

Antivenoms needed, say officials, but companies won't bite

"When a doctor in a developing nation sees a patient with an infection, it's an easy choice to prescribe an antibiotic," says Ana Padilla, a technical advisor at the World Health Organization (WHO) in Geneva. "But when a patient shows up with a snake bite, most doctors won't know which antivenom to give or how to administer it—and even if they did, they probably don't have it or know where to get it."

Because of this knowledge gap, Padilla says, at least 100,000 people die each year from snake bites, and 300,000 more suffer debilitating injuries. In early May, the WHO launched a new website (http://www.who.int/bloodproducts/snake_antivenoms/) aimed at filling that gap.

The result of two years' worth of information gathering, the site hosts a growing list of more than 200 venomous snake descriptions, maps showing the areas they inhabit and any known antivenoms, along with the companies that produce them. The idea is that charities, medical organizations and governments will use the information to help ensure that needed antivenoms are produced and distributed to the proper areas.

But Padilla admits that it's going to be an uphill battle. Antivenoms are expensive to produce. The lengthy process involves exposing an animal (typically a horse) to venom and then refining the animal's resulting blood-borne antibodies into a serum. Single doses can cost hundreds of dollars but only have a shelf life of around two years.

The production process is usually not closely monitored, especially in the areas that need the venom most: sub-Saharan Africa, South Asia and Southeast Asia. The animal proteins in the serum can often cause an allergic reaction, says Scott Pfaff, a venom expert and curator of herpetology at the Riverbanks Zoo and Garden in Columbia, South Carolina.

"You have to know what you're doing when you're delivering the stuff, because the antivenom might do a better job of injuring the patient than the venom," Pfaff says. Any antivenom imported

into the US is considered an Investigational New Drug by the Food and Drug Administration—a designation that may be appropriate, Pfaff says, as there's often a question as to the antivenom's active ingredients.

Additionally, many commercial producers of antivenoms have halted production because there simply aren't enough snake bites to make a profit. For example, there may no longer be adequate supplies of coral snake antivenom in the US later this year because of a halt from its primary producer, Wyeth, in 2003. This means that the WHO's new initiative will probably be largely reliant upon nonprofit organizations to produce the serums, Padilla says.

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Some of the most needed antivenoms:

	Common Name	Species Name	Antivenom(s)	Threat
Americas	Lanceheads	<i>Bothrops</i> species	Antibiotropico Polivalente	Responsible for 15 deaths per 100,000 people in Brazil
Africa	West African carpet viper	<i>Echis ocellatus</i>	FAV-Afrique, SAIMR Echis antivenom	Most common snake danger in central and west sub-Saharan Africa, up to 12.3% fatality rate (in Nigeria)
Asia	Malayan pit viper	<i>Calloselasma rhodostoma</i>	Haemato-Polyvalent snake antivenom, Malayan pit viper antivenin, Polyvalent anti-snake venom	Responsible for half of all hospitalizations in Malaysia, where mortality rate reaches 18 per 100,000 people
Oceania	Australian brown snakes	<i>Pseudonaja</i> species	CSL brown snake antivenom, CSL polyvalent antivenom	Responsible for half of approximately 200 snakebite deaths in Oceania each year

Source: Chippaux, J.P. *Bull. World Health Organ.* 76, 515–524 (1998).

Cancer vaccine approval could open floodgates

The US Food and Drug Administration approved the first-ever vaccine to treat cancer on 29 April. After a three-year battle with the regulatory agency and three phase 3 trials, the treatment—called Provenge, by Seattle-based Dendreon—extended median survival time in men with advanced prostate cancer by more than four months.

The success of Provenge could herald many more therapeutic vaccine treatments for everything from brain tumors to renal cancer, says Joseph Pantginis, a biotech analyst with Roth Capital Partners in New York. "It finally breaks the glass ceiling after years of skepticism and many failures in the cancer immunotherapy space."

Here are ten promising cancer vaccines currently in mid- to late-stage development.

Company	Product	Type of cancer	Phase ^a
Celldex Therapeutics & Pfizer	CDX-110	Glioblastoma (brain)	2
GlaxoSmithKline	MAGE-A3 ASCI	Lung, melanoma	3
Geron	GRNVAC1	Acute myelogenous leukemia	2
Vical	Allovecitin-7	Melanoma	3
Biovest International	BiovaxID	Non-Hodgkin's lymphoma	3
Oncothyreon & Merck	Stimuvax	Breast & lung	3
Oxford BioMedica	TroVax	Kidney	3
Argos	AGS-003	Kidney	2
New Link Genetics	HyperAcute	Lung, pancreas	2
TVAX Biomedical	TVAX immunotherapy	Astrocytoma (brain) & kidney	2

^aOngoing or completed trial phase.