

JE 28 Sept 09

sanofi aventis

Because health matters

25 September 2009

Standing Committee on Health and Ageing
House of Representatives
PO BOX 6021
Parliament House
Canberra ACT 2600

Dear Committee Secretary

RE: Round Table forum on regional health issues jointly affecting Australia and the South Pacific

Please find attached a submission from Sanofi Pasteur, the vaccines division of the sanofi-aventis Group to the House of Representatives Standing Committee on Health and Ageing Round Table forum on regional health issues jointly affecting Australia and the South Pacific.

Sanofi Pasteur would welcome the opportunity to provide further information to the Committee about our vaccines program if required.

We look forward to the outcomes of the forum.

Yours sincerely



Rowena Cowan
Government Relations Manager

Roundtable forum on regional health issues jointly affecting Australia and the South Pacific

Submission from Sanofi Pasteur (the vaccines division of sanofi-aventis Group)

Sanofi Pasteur welcomes the opportunity to make a submission to the House of Representatives Standing Committee on Health and Ageing on regional health issues jointly affecting Australia and the South Pacific. In particular, Sanofi Pasteur would like to focus on relevant vaccines in our portfolio and work currently being undertaken to develop a vaccine for Dengue fever.

Overview

With the exception of clean, safe drinking water, no human endeavour rivals immunisation in combating infectious diseases and reducing mortality rates.¹ Immunisation saves more than two million lives every year and is one of the most cost-effective health-care investments available.

Sanofi Pasteur, the vaccines division of sanofi-aventis Group, is the largest company in the world devoted entirely to human vaccines. With a heritage dating back more than a century to Louis Pasteur, Sanofi Pasteur offers the broadest range of vaccines in the world against 20 infectious diseases. In 2008, our company produced more than 1.6 billion doses of vaccine, making it possible to immunise more than 500 million people across the globe.

Our Vaccines Portfolio

Sanofi Pasteur produces vaccines which provide protection against 20 bacterial and viral diseases including Yellow Fever, Influenza, Hepatitis A and B, Rabies, Japanese Encephalitis, Tuberculosis, Typhoid Fever and Cholera.

Sanofi Pasteur is the world leader in influenza vaccines and a critical partner in global influenza management plans. Our company supplies 77 percent of the southern hemisphere influenza vaccines market.

In Australia, Sanofi Pasteur provides 35 percent of seasonal influenza supply and 50 percent of Australia's H5N1 (Bird Flu) vaccine for the National Medical Stockpile. Our company is also the sole Australian supplier of several key vaccines for diseases such as Japanese Encephalitis, Rabies, Tuberculosis and Yellow Fever. These vaccines play an important role in protecting the Australian public and Australian Defence Forces.

Vaccines in development

Development of a new vaccine can take up to 25ⁱⁱ years with an overall cost of up to US\$1 billion.ⁱⁱⁱ Every day, Sanofi Pasteur invests more than AU\$ 1.7 million in vaccines research and development globally and our company currently has 18 vaccines in development or submitted for authorisation.

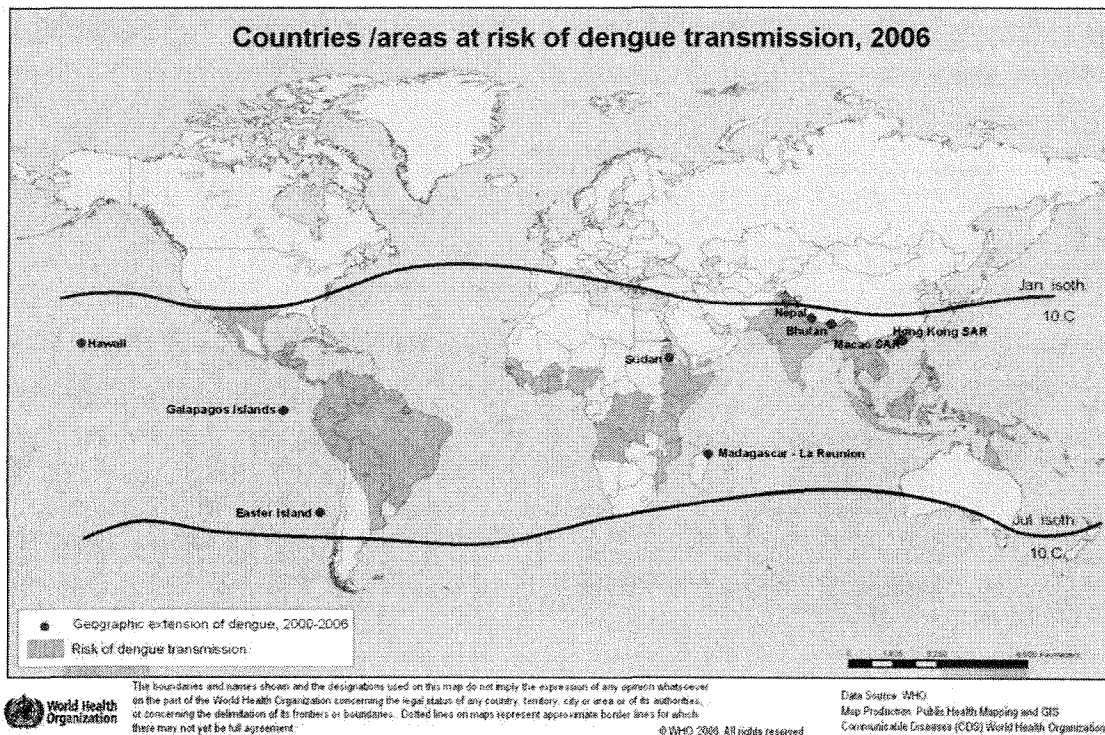
- ***Dengue***

Dengue fever is a mosquito-borne disease caused by four types of Dengue viruses (type 1 to 4). Dengue fever occurs mostly in tropical and subtropical countries and is spreading to new parts of the globe each year. Overall, the disease is a potential threat for almost half the world's population with an estimated 3.5 billion people living in countries at risk.

Of the estimated 230 million people infected annually, two million, mostly children under 15 years of age, develop Dengue Hemorrhagic Fever (DHF), a severe form of the disease^{iv}. DHF, with an average 5 percent fatality rate, is a leading cause of hospitalisation in South-East Asia, placing tremendous pressure on strained medical resources.

Dengue fever typically affects countries such as the United States (Puerto Rico, Texas-Mexico border, Hawaii and the Pacific Islands) and Australia (Queensland). Outbreaks have also occurred recently in Paraguay and the Middle East. In addition, a substantial number of people travelling to endemic regions are also infected each year.

The World Health Organisation has now warned that the Western Pacific Region may be heading for a major Dengue outbreak^v.



Dengue in Australia ^{vi}

Dengue has historically been reported in the Northern Territory, New South Wales and Queensland, but has only been reported in North Queensland in recent decades. Transmission of the virus is limited by the distribution of its vector, the mosquito *Aedes aegypti*, to North Queensland. Dengue is not endemic in Queensland, however, *Ae. aegypti* is common in North Queensland (Fig. 1) and the area is prone to outbreaks. *Ae. aegypti* frequents backyard rubbish and junk, breeding primarily in artificial containers holding water inside and outside the home: cans, buckets, jars, pot plant dishes, birdbaths, boats, tyres and tarpaulins. In North Queensland, elevated sites such as roof gutters and rainwater tanks are also important breeding sites. Imported cases from infected travellers are therefore a risk for the rapid spread of Dengue in northern Queensland.

The most recent epidemic of Dengue in Queensland (which started in December 2008) was the largest recorded in at least 50 years. The epidemic involved Cairns, Port

Douglas, Yarrabah, Injinoo, Innisfail and Mareeba with 931 cases over 48 weeks and has just been declared over. All four Dengue serotypes have been reported in Queensland over the years.

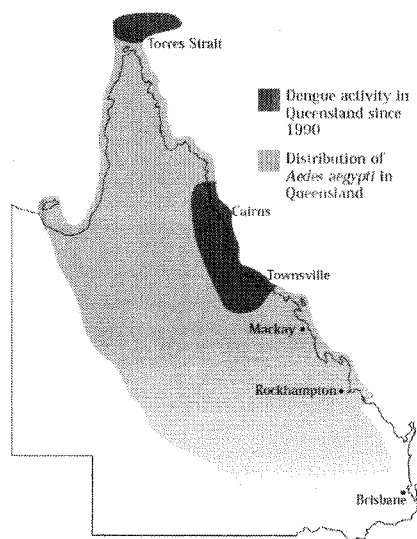


Figure 1. Distribution of *Aedes aegypti* in Queensland

Since 1999 Queensland Health has been notified of an average of 10 imported cases of Dengue fever to North Queensland per year. Approximately 60 percent of these cases were from Papua New Guinea (PNG) and East Timor, with most of the remainder coming from Thailand, Bali and South Pacific nations. There is a high level of Dengue activity in PNG at any given time. Given the Torres Strait Islands are geographically very close to PNG and the islands receive many visitors from PNG, there is an increased risk of importations of Dengue to the Torres Strait.

Sanofi Pasteur's Global Dengue Vaccine Clinical Program

Sanofi Pasteur commenced development of a Dengue vaccine in the 1990s, with an objective to bring quality, safe, industrially scalable and protective tetravalent (containing four serotypes) Dengue vaccine to people living in endemic countries or travelling to tropical destinations. Sanofi Pasteur has a long standing commitment to Dengue vaccine development which has occurred in partnership with the World Health Organisation Initiative for Vaccine Research Steering Committee, the Special Program for Research

and Training in Tropical Diseases, Pan American Health Organisation, Paediatric Dengue Vaccine Initiative and the Carso Health Institute.

Clinical studies with Sanofi Pasteur's most advanced tetravalent candidate vaccine started in the 2000s. Our tetravalent Dengue vaccine candidate has been evaluated in clinical trials in adults and children from non-endemic and endemic countries (U.S., Mexico, Philippines). This clinical trial program includes over 24 studies from Phase I to III, with over 50,000 subjects.

Overall, a balanced immune response against all four serotypes was observed after three doses of the vaccine. The vaccine appears to be well tolerated with a similar safety profile after each dose^{vii}. Sanofi Pasteur's Dengue vaccine research program includes ongoing clinical studies in Mexico, Peru, The Philippines and Thailand, with adults and children. The goal of a paediatric clinical study in Thailand is to assess the efficacy of the vaccine in protecting children against symptomatic Dengue infection. Sanofi Pasteur's tetravalent Dengue vaccine candidate is the first in the world to reach this stage of clinical development.

Sanofi Pasteur Dengue Fever Vaccine in Australia

Sanofi Pasteur has already completed one Phase II Dengue fever vaccine study in Australia, is supporting a Melbourne based epidemiological study in travellers and will be running a phase III lot to lot consistency study (tests to demonstrate consistency of manufacturing quality) with our quadrivalent Dengue fever vaccine in Australia (to start in October 2010) with 1050 planned subjects.

Based on the seriousness of Dengue fever as a public health issue, and the benefit that a vaccine will provide in regions such as North Queensland and the South Pacific, Sanofi Pasteur is expediting our Dengue fever vaccine trials and approvals process as much as possible, while ensuring safety is not compromised.

- ***Human Immunodeficiency Virus (HIV)***

Sanofi Pasteur is taking part in the global effort to develop an HIV vaccine. In the nearly 20 years since our HIV vaccine development program was established, Sanofi Pasteur has been collaborating with a number of leading governmental agencies and pharmaceutical companies. These partnerships have led to major advances in research, clinical study design, and implementation. An HIV prophylactic vaccine involving more than 16,000 adult volunteers in Thailand has demonstrated that an investigational HIV vaccine regimen was safe and modestly effective in preventing HIV infection, lowering the rate of HIV infection by 31.2 percent compared with placebo.

- ***Japanese Encephalitis***

Approximately 30,000 to 50,000 people suffer from Japanese encephalitis annually, mostly in Asia. Sanofi Pasteur is committed to the fight against this disease in endemic regions with the development of a next-generation, single-dose (only one injection to be immunised) Japanese Encephalitis vaccine.

Conclusion

Sanofi Pasteur is proud of its record of achievement in vaccines development and production, but recognises that vaccination is an ongoing challenge. It remains critical to develop improved vaccines and increase access to these vaccines, enabling more lives to be saved.

Our company representatives would welcome the opportunity to meet with members of the House of Representatives Standing Committee on Health and Ageing to discuss our work on infectious diseases affecting Australia and the South Pacific and provide further information about our vaccine for Dengue fever.

ⁱ Plotkin SA, Orenstein WA. *Vaccines*. 4th ed. Philadelphia, Pa: W.D. Saunders; 2004:1.

ⁱⁱ Tomich n, ed. *The Global Vaccine Shortage: The Threat to Children and What Do About It*. New Canaan, Conn: The Albert B. Sabin Vaccine Institute; 2003;26.

ⁱⁱⁱ Wilde H. what are today's orphaned vaccines? *CID* [serial online]. 2001;33:648-650. Available at: <http://www.journals.uchicago.edu/CID/journal/issues/v33n5/010333/010333.web.pdf>. Accessed January 19, 2007.

^{iv} Pediatric Dengue Vaccine Initiative (PDVI), presentation "Estimating the global burden of dengue" at 2nd Int Conf on Dengue & DHF, 15-17 Oct 08 , Phuket, Thailand

^v WHO alarmed about the spread of dengue,
http://www.wpro.who.int/media_centre/press_releases/pr_23072007.htm

^{vi} Dengue Fever Management Plan for Queensland, 2005 - 2010

^{vii} Bouckennooghe et al presented at 57th ASTMH annual meeting, New Orleans, December 2008