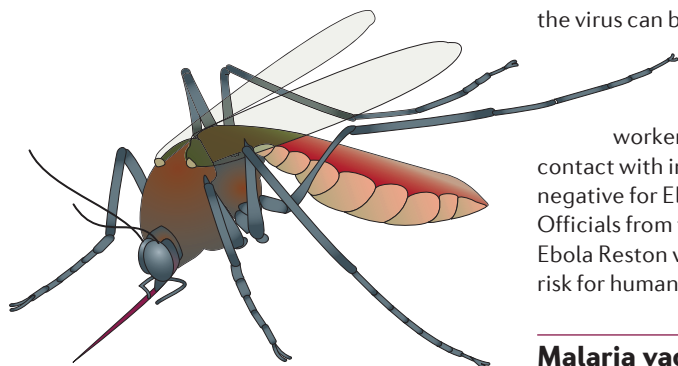


DISEASE WATCH | IN THE NEWS

Bacteria fight mosquitoes



Bacteria that can halve the lifespan of insects could be used to virtually eliminate the transmission of dengue fever. Some 50 million people are infected with Dengue virus each year, of whom around 12,500 die. Scott O'Neill of the University of Queensland in Brisbane and his colleagues report in *Science* that an adapted strain of *Wolbachia pipientis*, a bacterium that shortens the lives of fruit flies, can infect the dengue-transmitting mosquito *Aedes aegypti*. Infected mosquitoes live for 30 days in the laboratory, half the usual 60 days of uninfected flies, and infection is passed on to offspring at a high rate. Further studies are now underway to determine whether the bacteria halve the lives of mosquitoes in the field. Traditional methods of reducing outbreaks, such as using bed nets to reduce mosquito bites, have had limited success against *A. aegypti*, so several groups are working on alternative control methods. One advantage of this 'biopesticide' approach, says O'Neill, is that it may be more likely to get regulatory approval than ongoing attempts to control the spread of dengue fever by genetically modifying the disease-carrying mosquitoes.

Science/Nature News

Pigs get Ebola

The Ebola Reston virus has been found in pigs near Manila, in the Philippines. The virus, which has never before been seen in swine, has previously been identified in macaques in the Philippines. Several groups, including the United Nations Food and Agriculture Organization and the World Health Organization, are

investigating further to identify the source, the transmission and the virulence of the outbreak. It is not yet clear whether the virus can be transmitted from pigs to humans. Preliminary laboratory tests on animal handlers and slaughterhouse workers who may have come into contact with infected pigs have been negative for Ebola Reston infection. Officials from the Philippines said that the Ebola Reston virus presented a low health risk for humans. *Financial Times/ABS-CBN NEWS*

Malaria vaccine success

A GlaxoSmithKline malaria vaccine that has been in development for several decades may provide better than 50% protection for children in Africa, setting the stage for Phase III clinical trials to start soon. The vaccine, called RTS,S, was tested in 800 children aged 5–17 months in Kenya and Tanzania, and results were published in two papers in *The New England Journal of Medicine*. Whereas previous trials with RTS,S achieved little better than 30% protection, these trials, in which a new adjuvant was added to the RTS,S formulation, achieved 53% protection. The Phase III clinical trials, which will be funded largely by the Bill & Melinda Gates Foundation, will involve around 16,000 children in 7 African countries. A number of questions still remain about the RTS,S vaccine, such as how it works and whether it can provide long-term protection. *N. Engl. J. Med./Nature News*

More cases of vCJD to come?

Experts are warning that a new wave of the human form of mad cow disease may be about to sweep through the United Kingdom. To date, there have been 164 fatal cases of variant Creutzfeldt–Jakob disease (vCJD) in the United Kingdom, but all cases have struck patients with the MM (methionine–methionine) version of the gene that encodes the prion protein. Now, however, doctors have diagnosed the first suspected case of the incurable brain disease in a patient who has the MV (methionine–valine) version of the gene. Laboratory studies have suggested that vCJD can affect MV mice, but that it takes longer to develop. If the diagnosis is confirmed by autopsy, then at least 89% of the population is likely to be susceptible to vCJD, rather than 42% as had previously been thought. Chris Higgins,

Chairman of the government's Spongiform Encephalopathy Advisory Committee, estimated that this would result in a new wave of 50–350 new cases of vCJD. Cases of vCJD peaked in the United Kingdom in 2000, with 28 cases, and have dwindled of late to around 1 case per year. *The Independent/The Times*

Tamiflu shows signs of weakness



Corbis

Health officials have warned that a prevalent strain of influenza is resistant to Tamiflu, an antiviral that is produced by Roche. The prevalence of influenza A H1N1, the strain that has shown resistance to Tamiflu, is high in some states of the United States, the CDC report. Although it is still early in the flu season, and therefore unclear whether H1N1 will become the predominant strain this winter, this is "an early heads-up" for doctors who need to treat flu, say officials. Doctors are advised to consider prescribing other drugs, such as GlaxoSmithKline's Relenza, in some cases. Tamiflu has been stockpiled by many governments to cope with an avian or pandemic flu. Because drug-resistance genes can be passed between different strains of flu, these findings suggest that outbreak control strategies may need to be revised.

Bloomberg/Associated Press

Nations inflate vaccine numbers

Dozens of countries report inflated numbers of vaccinations they administer to children to get more funding from United Nations (UN)-sponsored programmes, a *Lancet* study shows. Christopher Murray, Director of the Institute for Health Metrics at the University of Washington, and his colleagues assessed official reports of how many children received full coverage with the diphtheria, tetanus and pertussis vaccine and compared these with surveys of coverage from independent groups. The official reports estimated that 14 million children were vaccinated from 1986–2006, compared with only 7 million children estimated by independent surveys. Of the 51 countries that take part in UN-backed programmes that provide funding for vaccinating children, 32 over-reported the extent of their coverage by at least 50%. The authors estimate that the Global Alliance for Vaccines and Immunization (GAVI), which provides US\$20 per child protected, over-paid for vaccinations by \$140 million. The countries that over-reported the most were Armenia, Myanmar, Somalia and Zimbabwe. GAVI officials said that they would hold off on all payments until affected countries account for the discrepancies, and stress that there is no evidence of corruption. “One has to wonder where the money has gone — hopefully not into Swiss bank accounts,” says Philip Stevens, of the London-based International Policy Network think tank.

Lancet/Associated Press

Rotaviruses stick to sugars

All rotaviruses bind to sialic acids on the surfaces of host cells, show Mark von Itzstein of Griffith University in Southport, Australia, and his colleagues, reversing our previous understanding of rotavirus infection. Using NMR microscopy, the authors examined how ‘sialidase-insensitive’ human Wa and ‘sialidase-sensitive’ porcine CRW-8 rotaviruses interact with host gangliosides. Reporting in *Nature Chemical Biology*, they show that both interactions involve binding to N-acetylneuraminic acid, a sialic acid, challenging the paradigm that there is a

difference between sialidase-sensitive and sialidase-insensitive rotaviruses. The authors suggest that “a more robust rotavirus classification system based on ganglioside specificity rather than sialidase sensitivity may be required.” “Identification of common ganglioside-recognizing epitopes could provide new directions for chemotherapeutic and vaccine discovery,” they also write. *Nature Chem. Biol.*

Giardia forced to put up its guard



Researchers have found a way to make the single-celled *Giardia lamblia* show its protective colours using a technique that could pave the way for developing an effective vaccine. *G. lamblia* causes some 280 million cases of vomiting and diarrhoea each year and evades the immune system in part by switching between some 190 different cloaking coat proteins. Reporting in *Nature*, Hugo Luján and his colleagues at the Catholic University of Córdoba in Argentina show that by silencing Dicer, an essential component of the RNA interference pathway, they can force the parasite to express many of its 190 cloaking coat proteins at the same time. Luján tells *The New York Times* that he has used this approach in as yet unpublished work to produce a vaccine that protects gerbils against giardiasis. He hopes that he might also be able to develop a human vaccine, and that a similar strategy — forcing a pathogen to reveal all its coat proteins —

could also be used to develop vaccines for other parasites that switch their coat proteins, such as malaria. *Nature/The New York Times*

Drug-resistant TB rife in China

Levels of multidrug-resistant tuberculosis (MDR-TB) in China are nearly twice the global average, according to research published in *BMC Infectious Diseases*. China has almost 4.5 million cases of TB, second only to India. Susan van den Hof of the KNCV Tuberculosis Foundation in The Hague, The Netherlands, and her colleagues assessed surveys from 1996–2004 of the drug-resistant status of TB cases from patients in ten Chinese provinces. Of 14,059 cases, 9.3% were MDR, whereas the global average is 4.8%. “Many possible explanations for the development of drug resistance in China exist, and different explanations may prevail in different areas of this vast country,” the researchers write. “These include the inadequate use of anti-TB

drugs in public hospitals, lack of supervision of treatment, poor drug-management and absence of infection control measures in hospitals,” they add. *BMC Infect. Dis./Reuters*

Outbreak news

Cholera. More than 30,000 people have been diagnosed with cholera in Zimbabwe as of 1 January 2009, report WHO scientists, and there have been over 1,600 deaths from the water-borne illness already. Experts fear that the outbreak might lead to as many as 60,000 cases in the up-coming rainy season, which could increase transmission of the disease.

Associated Press/The New York Times

Influenza. Doctors reported 69 cases of flu for every 100,000 people during the last week of 2008 in the United Kingdom. At this rate, this flu season is predicted to be the worst since the winter of 1999–2000, in which 22,000 people died. Portugal, France, Ireland, Italy and Spain are also experiencing particularly intense flu outbreaks. *The Guardian/The Age*

In the News was compiled with the assistance of David Ojcius, University of California, Merced, USA. David's links to infectious disease news stories can be accessed on Connotea (<http://www.connotea.org>), under the username NatureRevMicrobiol.