



Joshua Lederberg

'Eradication' of Smallpox Shouldn't End Containmentment

THE ERADICATION of smallpox is one of the major programs of the World Health Organization and may become one of the conspicuous successes of international cooperation for human welfare.

The virus is spread by direct contact from infected to susceptible people, is often lethal, and, once established, the infection responds poorly if at all to any existing medical procedures. The main weapons against smallpox have been quarantine of exposed people and immunization of healthy ones to contain the virus and deny it the fertile ground it needs for continued spread.

The WHO programs are shrinking the territory still occupied by smallpox as an endemic disease, the main foci still left being in South Asia, Indonesia, Central Africa and patches of Brazil.

THIS "ERADICATION", however, cannot be accepted at face value; that is, statistics about the decline of smallpox as a reported disease cannot be interpreted as the disappearance of the smallpox virus from the planet.

The danger is that "eradication" will be followed by complacency and relaxation of the very measures that contain the virus. If a large population of sensitive, un-

vaccinated adults builds up, the consequences of a new epidemic would be most serious, for the disease tends to be most severe in young adults as compared to its occurrence in children who are exposed earlier in life in endemic regions.

Demands for just such a relaxation have already been voiced. Writing in the *New England Journal of Medicine*, Drs. J. M. Lane and J. D. Millar of the National Communicable Disease Center take issue with the present recommended practice of routinely vaccination 1-year-olds. Pediatricians prefer to vaccinate children of this age not because they are at high risk of exposure to smallpox but because they are then least vulnerable to rare side-effects.

Significant complications occur in about 0.01 per cent of vaccinations. In 1963, nine deaths were recorded as a consequence of some 14 million vaccinations; none of these were primary vaccinations of 1-year-olds. Assuming some corrections in the figures, Drs. Lane and Millar calculate a basic risk of about one death per million vaccinations, or a total of about 210 in the United States between 1970 and 2000.

They also point out that

no smallpox has been imported into the United States since 1949. The progressive eradication of smallpox the world over would further lessen the chances of new introductions. And it would be unlikely that as many as 210 cases of smallpox would ensue even if a traveler did bring the virus back. But that would be a consequence of the very programs now being criticized.

VACCINATION is a very clear example of a confrontation of personal versus community values. The person who avoids vaccination exposes himself to some small risk of infection, but he also exploits his fellow citizens who submit to it for the benefit of the community.

These are essentially the only measures we have against a disease that has claimed ten million victims in recorded history. A deterioration in our standards of community protection would expose the entire population to eventual risks of the utmost gravity.

The critics of vaccination have an important point, but they are grasping the wrong end of the stick. A complication rate of 0.01 per cent is a burden we should not have to pay, but much of it would be preventable now by more careful selection of patients who already give indications of being at high risk, like children with eczema or with immunological disorders. New vaccines are being introduced that show some promise of having even lower rates of side-effects.

Above all, the community has a large, special responsibility to learn how to minimize the burdens on individual subjects who participate in vaccination programs more for the public than for their individual benefit. We still know very little about why the vaccine does get out of hand in rare cases. The recent course of budgetary policy for health research flies in the teeth of that responsibility.

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Dear Dr. Lane--

May I have reprints of your papers on this?

In retrospective re-reading, I see I may have underplayed the non-lethal complications suffered by routine 1-yr. vaccination. Have you any perception of how well these might be mitigated by more careful case-selection.

Is it known that routine vaccine is genetically homogeneous? Could there be a neurotropic mutant (like Burnet's neuroflu of years ago, or was that Newcastle?)

*Sincerely,
Joshua Lederberg*