



Region 8 Animal Control Newsletter

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Photo Courtesy Catster

Dengue fever: America's Next Health Crisis

By Katie Drummond AOL NEWS

Last year, the H1N1 outbreak killed at least 12,500 people worldwide, and billions of dollars were spent on vaccine development and the rush to stymie the virus' spread. At the same time, another global health crisis was expanding with staggering speed but much less attention.

Dengue fever, a mosquito-borne illness once contained to Central America and Southeast Asia, now threatens 2.5 billion people in more than 100 countries. The affected areas include wide swaths of the United State and Haiti, where the illness was already endemic before last week's earthquake.

"The bottom line is that this is a neglected disease," said Dr. Raman Velayudhan, a dengue specialist

with the World Health Organization. "No attention means very little donation money, so countries are fending for themselves."

Dengue (pronounced "DENG-ee") was identified and named in the late 18th century. The first modern pandemic was reported in Southeast Asia during the 1950s. Since then, outbreaks have become common in tropical regions. About 40 million cases are diagnosed each year, with 22,000 deaths.

The disease is transmitted via human contact with mosquitoes. Once a person is infected, they can pass the illness to other mosquitoes, or through blood products. An individual may suffer from no more than a fever during his first infection but can become susceptible to more serious symptoms -- including circulatory failure -- if infected again.

Over the past decade, outbreaks have become more prevalent. The U.S. Centers for Disease Control and Prevention reports that a handful of countries, including Vietnam, Cape Verde, Malaysia and the Philippines, are struggling with outbreaks currently. Slowly, health officials and environmental agencies have started to warn that dengue infection rates could surge to unprecedented levels.

American tourism in areas like Puerto Rico and Latin America has led to more infected mosquitoes in the U.S. One variety of dengue-carrying mosquito, *Ae. albopictus*, has already been identified in 36 states. Outbreaks in Mexico, where 40,000 dengue fever cases were reported last year, have already been linked to surges in diagnoses among Texans.

"Our outbreaks depend on what's going on south of the border," said Allison Lowery of the Texas Department of State Health Services. In 2005, 25 people were hospitalized, and 16 of them suffered the more dangerous form of the disease, called dengue hemorrhagic fever. The scare in Texas occurred shortly after Mexican authorities reported their own 1,200-person outbreak.



The state already works with Mexican health officials to share outbreak reports, but because researchers have yet to find an effective vaccination, all-out prevention is nearly impossible once infected mosquitoes populate an area.

At a national level, studies into the prevention and treatment of dengue are ongoing. Right now, successful care for serious cases depends on hydration and hospitalization. In regions without adequate medical services, that often means the fever is fatal. The death rate during dengue outbreaks can exceed 20 percent in countries with insufficient treatment facilities.

The National Institutes of Health is a leading advocate for dengue awareness and research. In 2008, two leading NIH researchers published a paper in the Journal of the American Medical Association, warning that dengue infection rates could soon explode in the United States. Drs. Anthony Fauci and David Morens called the widespread appearance of dengue in the U.S. "a real possibility" if current climactic and globalization trends continued.

The NIH spearheads more than 60 research programs to combat dengue, including a promising vaccine that's undergoing clinical trials. Also on researchers' radar are modified mosquitoes, whose DNA has been altered to make them "dengue resistant."

Velayudhan is confident that a successful vaccine is out there, but he warns that "a working, approved vaccine is at least five years away." For now, he advocates for increased public education and health care training -- along with the dollars to do it.

"People will continue to be infected until we train and equip countries effectively," he said. "Right now, though, we simply don't have the resources."

Mode of Transmission



Photo by Marco Gaiani

Aedes albopictus

Although some species of Old World primates can be infected with Dengue and possibly serve as reservoirs, in the New World, infected humans are the only known reservoir and the principal means of transmission is from human to human through the bite of an infected mosquito. Recent studies have documented that the Dengue viruses can also be vertically transmitted from female mosquitoes to their eggs although not at a high level. (1,2)

Within the new World, two species of exotic, but long established *Aedes* mosquitoes are the principal vectors; *Aedes aegypti* (the yellow fever mosquito) and *Aedes albopictus* (the



Photo Courtesy University of Georgia

Asian tiger mosquito). Both of these mosquito species are classified as container breeding mosquitoes that bear distinctive contrasty black and white marking as adults. Speciation of adults can be most easily be done by examining the silvery white marking on the dorsal thorax; lyre shaped in *Ae. aegypti*, a single middorsal stripe in *Ae. albopictus*. With both species, the eggs are deposited singly at or near the waterline in containers that hold water. Having evolved for rapid development, egg hatching requires submersion in water that is followed by a drop in the level of dissolved oxygen, the later being an indicator of abundant food (microbes and protozoa) for the larvae. Of the two mosquito species, *Ae. aegypti* is more synanthropic and thrives in and around urban areas, most notably where there are abundant structures and/or discarded materials that catch and hold rain water. *Aedes albopictus* will colonize similar areas, but is less fastidious in terms of breeding sites and will also breed in stumps and tree holes, enabling it to thrive over much wider swaths of land including rural areas. As the common name of *Ae. albopictus* implies, both will thrive in discarded tires that hold water. Unlike many other mosquitoes, adult female *Ae. aegypti* and *Ae. albopictus* are both day-time active species that will readily bite and feed on people throughout even the hottest parts of the day. Because of this, it is advisable for residents living in infested areas to use repellents and employ other bite prevention tactics throughout the day. Eliminating or modifying potential breeding sites in and around residential areas is paramount to their effective control.

- References: 1) Cecilio, AB, ES Campanelli, KPR Souza, LB Figueirido, and McResende, 2009. Natural vertical transmission by *Stegomyia albopicta* a dengue vector in Brazil. *Braz.J. Biol* 69 (1):123-127
- 2) Guathe, J, J. Martinez-Munoz, D. Perez-Ishiwawa and J Salas-Benito. 2007. Evidence of Vertical transmission of Dengue virus in the endemic localities in the state of Oaxaca, Mexico. *Intervirolgy* 50: 347-352

MAP COURTESY CDC

DSHS ACO Training Course Schedule

Approved Courses conducted by the Department of State Health Services Zoonosis Control Branch¹



Call the number provided or click on contact name for the *course date* for which you would like to register to ask questions about a particular course.

	Type	Location	Contact(s)	Phone Number
*Feb 17-18, 2010	Basic	Abilene, Texas	Debra Perkins	(325) 795-5857
*Mar 10-12, 2010	Basic	Corpus Christi	Laura E. Robinson, D.V.M., M.S. Leticia Tamayo	(956) 444-3224
Mar 23-24, 2010	Basic	Regional Headquarters, 5425 Polk St., Houston, TX	Gary Johnson Brittany Singletary Jael Miller	(713) 767-3300
May 11-12, 2010	Basic	2408 South 37th St., Temple, TX 76504	Beverlee Nix, D.V.M. Leslie Platz Rebecca Hejnal Melissa Maass	(254) 778-6744
Jul 14-15, 2010	Basic	Conroe, TX	Gary Johnson Brittany Singletary Jael Miller	(713) 767-3300
Sep 14-15, 2010	Basic	2408 South 37th St., Temple, TX 76504	Beverlee Nix, D.V.M. Leslie Platz Rebecca Hejnal Melissa Maass	(254) 778-6744
Nov 17-18, 2010	Basic	Sugar Land, TX	Gary Johnson Brittany Singletary Jael Miller	(713) 767-3300

¹These courses serve to meet the training requirements set forth in Texas Health and Safety Code, Ch. 829, Animal Control Officer Training.

* Indicates that a course is full.

¹These courses serve to meet the training requirements set forth in Texas Health and Safety Code, Ch. 829, Animal Control Officer Training.

Internet address for non DSHS

courses <http://www.dshs.state.tx.us/idcu/health/zoonosis/education/training/nonaco>

*for news relating to either of the following organizations,
here is their contact information*

STACCA 830-629-5287

TACA website <http://www.taca.org/>



POSITIVE ANIMAL RABIES CASES IN 2009

Counties	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Totals
Atascosa					bat								1
Bandera			bat		raccoon, skunk		raccoon						4
Bexar	skunk	skunk	Skunk, bat	Skunk 4	skunk	Skunk 2		skunk	Bat 2, skunk	Bat skunk	Bat 2		19
Comal				skunk					skunk	bat		bat	4
Frio			bat										1
Gillespie									Bat				1
Goliad								skunk					1
Gonzales				skunk									1
Guadalupe			Skunk 3, bat										4
Jackson			skunk										1
Kerr				bat									1
LaSalle	skunk												1
Lavaca												skunk	1
Real											Bat		1
Victoria			bat						bat				2
Wilson			skunk	skunk			bat				Bat		4
Totals	2	1	11	8	4	2	2	2	6	3	4	2	47

PUBLIC HEALTH SERVICE REGION 8 POSITIVE REPORTED ANIMAL CASES 2007 - 2009

