

Radiation and the early fetus

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This guidance has been produced to advise clinical radiologists on the measures routinely taken in departments of clinical radiology to protect the unborn child from irradiation. This guidance was originally issued in 1995 and replaces the previous document, BFCR(95)2, which is now withdrawn.

What follows is a very brief outline of the facts. For further information, please refer to the NHS Choices for Patients platform,¹ *The Guidelines for Diagnostic Imaging During Pregnancy* produced by The American Congress of Obstetrics and Gynaecology,² *The Protection of Pregnant Patients During Diagnostic Medical Exposures to Ionising Radiation* produced by the Health Protection Agency, The Royal College of Radiologists and the Society and College of Radiographers³ and the *Pre-procedure Pregnancy Checking in Under 16s: Guidance for Clinicians* produced by The Royal College of Paediatrics and Child Health.⁴

The following comments only apply to female patients fulfilling the following criteria:

- They are of childbearing potential⁴
- The radiographic examination requested places the uterus in or near the main X-ray beam or involves the intravenous injections of radiopharmaceuticals.

It is current practice to ask these patients if there is any chance that they might be pregnant. If the answer is 'no', the radiological examination requested is performed. If the answer is anything other than a firm 'no', the radiographer or radiologist checks the date of the last menstrual period. When the period is overdue and the patient cannot be certain she is not pregnant, consideration will be given to postponing the examination. This will usually require consultation with the responsible radiologist, and they may need to have discussion with the referring clinician. This is the '28-day rule'.

The 28-day rule replaced the 10-day rule introduced in 1986, but there is evidence^{2,3} that the incidence of childhood cancer may be increased slightly following *in utero* irradiation before a period has been missed. The Health Protection Agency provides practical advice regarding the 10-day rule for what are classified as high-dose examinations.³ These are investigations resulting in doses to the uterus of 'some tens of milligray'. For most departments, the only routine examinations approaching this dose level are probably barium enemas and abdominal or pelvic CT, although there are wide variations between departments in the doses resulting from identical examinations.⁵

The following points should be considered.

- The risk of childhood malignancy following fetal irradiation before the first missed menstrual period is probably real, but is likely to be significantly less than the risk from the same dose incurred after the pregnancy has declared itself.³
- Common sense, and a limited audit in one centre, suggest that very few patients attending for a high-dose examination will require rescheduling if the 10-day rule is applied to a limited extent.
- Even in the case of inadvertent exposure of an early pregnancy (before or after the first missed menstrual period) to one of the high-dose procedures, the level of risk is not sufficient to justify termination.²

It is recommended that you should consider a limited application of the older 10-day rule to those examinations which fall into a high-dose category.³

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