Early Discharge of Maternity Patients

It is now some three years since the advantages and disadvantages of the early discharge of maternity patients were discussed in these columns, and in view of the increasing support for the idea since then the two further reports in the B.M.J. this week are timely. Both of them are from Bradford—one by obstetricians and the other by paediatricians—and they present an impressive number of cases, for the regimen has now been in use there since 1956 and some 13,000 puerperal patients have been managed in this way. Mr. G. A. Craig and Mr. J. M. B. Muirhead report (page 520) that in their experience planned early discharge does not result in increased maternal morbidity nor does it add to the risks of birth. Discussing the effects on the babies, Drs. M. W. Artherton and F. N. Bamford report (page 517) that the regimen has had no serious adverse effect and may have contributed to an improvement in child health. But they go on to say: "There is no evidence that early discharge offers any advantage for the individual baby as compared with staying in hospital for ten days, and in fact there are additional risks partly attributable to difficulties in neonatal diagnosis." That the general practitioners welcome and actively support the Bradford scheme can be seen by the report of a survey of 100 cases of early discharge carried out by members of the Bradford Group of the College of General Practitioners.

The latest results are of great interest. Statistically there appears to be no difference between the number of patients readmitted after planned early discharge and those admitted as an emergency after domiciliary confinement. Likewise, the perinatal mortality is the same in the two groups.

The length of time a patient remains in hospital after delivery depends on many factors. While the present shortage of maternity beds undoubtedly plays a large part, to this must be added the rules of the Central Midwives Board—a subject on which Professor P. Rhodes has recently written forcefully. Another factor affecting the situation is the view of the patient herself, and it is the experience of many practising obstetricians that puerperal mothers are asking to be allowed home at an increasingly early date after delivery. The doubts about the dangers to mother and baby from early discharge are largely dispelled by the Bradford reports. However, there is a considerable difference between a scheme of this nature working at a high level of efficiency, as at Bradford, and occasional early discharge of a patient without the complete arrangements that the existence of such a scheme implies.

The patients ideally suited for early discharge are those multiparae whose past history necessitates hospital delivery for fear of a possible recurrence of their previous complication. To this main group might be added those normal multiparae who are apprehensive about home confinements. The selection of these cases can be largely done in the antenatal period. And, though the final decision is not made in the Bradford scheme until after delivery, it would seem advisable that, whenever possible, the mother should be informed of this probability early in pregnancy so that she can make the necessary arrangements for additional help at home in good time.

The success and safety of early discharge depend on close liaison between hospital, district midwife, and general practitioner. It is essential for the hospital to notify both of them by telephone on the same day as the patient is discharged, giving such information as may be needed. The district midwife is an essential part of the scheme; indeed, without her active support it will not succeed. In future it may be found helpful for arrangements to be made to allow either the domiciliary midwife to come into hospital to deliver

4 Report Committee on Industrial Health in Factories, 1941. British Medical Association.
her patients or the hospital midwife to undertake the home visiting of them after discharge.

From the Bradford reports it can be seen that the final decision to permit a mother and baby home after 48 hours must be made by someone of at least registrar status. It would also be of considerable value if the general practitioner and district midwife in charge of such a case could freely obtain an opinion by domiciliary consultation from either the hospital obstetric or paediatric department on any puerperal or neonatal complication before readmission of the woman after she has returned home.

When early discharge was discussed in these columns three years ago\(^1\) the conclusion was drawn that, though it might be suitable in emergency conditions, it had little part in long-term planning. That reflected an opinion then prevalent and previously advanced by the Royal College of Obstetricians and Gynaecologists.\(^4\) But it may well need revision. G. D. Pinker and A. C. Fraser reported after a trial over three years at St. Mary's Hospital that the scheme was "safe and desirable" for both mother and baby and recommended that the voluntary early discharge of selected patients should be an accepted part of the maternity services. Advice on the planning of arrangements has been given by the Ministry of Health.\(^8\) Now the two reports from Bradford indicate that it would be reasonable to explore the whole question further.

**Activation Analysis**

Radioactive isotopes have contributed to many advances in clinical science, especially during the last 20 years, when ample supplies have been available as by-products of the atomic energy programme. The complementary technique of activation analysis offers some distinctive advantages which deserve closer study.

The basis of this technique is that most elements are partially converted to radioactive isotopes on exposure to neutrons—for example, inside a nuclear reactor. The induced radioactivity is highly specific for the elements contributing to it. It is therefore possible to identify and estimate many of the elements present in a sample by studying the radioactivity induced by a short spell inside a nuclear reactor. This apparently roundabout procedure is, for many elements, the most sensitive method of analysis now available. Recently the use of this technique in the identification of human hair was discussed in these columns.\(^1\)

The uses of activation analysis in clinical science are more often commended than practised, but useful progress was reviewed and discussed at the symposium on Nuclear Activation Techniques in the Life Sciences held in Amsterdam from 8 to 12 May under the auspices of the International Atomic Energy Agency. Several research projects are at present concerned with the elemental analysis of various body constituents in the hope of correlating pathological signs with abnormalities in the metabolism of minor elements not normally within the purview of the biochemist.

A typical inquiry entailed the estimation of seven trace elements in blood from normal persons and from patients with chronic uraemia. Levels of arsenic in the blood were on average three times higher in the uraemic patients. A suggestion that the apparent retention of arsenic may contribute to toxic manifestations of uraemia can hardly be supported, partly because the quantities are so small (about 5 \(\mu\)g. of arsenic per litre of blood) and also because no correlation has been found between arsenic level in the blood and degree of renal insufficiency as indicated by blood creatinine measurements. But speculative inquiries of this kind are worth while because they may sometimes provide the first clue to the solution of an intractable problem. Information of a more immediately useful kind can be expected from using activation analysis in problems where the underlying biochemical and physiological considerations are better understood.

Thyroid metabolism, much studied by radioactive isotopes, offers interesting problems for attack by activation analysis. Semi-automatic methods for the routine determination of protein-bound stable iodine have been elaborated, notably in France,\(^7\) where the establishment of a laboratory to carry out such tests on a commercial basis is now being considered. The basis of the estimation is the partial conversion, under bombardment by thermal neutrons, of stable iodine-127 to the radioactive isotope iodine-128, which has a half-life of 25 minutes. Chemical manipulation is necessary to remove radioactive isotopes of sodium and other elements formed in abundance along with the iodine-128.

New prospects have resulted from the development (also in France) of techniques using iodine-129. This isotope has a very long half-life (\(1.6 \times 10^7\) years) and a number of other properties particularly useful for clinical applications. The gamma-radiation which it emits is of very low energy and gives a correspondingly small radiation dose to the patient, but can be detected in the thyroid gland by an external scintillation counter. It would be possible, by daily administration of small doses of iodine-129 to a patient, to attain isotopic equilibrium. When this state has been reached, the ratio of the concentration of iodine-129 to iodine-127 is the same throughout the body. Isotopic equilibrium cannot be reached with iodine-125 or iodine-131 because of the heavy dose of radiation which the patient would incur. With iodine-129 the total dose over a period of a year in isotopic equilibrium would be very much less than that incurred in a single tracer test with iodine-131, but the amount of information to be obtained by radioactive assay of blood, urine, and the thyroid itself would be substantially greater. The usefulness of this isotope is further enhanced by the fact that, on exposure to irradiation by thermal neutrons, it is partly converted to another radioactive isotope, iodine-130 (and its isomeric form, iodine-130m) allowing detection at excellent sensitivity by activation analysis.

The technique of activation analysis in vivo, first reported on by J. Anderson and others\(^9\) in 1964, offers the possibility of direct measurement of the total stable iodine content of the thyroid. In principle, the stable iodine-127 in the thyroid can be activated by neutron bombardment to yield radioactive iodine-128, which can be measured by external counting. In practice this simple technique cannot give accurate results, mainly because of the impossibility of achieving uniform irradiation of the thyroid gland by neutrons. A technique entailing prior administration of iodine-129, followed by neutron irradiation of the thyroid and simultaneous estimation (by external scintillation counting) of iodine-128, 130, and 130m, provides an accurate estimate of thyroid iodine in the sheep and may soon be applicable to man.\(^9\)

1. **Br. med. J.,** 1967, 2, 584.