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<b>Title:</b> INDEPENDENT PRESCRIBING BY THERAPEUTIC RADIOGRAPHERS IA No: 5196  <b>Lead department or agency:</b> National Health Service England  <b>Other departments or agencies:</b> Department of Health, Medicines and Healthcare Products Regulatory Agency, The Society and College of Radiographers, Devolved Administrations	<b>Impact Assessment (IA)</b>		
	<b>Date:</b> 05/01/2016		
	<b>Stage:</b> Consultation		
	<b>Source of intervention:</b> Domestic		
	<b>Type of measure:</b> Other		
<b>Contact for enquiries:</b> enquiries@ahp.nhs.net			

<b>Summary: Intervention and Options</b>	<b>RPC Opinion:</b> Not Applicable
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Cost of Preferred (or more likely) Option			
Total Net Present Value	Business Net Present Value	Net cost to business per year (EANCB on 2009 prices)	In scope of One-In, Two-Out? Measure qualifies as
£14m	£m	£m	No   NA

**What is the problem under consideration? Why is government intervention necessary?**

Demand for primary and urgent health care has increased UK-wide; optimal health care delivery is restricted by government regulation limiting who can prescribe and constraining the effectiveness of services and multidisciplinary teams. There are potential efficiencies, equity gains and improvements in patient experience from expanding the range of health care professionals who can prescribe medicines within their competency. Efficiency is currently restricted by patients being required to consult doctors to access medicines who could otherwise have been fully managed by other professionals. This system may also delay access to doctors for patients who require their clinical skills.

**What are the policy objectives and the intended effects?**

To extend independent prescribing to radiographers in order to: a) increase access to prescribed medicines without the need to see a doctor for a prescription only, b) increase timely access to prescribed medicines to manage side-effects of radiotherapy and reduce demand for oncologists. The intended effects are: improved patient experience of care; efficiency savings by increasing the use of radiographers to prescribe medicines for pain relief and managing non-complex side-effects of radiotherapy; better management of short-term morbidity associated with radiotherapy; improved cancer outcomes by increasing the rate of completed courses of radiotherapy; greater satisfaction and choice.

**What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)**

Option 1 - No change.  
 Option 2 - Independent prescribing for any condition from a full formulary  
 Option 3 - Independent prescribing for specified conditions from a specified formulary  
 Option 4 - Independent prescribing for any condition from a specified formulary  
 Option 5 - Independent prescribing for specified conditions from a full formulary

The preferred option is option 2.

<b>Will the policy be reviewed?</b> It will not be reviewed. <b>If applicable, set review date:</b> Month/Year					
Does implementation go beyond minimum EU requirements?			No		
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	<b>Micro</b> No	<b>&lt; 20</b> No	<b>Small</b> Yes/No	<b>Medium</b> Yes/No	<b>Large</b> Yes/No
What is the CO <sub>2</sub> equivalent change in greenhouse gas emissions? (Million tonnes CO <sub>2</sub> equivalent)			<b>Traded:</b>		<b>Non-traded:</b>

*I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.*

Signed by the responsible Minister: George Freeman Date: 22<sup>nd</sup> February 2016

# Summary: Analysis & Evidence

# Policy Option 1

**Description:**

**FULL ECONOMIC ASSESSMENT**

Price Base Year 2014	PV Base Year 2014	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: £-5,000	High: £99.8m	Best Estimate: £13.9

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional	Optional	£8m
High	Optional	Optional	£11.5m
Best Estimate			£8m

**Description and scale of key monetised costs by 'main affected groups'**

The independent prescribing educational programmes required to train advanced therapeutic radiographers; conversion courses to allow current therapeutic radiographer supplementary prescribers to train to become independent prescribers; staff replacement /backfill for advanced therapeutic radiographers to attend educational programmes.

**Other key non-monetised costs by 'main affected groups'**

On-going cost of additional clinical supervision above current supervision arrangements; increased complexity of governance undertaken by employers and the Health and Care Professions Council (HCPC) as the regulatory body for the radiographer undertaking independent prescribing; cost of patients'/ carers' time off work to attend additional appointments or due to poor management of symptoms.

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional	Optional	£11.5m
High	Optional	Optional	£110.4m
Best Estimate			£22m

**Description and scale of key monetised benefits by 'main affected groups'**

Increased capacity of oncologists to manage patients by using advanced therapeutic radiographers to independently prescribe in 'on-treatment' review clinics; increased capacity of advanced therapeutic radiographers to treat the side-effects associated with radiotherapy treatment.

**Other key non-monetised benefits by 'main affected groups'**

Health gain through better management of side-effects of therapeutic radiotherapy as patients may see a radiographer more frequently than other members of the oncology team; improved cancer outcomes by increasing the rates of completed courses of radiotherapy through better support where decisions to continue treatment are influenced by how well side-effects are managed which is linked to timely prescribing decisions. Reduction in administration costs associated with supplementary prescribing.

Key assumptions/sensitivities/risks	<b>Discount rate (%)</b>	3.5%
Key risks: non-compliance by patients as well as errors by prescribers; expansion of governance arrangements; keeping control of information on prescribed medicines, including the communication of prescribing decisions to others; ensuring advanced therapeutic radiographers have sufficient information to make safe and effective prescribing decisions.		

**BUSINESS ASSESSMENT (Option 1)**

<b>Direct impact on business (Equivalent Annual) £m:</b>			<b>In scope of OITO?</b>	<b>Measure qualifies as</b>
Costs:	Benefits:	Net:	No	NA

## Evidence Base (for summary sheets)

### Policy background:

The *Review of Prescribing, Supply and Administration of Medicines*<sup>1</sup> in 1999, chaired by Dr June Crown, proposed that prescribing rights be extended to a range of health professionals in order to improve services to patients, make better use of the skills of professional staff and thus make a significant contribution to the modernisation of the health service. Following the review, revised regulations have enabled an expansion of non-medical prescribing so that experienced nurses, optometrists, pharmacists, physiotherapists and podiatrists can train to independently prescribe medicines within their clinical competence. In addition, radiographers can train to supplementary prescribe medicines within a Clinical Management Plan. This has been championed through such publications as *High Quality Care for all*<sup>2</sup>, *Modernising Allied Health Professions careers: a competency based career framework*<sup>3</sup>, and more recently the *Allied health professions (AHP) prescribing and medicines supply mechanisms scoping project report*<sup>4</sup> and *Operational guidance to the NHS: extending the patient choice of provider*<sup>5</sup>.

Within the government's response to the consultation on refreshing the Mandate to NHS England, there were numerous suggestions on how to make better use of resources, one of which was the more effective use and prescribing of medicines. Changes to medicines legislation, in line with these recommendations to allow eligible therapeutic radiographers to independently prescribe medicines, will support changes to models of service delivery such as radiotherapy satellite centres led by advanced and consultant radiographers.

In the *Five Year Forward View*<sup>6</sup> NHS England set out how the health service needs to change, arguing for a more engaged relationship with patients, carers and citizens to promote wellbeing and prevent ill-health. This vision is for a health service that no longer sees expertise constrained by traditional boundaries, fragmented services, patients having to visit multiple professionals for multiple appointments. One organised to support people with multiple health conditions, not just single diseases. A future that sees far more care delivered locally but with some services in specialist centres where that clearly produces better results, one that recognises that we cannot deliver the necessary change without investing in our current and future workforce.

Independent prescribing by advanced therapeutic radiographers also supports the achievement of a number of ambitions across the devolved administrations such as, *Transforming Your Care: A Review of Health and Social care in Northern Ireland*<sup>7</sup>, *Transforming Your Care: Strategic Implementation Plan*<sup>8</sup>, *Improving Outcomes by Shifting the Balance of Care: Improvement Framework*<sup>9</sup>, *Achieving Sustainable Quality in Scotland's Healthcare: A '20:20' Vision*<sup>10</sup>, *Together for Health: A Five Year Vision for the NHS in Wales*<sup>11</sup> and *Achieving Excellence: The Quality Delivery Plan for the NHS in Wales*<sup>12</sup>. These documents set out the vision for the future of the NHS which no longer sees expertise constrained by traditional boundaries, fragmented services or patients having to visit multiple professionals for multiple appointments.

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<sup>1</sup> Department of Health (1999) *Review of Prescribing, Supply & Administration of Medicines*, London.

<sup>2</sup> Department of Health (2008) *High Quality Care for All: NHS Next Stage Review Final Report*. London.

<sup>3</sup> Department of Health and Skills for Health (2008) *Modernising Allied Health Professional Careers: a competency based career framework*. London.

<sup>4</sup> Department of Health (2009) *Allied health professions (AHP) prescribing and medicines supply mechanisms scoping project report*. London

<sup>5</sup> Department of Health (2011) *Operational guidance to the NHS: extending the patient choice of provider*. London

<sup>6</sup> NHS England (2014) *Five Year Forward View*, London

<sup>7</sup> Northern Ireland Department of Health, Social Services and Public Safety (2011) *Transforming Your Care: A Review of Health and Social Care in Northern Ireland*, Belfast

<sup>8</sup> Northern Ireland Department of Health, Social Services and Public Safety (2013) *Transforming Your Care: Strategic Implementation Plan*, Belfast

<sup>9</sup> NHS Scotland (2009) *Improving Outcomes by Shifting the Balance of Care: Improvement Framework*, Edinburgh

<sup>10</sup> NHS Scotland (2011) *Achieving Sustainable Quality in Scotland's Healthcare: A '20:20' Vision*, Edinburgh

<sup>11</sup> NHS Wales (2011) *Together for Health: A Five Year Vision for the NHS in Wales*, Cardiff

<sup>12</sup> NHS Wales (2012) *Achieving Excellence: The Quality Delivery Plan for the NHS in Wales*, Cardiff

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### **Problem under consideration;**

Although the use of patient group directions (PGDs) and supplementary prescribing by therapeutic radiographers has expanded timely access to medicines for patients, there are significant drawbacks to the current mechanisms. The most common example of inefficient care in the current system is the management of side-effects of radiotherapy treatment. Under the current system, the radiographer can supply and/or administer a medicine to manage side-effects if it is on a patient-specific direction (PSD) or patient-group direction (PGD) and if the radiographer is a supplementary prescriber they can prescribe the medicine if it is included in the clinical management plan (CMP). If these mechanisms are not available, then a referral to a doctor is required delaying resolution of symptoms and increasing cost.

For supplementary prescribers, the availability of doctors for CMP agreement poses the greatest challenge for radiographers who frequently work in clinical settings where a doctor is not present, for example radiographer-led services and satellite radiotherapy clinics. Other challenges reported by radiographers include trying to find a doctor to provide a prescription for medicines not included on the patient's CMP.

### **Rationale for intervention**

Radiographers can already train to become supplementary prescribers and introducing independent prescribing for eligible therapeutic radiographers enables them to maximise their ability to improve the quality of patient care including outcomes, experience and safety. Independent prescribing by eligible therapeutic radiographers would also be consistent with the government's policy to focus on improved outcomes for all and to transform the way the NHS provides care for both vulnerable older people closer to their homes.

Radiographers have been using PGDs since 2000 and have been eligible to train as supplementary prescribers since 2005.

In 2009, an Allied Health Professions (AHPs) Prescribing and Medicines Supply Mechanisms Scoping Project was undertaken to establish whether there was evidence of service and patient need to support the extension of prescribing and medicines supply mechanisms available to AHPs. The project found there was evidence supporting a progression to independent prescribing for radiographers and that when appropriate and that further work should be undertaken to consider this. However a lack of capacity prevented development of prescribing rights for all the AHPs who had been identified as having a need. The drivers in the system are stronger now and make the case in support of independent prescribing for radiographers. For example, an increase in radiographer-led services and satellite and treatment centres mean that increasingly radiographers need to be able to prescribe to be able to deliver the service. Radiographers working at advanced practice level are highly skilled specialists who have developed their own specific scope of practice within the profession which represents a narrow field of clinical expertise. For example, an advanced practice therapeutic radiographer often specialises in a particular cancer, for example, head and neck cancers. They have a high level of knowledge and experience in managing patients with these conditions and are acknowledged experts in their field.

The initial proposal by NHS England was to consider independent prescribing for both diagnostic and therapeutic radiographers and the public consultation and accompanying documentation including the impact assessment reflected this. At this stage the Commission on Human Medicines is fully supporting the proposal for independent prescribing by therapeutic radiographers and NHSE is continuing to work with the Commission for Human Medicines and colleagues in MHRA and the Department of Health regarding the proposal for independent prescribing by diagnostic radiographers. The outcome of this collaborative work will be reported at a later stage.

### *Economic case*

There is potential to increase efficiency of health care by reducing costs and improving health outcomes by more effective use of allied health professionals with advanced skills and training to meet some of the excess demand for services. Advanced therapeutic radiographers who have been trained in supplementary prescribing already prescribe medications that are on a patient's clinical management plan. There is a potential welfare loss due to unnecessary waiting time for symptom relief after consulting a radiographer. If a prescription could be issued by an advanced therapeutic radiographer

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rather than a doctor, there is potential welfare gain from increasing the time a doctor has available for other patients who require their skills. The lack of timely and appropriate access to medicines by patients who do not consult health care professionals with independent prescribing rights may also exacerbate inequalities in access to health care and reduce choice of health care setting. It may also worsen patient experience by requiring unnecessary health care visits to access medicines and prolonging periods of uncontrolled side-effects of treatment.

### **Policy objective**

The objective is to extend independent prescribing rights to advanced therapeutic radiographers to enable them to prescribe medicines as required and where appropriate to their patients. Patients would be able to receive the care and medicines they need, without having to make additional appointments with other prescribers. A greater number of patients could benefit from improved care, first time and in the right place and support changes to models of service delivery such as radiographer-led radiotherapy clinics.

The policy is intended to improve patient care and experience in the following ways:

- More responsive management of the side-effects of radiotherapy which can change rapidly during treatment period.
- Reduced discontinuation of treatment rates due to poor management of the side-effects of radiotherapy
- Reduced pain and anxiety for patients undergoing radiotherapy treatment
- Freeing up doctors' time used to prescribe medicines that could be prescribed safely and effectively by advanced therapeutic radiographers

### **Private sector impact**

It is anticipated that the proposed changes of independent prescribing by advanced therapeutic radiographers working in the private sector would have a minimal impact. The Society and College of Radiographers (SCoR) which is the professional body representing radiographers estimates that less than 10% of therapeutic radiographers currently work in the private/independent sector and of these 30% are advanced practitioners; hence there are around 130 therapeutic radiographer advanced practitioners in the private sector in total. Most oncology treatment review in the private sector is consultant-led practice (unlike in the NHS where it is mostly radiographer-led service) and hence there would be very few advanced practice therapeutic radiographers who would have a case of need within their practice to support training to become an independent prescriber.

### **Public consultation**

NHS England led a 12-week public consultation between 26 February and 22nd May 2015 on the proposal to introduce independent prescribing by all radiographers (diagnostic and therapeutic). The UK-wide consultation was developed in collaboration with: the devolved administrations; the Medicines and Healthcare Products Regulatory Agency (MHRA); the Department of Health (DH); and SCoR.

The consultation received 984 responses in total. 969 responses were received via the online portal (Citizen Space), and 15 were received in hard copy. In total, 83 organisations responded to the consultation and 901 responses were received from individuals of whom 126 were from patients, carers and members of the public, while 769 responded as a health or social care professional including; doctors, nurses, pharmacists and Allied Health Professionals. There were 78 responses from Scotland, 128 responses from wales, 19 responses from Northern Ireland, 734 responses from England and 25 responses that did not answer.

There was a significant amount of support for the introduction of independent prescribing by radiographers from organisations, healthcare professionals and patients across England and the devolved nations alike; many emphasising the benefits that could be achieved for patient services and patient care. 94.31% of respondents supported amendments to legislation being made to enable radiographers to prescribe independently. Independent prescribing for any condition from a full formulary was the preferred option for the majority of respondents with 64.43% in support.

**Monetised and non-monetised costs and benefits of each option (including administrative burden);**

Overview of costs and benefits associated with all options

*Costs:*

All options apart from 'No change' will require advanced therapeutic radiographers to undertake an Health and Care Professions Council (HCPC) approved training programme to become an independent prescriber.

Staff backfill for training.

*Benefits:*

A reduction in GP and outpatient oncology appointments to titrate medicines during radiotherapy

The health benefits associated with earlier symptom management during radiotherapy have not been monetised as the estimates are highly speculative.

**Monetised costs**

Option 2: Independent prescribing for any condition from a full formulary

*Training:*

In November/December 2014 HCPC figures showed that there were 31,109 registered radiographers in the UK. The diagnostic/therapeutic split of registered radiographers is 86% and 14% respectively. Therefore 4,355 radiographers are therapeutic radiographers. SCoR has estimated from the database of its membership that advanced practitioners make up 30% of the therapeutic radiography workforce is registered with HCPC (1,307 with rounding). SCoR data also suggests that approximately 10% of therapeutic radiographers (130 in total) work in the private sector (Appendix, table 1).

The cost of training includes the conversion course for therapeutic radiographers who already have supplementary prescribing rights to enhance their skills to become independent prescribers. The cost depends on the numbers of new participants and the numbers converting from supplementary prescribers

The full cost of a course to train an advanced therapeutic radiographer as an independent prescriber is estimated to be around £1,750 based on the price of existing courses offered for other allied health professional groups to undertake this training. A conversion course for practitioners with supplementary prescribing skills is approximately £600. Training would only be offered where there is an identified need and commenced on a voluntary basis. The financial cost would be met in general by employer or education commissioners although they may be met by individuals or non-NHS organisations if working within the private sector.

The uptake of training was estimated by SCoR. Based on experience of uptake of training in independent prescribing by other allied health professional groups (physiotherapists and podiatrists), approximately 30% of eligible practitioners (or 392 individuals) are projected to take up training over the course of their career, although this could increase over time as the benefits of independent prescribing becomes more widely recognised by employers. The SCoR have advised that uptake would be low but constant over time due to the fact that individual trusts would not be able to release more than one member of staff for training at any one time. Based on this information, a low uptake of 35 advanced practitioners was assumed that would lead to 30% of the workforce trained after ten years. This estimate does not take into account the fact that some of the APs trained in independent prescribing will leave the profession either through retirement or change of career. The number of APs (rather than all radiographers) who will leave the profession over the next 10 years could not be robustly quantified. Therefore a higher estimate of 50 APs per year starting training was also estimated. This would lead to 42% of the advanced therapeutic radiographer workforce being trained after ten years. This is very likely to be a higher estimate than the percentage of the AP workforce trained in independent prescribing in the workforce in any year. The best guess estimate of financial impact has assumed that the lower

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estimate of uptake is the most likely as experience from physiotherapists and podiatrists is that uptake has been lower than expected.

There are currently 43 advanced therapeutic radiographers who have been trained in supplementary prescribing. It is anticipated that there would be an identified need for all to attend training to convert to independent prescribers within two years if there was a change in legislation.

The ten-year discounted cost of training is between £553,000 and £779,000 depending on the uptake of training courses by therapeutic radiographers (Appendix, tables 2 and 3).

The cost of training would be the same for all other options (option 3 to 5)

### *Financial cost of staff backfill while on training*

Although staff may not be replaced while on training, there is an economic value of their lost time as it will be reflected in diminished service provision; this cost is proxied by assuming full back-cover. The educational programme is estimated to take advanced practitioners out of service for 26 days of the year and it is assumed that these days would be covered by equivalent Band 7 advanced radiographers, and for the purpose of this impact assessment a shift length of 7.5 hours has been applied. The hourly cost of staff covering colleague's absence is assumed to be lower as overheads do not have to be included as there are no (or marginal) capital or management costs associated with replacing staff time.

The total discounted 10-year financial cost of staff replacement while training was estimated to be between £1.3 million and £1.9 million, depending on training uptake (Appendix, table 4).

### *Total financial costs and opportunity costs*

The combined financial cost of training over ten years and staff backfill was estimated to be between £1.9 million and £2.7 million depending on rate of uptake of training in independent prescribing (Appendix, table 5).

Given the NHS budget constraint, both the cost of the training and the cost of staff backfill will inevitably displace health services that would have been provided to patients; this is the opportunity cost of the proposal<sup>13</sup>.

The opportunity cost of training and staff backfill was valued at £8.1 million to £11.5 million. The best estimate was assumed to be the lowest estimate reflecting the lower uptake and cost of training (Appendix table 5).

## **Non-monetised costs**

Option 2: Independent prescribing for any condition from a full formulary

Enhanced clinical supervision - No changes are anticipated as clinical supervision would continue to be provided by the supporting independent prescriber (doctor), and other members of the multidisciplinary team who are independent prescribers as part of the normal clinical supervision framework within the radiotherapy department.

The training for therapeutic radiographers who are not already qualified as supplementary prescribers will be part-time for approximately 26 days over 16 weeks. There is no anticipated additional cost related to staff backfill as the release of staff to undertake an independent prescribing course will be staggered over each academic year, and as a result the study/contact days at the universities would be known several months in advance. Backfill is determined locally, but this insight will allow employers to plan the staff absences in advance.

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<sup>13</sup> Following current DH guidance, the opportunity cost is calculated at one Quality Adjusted Life Years (QALY) per £15,000. The stream of QALYs foregone is then discounted at a rate of 1.5% per year. The social value of the displaced QALYs is re-monetised at a value of £60,000 per QALY, representing the social value of a QALY (what people are on average willing to spend to improve their healthy life expectancy by one QALY).

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It is not expected that an automatic increase in salary will result from the completion of training to be an independent prescriber. Some advanced therapeutic radiographers who have completed training may move into new roles or take on new responsibilities depending on the needs of the service and why a role for independent prescribing was identified in the first place. On its own, independent prescribing would not always be sufficient grounds for a salary upgrade.

The additional risks associated with prescribing are discussed in the Risk and Assumptions section below.

### **Monetised benefits**

Option 2: Independent prescribing for any condition from a full formulary:

#### *Financial cost of avoided health service use*

In current practice, patients who require a change in medicines need to be referred either to their GP or a hospital consultant. The SCoR membership was consulted and asked what the current rate of referrals was for prescribed medicines alone. It was estimated by them that a minimum of one to two patients per week who are first managed by an advanced therapeutic radiographer will require a change to their medicine(s) that have to be prescribed by a doctor. If one or two consultations per advanced therapeutic radiographer could be avoided per week, it would represent a financial saving of between £2.9 million and £27.6 million. The extent of financial savings depends on how many appointments could be avoided, where that person accesses their medicines (GP or hospital outpatient appointment for example), and how many advanced therapeutic radiographers had qualified as independent prescribers at that time. The table in appendix 6 illustrates how these estimates were arrived at: the lowest estimated benefit is based on one GP appointment avoided per week for each advanced therapeutic radiographer who has been trained in independent prescribing. The higher estimate is based on two consultant-led outpatient appointments avoided per independent prescriber AP radiographer per week. Given the lack of published evidence these estimates were agreed after consultation with the membership of SCoR. These wide estimates reflect the uncertainty in the values used to calculate the financial savings. The best guess assumed that 90% of patients would consult their GP and 10% would require a consultant-led outpatient appointment. This would lead to a ten-year financial saving of £3.3 million (appendix, table 6).

The impact on financial savings has been estimated separately for AP radiographers working in the private sector because currently it is very unlikely that they will need to refer patients to their GP or oncologist for prescribed medicines as advanced radiographers in the private sector are part of a consultant-led pathway of care. This differs from the NHS where advanced therapeutic radiographers lead the pathway. Financial savings could be derived from changes in service delivery such as radiographer-led review clinics for private patients but the financial impact has not been quantified due to lack of data and because uptake or training and associated financial savings to the private sector are highly unlikely.

#### *Opportunity cost of avoided health service use*

The total discounted ten-year opportunity cost of health service use (therapeutic services) is estimated to be between £11.5 and £110.4 million. The best guess is £22 million (Appendix, table 7).

Savings arising from other options:

For all other options (prescribing for a restricted list of conditions and/or a restricted list of medicines, options 3 to 5), the cost savings would be lower as fewer re-referrals or outpatient appointments would be avoided. It was not possible to quantify the reduction in cost savings associated with each option given the lack of published data. Expert opinion was that a detailed audit would be required of all medicines that could be included in a specific formulary, alongside a list of all conditions they could be used for to arrive at robust estimates of the proportionate reduction for each option.

## **Non-monetised benefits**

Option 2: Independent prescribing for any condition from a full formulary:

- Earlier treatment of the side-effects of radiotherapy due to frequent assessment during treatment by an advanced therapeutic radiographer compared with oncologist-only care.
- Better cancer outcomes as a result of higher adherence to radiotherapy treatment;
- Improved experience of care
- Better access to treatment through reconfiguration of services. Satellite radiotherapy centres have been developed to bring radiotherapy treatment closer to the patient's home. Services are radiographer-led, and so the radiographer needs to be an independent prescriber to be able to provide the medicines the patients need without the requirement to send the patient to see the oncologist or their GP.

## **Net present value**

The net present value is calculated as the difference between the social value (opportunity cost) of the health service savings and the social value of the costs.

The ten-year discounted net benefit is estimated to be between minus £5,000 and £98.9 million, reflecting the wide uncertainty in the estimates. The best guess estimate of net present value was £14 million.

## **Longer term changes in local service configuration**

If independent prescribing were introduced, existing models of radiography provision could be developed further and new models of service configuration created allowing advanced therapeutic radiographers to become more effective in their practice. For example, advanced therapeutic radiographers could lead clinics in hospitals and community settings which would contribute to relieving the pressure on oncology services. Satellite radiotherapy centres could be developed with advanced practice therapeutic radiographers leading the service and providing timely medicines management of the effects of radiotherapy treatment

No robust estimate of the costs or savings resulting from service reconfiguration have been identified for this IA as this would require multiple assumptions about the future delivery of health care beyond the scope of this proposed change in regulations.

## **Risks and assumptions**

### *Inappropriate and over-prescribing –*

Theoretical risks (not observed in practice) associated with non-medical prescribing have been identified and are reported here. They are presented as changes in health care provider behaviour and changes in patient/carers behaviour:

### *Change in health care provider behaviour:*

The risk of errors in prescribing decisions made (over or under prescribing, polypharmacy, or prescribing the wrong medicine or the wrong dose) is based on the fact that radiographers have fewer years' training in pharmacology than a medically qualified doctor.

To alleviate the risk of prescribing errors or adverse interactions as a result of polypharmacy, the advanced independent prescriber should be aware of the medication the patient is currently taking, including over-the-counter and herbal preparations before prescribing new medicines. They should take steps to ensure they have access to the primary source of prescribing information, which is likely to be in the patient's medical records, the summary care record, or equivalent. Prescribing is not an activity that occurs in isolation. Prescribing information must be shared with other health professionals who need to know the information for the benefit of the patient, including the patient's GP or hospital team. Where possible, the independent prescriber should have access to other professionals' prescribing decisions where they impact upon their own decisions. This will include communication across NHS-private practice boundaries where it is necessary to ensure that clinicians have appropriate information to inform their prescribing practice. These risks would be minimal as the highly experienced,

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advanced therapeutic radiographer would only work within their specialist field and scope of practice, and being thoroughly familiar with the medicines they would prescribe within their competence.

The risk of less specialist treatment or management of symptoms resulting from radiographer prescribing is also minimal as advanced therapeutic radiographers can only prescribe within their competence and in line with prescribing governance arrangements. Radiographer independent prescribers would also refer patients as appropriate to specialist healthcare professionals such as oncologists where a patient required more specialist review or care. It was concluded that there is no identifiable incentive for radiographers to prescribe outside their competency.

Radiographers have been safely and efficiently using patient group directions since 2000 and have been eligible to train as supplementary prescribers since 2005. The SCoR Prescribing Group reports that there have been no reported adverse events triggered by poor prescribing by radiographers registered with the SCoR during this timeframe; a research project has been undertaken on contrast agents prescribed by radiographers that has demonstrated safe practice<sup>14</sup>.

When supplying, administering or prescribing medicines, therapeutic radiographers are responsible for ensuring that they adhere to standards of medicines use set by their regulator, the HCPC. The SCoR has gathered expert opinion from its membership and has put forward the following arguments for why an increase in adverse effects from extending independent prescribing to therapeutic radiographers would not be likely:

- It is not expected that there will be an increase in the rate of prescribing or adverse events resulting from independent prescribing by radiographers, as it will provide an alternative route to prescribing the medicines that the oncologist would have previously prescribed to the patients themselves.
- Governance arrangements to address safety already exists which cover radiographic practice. In addition, since radiographers work with ionising radiation they are particularly safety conscious as a profession.
- Current supplementary prescribers are highly trained to work within their individual scope of practice and will be the same for all independent prescribers.
- No serious event related to prescribing by radiographer supplementary prescribers has been reported.
- Adverse events due to polypharmacy are less likely under independent prescribing because responsibility for prescribing lies with the independent prescriber (and is not divided as it may be under supplementary prescribing arrangements).

There is a potential risk of increased pressure to prescribe (either by peers or patients). For example a patient addicted to painkillers uses the opportunity of being seen by a therapeutic radiographer who does not know them to seek a prescription. This risk is mitigated by individual scope of practice and clear professional guidance from the SCoR that states that therapeutic radiographer independent prescribers should only prescribe for their own patients within their scope of practice and expertise. However, there are also opportunities to better educate patients on the role of healthcare practitioners, especially allied health professionals.

### *Changes in patient/carer behaviour:*

Changes in patient behaviour, such as inappropriately accessing radiographer services in order to obtain a prescription were assumed to be rare to non-existent. Patients only consult an advanced therapeutic radiographer after already accessing health services via cancer services. No incentives for inappropriate patient behaviour that could result from knowing that a radiographer was also an independent prescriber were identified.

## **Monitoring and evaluation**

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<sup>14</sup> <https://www.sor.org/learning/document-library/supply-and-administration-medicines-and-contrast-agents-results-survey-current-practice-imaging-and-radiotherapy-departments>.

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As part of the work to take forward independent prescribing by physiotherapists and podiatrists, the project team worked with the Research and Development Directorate at the Department of Health (DH) to agree funding and a specification for an evaluation. DH initiated an open tender process and the University of Surrey was awarded the contract to undertake an evaluation of independent prescribing by physiotherapists and podiatrists. The study has commenced and is expected to be completed in April 2016. We intend to follow a similar approach in respect of independent prescribing by advanced therapeutic radiographers.

### **Summary and preferred option with description of implementation plan**

While the existing supplementary prescribing, supply and administration arrangements have helped to improve the effectiveness of care for some patients, there is potential for therapeutic radiographers to contribute much more. Service efficiency and innovation are currently hampered by incongruence between the existing mechanisms and patient need.

The introduction of independent prescribing for therapeutic radiographers has the potential to improve patient health, experience of care and safety by reducing delays in accessing treatment and creating clear lines of responsibility and accountability for prescribing decisions. Independent prescribing by therapeutic radiographers can enable new ways of working to improve quality of care, delivering safe, effective services focused on improving the patient outcomes and experience.

**Appendix – Radiographers.**

**Option 2. Prescribing for any condition from a full formulary**

**Table 1.** Advanced practitioner therapeutic radiography workforce in the UK (December 2015)

	<b>Proportion</b>	<b>Number</b>
Radiographers in the UK		<b>31,109</b>
Therapeutic radiographers	14%	4,355
Advanced therapeutic radiographers in the UK	30%	1,307
Advanced therapeutic radiographers in the private sector	10%	130
Proportion therapeutic radiographers who are already supplementary prescribers		43

**Table 2.** Demand for training by year (conversion from supplementary prescribing and full prescribing courses).

Estimates of values and assumptions:

Low estimate assumes 50 in therapeutic radiography per year attend a training course (high estimate 65 therapeutic radiographers per year, i.e. one per department); all of the advanced radiographers (43 advanced therapeutic radiographers) who are already trained in supplementary prescribing will attend a full prescribing course in years 1 and 2. Cumulative workforce trained assumes a static workforce (same numbers leaving the profession as entering it) over ten years.

<b>Year</b>	<b>Full course participation plus conversion from supplementary prescribing (low estimate)</b>	<b>Full course participation plus conversion from supplementary prescribing (high estimate)</b>	<b>Cumulative % trained (low) of the AP workforce (N=1307)</b>	<b>Cumulative % trained (high)</b>
Year 1	53	68	4%	6%
Year 2	53	68	9%	11%
Year 3	50	65	11%	15%
Year 4	50	65	14%	19%
Year 5	50	65	17%	22%
Year 6	50	65	19%	26%
Year 7	50	65	22%	30%
Year 8	50	65	25%	34%
Year 9	50	65	27%	38%
Year 10	50	65	30%	42%

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**Table 3.** Ten-year discounted financial cost of training in independent prescribing

Estimates of values and assumptions:

Assumes the cost of a conversion course is £600, cost of full prescribing course £1750 (Source: estimates from UK education providers, November 2014). Discount rate 3.5%

<b>Year</b>	<b>Discounted costs (low estimate)</b>	<b>Discounted costs (high estimate)</b>
Year 1	£74,450	£100,700
Year 2	£71,353	£96,715
Year 3	£57,178	£81,682
Year 4	£55,244	£78,920
Year 5	£53,376	£76,251
Year 6	£51,571	£73,673
Year 7	£49,827	£71,181
Year 8	£48,142	£68,774
Year 9	£46,514	£66,449
Year 10	£44,941	£64,201
<b>Total</b>	<b>£552,595</b>	<b>£778,546</b>

**Table 4 –** Ten-year discounted financial cost of staff backfill while on training courses

Estimates of values and assumptions:

Cost of backfilled staff is estimated at £22 per hour, based on PSSRU (2014) Unit costs for Agenda for Change Band 7 staff, excluding qualifications and overheads.

Low and high estimates of training are reported in table 2 above.

Total time for backfill is based on a 7.5-hour shift and 26 training days per advanced radiographer for the full course and 2 days training for the conversion course undertaken by the 43 advanced therapeutic radiographers who already have supplementary prescribing rights (22 trainees in year 1 and 21 trainees in year 2). Discount rate 3.5%

<b>Year</b>	<b>Discounted cost (low uptake of training)</b>	<b>Discounted cost (high uptake of training)</b>
Year 1	£159,044	£224,062
Year 2	£153,344	£216,163
Year 3	£141,622	£202,317
Year 4	£136,833	£195,475
Year 5	£132,206	£188,865
Year 6	£127,735	£182,478
Year 7	£123,415	£176,308
Year 8	£119,242	£170,346
Year 9	£115,210	£164,585
Year 10	£111,314	£159,019
<b>Total</b>	<b>£ 1,319,964</b>	<b>£1,879,620</b>

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**Table 5.** Ten-year discounted financial cost and opportunity cost of training and staff backfill, by rate of uptake of training

To estimate the opportunity cost of health care displaced by the cost of training courses and staff backfill, the financial cost (actual spend) was translated into quality adjusted life years (QALYs) at a rate of £15,000 per QALY. The social value of the health benefit displaced by radiographer training in independent prescribing (course fees and backfilled time) was calculated by re-monetising the QALYs displaced at a rate of £60,000 per QALY. Discount rate for financial costs 3.5%. Discount rate for opportunity costs 1.5%

Year	Financial cost (low uptake of training)	Financial cost discounted (high uptake of training)	Opportunity cost (low uptake of training)	Opportunity cost discounted (high uptake of training)
Year 1	£233,494	£324,762	£933,977	£1,299,050
Year 2	£224,697	£312,878	£916,496	£1,276,174
Year 3	£198,799	£283,999	£826,845	£1,181,206
Year 4	£192,077	£274,395	£814,625	£1,163,750
Year 5	£185,581	£265,116	£802,586	£1,146,552
Year 6	£179,306	£256,151	£790,725	£1,129,608
Year 7	£173,242	£247,489	£779,040	£1,112,914
Year 8	£167,384	£239,120	£767,527	£1,096,467
Year 9	£161,724	£231,034	£756,184	£1,080,263
Year 10	£156,255	£223,221	£745,009	£1,064,299
Total	£1,872,559	£2,658,166	£8,133,015	£11,550,283

**Table 6.** Total ten-year discounted financial savings from avoided re-referral to GP or hospital consultant radiotherapy treatment to obtain a prescription only

Estimates of values and assumptions

Assumes 100% of the benefits of training accrue the following year.

Low estimate, one GP appointment per AP per week avoided (higher estimate, 2 consultant-led outpatient appointments avoided per AP per week, best guess one GP appointment per week is avoided for 90% Aps per week, one outpatient appointment is avoided for 10% advanced therapeutic radiographers per week.

Assumes advanced radiographers are in clinic 44 weeks per year

GP costs: £37 per GP appointment (Unit Costs of Health and Social Care 2013/14; PSSRU)

Outpatient appointment: £139 per non-admitted face to face attendance, Follow-up (Medical Oncology), (NHS Reference costs 2013/14). Discount rate 3.5%

Year	Savings - Low uptake	Savings - High uptake	Savings – Best guess
Year 1	0	0	0
Year 2	£89,658	£850,922	£114,374
Year 3	£171,732	£1,632,875	£219,075
Year 4	£217,318	£2,129,285	£277,227
Year 5	£259,624	£2,590,254	£331,195
Year 6	£298,820	£3,017,612	£381,197
Year 7	£335,068	£3,413,104	£427,438
Year 8	£368,523	£3,778,397	£470,116
Year 9	£399,332	£3,650,625	£509,418
Year 10	£427,636	£3,527,174	£545,525
<b>Total</b>	<b>£2,567,710</b>	<b>£24,590,246</b>	<b>£3,275,565</b>

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**Table 7.** Total 10-year discounted opportunity cost from avoided re-referral to GP or hospital consultant radiotherapy treatment to obtain a prescription only. Discount rate 1.5%

Year	Savings - Low uptake	Savings - High uptake	Savings – Best guess
Year 1			
Year 2	£365,699	£3,470,755	£699,769
Year 3	£714,267	£6,791,433	£1,366,760
Year 4	£921,675	£9,030,601	£1,763,638
Year 5	£1,122,797	£11,202,103	£2,148,488
Year 6	£1,317,773	£13,307,451	£2,521,577
Year 7	£1,506,741	£15,348,125	£2,883,170
Year 8	£1,689,836	£17,325,577	£3,233,524
Year 9	£1,867,190	£17,069,534	£3,572,894
Year 10	£2,038,933	£16,817,275	£3,901,527
<b>Total</b>	<b>£11,544,912</b>	<b>£110,362,855</b>	<b>£22,091,346</b>

**Table 8.** Net present value, years 1 to 10

Estimates of values and assumptions:

The net benefit is the difference between the estimate of financial savings and the cost of training and staff backfill. Opportunity cost of training and staff backfill is reported in table 5. Best guess assumes low uptake of training. Opportunity cost of savings is reported in table 7 above.

The NPV is the net social value (measured in opportunity cost not financial costs), measures as the difference in value between health services displaced (and ultimately health gain lost) by spending on training and staff backfill, and the health services freed up (and ultimately health gain) as a result of the change in prescribing regulations.

Year	Low estimate	High estimate	Best guess
Year 1	-£933,977	-£1,299,050	-£933,977
Year 2	-£910,475	£2,194,581	-£216,727
Year 3	-£466,939	£5,610,226	£539,916
Year 4	-£242,075	£7,866,851	£949,013
Year 5	-£23,755	£10,055,551	£1,345,901
Year 6	£188,165	£12,177,843	£1,730,851
Year 7	£393,827	£14,235,211	£2,104,130
Year 8	£593,369	£16,229,110	£2,465,997
Year 9	£786,927	£15,989,271	£2,816,710
Year 10	£974,635	£15,752,977	£3,156,518
<b>Total</b>	<b>-£5,371</b>	<b>£98,812,572</b>	<b>£13,958,331</b>