offered modern medical services for their employees and families. The factory would provide an empty space that the hospital would equip and convert into an occupational health clinic. The hospital was then responsible for providing a doctor and a nurse who could give first aid treatment to the employees. All laboratory tests were completed at the Kimbanguist Hospital, and workers and their families were admitted there when necessary.

What made it possible to complete the hospital's construction and get it working in such a short time was the collaboration of local and international organisations and in particular the enthusiasm and commitment of the volunteers. Each day during construction a hot meal was provided to the volunteers.

Because there was no budget for this, Kimbanguist women from Kinshasa came to the hospital in groups with all the materials necessary to make these meals. The church people also volunteered their vehicles to transport hundreds of workers to and from the construction site. The enthusiasm was also enhanced by Son Eminence Dianganda Kontima, the spiritual father of the church, who would arrive at the construction site several times a week, both during the day and at night. His presence attracted additional volunteers, and at times there were more than 1500 volunteers on the site. The entire construction was completed manually—in song and in happiness.

We thank J Allhole for her help and advice.

Medicine in the outback

Bernhard Ostberg

The advertisement

A notice appeared in the *Australian* in May 1988. Medical Officer required for an independent aboriginal controlled Health Service based at Walungurru 520 km west north west of Alice Springs. It cares for approximately 600 Pintupi people over a vast area encompassing the community of Kiwirrkurra in Western Australia and also numerous outstations in both the Northern Territory and Western Australia. The Pintupi Homelands Health Service employs six health workers, a traditional healer, two sisters, and a doctor. Policy decisions are made by the Health Committee in consultation with staff and administration.

The community—English is a second language. Alcohol is rigidly banned. There is a bilingual school. There is a store and a Lutheran church. A mail plane arrives every Wednesday and Friday. Communication is by radio telephone. Health staff accommodation is basic, being demountables with air conditioning, cooking facilities, toilet, and shower.

Qualifications—Work experience in remote, preferably Aboriginal, communities and also primary care. A commitment to work under Aboriginal control. A willingness to undertake work which is challenging, wide ranging, and hard in a beautiful, isolated area of the western desert.

The arrival

Some correspondence and a few difficult radio telephone conversations later my wife and I were flying along the Macdonnell Ranges, past Papunya and Ilpilla, the site of Lasseter's base camp, and on to Kintore. The small aircraft finally landed on a dusty ochre-red airstrip in the western desert, where we were met by a sister, Dr George, a small group of Aborigines, and a large pack of dogs. Among the group I saw a young Aboriginal woman with a papilloma the size of a cherry in her lip, and I wondered why it hadn't been removed. It was in fact a plug of tobacco, which it was common practice for the Aborigines to chew and then to store by holding it in the corner of their mouths. The tobacco is mixed with the ash of a particular shrub, and a white person who used the mixture said that it had properties resembling those of marijuana.

Dr George, the Ngunkara or native healer, was a stocky Aboriginal with a short black beard and was dressed in only a red singlet and navy shorts. After the radiator in the old Toyota had been refilled with water we left for the settlement of small concrete houses and tin humpies that were settled among years of accumulated rubbish. My wife and the large amount of

luggage, books, and medical equipment were left at a very dirty, very untidy, and very small demountable that was to be our home, while we drove on to the clinic.

The clinic was another demountable with a large goanna painted on its side—the work of a locally famous Walungurru artist. Inside was chaos: the passage and small surgery were crammed with patients, children were running crazily around, one child was spinning in the doctor's dilapidated revolving chair, and music was blaring from the radio communication set. Sister began examining patients, dispensing medicine, and syringing ears. Dr George, who had remained behind in the passage, appeared with a kidney dish of blood to be emptied in the wash basin. I looked inquiringly at the sister but her only response was to ask me to see a sick baby in the waiting room. The baby had pneumonia so I ordered penicillin and asked about the patient who had vomited blood. Sister said that Dr George had sucked the blood therapeutically from the baby I had just examined. Incredulous, I returned to the waiting room and re-examined the baby but could find no break in its skin. This was my introduction to three very unusual months of medicine. The doctor, whom I was relieving, had been 20 months in the community and was devoted to the Aborigines despite having been beaten on several occasions for standing his ground. The sister finished her term shortly after I arrived, but fortunately two adventurous and dedicated sisters with whom I had previously worked came to the rescue.

Chlamydial infection

During the second week it occurred to me that the unusual prevalence of upper respiratory infection might be due to the same organism that causes endemic trachoma—that is, *Chlamydia trachomatis*. Nasal infection is probably primary with later spread to the eyes, ears, and bronchi. Should the primary infection occur in the eyes then the nasolacrimal duct would give the organism easy access to the respiratory tract.

My interest in chlamydia prompted me to look among the books on the shelves of the clinic, where I was surprised to find some relevant texts. The Royal College of Ophthalmologists' report *National Trachoma and Eye Health Programme* states: "The findings showed, in short, a marked relationship between the presence of respiratory disease, as conservatively defined, and such conditions as otitis media and nasal discharge, as well as follicular trachoma." In the

Pseudopapilloma of lip

Aboriginal Health Bulletin of August 1987 Dawson *et al* reported that, of 131 Aboriginal children with chronic otitis media, they had isolated chlamydia from only two but thought that the problems with collecting and transporting the specimens probably resulted in underestimation of the infection rate.² Edward J Beck's book *The Enigma of Aboriginal Health* stated that "the isolation of *Chlamydia trachomatis* from children with a distinct pneumonia syndrome and its known association with enteric infection raises the issue of whether the inclusion conjunctivitis caused by the organism occurs in isolation or whether it is part of a more general infection."³

These few references confirmed that the role of chlamydia as a cause of upper and lower respiratory infection had long been suspected. *C psittaci* has long been incriminated as a causal agent of eye and genital infection in koala bears; an interesting speculation is that other marsupials, reptiles, or birds that form part of the Aboriginal diet in remote areas are a reservoir of *C trachomatis* and thus might be the source of infection. It is not known whether the prevalence of respiratory infection antedates European settlement in Australia.

Aboriginal diseases

Pneumonia in babies and young children is the most serious medical problem in Aboriginal communities, the incidence being 80 times that in white Australian children. The good response of pneumonia to penicillin in Aboriginal children, however, suggests that chlamydia is usually not the primary organism but with its affinity for mucous secreting cells could be responsible in many cases for an antecedent bronchitis which, in the narrow bronchi of small children, results in atelectasis and secondary pneumonia due to more common pathogens. Bronchitis and bronchiolitis were also common, and fine crackles and wheezes could commonly be heard in children who seemed otherwise well. In this community pneumonia that was life threatening or unresponsive to treatment accounted for most of the urgent transfers to the Alice Springs Hospital by the Royal Flying Doctor Service.

Chronic rhinitis, as evidenced by a whitish mucoid discharge between the nose and upper lip, was nearly universal among the children, and chronic otitis media with a mucoid discharge was extremely common. At the outstation Kiwirrkurra, where I examined 19 schoolchildren, I found only one normal tympanic membrane; perforations with or without a mucoid discharge, catarrhal otitis media, and scarring com-

prised the condition of the remainder. Trachoma, however, was well controlled by a five day course of tetracycline drops given monthly at the school.

There was a high incidence of gastroenteritis, failure to thrive, scabies, impetigo, and trauma. Failure to thrive, frequently associated with diarrhoea, was a serious problem and, though it affected small babies, was most common after weaning. It had been attributed to poor feeding practices but often seemed to be secondary to chronic nose, ear, and chest infections, interfering with appetite and health. Scabies was a common complaint and was often accompanied by impetigo; as well as infections with *Sarcoptes scabiei* those with the dog mange mite were frequently seen presenting as vesicular lesions on the legs of small children who had slept with their dogs. No burrows were found as the mite probably died soon after penetrating the hostile environment of an unfamiliar host.

The incidence of syphilis was high; some communities report that slightly less than 60% of males and slightly more than half of females have serological evidence of past infection and that a tenth of the male population aged between 15 and 25 had active infection. In this community I saw only one young man with granuloma inguinale, who presented with multiple moist velvety papules, one to two centimetres in size, in his natal cleft. On examination I was surprised to find that he had a very angry looking hypospadias extending nearly the full length of his penis. The next day I saw another man with identical hypospadias and realised that this was a subincision, the result of an initiation practice which I thought had been abandoned. Circumcision is also practised as an early initiation rite and when done with primitive implements and lack of asperis may often leave scarring, leading to paraphimosis in later life. This subincision, which relieves paraphimosis, may have developed as a ritual and prophylactic measure, especially if paraphimosis was fairly common after circumcision. This hypothesis might explain the origin of a most unusual and mutilating procedure, which to my knowledge is only practised by Australian Aborigines.

Alcoholism was rare as alcohol had been banned in this community and the penalty for introducing it into the homelands was burning the offender's car. Other offences were punished with a spear through the thigh. Alcoholism with its associated violence, trauma, and ill health is a major problem in uncontrolled communities. Petrol sniffing among the young children was a minor problem. It did lead, however, to my good friend Dr George being run down by his own old Toyota when it was stolen by three crazed sniffers. He recovered physically but lost considerable prestige as it was commonly believed that if the necessity arose he could fly. Another time a confused young sniffer drove into and wrecked the pumping station at Kiwirrkurra and then felled the radio tower, leaving the outstation with neither water nor communication. He then got a gun and while hunting for a victim was finally captured and beaten into submission with a shovel.

Midwifery taboo

Male doctors were by custom excluded from dealing with "women's business" so that all gynaecological examinations and obstetrics were carried out by the female staff; confinements were managed by the sisters. For a while we had no qualified female staff but were fortunately able to transfer all our confinements to Alice Springs. One of our patients absconded from hospital on the second postnatal day carrying her intravenous drip with her. She was readmitted some days later semimoribund; a week later she arrived back at Kintore alive and well with a healthy baby.

Poor housing, dust and dogs

A constant problem was the difficulty in educating the Aboriginal health workers, who suffered from the all pervasive "too tired syndrome," who left without notice to live in other communities, or who went absent without leave for long periods. With our own two male health workers, however, we had a friendly and cooperative relationship. The patients also tried our patience by their non-compliance. This meant that treatment had to be 12 hourly, patients returning each day for their two doses. Sometimes at the end of the day the noticeboard listing patients due for treatment would be free of any attendance ticks. The health Toyota would then be driven around the small community of houses and humpies to collect the defaulting mothers and children, at times the mothers refusing to leave a squatting circle of gambling card players. A typical example was a child with severe pneumonia and status epilepticus who failed to return, as did a child with an unexplained fever who developed meningitis. Non-compliance was probably due to a combination of ignorance, the too tired syndrome, and a persisting faith in the native healer.

Dr George, Ngunkara number one, as he modestly introduces himself, was, however, aware of his limitations. After his ministrations of massage, incantations, thumping, splinter removal, or blood sucking he was anxious for further treatment by the more conventional medical staff. We developed a close friendship with him. He would visit at least once a day, often accompanied by family or friends, for a cup of tea or coffee. This was a ceremony of some delicacy as his drink had to be at exactly the right temperature or he would spit it on to the floor; if it was too hot it would remove his special powers, a belief that we found was generally held among native healers.

Problems in miniature

The community provided in miniature a picture of the problems present in the larger scene. The money allocated was badly handled; the houses provided were mostly used for storage while living, sleeping, and cooking were done outside; the sewage cisterns were clogged by stones; the taps from the bore water supply were left running; the rubbish was left strewn about; and the medical Toyotas were driven to sports meetings and damaged on hunting trips. The community adviser who was brave enough to suggest that everyone should join a scheme requiring some work to be done before they were entitled to unemployment benefits had spears thrown at him by an enraged Aborigine, and his temporary position as community adviser was not confirmed. The permissive attitude to children

accounted for part of the chaos in the settlement and probably contributes to the problems the children have in their adult lives. It also accounted for the children's poor attendance at school.

There are many other complex reasons for the problems of Aborigines. Only recently have many in this community abandoned their nomadic life, to which they had successfully adapted over thousands of years. The lifestyle to which they were now learning to adjust has different laws, language, customs, social structure, and religion. Added to this is their exposure for the first time to drugs and alcohol of a mechanised and electronic era. This is not a lifestyle they would voluntarily have chosen. The decisions to be made, however, must largely be their responsibility and the choices their choices. Our responsibility is to help and to be patient. Their successful adaptation can be expected only with the passage of time.

Some time has passed since this report was written, and we have since done another short locum in the community. The previous doctor had just finished three years of dedicated service. This time our accommodation was a fresh and clean demountable with a large creeper covered shade house attached. The surrounding rubbish was unchanged, an equilibrium had been established between the desert winds and the litter. We had only settled in when we were asked to go to another small community 200 km further into the western desert where a ceremonial gathering of Aborigines was being held. Groups had come from hundreds of kilometres for a ceremony of initiation and punishment. During the ceremonies a young man who had bled for four days from his subincision had been evacuated by air. He was in extremis and needed 10 units of blood before he recovered. I was to be on hand in case there were further problems.

As we approached the community our driver made radio contact and after an exchange of Pintupi, of which we could understand only "Yuwa yuwa, white fella white fella," we bumped roughly overland the last kilometres to avoid contact with the ceremonial area. White men are not allowed to witness the ceremonies, and all women are excluded. It is rumoured that some time ago a white doctor who had tried to record the proceedings was caught and subincised as punishment. Surprisingly, there were no further medical problems at the initiations, and we had the pleasure of meeting again Dr George, who was the official Ngunkari at the ceremonies. When we met he was still covered with white paint and red ochre, and after our affectionate hugs so was I.

A community meeting was held after the initiations. People squatted in a large circle; women and infants in a separate group; the speakers in the middle; and the children, who had at times to be quietened, played ball nearby. A partly naked old man and his dog lounged slightly apart enjoying the morning sun. A microphone was passed around as people sometimes rather self-consciously voiced their opinion. A wide range of problems was discussed including alcohol, the staffing of the new clinic, and the possible approval of an application by Western Mining Corporation for permission to explore for minerals. The meeting included several white community advisers and even a west Australian politician who, among others, had flown in.

Back in Walungurru the white man's world had made further inevitable invasions. There was now television by satellite and FM radio. Alcohol was being smuggled in more frequently, and the punishment for this was now only a fine. The result was more fighting, more knife and spear wounds, and more domestic violence.

The medical problems had not changed except that there were fewer cases of pneumonia, owing it seemed, to fewer children in the susceptible age group. Another

sadness was that Dr George had left. It was rumoured that he had given the "wrong medicine" and that he was going to a community further out into the desert, where his prestige was still strong. When we saw him leaving the initiations he was happily waving from the back of a crowded truck on his way to Jigalong, a four day drive away, and we wondered if he would ever come back.

Our return confirmed my earlier impressions. I found the Aborigines a gifted and lovable people who are making a brave attempt to adjust to our society. We must remember that we are asking them to achieve in 200 years a level of sophistication that has taken us

2000. Had I a wish to be granted it would be that they would suddenly develop the confidence to take the responsibility for their future into their own hands and that we would be given the patience necessary while they are developing; this will be an appreciably longer time than everyone expects.

- 1 Royal College of Ophthalmologists. *National trachoma and eye health programme*. Sydney: RCO, 1980.
- 2 Dawson VM, Coelen RJ, Murphy S, Graham D, Dyer H, Sunderman J. Microbiology of chronic otitis media with effusion among Australian Aboriginal children: role of Chlamydia trachomatis. *Aboriginal Health Bulletin* 1987;8:5.
- 3 Beck EJ. *The enigma of Aboriginal health*. Canberra: Australian Institution of Aboriginal Studies, 1985.

Health in rural south India: new approaches

Patricia Day Bidinger

"Health for all in the year 2000" is a phrase often repeated in medical circles. Countless participants at conferences have debated how to achieve this objective. One of the main problems has been how to translate this broad objective into programmes targeted at responding effectively to local health care needs. The Institute for Rural Health Studies in Hyderabad, south India, was established to carry out research on the nature and causes of rural health problems. Through its research on specific problems and their causes, as well as through its pilot programmes in health care delivery, the institute is turning the broad objective of health for all into specific recommendations for rural village health programmes and also for government policy makers.

The institute was founded in 1981 by two women scientists concerned about the lack of applied, interdisciplinary research in health and nutrition problems common in rural areas of the Indian state of Andhra Pradesh. Previous work in rural villages in the states of Maharashtra and Andhra Pradesh had indicated the complex and interdisciplinary nature of health and health related problems. Rural primary health centres were failing to provide even a minimal level of health care to anyone outside the immediate area of the centre itself. Centres were few and far between; the greater the distance from a city or town, the less likely was a primary health centre, and if one existed it was likely to lack a doctor or medical supplies, or both. Cold boxes

for vaccines were usually "warm boxes," and vaccinations never reached villages at any distance from towns; meanwhile, officials complained about the poor response to their vaccination programmes. Polio, diphtheria, and whooping cough were still common village ailments.

Apart from villagers themselves, few people seemed to know what specific problems faced rural villagers during the year. Few professionals had attempted to examine the relation between agriculture, economics, and health or realised that "health" problems might not be just medical problems. For example, the lack of transportation to a distant medical facility is an impediment to good health. Thus, the institute's early studies focused on agricultural and socioeconomic determinants of nutrition and health state, and later ones have been devoted to evaluating ways to improve health care delivery.

Seasonal fluctuations in food supplies

One of the institute's first major studies examined the relation of seasonal fluctuations in the production of food in a village to individual food consumption and health in families with young children.¹ Policy emphasised the need to target food at poorer villagers, especially children, during the "lean" seasons, but the research showed that food supplies were available throughout the year and that consumption of food was not seasonal. A small segment of villagers remained chronically underfed throughout the year, generally because of social causes—for example, a widow or elderly couple living alone with little support. The equalisation of food supplies could be traced to the availability of easy credit to farmers through the state bank's lending programme. Farmers had used the credit to augment irrigation (sinking new wells and deepening old ones), which enabled them to increase cropping intensity and led to more work, a greater demand for labour, and hence better conditions for labourers. Farmers expressed fears that they would be short of labour and began to offer labourers both higher wages and access to small loans, primarily paddy rice for consumption during the slack seasons. The result was a sharp decrease in the incidence of undernutrition among children and adults and no evidence of seasonal variation in either anthropometric indices or food consumption.

Presented with these unexpected results, bank officials said that it was the first piece of statistical evidence to show the impact of their credit programme on health and nutrition. That programme has now

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Data gathering—P Babu, the institute's research associate, visits villagers