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Older adults and the unique role of the radiation therapist: Future directions for improving geriatric oncology training and education

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ABSTRACT

There is widespread recognition that the provision of high quality, appropriate and equitable care to older adults with cancer is a growing challenge in oncology practice. Radiation therapy (RT) is an effective and localised treatment that represents an attractive curative or palliative option for many older adults, and radiation therapists (RTT) play an important role in the delivery, support and quality of care for people during RT. The need to develop an evidence-based, global approach to improving all radiation oncology (RO) professionals' knowledge and clinical practice in geriatric oncology (GO) has been previously identified. This article specifically focusses on the status quo of GO clinical practice and education for RTT worldwide. We explore the unique clinical role that RTT play in the management of older adults with cancer and define multiple clinical care points in which RTT could potentially participate in geriatric screening, geriatric assessment and intervention to optimise the care of older adults, with a focus on dementia. Directions for future efforts to improve the knowledge and clinical skills of RTT in caring for older adults are discussed.

Introduction

This practice development review article outlines the unique and increasing clinical role that radiation therapists (RTT) play in the wholistic care of older adults undergoing radiation therapy (RT). We undertake a review of the current available evidence and guidance for geriatric oncology (GO) clinical practice, training and education for RTT globally. Multiple clinical care points in which the RTT role could potentially expand or specialise into geriatric screening, assessment and intervention to optimise the care of older adults, particularly those with dementia, are also discussed. Current GO educational offerings and future directions to improve RTT knowledge and skills around caring for older adults are also explored.

Background

Cancer and the ageing population

The number of older adults with cancer is rapidly increasing in parallel with the worldwide trend of population ageing [1–4]. There exists a great degree of heterogeneity amongst older adults in terms of frailty, comorbidities, cognition, personal preferences, psychosocial wellbeing, family and carer support. This heterogeneity is not routinely integrated into decision making in oncology, where cancer-directed care and age-related considerations are often considered separately [3,5–8]. Older adults are at risk for worse outcomes across all aspects of the treatment pathway as compared to younger cohorts [3,7,8].

The increasing role of RT in the treatment for older adults with cancer

RT is an effective and localised treatment that often represents a

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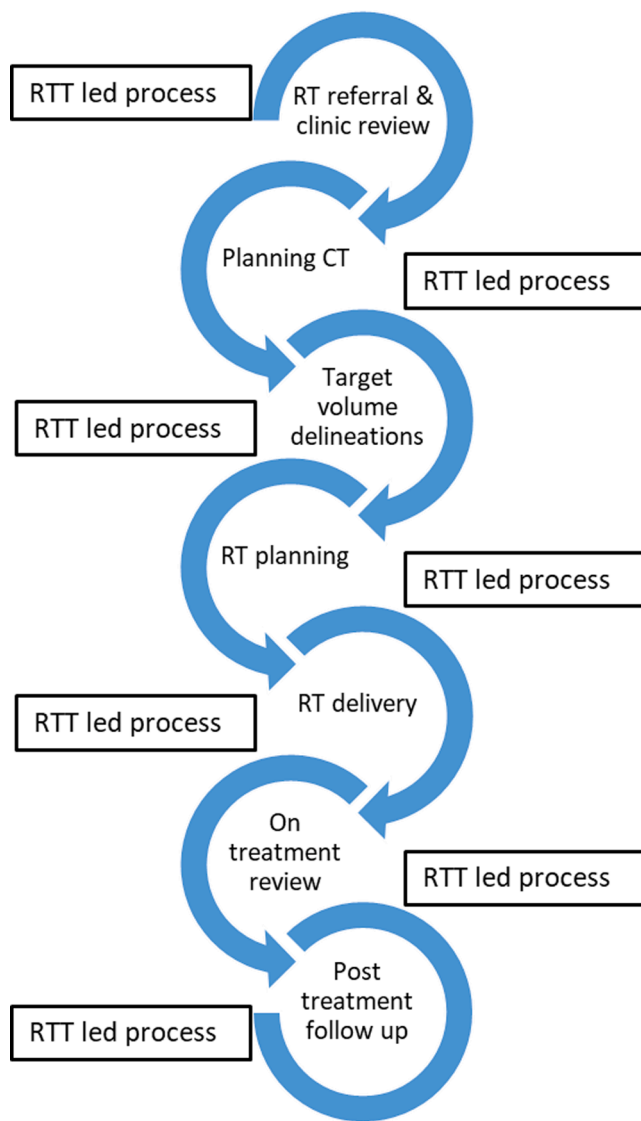


Fig. 1. RTT-led services across the RT patient pathway [32].

particularly attractive choice for older adults [9,10]. In both the palliative and curative setting, RT can avoid the systemic toxicity of chemotherapy and/or the morbidity and mortality of surgery, general anaesthetic and inpatient admission [11]. The acceptability, tolerability and convenience of RT has significantly improved over the last decade with recent technological advances within the specialty of radiation oncology (RO) [12]. Techniques such as SBRT (stereotactic body radiation therapy) and hypofractionated RT have resulted in markedly shorter treatment schedules, reduced side effects and improved cure rates and quality of life [12]. Recent high level randomised evidence has confirmed these improved outcomes in malignancies commonly occurring in older adults, most notably prostate, breast and lung cancer [12–17]. This has a clear advantage for many older adults who may be frail, pre-frail and/or have limited social support networks to tolerate prolonged treatment schedules or significant side effects [18,19]. Brachytherapy, although often overlooked, can also represent an excellent option for older adults due to limited toxicity to normal tissues and the logistical advantages of fewer hospital visits and in many cases can be undertaken without the need for general anaesthesia.

However, despite the advantages of RT for older adults, even low grade RT related side effects coupled with frailty deficits can significantly impact on health outcomes and long term quality of life for older adults [18,19]. This can result in increased risk of falling, infection,

increased levels of fatigue, poor appetite and weight loss, increased chance of hospitalisation, gaps and or cessation of treatment, poor outcomes and diminished quality of life [18]. Hence the implementation of multi-disciplinary geriatric screening and assessment prior to undergoing cancer treatments, including RT, has been advocated [19–23]. The identification of frailty that is potentially reversible can improve health outcomes and enhance quality of care for older adults [18,24].

Why do radiation oncology (RO) professionals need improved GO education and training?

Improved education of cancer healthcare professionals is vital to meeting the needs of older people [25]. The training of all RO professionals, including RTT, nurses, medical physicists, radiation and clinical oncologists) around the care of older adults with cancer will be vital to ensuring the unique needs of this patient population are met. However, it is increasingly recognised that within the specialty of RO, knowledge levels around key concepts in GO are lacking [26–29]. Previously our group has argued the need for an evidence-based, global approach to improving all RO professionals' knowledge and clinical practice in GO [30]. For example, the recent publication of an international Delphi consensus on the ideal set of geriatric RO learning outcomes for RO and clinical oncology trainees worldwide may assist RO training bodies in the development and implementation of a standardised geriatric RO curricula [31].

RTT and older adults with cancer

The unique and expanding role of the RTT

RTT are highly trained frontline members of the RO multi professional team. RTT skills and knowledge are essential to multiple steps across the RT process. As depicted in Fig. 1, these may include pre-treatment assessment, the appointment booking process, patient identification/consent, positioning and immobilisation for planning and treatment, volume delineation, treatment planning, quality assurance, treatment delivery and verification, on and post RT review (33). RTT communicate with and provide support for patients during the whole RT process and are in many ways the “face” of the RT patient experience. The RTT role is focussed on ensuring care is safe, effective and appropriate [33]. RTT combine both technical skills and psychosocial care and are in the unique position of meeting the patient daily during treatment, as well as across multiple steps in the treatment pathway [32–34].

There is a great deal of heterogeneity in terms of training, accreditation and titles for RTT around the world [32]. This variation also occurs in relation to clinical roles, responsibilities and scope of practice. Recent emergence of advanced practice in some regions has seen RTT gain a significantly expanded role, both clinically and technically [35]. Significant efforts to benchmark RTT education have been undertaken by the European Society for Radiotherapy and Oncology (ESTRO) Radiation Therapist (RTT) committee [36,37]. This work endeavours to ensure that all appropriate educational RTT training programmes adhere to the ESTRO core curriculum for RTT training and require a benchmarked level of skills and knowledge for graduate RTT, including an ability to adapt to future developments in the field [36,37].

RTT and older Adults: A unique clinical relationship

There are multiple unique clinical care points that exist between RTT and older adults across the RT process which offer the opportunity to enhance patient care (Fig. 2) [32]. The frequent nature of the day to day clinical interactions between RTT and older adults undergoing daily external beam RT treatment is unlike radiation or clinical oncologists, who may only review a patient at infrequent intervals. RTT also have frequent contact with and are very involved in the clinical care of older adults undergoing brachytherapy. Hence this regular clinical exposure

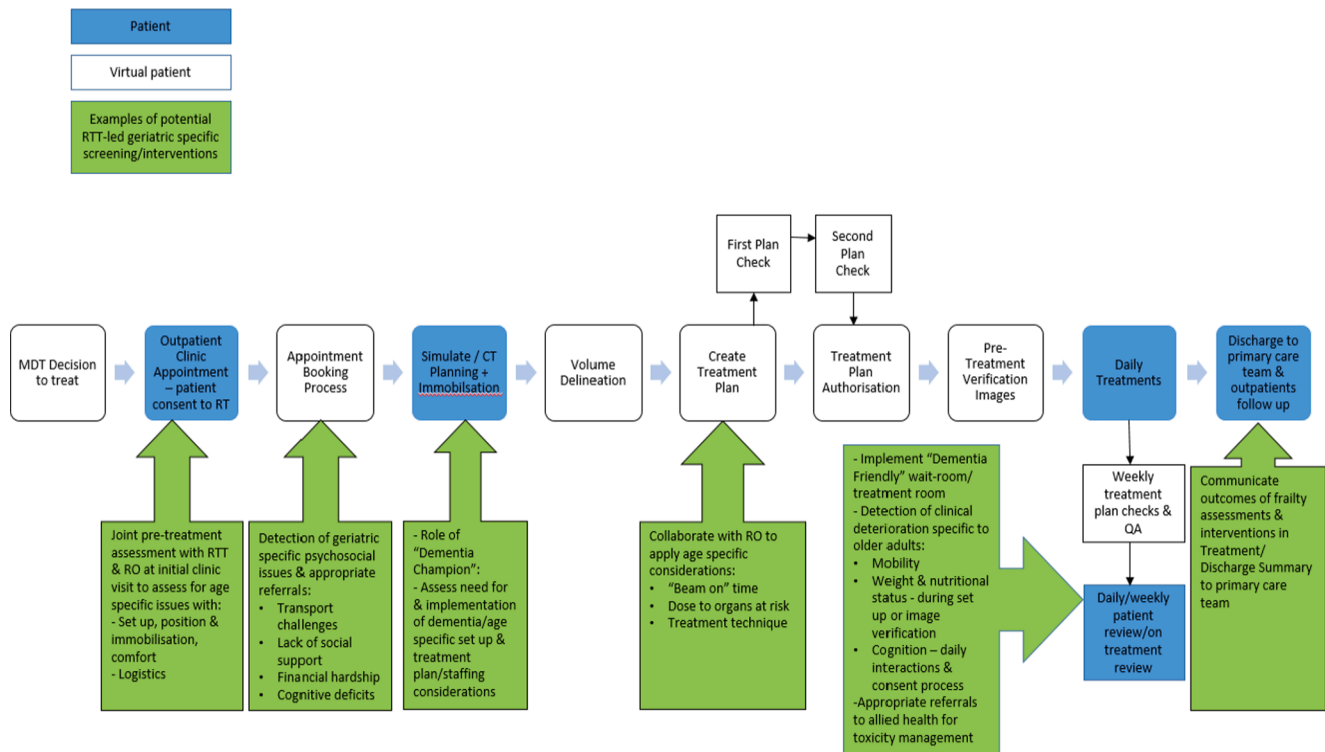


Fig. 2. RT process map and potential RTT care point opportunities to optimise care of older adults during treatment pathway [32].

puts RTT in an optimal position to proactively contribute to assessing geriatric domains, detecting potential issues and implementing tailored plans or early interventions ahead of time. RTT have the capacity to optimise the ongoing delivery of care to older adults by ensuring unmet geriatric-specific communication or informational needs are addressed and monitoring for clinical deterioration over the RT treatment course. Many of these activities would not necessarily be practically possible or feasible for the treating clinician. All the points of care depicted in Fig. 2 are examples (albeit not exhaustive) opportunities for RTT to formally expand their role in frailty screening, geriatric assessment and intervention to individualise care specific to the needs of older adults.

What evidence exists for an expanded RTT clinical role for older adults?

It is important to note that RTT may already be informally and/or organically providing clinical care tailored to the needs of older adults as part of their daily work. However, to our knowledge, there are very few formal GO education interventions specific for RTT or defined clinical/advanced practice roles specific to managing older adults during the RT process (noting discussion of what exists currently is expanded below).

There is growing evidence supporting the expanded role of RTT in the management of older adults. Akthar et al assessed the knowledge and attitudes of RTT on the need for geriatric assessment and specialized GO clinics for older patients with breast cancer receiving radiation therapy [26]. This study provided unique insight from RTT as to the utility of specialized GO clinics and highlights existing knowledge gaps. Although it found 90% of RTT were unaware of specialized clinics for geriatric assessment and 80% were not familiar with geriatric screening and assessment tools, 66% of RTT supported the concept of designated GO clinics for older adults and 86% agreed that geriatric assessments would be useful for this patient population (27). Hashmi et al assessed the feasibility of RTT undertaking a Brief Geriatric Assessment (BGA) during routine RT [38]. It was found that the RTT scope of practice limits the necessary skills needed to undertake BGA, however with appropriate training and education RTT are shown to have the potential to assess for frailty and deliver low level interventions [38]. Examples of

such interventions include fatigue management education, physical activity education, sleep hygiene, functional assessments, mobility assessments, education strategies for mild cognitive impairment, adaptive equipment to reduce functional deficits, referrals to community services for falls interventions, rehabilitation, psychological support, befriending service and carer support [38].

A focus on dementia and the role of RTT

The incidence of both cancer and/or dementia increases with age [39]. Hence there is an increased probability of these two diagnoses co-existing in older adults. Evidence suggests that oncological outcomes for people with dementia are inferior and decision making around treatment in the context of dementia can be extremely challenging [39–42]. Often surgery and chemotherapy are contraindicated for people with dementia, whilst RT offers an effective and well tolerated alternative for such patients. However, the needs of people with dementia in the cancer care environment are unique. The unfamiliar, often loud, bustling RT department and multiple interactions with various staff can present a specific sensory challenge to a person with dementia [41,43]. Distress, disorientation and/or delirium can occur easily and ideally must be minimised wherever practically possible. In response to this specific need, the UK Society and College of Radiographers (SCoR) has published 'Caring for People with Dementia in Clinical Imaging and Radiotherapy: A Clinical Guideline' in order to provide evidence-based advice for the staff who support patients with dementia and their carers through the radiotherapy [44]. The review identified a key theme was the need for role-specific, tailored training for clinical staff around caring for people with dementia [44]. Similarly, a national audit undertaken in the Republic of Ireland around the specific provisions for people with dementia who undergo RT demonstrated multiple areas of need, including specific education and training of RO professionals on improving communication and limiting distress for patients presenting with dementia [43]. The authors identified focussed dementia educational interventions as an immediate priority [43]. We suggest it can be assumed these findings are very likely to be applicable to RT departments worldwide and raises

Table 1
Global geriatric oncology educational courses and resources available to RTT.

Course	Institution	Mode of delivery	Description	Website
Advanced course in GO	SIOG & Università Cattolica del Sacro Cuore	F2F, 1 week + conference	This course focuses on training of health professionals in the management of elderly cancer patients, providing specific skills in assessment, care pathways and therapeutic choices about the elderly patients with cancer.	https://www.siog.org/content/siog-advanced-course-go
Fellowship	SIOG/UICC	Research: 2–6 months Clinical: 1–3 months	Research: Research projects (retrospective and prospective protocols, epidemiology, laboratory research) aiming to improve care for older cancer patients. Clinical: Clinical attachment aiming to improve knowledge in geriatric oncology and to facilitate implementation	https://www.siog.org/content/siog-fellowship
OncoGeriatric training day	The Christie NHS and BGS	F2F and live stream	Aimed at professionals from all backgrounds with an interest in improving outcomes for older people with cancer	https://www.christie.nhs.uk/
Clinical Fellowships	CARG	Multiple courses	A number of courses aimed at all professionals ranging from 2 days to 3 year clinical/research fellowships.	https://www.mycarg.org/?page_id=168
The Portal of Geriatrics Online Education (POGOe)	Icahn School of Medicine at Mount Sinai & Vanderbilt University School of Medicine, Department of Biomedical Informatics & Division of Geriatrics.	Online	A free public repository of geriatric educational materials resources in e-learning formats (including lectures, exercises, virtual patients, case-based discussions, simulations)	https://pogoe.org/
Clinical Frailty Scale (CFS) Training Module	AIMS Research Group led by Dr. Daniel McIsaac, Canada	Online	Provides learners with a comprehensive understanding of frailty and how to accurately determine a person's Clinical Frailty Scale score	https://rise.articulate.com/share/deb4rT02lvONbq4AfcMNRUudcd6QMts3#/
St James Frailty Education Program	St James's Hospital, Ireland	Online	Aims to provide healthcare professionals with an enhanced understanding of frailty & frailty assessments	https://www.stjames.ie/misa/educationtraining/
Stand Alone Frailty Module	Trinity College Dublin	Online	Education around the assessment and management of frailty in ageing adults	https://www.tcd.ie/medicine/medical-gerontology/postgraduate/standalone-frailty-module/
Caring for People with Dementia: a clinical practice guideline for the radiography workforce	SCoR	Online resource	A set of recommendations for the radiographic workforce caring for people with dementia and carers when undergoing imaging and/or radiotherapy	https://www.sor.org/learning/document-library/caring-people-dementia-clinical-practice-guideline-radiography-workforce-imaging-andradiotherapy

GO = geriatric oncology; F2F = face to face; SIOG = International Society of Geriatric Oncology; UICC = Union for International Cancer Control; BGS = British Geriatric Society; CARG = Cancer and Ageing Research Group, SCoR = The Society and College of Radiographers.

issues around RTT awareness of concepts related to capacity to consent and dissent.

The specific nature of the RTT role offers multiple opportunities for improved care of older adults with dementia. As depicted in Fig. 2, RTT are responsible for the appointment booking process. This often requires communicating with the carers of people with dementia and could include discussion/education of how the logistics of treatment may impact their dementia and implementing adjustments or interventions that may tailor the RT process to the person's individual needs. In simulation and/or creating the treatment plan, RTT may also play a role in adjusting factors such as set-up time, “beam on” time, immobilisation, staff numbers/turnover in the treatment room and creating a calm environment in order to minimise distress or disorientation. Another basic requirement for daily RT and associated procedures is that patients give consent. Thus assessing cognition and capacity in older adults is of paramount importance for RTT. Thus, RTT are well placed to undertake routine cognitive assessment and implement strategies to maximise the well-being and tolerance of treatment for people with dementia. The concept of an RTT taking on a specialist role as a “dementia champion” is recommended in the SCoR clinical practice guideline and interest has

been expressed within the workforce to develop such a role [44].

Potential barriers to an expanded RTT role

Beyond the education need, there exist several real and/or perceived economic and practical barriers that may affect the expansion of the RTT role into GO. Many RO centres worldwide are currently impacted by workforce shortages and increasing patient volumes, which raises concerns that resources and staff time are limited with little capacity to undertake “new roles”. Further there may be concerns around the potential over-specialisation of some staff. We would argue there is still nevertheless merit in cultivating a RTT dementia or GO champion who has a level of knowledge and leadership needed to optimally coordinate and optimise care to a standard that cannot be attained by the entire RTT workforce [43,45]. Further, it is arguable that the implementation of such a RTT role has the potential to be cost neutral and could potentially encompass specialisation in care of the older adult more broadly across the cancer care pathway [43]. Analyses to date lean toward a positive cost-effectiveness of geriatric focussed interventions in clinical practice in cancer [46]. We argue this would likely to translate into RO in terms

of cost and staff resource savings via reduction of in-hospital admissions/length of stay, RT treatment toxicity and completion. The evidence also shows RTT strongly support an expanded role into the care of older adults and hence such roles may translate into improved staff satisfaction and recruitment and retention of RTT [26,38,44].

What GO training and education opportunities currently exist for RTT?

Currently available educational strategies and resources for improving RTT knowledge around general geriatric and GO are outlined in Table 1. However, other than the SCoR guidelines, these offerings are generally not tailored to the specific learning needs of RTT or other RO professionals and do not provide content that is specific to older adults undergoing RT [30,44].

To our knowledge, there is currently a paucity of formally published or identified curricula that exist for GO focussed education specific for RTT. We note that GO has been integrated into the undergraduate programme for RTT at Trinity College Dublin for a number of years. This consists of a basic introduction to what frailty is, the role of geriatric assessment and how age-related concerns may impact cancer care. This is delivered by an RTT with expertise in geriatric oncology, in keeping with the university's research led teaching ethos. Case-based discussions with a geriatrician are also included, to illustrate how best to optimise patient management for those with more complex needs [A. O'Donovan, personal communication, June 10, 2022]. There are also examples of RTT-led efforts at individual RT departments to engage staff online geriatric training around frailty, for example RTT at Oldham Radiotherapy in the United Kingdom coordinated to complete the AIMS Research Group Clinical Frailty Scale Training Module [A Hashmi, personal communication, June10, 2022]. This provided RTT with a comprehensive understanding of frailty and how to accurately determine a person's Clinical Frailty Scale score based on their specific circumstances. Other novel work, as yet unpublished, to develop interactive educational interventions include a trial of Virtual Reality headsets (from The Christie Hospital Library, United Kingdom) to undertake frailty walk-throughs for RTT to better understand how it feels to be a frail person [A. Hashmi, personal communication, June10, 2022].

Future directions and priorities for RTT geriatric oncology education?

There is growing recognition of the need to develop GO education interventions that are tailored to all RO professionals [30,31]. This particularly applies to RTT given their vital and unique role in the care of older adults. As previously discussed by the authors, international RO organisations with experience and expertise in education for RO professionals, such as ESTRO and the American Society for Radiation Oncology (ASTRO), are arguably most appropriate to develop such interventions [30]. This is particularly pertinent in context of the ESTRO RTT leadership and success around benchmarking of RTT education across the region [37]. Given the multidisciplinary nature of RO, interdisciplinary educational interventions may arguably be an optimal delivery format. The ESTRO Foundations of Leadership in Radiation Oncology (FLiRO) course has demonstrated that an interdisciplinary learning format amongst RO professionals, delivered either live and virtually, is both feasible and effective in achieving learning outcomes [47]. This may provide a primer for any future GO focused training and education for RO professionals.

There is also a strong rationale to focus training efforts in an effort to address the gap for RTT to specialise as Frailty and/or Dementia Champions and this is a noteworthy recommendation SCoR clinical practice guidelines [44]. RTT are also key professionals in developing research to enhance evidence-based care, in which there currently is a great need to do so for older adults with cancer. Indeed, to date, an appreciable proportion of the GO research in RO has been RTT led. The future involvement of RTT in clinical research around older adults with cancer undergoing RT is therefore another key priority [19,23,48].

Lastly, it is imperative that future RTT education interventions are ideally evidence-based and standardised. An RTT focussed needs assessment and development of learning outcomes must be the first fundamental step in establishing any GO curricula tailored to the learning needs and unique clinical role of RTT.

Conclusion

RTT are vital to ensuring high quality, individualised care for older adults undergoing RT. Multiple opportunities exist along the RT patient pathway to expand the role of the RTT into geriatric screening, assessment and intervention across multiple geriatric domains, particularly dementia. However, at present there is a lack of GO focussed content across RTT curricula worldwide. Current education and training opportunities are limited and generally not tailored to RTT and/or RO professionals. Future work across the global RO community to expand RTT knowledge and skills around GO will ensure that older adults receiving RT receive the best care possible throughout their treatment course.

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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