MEDICAL PRACTICE

Outside Europe

Drugs and doctorings for trans-Saharan travellers

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The Sahara is the greatest of the world's waste lands which is being opened up as a major tourist attraction, and it is now possible to travel overland from the Mediterranean to the Bight of Benin by public transport during a four week vacation.¹ Although many publications are available to advise the prospective traveller to the tropics in general, little information is available on medical care during desert crossings in particular.

FIG 1—Even this 6-wheel-drive desert bus, which provides a bi-monthly service to the Hoggar Mountain area occasionally gets stuck in soft sand. Note washboard piste surface.

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This paper records the experiences of one trans-Saharan expedition and offers advice to travellers or their medical advisers.

The expedition aimed at determining the feasibility of travelling overland from the North African coast to the West African coast during a conventional annual leave period of three to four weeks. The participants included a doctor, a final-year medical student, a student of West African studies (who is also an accountant), and a solicitor, all in good general health and aged under 35 years. Winter is climatically the most suitable season both for travellers and road conditions. In view of the strict time limits and to avoid the risk of abandoning a vehicle in the desert, the group used public transport (figs 1 and 2). Accommodation varied from economy class hotels to *en plein air*.

Plans for medical care may be divided into prophylaxis and treatment, with the former being divided into prophylaxis before and after departure.

Prophylactic care

BEFORE DEPARTURE

Vaccination against smallpox, yellow fever, cholera, typhoid, tetanus, polio, and, if seronegative, tuberculosis and diphtheria and prophylaxis with gammaglobulin is well worth while; vaccination against rabies, plague, typhus, rubella, pertussis, and measles is probably unnecessary.

Immunisation against smallpox and yellow fever for international certificates of vaccination is unavoidable unless one has (a) an abnormal immunological response, whether from steroids, radiation therapy, immunosuppressive drugs, or leukaemia or reticulosis or (b) a history of postvaccinal complications such as encephalitis. When considering entry to endemic regions eczema and pregnancy are not contraindications.²

Cholera vaccination, conveniently available in combination with tetanus and typhoid, is worth while, since totally reliable reporting—or even detection—of isolated pockets of cholera in

remote desert areas with isolated nomadic settlements cannot be guaranteed. Accidental meetings with nomads are surprisingly common and local culture may dictate strict observance of communal tea ceremonies.

Use of paratyphi A and B vaccines does not guarantee immunity and as a result several authorities no longer recommend them.³⁻⁴ The combined TAB vaccine seems useful, however, in that any immunity conferred must have some value, and it is much more convenient to receive a single injection for tetanus, cholera, and typhoid than three separate injections. Moreover, intradermal administration reduces the incidence and degree of reactions compared with the subcutaneous route, although there may be some reduction in the immunological response.⁵

In view of the fact that polio and tuberculosis are endemic in the Sahara, polio and BCG vaccinations are well worth while for travellers not immunised or found to be negative to Heaf testing. Although only partial protection is provided, Turner recommends immunisation against plague and typhus for "overlanders" to India.² Our group, however, did not expect prolonged high-risk exposure and chose early treatment in preference to the frequently severe reactions. Groups not accompanied by a doctor are better advised to have these vaccines, particularly if any periods of more than transient residence with nomads are expected.

Hepatitis represents a considerable risk on journeys in the desert, where, even in winter, the water supply in large towns may be limited to a maximum of two hours a day and standards of hygiene suffer accordingly. Intramuscular gammaglobulin provides worthwhile protection for short-term (4-6 months) travellers,⁶ and is therefore recommended. It also confers passive protection against rubella, measles, polio, and smallpox⁷ and should be given within days of departure.

Antimalarial prophylaxis should be started 24 hours before entering a malarial zone, and it must be continued after the travellers' return. A daily antimalarial, such as proguanil, is preferable to the weekly variety since it is easier to remember when there are no external reminders of the day of the week. Missing a daily dose probably means less than ideal protection for only about a day, whereas omission of a weekly tablet may mean inadequate protection for several days.

Psychological preparations should not be overlooked or underestimated. Members should be made aware of any personality disorders in any of the group and specified roles should be allocated to each participant. In particular, a group leader should be chosen before departure. Many problems in desert travel occur quickly and unexpectedly and require equally rapid decisions, often when incomplete information is available and when the consequences are both far-reaching and largely unpredictable. Under such circumstances a more civilised committee-style democracy is prone to disintegrate, especially if the voters are hot, tired, hungry, and thirsty.

AFTER DEPARTURE

Water—Contaminated drinking water and foodstuffs are perhaps the most important route of infection. Water sterilising tablets should be used routinely. Though convenient, these reduce the palatability of the water and some sort of flavouring such as powdered orange or lemon juice to disguise the chlorination is well worth any additional weight incurred. Such palatability, rarely mentioned in guide books, is crucial, particularly when one bears in mind that water requirements increase if feverish, when anorexia may be at its peak. Cooled, shaken water is easier to drink than hot or tepid flat water. It is worth while leaving water containers exposed during the cool nights and then insulating them in the day. Alternatively, some cooling can be obtained by evaporation from a wet cloth covering the water-carrier. Although skins help to keep water cool, they add a distinctive flavour, and the protein lining will reduce the efficiency of chlorination by acting as a buffer. Additional filtering is essential where poorly designed or poorly

maintained wells may contain straw or other "farmyard" material from camels; this not only looks unappetising but also acts as a buffer to the sterilising effect of the tablets. Porous pot filters are difficult, if not impossible, to obtain but may be replaced by filter paper provided the tablets are used to sterilise the water after clarification (Whatman's No 1 filter paper can provide up to 8 litres/hour).

Dehydration and salt depletion from the heat can be avoided by adequate fluid and salt intake. The following formula² is useful as a guide to daily intake: 2 litres of water per day at 0°C, plus 1 litre for every 10° to the day's peak temperature, and 1.5-2.5 times the daily saline requirement of 10 g. The salt as well as the water must be palatable. Salt is better taken in food than in drinks or as tablets.

Antibiotics—The case for prophylactic antibiotics is not conclusive, but the evidence strongly suggests that certain preparations are valuable. These include Streptotriad.⁸ Interestingly, none of our group, who were all taking Streptotriad, experienced diarrhoea. Obviously dirty food, salads, and unsterilised dairy products should be avoided and all fruit peeled.

Sun and sand—Exposure to the elements must be undertaken intelligently with a gradual increase in the duration. The use of commercially available sun creams or lotions should obviate the need for ultraviolet light barrier creams such as Uvistat except for those with excessively sensitive skins, and perhaps those travelling in the exposed rear compartment of lorries (when more attention should also be paid to the risks of dehydration). Broad-rimmed hats are trendy, but less comfortable and more expensive than turbans, which are also more effective as a screen from the sun and the sand and warmer at night. (A light-weight nylon lock-knit material can easily be obtained before departure.) In general, loose fitting clothes are more comfortable, and cotton material is much better than woven nylon garments. Though recommended by some travel guides⁹ for sunburn prophylaxis, vitamin A does not seem worth while. Sunglasses are often recommended but are not essential and may increase the risk of nasal burns. Goggles, however, are invaluable during dust or sand storms, which otherwise become extremely unpleasant. Unless the traveller is actually driving a vehicle, which is not recommended during a storm, cheap plastic swimming goggles are adequate.

Cold exposure is often much more severe than expected: few travellers accurately forecast the chilling effects of subzero temperatures and a 10- to 15-knot wind, particularly in the context of the wide range of diurnal temperature variation in deserts. Even at low altitudes temperatures in the Sahara may fall below freezing point. The presence of any wind at these temperatures makes most sleeping bags inadequate, and a tent or other windbreak improves the chances of sleep. Frostbite would be as uncomfortable as unexpected if not forewarned. A Balaclava, woollen gloves, and even bed socks are worth considering if space and weight permit. A lip salve is a useful item

FIG 2—Cairns, at varying intervals, provide some route markings for the piste, should sand storms obliterate tyre tracks.

which is often overlooked and was used liberally by our group.

Finally, repellent creams or ointments are helpful in reducing discomfort from insect bites in the evenings, and avoiding immersion in water reduces the risks of developing schistosomiasis and dracunculiasis.

Treatment

Details of the medical equipment taken are listed in the table. These are necessarily a compromise but cover most of the likely eventualities.

The Saharan "black bag"

Tablets:	Pentazocine	Miscellaneous:
Diazepam	Chlorpheniramine	Band-Aid Elastoplast
Codeine phosphate	Hydrocortisone	dressings
Imodium	Ampicillin	2-0 Mersilk with 90 mm
Prochlorperazine	Sterile water	cutting needle
Asilone	Terbutaline	2-0 Dexon with needle
Codis	Lignocaine	Iodine lotion
Ibuprofen	Ointments:	Mediswabs (alcohol
Streptotriad	Hydroderm	impregnated swabs)
Tetracycline	Betamethasone	Micropore adhesive
Ampicillin	Framycetin	Hypodermic needles
Metronidazole	Insect repellent	and syringes
Chloroquine	Lip salve	Crêpe bandage
Proguanil	Suntan cream	Scissors
Actifed	Glacier cream/Uvistat	Thermometer
Motion sickness	Caladryl/calamine	Pen torch
tablets	lotion	Stethoscope
Oral contraceptives	Drops:	Argotone spray
	Neocortef drops	Whatman's No 1 filter
Injections:	Chloramphenicol	paper and funnel
Diazepam	drops	
Prochlorperazine		

Antibiotics—The range of antibiotics for fevers need not be very extensive. In addition to a curative antimalarial such as chloroquine, tetracycline, ampicillin, and metronidazole will cover most conditions if Streptotriad has been used prophylactically. Codeine is adequate for most diarrhoeal symptoms and will provide analgesic cover in other circumstances. Undue diarrhoea or straining at stool exacerbates piles so that analgesic suppositories are occasionally unexpectedly useful.

Parenteral preparations may be life-saving if severe intractable vomiting occurs, and non-medical members of any group can easily be taught how to administer them. Prochlorperazine, diazepam, ampicillin, and hydrocortisone, together with an analgesic, are probably adequate.

Analgesics—Strong analgesics may be needed for accidental trauma. Since Customs and Excise difficulties may arise over potent analgesics, pentazocine is preferable to opiates even though it is not as effective. If mild analgesics are needed to treat local people encountered en route it is worth remembering that the individual wrapping in silver foil and an ability to effervesce in water makes Codis a "higher class" medicine than other preparations whose objective potency in the laboratory may be equivalent.¹⁰

Antivenom for snake and scorpion bites is an emotive topic. From the writings of Saharan travellers it seems that snake sightings are uncommon and actual bites very rare. Non-medical guide books almost uniformly advise a tourniquet, incision, and drainage or oral suction as the primary treatment. Immediate treatment ought instead to comprise reassurance and probably tranquillisers, followed by wiping to remove venom from the surface of the wound, since few bites are associated with any poisoning at all.¹¹ Tourniquets should not be used at above systolic pressure, and their use at pressures below systolic seems unnecessary except as a placebo activity. Taking the patient to hospital to obtain antivenom as soon as possible would seem more appropriate than carrying one's own supply unless the expedition is very large, since it is unstable unless kept cool, expensive, and needs to be specific for the offending species of snake. Examination of the dead snake will, of course, help in identifying the appropriate antivenom. The toxicity of scorpions and poisonous spiders is generally overrated,

and death normally occurs only in small children. Simple precautions against being bitten by scorpions or small snakes include shaking shoes empty before putting them on. If bitten tranquillisers and analgesics are usually adequate, and local reactions may be reduced by antihistamines or, if severe, corticosteroids.

Sunburn—If care is taken sunburn should not pose a serious problem. Calamine lotion is a useful standby but is even better when combined with an antihistamine (Caladryl), and it may be helpful on insect bites. Topical steroids may be used with caution for second degree sunburn.

DDT powder may provide relief from the occasional almost inevitable visitor in one's clothing. Finally, a piece of advice for mixed parties, which is mentioned in only one guide book (appropriately enough a French one⁹), is to take contraceptives, as they may not be readily available locally.

Conclusion

The aim of any medical adviser to an expedition must be to return without using most of the items carried, and in this respect our journey was successful. I hope, however, that the lists of drugs and medical precautions will prove useful for other groups considering similar journeys.

I thank those, too numerous to name, who gave useful advice while planning this expedition, in particular Dr H Reid, Liverpool School of Tropical Medicine, for advice regarding snakes; Dr F M Hull, medical officer to the Anglo-Scottish Garwal Trek; Dr R Fletcher, medical officer to the Birmingham Medical Research Expeditionary Society's Himalayan Expedition; and S J Lloyd for fig 2.

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WORDS WARD ROUND. Why round? Almost all wards are rectangular, and progress during a ward round is along one side, across the width at the far end, and back up the other side, which is anything but circular. I am reminded of a nursery rhyme in which a poor fellow (probably of the RCP) who had lost his way was advised to go "straight down the crooked lane and all around the square." In recent years the course of a ward round has deviated even more from the circular. Such is the difficulty at times of finding empty beds for emergency cases that a round may mean visiting a series of patients in different wards in widely separated parts of the hospital, and the course of a round is that of a three-dimensional zig-zag over the best part of half a mile (0.8 km, no less). Then there is the Grand Round where no one goes round and everyone is seated except the doctor expounding in what is, in effect, a case demonstration. There are few who have been privileged, like myself, to do truly circular ward rounds. This was some years ago at St Giles's Hospital in Camberwell, south-east London, where there is a drum-shaped block of circular plan. On each floor about 20 beds were arranged radially like those in a bell tent. Ward rounds here were both clinical and topographical.