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Radiography of Potentially Pregnant Females

SIR,—In June 1972 the Department of Health and Social Security published a revised *Code of Practice for the Protection of Persons against Ionizing Radiations arising from Medical and Dental Use* (London, H.M.S.O.). In the preface (para. 3) it is stated that "although the arrangements recommended relate primarily to institutions they should be applied, as far as practicable, by all medical and dental practitioners." The accompanying circular HM(72)39 from the Department imposes upon boards of governors and regional hospital boards the duty of implementing the code. The bulk of the code applies to those who administer the radiation, whether for diagnosis or treatment, but Section 7, dealing with the protection of the patient, applies also to those who request that such procedures be carried out. In particular we are concerned with paragraph 7.3.1. which reads as follows: "In all women of reproductive capacity the clinician requesting the examination should consider the possibility of an early stage of pregnancy. The date of the last menstrual period should be entered on the request form and it is the responsibility of the clinician requesting the examination to ascertain this. To reduce the likelihood of irradiation of a pregnancy, examinations involving the lower abdomen should, if practicable, be carried out within 10 days following the first day of the menstrual period."

Radiological Protection Committees are considering how these problems can best be dealt with to ensure that no embryo or fetus receives more radiation than is absolutely essential. The code and the circular do not

give specific details as to how the problem might be adequately tackled. As far as we are aware the bulk of medical practitioners have not been contacted to inform them of these requirements of the code and to suggest how the problem may best be dealt with.

Following the work of Dr. Alice Stewart and others it is now universally accepted that radiation to the fetus can cause leukaemia or other neoplastic disease. The hazards may be estimated in simple terms with sufficient accuracy for the present purpose in the following way:

The natural incidence of childhood neoplasia and leukaemia is about 1 in every 1,200 live births. The best estimates indicate that a dose of 1.4 r will double the natural incidence. Diagnostic examination of the pelvic regions can result in a dose to the fetus ranging from about 0.25 r up to perhaps 5 r or more in an extensive examination. This means that an average examination might double the natural incidence of leukaemia etc. This could also be expressed by saying that should leukaemia or neoplasia arise in a child who was radiographed as a fetus there is a fifty-fifty chance that the radiation caused it. All the evidence indicates that an early pregnancy is just as susceptible as a later one.

The code of practice clearly places the responsibility for finding out whether the patient might be pregnant or not on the referring clinician and requests that the date of commencement of the last menstrual period should be entered on the request form. Experience has shown that it is almost impossible for the x-ray department to cope with this problem without further assistance.

Many individuals do not know when their next period will occur and booking clerks cannot be expected to make these inquiries and arrange to book the patient within the first 10 days of the beginning of the next period (when the patient is unlikely to be pregnant) without considerable delays and difficulties. It is therefore suggested that the referring clinician, when requesting an x-ray or isotope investigation involving the area from the diaphragm to the knees, should ascertain if there is any possibility of pregnancy. He should also state whether the examination is of such urgency that it should be carried out regardless of whether the patient is pregnant or not. If the examination is not of immediate urgency or of a type for which an appointment must be booked, it is suggested that the referring physician should explain to the patient that because of a small hazard to the fetus it is best if the examination is carried out when the patient is not pregnant and the patient therefore should take the necessary steps to see that she does not become pregnant until after the examination.

To avoid difficulties when the patient arrives at hospital either for an outpatient appointment or with a view to admission it is further suggested that in any case in which there is a possibility of a diagnostic radiological investigation being required the patient likewise should be advised not to become pregnant until after the possibility of a radiological examination has passed, and it should be explained to her that if she fails to do this it will be her responsibility if any unfortunate consequences should occur.

We suggest that doctors should be supplied with a card (see Proforma) on which