

Editorial

Immunization safety: a global priority

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Immunizations are undoubtedly one of the most effective and safest of all health interventions. Nevertheless, implementation of immunization programmes on a worldwide basis faces many challenges. “Immunization safety” (i.e. ensuring and monitoring the safety of all aspects of immunization including vaccine quality, vaccine storage and handling, vaccine administration and the disposal of sharps) is one such challenge that those of us who advocate use of vaccines must find ways to address.

This challenge has arisen for many reasons. It has been recognized ever since the inception of vaccination against smallpox that adverse events may follow the administration of vaccines. Such adverse events have been reported to be either local (at the site of injection) or systemic, and may be mild or severe. It has also been recognized that, while some of these events are indeed due to the vaccine itself, many others are coincidental and arise because of other medical conditions. The large number of doses of vaccines that are administered, create conditions that are auspicious for the occurrence of post-vaccination coincidental events (although many probably have no relation whatsoever with vaccination) and lead to undue concerns and allegations.

In the past, the initial focus after a report of an adverse event or a series of events was the quality of the vaccine. Because of the need to assure and improve vaccine quality, WHO and national regulatory authorities (NRAs) worldwide have devoted much energy and resources to working with vaccine manufacturers to enhance their compliance with good manufacturing practices. The availability of vaccines of good quality is, however, not enough. It has been reported that up to one-third

of vaccination injections are not carried out in a way that can guarantee sterility (7). Infectious diseases have actually been transmitted by the very act of immunization. In addition, there are reports of unfortunate programme mistakes. Individuals involved in immunization and especially those involved in dealing with local adverse events may be ill prepared to handle the actions needed to address them. Vaccination is expected to be a safe medical intervention that will not lead to harm. Part of this expectation arises because vaccines are given to healthy children and child-bearing women. This is in contrast to therapeutic drugs, which are taken to cure or alleviate disease — the difference is not trivial.

Paradoxically, the very success of global immunization programmes in decreasing the incidence of long-dreaded scourges such as poliomyelitis, diphtheria and measles, as well as in eradicating smallpox in the late 1970s, can actually lead to increased public concern about vaccine safety. If there is no discernible risk from the infectious disease concerned, why should one take the risk of being vaccinated against it in the first place?

It is therefore not surprising that immunization safety ranks high on WHO's priority list, resulting in the establishment of the Immunization Safety Priority Project (ISPP). The project's main target is to establish by the year 2003 a comprehensive system to ensure the safety of all immunizations given in national immunization programmes. It requires an overall awareness of the importance of safety and need for prevention, early detection, and quick response to adverse events related to immunization programmes to lessen their negative impact on health and on the programmes themselves. Countries are the primary focus of this project. Beyond the countries and WHO, the partner coalition includes the United Nations Children's Fund (UNICEF), the World Bank, the Programme for Appropriate Technologies for Health (PATH), the Bill and Melinda Gates Children's Vaccine Program, vaccine manufacturers, and national and interna-

tional professional organizations. Several development and/or technical agencies such as the Canadian International Development Agency (CIDA), the Japanese International Cooperation Agency (JICA), the US Agency for International Development (USAID), and the Centers for Disease Control and Prevention (CDC) are also participating in this project which has four major objectives:

- to ensure vaccine safety, from clinical trials, through vaccine distribution, to the point of use;
- to strengthen research and development of safer and simpler delivery systems;
- to establish efficient mechanisms that detect serious or potentially serious adverse effects following immunization and enable prompt and effective response;
- to broaden access to safer and more efficient systems for vaccine delivery and sharps waste management.

The last-mentioned of these activities is an area of concerted action within the common strategic framework of the newly launched Safe Injection Global Network (SIGN), whose mission is to achieve safe and appropriate use of all injections worldwide (2).

Examples of recent ISPP activities include the establishment of a Global Advisory Committee on Vaccine Safety to provide a reliable and independent scientific assessment of vaccine safety issues (3); the development of training material and activities on post-marketing surveillance and managing/monitoring of adverse effects following immunization; partnership-building with the media; and a joint UNICEF–WHO statement on the safety of injections and the use of auto-disable syringes. An external Steering Committee on Immunization Safety has also been created to provide technical and scientific advice to ISPP. This committee met for the first time on 25–26 October 1999 and stressed the importance of delivering safe vaccines of high quality and of focusing

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on prevention and safety assurance from development through clinical trials to the point of use. Highlighted also was the importance of prompt monitoring and management of adverse events following immunization and the importance of strengthening NRAs and of fostering proper collaboration between vaccine NRAs and managers of immunization programmes. The committee made the recommendations shown below.

- The appropriate levels (e.g. minister of health through the World Health Assembly and the Regional Committees) should be targeted as part of strategies for advocacy.
- All costs of safe delivery of vaccines, including the disposal of residual waste, should be encompassed in strategies for financing immunization services and it is important to promote the concept of the “cost of safely immunized child”.
- Immunization safety should be emphasized as a core function of immunization systems during health care reform.
- The capacity at all levels to assess/manage immunization safety concerns should be enhanced.
- WHO/UNICEF and their Member States should expand access to training as a core element of immunization safety. This should include monitoring adverse events following immunization, risk communication/media training, injection safety, and the functions of NRAs. The ability to train should be addressed at an early stage in the development of new technologies/programmes and emphasis should be put on pre-service training.
- National immunization plans should be developed and include policies towards safety and waste management, and these policies should be implemented.
- Early detection and proper response and timely management of vaccine safety concerns, in particular to correct programmatic errors, should be implemented. The process may vary by region, but regions must have the capacity to achieve these objectives.

The Special Theme of this issue of the *Bulletin* is “immunization safety.” An attempt is made to present an uncompromising view of the situation, with emphasis not only on the challenges but also on the progress made and care taken in ensuring safety and on descriptions of the broad range of skills and activities needed. Several articles indicate how advances in science and technology have improved both

the safety of vaccines and the capability to both detect and deal rapidly with vaccine safety.

The Public Health Classic “Measles immunization with killed measles virus vaccine”, by Rauh & Schmidt, originally published in 1965 in the *American Journal of Diseases of Children*, and reproduced in this issue (pp. 226–231) together with a commentary by Sir Gustav Nossal, reminds us of some rare but sad events in immunization history (4). The other articles relating to immunization safety can be grouped into four categories and describe how immunization safety has improved since 1965. Dellepiane et al. highlight what goes into making a vaccine safe (5). Dicko et al. (6) emphasize the need for and challenge presented by the safety of the delivery process and discuss possible solutions. Mehta et al. (7) and Collet et al. (8) deal with the issue of risk identification and management. Finally, examples of the epidemiological and scientific/laboratory tools used to study vaccine safety issues are presented by Chen et al. (9), Butel (10), and Afzal et al. (11). Both laboratory-based tools and epidemiological approaches are needed to study vaccine safety-related issues. And no matter how safe vaccines are or are supposed to be, we need public health follow-up as well as detection, rapid reaction, and investigative capability.

The article by Ward, as seen in the Round Table discussion papers which follow it, is provocative and suggests new hypotheses (12). It forces all of us to consider the outer limits of vaccine safety and to plan for them. Without question, it advocates vaccination as a useful and important intervention but cautions against making further advances without always ensuring that the necessary comprehensive safeguards are in place.

We hope this issue of the *Bulletin* will generate interest, dialogue, and reactions. Only through cooperation will we continue to improve immunization safety, thus strengthening its current position as one of the safest of health interventions. ■

References

1. **Battersby A et al.** Sterilizable syringes: excessive risk or cost-effective option? *Bulletin of the World Health Organization*, 1999, **77**: 812–819.
2. **Hutin Y, Chen RT.** Injection safety: a global challenge. *Bulletin of the World Health Organization*, 1999, **77**: 787–788.
3. **Vaccine Safety Advisory Committee.** Vaccine safety. *Weekly Epidemiological Record*, 1999, **74** (41), 337–338.

4. **Rauh LW, Schmidt R.** Measles immunization with killed virus vaccine. *American Journal of Diseases of Children*, 1965, **109**: 232–237.
5. **Dellepiane N, Griffiths E, Milstien JB.** New challenges in assuring vaccine quality. *Bulletin of the World Health Organization*, 2000, **78**: 155–162.
6. **Dicko M et al.** Safety of immunization injections in Africa: not simply a problem of logistics. *Bulletin of the World Health Organization*, 2000, **78**: 163–169.
7. **Mehta U et al.** Developing a national system for dealing with adverse events following immunization. *Bulletin of the World Health Organization*, 2000, **78**: 170–177.
8. **Collet JP et al.** Monitoring signals for vaccine safety: the assessment of individual adverse event reports by an expert advisory committee. *Bulletin of the World Health Organization*, 2000, **78**: 178–185.
9. **Chen RT et al.** The Vaccine Safety Datalink: immunization research in health maintenance organizations in the USA. *Bulletin of the World Health Organization*, 2000, **78**: 186–194.
10. **Butel JS.** Simian virus 40, poliovirus vaccines, and human cancer: research progress versus media and public interests. *Bulletin of the World Health Organization*, 2000, **78**: 195–198.
11. **Afzal MA, Minor PD, Schild GC.** Clinical safety issues of measles, mumps and rubella vaccines. *Bulletin of the World Health Organization*, 2000, **78**: 199–204.
12. **Ward BJ.** Vaccine adverse events in the new millennium: is there reason for concern? *Bulletin of the World Health Organization*, 2000, **78**: 205–215.