

## Smallpox - An Old Disease, A New Threat

### Part I - A New Threat

The worldwide eradication of smallpox by the World Health Organization (WHO) 20 years ago is a success story that, ironically, could end in catastrophe. This is the first of a three part series that will explore the history of the disease and the modern dangers from a virus that was on the brink of extinction.

Today, the only known stocks of the smallpox virus are at the Centers for Disease Control and Prevention in Atlanta and at the Russian State Center for Research on Virology and Biotechnology in Koltsovo, Russia. These stocks were slated for destruction on June 30, 1999; however, the World Health Assembly, which governs WHO, decided to postpone the elimination of smallpox until possibly as late as 2002. That decision came after the Clinton administration asked for a delay to allow time for further research on the virus. The concern about destroying the virus comes from reports that terrorist groups may have stocks of the virus that could be used for biological warfare.

Because of the success of WHO in eliminating smallpox, a large percentage of the world (including everyone in the U.S. and Canada born after 1973) has not been vaccinated against the disease. Thus, we have a large susceptible population that can be easily infected and can lead to an epidemic. Given that smallpox is very contagious and that most doctors would not recognize smallpox, the danger is its reemerging is clear.

Ken Alibek, author of the book "Biohazard: The Chilling True Story of the Largest Covert Biological Weapons Program in the World-Told from the Inside by the Man Who Ran It," was a top scientist working on biological weapons in the Soviet Union. He defected to the U.S. in 1992 and in this memoir describes the real dangers of biological warfare from arsenals of various biological agents, including smallpox. He claims that such weapons were made by the Soviets and that they were sold to other countries or possibly taken out of the country by Russian scientists lured to work for terrorist organizations.

Given the real danger of a smallpox epidemic if the virus was released and the possibility that unknown stocks exist, it might seem very reasonable to keep the official stocks. The Clinton administration declared that we have a responsibility to develop new vaccines and drugs against smallpox and, therefore, access to the virus could be useful. The major problem is that there is at present no plan to conduct any research with smallpox. Given that humans are the only host for the virus, there is currently no way to test the effectiveness of new vaccines or drugs. The vaccine that has been used since the late 18<sup>th</sup> century against smallpox is actually directed against the cowpox virus, which is not in any danger of being destroyed. That vaccine is no longer available. In fact, one might argue that producing sufficient vaccine to treat the population should have a higher spending priority than further research on a disease that has been eradicated.

The entire genome of the smallpox virus has been sequenced. This means that the virus could be reconstructed from the sequence of the genome if it were necessary. This fact can be used either to argue that there is no need to keep stocks of the virus, or that there is no point in destroying the stocks since the virus can be made again.

We will next look at the history of this devastating disease.

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