

Title: INDEPENDENT PRESCRIBING BY RADIOGRAPHERS IA No: 5196 Lead department or agency: NHS England Other departments or agencies: Department of Health MHRA The Society and College of Radiographers Devolved Administrations	Impact Assessment (IA)		
	Date: 01/01/2011		
	Stage: Consultation		
	Source of intervention: Domestic		
	Type of measure: Secondary legislation		
Contact for enquiries:			

Summary: Intervention and Options	RPC Opinion: 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?
£-479,000	£m	£m	No
			Measure qualifies as NA

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

Demand for primary and urgent health care has increased UK wide, and the way that health care is delivered is restricted by government regulation limiting who can prescribe, and constraining 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 having to consult doctors just to access medicines and who otherwise could be managed by less expensive professionals. This also delays 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 during and following imaging without the need to see a doctor, b) increase access to prescribed medicines to manage side-effects of radiotherapy and reduce demand for an oncologist. The intended effects are: improved patient experience of care; efficiency savings by increasing the use of radiographers to prescribe medicines for pain relief and to manage non-complex side-effects of radiotherapy thereby freeing up doctors' time; better management of short-term morbidity associated with side-effects of radiotherapy; improved cancer outcomes by increasing the rates of completed courses of radiotherapy; greater satisfaction and

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.

Will the policy be reviewed? It will be reviewed. If applicable, set review date: 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.	Micro No	< 20 Yes/No	Small Yes/No	Medium Yes/No	Large Yes/No
What is the CO ₂ equivalent change in greenhouse gas emissions? (Million tonnes CO ₂ equivalent)			Traded:		Non-traded:

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
 SELECT SIGNATORY: _____ Date: _____

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: -£3m	High: £48m	Best Estimate: £479,000

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional	Optional	£8.2m
High	Optional	Optional	£13.3m
Best Estimate			£8.2m

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

The independent prescribing educational programmes required to train advanced radiographers and the conversion courses to allow current radiographer supplementary prescribers to train to become independent prescribers. Staff backfill for advanced radiographers to attend educational programmes is also included.

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

On-going cost of additional clinical supervision above current supervision arrangements. Complexities of governance undertaken by employer and the Health and Care Professions Council (HCPC) as the regulatory body for the radiographer undertaking independent prescribing

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional	Optional	£5.2m
High	Optional	Optional	£56.4m
Best Estimate			£7.7m

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

Reducing re-referral to A&E by using advanced radiographers to independently prescribe pain relief for non-complex injuries; releasing capacity of radiologists by increasing radiographer-led imaging services; releasing capacity of oncologists by using advanced radiographers to independently prescribe in therapy led on-treatment review clinics and to treat the side effects associated with radiotherapy treatment.

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

Health gain through more timely management of side-effects of 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 the decision to continue treatment is 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	Discount rate	3.5%
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 radiographers have sufficient information to make safe and effective prescribing decisions.		

BUSINESS ASSESSMENT (Option 1)

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

Evidence Base (for summary sheets)

Policy background:

The *Review of Prescribing, Supply and Administration of Medicines*¹ 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. This has been championed through such publications as *High Quality Care for all*², *Modernising Allied Health Professions careers: a competency based career framework*³, and more recently the *Allied health professions (AHP) prescribing and medicines supply mechanisms scoping project report*⁴ and *Operational guidance to the NHS: extending the patient choice of provider*⁵.

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 is the more effective use and prescribing of medicines. Changes to medicines legislation, in line with these recommendations to allow eligible 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 publication *Five Year Forward View*⁶ NHS England sets out how the health service needs to change, arguing for a more engaged relationship with patients, carers and citizens so that we can promote wellbeing and prevent ill-health. One 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 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*⁷, *Transforming Your Care: Strategic Implementation Plan*⁸, *Improving Outcomes by Shifting the Balance of Care: Improvement Framework*⁹, *Achieving Sustainable Quality in Scotland's Healthcare: A '20:20' Vision*¹⁰, *Together for Health: A Five Year Vision for the NHS in Wales*¹¹ and *Achieving Excellence: The*

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

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

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

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

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

⁶ NHS England (2014) *Five Year Forward View*, London

⁷ 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

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

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

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

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

*Quality Delivery Plan for the NHS in Wales*¹². 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.

Problem under consideration;

Although the use of patient group directions (PGDs) and supplementary prescribing by radiographers has expanded timely access to medicines for patients, there are significant drawbacks to the current mechanisms. The most common examples of inefficient care in the current system are a) the one-off supply of analgesics following an A&E attendance when a patient requires an x-ray and has to be re-referred back to A&E or to the GP for a prescription, b) the need to involve radiologists to prescribe in radiographer-led services, and c) the management of side-effects of radiotherapy treatment. Under the current system, the radiographer can supply and/or administer a medicine 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.

For supplementary prescribers, the availability of doctors for CMP agreement poses the greatest challenge for radiographers who frequently work in clinical settings in which a doctor is not present, for example radiographer-led services, out-of-hours services in the acute settings 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 patients CMP and difficulties when time frames of care are short or due to one-off patient appointments as is the case with the vast majority of diagnostic-imaging patient contact.

Rationale for intervention

Radiographers can already train to become supplementary prescribers and introducing independent prescribing for eligible radiographers enables them to maximise their ability to improve the quality of patient care including outcomes, experience and safety. Independent prescribing by eligible 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 breadth of clinical practice. 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 expertise and are knowledge experts in their specific field.

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

Economic case

There is potential to increase efficiency 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 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 radiographer rather than a doctor, there is potential welfare gain from increasing the time a doctor has available for 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.

Policy objective

The objective is to extend independent prescribing rights to advanced 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 diagnostic imaging and radiotherapy clinics both in the community setting and in acute hospital setting.

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
- Reducing pain and anxiety for patients undergoing radiotherapy treatment
- Reducing pain and anxiety in specific imaging procedures, especially interventional procedures (MRI and CT scans, endoscopy etc.)
- Free up doctors' time used to prescribe medicines that could be prescribed safely and effectively by advanced radiographers
- Earlier pain management of minor musculo-skeletal injuries

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 radiographers to undertake an Health and Care Professions Council (HCPC) approved training programme to become an independent prescriber.

Staff backfill for training.

Benefits:

Cost savings result from a reduction in re-referral back to A&E following an imaging intervention e.g. x-ray, and

a reduction in outpatient oncology appointments to titrate medicines during radiotherapy (therapeutic services)

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 29,578 registered radiographers in the UK of which 90% (26,620) work in the NHS. The diagnostic/therapeutic split of registered radiographers is 86%: and 14%. It is assumed that advanced practitioners make up 20% of the diagnostic and 30% of therapeutic radiographers registered with HCPC (Appendix, table 1).

The cost of training includes the conversion course for 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 radiographer as an independent prescriber is estimated to be around £1750. A conversion course for practitioners with supplementary prescribing skills is approximately £600. It would be offered only 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 independent sector.

The uptake of training was forecasted by The Society and College of Radiographers (ScoR). Approximately one percent of therapeutic radiography departments would be required to be released for training every year. There are 65 departments in the NHS. A lower estimate of 50 percent per year and a higher estimate of 80 percent per year were included in the analysis. There are currently 46 advanced 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 £1.5 million and £2.5 million depending on the uptake of training courses by advanced 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 time 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 or otherwise; 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.

The total discounted 10-year financial cost of staff replacement while training was estimated to be between £4 million and £6.6 million, depending on training uptake (Appendix, table 4).

Total financial costs and opportunity costs

The financial cost of training over ten years including staff replacement was estimated to be between £5.6 million and £9.1 million dependent 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. 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).

DH guidance advises that in each QALY could also generate on average £14,000 of wider societal benefit (for example by reducing dependency). In this consultation draft, the wider societal benefit has not been calculated.

The opportunity cost of training and staff backfill was between £22.4 million and £36.3 million. The best estimate was assumed to be the lowest estimate (Appendix table 5), reflecting the lower cost of training.

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 imaging or radiotherapy department.

The training for 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 abstractions required in advance.

It is not expected that an automatic increase in salary will result from the completion of training to be an independent prescriber. Some advanced 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

Diagnostic services - Reduction in re-referral to A&E/ GP for a prescription

In current practice, it is estimated that of the patients who are x-rayed for suspected skeletal injury most demonstrate no skeletal injury. Of those, 5 patients a week require a prescription for analgesia before being discharged. If the advanced radiographer could prescribe the medicines without the need for re-referral to a prescribing clinician, then the prescribing clinician could see and treat more patients.

No estimates for the rate of re-referral to A&E following radiography could be identified in the published literature. Expert opinion from the membership of the Society and College of Radiographers (SCoR) provided estimates of higher and lower values which were used in a critical analysis. It assumes that the patient is currently referred back to an A&E registrar, and that the transaction would take 5 minutes of both the registrar's and radiographer's time (on paperwork) to complete.

The benefits varied in value from £668,000 to £10.3 million reflecting the uncertainty in the analysis. The best guess estimate is £1.6 million (appendix, table 6).

Therapeutic services – Higher rates of adherence to radiotherapy and better cancer outcomes

In current practice, patients who require a change in medicines need to be referred either to their GP or a hospital consultant. It was estimated that at least one to two patients seen by an advanced radiographer per week will require medicine(s) that have to be prescribed by a doctor e.g. radiologist or GP. If one or two consultations per advanced radiographer could be avoided per week, it would represent a saving of between £414,000 and £5 million depending on how many appointments were avoided, where that person accessed their medicines (GP or hospital outpatient appointment), and how many advanced radiographers had qualified as independent prescribers at that time. The best guess estimate was a ten-year saving of £528,000 (appendix, table 7).

Total health service savings

The total discounted ten-year financial savings in health service use (diagnostic services and therapeutic services) is estimated to be between £1.1 million and £15.2 million. These wide estimates reflect the uncertainty in the values used to calculate the cost savings. The best guess is £2.1 million which assumes that 10 re-referrals a week back to A&E could be avoided in diagnostic radiography services and one re-referral could be avoided per week in therapeutic radiography services. The best guess also assumes 90% of patients would go to their GP and 10% would require an outpatient appointment (Appendix, table 8).

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).

DH guidance advises that each QALY could also generate on average £14,000 of wider societal benefit (for example by reducing dependency). In this consultation draft, the wider societal benefit has not been calculated.

The discounted opportunity cost over ten years was estimated to be between £4.9 million and £53.5 million with a best estimate of £7.2 million (table 8).

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 A&E 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 can be achieved because the radiographer sees the patient more frequently compared to the oncologist during treatment.

Better cancer outcomes as a result of higher adherence to radiotherapy treatment; improved outcomes for patients and improved patient experience.

Improved experience of care; patient centred and personalised care:

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 costs) of the health service savings and the social value of the costs. This estimate does not take into account any change to service configuration which could potentially bring about greater costs or savings.

The ten-year discounted net benefit is estimated to be minus £17.5 million and £31.3 million, reflecting the wide uncertainty in the estimates. The best guess estimate of net present value was minus £15.1 million. A description of the estimates assumed for the highest, lowest and best guess estimates of net present value are presented next to table 9 in the appendix.

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 radiographers to become more effective in their practice. For example, advanced radiographers could lead clinics in hospitals and community settings for musculo-skeletal disorders, allowing GPs to refer directly to the service which would contribute to relieving the pressure on oncology and radiology services. Radiographers working in diagnostic services could provide radiographer-led services within accident and emergency departments, walk-in centres and minor injury units. This could reduce waiting times in primary, community and accident and emergency care, and extend the range and breadth of services that can be offered in people's homes.

Satellite radiotherapy centres could be developed with advanced practice radiographers leading the service and providing timely medicines management of the effects of radiotherapy treatment

No robust estimate of the costs or savings that would result 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.

Rationale and evidence that justify the level of analysis used in the IA (proportionality approach);

The current quantification of benefits is unlikely to reflect the true benefit of radiography prescribing as no evidence has been presented on the impact health impact of radiographers' prescribing on cancer outcomes. Further analysis is warranted and will be undertaken during consultation. A literature review of cancer outcomes from radiotherapy (specifically in head and neck cancers) will be undertaken.

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, advanced 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 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 radiologists 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; with a research project been undertaken on contrast agents prescribed by radiographers that has demonstrated safe practice

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

When supplying, administering or prescribing medicines, 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 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 radiologist or 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 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 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 radiographer after already accessing health services via their GP, A&E or 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

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 January 2016. We intend to follow a similar approach in respect of independent prescribing by advanced radiographers.

Summary and preferred option with description of implementation plan

This section is to be completed after consultation only

Appendix – Radiographers.

Option 2. Prescribing for any condition from a full formulary

Table 1. Advanced radiography workforce in the NHS - Proportions and numbers of advanced radiography practitioners by area of speciality.

Estimates of values and assumptions:

29,578 radiographers in the UK (86% in diagnostics, 14% in therapeutic radiography) in total, 90% of all radiographers work in the NHS (source HCPC 2014)

NHS only (n=26,620)	Diagnostic	Therapeutic
Advanced practitioners	20%	30%
Regular practitioners	80%	70%
No. regular in the NHS	18,315	2,609
No. advanced radiographers in the UK NHS	4,579	1,118
Current number of radiographers who are supplementary prescribers (all radiography specialties)	46	

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

Estimates of values and assumptions:

Low estimate assumes 50 of advanced practitioners in diagnostic radiography and 50 in therapeutic radiography per year attend a training course (high estimate 100 diagnostic radiographers per year plus 65 therapeutic radiographers per year, i.e. one per department); 46 (100%) of the advanced radiographers who are already trained in supplementary prescribing will attend a full prescribing course in years 1 and 2.

	year 1	year 2	year 3	year 4	year 5	year 6	year 7	year 8	year 9	year 10
Independent prescribing course participation (low estimate)	100	100	100	100	100	100	100	100	100	100
Independent prescribing course participation (high estimate)	165	165	165	165	165	165	165	165	165	165
Conversion course for supplementary prescribers (n=46)	23	23	0	0	0	0	0	0	0	0
Projected uptake including supplementary prescribers (low)	123	246	346	446	546	646	746	846	946	1046
Projected uptake including supplementary prescribers (high)	188	376	541	706	871	1036	1201	1366	1531	1696
Cumulative % trained (low)	2.16%	4%	6%	8%	10%	11%	13%	15%	17%	18%
Cumulative % trained (high)	3.30%	7%	9%	12%	15%	18%	21%	24%	27%	30%

Table 3. Financial cost of training

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).

Year	1	2	3	4	5	6	7	8	9	10	Total
Discounted costs (low estimate)	£188,800	£182,415	£163,364	£157,840	£152,502	£147,345	£142,363	£137,548	£132,897	£128,403	£1,533,478
Discounted costs (high estimate)	£302,550	£292,319	£269,551	£260,436	£251,629	£243,120	£234,898	£226,955	£219,280	£211,865	£2,512,603

Table 4 – 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 Personal Social Services Research Unit (PSSRU) (2014) Unit costs for Band 7¹³ 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 10 hours training for the conversion course undertaken by 46 advanced practitioners who already have supplementary prescribing rights (23 trainees in year 1 and 23 trainees in year 2).

Year	1	2	3	4	5	6	7	8	9	10	Total
Discounted cost (low uptake of training)	£503,251	£486,233	£431,610	£417,014	£402,912	£389,287	£376,123	£363,404	£351,115	£339,241	£4,060,191
Discounted cost (high uptake of training)	£762,879	£737,082	£712,156	£688,074	£664,805	£642,324	£620,603	£599,616	£579,339	£559,748	£6,566,627

¹³ The marginal hourly cost of replacing posts at Agenda for Change band 6 and band 7 are both estimated to be £22 because of the different proportion of overheads (management, non-staff and capital) and qualifications associated with these posts as reported in PSSRU Unit Costs of Health and Social Care for 2013-14.

Table 5. Total discounted financial cost and opportunity cost by year, 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 opportunity cost and financial cost was 3.5%.

Financial cost (low uptake of training)	£692,051	£668,649	£594,974	£574,854	£555,415	£536,633	£518,486	£500,952	£484,012	£467,644	£5,593,670
Financial cost discounted (high uptake of training)	£1,065,429	£1,029,400	£981,707	£948,509	£916,434	£885,444	£855,501	£826,571	£798,620	£771,613	£9,079,230
Opportunity cost (low uptake of training)	£2,768,206	£2,674,595	£2,379,897	£2,299,417	£2,221,659	£2,146,530	£2,073,942	£2,003,809	£1,936,047	£1,870,577	£22,374,679
Opportunity cost discounted (high uptake of training)	£4,261,718	£4,117,602	£3,926,829	£3,794,038	£3,665,737	£3,541,775	£3,422,005	£3,306,285	£3,194,478	£3,086,452	£36,316,919

Health service savings

Table 6. Discounted financial savings from reduced re-referral to Accident and Emergency after radiography to obtain a prescription only (Diagnostic radiography)

Estimates of values and assumptions:

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

High estimate assumes 20 re-referrals per week (low estimate 5, best guess 10); time requirement is 10 minutes for both radiographer and A&E registrar (low estimate 5 minutes, best guess 5 minutes). Cost of a radiographer (£42 per hour) and A&E registrar (£55 per hour) derived from Unit Costs of Health and Social Care (PSSRU 2013-14).

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Low uptake estimate	0	£20,074	£38,791	£52,715	£65,653	£77,655	£88,771	£99,046	£108,524	£117,248	£668,477
High uptake estimate	0	£490,926	£682,472	£860,503	£1,025,712	£1,178,763	£1,320,290	£1,450,898	£1,571,162	£1,681,633	£10,262,358
Best guess estimate	0	£80,298	£109,120	£135,901	£160,746	£183,755	£205,024	£224,645	£242,704	£259,285	£1,601,477

Table 7. Discounted financial savings from lower re-referral to GP or hospital consultant radiotherapy treatment to obtain a prescription only (Therapeutic radiography)

Estimates of values and assumptions

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

Low estimate assumes one referrals per week to titrate or change medicines could be avoided (high estimate 2, best guess 1), low estimate assumes low estimate of uptake of training (high estimate assumes high uptake), and all patients requiring a prescription book a GP appointment to obtain one (higher estimate, consultant-led outpatient appointment, best guess 90% see a GP and 10% require an outpatient appointment)

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

Outpatient appointment: Non-Admitted Face to Face Attendance, Follow-up (Medical Oncology), £139

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Low uptake estimate	0	£12,427	£24,013	£32,633	£40,642	£48,072	£54,953	£61,314	£67,181	£72,582	£413,816
High uptake estimate	0	£142,712	£275,772	£383,371	£483,377	£576,181	£662,156	£741,657	£815,025	£882,582	£4,962,833
Best guess	0	£15,853	£30,633	£41,629	£51,846	£61,324	£70,102	£78,216	£85,701	£92,591	£527,895

Table 8. Total health service savings (diagnostic and therapeutic radiography combined)

Following DH guidelines, the opportunity cost of savings in health care utilisation was estimated by converting the financial cost (actual spend) into health benefits as quality-adjusted life years (QALYs) at a rate of £15,000 per QALY. The social value of freeing up health services to treat other people was calculated by re-monetising the QALYs displaced at a rate of £60,000 per QALY. Opportunity cost (re-monetised QALYs) were discounted at a rate of 1.5% per year

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Financial savings - low estimate		£32,501	£62,805	£85,348	£106,294	£125,727	£143,723	£160,359	£175,705	£189,830	£1,082,293
Financial savings - high estimate		£633,638	£958,244	£1,243,873	£1,509,089	£1,754,944	£1,982,446	£2,192,555	£2,386,186	£2,564,214	£15,225,191
Financial savings - best guess		£96,150	£139,753	£177,530	£212,592	£245,079	£275,126	£302,861	£328,405	£351,876	£2,129,372
Opportunity cost - low estimate		£132,567	£261,216	£361,972	£459,693	£554,446	£646,299	£735,315	£821,560	£905,094	£4,878,162
Opportunity cost - high estimate		£1,934,230	£3,063,727	£4,090,293	£5,085,848	£6,051,084	£6,986,680	£7,893,302	£8,771,601	£9,622,217	£53,498,983
Opportunity cost - best guess		£285,821	£433,876	£565,756	£693,643	£817,628	£937,796	£1,054,233	£1,167,025	£1,276,252	£7,232,028

Table 9. Net present value, years 1 to 10

Estimates of values and assumptions:

The net benefit is the difference between the estimate of benefit and cost. Training costs are assumed to be low and the benefit values are taken from table 5.

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	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Low estimate	-£2,768,206	-£2,542,028	-£2,118,680	-£1,937,445	-£1,761,966	-£1,592,084	-£1,427,644	-£1,268,494	-£1,114,488	-£965,483	-£17,496,517
High estimate	-£2,768,206	-£740,365	£683,831	£1,790,876	£2,864,189	£3,904,554	£4,912,738	£5,889,493	£6,835,554	£7,751,640	£31,124,304
Best guess	-£2,768,206	-£2,388,774	-£1,946,021	-£1,733,661	-£1,528,015	-£1,328,903	-£1,136,147	-£949,576	-£769,023	-£594,325	-£15,142,651