

# The eradication of smallpox

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What is the history of the eradication of smallpox? What are the ramifications of maintaining a reserve stock of the virus in research laboratories?

Smallpox has been one of the most fatal infectious diseases to have afflicted humankind in recorded history. From the earliest recorded occurrences of the disease we learn that the disease spread rapidly where ever human population was dense and killed one in five of infected persons. Children were particularly vulnerable, as it claimed one in three of them during an outbreak. Since the disease was spread by air, it was very difficult to contain it in congested human settlements such as cities. Not until the discovery of medical vaccination were humans able to protect themselves against smallpox. While vaccination option remained controversial throughout, there is no doubt that it greatly helped contain the disease and save thousands of lives. The improvement in sanitary conditions in cities and hygiene levels in hospitals had also contributed to controlling the disease. (Brickman, 2002) As statistics from Britain's National Health Service shows, the first stage in the elimination of smallpox was achieved during the middle of last century, when “ virulent smallpox (variola) was replaced naturally in Britain by a milder type (alastrim), antigenically identical but with a much lower mortality (1 percent). This was then gradually eliminated by increased attention to isolation and contact tracing” (Baxby, 1999). However, the threat of smallpox still persisted as sporadic outbreaks of both these variants remained till the 1960s. But through a combination of vaccination, safety legislation and improvement in sanitary conditions, smallpox was completely eradicated from Europe and America by 1970. The World Health Organization was encouraged by the success in advanced countries and attempted to replicate this success in the rest of the world.

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But the medical community always had hope, for smallpox was an ideal candidate for eradication. For example, the immune system of the affected individual got boosted after a bout. Secondly, “ the virus was antigenically stable (unlike influenza); there were no carriers (unlike typhoid) or animal reservoirs (unlike malaria)” (Baxby, 1999). To add to this, effective vaccines were being developed. And the medical community was also aware that robust control measures can be implemented to contain an emerging epidemic. So in the 1970s, a world wide eradication drive was implemented. Surveillance-containment was the buzzword associated with this drive. This involved

“ trained workers searching for cases, with rewards for those who found them. Cases and their contacts were then isolated; contacts were vaccinated. Interestingly this strategy incorporated elements of a system devised in 1778 by John Haygarth in Chester. The last natural case occurred in Somalia in 1977 and after exhaustive enquiries the 1980 WHO Assembly concluded that smallpox had been eradicated.” (Baxby, 1999)

The remaining stocks of smallpox are strictly confined to high-security medical laboratories in the USA and Russia. It is kept for purely academic and research purposes. But given the geo-political equations of our times, many people have questioned this rationale. For example, if the last remaining culture of the disease were to leak into atmosphere , either as a result of an accident or as a result of a missile attack or terrorist attack, then unfathomable damage could result from the fresh outbreak of the epidemic. It is also rumoured that some countries might have retained samples of the virus so that it might come handy as a biological weapon in the event of a war. But since a fresh outbreak of the virus would lead to a global public

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health emergency of unprecedented magnitude, uttermost care and prudence has to be applied to mitigate this threat. Understanding the gravity of the situation, “ in 1999 the WHO approved a research program at the two authorized repositories to develop improved medical defenses against the disease” (Tucker, 2003). But since the samples have not yet been destroyed and the threat remains unmitigated, the debate has intensified among the WHO's 193 strong member countries. It is imperative that through tactful diplomacy the political leadership of the world should put an end to this looming threat.

#### References

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