

A Community Medical Service Using Two-Way Radio

MAKING A LITTLE DOCTOR GO A LONG WAY

C. W. ALLWOOD

SUMMARY

Experience over a period of 3½ years shows that two-way radio, and good co-operation with nursing staff, can alleviate a shortage of doctors and make a basic community medical service possible in an outlying area.

S. Afr. Med. J., 48, 1957 (1974).

Having just appointed a second doctor to the Manguzi Methodist Hospital, it would seem appropriate to record what has been achieved thus far in a one-doctor hospital using modern communication techniques to extend medical cover.

GEOGRAPHY

Manguzi Methodist Hospital is situated at Maputa in north-eastern Natal, South Africa—10 km from the Mozambique border. The hospital serves an estimated population of 30 000 Zulu and Tonga people scattered over an area of approximately 1 900 km.² Communication has always been a problem and even today roads and telephones are poor and unpredictable. The country is generally flat; low-rolling sand hills vegetated by coastal bush and grassland.

THE HOSPITAL WORK

The 148-bed hospital has, until now, provided a medical service with one doctor, a matron and 4 nursing sisters, adequate nursing staff, administrative and maintenance departments. There is a small X-ray unit and laboratory. The hospital is able to cope with most medical problems, major surgery being done under spinal anaesthesia or neuroleptanalgesia with local anaesthetic.

Approximately 50 patients per year had to be referred to other hospitals. The nearest referral centre is Empangeni Hospital, 288 km south. Cases which were referred included those needing more accurate diagnosis, sophisticated laboratory investigations, major elective surgery and those with orthopaedic problems. Others included cardiothoracic, radiotherapy, ophthalmology and neurosurgery cases which

have to go to Durban. Patients tend to resist being referred to other centres.

Table I shows the workload of the hospital for the 12-month period from April 1972 to March 1973. The hospital provides training for staff-nurses and midwives, and a doctor must participate in this programme. The doctor, as medical superintendent, also has a considerable administrative responsibility.

TABLE I. HOSPITAL STATISTICS FROM APRIL 1972 TO MARCH 1973

Total hospital beds	148
Total inpatient days	48 868
Outpatients at hospital	14 559
Outpatients at clinics	13 450
Total admissions	1 912
Patients referred to other units	23
Operations—minor (including tooth extractions)	635
—major	54
X-ray films	1 667
Laboratory investigations	5 144
Maternity deliveries	298

DISTRICT WORK

Public transport facilities are very poor and people have difficulty getting to hospital. Some have to walk 30 km to catch an erratic thrice-weekly bus. The greater part of the area has no bus service at all and most roads are sandy tracks.

To provide a more comprehensive medical service, the hospital runs a chain of 10 clinics in the area. Hospital staff go out 3 days a week to suitably-spaced stopping-places—some weekly, some fortnightly. The clinics involve health education, medical follow-up, inoculations, antenatal and postnatal care, treatment of minor ailments, and a means of transport to and from hospital for sicker patients. The clinics are so located that few people have to walk more than 8 km in order to get medical assistance and follow-up treatment. (It must be admitted that this system caters for chronic rather than acute medical problems.)

For supervision and medical care, the aim was for the doctor to do a third to a half of all clinics, alternating with a nursing sister.

Manguzi Methodist Hospital, Maputa, KwaZulu

C. W. ALLWOOD, B.A., M.B. CH.B.

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THE PROBLEM

In instituting this type of comprehensive service, it was clear that the doctor had periodically to attend clinics as well as provide continued medical cover for the patients at the hospital. The distance from the furthest clinic could be travelled in 1½ - 2 hours in an emergency. The problem was the provision of an adequate practical communications system.

SOLUTIONS

Two-Way Radio

At a cost of R2 700 in 1970, a VHF radio system consisting of three 20-watt radio sets, capable of transmitting and receiving, was installed. One set was a base station, one was installed in the clinic vehicle-cum-ambulance and one was portable, with its own chargeable battery, which could be used as a spare or in any other hospital vehicle. A 30-m mast was erected at the hospital. The range of the system is limited almost to the line of sight but extends 40-60 km in this fairly flat country.

Expanding the Duties of Nursing Sisters

Having an experienced person trained in eliciting physical signs and in assessing the general condition of a patient, is as important as the actual means of communication. The nursing sisters soon became adept at presenting cases over the radio to the doctor and at instituting emergency therapy (including the setting up of intravenous infusions in adults and children).

RESULTS

After 3½ years, it can be stated that the radio system has proved itself to be an essential part of this kind of

medical service—a great help in medical and administrative problems. Neighbouring hospitals were convinced of its value and, in 1971, Bethesda Methodist Hospital (112 km south-west on the Ubombo mountains—altitude 500 m) and Mseleni Mission Hospital (56 km south on the plain) also installed similar radio systems on our wavelength.

This has greatly expanded the usefulness and range of our own system. The expanded system now covers an irregular area approximately 250 × 150 km, and anyone within this area can communicate with home-base directly or through one of the other hospitals. (By special concession, the Post Office allows communication between these hospitals because of the poor telephone system.)

The enlarged system permits doctors to cover for one another over short periods. The radios are so arranged that all 3 hospitals are on 24-hour radio standby, and doctors can be called or consulted at any time.

For more than 2 years, we have had weekly journal and clinical discussions over the radio. For long periods, this was the only professional contact for some. Although not replacing first-hand consultation, the radio discussions have been invaluable as a source of stimulation and in preventing professional loneliness and subsequent blunting of clinical acumen.

CONCLUSION

Two-way radio in the practice of medicine has been used for a long time in many ways, and it is the answer to many different problems. In our type of medical service, it must be emphasised that no communication system is sufficient in itself; its success depends as much on the co-operation, communication and mutual trust between the overlapping nursing and medical professions. Our experience provides some answers to the existing critical shortage of medical manpower in providing a comprehensive community service.

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