each individual workplace.

Figure 5.3: Framework to guide the implementation of radiation therapy advanced practice.



The radiation oncology arm of RANZCR also have a role in advocating advanced practice pursuits to aid legitimate actions. The tripartite professional bodies ASMIRT, RANZCR, and the Australasian College of Physical Scientists and Engineers in Medicine, ACPSEM, collaborated on the National Strategic Plan for Radiation Oncology⁽²⁵⁾ that recommended the implementation of RTAP by 2022. Thus, it is reasonable to anticipate that a shared approach to actively enable advanced practice through workforce modelling and strategic implementation would be a worthwhile endeavour. Additionally, a collective lobbying of government to facilitate structural change may have greater influence than from ASMIRT alone. However, it is acknowledged there may be sensitivities around this strategy given recent commentary from the radiologist component of RANZCR overtly rejecting advanced practice in radiography.⁽⁷⁹⁾

5.6.4 Implications to Regulatory Authority

The current objective of the MRPBA is to define the baseline professional capabilities for safe radiation therapy practice, not advanced practice.⁽⁶¹⁾ However, to enable legitimacy of the RTAP in the workplace it would be of value for the MRPBA to revisit this stance and frame an equivalent professional baseline for RTAP. A supplementary endorsement category to registration with clearly associated capabilities and expectations, similar to that in place for nurse practitioners,⁽²⁵⁶⁾ would aid professional legitimacy and contextual fit.

5.6.5 Implications to Government

Health workforce redesign is purportedly desired by government,⁽¹⁴⁾ and yet the complexity of State and Commonwealth accountabilities do not readily enable momentum.^(9,23) Although it is acknowledged that change in this area will be difficult to achieve, for effective progress to be made improvement is necessary. Ideally, allowances are needed for funded activities to be performed by the RTAP to enable easier delegation of RO tasks. Furthermore, alignment of industrial award definitions between the States to include a category of advanced practitioner will aid legitimate implementation within workplaces.

5.7 Limitations of the Research

The technical limitations of each phase of the study have been discussed in Chapter 3. Therefore, this section will summarise the key limitations of the study as a whole.

Data sample: A positive response bias from the focus group participants was apparent during data collection, even though open national recruitment strategies were applied. As the first phase of the research that would be later integrated with the data from the case studies this was not thought to be self-limiting, however it does infer the absence of input from practitioners who may be against the implementation of radiation therapy advanced practice. Additionally, case study sites were approached as those that were known through professional networks, and although theoretical sampling and integrated analysis strategies were applied throughout, it is possible that inadvertent exclusion of particular viewpoints or experiences did occur.

Timing of data collection: The collection of focus group data during a one-month period did not enable transcription and analysis of data in between each focus group, particularly as I was a novice constructivist grounded theory researcher. The commencement of case study data collection exactly a year later also meant that a tentative outcome from the focus group data had been framed, but without the opportunity for fully engrossed focussed coding and category generation - this came much later in the research timeline. Similarly, collection of case study data was framed by the limitations of a 12-month research grant, hence recruitment of several case study sites occurred simultaneously once University ethics was approved. This was required to allow for potential delays with additional ethics requirements from some case study sites, but it did mean that true principles of theoretical sampling between case study sites could not be fully developed. Equally, the rapid turnaround of the final three case study sites during a three-month period meant that transcription and analysis was not feasible between site visits. This was addressed through regular listening to audio files, and consistent and thorough reflective memos during and after each case study day and the site, focussed on constant comparative techniques.

Generalisability: Although using a constructivist grounded theory approach has enabled contextual theory generation drawn from authentic rich participant data, the generalisability across other radiation therapy contexts not included in the data cannot be assured. Active attempts were made to gather participant data from across a contextual spectrum, but the nature of a socially situated study indicate that findings were derived from data collected at a moment in time and place, and that it may not be equally relevant to all.

Timing of the study: The PhD journey is a long one, and due to circumstances much of the data collection occurred during the early period of this study. It is not known in a post-Covid world if perceptions of advanced practice may since be altered given Australian regulatory authorities have expanded allowances for a pandemic response sub-register, and internationally role substitution is an active strategy to manage patient need.(286,287) Arguably workforce flexibility has been more visible in the last year than it has for some time. However, it has not made an apparent impact on the implementation of radiation therapy advanced practice in Australia given the 2020 Annual Report from ASMIRT continues to identify only two recognised RTAP in the country.(60)

Despite these limitations, the research remains valid to address the intent to better understand the factors that may be influencing the scattered implementation of radiation therapy advanced practice in Australia and has highlighted key features that have not been previously addressed in the contextual literature.

5.8 Opportunities for Future Research

This research intentionally directed attention towards understanding the factors surrounding the implementation of radiation therapy advanced practice within an interpretivist framework, to highlight the contextual influencing factors within the socially constructed workplace. Methodological choices were made to align with the research aim; however, it does present the opportunity to further build on this research using alternate strategies and different foci. Such research could entail the following:

- Capturing a national viewpoint of the perceived need for radiation therapy advanced practice. An unreported national survey was last completed in 2012 (as part of my work developing a curriculum framework for radiation therapy advanced practice) so it would be timely to capture new data in the context of modern practice. This could in turn inform a strategic approach to targeted implementation.
- Similarly, as noted in the previous section, data collection for this study commenced almost six years ago. It would be of interest to revisit the focus group phase of the research to establish if perceptions towards radiation therapy advanced practice may have changed since to inform further development strategies.
- A health-economics focussed evaluation of current RTAP roles, and conceivably opportunities for well-defined future roles, would add an alternate lens to advocacy. Government and professional body reports promoting advanced practice presume that health workforce redesign is a positive strategy for patient access and career enhancement. However, economic value add of Australian radiation therapy advanced practice has not yet been systematically measured.
- Following the development of the proposed implementation framework, an evaluation would be assisted by an action research investigation within pilot sites to inform the validity of the framework.
- As a closely related profession and with a shared professional body, there is an opportunity to replicate this research approach with a focus towards radiography advanced practice. The professional issues associated with radiography advanced practice have been more visible in recent years, suggesting that implementation may be more problematic than within radiation therapy. It would be of value to explore the influencing factors around radiography advanced practice implementation to identify potential opportunities for improvement.
- Similarly, health workforce redesign in other allied health professions in Australia have also evolved the assistant practitioner, but not radiation therapy. It would be of interest to explore

the perceptions around the potential for such a role, to in turn create opportunity for advanced practitioners to evolve.

5.9 Reflections of the Research Journey

From the time at which I commenced this endeavour to where I find myself now on the cusp of thesis submission has taken almost exactly 7 years. I started this process eager and excited to discover what was 'wrong' with advanced practice and how I might be able to 'fix it'. The methodological choices early in the journey, with the guidance of copious reading and reflection, introspection, and supervisory input, enabled me to acknowledge my personal intentions and reposition them to become a 'better understanding of what might be going on' in the area of interest. My choice of constructivist grounded theory was ratified during the first focus group where I was surprised to find that the concept of radiation therapy advanced practice was still one that practitioners were struggling with. As explored during the introductory chapter, my own personal career journey had enabled me to be absorbed in advanced practice for nearly 10 years prior to commencing the PhD, so I did not appreciate that others might still feel a little in the dark. I found this discovery genuinely exciting and embraced the data collection and analysis experience. Similar inspiration occurred when hearing features of identity meaning for the first time listening to an audio transcript I had already coded, and then finding repeat occurrences across the dataset. Later, presentation of the emergent theory on various occasions to colleagues, supervisors, and milestone panellists, enabled me to check in, rethink and re-evaluate, and emphasise that the theory is grounded in and justified by the data. Although I openly acknowledge that alternate research approaches could be applied to the subject area, constructivist grounded theory was a good fit for me personally to help frame my own professional context while achieving what I feel to be an authentic research outcome. The PhD journey has been exhausting and frustrating at times, but I am buoyed by the thrill of discovery, the sense of amazement reflecting on my own personal learning growth as a researcher, and the anticipated opportunity to make a difference to my profession and their patients as a result of this process.

5.10 Conclusion

The grounded theory of 'Navigating Uncertainty' situated within this research illustrates the challenges accompanying the implementation of radiation therapy advanced practice within Australia. Uncertainty associated with contextually defined conceptual, practical, and social concerns was shown to influence the capacity for implementation strategies to progress, and practitioners needed to apply continuous strategies to navigate uncertainty to achieve desired outcomes. Locally established creative strategies to flexibly and actively manage uncertainty and find a legitimate place for the RTAP, particularly when advocated by leaders, were shown to be critical for achieving the desired implementation outcome. This suggests the current state of advanced practice implementation in Australia is reliant on the creative capacity of centre leaders to progress despite ambiguous and sometimes conflicting expectations. Of concern, implementation strategies are contextually derived and approached variably between centres, and there is a need for a more informed systematic approach if national implementation is to be achieved. Opportunities to address these challenges have been posited within this chapter, which includes structural guidance, regulatory change, and advocacy from influencers. Structural changes aside, the contextual social acceptance of the RTAP is essential to successful integration and must be acknowledged and openly strategized by leaders seeking advanced practice implementation.

This research has demonstrated the pathway to radiation therapy advanced practice in Australia is not a clear one. The implementation of radiation therapy advanced practice in Australia is complex, disordered, and precarious, currently dependent on the creativity and flexibility of leaders, resilience of the RTAP, and acceptance of others to progress. However, the challenges associated with navigating uncertainty presented in this research have been effectively accommodated by some practitioners – there is an opportunity to share these experiences with others to inform flexible and creative approaches. Although the implementation of advanced practice will always be contextual, there is a need for a national framework of systematic and shared implementation strategies that recognise structural and social necessities if broader outcomes are to be accomplished.

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Appendices

Appendix A: Summary of Papers Analysed in Literature Review

RT = radiation therapist; RO = radiation oncologist; RN = registered nurse; MP = medical physicist; RTAP = radiation therapy advanced practitioner.

First Author: Year Title	Purpose	Method	Sample
Feasibility Studies: non-specific scope of practice			
White et al: 2004 Role development for therapeutic radiographers in the public hospitals in Hong Kong.(131)	Explore perceptions of RTAP in Hong Kong.	Survey (paper), closed and open questions. Semi-structured interviews informed by survey outcomes.	Hong Kong. Regional study. Surveys to RO, RT, RN and MP in 4 public hospitals in Hong Kong. 285 surveys provided, 132 returned. Response rate by profession RT 60%; RO 30%; RN 49%; MP 65%. Interviews with 15 RT participants.
Bolderston: 2005 Advanced Practice Issues for Radiation Therapists in the Province of Ontario: A Case Study.(104)	Explore RT perceptions of RTAP in Ontario.	Case study approach using semi- structured interviews. Thematic analysis.	Canada. Provincial study. Four cancer centres in Ontario, 22 interviews with RTs of various levels.
Bolderston et al: 2005 Canadian managers' perspectives on advanced practice.(171)	Explore RTAP perceptions of Ontario RT managers.	Open ended survey (paper), followed by discussion group to clarify and extend results.	Canada. Provincial study. Survey of 8 Ontario RT managers (of 10). Discussion group with 10 managers.
Coleman et al: 2009 Role Extension for Radiation Therapists in New Zealand; a Survey of Radiation Oncologists and Radiation Therapists.(126)	Explore perceptions of RTAP feasibility in New Zealand.	Survey (paper) including closed and open-ended questions.	New Zealand. National study. Survey provided to all ROs (n=39) and RTs (n=235) in New Zealand. Response rate 19 ROs (49%) and 119 RTs (51%).
Coleman et al: 2014 Establishing radiation therapy advanced practice in New Zealand.(127)	Validate proposed national profiles for RTAP and explore implementation factors.	Survey (online) including closed (proposed profiles) and open (implementation) questions.	New Zealand. National study. Survey distributed to all RTs in New Zealand (n=260). 73 complete responses (28%).

Kinamore: 2014 Exploring attitudes and opinions of radiation therapists in British Columbia towards advanced practice.(116)	Explore perceptions of RTAP in British Columbia.	Survey (online), closed questions.	Canada. Provincial study. Survey circulated to all 266 RTs in British Columbia – 183 responses (69%).
Martens et al: 2018 Radiation Therapists' Perceptions of Advanced Practice in Alberta.(172)	Explore perceptions of RTAP in Alberta.	Survey (online), closed questions – used Kinamore study survey.	Canada. Provincial study. Survey distributed to 191 RTs in Alberta – 56 responses (29%).
Feasibility Studies: specific scope of practice			
Shi et al: 2008 Clinician and therapist perceptions on radiation therapist-led treatment reviews in radiation oncology practice.(132)	Explore feasibility of RTAP treatment review.	Develop audit tool. Audit medical intervention. Survey (paper) open and closed questions, informed by audit.	Singapore. Regional study. Audit tool development – observation of 80 treatment reviews over two-week period. Audit – observation of 160 treatment reviews over 4-week period. Survey – 65 RTs and 29 ROs at two primary cancer centres in Singapore. 53 RT responses (81%) and 22 RO responses (75%)
Dempsey et al: 2009 The level of confidence and responsibility accepted by Australian radiation therapists in developing plans and implementing treatment.(63)	Explore confidence of RTs approving plans for treatment delivery as potential for RTAP.	Survey (paper) including six planning scenarios, with associated closed and open questions.	Australia. Quasi-national study (25 centres). 524 surveys circulated to RTs within 25 centres known to authors. 203 responses (38%).
Lee et al: 2012 Evaluation of variability in seroma delineation between clinical specialist radiation therapist and radiation oncologist for adjuvant breast irradiation.(111)	Evaluate accuracy of RTAP breast seroma delineation.	Concordance assessment RTAP defined seroma contours against RO contours.	Canada. Single site study. 20 retrospective early stage breast cases with visible seroma cavity, partial breast irradiation. 1 RTAP and 7 RO participants completed contouring.
Acharya et al: 2013 Ability of radiation therapists to assess radiation-induced skin toxicity.(62)	Explore feasibility of RTs to assess skin reactions as potential for RTAP.	Comparison of RT and RO skin toxicity assessment scoring using photo series.	Australia. Single centre study. 9 patient image series', with weekly photos. Participants 12 ROs and 17 RTs.

Monk et al: 2013 An exploration of the feasibility of radiation therapist participation in treatment reviews.(64)	Explore feasibility of RTAP treatment review.	Audit of medical intervention rates; survey (paper), closed and open questions – based on Shi study.	Australia. Single site study. Observational audit of 200 treatment review clinics over 6-month period – two RT observers, convenience sample. Survey to 80 clinical staff – RT, RN, RO – with 60 responses (75%).
Hetherington et al: 2018 TRUFU: Therapeutic radiographer undertaking follow up for prostate cancer patients.(173)	Explore potential for RTAP led follow up reviews.	Observational time study, with follow up survey (paper).	UK. Single site study. 30 prostate patients attending follow up clinic. 5 ROs and 1 RTAP – patients randomised equally to see either RO or RTAP. Survey delivered to patients at clinic end.
Evaluation Studies: specific scope of practice			
Colyer: 2000 The role of the radiotherapy treatment review radiographer.(95)	Describe the experience of RTAP treatment review.	Phenomenological methodology using unstructured interviews.	UK. Small scale contextual study. Three RTAP treatment review participants from different centres, with range of experience in role.
Blyth: 2001 An innovative approach to palliative care within a radiotherapy department.(43)	Evaluate RTAP led fast track palliative clinic.	Audit of service in terms of time from referral to sim; accuracy of RTAP activities; and surveys (paper) of patient and RO satisfaction.	UK. Single centre study. 2 x RTAPs run fast track clinic. Retrospective review of waiting times before (127 patients) and after implementation (127 patients). Audit of RTAP film marking of 100 consecutive patients. Satisfaction survey of 50 consecutive patients using service. Satisfaction survey of 13 ROs.
Ellis et al: 2006 Multidisciplinary radiographer-led review clinics – an example of implementation.(96)	Evaluation of RTAP treatment review clinic.	Semi structured interviews.	UK. Single centre study. 11 patients, and 19 RT managers from other centres.
Cameron et al: 2008 An audit or a radiotherapy review clinic for breast cancer patients: a multi-disciplinary approach.(44)	Audit effectiveness of team led (RTAP, RO and RN) breast review clinic.	Audit of breast treatment review forms completed by RTAP, RO or RN over 7-month period. Patient perception survey (paper) for each breast weekly review over 7-month period.	UK. Single centre study. 2 RTAPs, RN and RO involved in audit. 230 review forms provided: 153 returned, 113 of these had complete data. 389 patient surveys analysed (230 patients provided survey on multiple occasions: response rate not provided).
Lees: 2008 The role of the 'on treatment' review radiographer: what are the requirements?(97)	Describe the knowledge, skills and attributes of the treatment review RTAP.	Grounded theory informed methods. Semi-structured interviews informed by Colyer study and personal experience.	UK. Small scale contextual study. Three clinical centres. 7RTAPs - 5 RTAPs at one centre; one RTAP at each of the other two centres.

Treeby: 2008 Prospective cohort survey of patient satisfaction with on-treatment review by advanced practice urology radiographer.(98)	Evaluate patient satisfaction attending for RTAP treatment review.	Survey (paper), closed and open questions.	UK. Single site study. 50 patients attending urology review clinic over 2-month period, survey delivered final day of treatment. 34 respondents (68%).
Jaspere et al: 2010 Evaluation of an 'In House' RT-Led Treatment Review Programme (129)	Evaluation of RTAP/RN led treatment review clinic.	Semi-structured interviews.	New Zealand. Single site study. Three participants: Senior RT, RTAP, and RN.
Lee et al: 2012 Radiotherapy Treatment Review: A Prospective Evaluation of Concordance between Clinical Specialist Radiation Therapist and Radiation Oncologist in Patient Assessments.(112)	Evaluate accuracy of RTAP breast toxicity scoring during treatment review.	Concordance assessment between RTAP and RO using toxicity scoring tool.	Canada. Single site study. 1 RTAP and 1 RO, each reviewed same 29 breast patients over 12-week period (i.e. patient reviewed twice).
Bristow et al: 2014 Role Development for Radiation Therapists: An Examination of the Computed Tomographic Simulation Procedure for Patients Receiving Radiation Therapy for Breast Cancer.(174)	Evaluate effectiveness of RT led breast CT-Simulation (CT-Sim).	Prospective review of RT accuracy and RO intervention during breast cancer CT-Sim. Survey (paper), closed statements with open options.	Canada. Single centre study. Audit of 330 consecutive breast patient cases over 4-month period. Survey to 9 (of 12) ROs and 21 (of 26) RTs about RT led CT-Sim. RTs had been rostered to RT led CT-Sim in previous 12 months.
Casson et al: 2014 Implementation and evaluation of a rapid access palliative clinic in a New Zealand cancer centre.(128)	Evaluation of the Rapid Access Palliative Clinic.	Retrospective analysis of data collected over 4 years since clinic implemented.	New Zealand. Single centre study. Data base of 261 patient cases. Clinic run by RO, RTAP and RN.
Lee et al: 2016 Building a New Model of Care for Rapid Breast Radiotherapy Treatment Planning: Evaluation of the Advanced	Validation of RTAP breast delineated seroma contours; secondary to identify criteria for complex	Concordance assessment of cavity delineation between RTAP and RO; complexity factors associating patient factors with visual acuity.	Canada. Single centre study. Prospective review of 30 consecutive patient cases attending for breast planning. 1 RTAP and 1 RO.

Practice Radiation Therapist in Cavity Delineation.(109)	cases requiring RO assessment prior to plan approval.		
Job et al: 2017 Reducing radiotherapy waiting times for palliative patients: The role of the Advanced Practice Radiation Therapist.(45)	Evaluation of palliative RTAP impact on patient waiting times.	Prospective comparison of time from referral to consult, to planning, to treatment, for each referral pathway (RO vs RTAP).	Australia. Single centre study. 150 patient episodes over five-month period. Referrals from adjacent hospital medical team.
Rozanec et al: 2017 Patient satisfaction with the role of a Clinical Specialist Radiation Therapist in palliative care.(113)	Evaluate patient satisfaction with RTAP in palliative clinic.	Surveys (paper) – version for RTAP (closed and open questions) and non-RTAP pathway (closed questions). Previously validated survey.	Canada. Single site study. 19 patients who did receive care from RTAP, and 14 patients who did not, over 6-month period.
Evaluation Study: non-specific scope of practice			
Eddy: 2010 Work-based learning and role extension: A match made in heaven?(175)	Explore factors with work-based learning integration during RTAP training.	Principles of grounded theory study. Semi-structured interviews.	UK. Regional study, single training provider. 7 RTAP trainees associated with author University, all pursuing different RTAP roles at different centres.

Appendix B: Phase 1 Focus Groups MUHREC Ethics Approval



Human Ethics Certificate of Approval

This is to certify that the project below was considered by the Monash University Human Research Ethics Committee. The Committee was satisfied that the proposal meets the requirements of the *National Statement on Ethical Conduct in Human Research* and has granted approval.

Project Number: CF15/2627 - 2015001077

Project Title: Evaluation of the Implementation of Australian Radiation Therapy
Advanced Practitioners: Focus Groups

Chief Investigator: Prof Marilyn Baird

Approved: From: 3 July 2015 To: 3 July 2020

Terms of approval - Failure to comply with the terms below is in breach of your approval and the Australian Code for the Responsible Conduct of Research.

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, before any data collection can occur at the specified organisation.
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must include your project number.
6. Amendments to the approved project (including changes in personnel): Require the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. Future correspondence: Please quote the project number and project title above in any further correspondence.
8. Annual reports: Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. Final report: A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. Monitoring: Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. Retention and storage of data: The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.



cc: Mrs Kristie Matthews, Prof Gillian Duchesne

Monash University, Room 111, Chancellery Building E
24 Sports Walk, Clayton Campus, Wellington Rd
Clayton VIC 3800, Australia
Telephone: +61 3 9905 5490 Facsimile: +61 3 9905 3831
Email: muhrec@monash.edu <http://intranet.monash.edu.au/researchadmin/human/index.php>
ABN 12 377 614 012 CRICOS Provider #00008C

Appendix C: Phase 1 Focus Groups Recruitment Emails

Introduction email

My name is Kristie Matthews, and I am a radiation therapist currently undertaking a Master of Philosophy at Monash University to research the influencing factors surrounding the implementation of radiation therapy advanced practice in Australia. It is intended that the research process and outcomes will inform a knowledgeable discourse around this important topic.

I am seeking practising Radiation Therapists, Radiation Oncologists, and Radiation Oncology Medical Physicists willing to participate in an online focus group discussion on radiation therapy advanced practice. Focus group discussions will be facilitated using video meeting software via a web cam or smart phone, and are intended to take one hour. Session options will be available both during and outside of usual working hours.

If you are interested in participating, please read the attached explanatory statement for more information and email me at kristie.matthews@monash.edu by **Friday 31st July**

Follow up email

Thank you for your interest to participate in an online focus group to explore the influencing factors around the implementation of radiation therapy advanced practice in Australia. Your input is vital to gain a thorough understanding of this area of practice, and it is hoped will inform further discussions more broadly.

Please read the attached explanatory statement and consent form, and sign and return the consent form as soon as possible. Consent forms can be scanned and returned via email, or returned via post to the address included on the explanatory statement.

In addition, it would be appreciated if you could please complete the demographic survey via the link below. This survey should only take two minutes to complete, and will be used to help plan the online focus group sessions. De-identified demographic data may also be aggregated during data analysis.

https://monashmnhs.qualtrics.com/SE/?SID=SV_71cSG88INYUeI9n

If you have any questions about this process, please email me at kristie.matthews@monash.edu.

Once you have responded with the consent form and survey, further information relating to the online focus group will be forwarded to you in the weeks following. Your participation is greatly appreciated.

Appendix D: Phase 1 Focus Groups Explanatory Statement

EXPLANATORY STATEMENT

Radiation Therapy Advanced Practice: Online Focus Group

Project: Evaluation of the implementation of Australian radiation therapy advanced practitioners

Researcher: Kristie Matthews

Department of Medical Imaging and
Radiation Sciences

Phone: **

email: kristie.matthews@monash.edu

Chief Investigator: Prof Marilyn Baird

Department of Medical Imaging and
Radiation Sciences

Phone: 03 9905 1270

email: marilyn.baird@monash.edu

You are invited to take part in this study. Please read this Explanatory Statement in full before deciding whether or not to participate in this research. If you would like further information regarding any aspect of this project, you are encouraged to contact the researcher via the phone number or email address listed above. This research study has been approved by Monash University Human Research Ethics Committee (MUHREC), approval number CF15/2627 - 2015001077

What does the research involve?

This study informs the first stage of a Master of Philosophy being undertaken by the researcher. The Chief Investigator listed is the academic supervisor of the research degree. The aim of the study is to investigate what is influencing the implementation of radiation therapy advanced practitioners in Australia. Radiation therapy advanced practice has not been broadly implemented in Australia, and this study intends to explore the factors that may be involved to gain a better understanding of the reasons why.

Study participants will be asked to join an online (web based via 'GoToMeeting' software on computer, tablet or smart phone) focus group discussion that will be of one hour duration. Each focus group will likely include 6-8 people. Professional groups included in the focus group may be the same, or mixed. Focus group discussions will be video and audio recorded to aid accurate transcription and data analysis. Prior to the focus group discussion, study participants will be asked to complete a consent form and brief online demographic survey.

There will also be the opportunity for further follow up with the researcher via phone or email after the session; and with the researcher and other participants via a web-based platform in the week following the focus group session.

Why were you chosen for this research?

You have been asked to participate in this research given your professional role as a radiation therapist, radiation oncologist, or radiation oncology medical physicist. Invitations have been circulated to individuals via radiation therapy centre managers and relevant professional bodies.

Consenting to participate in the project and withdrawing from the research

Study participants will be requested to sign a written consent form and return this to the researcher prior to the focus group discussion. Participants have the right to withdraw at any time prior to the focus group discussion by emailing a request to the researcher. Participants have the right to withdraw at any time after the focus group discussion by emailing a request to the researcher, and all de-identified coded data associated with the individual will be removed from the study. There will be no implications if a participant

chooses to withdraw from the study at any time. Participant withdrawal will not be possible after results have been reported through publication or thesis.

Possible benefits and risks to participants

A possible benefit to participants will be to inform knowledgeable discussion around radiation therapy advanced practice implementation within Australia. As it cannot be ensured focus group discussion participants will not be known to each other prior to the event, a possible risk could be minor discomfort experienced by the participant if known to others in the group. As the topic of discussion is not deemed sensitive, this risk is not anticipated to cause harm.

Confidentiality

All participants will be requested to maintain confidentiality of the focus group discussion after it has occurred. Participants are requested not to disclose the participation of other individuals or content discussed to those not involved. Data gathered from the focus group will be de-identified during transcription using a coded identity that cannot be tracked to any individual, except by the researcher to facilitate study withdrawal. Any reports generated from the data, such as thesis and publication, will only present coded identifiers.

Storage of data

Data will be stored according to Monash University policies. Data will be stored in a password protected secure digital environment and will be accessed only by the researcher. De-identified data may be accessed by collaborating researchers for quality assurance and data validation purposes only.

Results

The de-identified results of this study will be presented as publication and thesis.

Complaints

Should you have any concerns or complaints about the conduct of the project, you are welcome to contact the Executive Officer, Monash University Human Research Ethics Committee (MUHREC):

Executive Officer
Monash University Human Research Ethics Committee (MUHREC)
Room 111, Building 3e
Research Office
Monash University VIC 3800
Tel: +61 3 9905 2052 Email: muhrec@monash.edu Fax: +61399053831

What next?

If you would like to participate in this study, please email the researcher as soon as possible indicating your interest.

Thank you,

Kristie Matthews
kristie.matthews@monash.edu

Appendix E: Phase 1 Focus Groups Consent Form

CONSENT FORM

Radiation Therapy Advanced Practice: Online Focus Group

Project: Evaluation of the implementation of Australian radiation therapy advanced practitioners

Researcher: Kristie Matthews
Department of Medical Imaging and Radiation Sciences
Room 108, 10 Chancellors Walk
Monash University
CLAYTON VIC 3800
Phone: **
email: kristie.matthews@monash.edu

I have been asked to take part in the Monash University research project specified above. I have read and understood the Explanatory Statement and I hereby consent to participate in this project.

I consent to the following:	Yes	No
Taking part in an online focus group which may include 6-8 people	<input type="checkbox"/>	<input type="checkbox"/>
Being audio and video recorded during the focus group	<input type="checkbox"/>	<input type="checkbox"/>
Any contribution to the focus group made by me will be de-identified during transcript	<input type="checkbox"/>	<input type="checkbox"/>

Name of Participant _____

Email of Participant _____

Participant Signature _____ Date _____

Please sign and return the consent form to the researcher listed above as soon as possible. Forms can be scanned and returned via email, or hard copies can be posted. Once you have consented to participate, the researcher will be in contact via email with further information.

Appendix F: Phase 1 Focus Groups Demographic Survey

Participant Demographics

This brief demographic survey is for participants of the Radiation Therapy Online Focus Groups for the **'Evaluation of the implementation of Australian radiation therapy advanced practitioners'** study.

The information provided in this survey will be used to capture the demographic mix of each focus group. You are required to provide your name and email details, however this will only be used to manage focus group discussions and not for any other purpose. Personal information will be removed prior to any data analysis. Other general information provided may be aggregated and used during data analysis.

If you would like further information about this project, please contact researcher Kristie Matthews, kristie.matthews@monash.edu

Please provide your name and preferred email contact in the text box below.

What is your professional role?

- ☐ Radiation Therapist
- ☐ Radiation Oncologist
- ☐ Radiation Oncology Medical Physicist

Where is your current employment?

- ☐ New South Wales
- ☐ Victoria
- ☐ Queensland
- ☐ Western Australia
- ☐ South Australia
- ☐ Australian Capital Territory
- ☐ Tasmania
- ☐ Northern Territory

How many years have you been working in your profession?

- ☐ 1-5
- ☐ 6-10
- ☐ 11-15
- ☐ 16-20
- ☐ 21-25
- ☐ 26+

Please select which position category/job title accounts for most of your working time in your

profession?

- ☐ Junior professional
- ☐ Intermediate professional
- ☐ Senior professional
- ☐ Manager or Director
- ☐ Educator/Tutor
- ☐ Research
- ☐ Other (please specify)

Please select THREE preferred day and time options to participate in an hour long online focus group session:

	Time Options		
	Morning	Afternoon	Evening
Monday	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tuesday	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wednesday	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thursday	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Friday	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thank you for your responses, the researcher will be in contact with you shortly to organise participation in a focus group.

Appendix G: Phase 1 Focus Groups Moderators Guide

RTAP Focus Group: Moderators Guide

1 week prior to FG

- Consent has been received by all participants electronically or hard copy
- Each participant has had the opportunity to test online functionality on their chosen device

Welcome: (5 mins)

Welcome and thank you for participating in this focus group discussion. My name is Kristie Matthews, and I am undertaking this research as part of a Master of Philosophy at Monash University. This research is supported by my supervisors Professor Marilyn Baird and Professor Gillian Duchesne, and once again I appreciate your contribution to this process.

My role as moderator of this discussion is to ask prompting questions and to keep the discussion on topic, while your role is to engage in the group discussion with each other, rather than with me. Observing proceedings offline is ** who will be taking notes during the session to aid data analysis, and will manage any IT issues. You have been provided with ** email address – if you have any technical difficulties during the discussion, please email ** directly for support.

This Focus Group discussion has been approved by the Monash University Ethics Committee, as such all information will be confidential and anonymised in the write up of the research. The research may be published; however your anonymity will be maintained. I also request that any discussion ensuing today is not openly disclosed to any person not participating in the focus group.

You are free to withdraw at any time without giving a reason. If you do not feel comfortable disclosing something as part of the group you do not have to. In the weeks following the focus group discussion I will also provide you with the opportunity to contribute additional information via email, or in a private online discussion area established specifically for this project.

As you have agreed during the consent process, the proceedings today are being audio and video recorded to facilitate data analysis.

You have all been selected to participate in this focus group because of your experience working in the radiation oncology sector and your point of view is important. I am interested in what you think and feel about radiation therapy advanced practice, and would value knowing your honest opinions about this topic. There are no right or wrong answers to the questions I will pose shortly, and

agreement amongst all of you is not expected as part of the process. With this in mind, please feel you can communicate openly and respectfully with each other, even if difference of opinion is apparent.

Before we commence, I would ask you to share your first name and professional role with others in the group. The topic of discussion today is not likely to be sensitive so you may choose to disclose more detail than first name and profession if you wish, however this is not a requirement.

Introductions: (2 mins)

****Prompt each participant to share first name and professional role.**

Guidelines: (3 mins)

The purpose of this research is to investigate the factors that may influence the implementation of radiation therapy advanced practice in Australia. I encourage everyone to speak freely and honestly about your views.

As we are using online media to engage in this focus group discussion, I would ask that you are mindful of not speaking while someone else is talking. You do not need to speak in any particular order, but I would like to give everyone the opportunity to contribute. If necessary, please feel you can raise your hand if you do have something to say. When you do state your view, please maintain sensitivity and respect for privacy of other group members.

I have allocated one hour for this discussion. As there is limited time I may need to stop you and re-direct the discussion. Before we commence, does anyone have any questions?

Focus Group Questions: (45 mins total)

- **First Question: What does radiation therapy advanced practice mean to you?**
 - Prompt: What is the first thing you think of when you hear ‘radiation therapy advanced practitioner’ (10 mins)
- **Second Question: Could you please share your experiences with radiation therapy advanced practice?**
 - Prompt: What are the influencing factors in your experience?
 - Prompt: If you have no personal experience, could you please discuss what you think about radiation therapy advanced practice? (15 mins)
- **Third Question: What do you think is the current status of radiation therapy advanced practice in Australia?**
 - Prompt: What are the influencing factors locally?
 - Prompt: What are the influencing factors nationally?
 - Prompt: Should advanced practice be implemented more widely? Or not? (20 mins)

Summary: (4 minutes)

Thank you all for your contributions, but unfortunately we are nearly out of time. In the last few minutes, please take the opportunity to add any other related areas you see as important that haven’t been covered, or to re-iterate your key thoughts and ideas.

Closing: (1 min)

Thank you once again. As I have previously suggested, if you have further that you wish to discuss that has not been fully elaborated on today, or to explore any new ideas suggested during the closing, I will be providing you all with the opportunity to do so via email or in a private online discussion area. I will be in contact with all of you in the coming weeks to establish this communication.

Does anyone have any final questions?

Thank you for participating, I appreciate your honest opinions and they will be of value to the research.

Appendix H: Phase 1 Focus Groups Example Participant Guide

Radiation Therapy Advanced Practice Focus Group: Participant Guide

Thank you for agreeing to participate in the online radiation therapy advanced practice focus group. The focus group discussions will be enabled by web based meeting software 'Zoom'. This guide has been designed provide you with some information about what will happen before and during the focus group session.

Your focus group session has been allocated for **Friday, 4th Sept, 11am-12pm EST**. Details as follows:

- Join from a PC, Mac, iPad, iPhone or Android device:
Please click this URL to start or join. <https://monash.zoom.us/j/829190894>
Or, go to <https://monash.zoom.us/> join and enter meeting ID: 829 190 894
- Join from a dial-in phone:
Dial: +61 3 99059666 (+61 3 9905 ZOOM) or +61 2 8015 2088
Meeting ID: 829 190 894

The focus group session is best facilitated via video and audio link. It is recommended that you join the meeting via a device with video and audio function, either through a PC with web cam, or other device with built-in functions. If your PC does not have a microphone, you can choose to join via webcam but talk/listen on the phone.

Prior to the session, it is important that we test the software on your device to ensure a streamlined process on the day. The window available as a test session is:

Wed 2nd Sept, between 11am - 1230pm:

Please click this URL to start or join. <https://monash.zoom.us/j/640954696>

Or, go to <https://monash.zoom.us/join> and enter meeting ID: 640 954 696

Please use the device you intend to use for the actual session to log into the meeting time allocated for a few minutes. If you are using a handheld device, you may need to download the Zoom application from the appropriate app store prior to the test. It is suggested that if using a PC with a webcam and built in microphone that you may require headphones also to minimise feedback.

If you need assistance in using Zoom, please see attached document, or videos are available via <https://www.youtube.com/user/ZoomMeetings>

For the actual focus group session:

- Please 'arrive' at the meeting five minutes early if possible.
- When you log into the software, please only use your first name as an identifier.
- If for any reason you are unable to make the focus group please let me know via phone or email as we will need to make a prompt start.
- Anyone arriving more than five minutes late will be advised that they will not be able to participate as interruptions may affect the flow of the discussion.
- I will be facilitating the discussion and will be visible on screen to the group.
- An administration assistant ** will also be present observing and taking notes, but may not be visible to the group if screen space does not allow it. ** is also on hand to address any technical issues that may occur: if the technology stops working for you during the session, please email ** at **@monash.edu immediately to address the issue.
- The session will be audio and video recorded to aid transcription and analysis.
- Remember your participation is voluntary and you are free to withdraw at any time.
- You will be provided the opportunity for further follow up in the weeks after the session, with the researcher and other participants via a web based platform. Further information about this component will be provided on completion of the focus group.

If you have any questions relating to the conduct of the focus group please contact me (Kristie Matthews) by email kristie.matthews@monash.edu, or phone **

The video and audio of the focus group will be downloaded and recorded directly to the researcher computer and will not be accessed by any third party. However, if you have any questions about the security of the Zoom system prior to the focus group, please review their information page linked below and contact me with any concerns:

<http://d24cgw3uvb9a9h.cloudfront.net/static/19770/doc/Zoom-Security-White-Paper.pdf>

Thank you once again for agreeing to participate.

Appendix I: Phase 1 Focus Groups Chatzy Instructions

Radiation Therapy Advanced Practice Focus Group: Private Chat Room Participant Guide

Thank you for your recent participation in a radiation therapy online focus group discussion. It is anticipated that given the short duration of the focus group discussion, it may be possible that you have more to discuss with the other participants. To facilitate this discussion, a private chat room has been established online via Chatzy.com. The chat room can only be accessed by focus group participants who have been provided the log in details below, but which may include individuals not previously included in your focus group session.

- The URL link below will take you directly to the room.

<http://www.chatzy.com/81060545825515> The password is **

- You will be presented with a welcome message as follows:

‘Welcome to Radiation Therapy Advanced Practice Focus Group chat room. This site has been established as a private chat room to facilitate any required follow up discussion necessary after the video supported focus groups. Each practitioner who engaged in a video focus group has been invited to contribute to this chat room for a period of one week.’

- Please identify yourself with your first name only.
- The researcher will present the same questions asked within the online focus groups. If you would like to make further contribution to any of these questions, or respond to any of the participant messages left in the chat room, please type your message by selecting ‘write message’, or typing directly into the chat bar at the bottom of the page. Any messages you leave will be available for viewing by all focus group participants.
- The chat room will be open from now until the end of September. You may leave your messages at any time during this period, but please be aware that others may or may not be online at the same time so you may not receive an immediate response to your comments. At the completion of this period, the researcher will download a transcript of the discussion, delete all messages and close the room.

A Chatzy private room is a secure environment, however if you wish to consult their privacy policy please follow the link:

<http://www.chatzy.com/terms.htm>

If you have any questions relating to the conduct of the focus group please contact me (Kristie Matthews) by email kristie.matthews@monash.edu, or phone **

Alternatively, if you have more to contribute but wish to do so individually as opposed to a group discussion, please email your comments directly to kristie.matthews@monash.edu

Thank you for your participation in this project.

Appendix J: Phase 1 Focus Groups Online Survey

Thank you for your recent participation in an online focus group for the 'Evaluation of the implementation of Australian radiation therapy advanced practitioners' study. The study intent is to explore the influencing factors around the implementation of radiation therapy advanced practice in Australia, and your contribution to the research is highly valued.

Given the focus group was facilitated using online media, the researcher is also interested in investigating the validity of this approach as a qualitative research method. It would be appreciated if you could take the time to complete this five minute survey.

Your participation is voluntary, and you may exit this survey at any time by clicking on the exit button at the top of the page. Survey responses are anonymous, and aggregate data may be presented in publication and thesis. Ethics approval for this survey has been granted by Monash University Human Research Ethics Committee, approval number CF15/2627 - 2015001077

If you would like further information about this project, please contact researcher Kristie Matthews, kristie.matthews@monash.edu

Have you participated in a Focus Group not including the Radiation Therapy Advanced Practice focus group? Please indicate which type/s.

- ☐ Face to Face Focus Group
- ☐ On|ine Focus Group
- ☐ None: I have not participated in a Focus Group before

Which mechanism did you use to participate in the online Radiation Therapy Advanced Practice focus group recently?

- ☐ Telephone only
- ☐ Telephone and Computer
- ☐ Computer with microphone and webcam
- ☐ Mobile phone or Tablet with microphone and webcam
- ☐ Other (please describe)

The final question is intended to explore your experience of the online Radiation Therapy Advanced Practice focus group. Please rate your agreement to each of the following statements.

	Strongly Disagree	Disagree	Agree	Strongly Agree
I volunteered for the focus group because it was facilitated online	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt inhibited being able to express my true opinions during the focus group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was able to visualise the other participants easily	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conversation flowed as easily as it would have in a face to face discussion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Accessing the Zoom meeting link was easy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I was able to readily express my ideas during the focus group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Offering a focus group time to suit my personal schedule made participation easy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication was more difficult than it would have been in a face to face meeting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt comfortable communicating in an online environment with people I may not have met before	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The moderator was able to keep discussion on track in an online environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt engaged with the other participants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I found it difficult to interact with the other participants in an online environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was more able to participate using an online mechanism than if it was a face to face discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt uncertain if an online focus group would work for me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please provide any comments required to further explain your response to the statements presented, if necessary.

Please provide any additional comments regarding the online Radiation Therapy Advanced Practice focus group you feel may be important, if necessary.

Many thanks for your participation in this research.

If you have any questions, please email researcher Kristie Matthews, kristie.matthews@monash.edu

Appendix K: Phase 2 Case Studies MUHREC Ethics Approval



Human Ethics Certificate of Approval

This is to certify that the project below was considered by the Monash University Human Research Ethics Committee. The Committee was satisfied that the proposal meets the requirements of the *National Statement on Ethical Conduct in Human Research* and has granted approval.

Project Number: CF16/507 - 2016000247

Project Title: Evaluation of the Implementation of Australian Radiation Therapy
Advanced Practitioners: Clinical Centre Case Studies

Chief Investigator: Prof Marilyn Baird

Approved: From: 29 February 2016 To: 1 March 2021

Terms of approval - Failure to comply with the terms below is in breach of your approval and the Australian Code for the Responsible Conduct of Research.

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, before any data collection can occur at the specified organisation.
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must include your project number.
6. Amendments to the approved project (including changes in personnel): Require the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. Future correspondence: Please quote the project number and project title above in any further correspondence.
8. Annual reports: Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. Final report: A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. Monitoring: Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. Retention and storage of data: The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.



cc: Mrs Kristie Matthews, Prof Gillian Duchesne

Monash University, Room 111, Chancellery Building E
24 Sports Walk, Clayton Campus, Wellington Rd
Clayton VIC 3800, Australia
Telephone: +61 3 9905 5490 Facsimile: +61 3 9905 3831
Email: muhrec@monash.edu <http://intranet.monash.edu.au/researchadmin/human/index.php>
ABN 12 377 814 012 CRICOS Provider #00008C

Appendix L: Phase 2 Case Studies Research Protocol

TITLE: Evaluation of the implementation of Australian Radiation Therapy Advanced Practitioners: Clinical Centre Case Studies

Principal Researcher: Kristie Matthews, Monash University (Sessional Academic; HDR Student)

Associate Researchers/Academic Supervisors: Prof Marilyn Baird, Monash University (Head of Department Medical Imaging and Radiation Sciences); Prof Gillian Duchesne, Peter MacCallum Cancer Centre (Radiation Oncologist, Researcher)

1. PROJECT DESIGN: Qualitative study using grounded theory methodology, consisting of oncology professional interviews, inter-professional practice observation and document review at selected radiation oncology centres. This project is the second phase of the overall research study.

2. STUDY OBJECTIVES

The aim of this study is to explore:

- The influencing factors shaping the implementation and practise of radiation therapy advanced practice observable within typical Australian radiation oncology services.

3. BACKGROUND

Advanced practice for radiation therapists has been an available career pathway internationally for more than a decade, and several papers have reported service enhancements in relation to patient access and timeliness of care¹⁻³. In Australia, implementation of similar roles has been isolated to very few clinical centres, and where such roles are reported there exists variation in expectations and outcomes⁴. Government reports suggest that cancer workforce reform, including the broader introduction of radiation therapy advanced practitioners, is a necessity to meet the health needs of an ageing population^{5,6}. If advanced practice for radiation therapists is to become a more widely accepted career pathway in Australia it is timely to investigate what is happening around the implementation of advanced practitioner roles. Anecdotally, the implementation of radiation therapy advanced practice varies across clinical services, and the factors that may be influencing such variation in implementation have not been previously measured.

This project forms the second stage of a larger research project intended to investigate the influencing factors (i.e., barriers and enablers) around radiation therapy advanced practitioner implementation on a national level. In line with the grounded theory methodology used for this study, it is indicated that social processes can be best investigated in the field, where study participant actions and processes can be observed in the context of the study area⁷. It is perceived that the investigation of advanced practice within the context of practice, including observation of practice, analysis of practice documents, and stakeholder interviews over several days, may explain the influencing factors in line with the research aim more than interviews alone. Therefore, a case study approach has been selected to provide an opportunity to explore the factors influencing radiation therapy advanced practitioner implementation within the context of the workplace⁸.

4. RESEARCH PLAN/METHODOLOGY

4.1 Participants

Case study selection criteria: Up to five radiation oncology departments within Australia, who have implemented a radiation therapy advanced practitioner or similar, or who are actively seeking to implement radiation therapy advanced practice. Sample may include metropolitan and regional, private and public, and different capacity services.

Participant selection criteria: Radiation therapists working as advanced practitioners, and radiation therapists, radiation oncologists, and radiation oncology medical physicists working alongside advanced practitioners, or having some influence over the working role of the advanced practitioners.

Participant (de-)identification procedures: Interview data will be recorded by first name only in the first instance and re-identified on transcription. Departments will be given a pseudonym in any report resulting from the research. Any field notes recorded will not include any identifiers.

4.2 Measures

- Participant interview/s with the principal researcher.
- Principal researcher observation of inter-professional interactions involving the advanced practitioner.
- Review of any departmental documentation associated with the advanced practitioner role.

4.3 Procedures

Recruitment: Clinical centres selected as case studies will be recruited via email to the radiation therapy clinical centre manager, with the explanatory statement. Permission will be requested in writing, and a template provided to facilitate this. Once permission has been granted by the manager, and clinical centre ethics approval obtained if required, participants will be recruited via the radiation therapy clinical centre manager prior to data collection on behalf of the researcher, and/or directly by the researcher when in attendance at the clinical centre. All participants will be provided with the explanatory statement by the clinical centre manager and/or researcher.

Consent: All participants will be provided with an explanatory statement prior to consent. Participants requested to engage in interviews will be asked to sign a consent form and return this to the researcher prior to any data collection. Participants requested to engage in researcher observation of inter-professional interaction will be required to verbally consent prior to any data collection. Consent to collect data from local documentation will be verbally requested of the radiation therapy clinical centre manager by the researcher.

Privacy issues: Participant selection will be navigated with the assistance of the radiation therapy departmental manager. Individual refusal to participate or later withdrawal from the study will not have any repercussions. Any identifiable information (participant names and centres) will be de-identified or re-identified prior to any data analysis and reporting.

Details of data collection, processing and analysis: Interview data will be audio recorded, and hand-written notes recorded if necessary, for later transcription by a professional transcription service. Identities will be altered after transcript validation by participants. Observations will be recorded by hand in field notes, without any identifiers, and be later transcribed by the researcher. Document review will be hand recorded, and later transcribed by the researcher (no documents will be copied directly). All data will be stored in a password protected computer accessible by the researcher. Analysis will utilise grounded theory methods to develop categories using NVivo 10 software. Results will be presented in thesis, publications, and professional body reports if relevant to do so.

Record keeping procedures, including storage of data access and destruction: Research data will be stored according to Monash University Research Data Management Policy, which is compliant with the Australian Code for the Responsible Conduct of Research (2007) 'Section 2: Management of Research Data and Primary Materials'. Any laptop computer will be password-protected and electronic records stored on it will be coded and in databases requiring password access. Only the researchers will have access to the data. In compliance with the Australian Code for the Responsible Conduct of Research (2007), data will be stored securely for a minimum of five years after submission of thesis. Data will be destroyed according to Monash University policies after this period if no longer required.

5. STATISTICAL CONSIDERATIONS

None: grounded theory data analysis methods will be utilised, and the sample will be determined by the emergent data analysis.

6. ETHICAL CONSIDERATIONS

The study will be conducted according to the NHMRC National Statement on Ethical Conduct in Human Research 2007 (and updates), and the World Medical Association Declaration of Helsinki 2013.

7. REFERENCES

1. Bolderston A. Advanced practice perspectives in radiation therapy. *Journal of Radiotherapy in Practice*. 2004;4(2-3):57-65.
2. Eddy A. Advanced practice for therapy radiographers -- a discussion paper. *Radiography*. 2008;14(1):24-31.
3. James S, Beardmore C, Dumbleton C. A survey on the progress with implementation of the radiography profession's career progression framework in UK radiotherapy centres. *Radiography*. 2012;18(3):153-159.
4. Frecklton I. *Advanced Practice in Radiography and Radiation Therapy: Report from the Inter-Professional Advisory Team*: Australian Institute of Radiography;2012.
5. Health Workforce Australia. *National Cancer Workforce Strategy: Literature Review*2011.
6. Radiation Oncology Tripartite Committee. *Planning for the Best: Tripartite National Strategic Plan for Radiation Oncology 2012-2022*: Royal Australian and New Zealand College of Radiologists;2012.
7. Charmaz K. *Constructing Grounded Theory*. London: SAGE Publications, Inc.; 2014.
8. Baxter P, Jack S. Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. *Qualitative Report*. 2008;13(4):544-559.

Appendix M: Phase 2 Case Studies Manager Request

My name is Kristie Matthews, and I am a radiation therapist currently undertaking a Master of Philosophy at Monash University to research the influencing factors surrounding the implementation of radiation therapy advanced practice in Australia. It is intended that the research process and outcomes will stimulate knowledgeable discussion around this important topic, and better inform broader implementation strategies.

I am seeking participation from selected radiation oncology centres to be representative case studies for advanced practice/clinical specialist implementation. Your centre has been selected given my understanding that you have initiated advanced practice radiation therapy type roles in the past, or are seeking to implement such roles in the near future.

Participation entails my attendance as the researcher within your centre for up to three days, to conduct interviews (with radiation therapists, radiation oncologists, radiation oncology medical physicists, and managers), observe non-patient related inter-professional interactions, and review any documentation that may be associated with an advanced radiation therapist role. Further details are included in the attached explanatory statement.

As manager of the *** centre, I am seeking your support to undertake this research within your centre for a three day period at a time convenient to you. Please note, you are under no obligation to support this research, and may decline this request without repercussion. If you are willing to support this research initiative and my attendance within your centre as presented in the explanatory statement, I would appreciate if you could populate the attached permission letter. Please print the letter on institutional letterhead, or insert your institutional logo, and return it to me via email or post for my records.

Ethics approval has been provided by Monash University, however I recognise that you may have a requirement to inform your local institutional ethics. I would appreciate if you could please advise if you believe approval from your local ethics review board is required, and provide the contact details of the Ethics Coordinator, or similar, within your centre, as you deem appropriate.

If you have any questions about this project, or require additional information prior to providing your permission, please let me know as soon as possible.

Kind regards,

Kristie Matthews

Appendix N: Phase 2 Case Studies Explanatory Statement

EXPLANATORY STATEMENT

Project: Evaluation of the implementation of Australian Radiation Therapy Advanced Practitioners: Clinical Centre Case Studies

Researcher: Kristie Matthews

Department of Medical Imaging and
Radiation Sciences
Phone: **
email: kristie.matthews@monash.edu

Chief Investigator: Prof Marilyn Baird

Department of Medical Imaging and
Radiation Sciences
Phone: 03 9905 1270
email: marilyn.baird@monash.edu

You are invited to take part in this study. Please read this Explanatory Statement in full before deciding whether or not to participate in this research. If you would like further information regarding any aspect of this project, you are encouraged to contact the researcher via the phone number or email address listed above. This research study has been approved by Monash University Human Research Ethics Committee (MUHREC), approval number CF16/507 - 2016000247

What does the research involve?

This study informs the second stage of a Doctor of Philosophy being undertaken by the researcher. The Chief Investigator listed above is the academic supervisor of the research degree. The aim of the study is to investigate what is influencing the implementation of radiation therapy advanced practitioners in Australia. Radiation therapy advanced practice has not been broadly implemented in Australia, and this study intends to explore the factors that may be involved to gain a better understanding of the reasons why. This stage of the study involves the researcher attending radiation oncology centres to interview practitioners and observe non-patient related practice.

Interview

Study participants will be asked to participate in a 30-45 minute interview with the researcher to discuss radiation therapy advanced practice within their place of work. The researcher may also request a second interview in the days after the initial interview, and/or contact participants via email in the months that follow. Follow up interviews and emails are intended to explore new ideas and/or confirm research findings. Interviews will be audio recorded to aid accurate transcription and data analysis.

Observation

Study participants may also be observed by the researcher during (non-patient) inter-professional interactions. The intention of any observations is to enable the researcher to enrich the data relating to the integration of any radiation therapy advanced practitioners (or similar) within the clinical setting, and potentially add specific lines of enquiry to the interview questions. Although a practising radiation therapist, the researcher will not be actively engaging in any clinical related activity, and will not be observing any patient related interactions. The focus of observation will be on inter-professional interactions, as opposed to clinical tasks or activities. Any intended observation will be verbally requested by the researcher prior to the interaction, and hand written notes of the interaction recorded if verbal consent is provided by all participants involved in the interaction.

Data may also be collected from documentation associated with an extended/advanced activity, if relevant to the research.

Why were you chosen for this research?

You have been asked to participate in this research given your professional role as a radiation therapist, radiation oncologist, or radiation oncology medical physicist, located at a clinical centre selected as a case study.

Consenting to participate in the project and withdrawing from the research

Study participants will be requested to sign a written consent form and return this to the researcher prior to the interview. Study participants will be required to verbally consent to any observation of inter-professional interactions. Clinical centre managers will be required to verbally consent to any documentation review. Participants have the right to withdraw at any time after the interview/observation by emailing a request to the researcher, and all de-identified coded data associated with the individual will be removed from the study. There will be no implications if a participant chooses to withdraw from the study at any time. Participant withdrawal will not be possible after results have been reported through publication or thesis.

Possible benefits and risks to participants

A possible benefit to participants will be to inform knowledgeable discussion around radiation therapy advanced practice implementation within Australia. It is recognised that researcher observation within practice may cause a feeling of discomfort to the participant, however given the intention of observation is not deemed sensitive, this risk is not anticipated to cause harm.

Confidentiality

Data gathered from the interviews and/or observations will be de-identified during transcription using a coded identity that cannot be tracked to any individual, except by the researcher to facilitate study withdrawal. Any reports generated from the data, such as thesis and publication, will only present coded identifiers. In addition, clinical centres will be given a pseudonym in reports, thesis and publication.

Storage of data

Data will be stored according to Monash University policies. Data will be stored in a password protected secure digital environment and will be accessed only by the researcher. De-identified data may be accessed by collaborating researchers for quality assurance and data validation purposes only.

Results

The de-identified results of this study will be presented as publication and thesis.

Source of funding

The case study stage of the research project has been funded by a grant from the Victorian Medical Radiation Practitioners Education Trust (VMRPET).

Complaints

Should you have any concerns or complaints about the conduct of the project, you are welcome to contact the Executive Officer, Monash University Human Research Ethics Committee (MUHREC):

Executive Officer
Monash University Human Research Ethics Committee (MUHREC)
Room 111, Building 3e
Research Office
Monash University VIC 3800

Tel: +61 3 9905 2052 Email: muhrec@monash.edu Fax: +61 3 9905 3831

Thank you,

Kristie Matthews
kristie.matthews@monash.edu

Appendix O: Phase 2 Case Studies Manager Permission Letter

PERMISSION LETTER

Project: Evaluation of the Implementation of Australian Radiation Therapy Advanced Practitioners: Clinical Centre Case Studies

Date (please populate)

**Professor Marilyn Baird
Department of Medical Imaging and Radiation Sciences
Room 129, 10 Chancellors Walk
Monash University
CLAYTON VIC 3800**

Dear Prof Baird,

Thank you for your request to recruit participants from (organization) for the above-named research.

I have read and understood the Explanatory Statement regarding the research project **CF16/507 - 2016000247: Evaluation of the Implementation of Australian Radiation Therapy Advanced Practitioners: Clinical Centre Case Studies** and hereby give permission for this research to be conducted.

Yours sincerely,

(Signature of person granting permission)

(Name of person granting permission)

(Position of person granting permission)

Appendix P: Phase 2 Case Studies Participant Consent Form

CONSENT FORM

Project: Evaluation of the implementation of Australian Radiation Therapy Advanced Practitioners: Clinical Centre Case Studies

Researcher: Kristie Matthews
Department of Medical Imaging and Radiation Sciences
Room 108, 10 Chancellors Walk
Monash University
CLAYTON VIC 3800
Phone: **
email: kristie.matthews@monash.edu

I have been asked to take part in the Monash University research project specified above. I have read and understood the Explanatory Statement and I hereby consent to participate in this project.

I consent to the following:	Yes	No
Being interviewed by the researcher for 30-45 minutes, on one or two occasions	<input type="checkbox"/>	<input type="checkbox"/>
Being audio recorded during the interview	<input type="checkbox"/>	<input type="checkbox"/>
Receiving follow up emails from the researcher in the months after the interview/s	<input type="checkbox"/>	<input type="checkbox"/>
Being observed during non-patient related interactions, if additional verbal consent is provided at the researcher request	<input type="checkbox"/>	<input type="checkbox"/>
Any contribution to the project made by me will be de-identified in transcription	<input type="checkbox"/>	<input type="checkbox"/>

Name of Participant _____

Email of Participant _____

Participant Signature _____ Date _____

Please sign and return the consent form to the researcher listed above as soon as possible. Forms can be scanned and returned via email, or hard copies can be posted, or hand delivered as appropriate.

Appendix Q: Phase 2 Case Studies Interview Guide

An Evaluation of the Implementation of Australian Radiation Therapy Advanced Practitioners: Case Study Interviewer Guide

Opening statement

Thank you for agreeing to participate in this interview today.

As indicated in the explanatory statement and consent, today's interview will be audio recorded to aid data analysis. The audio recording of your interview may be provided to a professional transcription service to produce a written recording of our discussion. To sustain your privacy, I would request that you refer to any colleagues that you raise in the discussion by their first name only, and that you don't refer to your clinical centre by name. I will be referring to you by first name only throughout the discussion also.

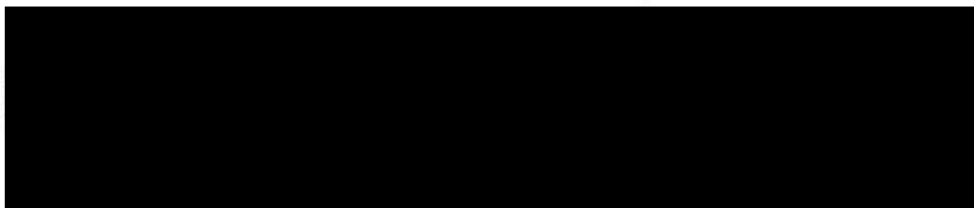
Today we are going to be talking about radiation therapy advanced practice as it relates to your clinical centre. I do value your honest opinions, and given the interview is largely unstructured, please feel that you are able to contribute any pertinent issues that you believe are important to this topic.

Do you have any questions before we start?

Opening questions and prompts

- **Please tell me about radiation therapy advanced practice within your clinical centre.**
 - Focus: the nature of the radiation therapy advanced practitioner role in the service
 - Prompts: structure; function/activities; outcomes; label/title; cultural fit
- **Please tell me about how the radiation therapy advanced practice role came about**
 - Focus: the factors around the implementation (or not) of RTAP role
 - Prompts: drivers for change; implementation strategies; barriers and enablers; outcomes; cultural fit
- **Please tell me about how the role in your clinical centre fits compared to other centres**
 - Focus: fit within broader radiation therapy advanced practice landscape
 - Prompts: perceived success; future evolution; fit to other organisations/national radiation therapy/national radiation therapy advanced practice initiatives

Appendix R: Elm Radiotherapy Centre Ethics Approval



Mrs Kristie Matthews
Department of Medical Imaging and Radiation Sciences
Monash University
Room 108
10 Chancellors Walk
Clayton VIC 3800

Dear Mrs Matthews,

Re: ETHLR.16.101E

Thank you for your letter of 23 May 2016 submitting the following study for site governance review:

Evaluation of the implementation of Australian Radiation Therapy Advanced Practitioners: Clinical Centre Case Studies

██████████ recognises the ethical and scientific review and approval of certified Human Research Ethics Committees (HREC). In this case I note the ethical review and approval from Monash University HREC, dated 29 February 2016.

The above named study is approved to commence at ██████████ sites as per the submissions approved by the lead reviewing HREC.

Please see conditions of approval on the following page.

This correspondence will be reported to the ██████████ HREC meeting of 4 July 2016.

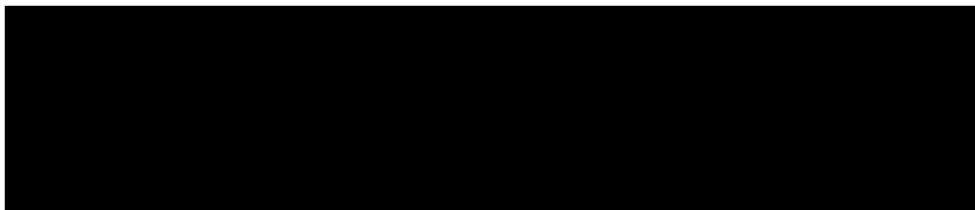
Yours sincerely,



Research Ethics and Governance

21 June 2016





Outcome of Consideration of Protocol

Submission No: ETHLR.16.101E **Date of Approval:** 21 June 2016

Project Title: Evaluation of the implementation of Australian Radiation Therapy Advanced Practitioners: Clinical Centre Case Studies

Submitted by: Mrs Kristie Matthews

Approval Period: 1 year from 21 June 2016 to 21 June 2017.

NOTE: Projects approved for one year will be automatically marked as 'closed' by the secretariat office on the anniversary of the approval date. This means ethical approval is no longer current and work must not continue on this project. If additional time is required you will need to submit a request for extension of the approval period prior to the anniversary date.

As the project will close automatically you are not required to submit a final report. For the duration of the approval period you will be required to report any amendments and breaches as per the conditions of approval below.

Conditions of Approval

The following items are required for noting:

- All items submitted to and approved by the lead reviewing HREC to be notified to Health Research Ethics and Governance Office, including but not limited to:
 - Protocol amendments
 - Investigator brochure updates
 - Patient recruitment and retention materials intended for use at [REDACTED] sites
- All safety monitoring reports submitted to the lead reviewing HREC to be notified to [REDACTED] Health Research Ethics and Governance Office, including but not limited to:
 - SUSAR/Line Listing reports
 - Data Safety and Monitoring Board reports
 - unforeseen events that may affect the continued ethical acceptability of the project

The following items are required for review:

- Annual project progress report on the conduct of the study at [REDACTED] sites
- Serious adverse events occurring in relation to participants recruited through [REDACTED] sites
- Current insurance certificate, annually or as required
- Any items or reports required by regulation or [REDACTED] policy



21 June 2016



Appendix S: Maple Radiotherapy Centre Ethics Approval and Documents

Ms K Matthews
Monash University
C108, Level 1
10 Chancellors Way
Clayton 3800

Dear Ms Matthews

HREC Reference number: HREC/16/QPAH/202

Project Title: Evaluation of the Implementation of Australian Radiation Therapy Advanced Practitioners: Clinical Centre Case Studies

Thank you for submitting the above research protocol to the [REDACTED] Human Research Ethics Committee for ethical and scientific review. This protocol was first considered by the Human Research Ethics Committee (HREC) at the meeting held on 5 April 2016.

You are reminded that this letter constitutes ethical approval only. You must not commence this research protocol at a site until separate authorisation from the [REDACTED] Chief Executive or Delegate of that site has been obtained.

A copy of this approval must be submitted to the Research Governance Office(r)/Delegate of the relevant institution with a completed Site Specific Assessment (SSA) Form for authorisation from the Chief Executive or Delegate to conduct this research at the Radiation Oncology, Mater Centre.

If this study currently receives grant funding, please remember to forward a copy of this approval letter to the relevant Grants Office of the Administering Institution(s) for the grant.

I am pleased to advise that the HREC has granted approval of this research protocol. The documents reviewed and approved include:

Document	Version	Date
MSF31 Submission checklist form		15 March 2016
NEAF		15 March 2016
Recruitment email	1	18 February 2016
Explanatory Statement for staff participants	2.1	21 April 2016
Consent Form	2	20 April 2016
Case Study Interviewer Guide	1	18 February 2016
Email communication from [REDACTED] re outstanding issues		22 March 2016
Letter in response to HREC comments		20 April 2016

This HREC approval is valid from 26 April 2016 until 26 April 2019.

Please note the following conditions of approval:

-
1. The researcher must provide an annual report to the HREC and a final report on completion of the study in the specified format. Approval is contingent upon submission of this.
 2. The Principal Investigator will immediately report anything which might warrant review of ethical approval of the protocol in the specified format, including unforeseen events that might affect continued ethical acceptability of the protocol. Serious Adverse Events must be notified to the HREC as soon as possible. In addition the Investigator must provide a summary of the adverse events, in the specified format, including a comment as to suspected causality and whether changes are required to the Patient Information and Consent Form. In the case of Serious Adverse Events occurring at the local site, a full report is required from the Principal Investigator, including duration of treatment and outcome of the event.
 3. Amendments to the research protocol which may affect the ongoing ethical acceptability of a protocol must be submitted to the HREC for review. Amendments should be accompanied by all relevant updated documentation and a cover letter from the principal investigator, providing a brief description of the changes, the rationale for the changes, and their implications for the ongoing conduct of the study. Hard copies of the cover letter and all relevant updated documents, with *tracked changes*, must also be submitted to the HREC office as per standard HREC SOP.
 4. Amendments to the research protocol which only affect the ongoing site acceptability of the protocol are not required to be submitted to the HREC for review. These amendment requests should be submitted directly to the Research Governance Office/r.
 5. Proposed amendments to the research protocol which may affect both the ethical acceptability and site suitability of the protocol must be submitted firstly to the HREC for review and, once HREC approval has been granted, then submitted to the Research Governance Office/r.
 6. Amendments which do not affect either the ethical acceptability or site acceptability of the protocol (e.g. typographical errors) should be submitted electronically (track changes) and in hard copy (final clean copy) to the HREC Coordinator. These should include a cover letter from the Principal Investigator providing a brief description of the changes and the rationale for the changes, and accompanied by all relevant updated documents with tracked changes.
 7. The HREC will be notified, giving reasons, if the protocol is discontinued at a site before the expected date of completion.
 8. The Principal Investigator will provide at least, an annual report to the HREC on the anniversary of the approval and at completion of the study in the specified format.
 9. If you require an extension for your study, please submit a request for an extension in writing outlining the reasons. Note: One of the criteria for granting an extension is the compliance with the approval's conditions including submission of progress reports.
 10. Any research study that prospectively assigns human participants or groups of humans to one or more health-related interventions to evaluate the effects on health outcomes ([WHO / ICMJE 2008 definition](#)) should be registered, including early phase and late phase clinical trials (phases I-III) in patients or healthy volunteers ([WHO Recommendation / ICMJE policy](#)). If in doubt, registration is recommended. All studies must be registered prior to the study's inception, i.e. prospectively.
<http://www.anzctr.org.au/>

Should you have any queries about the HREC's consideration of your protocol please contact the [REDACTED]

Please note that the [REDACTED] HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research (2007)*, *NHMRC and Universities Australia Australian Code for the Responsible Conduct of Research (2007)* and the *CPMP/ICH Note for Guidance on Good Clinical Practice*. Attached is the HREC Composition (Attachment I).

Once authorisation to conduct the research has been granted, please complete the Commencement Form (Attached) and return to the [REDACTED] Human Research Ethics Committee.

The [REDACTED] HREC wishes you every success in your research.

Yours sincerely,

[REDACTED]

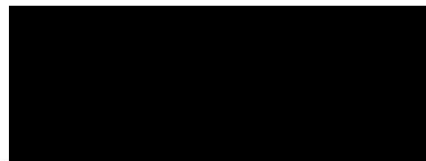
26/4/16

[REDACTED]

[REDACTED]



MONASH University



EXPLANATORY STATEMENT

Project: Evaluation of the implementation of Australian Radiation Therapy Advanced Practitioners: Clinical Centre Case Studies

Researcher: Kristie Matthews

Department of Medical Imaging and
Radiation Sciences
Phone: 0417 340 573
email: kristie.matthews@monash.edu

Chief Investigator: Prof Marilyn Baird

Department of Medical Imaging and
Radiation Sciences
Phone: 03 9905 1270
email: marilyn.baird@monash.edu

You are invited to take part in this study. Please read this Explanatory Statement in full before deciding whether or not to participate in this research. If you would like further information regarding any aspect of this project, you are encouraged to contact the researcher via the phone number or email address listed above. This research study has been approved by Monash University Human Research Ethics Committee (MUHREC), approval number CF16/507 – 2016000247, and [REDACTED] HHS HREC – HREC/16/QPAH/202.

What does the research involve?

This study informs the second stage of a Doctor of Philosophy being undertaken by the researcher. The Chief Investigator listed above is the academic supervisor of the research degree. The aim of the study is to investigate what is influencing the implementation of radiation therapy advanced practitioners in Australia. Radiation therapy advanced practice has not been broadly implemented in Australia, and this study intends to explore the factors that may be involved to gain a better understanding of the reasons why. This stage of the study involves the researcher attending radiation oncology centres to interview practitioners and observe non-patient related practice.

Interview

Study participants will be asked to participate in a 30-45 minute interview with the researcher to discuss radiation therapy advanced practice within their place of work. The researcher may also request a second interview in the days after the initial interview, and/or contact participants via email in the months that follow. Follow up interviews and emails are intended to explore new ideas and/or confirm research findings. Interviews will be audio recorded to aid accurate transcription and data analysis.

Observation

Study participants may also be observed by the researcher during (non-patient) inter-professional interactions. The intention of any observations is to enable the researcher to enrich the data relating to the integration of any radiation therapy advanced practitioners (or similar) within the clinical setting, and potentially add specific lines of enquiry to the interview questions. Although a practising radiation therapist, the researcher will not be actively engaging in any clinical related activity, and will not be observing any patient related interactions. The focus of observation will be on inter-professional interactions, as opposed to clinical tasks or activities. Any intended observation will be verbally requested by the researcher prior to the interaction, and hand written notes of the interaction recorded if verbal consent is provided by all participants involved in the interaction.

Data may also be collected from documentation associated with an extended/advanced activity, if relevant to the research.

Why were you chosen for this research?

You have been asked to participate in this research given your professional role as a radiation therapist, radiation oncologist, or radiation oncology medical physicist, located at a clinical centre selected as a case study.

Consenting to participate in the project and withdrawing from the research

Study participants will be requested to sign a written consent form and return this to the researcher prior to the interview. Study participants will be required to verbally consent to any observation of inter-professional interactions. Clinical centre managers will be required to verbally consent to any documentation review. Participants have the right to withdraw at any time after the interview/observation by emailing a request to the researcher, and all de-identified coded data associated with the individual will be removed from the study. There will be no implications if a participant chooses to withdraw from the study at any time. Participant withdrawal will not be possible after results have been reported through publication or thesis.

Possible benefits and risks to participants

A possible benefit to participants will be to inform knowledgeable discussion around radiation therapy advanced practice implementation within Australia. It is recognised that researcher observation within practice may cause a feeling of discomfort to the participant, however given the intention of observation is not deemed sensitive, this risk is not anticipated to cause harm.

Confidentiality

Data gathered from the interviews and/or observations will be de-identified during transcription using a coded identity that cannot be tracked to any individual, except by the researcher to facilitate study withdrawal. Any reports generated from the data, such as thesis and publication, will only present coded identifiers. In addition, clinical centres will be given a pseudonym in reports, thesis and publication.

Storage of data

Data will be stored according to Monash University policies for a minimum of 7 years. Data will be stored in a password protected secure digital environment and will be accessed only by the researcher. De-identified data may be accessed by collaborating researchers for quality assurance and data validation purposes only.

Results

The de-identified results of this study will be presented as publication and thesis.

Source of funding

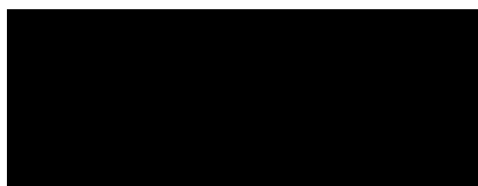
The case study stage of the research project has been funded by a grant from the Victorian Medical Radiation Practitioners Education Trust (VMRPET).

Complaints

Should you have any concerns or complaints about the conduct of the project, you are welcome to contact the following:

Executive Officer
Monash University Human Research Ethics Committee
Room 111, Building 3e
Research Office
Monash University VIC 3800
Tel: 03 9905 2052
Email: muhrec@monash.edu

Human Research Ethics Committee Coordinator



Thank you,



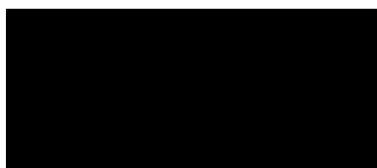
Kristie Matthews
kristie.matthews@monash.edu

V2.1 21/04/2016



MONASH University

CONSENT FORM



**Project: Evaluation of the implementation of Australian Radiation Therapy Advanced Practitioners:
Clinical Centre Case Studies**

Researcher: Kristie Matthews
Department of Medical Imaging and Radiation Sciences
Room 108, 10 Chancellors Walk
Monash University
CLAYTON VIC 3800
Phone: [REDACTED]
email: kristie.matthews@monash.edu

I have been asked to take part in the Monash University research project specified above. I have read and understood the Explanatory Statement and I hereby consent to participate in this project.

I consent to the following:	Yes	No
Being interviewed by the researcher for 30-45 minutes, on one or two occasions	<input type="checkbox"/>	<input type="checkbox"/>
Being audio recorded during the interview	<input type="checkbox"/>	<input type="checkbox"/>
Receiving follow up emails from the researcher in the months after the interview/s	<input type="checkbox"/>	<input type="checkbox"/>
Being observed during non-patient related interactions, if additional verbal consent is provided at the researcher request	<input type="checkbox"/>	<input type="checkbox"/>
Any contribution to the project made by me will be de-identified in transcription	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

Name of Participant _____

Email of Participant _____

Participant Signature _____ Date _____

Please sign and return the consent form to the researcher listed above as soon as possible. Forms can be scanned and returned via email, or hard copies can be posted, or hand delivered as appropriate.

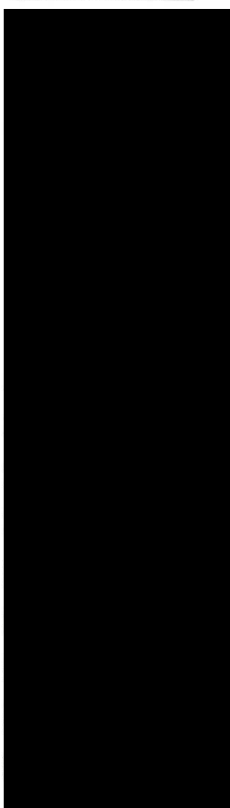
V2 20/04/2016

Appendix T: Oak Radiotherapy Centre Ethics Approval and Documents

HREC Committee Secretariat:



HREC Committee Members:



Research Office File No: **(4786)**

HREC Ref: AU RED HREC/16/WMEAD/279

SSA Ref: AU RED SSA/16/WMEAD/300

24 November 2016



Project title: 'Evaluation of the Implementation of Australian Radiation Therapy Advanced Practitioners: Clinical Centre Case Studies'

Thank you for Kristie Matthews' correspondence addressing the matters raised in the HREC's letter dated 2 September 2016 following single ethical review of the above project at its meeting held on 30 August 2016.

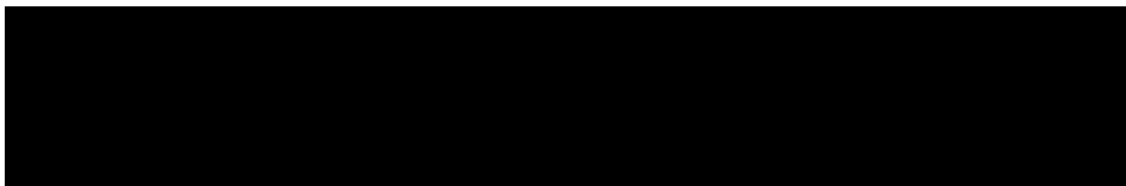
This HREC has been accredited by the [redacted] Department of Health as a lead HREC to provide the single ethical and scientific review of proposals to conduct research within the [redacted] public health system. This lead HREC is constituted and operates in accordance with the National Health and Medical Research Council's *National Statement on Ethical Conduct in Human Research* and the *CPMP/ICH Note for Guidance on Good Clinical Practice*.

This proposal meets the requirements of the National Statement and I am pleased to advise that the HREC has now granted ethical approval of this Single site research project to be conducted by you at:

- [redacted]

The following documentation has been reviewed and approved by the HREC:

- NEAF submission code AU/1/C3B6210
- Protocol, version 1, dated 6 February 2016
- Participant Information and Consent Form, version 1.1, dated 22 November 2016
- Case Study Interviewer Guide, version 1, dated 18 February 2016



Please note the following conditions of approval:

- The Chief Investigator will immediately report anything which might warrant review of ethical approval of the project in the specified format, including unforeseen events that might affect continued ethical acceptability of the project.
- **For clinical trials of implantable medical devices only** – The Chief Investigator will confirm to the HREC that a process has been established for tracking the participant, with consent, for the lifetime of the device and will immediately report any device incidents to the Therapeutic Goods Administration (TGA).
- The Chief Investigator will immediately report any protocol deviation / violation, together with details of the procedure put in place to ensure the deviation / violation does not recur.
- The Chief Investigator will provide to the HREC in the specific format, proposed amendments to the research protocol or conduct of the research which may affect the ethical acceptability of the project, must be provided to the HREC to review in the specific format. Copies of all amendments when approved by the HREC must also be provided to the Research Governance Officer.
- The Chief Investigator must notify the HREC, giving reasons, if the project is discontinued at a site before the expected date of completion.
- The Coordinating Chief Investigator must provide an annual report to the HREC and a final report at completion of the study, in the specified format. HREC approval is granted for a period of 12 months and ongoing approval is contingent upon annual submission. Annual Reports for all studies should be submitted in November, they will be processed and presented to the HREC at their January meeting. A copy of the Annual / Final Research Report Form can be obtained electronically from the Research Office on request.
- The HREC has the discretion to adopt other appropriate mechanisms for monitoring depending on the complexity, design and risk perceived including
 1. Discussion of relevant aspects of the project with investigators, at any time,
 2. Random inspection of research sites, data or consent documentation,
 3. Interview with research participants or other forms of feedback from them, and
 4. Request and review reports from independent agencies such as a Data Safety Monitoring Board.
- If your research project is an interventional trial, please ensure it is registered on one of the clinical trial registries, eg <http://www.actr.org.au>.
- It should be noted that compliance with the ethical guidelines is entirely the responsibility of the Chief Investigator.

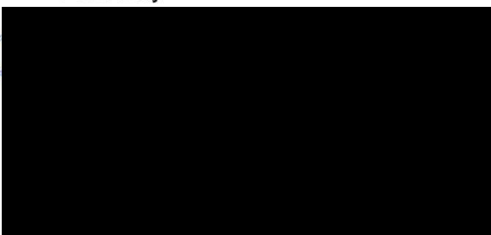
You are reminded that this letter constitutes *ethical approval only*. You must not commence this research project at a site until separate authorisation from the Chief Executive or delegate of that site has been obtained. Copies of this letter, together with any approved documents as enumerated above, must be forwarded to all site investigators for submission to the relevant Research Governance Officer.

Should you have any queries about the HREC's Terms of Reference, Standard Operating Procedures or membership, please contact the Acting Research Ethics Manager through the Research Office on [REDACTED]

In all future correspondence concerning this study, please quote Research Office File Number **(4786)**

The HREC wishes you every success in your research.

Yours sincerely

A large black rectangular redaction box covers the signature area. To the left of the box, there is a small, faint blue circular mark.



Participant Information Sheet/Consent Form



Title

Evaluation of the Implementation of Australian Radiation Therapy Advanced Practitioners: Clinical Centre Case Studies

Short Title

ARTAP

Project Sponsor

Monash University

**Coordinating Principal Investigator/
Principal Investigator**

Kristie Matthews /



Location



Part 1 What does my participation involve?

1 Introduction

You are invited to take part in this research project, Evaluation of the Implementation of Australian Radiation Therapy Advanced Practitioners: Clinical Centre Case Studies. This is because you are a radiation therapist, radiation oncologist, or radiation oncology medical physicist, located at a clinical centre selected as a case study.

The research project is aiming to investigate what is influencing the implementation of radiation therapy advanced practitioners in Australia.

This Participant Information Sheet/Consent Form tells you about the research project. It explains what the research involves. Knowing what is involved will help you decide if you want to take part in the research.

Please read this information carefully. Ask questions about anything that you don't understand or want to know more about. Before deciding whether or not to take part, you might want to talk about it with your employer.

Participation in this research is voluntary. If you don't wish to take part, you don't have to.

If you decide you want to take part in the research project, you will be asked to sign the consent section. By signing it you are telling us that you:

- Understand what you have read
- Consent to take part in the research project
- Consent to the research that is described

You will be given a copy of this Participant Information and Consent Form to keep.

2 What is the purpose of this research?



Radiation therapy advanced practice has not been broadly implemented in Australia, and this study intends to explore the factors that may be involved to gain a better understanding of the reasons why.

The results of this research will be used by the study researcher, Kristie Matthews to obtain a Doctor of Philosophy.

This research has been locally initiated by the study doctor, [REDACTED]

This research has been funded by a grant from the Victorian Medical Radiation Practitioners Education Trust (VMRPET).

This research is being conducted by Department of Medical Imaging and Radiation Sciences, Monash University.

3 What does participation in this research involve?

This study involves the researcher attending radiation oncology centres to interview practitioners and observe non-patient related practice.

Interview

Study participants will be asked to participate in a 30-45 minute interview with the researcher to discuss radiation therapy advanced practice within their place of work. The researcher may also request a second interview in the days after the initial interview, and/or contact participants via email in the months that follow. Follow up interviews and emails are intended to explore new ideas and/or confirm research findings. Interviews will be audio recorded to aid accurate transcription and data analysis.

Observation

Study participants may also be observed by the researcher during (non-patient) inter-professional interactions. The intention of any observations is to enable the researcher to enrich the data relating to the integration of any radiation therapy advanced practitioners (or similar) within the clinical setting, and potentially add specific lines of enquiry to the interview questions. Although a practising radiation therapist, the researcher will not be actively engaging in any clinical related activity, and will not be observing any patient related interactions. The focus of observation will be on inter-professional interactions, as opposed to clinical tasks or activities. Any intended observation will be verbally requested by the researcher prior to the interaction, and hand written notes of the interaction recorded if verbal consent is provided by all participants involved in the interaction.

Data may also be collected from documentation associated with an extended/advanced activity, if relevant to the research.

This research project has been designed to make sure the researchers interpret the results in a fair and appropriate way and avoids study doctors or participants jumping to conclusions.

There are no costs associated with participating in this research project, nor will you be paid.



4 Other relevant information about the research project

This study informs the second stage of a Doctor of Philosophy being undertaken by the researcher. The site principal investigator listed has oversight of the research within your clinical centre.

5 Do I have to take part in this research project?

Participation in any research project is voluntary. If you do not wish to take part, you do not have to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage.

If you do decide to take part, you will be given this Participant Information and Consent Form to sign and you will be given a copy to keep.

Your decision whether to take part or not to take part, or to take part and then withdraw, will not affect your employment.

6 What are the possible benefits of taking part?

We cannot guarantee or promise that you will receive any benefits from this research, however possible benefits may inform knowledgeable discussion around radiation therapy advanced practice implementation within Australia.

7 What are the possible risks and disadvantages of taking part?

It is recognised that researcher observation within practice may cause a feeling of discomfort to the participant, however given the intention of observation is not deemed sensitive, this risk is not anticipated to cause harm.

If you become upset or distressed as a result of your participation in the research, the study doctor will be able to arrange for counselling or other appropriate support. Any counselling or support will be provided by qualified staff who are not members of the research project team. This counselling will be provided free of charge.

8 What if I withdraw from this research project?

If you decide to withdraw from this research project, please notify a member of the research team before you withdraw.

Participants have the right to withdraw at any time after the interview/observation by emailing a request to the researcher, and all de-identified coded data associated with the individual will be removed from the study. There will be no implications if a participant chooses to withdraw from the study at any time.

Participant withdrawal will not be possible after results have been reported through publication or thesis.



9 What happens when the research project ends?

The de-identified results of this study will be presented as publication and thesis.

Part 2 How is the research project being conducted?

10 What will happen to information about me?

By signing the consent form you consent to the study researcher and relevant research staff collecting and using information provided by you for the research project. Any information obtained in connection with this research project that can identify you will remain confidential.

Data gathered from the interviews and/or observations will be de-identified during transcription using a coded identity that cannot be tracked to any individual, except by the researcher to facilitate study withdrawal. Any reports generated from the data, such as thesis and publication, will only present coded identifiers. In addition, clinical centres will be given a pseudonym in reports, thesis and publication.

Your information will only be used for the purpose of this research project and it will only be disclosed with your permission, except as required by law.

It is anticipated that the results of this research project will be published and/or presented in a variety of forums. In any publication and/or presentation, information will be provided in such a way that you cannot be identified, except with your permission.

In accordance with relevant Australian and/or NSW privacy and other relevant laws, you have the right to request access to the information collected and stored by the research team about you. You also have the right to request that any information with which you disagree be corrected. Please contact the research team member named at the end of this document if you would like to access your information.

Any information obtained for the purpose of this research project that can identify you will be treated as confidential and securely stored. It will be disclosed only with your permission, or as required by law.

11 Complaints and compensation

If you suffer any distress as a result of this research project, you should contact the study team as soon as possible and you will be assisted with arranging appropriate support.

12 Who is organising and funding the research?

This research project is being conducted by Kristie Matthews, Department of Medical Imaging and Radiation Sciences, Monash University.

No member of the research team will receive a personal financial benefit from your involvement in this research project (other than their ordinary wages).

13 Who has reviewed the research project?

Evaluation of the implementation of Australian Radiation Therapy Advanced Practitioners: Clinical Centre Case Studies
WSLHD Participant Information Sheet/Consent Form Version 1.1 dated 22/11/2016
Page 4 of 7



All research in Australia involving humans is reviewed by an independent group of people called a Human Research Ethics Committee (HREC). The ethical aspects of this research project have been approved by the HREC of the [REDACTED]

This project will be carried out according to the *National Statement on Ethical Conduct in Human Research (2007)*. This statement has been developed to protect the interests of people who agree to participate in human research studies.

14 Further information and who to contact

The person you may need to contact will depend on the nature of your query.

If you want any further information concerning this project or if you have any problems which may be related to your involvement in the project (for example, distress), you can contact the principal study doctor on 02 9845 5200 or any of the following people:

Contact person

Name	Kristie Matthews
Position	Co-ordinating Principal Investigator
Telephone	[REDACTED]
Email	kristie.matthews@monash.edu

For matters relating to research at the site at which you are participating, the details of the local site complaints person are:

Complaints contact

Name	[REDACTED]
Telephone	[REDACTED]
Email	[REDACTED]

If you have any complaints about any aspect of the project, the way it is being conducted or any questions about being a research participant in general, then you may contact:

Reviewing HREC approving this research and HREC Executive Officer details

Reviewing HREC name	[REDACTED]
HREC Executive Officer	[REDACTED]
Telephone	[REDACTED]
Email	[REDACTED]

Local HREC Office contact (Single Site -Research Governance Officer)

Name/Position	[REDACTED]
Telephone	[REDACTED]
Email	[REDACTED]





Consent Form

Title Evaluation of the Implementation of Australian Radiation Therapy Advanced Practitioners: Clinical Centre Case Studies

Short Title ARTAP

Project Sponsor Monash University

**Coordinating Principal Investigator/
Principal Investigator** Kristie Matthews / 

Location 

Declaration by Participant

I have read the Participant Information Sheet or someone has read it to me in a language that I understand.

I understand the purposes, procedures and risks of the research described in the project.

I have had an opportunity to ask questions and I am satisfied with the answers I have received.

I freely agree to participate in this research project as described and understand that I am free to withdraw at any time during the project without affecting my employment.

I acknowledge that regulatory authorities may have access to my information **specifically related** to this project to monitor the research in which I am agreeing to participate. However, I understand my identity will not be disclosed to anyone else or in publications or presentations.

I understand that I will be given a signed copy of this document to keep.

Name of Participant (please print) _____

Signature _____ Date _____

Declaration by Study Doctor/Senior Researcher[†]

I have given a verbal explanation of the research project, its procedures and risks and I believe that the participant has understood that explanation.

Name of Study Doctor/
Senior Researcher[†] (please print) _____

Signature _____ Date _____

[†] A senior member of the research team must provide the explanation of, and information concerning, the research project.

Note: All parties signing the consent section must date their own signature.





Form for Withdrawal of Participation

Title Evaluation of the Implementation of Australian Radiation Therapy Advanced Practitioners: Clinical Centre Case Studies

Short Title ARTAP

Project Sponsor Monash University

**Coordinating Principal Investigator/
Principal Investigator** Kristie Matthews / 

Location 

Declaration by Participant

I wish to withdraw from participation in the above research project and understand that such withdrawal will not affect my employment.

Name of Participant (please print) _____
Signature _____ Date _____

In the event that the participant's decision to withdraw is communicated verbally, the Study Doctor/Senior Researcher will need to provide a description of the circumstances below.

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Declaration by Study Doctor/Senior Researcher[†]

I have given a verbal explanation of the implications of withdrawal from the research project and I believe that the participant has understood that explanation.

Name of Study Doctor/ Senior Researcher [†] (please print) _____
Signature _____ Date _____

[†] A senior member of the research team must provide the explanation of and information concerning withdrawal from the research project.

Note: All parties signing the consent section must date their own signature.

Appendix U: Example Memo

1/5/16: Concept creating a legitimate identity

Creating a legitimate identity

Thoughts from FG1, but also links with FG2 and 3 – unofficially doing the job of the AP, and why that is the case, struggling to make it work and fit.

As a concept, creating implies something new as opposed to building, or fostering, or inserting an existing construct. More than 'making it fit', as actually coming up with a legitimate role, not just pushing in and trying to make it work in the new structure. Legitimate means accepted, belonging. Identity associated with the name the label. How does this fit as an influencing factor? Would suggest that if unable to create a legitimate identity, that it doesn't work as well – like FG3, seen as the resource person, and stuck with trying to make it fit, and unofficially doing the job of the AP, without being able to push it further. How does this fit with levels? Not clearly, but perhaps being legitimate indicates acceptance regardless of levels? To think further on this

Would this be a tentative category? Need to find examples of actual action within case study sites, at the moment limited to thoughts of participants who have not gone there at all, and those that have tried but failed – only negative cases, need to determine if confirmed through case studies.

Is this part of the challenge creating the legitimate identity, that you have to break out of the existing self-concept first? Or is it more the inferred identity expected of others? Thinking about FG3, they identified as APs, but struggled to get the same recognition within their centres – they were unable to create the legitimate identity even though their self-identity supported it

Training is an important feature of being able to create a legitimate identity, but not the only factor – as seen in FG2 and 3.

Need to look at FG4, where one part has legitimate AP, and sense that this may not be accepted by all – follow up.

Perhaps the concepts of levels and boundaries doesn't fit exactly with the creating an identity – role identity is having an influence on the need for legitimacy though, and the challenge faced with trying to create the identity perhaps. Creating the legitimate identity is perhaps the endpoint – first there is a need to break down the barriers around existing role identity – own and others – before able to create a new one.

Is creating a legitimate identity a struggle? Seems to be given the negative cases to date – again, need to confirm with case studies. Perhaps the concept needs to reflect the action prior to creating the legitimate identity – perhaps breaking down barriers, or breaking through to create a legitimate identity?? Really need case study data to push this further, but feel like on the brink of an important idea.