

**Ministry of Health, Government of Malaysia (MOH) Circular originally sent out in April 1998, with amendments April 1999**

**Radiation and Women of Childbearing Potential**

In 1964, the National Health and Medical Research Council (NHMRC) recommended that "In women of childbearing age, non-urgent x-ray examinations that entailed pelvic irradiation should be restricted to the first ten days of the menstrual cycle." This practice is commonly known as the 10 Day Rule.

In 1984, the International Commission on Radiological Protection (ICRP) reported that there was little, if any, risk of damaging the foetus during the first two weeks of gestation i.e. before the first menstrual cycle was missed<sup>1</sup>. The National Radiological Protection Board (NRPB) issued advice based on this statement<sup>2</sup>. The College of Radiographers and Royal College of Radiologists followed up with their joint guidelines<sup>3</sup>. Before an examination of an area where the uterus is within or close to the irradiated area is conducted, the radiographers and the radiologists are required to ask the patient if there is any possibility that the patient may be pregnant. If the patient replies in the negative (NO) then the radiographers and the radiologists must ask the date of the patient's last period. If the menstrual cycle is overdue, then the examination may be postponed. This practice is commonly known as 28 Day Rule.

In 1993, the NRPB published its latest statement on diagnostic medical exposure to ionising radiation during pregnancy<sup>4</sup>. For adverse effects (foetal death or malformation, severe mental retardation and inherited diseases in future generation), the influence of diagnostic doses of radiation was found to be insignificant in relation to natural incidence of these disorders. However, for induction of cancer the position is not clear. Evidence now exists that some carcinogenic mutations, even at the very early stage of life, are compatible with continuing development of the foetus and may result in an additional risk of fatal childhood cancer before the age of 15 of 1 in 1300<sup>4</sup>. This represents a doubling of the incidence in unexposed population. The procedures that concern NRPB are those that entail doses of "some tens mGy". In routine practice, this means abdominal or pelvic computed tomography and barium enemas. The NRPB suggests that one way to avoid irradiation of an early foetus is to restrict these high dose procedures to the first ten days of the menstrual cycle i.e. a limited return to the 10 Day Rule.

Based on the current knowledge, the following guidelines should be adhered to;

- I. For most of the routine examinations, except those falling into the dose category, which will result in irradiation to the uterus, radiology departments should apply the 28Day Rule.
- II. For non-urgent examinations involving high doses to uterus in patients who are at risk of pregnancy but not yet overdue, the examinations should be delayed until the first ten

days of the next menstrual cycle. High dose examinations include computed tomography of the abdomen and pelvis and barium enema.

III. Radiation exposure of the lower abdomen and pelvis of women of childbearing potential should be kept to a minimum. During pregnancy, radiation to these regions should only occur if the radiological examination cannot be postponed because of the urgent nature of the investigation

IV. The risk of radiation damage to a foetus, even at the relatively high doses resulting from abdominal or pelvic computed tomography or barium enema, is small and inadvertent exposure in early pregnancy will not of itself be an indication for termination or for the use of invasive diagnostic procedures such as amniocentesis.

### **References**

1. International Commission on Radiological Protection. Statement from the 1983 Washington meeting of ICRP. Annals of International Commission on Radiological Protection 1984:14
2. National Radiological Protection Board. Exposure to ionising radiation of pregnant women: advice on the diagnostic exposure of women who are, or who may be pregnant. ASP8.NRPB, 1985.
3. College of Radiographers and Royal College of Radiologists. Guidelines for implementation of ASP8.NRPB, 1986.
4. National Radiation Protection Board. Board statement on diagnostic medical exposure to ionising radiation during pregnancy and estimates of late radiation risks to the UK population. Documents of the NRPB 1993; 4(4):1-14.