visited or worked in country hospitals in such areas should be admitted or transferred to a DHSS designated high security unit.

Although it is not too difficult to decide on appropriate isolation for patients at either end of the spectrum of risk, many patients are likely to fall into a third category, designated as "moderate suspicion." One group are those in whom it is not clear where they have been—perhaps because their English is poor. Another group are those who have been in small towns or country districts in which viral haemorrhagic fevers are not known to be endemic. Such patients should be admitted to either a designated high security unit or a hospital with "intermediate isolation" facilities. Although at first glance this recommendation may imply a welcome degrading of isolation precautions, the guidelines suggest that this accommodation should be able to be sealed to permit fumigation and should also have a mechanical ventilation system which provides a continuous airflow into the unit with exhaust to the outer air with a filter.

Since few isolation units have such facilities these recommendations mean that a high proportion of patients will still have to be transferred to a designated high security unit; they also imply a risk of virus transmission by the airborne route. Nevertheless, any threat of hospital acquired infection by this route is based on a single episode in a Nigerian hospital in which the index case, a pregnant woman with pneumonia, may have infected 16 other patients in the same ward.¹⁰ Thus, although the epidemiological data should be interpreted with caution, it might be premature to conclude that airborne spread never occurs. Conversely, an extensive study recently conducted in a hospital in Sierra Leone, where a large number of patients with Lassa fever were carefully barrier nursed but there were no facilities to prevent airborne transmission, showed no transmission to patients or to hospital staff (J B McCormick and S Fisher-Hoch, personal communication). Perhaps it would be more sensible to reserve precautions to prevent airborne transmission for patients with pulmonary lesions.

The memorandum's precautions for patients with "moderate risk" seem too elaborate and costly. They look as if they are a compromise between the views of the scientists on the working party and the more emotional views of its observers and some of those consulted. Overzealous precautions may detract attention from the very real hazard of transmitting infection by percutaneous exposure to blood or body fluids.

While it makes good sense to be cautious when providing guidelines for safety for newly recognised pathogens, it is also important to ensure that recommendations are updated when additional information becomes available. Hence the memorandum (which is a considerable advance on the previous one) will need to be updated regularly. Possible amendments include correcting the statement that the incubation period can be as short as three days since there is little evidence that it is this short; relaxing the precautions relating to the risk of airborne spread; and, less importantly, omitting the stipulation for ambulance crews transporting patients in the "strong suspicion" category to wear disposable underwear.

Studies are in progress to increase the speed of laboratory diagnosis; one preliminary report suggests that Lassa fever viral antigen may be detected in the peripheral blood within a few hours of collecting specimens.¹¹ Hence the imminent transfer of diagnostic facilities of viral haemorrhagic fever from Porton to London is welcome, although it is a pity that diagnostic facilities for other "exotic" infections (for

example, arboviruses and rickettsiae) will not be moved as well. Such "split" arrangements may reduce the rapidity of obtaining a definitive diagnosis for tropical infections and detract from the efficiency, training, and research programmes for those with an interest in the laboratory aspects of these infections.

There is also good news on treatment and prophylaxis. Ribavirin when given in the first week of illness has reduced death rates in patients with aspartate transaminase activity greater than 150 IU (a bad sign) from 55% to 5%.¹² The treatment does not, however, reduce the need for barrier nursing since viruses may persist in the blood and urine for some time after treatment.¹³ Oral ribavirin should also be given for 10 days prophylactically to those who have been percutaneously exposed to the virus—by this route toxicity is low, acceptable, and reversible.

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Our diurnal nature

Increasingly people are being required to ignore their diurnal nature and work at night or soon after a rapid time zone transition. In either case they are working when their "internal clock" expects them to be asleep, which may have serious implications for their own performance and for the safety of others. Both the Three Mile Island and Chernobyl disasters occurred in the early hours of the morning and have been at least partially attributed to bad decisions by shift-workers.¹ Similar errors may well occur in the decisions of politicians and others on their arrival in a new time zone, although their consequences may be less tangible.

During evolution we have internalised the pronounced daily cycle to enable us to anticipate it—an ability that clearly had an adaptive value for most species.² Consequently circadian rhythmicity appears to be a characteristic of all physiological processes³ and also occurs in many measures of performance efficiency.⁴ Thus, for example, both body temperature and performance efficiency on certain simple tasks are normally lowest in the early hours of the morning

and reach their maximum in the evening.⁴ In contrast, adrenaline and noradrenaline concentrations and alertness normally reach a maximum at about midday.⁵

Circadian rhythms also differ in the degree to which they are exogenously and endogenously controlled. Noradrenaline concentrations and heart rate are largely exogenously determined, while body temperature, adrenaline, alertness, and various measures of performance have a larger endogenous component.⁶⁻¹⁰ When people arrive in a new time zone or work at night the timing of the exogenous components of their rhythms can adjust almost immediately if they schedule their activities well. The endogenous component, however, can take up to three weeks to adjust¹¹ and is unlikely to do so over the normal maximum of six or seven successive night shifts.¹² Consequently the normal temporal relation between different rhythms is disrupted, which may be responsible for feelings of disorientation, malaise, and "jet lag."¹³ Further, the lack of adjustment of the endogenous timing system results in disturbed sleep.¹¹⁻¹³

Without time cues the endogenous circadian timing system adopts a 25 hour cycle in most people,⁷ which explains why people generally suffer more after an eastward than a westward flight.¹¹ It also explains why shift systems that rotate in the direction "morning, evening, night" are generally better.¹⁴ Extreme "morning types" (those who feel wide awake early in the morning but find it difficult to stay up late) may, however, have fewer problems than "evening types" after an eastward flight since their endogenous timing system may be shorter.¹⁵ Indeed, "evening types" may be able to reduce the problems they have after an eastward flight by "stretching" their rhythms through, say, 16 hours rather than contracting them through eight hours. This means staying awake for 40 hours rather than trying to sleep after only eight hours of wakefulness.

Other attempts to alleviate the problems of shiftwork and rapid time zone transitions are based on "resetting" the endogenous timing system. An "anti-jet lag diet" has been proposed from animal studies,¹⁶ although its efficacy for humans has yet to be established. More promising perhaps are recent suggestions that jet lag may be reduced by the appropriate timing of exposure to bright light,^{17, 18} which suppresses the secretion of melatonin by the pineal gland.¹⁹ Alternatively, melatonin may be given before and after flights.²⁰

Giving melatonin reduces subjective ratings of jet lag severity but may not necessarily improve performance efficiency. Circadian rhythms in certain types of complex cognitive performance can behave very differently from those in most physiological processes,^{8, 21} and subjective impressions of performance at different times of day can differ considerably from actual ability.^{22, 23} Until we understand better the endogenous circadian system controlling performance rhythms we must be cautious about ignoring our diurnal nature.

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Beware congesting nasal decongestants

The bad effects of topical "decongestants" (vasoconstrictors) used long term on the nasal mucosa have long been known, but they remain widely prescribed, are prominently displayed in chemists' shops, and are advertised on posters and television. The *British National Formulary* roundly deprecates their use: "Vasoconstriction of the mucosal blood vessels . . . reduces the thickness of the nasal mucosa. [Decongestants] are of limited value as they can give rise to a rebound phenomenon as their effects wear off, due to a secondary vasodilatation with a subsequent temporary increase in nasal congestion. This in turn tempts the further use of the decongestant, leading to a vicious circle of events. The formulary says that if decongestants are to be used then ephedrine is the drug of choice and should be used for a short time only. In our experience up to seven days' use is relatively safe.

The vasoconstrictors are usually sympathomimetic amines or the chemically related imidazoles. The α adrenergic agonists constrict subepithelial precapillary sphincters, arterioles, and venous sinuses, and the β agonists mediate vasodilatation. Prolonged pharmacological vasoconstriction is probably followed by vasodilatation, and ultimately the muscle responds less well to any repeated nasal application of the vasoconstrictors. The most commonly used sympathomimetic decongestants are ephedrine and phenylephrine, while the common imidazole vasoconstrictors are xylometazoline, oxymetazoline, and naphazoline. Of 19 drugs with local actions on the nose listed in the *Monthly Index of Medical Specialties* 11 contain one or other of these substances.

Entry to the vicious circle of decongestant use commonly occurs during acute episodes of nasal airway narrowing. After coryza, for example, the decongestant is obtained over-