Middle Articles

Use of Radio Communication in General Practice

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General practitioners spend much of their day away from their telephone. Especially when rota systems are in operation, a doctor may spend most of his time visiting, and be responsible for the care of some thousands of patients. Rapid communication with his wife or his secretary is desirable, and the only efficient means is the radiotelephone.

Radiotelephones have been used by general practitioners successfully for over 15 years. Individual systems have been described by Hodgkin (1954) and by Hart *et al.* (1961), and, with the help of the Practice Organization Committee of the College of General Practitioners, I have recently studied over 30 practices in which radio is employed. Urban, semirural, and rural practitioners all said that by its use they saved time and mileage, and that immediate contact with their base allowed them to delegate ambulance arrangements and other tasks that would otherwise have delayed their rounds. They were spared the annoyance of finding late but urgent calls when they returned for their meals, and emergencies could be seen rapidly.

Only a few doctors felt that their availability was abused, and the majority were going to replace their equipment if it became necessary. In some practices radio made the difference between order and chaos.

Organization of Systems

A base station either at the doctor's home or at his surgery is manned by his wife or receptionist. The set is the size of a small suitcase and plugs into the mains, feeding a small aerial on an alloy mast such as is used for television. A small microphone with a "press to talk" button transmits messages, and incoming calls are heard clearly on a loudspeaker.

Connexion with the telephone system is forbidden, and calls are filtered by the operator, who passes on those the doctor may require. Such messages will be heard in any vehicle with a set on that frequency, which will be one of the "Ambulance and Medical" channels reserved for professional use. The doctor can call in at any time and will be heard only by the base, as the fixed and mobile sets transmit on slightly different frequencies. A doctor will find others on his frequency if he tries his set in different parts of the country; but troubles seldom arise, as there is seldom another system within 30 miles (48 km.).

The doctor is usually equipped with a mobile set mounted in his car and running from the battery. Current consumption is low, and some sets can be moved from one vehicle to another if aerial and battery leads have already been installed. In my own practice I am experimenting with "personal" sets which are carried on a belt or a shoulder-strap. These weigh from 2 to 4 lb. (0.9 to 1.8 kg.) and use dry batteries or rechargeable accumulators. In spite of their low power, two-way communi-

cation is good even within buildings. In a geographically suitable practice I believe this to be the equipment of choice.

Problems Encountered by Users

Cost of Equipment.—Although the cost can be claimed as a practice expense for tax purposes, expense is probably the major deterrent to the increased use of mobile radio. Most doctors purchase equipment outright, for while rental agreements are available they are for a minimum of five years. Maintenance is included, but the annual rental is about 40% of the cash price, and the life of equipment is probably at least 8 to 10 years. Prices vary between manufacturers, but a base station will cost between £150 and £250, depending on its power and facilities—for example, remote control—and car sets will vary from £125 to £185. Personal lightweight sets may cost from £90 to £200. Installation will cost at least £6 for a car set and £25 for a base, and licensing will be £3 for each of the first two sets and £2 per set thereafter.

Interference.—Interference from other radiotelephone systems is seldom serious, though it was reported by a third of the doctors approached. Thirteen practices, however, reported the interception of messages on domestic television and radio-sets. In some cases the problem had been solved by the Post Office, and in others it was due to the use of obsolete equipment. It is now usual for the Post Office to allocate a "high-band" channel, and the high band appears less prone to interception than the low-band frequencies. Some doctors habitually use code phrases to ensure privacy.

Staffing Problems.—It is seldom practicable to staff a base station continuously. When a surgery is apart from the doctor's home a transmitter installed there may be unattended at night, and if it is placed at home the additional tie may be resented by the wife. One practice issues a supplementary set to the wife of the duty doctor so that she can maintain contact. The portable sets in the home and in the car can contact each other via the unattended base station at the surgery—a talk-through system. Another practice, providing casualty cover for a local hospital, has installed the base station there. Most systems compromise, maintaining useful but not continuous cover.

Reception Problems.—Range and reception are largely determined by the site of the base station, the height of its aerial, and the type of country served. Range is reduced among hills, and reception is poor when the car is shielded by buildings, as in a town, when at extreme range. The capabilities of equipment may be demonstrated before an order is placed, and manufacturers should be able to give an accurate idea of the range to be expected. With car mobile sets a 5-mile (8-km.) radius should be adequately covered under almost any circumstances, and 12 out of 30 practices approached had a reliable range of more than 10 miles (16 km.). Most British practices can therefore be covered completely. Lightweight sets will transmit for about half these distances, but reception may be

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possible at greater range. In my own practice lightweight sets will function in buildings for up to 3 miles (4.8 km.) and in the open air for up to 5 miles (8 km.).

Servicing.—An adequate service network is essential, particularly in the early months. Most doctors have had no real difficulties, but those in isolated areas may find servicing a problem. Manufacturers quote a fault rate of one a year for a modern transistorized set, but the older valve equipment was less reliable. Progress in design continues to be made.

Planning and Installation of Systems

There is no substitute for adequate initial planning, and a useful guide is published by the Institute of Office Management. A doctor or a partnership should consider the ways in which radio could be integrated into the pattern of the practice, and only then should an approach be made to manufacturers. Technical representatives may be able to demonstrate the range obtainable, may suggest helpful modifications, and will be able to supply detailed information and estimates of the cost, but the basic organization of the system must be determined by the features of the practice.

When details have been agreed an application is submitted to the Radio Services Department of the Post Office for a channel allocation. It is usual to do this through the manufacturer, as details of the equipment to be installed will be required. When the frequency has been allocated the equipment

may be ordered and installed, the entire procedure probably taking about three months.

Summary

The majority of radiotelephone systems in use by general practitioners give helpful and reliable service. Most doctors would wish for cheaper equipment, but few have regretted their purchase. Problems occasionally arise, but are seldom insuperable if the advance planning has been adequate. Progress in the design of lightweight equipment may make the lightweight set the equipment of choice in future.

I would like to thank the Practice Organization Committee of the College of General Practitioners, and all those doctors who supplied me with detailed information about their systems. Dr. J. E. Struthers, of the Ministry of Health, and Mr. D. R. Golding, Statistical Officer of the Oxford Regional Hospital Board, gave me valuable advice. Technical assistance and information of great help was provided by Pye Telecommunications Ltd., Motorola, Cossor, Storno-Southern, and Ultra.

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NEW APPLIANCES

Transvaginal Pudendal Block

Dr. J. H. N. FERRIS, senior tutor, Jubilee Obstetric Unit, Belfast City Hospital, writes: In recent years there has been considerable controversy over the best methods of anaesthesia for low-forceps deliveries by general practitioners. The main criticism of pudendal block appeared to be the difficulty in unpractised hands in directing the needle accurately to the ischial spines. By using the transvaginal route this difficulty can be overcome. Provided the ischial spines can be palpated an accurate pudendal block can be easily achieved with the minimum of handling

and a reduction in the amount of local anaesthetic.

The great interest shown by general practitioners on refresher courses in the method, and the inquiries concerning the availability of the guide (Fig. 1), prompted this description of the technique of its use.

The pudendal-nerve-block guide is clipped on the lateral aspect of the left index finger and steadied with the thumb (Fig. 2). The tip of the finger is inserted in the vagina and is first placed on the left ischial spine. The distal end of the guide will then lie

inferolateral to the spine. Injection at this point will block the nerve as it rounds the spine. After withdrawal of the needle by pronating the hand and forearm, the finger can now be placed on the right ischial spine, the guide again pointing accurately to the inferolateral aspect of the spine. Five millilitres of 0.5% Xylocaine (lignocaine) is injected at each spine and 10 ml. in the labial and perineal region.

The rounded tip of the guide prevents catching and tearing of the vaginal mucosa. The split ring allows for adjustment to fit any size of finger. The needle (Luer fitting) is $\frac{1}{4}$ in. (1.3 cm.) longer than the guide, thus making it impossible to advance it too far.

The needle and guide are available from Chas. F. Thackray Ltd., Leeds, price £2 2s.

FIG. 1.

FIG. 2.