

DISEASE WATCH | IN THE NEWS

Chlamydia dipstick test

Chlamydia afflicts more than 90 million people annually and is the main cause of preventable childhood blindness in developing countries, as well as causing infertility worldwide. Although chlamydia is treatable with antibiotics, a lack of

obvious symptoms complicates diagnosis. Now, a cheap dipstick test called 'Firstburst', which gives a result 'on-the-spot' in less than 25 minutes, has been developed. Bonus features of the test are its simplicity of use and stability at high temperatures. [Wellcome Trust](#)

that a trained scientist can tackle. Lives could be saved because early TB detection is essential for effective treatment. [SciDevNet](#)

Complete vaccine hope for meningitis

A major hurdle to vaccination for meningitis is the existence of multiple strains of bacteria (known as groups A, B and C) that can cause the disease. An engineered meningococcal strain that provides protection in mice against all three groups of meningococcal bacteria has now been developed. Meningitis is fatal in 1 in 10 infected children in the United Kingdom and many survivors are left severely handicapped. Vaccines presently in use don't protect against all three strains. So, this breakthrough could be the first step towards a single vaccine for humans. [BBC](#)



Sniffing out tuberculosis

Giant pouched rats in Tanzania have been trained to detect tuberculosis (TB) by sniffing saliva samples. After training for 4–6 months, the rats can correctly identify samples that contain *Mycobacterium tuberculosis*, the causative agent of the disease. Project director Bart Weetjens has now obtained funding to train a team of 400 'sniffer rats'. Rats can analyse more than 100 samples in just 30 minutes compared with the 20 samples per day

DISEASE WATCH | FOCUS

SARS

BACKGROUND

Causative agent. Severe acute respiratory syndrome (SARS) has been aetiologically linked to a new coronavirus called the SARS-associated coronavirus (SARS-CoV)¹. Genome-sequence analyses are consistent with the hypothesis that the SARS-CoV has an animal origin, from an as-yet unknown reservoir². SARS is most commonly spread by close person-to-person contact, which involves exposure to infectious respiratory droplets. Estimates of the incubation period have converged at 2–10 days³, and modelling data from Hong Kong indicate that 95% of cases have incubation periods of up to 14 days. An incubation period of 1 day has been reported in a small number of cases⁴. Transmission is amplified in healthcare settings, although community transmission also occurs². The sentinel event for the international spread of SARS has been attributed to environmental contamination in a hotel⁵, and point-source outbreaks have occurred through faecally contaminated aerosols in housing estates in Hong Kong⁶.

Distribution. The first known case of SARS was identified in Guangdong Province, China, in November 2002 (REF. 7), and spread of the disease to other parts of the world was associated with international air travel. In March 2003, the World Health Organization (WHO) issued a global alert and a travel advisory to contain the disease^{8,9}. As of 26 September 2003, the WHO had received reports of more than 8,000 probable cases of SARS and 774 deaths due to SARS, giving a global fatality rate of 9.6% (REF. 10). Areas with the highest burden of disease were identified as China, the Hong Kong Special Administrative Region of China, Taiwan, Singapore, Canada and Vietnam. These countries and provinces experienced sustained local transmission between healthcare workers — who formed a large proportion of the early cases.

Global status. The WHO, together with its Global Outbreak Alert and Response Network (GOARN) partners, brought together an international

team of health professionals — including clinicians, virologists, epidemiologists, public health professionals and environmental engineers — to study and contain the disease. This international response enabled the rapid identification of the infectious agent, its mode of transmission and the development of diagnostic tests. Traditional public health measures (for example, case detection and isolation, stringent infection control, contact tracing and surveillance) were used globally to successfully break the chain of transmission¹¹. SARS remains a public health challenge for several reasons, including nonspecific symptoms and signs, a lack of diagnostic tests that can be used to reliably detect SARS-CoV in the first few days of illness, the risk of superspreading events (which fuelled large disease clusters in the 2003 outbreak), the lack of a vaccine or agreed treatment modalities and limited data on the ongoing risk of interspecies transmission. Re-emergence of SARS on a large-scale is possible and preparedness of public health and healthcare systems is important to prevent and control the disease.

RECENT DEVELOPMENTS

New knowledge. Despite the rapid progress that has been made in the global understanding of SARS, many questions remain, including the risk of a re-emergence of SARS. The WHO has established a SARS Research Advisory Committee to review the evidence, determine gaps in knowledge and make recommendations on the public health research priorities¹². The recommendations made include further elucidation of



Global distribution of probable SARS cases by country.

SARS emerges again

Following two incidents in which scientists caught SARS in the lab, the latest case — confirmed by tests carried out in WHO-designated reference labs — is a patient in the Chinese province of Guangdong. Although the now-recovered patient hasn't been linked to any known SARS source, the authorities are slaughtering civet cats, because tests on a gene from the virus that infected the patient showed similarities to a coronavirus found in civets. **WHO**

American mad cow disease

A positive test in December, 2003 using tissue from a 'downer' — a dairy cow that couldn't walk — yielded the first US BSE case. More than twenty nations responded by banning all



US beef imports. 450 calves from a herd containing the sole offspring of the infected cow

have since been culled. Genetic tests confirmed that the infected cow was born in Canada before August 1997 — when both countries banned the practice of using cattle feed that contained parts of cattle and sheep — so the United States could now retain BSE-free status. Stanley Prusiner, who won the Nobel prize for discovering prions, previously voiced concerns about the failure of the US Department of Agriculture to test enough cows to detect BSE. Only about 10% of the ~200,000 downer cattle slaughtered in 2003 were tested, even though an inability to walk is a known symptom of BSE. Because 90% of beef consumption is domestic, pressure could mount to improve the testing programme.

Reuters

In the News was compiled with the assistance of David Ojcius, Institut Jacques Monod, Paris, France.

the transmission dynamics, such as interspecies transmission; a risk-benefit analysis of therapeutic modalities used during the outbreak; the development of protocols for future multicentre clinical trials, diagnostic quality assurance and laboratory biosafety; and analysis of the social and economic impact of SARS and the public health measures used to control it. The minimum level of global preparedness that is required to reduce the risk of emerging infectious diseases and mitigate their impact was also discussed.

New tools and interventions. The WHO SARS aetiology network sequenced the SARS-CoV genome and developed several diagnostic tests with unprecedented speed. However, available tests still lack sufficient sensitivity early in the disease, and further evaluation of their performance in different epidemiological situations is required. Research is also progressing on SARS vaccines. Inactivated, live, attenuated and subunit vaccines are among those under investigation, and the first clinical trial of an inactivated SARS vaccine is expected to begin early in 2004 (REF 13).

New strategies, policies and partnerships. The WHO established global surveillance for 'suspect' and 'probable' SARS cases on the basis of clinical and epidemiological criteria. These have been modified in the post-outbreak period to reflect the need for ongoing vigilance with a low, but non-zero, risk of SARS in most countries, and to incorporate laboratory case definitions. Revisions are also being made to the International Health Regulations, which provide the legal framework for the global surveillance and reporting of infectious diseases and a mechanism by which measures to prevent international spread can be enforced¹⁴.

CONCLUSIONS AND FUTURE OUTLOOK

The SARS epidemic severely stretched the national health systems of affected countries and tested the capacity of the WHO and its GOARN partners to respond quickly and effectively to a global health emergency. SARS has shown the importance of international collaboration to deal with an emerging infectious disease threat and the invaluable position that the WHO occupies in global health security. With its privileged access to the member states, the WHO was able to undertake global coordination of the SARS response by facilitating the sharing of information

between health professionals and global surveillance and laboratory research teams, and the mobilization of technical co-operation. The global experience gained during the outbreak has increased our readiness to implement prevention, containment and control measures quickly and effectively should SARS return.

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Online links

FURTHER INFORMATION

WHO/CSR SARS factsheet: <http://www.who.int/csr/sars/en/index.html>

Access to this interactive links box is free online.

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