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List of Abbreviations

AI	Artificial Intelligence
CDS	Clinical Decision Support
CT	Computed Tomography
HERCA	Heads of European Radiological protection Competent Authorities
IHA	Individual Health Assessment
NCA	National Competent Authority
WGMA	Working Group on Medical Applications
WP	Work Package



Guidance to Assist Radiology Departments in Improving Justification

1. Introduction

1.1 Introduction and Background

Justification is the first and arguably most important fundamental principle of radiation protection that applies to the exposure of patients to ionising radiation in medicine (the second being optimisation). Individual justification of diagnostic medical exposures, the third of three levels of justification [1], is a process by which it is ensured that the patient receives the appropriate diagnostic imaging procedure, or in some cases no imaging, in accordance with the clinical indications and the question asked on the referral. In addition, appropriate justification for the patient requires that the benefits outweigh the associated detriments of exposure to ionising radiation, taking into account alternative techniques and that the proposed procedure is consistent with patient safety and ethical approaches in medicine. In the broader sense, it has major impact on resource availability and allocation.

The use of computed tomography (CT) continues to grow. The estimated growth rate over the last 20 years has been 10% per annum due to increased availability, clinical applicability and the expectation that CT is a mainstream imaging modality. Although significant reductions in dose per examination have been achieved, doses for individuals have risen as it is now used repeatedly in some care pathways and patient populations. Some data suggest it contributes approximately 70% of total patient dose from diagnostic applications in some European countries [2]. Where adults undergo repeated scans and particularly where imaging involves children, the stochastic risks may be significant [3].

While appropriate CT imaging can add considerable value to an individual's healthcare, there remains concern that many examinations are not appropriate and add little or no clinical value. Early estimates from the UK [4] suggested that 20% of all imaging procedures may be clinically unhelpful. Other estimates suggest this figure may be as high as 50%, depending on the healthcare system, referral practices and availability of current imaging guidelines [5, 6]. These estimates include unnecessary CT.

The need to address justification has been a key aspect of several European Directives [7, 8], International Standards [9], national and international initiatives [10,11] and numerous publications, including HERCA and ESR statements and publications [12,13].

1.2 Scope, Purpose and Target Audience

This document primarily addresses justification of individual imaging procedures using CT for adult and paediatric patients. These procedures can be individual diagnostic exposures or exposures within a pre-determined and agreed care pathway for treatment assessment and follow-up of an individual patient. In general imaging departments, CT exposures are predominantly used in adult patients. Presentations by paediatric patients are smaller in number in general departments, rather than where specialist paediatric services are provided.

The use of CT in any exposure of asymptomatic individuals, whether as part of screening programmes or as part of individual health assessment (IHA), will involve different justification processes and provide additional challenges. The potential benefits and risks may need to be assessed differently as probability of a condition replaces symptoms and referral practices and mechanisms for the integration of results into health records and subsequent care may differ. Similarly, the use of CT as part of research will involve additional considerations and processes to



ensure that ethical values and legal requirements are fully considered. Elements of this guidance may be applicable to these and to CT guided interventional exposures.

This document is intended to highlight key issues associated with justification of CT imaging and to provide guidance on how justification for individual patients can be improved. It does not address justification of types or classes of practice.

While acknowledging that appropriate justification is a key issue for hospital management, this guidance is primarily for those managing or working within imaging departments, although it is expected that elements of the guidance will be useful for those making referrals for CT, whether from primary or secondary care.

2. European Basic Safety Standards Directive and National Regulations etc – legal requirements

Within Europe, most regulation of practices using ionising radiation is based on the 2013 Euratom Basic Safety Standards Directive (BSSD) [8]. This directive includes requirements for medical exposures and builds on and replaces previous Euratom Directives [7]. The BSSD is goal setting and addressed to Member States. It allows for some flexibility for medical exposures, in doing so recognising the differences of national healthcare provision systems and culture. It is implemented through national legislation, regulations, orders etc. Practical guidance on how to implement the requirements can be provided by the European Commission, national Competent Authorities and national and international professional organisations.

2.1 BSSD Requirements

Justification of individual medical exposures is addressed in detail in Article 55 – the first article within the medical exposures chapter – and Articles 57 and 62.

Article 55 requires that medical exposures show sufficient net benefit, taking into consideration potential diagnostic (and therapeutic) benefits to the individual and society while considering other available techniques using less or no exposure to ionising radiation. A key requirement is that exposures are justified in advance which presents a challenge for busy imaging departments. This needs to be addressed through local procedures specifying roles and responsibilities. Additionally, previous relevant diagnostic information should be available so that unnecessary exposures can be avoided. Specific requirements are given for the imaging of asymptomatic individuals, whether as part of screening programmes or IHA.

Article 57 states that the referrer and the practitioner are involved in the justification process, as specified by the Member State.

Article 62 requires special attention is given to the justification in pregnancy, both of the expectant individual and the unborn child.

2.2 BSSD Definitions

Chapter 2 Article 4 provides three key definitions relevant to justification:

“Clinical responsibility” for individual medical exposures is the responsibility of a practitioner and includes justification.

“Practitioner” is defined as a medical doctor, dentist or other health professional who is entitled to take clinical responsibility for a medical exposure.



“Referrer” is a medical doctor, dentist or other health professional who is entitled to refer individuals for medical radiological procedures to a practitioner.

The range of healthcare professionals that are entitled to act as practitioners and referrers varies, is dependent on national legislation and may be determined by the State or by individual employers. The activities of healthcare professionals as practitioners and referrers will require appropriate competence and local agreement. Further detail is provided in section 2.4.

2.3 The Justification Process

Article 57 of the BSSD places a requirement for the referrer and the practitioner to be involved in the justification process rather than justification, which is only one element of the justification process. The justification process includes initial presentation of the patient, assessment of the patient, consideration of imaging to demonstrate the condition under investigation, appropriate justification of imaging and authorisation of that imaging. Justification alone, an intellectual process based on knowledge and experience, is only one function of many within this process. In most cases, the process is carried out by more than one person, including the referring clinician and the practitioner. This can be made clear in legislation, while local policies and procedures are pre-requisites for the process to work in practice. Further information is provided by HERCA in its position paper on individual justification [12]. Assigning roles, tasks and especially responsibilities for individuals involved in the process aids transparency and can help to identify the training needed for individuals involved in the process. Processes can be flexible, in that responsibilities for aspects of the process may be transferred from one person to another to ensure the appropriate competence is available. For example, decisions on appropriateness of a CT procedure can be discussed between radiology professionals before responsibility for a final justification is carried out by a clearly identifiable practitioner. Such a practitioner may have specific expertise relevant to the referral.

2.4 Terminology, roles, entitlement and empowerment and responsibilities

The BSSD provides key definitions for the referrer, the practitioner and clinical responsibility. It does so within the legal context of the Directive, which is goal setting. Directives are drafted to allow some flexibility for implementation at a national level and are not prescriptive. National legislation and regulations may be prescriptive or may allow flexibility regarding which healthcare professionals are entitled to be referrers and practitioners and for which examinations.

These defined individuals undertake activities that can be considered as separate elements of the justification process but in some circumstances one individual might take on the role of both referrer and practitioner. It may also be helpful to consider the supporting activities of other staff, e.g., administrative staff, secretaries etc which relate to the justification process. These are important but such non-clinical staff cannot have legally defined roles, and responsibility for the justification process remains with the referrer and the practitioner.

For referrers and practitioners, the tasks and associated responsibilities should be based on education and training, both clinical and in radiation protection. However professional background alone is not sufficient and up to date competence is required. This is particularly true in CT where technological advances are rapid, and it is difficult for non-specialists to ensure their knowledge remains current. This may be evidenced by continuing medical education or professional development.

The tasks and responsibilities of individuals must be agreed by the healthcare organisation in which medical radiological imaging takes place. Local management should provide the framework within which the justification process is carried out. It should agree and specify the scope of practice of referrers and practitioners. This protects referrers, practitioners, other healthcare professionals and the institution by ensuring no-one acts outside their expected roles and that those acting within these roles can be suitably supported by management. For example, it is usually inappropriate for a



cardiologist to be entitled or to carry out justification of non-cardiac CT procedures even if they have sufficient general medical training and radiation protection knowledge from their own practice.

2.4.1 The referrer

The role of the referrer is to initiate the justification process by requesting imaging to address a clinical problem or potential clinical problem. Before doing so, the referrer should assess the patient and collect clinical information to inform justification of appropriate imaging. It is the responsibility of the referrer to provide the practitioner with a referral that is complete. The referral must contain all the information necessary such as clinical indications, clinical question asked and previous examinations, to allow the practitioner to justify the imaging examination.

The role of referrer can be undertaken by a range of appropriately qualified staff, depending on the clinical situation and modality to be used. In most European countries, all doctors are permitted to refer patients for CT imaging. In some healthcare systems however, referrals for CT are carried out only by hospital doctors, whether specialists or in training. In exceptional circumstances, other non-medically qualified clinicians act as referrer as part of agreed protocols, but these are usually applicable only in well-defined circumstances. This contrasts with referrals for radiography and ultrasound which are often provided by family doctors and other healthcare professionals.

2.4.2 The practitioner

The role of the practitioner is to consider relevant patient information, including previous imaging, and to justify the imaging procedure. For most cases in imaging departments, the practitioner is a radiologist. The radiologist is best placed to ensure that medical exposures, including CT, are appropriate, taking into account the clinical question to be answered and all the imaging modalities available.

In some cases, specialists other than radiologists may act as practitioners for a limited range of procedures, carried out within the radiology department or in separate facilities. Examples include some cardiologists and dental surgeons who are trained in the use of CT within their own specialty.

In some healthcare systems, other non-medically qualified healthcare staff may justify a limited range of CT procedures, according to defined protocols. These include specialist radiographers and nurses and physician assistants who have received additional training. This is not currently common practice across Europe.

2.4.3 The patient

Patients have no specified role or responsibility relating to justification or the justification process within the BSSD. Nevertheless, patients are central to their own healthcare and no procedures should take place without their agreement. For justification, the patient has a general duty on initial presentation to provide the referrer with accurate information about their condition, including pregnancy status. As patients' involvement with their healthcare evolves, they may also exert their rights to question the justification of CT procedures. This is already seen in paediatric CT imaging where concern is expressed about radiation dose for children. Proper information should, of course, be provided about the benefits and risks of the CT examination and the potential impact on future care.

3. Education and Training

Education and training, including continuing medical education and professional development, provide the basis for knowledge and competence for all healthcare professionals. They ensure that specialist staff keep up to date with advances in their fields.

All doctors should have adequate competence in patient assessment, and this should be sufficient to carry out many of the referrer's duties. However, family doctors and many hospital doctors are



unlikely to have up to date knowledge on radiation protection and CT imaging and this may affect their ability to request specific CT procedures. This in turn may limit the advice and support they can give to their patients regarding any future imaging pathway. This is not normally the case for specialists, who should be aware of imaging options and capabilities within their field of practice.

For healthcare professionals involved in the justification of CT imaging, training and education should include knowledge of the appropriateness of other imaging modalities, specific radiation protection training and an understanding of their roles and responsibilities under the legal framework associated with the use of ionising radiation in medicine.

4. How the Justification Process is Carried Out in Practice

The justification process should be described in local policies and procedures. It may be helpful to consider this as part of the framework which describes the processes involved in requesting, justification and written authorisation of individual exposures. Policies and procedures should include requirements for: supporting clinical information so that justification can be carried out appropriately; the suggested imaging procedure requested; the procedure agreed on and justified; and verification of the identities of the referrer and practitioner. They should also include agreed actions when these requirements are not satisfied.

For CT imaging, most processes will follow one of three scenarios:

Scenario 1 – the referring clinician (the referrer) initiates a request, preferably consistent with available imaging referral guidelines or national guidelines for IHA and in line with their scope of practice. Supporting written information should be supplied and the referrer identifiable as part of the request. The radiologist (the practitioner) considers the information supplied, checks that the request is consistent with the hospital approved scope of practice of the referrer and justifies an appropriate CT procedure, in accordance or not with the imaging procedure suggested by the referrer. Where the CT procedure initially requested is not agreed, this should be communicated and discussed with the referrer. The practitioner who justifies the CT procedure should be identifiable and this should be documented. This is probably the most common scenario for CT imaging. Reporting the CT images is a separate activity and is not part of the justification process. This is normally carried out by a radiologist, but this does not have to be the radiologist who justified the scan.

Scenario 2 – the consideration of the CT request is delegated to another healthcare professional (e.g., specialist radiographer) who undertakes the delegated task of assessing or vetting the request and authorising the procedure to take place. This is done in accordance with justification criteria provided by the practitioner (a radiologist). These criteria should at least be consistent with well-developed imaging referral guidelines but may be more detailed to address specific justification requirements. The healthcare professional is identifiable, but a radiologist retains responsibility for justification. The justifying radiologist is the person who takes responsibility for the justification criteria. In this scenario, the healthcare professional assesses or vets rather than justifies the exposure. If the healthcare professional is unsure or the request is outside agreed justification criteria, the referral is passed to a radiologist who then provides the justification. In such cases, the radiologist undertaking the justification is the practitioner, not the radiologist who provided the justification criteria. This radiologist should be identifiable.

Scenario 3 – the referrer is a specialist with agreed authority to both request and justify procedures (e.g., cardiologist or dental surgeon) within a limited scope of practice. Here, one individual carries out both roles of referrer and practitioner, but these activities should still be considered as separate and be documented to the same standard as described for scenario 1.

Other variations may exist but are not common practice. In particular, it is currently unusual for justification of CT imaging to be the responsibility of healthcare professionals other than radiologists



and medical specialists, but this may change as imaging protocols and artificial intelligence (AI) play a greater role in CT imaging.

5. Practical Tools to Facilitate and Undertake the Justification Process

5.1 Imaging referral guidelines

These have been available in some parts of Europe for over 30 years. These, and subsequent guidelines [14, 15] were originally intended to help the referrer make the best use of the imaging department and in 2000 the European Commission produced similar guidelines [16]. Both their value as an aid to improving the justification process and the importance of availability have been investigated [17,18]. Nevertheless, availability does not always equate to appropriate use [19,20].

The use of CT in IHA is a relatively recent practice and is justified for only a small number of circumstances. Guidelines may not be well established in all Member States. These guidelines will be based on probability rather than symptoms of a condition.

Following guidelines may increase the number of CT procedures undertaken for some conditions. This is not necessarily a negative consequence as the aim should be to ensure appropriate examinations, including appropriate imaging with CT, rather than to reduce the total number of procedures undertaken.

Imaging referral guidelines have greater influence if they are available, easily accessible to referrers, up to date and reflect current practice. Integration into normal working practices increases their routine use and removes the need for repeating initiatives to promote their use.

The guidelines also need to be considered as valuable by referring physicians and health policy makers. Their generation needs to be based on published evidence and follow rigorous approaches and to include the views of multiple specialties if inconsistencies between them and physician generated protocols are to be avoided.

5.2 Clinical Decision Support (CDS) systems

These integrate imaging referral guidelines into electronic requesting systems and provide feedback to referrers. Their major advantage is they address many of the problems that may occur with stand-alone guidelines i.e., lack of availability, ease of use etc. CDS systems are more common in some parts of the USA than in Europe but early evidence from Croatia [21] is encouraging and the EU-JUST-CT project should provide further evidence relating to justification of CT.

Introduction of CDS systems is expensive and requires political will, on-going support at national and local level, integration into healthcare pathways and education and training on their use.

In the future, benefits of CDS systems may be further enhanced if Artificial Intelligence (AI) is a fundamental basis for the architecture of these systems. AI offers the possibility of greater patient focused care by considering justification of exposures in multiple and differing potential pathways for the patient, informed by the patient's pathway and evolving clinical history and depending on whether the use of CT is intended for initial assessment, staging, treatment planning, treatment assessment or follow-up. AI based CDS systems have the potential to significantly change the justification of CT procedures and to influence greatly the role of the clinical radiologist. Nevertheless, under current legal approaches, AI cannot be considered a duty holder in justification and should be considered as a tool to support the referrer and practitioner, who remain responsible for the process.

6. Practical Tools to Assess the Justification Process

Clinical audit is a requirement of the BSSD and justification of CT exposures is a prime subject for this. Guidance on clinical audit has been produced by the European Commission [22,23,24] and HERCA [25, 26]. Member States and professional bodies have audited the appropriateness of CT examinations using retrospective data collection and analysis. This is time consuming and labour intensive. The ESR has produced a practical audit tool – Esperanto, now in its 3rd edition [27] – which includes audit of CT use.

The introduction of CDS systems offers the capability to undertake real-time review of cases, referral patterns and subsequent justification and this has the potential to reduce the effort required to undertake audit and to increase the frequency at which it is done.

7. Challenges for Imaging Departments

Justification of CT imaging is more likely to be appropriate when referring physicians are engaged with local available imaging services. Policies, procedures, and processes for CT imaging need to be developed, understood and agreed with appropriate stakeholders (clinicians and appropriate administrative staff) and up to date imaging referral guidelines or CDS systems should be available. Radiological imaging departments should ensure good communication with referrers, whether based in the community or hospitals and radiologists should be available to discuss requests, particularly if these are not consistent with imaging guidelines.

Expectations of patients are often set before or during initial consultations with family doctors and as imaging is accepted as an essential part of healthcare there is significant demand for radiological procedures, including CT imaging, to be performed. Referring physicians and radiologists have a clear role in managing these expectations and communicating and advising patients on possible alternative imaging or other diagnostic strategies and healthcare options. While patients have a right to be involved in every step of their own care, they should make decisions having been provided with clear and concise information and given the opportunity to discuss their requirements and concerns.

Public health initiatives play an important role in setting and managing expectations of the public and subsequently patients. These should be formulated in conjunction with appropriate clinical practitioners including radiologists. Examples of these in Belgium and Luxembourg have highlighted radiation dose issues, that radiological imaging is not without risks, that it should not be demanded and in some cases, it is not helpful. Such initiatives may provide the basis for discussion when a member of the public becomes a patient. At this stage, radiation risk is unlikely to be a factor for many patients. The exception is imaging of children when radiation exposure can be a significant and sometimes overemphasized (by the patient's representative) factor when deciding whether imaging should take place. Information campaigns [28] and international guidance all play a role in ensuring appropriate CT imaging takes place.

As stated previously, CT imaging is now accepted as a routine radiological investigation in most healthcare pathways. CT imaging is used in screening, initial diagnosis, planning of treatment, treatment assessment and patient follow-up and greater emphasis needs to be placed on justification of imaging over an entire patient pathway and over extended periods of time. Resources, both equipment and staff, must be used effectively and focused on aspects of the service that are likely to produce the greatest impact, e.g., justification by radiologists of complex CT imaging rather than routine procedures which are part of agreed, evidence based and established clinical pathways. To ensure this, radiologists should be aware of the context of all individual procedures within a patient's clinical pathway and be willing to de-justify individual procedures if they add no value to the care of the patient. In some cases, other modalities may provide the clinical information needed either for lower cost or lower or no radiation dose.



In addition, by ensuring that CT is justified appropriately, radiologists and other practitioners will also ensure that resources are available for other patients.

The impact of equipment and specialist staff availability, structures and methods of delivery of primary and secondary care within different healthcare systems cannot be underestimated. Insufficient access or long waiting times for CT may result in more critical scrutiny of CT requests and better justification. Conversely, insufficient access or long waiting times for MRI may result in inappropriate use of CT to provide patients with cross-sectional imaging, particularly in cases of perceived urgent clinical need. There is some evidence that healthcare systems dominated by private practice may have greater rates of inappropriate CT justification than publicly funded systems and reimbursement mechanisms can have significant implications for appropriate justification of CT imaging. In some systems, patient self-referral and physician self-referral are common and may influence the appropriate use of CT imaging [29,30]. Similarly, where over availability of CT services exists, this can increase the use of unnecessary imaging. Service providers may feel a need to accept inappropriate referrals to make their services financially viable and patients may feel empowered to try other CT services if, at an initial consultation, they are advised that the CT imaging they desire is not justified and will not be carried out. It is acknowledged that saying no to a request for CT imaging may not be easy, particularly where imaging has no value. A concerned patient may lose trust and it takes more time to refuse a request than to simply comply and provide the imaging. However, in many cases inappropriate imaging requests for CT can be addressed by proposing more appropriate procedures using other imaging modalities. This is unlikely to result in an overall reduction in imaging but can provide improvement in modality selection while still retaining the patient's confidence and providing the answer to the clinical question posed.

7.1 Specific Challenges in Teleradiology

Teleradiology brings its own challenges for justification of CT imaging, specifically where the referring clinicians, the practitioner, the CT imaging service and image interpretation are operated without an overarching single employer structure and framework.

As teleradiology essentially relates to the transfer of images between a location where the image is produced to another location where the image is interpreted, it should have little impact on the justification process. It may however provide further complexity regarding clinical responsibility, which includes justification and image interpretation. All legal responsibilities and roles of the referrer and the practitioner remain and understanding of these should be acknowledged, agreed and verified between all parties prior to contracts being developed and agreed. The referrer still has responsibility for assessing the patient and providing pertinent information so that a CT imaging procedure can be justified by the practitioner, wherever the procedure takes place. It is important therefore that the radiologists providing justification, overseeing the scanning service and those providing image interpretation are involved in the contracting process and understand their legal responsibilities, tasks and roles.

The practitioner will need to be confident that justified procedures will be carried out to appropriate standards and with appropriate techniques and protocols required for patient safety and high-quality imaging. The practitioner needs to be assured that the equipment used to undertake the scanning and that used to reconstruct data for image interpretation are fully compatible. This is particularly true if the radiologist justifying the scan is also responsible for interpreting the images and providing a medical report. Where different radiologists provide image interpretation and justification, feedback on scan findings and the value of CT imaging for individual patients may improve justification for future examinations of these patients and others.



8. The Regulator and the Imaging Department

In most medical disciplines, it is highly unusual for a doctor's clinical practice to be subject to specific regulation and inspection but the inclusion of medical exposures within the BSSD makes this a requirement for radiology.

In Europe most radiation protection inspectors do not have an appropriate background, sufficient training or sufficient knowledge to be able to comment on the justification of individual exposures. In addition, the depth of inspection regarding justification will depend on national regulations relating to patient anonymity – in many countries an inspector may not have access to patient records.

It is more likely that inspections will focus on processes and compliance with national regulations. The institution should be able to provide local policies and procedures including those relating to the justification process including competence of individuals to act as referrers and practitioners, whether their scope of practice is defined, how clinical data relevant to medical exposures is provided and whether justification can be confirmed to have taken place before exposures are carried out. Confirmation of the completion of stages of the justification process and its timing should be included in any activity trail, using unique individual healthcare professional identifiers (signatures, electronic passwords etc) and dating systems in accordance with departmental procedures [12].

Most inspectorates do not publish inspection checklists, although there are exceptions. However, valuable information relating to the expectations of national authorities is often available and can be gleaned from annual reports and from communicating directly with the Competent Authority.

Other sources of information are available. In Luxembourg, the Ministry of Health has published comprehensive guidance on justification of medical imaging [31] and in 2015 the HERCA Working Group on Medical Applications (HERCA WGMA) held an inspector workshop on justification in radiology and organised a European Action Week on the inspection of justification, including CT, involving 148 inspections in 17 countries [32].

The responsibility for compliance with regulations lies with the licensee and healthcare professionals. This should be reviewed on an ongoing basis. Inspection programmes can have an impact on routine day-to-day practice but this will be dependent on the frequency and scope of inspections. In addition, if professionals consider inspection to be an adversarial process, focusing on enforcement rather than compliance, this may result in reluctance to change and improve practice. The main focus of proactive inspections should always be demonstration of compliance with regulations rather than enforcement. It can also provide opportunities to clarify the contents, purpose, application and synergy of regulations, approved codes of practice and national guidance, where provided in conjunction with the regulator, for specific clinical settings. The inspector must remain independent from the institutions under scrutiny and refrain from providing direct practical advice on how to comply with legal requirements. Nevertheless, good practice from institutions, shared between professionals and within subsequent reports can improve local compliance and an active dialogue between licensees, healthcare professionals and the regulator, along with published results of inspections, can improve CT justification.

9. Conclusions

Appropriate justification of individual CT procedures remains a key aspect of patient safety, patient outcome, and the effective and efficient use of radiological imaging resources.

Dialogue with referring clinicians is essential if conflicts between referrers and radiological imaging departments are to be avoided.

Radiologists should be involved either directly or in setting up and approving policies, processes and procedures where other medical specialists and healthcare professionals provide justification. In all cases, the roles and responsibilities of all those involved in the justification process should be clear and identifiable.

As part of the process, clinical imaging guidelines and CDS systems can provide essential tools and their generation, availability and use should be considered a priority by hospital and healthcare providing organisations.

Assessment of appropriate individual justification can be provided by clinical audit. Inspection is an important process but its frequency may limit its impact on a daily basis.

These steps are summarised in Appendix 1 – Five practical steps to improving justification in CT imaging.

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11. Appendix

11.1 Five practical steps to improving justification in CT imaging

1. Communicate with referrers

Establish links to ensure that referrers are aware of the CT services offered by the radiological imaging department and which CT examinations can be requested by referrers within primary and secondary care

Referrers should be aware of the clinical information required to support a CT referral (patient clinical details, consistency with agreed imaging protocols, impact of imaging on subsequent patient care etc)

2. Define roles, responsibilities and entitlement for referral and justification

Clarify the roles and responsibilities of all referrers, practitioners and those acting in accordance with the directions of practitioners. This should apply to primary and secondary care settings (e.g., family doctors, hospital doctors in training, specialists, other healthcare professionals)

Referrers, practitioners and those acting in accordance with the directions of practitioners should be clear on the scope of their practice, dependent on education, training, operational parameters and entitlement to act as agreed within the imaging department and its parent organisation (health authority, hospital etc)

3. Establish policies and procedures for justification

These should include operational processes for undertaking the justification process and verifying that justification has taken place, in accordance with the roles, responsibilities and entitlements agreed within the parent organisation

4. Provide imaging referral guidelines or Clinical Decision Support (CDS) systems

Ensure that the latest imaging referral guidelines (in stand-alone analogue or digital formats or within CDS systems) are available to referrers in primary and secondary care settings and provide guidance on how referrals consistent with these are processed.

Further guidance should be provided relating to processes for imaging requests that are not consistent with imaging referral guidelines etc

5. Audit compliance of referrals with best practice imaging referral guidelines

Periodically audit referrals for CT against CT examinations performed and feedback information to referrers – to improve communication, expectation management, effectiveness, efficiency and appropriateness of the justification of CT examinations