



Diagnostic Imaging Pathways - About Imaging: General Principles in Requesting and Providing Imaging Investigations

Justification and Optimisation

All requests for imaging should be subject to the processes of **justification** and **optimisation**.

Justification is the process of weighing the risk of a procedure against the potential benefit. For a procedure to be justified the potential benefit should outweigh the risk.

- The radiologist has the knowledge and experience to best determine the imaging risks and consider alternative imaging investigations, including those not associated with ionizing radiation. However, the referring doctor, who has seen and knows the patient, can best assess the potential benefits in performing the test and, importantly, may also be best placed to assess the detriment to the patient of not performing the test.
- Therefore, optimally, the process of justification should be the **joint responsibility** of the referrer and the imaging specialist. Implicit in this statement is the requirement for adequate communication and consultation between these individuals.

Optimisation is the process of ensuring that the radiation dosage during imaging is kept to a minimum according to the ALARA principle (As Low As Reasonably Achievable), while maintaining the diagnostic quality of the examination.

- Optimisation is the responsibility of the imaging specialist and technologist.

Responsibilities of the Referring Doctor

1. Avoid unnecessary duplication of tests. This is aided by:
 - Awareness of any previous tests performed (e.g. by other doctors)
 - Ensuring that the patient is aware of the importance of keeping previous images and taking them along for review at the time of any subsequent tests.
 - Awareness of the appropriate interval for serial imaging. This, of course, will vary with the disease process and the type of imaging.
2. Ensure the results of a test should potentially alter patient management. However, it is acknowledged that exclusion of disease in certain circumstances may provide important reassurance for doctor and patient.
3. Provide adequate clinical details to the imaging specialist. Remember the adage “garbage in, garbage out”:
 - The statement of a provisional diagnosis on the request will help the radiologist to determine the correct protocol for the imaging investigation
 - In most situations a more meaningful report will be forthcoming if the imaging specialist is provided with the clinical history relevant to the examination and the question to be answered by the investigation
4. Ensure that imaging investigations are not a substitute for examining the patient.
5. Be aware that many imaging tests have risks. Referring clinicians should be sufficiently aware of those risks to determine whether the potential benefits of the test outweigh the potential risks. For any “invasive” procedure it is the Imaging Specialist's responsibility to obtain informed consent from the patient or relative or to delegate responsibility to a doctor who knows all the significant risks. The reader is referred to the [Ionising Radiation Training Module](#) at this web-site.
6. Consult with Imaging Specialist colleagues when appropriate. There is often a number of available

investigations in a particular clinical situation. The choice of the appropriate test in what may be a complex clinical problem will be facilitated by consultation.

7. Particularly in younger patients, if possible and appropriate, choose imaging that does not employ ionizing radiation (e.g. ultrasound, MRI) in preference to those using ionizing radiation.

Responsibility of the Imaging Specialist

1. Ensure, in association with the referring clinician, that the appropriate test is performed.
2. Determine that radiation dosage during imaging is kept to a minimum according to the ALARA principle (As Low As Reasonably Achievable).
 - Avoid duplication of tests (reference to prior imaging, avoidance of the need for repeating views by overseeing quality control of radiography, etc).
 - Adhere to strict principles of radiation protection such as shielding, appropriate technical factors, appropriate film/screen combinations and obtaining the minimum number of exposures required for adequate diagnosis.
 - When appropriate, choose tests that do not employ ionizing radiation in preference to those that do.
3. Avoid ionizing radiation in pregnant patients by:
 - Raising the awareness of patients for the need to inform the Imaging Specialist or technologist of the possibility of pregnancy.
 - Adhering to the “28 day rule”. If a patient of child-bearing age has missed a period, the test may need to be delayed until pregnancy is excluded.
 - Performing tests that do not employ ionizing radiation, in preference to those that do, when it is appropriate for patients of child-bearing age.
4. There may be over-riding urgent clinical circumstance, that warrant irradiation of a pregnant, or possibly pregnant patient. The responsibility for performing the test should be shared after consultation with the referring clinician
5. Provide a timely and accurate report of the examination. The need for promptness should be balanced with the need for accuracy, so that instant “patient-waiting” reports should be discouraged other than for plain x-rays, since this is likely to lead to perceptive errors. If the test shows a significant finding such that the delay in the referring clinician receiving a typed report by the conventional arrangements would be detrimental to the patient's health, it is the Imaging Specialist's responsibility to attempt prompt communication of the findings to the clinician.

Informed Consent

Informed consent is the process in which a proposed procedure or decision is discussed with the patient, enabling educated participation in their own healthcare. It is a patient's legal and ethical right to decide on their medical treatment. For the purposes of imaging investigations, elements of informed consent include:

- Nature of the proposed imaging investigation.
- Risks (including those of ionising radiation) and benefits of the proposed imaging investigation.
- Alternative and relevant forms of investigation.
- Risk and benefits of alternative investigations.
- Risk and benefits of not undergoing investigation.

The mental competency to make a decision must be assessed by the treating physician and if deemed to be inadequate, a decision should be sought by the patients appointed power-of attorney or next-of-kin in most situations. For the decision to be valid, consent must be obtained voluntarily.

It must be emphasised that the standard of disclosure varies between individuals and different risks and



adverse outcomes are of different importance to each individual. The following excerpt from the Rogers v Whittaker case highlights this.

“...in the circumstances of the particular case, a reasonable man in the patient's position, if warned of the risk, would be likely to attach significance to it or if the medical practitioner is, or should reasonably be aware that the particular patient, if warned of the risk, would be likely to attach significance to it...” ¹

Any documents prepared for the purposes of informed consent must therefore be flexible, to allow for the varying requirements of individual patients.

A guide for consumers in gathering information that may be needed for making informed decisions is published by the Consumers' Health Council of Australia at: <https://chf.org.au>

References

1. Rogers v Whittaker. 1992 175 CLR 479. [Click to view full reference.](#)

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