

# The Controversial Smallpox Vaccine -- Eighteen Points You Should Consider

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By [Meryl Nass, MD](#)

1. Smallpox is a serious disease and it would be great to prevent it. A very old vaccine exists, derived from the pustules of calf bellies inoculated with an old strain of-we think-a cowpox virus lost in antiquity. Edward Jenner came up with the idea of vaccination after realizing milk maids rarely got smallpox, and perhaps they caught something similar from cows which made them immune. The word vaccination comes from this Vaccinia virus.
2. This is a live virus vaccine. Nearly all the side-effects are a result of infection by this virus. Even though it only causes mild infections in most people, in some the infection causes disfiguring skin disorders, blindness, neurological impairments and death. No one knows what percentage of recipients will suffer these complications.
3. The vaccine is two hundred years old: why don't we have something better? Because it worked, and by the time biology developed methods for making new vaccines more efficiently, the disease had been wiped out.
4. Now that we can decode the genomes of microorganisms easily, it is likely that viral molecules that stimulate immunity will be identified and used to create new vaccines. This process does take years, and there is no guarantee it will yield fruit.
5. How serious is the threat? Well, no nation has been routinely vaccinating its population for smallpox for the past two decades, and only the US and Israel are considering a crash vaccination program in the immediate future. All nations are at risk, and approximately half the worlds' population has never been vaccinated. If smallpox is used on a mass scale, it will almost certainly spread around the globe in short order. It will not spare Afghanistan, Iraq, North Korea or any other nation, and the numbers of casualties will probably be huge.
6. This kind of threat, however, may mean no nation state is likely to use this weapon, since there is no way of avoiding the chaos and economic disaster that will accompany a smallpox epidemic.
7. Who might use such a weapon? Only a madman, or someone who has nothing left to lose. Saddam Hussein, faced with our threat to destroy him, fits this category. He is not the person we should be pushing into a corner while holding a gun to his head. He still has a finger on the chem.-bio button, after all. There are other ways of containing his danger to the West, while allowing him to

remain in power. Israel took out Iraq's nearly completed nuclear power plant twenty years ago; now that is the type of win-win strategy we should now be employing. Instead, President Bush is practically daring him to release his worst!

8. In a biological warfare situation, things may be very different than when you are facing natural diseases. The amount of the organism you inhale may be higher than in an ordinary exposure. The microorganism is most likely selected or created to maximize virulence. More than one type of pathogen may be used to enhance infectivity, or a chemical agent may accompany a microbial one. Genes for antibiotic resistance and vaccine resistance may have been added. This means that protective measures that are effective in routine situations may fail when we are facing bioterrorism.

9. Furthermore, what does a perpetrator do when the nation is immunized against anthrax or smallpox? He simply picks another agent, like tularemia, plague, ebola, or an encephalitis virus. We have no vaccines for these agents. Mass vaccination simply guarantees that the agent for which you were vaccinated will not be used, and something else will be selected. Nations that had offensive biological programs, including the US and Soviet Union, had dozens of agents to choose from.

10. Three smallpox vaccines will soon be available. None are currently licensed, though it is claimed that the Acambis vaccine will be licensed within weeks. Two studies of Wyeth's (long-expired) Dryvax vaccine efficacy were published in the New England Journal of Medicine April 25, 2002, by overlapping groups of researchers. In one study the 1:10 dilution gave 70% efficacy, and the 1:100 dilution gave 15% efficacy (only 3 of 20 recipients developed a cowpox lesion).

11. In the other study (and both had the same first author) 98% of vaccine recipients developed lesions after one dose using each of the three dilutions. The authors state this was due to lower vaccine titres in the first study. What they do not explain is why the titres were so different, and whether titres of virus in the other Dryvax vials that may be used on the public will be sufficient for protection.

12. NIH's Dr. Anthony Fauci reported that up to 50 million Americans may be at high risk of vaccine consequences. Yet the virus grows in the skin on your arm after vaccination, and can easily aerosolize. How effective will bandages be at preventing widespread release of vaccine for 1-2 weeks following vaccination? If vaccine is released in this way, how many of the 50 million will be inadvertently vaccinated.

13. To protect those at high risk, which includes people with AIDS, health care workers may be asked to take a work furlough for two weeks after vaccination. Will they also take a furlough from shopping malls, churches and schools? Will furloughs be effective at preventing viral spread to contacts of vaccinated individuals?

14. One big problem for the federal government is figuring out who will pay for these "vaccine vacations." Let's see now: 10 million health care workers at an average \$1,000/week for two weeks-looks like the furloughs could cost 20 billion dollars. If it requires an unpaid leave from work, how many health care workers will volunteer for vaccination?

15. I wish I had "the answer," but of course I do not. A killed or subunit vaccine, or even a more attenuated live vaccine would be a much better option. Do we have the time to develop one? Not if Saddam has smallpox and we preemptively strike soon.

16. Anthrax and smallpox vaccines are only the start down the vaccine slippery slope. What will our immune systems be like after receiving another twenty or thirty biowarfare vaccines, as envisioned in the Pentagon's Joint Vaccine Acquisition Program?

17. Vaccines will never provide the robust defense needed against potential biological warfare threats. Instead, post-exposure therapies that are generic, rather than specific for each microorganism, are what is needed. Even then, there are no guarantees. And when genetic engineering gets even more sophisticated, all bets are off as to whether any technology can save us.

18. Taking prevention seriously is the best way to combat bioterrorism. A meaningful, verifiable biowarfare treaty, with full inspections and universal membership, is our best shot at putting the biological genie back in the bottle. Though it's not 100% effective, it can prevent the creation of weapons on a mass scale.

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