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Influenza epidemic in Madagascar

On 5 August 2002, the World Health Organization (WHO) reported that it had received reports from the Ministry of Health (MoH) in Madagascar of 1930 cases of an acute respiratory syndrome, including 153 deaths (1). The reported symptoms included severe headache, neck and chest pains, and dry cough, and the majority of cases appeared to be either young children or the elderly. It was also reported that those who received 'treatment' appeared to have a better chance of recovering from the illness (2).

On 7 August, influenza A H3N2 virus was isolated from two out of 39 cases by the Pasteur Institute in Madagascar (3), and isolates of the same strain were later obtained from cases in other provinces (4). A team from the WHO Global Outbreak Alert and Response Network (GOARN) arrived in Madagascar on 14 August to investigate the outbreak and support the Madagascan MoH in its ongoing response. As of 22 August 2002, 22,646 cases have been reported, including 671 deaths. The outbreak has affected five out of six provinces in Madagascar, although over 80% of the cases have occurred in the highlands region of Fianarantosa province. Most deaths have occurred outside health facilities and have disproportionately affected young children. A preliminary report, along with recommendations was provided to the Madagascan MoH on 29 August by the International Team and attributes the epidemic to influenza A/Panama/2007/97-like (H3N2) virus (5). This is the same strain that has caused epidemics worldwide during 2001-02 and is similar to the strain used in the current vaccine and also for the vaccine for the coming season in the northern hemisphere.

The observed excess mortality is not thought to be due to an especially virulent strain but more to the widespread transmission among poor and malnourished communities who have limited access to health care and have probably had limited exposure to influenza in recent years. The island of Madagascar has also recently experienced some political instability, which has led to severe economic disruption. It has been recommended that influenza surveillance be strengthened in the country and improvements made in case management and training of healthcare providers, as well as the dissemination of health education messages to those at high risk, to seek medical care (5).

Those offering medical advice to people travelling from the United Kingdom to Madagascar need to be aware that there is influenza circulating in the country, however no special precautions are necessary except in those who would be indicated to receive influenza immunisation (6). These individuals should have received a recent immunisation, as this will offer protection against the strain currently circulating widely in Madagascar.

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Call by the House of Lords for evidence on issues relating to human infectious disease

The Science and Technology Select Committee of the House of Lords has set up a sub-committee to consider and report on issues relating to human infectious disease in the United Kingdom (UK), including: current effectiveness of the surveillance systems in the UK and potential problems in the future; links between surveillance and treatment of infectious disease; links between surveillance and the strategies for preventing infectious disease. It will also look at developments in surveillance, vaccine and diagnostic technologies, international approaches to surveillance, treatment and prevention of infectious disease, public attitudes, risk-perception, and the role of the media.

Written submissions are invited by 14 October 2002, particularly those addressing the following questions:

1. What are the main problems facing the surveillance, treatment and prevention of human infectious disease in the United Kingdom?
2. Will these problems be adequately addressed by the Government's recent infectious disease strategy, *Getting Ahead of the Curve*?
3. Is the United Kingdom benefiting from advances in surveillance and diagnostic technologies; if not, what are the obstacles to its doing so?
4. Should the United Kingdom make greater use of vaccines to combat infection and what problems exist for developing new, more effective or safer vaccines?
5. Which infectious diseases pose the biggest threats in the foreseeable future?
6. What policy interventions would have the greatest impact on preventing outbreaks of and damage caused by infectious disease in the United Kingdom?

The Committee welcomes evidence on any area of infectious disease. As other bodies have recently inquired, or are in the process of inquiring into antimicrobial resistance, hospital-acquired infections and sexually transmitted infection, however, the Committee will not make these primary concerns in its inquiry. Nevertheless the Committee will not exclude these areas. The focus will be on UK health issues, not diseases primarily affecting overseas countries, while acknowledging that infection crosses borders and may threaten the UK. The Committee will also focus on naturally occurring infection rather than bioterrorism. Evidence on the safety of MMR vaccine will not be considered.

Submissions should be sent to Melanie Moore, the Secretary to Sub-Committee I, preferably as an email attachment (mooreme@parliament.uk). Further information can be found at <http://www.parliament.uk/parliamentary_committees/lords_s__t_sub_committee_i.cfm>.

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Respiratory

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Respiratory tract infections, England and Wales: laboratory reports, weeks 31-35/02

	Number of reports received					Total reports
	31/02	32/02	33/02	34/02	35/02	31-35/02
Adenovirus (excluding EM faeces)	25	98	12	40	24	199
Coronavirus	–	–	–	–	–	–
Influenza A*	5	3	4	8	3	23
Influenza B*	3	1	–	1	2	7
Parainfluenza	12	11	7	8	4	42
RS virus	4	5	9	70	2	90
Rhinovirus	3	2	–	1	1	7
<i>Chlamydia sp</i>	7	2	3	3	2	17
<i>Coxiella burnetti</i>	3	2	1	–	–	6
<i>Legionella sp</i>	10	2	1	4	5	22
<i>Mycoplasma pneumoniae</i>	18	19	12	33	19	101

*Reports include cases diagnosed by culture, immunofluorescence and serology (including single high titre).

Adenovirus (excluding types 40, 41, group F, EM faeces): 199 cases were reported. 147 patients had eye infections. F 3y had respiratory failure; F 40y had lymphadenopathy.

Coronavirus: no cases were reported

Influenza A: 23 cases were reported. South East region reported eight cases, South West seven, North West five, Wales two, and Northern and Yorkshire one. Five cases were aged 65 years or over.

Influenza B: seven cases were reported. One patient had pneumonia. North West region reported 3 cases, South East 2 and Trent and Wales 1 each. Three cases were aged less than 15 years.

Parainfluenza (type 1,2; type 2,0; type 3,26; type 4,0; untyped 14). Forty-two cases were reported. F 28y was immunosuppressed; M 56y was infected in an outbreak. South West region reported nine cases, Northern and Yorkshire seven, West Midlands and North West five each, Eastern and Wales four each, Trent and South East three each, and London two. 48% of cases were aged less than 1 year.

Respiratory syncytial virus: 90 cases were reported. One patient had bronchiolitis. South East region reported 58 cases (of which 57 were late reports), North West 12 (of which 11 were late reports), Northern and Yorkshire region reported six cases, South West five, Eastern three, West Midlands, London, and Wales two each. 79% of cases were aged 1 year or less.

Rhinovirus: Seven cases were reported. North West region reported four cases, Northern and Yorkshire, West Midlands and South West one each.

Respiratory chlamydia (*C. psittaci*, 10; *C. pneumoniae*, 1; *Chlamydia sp*, 6): Seventeen cases were reported.

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M 65y had bird contact.

Coxiella burnetii: Six cases were reported. Eastern, and South West regions reported two cases each, West Midlands and Wales one each,

Legionella: 22 cases were reported with pneumonia. Seventeen were male aged 44 to 79 years and five female aged 42 to 80 years. There were no deaths. Eighteen cases were associated with travel: Spain (6), France (2), Italy (2), Bahamas, Cyprus, England, Greece, Portugal, Turkey one each. One case travelled to Italy and France and another to Italy and Germany. Four males aged 44, 52, 59, and 62 years had community acquired infection. Figures for the number of cases associated with a community outbreak in Barrow-in-Furness, with onset dates between 13 July and 6 August, are still being finalised, but to date, 131 cases and 5 deaths have been confirmed.

Mycoplasma pneumoniae: One hundred and one cases were reported. Thirteen patients had pneumonia. M 10y had bronchopneumonia; M 13y had recurrent chest infections. South West region reported 31 cases, South East 22, Northern and Yorkshire 18, North West 12, West Midlands seven, Wales six, Eastern four, London one. 39% of cases were aged less than 15 years.

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Dengue fever – an increasing threat to UK travellers?

Epidemic meningococcal meningitis in Africa: defining areas at risk 1980-1999

Dengue fever – an increasing threat to UK travellers?

Morbidity and mortality associated with Dengue fever (DF) and Dengue haemorrhagic fever (DHF) are an increasing public health concern worldwide. Dengue is one of the most common and widespread arthropod-borne infections in the world (1). It is endemic in over 100 tropical countries and the World Health Organization (WHO) estimates that over 50 million cases of DF and 500,000 cases of DHF occur every year (2). There are four different serotypes of the dengue virus each capable of producing a range of different symptoms. The incubation period ranges from three to 14 days, more commonly four to seven7 days. Many people infected remain asymptomatic: those who develop classical DF suffer a debilitating but self-limiting illness with symptoms resembling influenza, while the more severe DHF can present after a subsequent infection with a different serotype of the dengue virus. There is no vaccine and no specific treatment for this disease.

Where does dengue fever occur?

Dengue fever is endemic in most parts of Asia, the Pacific, the Americas, and Africa, with large epidemics occurring every three to five years. In 1998, there was a global pandemic of DF and DHF, which affected approximately 1.2 million people in 56 countries. An increase in reports of dengue in 2001 and 2002, particularly in Asia and the Americas, indicate that the disease may be reaching pandemic proportions again. Current dengue activity in Asia and the Americas is summarised below. The outbreak reports must, however, be interpreted with caution, as they are often unofficial press reports. Accurate case counts are often difficult to obtain from official sources, as many countries do not have adequate resources or systems available for surveillance.

Asia

Dengue activity in south-east Asia has increased since the Second World War (3): it is now endemic in most of the countries in that region, with epidemics occurring every three to five years. WHO is reporting a general increase in dengue activity during the current transmission season throughout the whole South East Asian region. (*Michael Nathan, WHO: personal communication*). Countries reporting current outbreaks are detailed below:

Date	Country/Region	Numbers DF/DHF/Deaths	Source	Additional comments
Up to 19 Aug2002	<i>Thailand</i> Anecdotal reports of an increase in dengue activity in Koh Pha Ngan and Koh Tao - popular with backpackers	68103/--/104	(4)	Epidemics occur in Thailand every two to three years. Numbers can reach between 60-100,000.

Jan to Jun 2002	<i>Vietnam</i>	6859/--/10	(5)	380 deaths in last epidemic in 1998. Since then, an average of 50 deaths/yr
Jan to Jul 2002	<i>Cambodia</i>	5207/--/59	(6)	Peak month in 2002 June with 1603 cases of DF
Up to Aug 2002	<i>Bangladesh</i>	2366/--/33	(7)	Started reporting dengue to WHO in 1999 when there were 273 cases
Up to Aug 2002	<i>Taiwan</i> (Mainly affecting southern region of Kaohsiung County and City)	1109/36/0	(8)	

The Americas

The first pandemics of dengue were reported in the Americas in the 1800s (9). In 2001, there were 639,000 reports of dengue fever in the WHO region of the Americas and over 633,000 cases of dengue fever reported so far in 2002. This is probably an underestimate as reports are incomplete (10). A large proportion of the cases from 2002 were attributed to the outbreak in Brazil where, in the first five months of the year, there were 555,691 cases of dengue fever, nearly 2000 cases of DHF, and 84 deaths. This outbreak is associated with dengue serotype 3, which has only been recently introduced in the population and explains the increased number of DHF cases registered in 2002 (11). In El Salvador, the first case of dengue fever serotype 4 has been confirmed in an 8 year old girl in San Miguel, El Salvador. Den-4 has not been seen in El Salvador since 1995 and has only been seen in Colombia this year (12). Other outbreaks in this region currently being reported are detailed below:

Date	Country/Region	Numbers DF/DHF/Deaths	Source	Additional comments
As of 10 August 2002	<i>Mexico</i>	2662/268/3	(13)	10 fold-increase compared to 2001
Up to 12 August 2002	<i>Guatemala</i>	2065/53/3	(14)	
As of August 2002	<i>Ecuador</i> Mainland Galapagos	344/11/-- 6/--/--	(15)	
As of August 2002	<i>Honduras</i>	16513/587/--	(16)	Number of cases of DF doubled compared to 2001

Why is Dengue a continuing problem?

A programme coordinated by the Pan American Health Organization (PAHO) to eradicate *Aedes aegypti* (the main mosquito vector of dengue) from the Americas in the 1950s and 1960s, was successful but was terminated in 1970. This, together with an increase in international travel, population growth and uncontrolled urbanization has contributed to the re-emergence of DF in the region. Similarly, in other endemic countries poverty and unsanitary living conditions are very important factors. Air-conditioning (which is less common in tropical countries) and the layout of modern cities also affect the transmission of dengue. Greater spaces between housing and industrial areas contribute to a lower population density in resource-rich countries than resource-poor countries. For example, in 1999, during a dengue epidemic on the Mexico/United States border in Texas, 62,514 cases were diagnosed in Nuevo Laredo, Mexico compared to 64 laboratory confirmed cases in Laredo, Texas. Even though the *Aedes* vector is present in both countries, there was a marked difference in transmission rates (17). Coordination between governments, health agencies and the community is necessary to reduce the breeding sites of the *Aedes* mosquito. This is labour-intensive and needs to be an ongoing process to be successful. Many countries in the Americas and in Asia do not have adequate resources to carry out these activities or other issues may take priority. Emergency responses to dengue epidemics often involve spraying with outdoor ultra-low volume insecticide sprays. These target the adult mosquitoes but overall are relatively ineffective, as the larval stage of the mosquito is not affected by this treatment. (18)

Implications for Travellers

Dengue is primarily a problem for the populations of endemic countries with serious health and economic consequences. It also, however, affects travellers from industrialized countries. Many countries endemic for dengue fever are increasingly popular destinations for travellers from both the

UK and the European Union. Retrospective studies involving Japanese, Spanish, Swiss, and German travellers, have demonstrated that rates of confirmed dengue isolates associated with symptomatic patients lie between 6.9% and 65% (19). Although these studies have only used small cohorts of travellers on relatively short-term visits they demonstrate the risk of dengue to travellers. More research is needed to quantify that risk and determine what the burden of illness associated with imported dengue may be on health services in the UK.

Dengue fever is not a notifiable disease in the UK. Imported dengue figures are reported in the *CDR Weekly* but are almost certainly underestimated. In 2000, only four laboratory reports of dengue virus were recorded and in 2001, only two reports (provisional) (20). The Centre for Applied Microbiology and Research (CAMR) confirmed 40 cases of dengue in 2001 and a further 57 probable (dengue IgG/IgM positive) and 101 possible (dengue IgG positive) cases. Of those cases where a travel history was provided, almost 50% were acquired in South-east Asia.

These figures show that dengue is imported into the UK and should be considered as a diagnosis for patients presenting to a clinician with fever and a history of travel to endemic countries, especially within two weeks of their return to the UK. It is possible, however, that cases may go undiagnosed. Diagnosis of dengue is important not just for surveillance, but also for the patient's awareness of their future risk when travelling. If patients (particularly those under 16 years) who have already been infected with dengue are re-infected with a different serotype, they are at an increased risk of developing dengue haemorrhagic fever. For this purpose it is also useful to collate information about which serotypes are circulating in endemic countries.

Ongoing transmission of dengue within the UK by returning travellers is not possible currently, as the climatic conditions are not suitable for *Aedes* mosquito to breed. Increased diagnosis, laboratory reporting and surveillance of imported dengue would, however, help to provide a better estimate of the risk to travellers and would inform advice to those going to dengue endemic areas. Travellers need to be aware that when they go to tropical areas it is important to reduce mosquito bites in the early morning and late afternoon (as this is the peak biting time of the *Aedes* mosquito) to avoid contracting dengue, as well as at night to prevent other arthropod-borne diseases.

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Epidemic meningococcal meningitis in Africa: defining areas at risk 1980-1999

Meningococcal meningitis occurs worldwide; the major global burden is in the African 'meningitis belt', stretching across the semi-arid Sahel south from the Sahara. Here, high levels of seasonally endemic disease occur each year, with frequent large-scale epidemics occurring irregularly and at greater intervals. The belt has no precise boundaries but to the north few people live and in countries with savannah and humid forested or coastal regions to the south, epidemics have involved the more arid northern zones and rarely other parts. In regions of Africa outside the belt the epidemiology of meningitis is distinct: outbreaks are less frequent with fewer cases reported, and the incidence of meningococcal disease observed in inter-epidemic periods is low (1).

The factors predisposing to meningitis epidemics are poorly understood, but it is likely that a combination of conditions is necessary for an epidemic to occur. These include immunological susceptibility and transmission of a virulent strain of meningococcus, population movements, and poor living conditions. Concurrent infections have also been implicated (2). The geographic predominance of seasonal outbreaks in the Sahel and their occurrence in other semi-arid regions of Africa outside the meningitis belt, during dry and dusty times of year, suggests these conditions also may play an important role (1,3).

The areas currently susceptible to epidemics of meningococcal meningitis have recently been described in a review of information obtained from published and unpublished reports of meningitis epidemics between 1980 and 1999, supported by information from cases of meningococcal disease reported by surveillance systems to the World Health Organization (WHO)(1). Documented epidemics that occurred between 1999 and the present concur with this description (see <http://www.who.int/disease-outbreak-news/>). Based on these observations, the regional epidemiology of meningitis and contiguous nature of affected regions, the meningitis belt may be regarded as an uninterrupted area of west, north-central and the Horn of Africa. Elsewhere in Africa the occurrence of epidemics around the Great Lakes and in the Rift Valley regions supports the existence of an epidemic-susceptible area outside the belt. Severe epidemics and focal outbreaks have occurred, however, and will continue to do so in other regions throughout Africa that may therefore also be considered at-risk (see table).

Those advising travellers from the United Kingdom (UK) should note that the vaccine used in the routine immunisation programme in the UK is conjugate C. Bivalent A and C polysaccharide vaccine has been recommended for travel to protect against the major epidemic serogroup A meningococcus. Vaccination is recommended for travel to at-risk areas for longer visits, especially for those living or working with the local population or those who will be remote from medical help, and for shorter visits to regions where there is an active outbreak. The quadrivalent polysaccharide vaccine protective against serogroups A, C, Y, and W135 is now widely available in the UK. Following recent outbreaks of W135 in pilgrims and their contacts in association with travel to Saudi Arabia (4) the quadrivalent vaccine is recommended for all pilgrims to Saudi Arabia and is a mandatory entry requirement for visitors arriving for Umra, pilgrimage or seasonal work (5). In view of the widespread existence of W135 in African countries, the recent epidemic in Burkina Faso (6), and risk posed by future epidemic disease, the wider use of this vaccine is being considered for those travelling in the sub-Saharan region.

Table: Documented epidemics of meningococcal meningitis in Africa, 1980 to date

Affected regions	Countries in parts affected
Meningitis Belt	(from West to East:) Senegal, The Gambia, Guinea-Bissau, Guinea, Mali, Cote d'Ivoire, Burkina Faso, Ghana, Togo, Benin, Niger, Nigeria, Chad, Cameroon, the Central African Republic, Sudan, Eritrea, Ethiopia, Somalia
Great Lakes and Rift Valley Regions	(from North to South:) The Democratic Republic of Congo (DRC, formerly Zaire), Uganda, Kenya, Rwanda, Burundi, Tanzania, Malawi, Mozambique.
Rest of Africa	(Northern Africa:) Egypt, Morocco, Tunisia (Southern Africa:) Angola, DRC, Mozambique, Namibia, South Africa, Zambia, Zimbabwe (West Africa:) Sierra Leone

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