

Oman: leaping across the centuries

Richard Smith

Before 1970 Oman, a country larger than Britain with a population of just over one million, had only eight kilometres of paved road and fewer than 100 doctors. The sultan ruled a feudal society unchanged for centuries until he was elbowed aside by his son, the present Sultan Qaboos bin Said. When the new sultan came to power he faced not only the task of guiding Oman into the twentieth century but also the problem of a war in Dhofar—the southern region that includes a monsoon-washed, green, coastal plain and the Empty Quarter, described by William Thesiger in *Arabian Sands*.

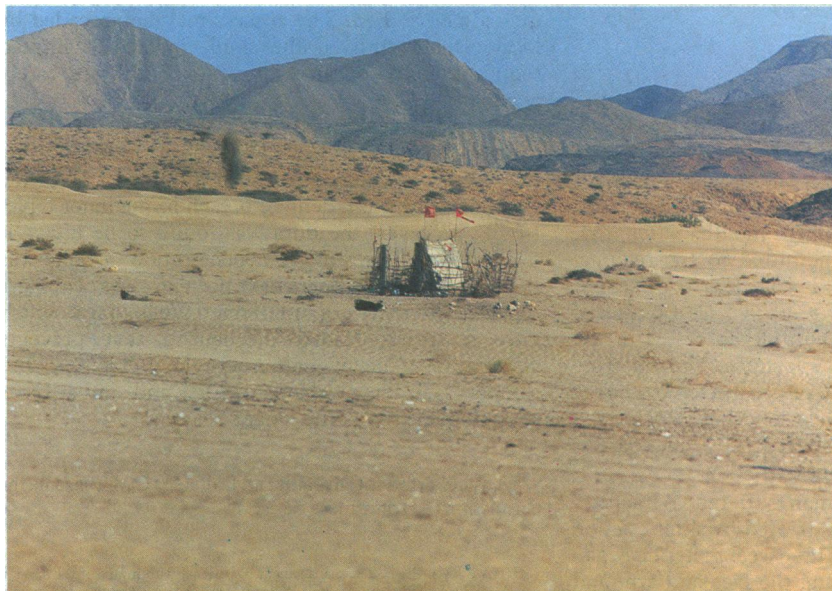
With little bloodshed Sultan Qaboos settled the rebellion, and with the help of money from oil he has brought the Omanis through developments that took a

thousand years in Europe in less than 20 years. He has given his people free health and education services, and, remarkably, he seems to have created this modern state without fracturing his people or destroying the extraordinary beauty of Oman.

The balance between development and tradition is first obvious to the visitor in the architecture—even the airport manages to be attractive, functional, and Islamic. And as I write I am looking towards the mountains across a new town that is obviously Arabian and looks as if it could have been there for 500 years.

A week in Oman, a hundred conversations, and a thousand handshakes gave me a chance to build on my first impressions and understand something about Oman in general and its health service in particular.

The leap over thousands of years: picture of Oman taken in identical spots in the 1970s and 1980s. (Taken by Bill Foxton and reproduced with his permission)



Life under the old sultan

Dr Dan Bosch is an American missionary doctor, who for most of the 34 years he has been in Oman was one of only three doctors. As there was no electricity before 1970 he and his family would live—like everybody else—by the hours of daylight. To avoid some of the rigours of the heat—45°C in the summer together with 80% humidity—they would sleep on the roof and rise at 6 am as the sun came up. He would do rounds of the 75 patient surgical hospital, the 15 patient leprosarium, and the 12 patient tuberculosis hospital and then breakfast at 8. From 8.30 he would see about 200 outpatients in four hours, some of whom had travelled for up to four days to reach the hospital. Almost everybody had trachoma, malaria, some intestinal infestation, and anaemia, in addition to the disease that brought them to the hospital; only those with the severest problems were admitted.

Dr Bosch took lunch from about 1 pm and afterwards rested until 3. Then he would operate until the sun went down and often afterwards by torchlight. Two patients would be in the operating theatre at once, and carefully trained assistants (some with only three years' primary school education) would prepare patients and sew up afterwards; a nurse would give the general anaesthetic. American nurses and midwives (sometimes only one) and one Indian woman doctor looked after the 75 bed maternity hospital.

In 1969 the three doctors saw 51 836 patients as outpatients, admitted 2566, and operated on 2385. In addition, 2326 babies were delivered. The mission ran up a deficit of 660 000 rupees (about £30 000), including 56 000 rupees (about £2800) that were paid to the sultan as duty on drugs and essential medical supplies.

When the new sultan took over and set about constructing a national health service Dr Bosch and the mission had to decide whether to go in with the new service. It eventually handed over hospitals and staff to the government and never regretted it. Dr Bosch became director of the surgical hospital and advised the government on its health programme.

In 1970 the government spent 534 282 riyals (about £700 000) on its health service and by the end of the year had 13 doctors and 12 hospital beds; by 1972 expenditure had increased to 4.43m riyals (about £6m), doctors to 63, and hospital beds to 526. The

latest figures—for 1986—show that expenditure has increased to 89·22m riyals (about £125m), doctors to 1096, and hospital beds to 3348.

Factors affecting health in Oman

Oman has many factors working in its favour as it struggles to improve the health of its people. Firstly, it is rich compared with most developing countries, but not as rich as some of the other Gulf states. Oil was discovered in 1964 and exports began in 1967. Production increased rapidly in the early 'seventies, when the price was high, and then fell until more oil was discovered in the south in the early 'eighties. But between November 1985 and July 1986 the price of a barrel of oil fell from \$27·35 to \$8·20. It has since risen to about \$16, but the income of Oman has been badly hit, causing the shelving of some projects included in the third national plan. The impact of the fall on national income is lessened as much of the country's infrastructure (schools, hospitals, roads, and so on) was already in place or near completion.

Partly because of its recent emergence from the middle ages and partly because of its wealth Oman has none of the urban or rural poverty associated with India or developing countries in Africa. There are no urban slums, and many people still live in remote villages or small towns or are nomadic in the interior. Malnutrition is rare, and there is no unemployment (although there is much underemployment). In addition, the huge expatriate workforces seen in the richer but smaller countries of the northern Gulf are not found in Oman.

Another factor favouring health is the system of government, which is best described as a benign dictatorship. The sultan rules through ministers, and

there are no elections. There is a consultative council but the counsellors are appointed. Government, however, seems to be by consensus: the government is not criticised in the press, and there are no unseemly confrontations. The sultan and his ministers (including the minister of health) spend three weeks twice a year travelling the country and holding meetings where anybody can approach them with a petition or request—a twentieth century royal progress. Such a system may seem intolerable to those used to parliamentary democracy, but it may be suited to Oman at this stage in its development: struggles for power and unstable government hinder development.

The sultan governs with style and has particular concerns about, for instance, architecture, the environment, and the handicapped; all Omani people have easy access to him and his ministers. Such access may be a more potent democratic force than a vote, though the well connected tend to do better.

Such a political system can work only with a small population, and Oman has a population of between 1·3 and 2·0 million. The government favours the higher figure because it is anxious to see a bigger population. The lack of good data on the population and its density makes health planning difficult. The government wants the population to increase, and family planning is not discussed, although it is available. Consequently, as infant mortality falls (from 130 in every 1000 live births to about 45) mothers with more than 10 children are becoming common. The population is thought to be increasing by about 3% a year.

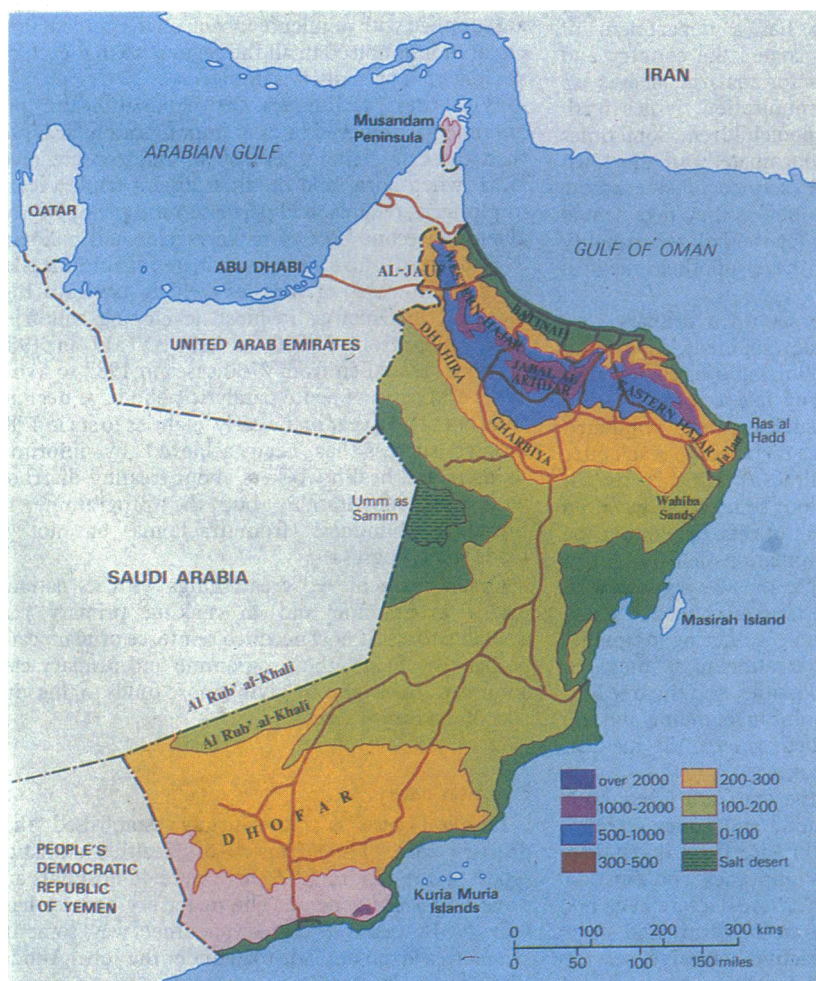
Another important factor in improving health is the nature of the people themselves. They are extremely hospitable and have a resilience (no doubt rooted in their religion and environment) that has allowed them to move through enormous cultural changes without seeming to be at all disturbed. As Thesiger wrote: "All that is best in the Arabs has come to them through the desert; their deep religious instinct, which has found expression in Islam; their sense of fellowship, which binds them as members of one faith; their pride of race; their generosity and sense of hospitality; their dignity and their regard which they have for the dignity of others as fellow human beings; their humour; their courage and patience; the language which they speak and their passionate love of poetry."

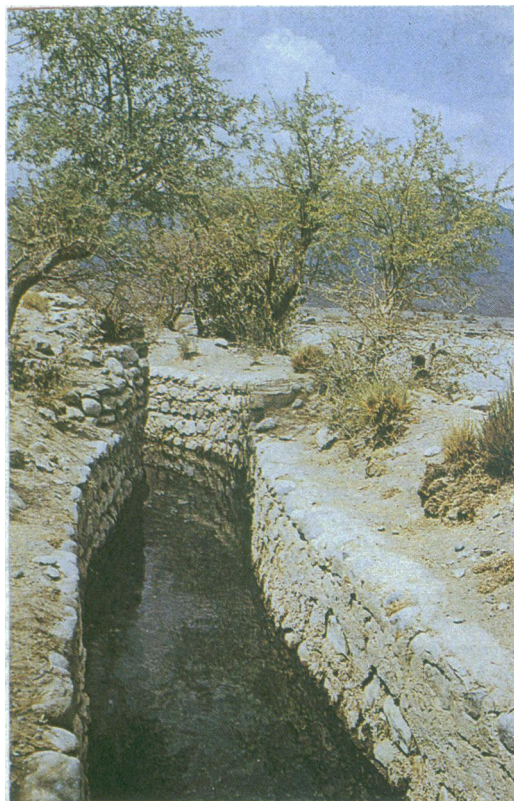
Some problems impede "health for all by the year 2000," a policy that Oman has enthusiastically adopted. An example is the supply of clean water. Water is a problem in a country that is mostly desert and where it may not rain (outside the monsoon area) for three years. The Capital Area has a desalination plant and clean water, but many places in the interior depend on water from the 800 year old falaj system (man made and often subterranean channels that lead water down from the mountains to the villages). Rural people get their water from falajs and wells, many of which are contaminated. They cannot just be closed because people depend on them. One doctor told me that water to one of the hospitals was contaminated but there was little they could do. The Omani government is tackling the problem rigorously through local agencies but has a long way to go before clean water and drainage are available to everybody in Oman.

Primary care

Oman is working hard to assemble the structure of its health service. The apex, the Royal Hospital, has been in place since November 1987. As in countries throughout the developing world where senior doctors (often imported from Britain) are asked to advise on setting up a health service the hospitals come first, curative medicine taking precedence over preventive medicine. This is often what the people themselves

Regions and heights above sea level (metres) in Oman. (From "Oman the Reborn Land" by F A Clements. London: Longman, 1980. We have been unable to trace the copyright holder)





A falaj, part of the ancient system that carries water from the mountains to the villages. (From "Oman the Reborn Land" by F A Clements. London: Longman, 1980. We have been unable to trace the copyright holder)

want, and Oman has made a better effort than many countries to proceed on all fronts at once.

The Ministry of Health has a department of preventive medicine, which covers the country and tests drinking water, sprays for malaria, chases up those who default from immunisation, issues birth certificates, and examines schoolchildren. Sometimes these efforts are not well coordinated. In the town of Rustaq, for instance, the service must examine 2500 children in the 15 days before they take school examinations; a few weeks later the half who qualify to go to university must have another medical examination.

The government has also set up a primary care service, but it needs further development. All around the country there are health clinics and small hospitals manned by doctors; everybody has access to such a clinic, although inevitably in such a sparsely populated country some must travel large distances to reach one.

One problem with these clinics is that they are not well matched to the population: some areas have too many, others too few. This is not easy to avoid in the absence of good data on population density, but a second problem is that people do not register with the clinics. They are free to go from clinic to clinic and from hospital to hospital, gathering opinions, investigations, records, and treatments as they go. Continuity of care is thus impossible, and the freedom to seek treatment anywhere inhibits planning and the rational use of resources. Furthermore, the medical records system in Oman is weak.

A third problem is that the staff are often both medically and socially isolated, and some are disenchanted. Most of the doctors are from the Indian subcontinent, Egypt, or the Philippines, and most do not speak Arabic. In addition, these doctors have not been given clear guidelines from the centre and sit in their clinics providing a reactive, curative service rather than taking initiatives in their communities.

Well trained medical auxiliaries might provide a better service.

This last problem (and along the way some of the others) has been tackled by the national health programme, which is directed by Dr Al Ghasani, director of preventive services, and managed by Shaun Brogan, a former officer in the Special Air Service who got to know Oman when he fought in the Dhofar war in the early 1970s. He has applied the drive and organisational skills of the army to tackling immunisation, diarrhoeal disease, tuberculosis, trachoma, acute respiratory infections, and other issues. The mother and child health programme is being coordinated by Shaun's wife, Dr Catherine Brogan, under the guidance of Dr Musallam El-Bualy, chief of child health services.

These programmes are being tackled through the health clinics and hospitals rather than through the public health division of the Ministry of Health. Targets are set, draft guidelines are written, and then workshops are held with representatives from all the regions, at which guidelines are finalised and people trained. Health workers then go back to their regions and train others. For immunisation they have been provided with specially designed records for each child, one being given to mothers to show when their children must be vaccinated. Ministry of Health employees are encouraged to emphasise to everyone the importance of vaccination. Health workers vaccinate children whenever they attend any Ministry of Health institution when an injection is due, and they send word to those who have not brought in their children. If people default health workers will visit them at home.

This system has been made to work by using both the stick and the carrot. Three supervising teams (of two men) cover the whole country, visiting all 175 institutions at least once every two months. Regions are supplied with regular feedback on the percentage of children immunised in all the regions so that each can see how well or badly it is doing.

With these techniques the national health programme has achieved rates of immunisation far higher than those in Britain: almost all children are given BCG (when born) and the first dose of triple vaccine (diphtheria, tetanus, and pertussis) and polio; 98% are given the second dose of triple vaccine and polio and 89% the third; and 85% are vaccinated against measles. As a result cases of measles (which carries a high mortality in Oman as in most developing countries) have fallen from 39 000 in 1981 to 317 in 1987; pertussis has fallen from 2700 cases in 1982 to five in 1987; and cases of acute paralytic polio have declined from about 40 a year in the early 'eighties to six in 1987. Similar success has been achieved by informing mothers and health workers about treating diarrhoea with oral rehydration, but the programme for preventing blindness (from trachoma) has not yet made such progress.

Oman has achieved great things with its national health programme and in making primary care available to all. It now needs to reinforce primary care, perhaps by fusing the programme and primary care administratively and by giving more funds to this vital part of the health service.

Hospital care

Hospital care is more firmly established than primary care. The Ministry of Health's statistical report shows that in 1986 there were 45 hospitals and three maternity centres. The maternity centres have four to 18 beds. I visited one that was some 10 kilometres up an unmade road under the Jebel Akhdar (the Green Mountains), staffed by one doctor, a

Filipino necessarily separated from her family; it delivers about 300 babies a year.

The hospitals ascend in size to regional hospitals, and I visited briefly the district general hospital at Rustaq. It is 15 years old, with about 80 beds, and is extremely busy. Patients sleep on beds in the corridors most nights, and the relatives who look after them sleep under the trees. The hospital has about 400 deliveries a month and yet had no obstetricians until recently (there are now two), whereas the maternity hospitals in the capital have a far higher ratio of obstetricians to deliveries.

The Capital Area has many hospitals, three of which are very modern. In addition to those run by the health service there is a brand new army hospital and a 60 bed police hospital that has its own computed tomographic scanner. The pinnacle is the new Royal Hospital, which cost 96m riyals (about £140m). It is by far and away the most beautiful hospital that I have ever seen. It has some 600 surgical, medical, paediatric, and obstetric beds, complete with intensive care units, laboratories, a radiology department that includes a computed tomographic scanner, and a mainframe computer. It is full of high technology equipment, and the facilities for staff (canteens and seminar rooms) are excellent. It is due to be joined in September by the 500 bed University Hospital, which has cost almost as much.

It is not only the building and equipment of the Royal Hospital that are good. Both the surgical department, which until recently was run by Professor Douglas Roy, formerly professor of surgery in Belfast and now chief of surgical services for the whole of Oman, and the medical department under Dr Abdulla Riyami, a cardiologist, practise regular audit in a way that is still not routine in most British hospitals. The physicians have daily meetings, when one of the five consultants randomly selects a set of records of somebody who has been discharged and critically analyses them. The surgeons have a meeting on mortality and morbidity each week, and, in addition, Dr David Sellu, a consultant who has just arrived from Britain, has set up a computer system for statistical audit.

There are inevitably problems to overcome. One is that patients arrive haphazardly (some after treatment elsewhere) and then cannot be referred back to primary care doctors for continuing care. The national health programme could organise this. A second is that the hospital has had a cautious reception from some Omanis, probably because it is strange and alien and (unlike older hospitals) has nowhere for relatives to stay. Most of the nurses do not speak Arabic, and communication is difficult. The 400 junior nurses

required to open the hospital were recruited in a short time. Consequently, they are of varying quality and will require rigorous inservice training to bring them up to a reasonable standard. Learning Arabic will be essential.

More doctors are needed, particularly to provide special skills and to staff the University Hospital. Many doctors from Britain and elsewhere would greatly enjoy themselves in Oman. The country is beautiful, the sea is clear and always cool, the people are friendly, and the medicine is exciting. For five months of the year the climate is perfect; for the seven other months it is extremely hot. British doctors can be seconded to Oman by their health authority with the approval of the Department of Health and Social Security.

Some services are not available, particularly radiotherapy and cardiothoracic surgery, and patients have to be sent abroad. The Minister of Health is currently deciding whether to invest in cardiothoracic surgery. This is the classic dilemma: to decide whether the large sums required to develop a programme for open heart surgery are justified to save patients from having to go abroad or whether the money should go to basic health and social programmes instead.

High technology medicine in a developing country

Some of the problems of trying to practise high technology medicine in a developing country were well illustrated by the Irish nephrologist Dr Feidhlim Woods. His actuarial three year survival for patients receiving chronic renal dialysis is zero, although his results for acute renal failure are as good as any. To travel four hours across the desert in a pick up van for dialysis three times a week is too hard, and a young girl whose survival depends on dialysis is unmarriageable and therefore a burden to herself and her family.

Transplantation is the only answer and yet presents great difficulties. It is not possible to take organs from cadavers just as it is not possible to perform necropsies. The options are therefore to take an organ from a living donor, related or unrelated. Some Omanis, however, are reluctant to have a kidney removed. Organs from unrelated donors are available in Bombay; the government does not allow patients to be sent to receive kidneys from unrelated donors, but some go on their own initiative. The results are bad: half of the recipients are dead within two years, usually from infection. On the other hand, those who receive a kidney from a relative go to Oxford, and the results are excellent.

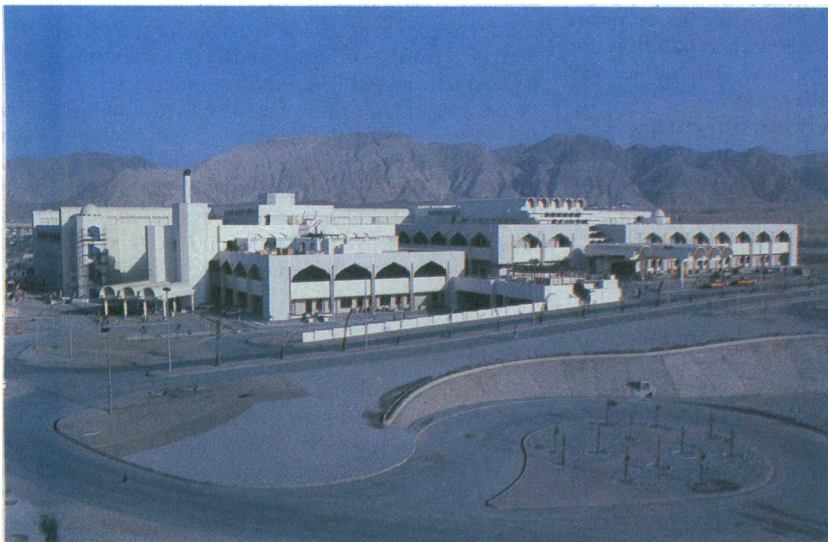
Another specialist service that has problems is the blood transfusion service. Omanis are as reluctant to give blood as they are to donate kidneys. Public education campaigns are proceeding, but blood still has to be imported at \$55 a unit.

The medical school

"Before Qaboos," as the Omanis say, Oman had three schools, which accommodated fewer than 1000 boys; there was no education for girls. Now the country has 700 schools with nearly 300 000 students, and in September 1986 the Sultan Qaboos University opened. It has six colleges, one of which is the College of Medicine. The medical school took in 41 students in its first year, half of them women and all Omanis. The first two years are devoted to bringing students up to the standards expected for admission to a medical school, and therefore the course will last seven years.

The medical school aims to produce doctors with skills relevant to Oman in a university of an international standard. Before the school opened Professor Gil Heseltine, the Canadian dean, spent time

The Royal Hospital, Al Ghobra



exploring health facilities in Oman to see what sort of doctors were needed. He also consulted the Ministry of Health and visited the schools.

Teaching is in English, but many students do not speak good English and intensive language teaching needs to be undertaken in the first two years of the course. The students have been taught to learn by rote at school and have few manual skills and no "problem solving skills" (in the jargon of medical education). They find it difficult to gather information and to think in concepts and may come from a culture that does not encourage disagreement. They also find it hard to accept that there are no reliable answers to many questions.

Small group sessions, some of them built round showings of Jonathan Miller's television series *The Body in Question*, have helped to encourage the necessary "depth of understanding." In the first two years students undertake various electives and a compulsory programme on first aid. One project that was particularly effective was a survey of trachoma by students in the town of Fanja. They were taught how to examine the eye and how to conduct a scientific survey; they then typed the data into computers themselves. The project gave them confidence as well as providing useful data.

Another difficulty arises in teaching men and women together. They attend the same lectures but are supposed to be kept apart to the extent that the men

move around on the ground floor of the university and the women on the first floor. But already the barriers are breaking down, and it is the women who are excelling.

The anxiety about reaching international standards surfaces in plans for research. The new professor of surgery, Professor A Daar, has spent years doing research in the department of surgery in Oxford, and he has plans to encourage research of a high standard that will also be relevant to the needs of Oman. He expects that researchers will eventually spend about 60% of their time on directed research programmes relevant to Oman. The rest of their time will be devoted to their own research.

The possibilities for research are endless, especially in local epidemiology. Dr M A Jaffer, a consultant surgeon, has begun a cancer register, and Dr C Thomas, a plastic surgeon, has collected data on burns and on cleft lips and palates, but they are still at the stage of posing questions. Is gastric cancer so common in men because of the Omani habit of drinking up to 60 cups of coffee a day? And are cleft lips and palates so common because of consanguinity?

I thank the government of Oman for inviting me to its country and the many people who gave me their time. Particularly attentive hosts were Douglas Roy and Shaun Brogan, who not only drove me around but also corrected my manuscript. I also thank Alex Paton, who used his knowledge of the Middle East to make beneficial cuts in the article.

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editor

Reduction in hospital readmission stay of elderly patients by a community based hospital discharge scheme: a randomised controlled trial

Joy Townsend, Mary Piper, A O Frank, Sandra Dyer, W R S North, T W Meade

Abstract

Study objective—To compare a community support scheme using care attendants with standard aftercare for their effects on independence and morale of elderly patients discharged from hospital and on their use of health and social services.

Design—Randomised controlled study of cohort of patients over 75 discharged to their own homes.

Setting—District general hospital and community.

Patients—Total of 903 patients (mean age 82, 25% over 85).

Interventions—Total of 464 patients received support from care attendants on first day at home and for up to 12 hours a week for two weeks. Support comprised practical care, help with rehabilitation, and organising social help. The remaining 439 patients received standard aftercare.

End point—Difference between two groups of 7% in hospital readmission rates or one point on activities of daily living scale (power 80%, significance level 5%).

Measurements and main results—Three months after the initial discharge 763 patients were interviewed (84%). There were no significant differences between the two groups in physical independence (activities of daily living scale), in measures of morale (Philadelphia scale), or in death rates. Hospital readmission rates within 18 months of discharge, however, were significantly higher in the control group and they spent more days in hospital (mean; control group 30.6 days, support group 17.1 days; $p=0.014$). Of the patients living alone who were followed up for 18 months 21 (15%) receiving

standard aftercare were readmitted more than twice compared with 6 (5%) supported by care attendants ($p<0.01$).

Conclusions—If the findings are confirmed, and the policy extended to all patients over the age of 75 living alone, an average health district might expect either to save about 23 hospital beds at a net annual saving of about £220 000 in the short term or to increase available beds by this number.

Introduction

Growing concern about the management of frail elderly patients after they have left hospital¹⁻³ has led to the development of several schemes for their support.^{4,5} Harrow Health Authority and Harrow social services department agreed that joint funding resources should be used to finance three care attendants appointed by the social services department to help patients aged over 75 years being discharged from any ward of Northwick Park Hospital to the central area of Harrow. The scheme was to be evaluated to establish whether it improved the independence and morale of elderly patients or affected their use of health and social services.^{6,7}

Patients and methods

The care attendants were to see patients before they were discharged, on their first day at home, and for up to 12 hours a week for two weeks. Their role was, firstly, to provide practical care; secondly, to help with rehabilitation by encouraging patients to look after themselves and get around, both inside and outside

Medical Research Council
Epidemiology and Medical
Care Unit, Northwick
Park Hospital, Harrow,
Middlesex HA1 3UJ
Joy Townsend, MSC,
scientific staff
Sandra Dyer, MSC, scientific
staff
W R S North, PHD, scientific
staff
T W Meade, FRCP, director

Northwick Park Hospital
Mary Piper, FRCP, consultant
physician in geriatric medicine
A O Frank, MRCP, consultant
physician in rheumatology and
rehabilitation

Correspondence to: Joy
Townsend.