Editorial

Injection safety: a global challenge

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As we review the successes and failures in global health at the end of the twentieth century, an alarming pattern emerges suggesting that the "first do no harm" principle may be being violated on a grand scale as a result of unsafe injection practices. Four articles on injection safety appear in this issue of the *Bulletin*. In the first of these, Simonsen et al. review the available evidence from many developing countries and conclude that injection overuse and unsafe practices combine to account for a substantial proportion of the new infections with hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV) (*1*). In other developing countries where studies have not been conducted to estimate the incidence of injection-associated bloodborne pathogen infections, observations suggest that unsafe injection practices are equally widespread. In their article Kane et al. have modelled the likely consequent global impact of such practices, estimating that 8–16 million hepatitis B infections, 2.3–4.7 million hepatitis C infections, and 80 000–160 000 HIV/AIDS cases may be caused by reuse of syringes and needles without sterilization annually worldwide (*2*). Because the initial phase of these infections is usually asymptomatic, the adverse effects of unsafe injections have been underappreciated. However, the delayed burden of chronic diseases and death associated with unsafe injections as well as their cost to society can no longer be ignored. Miller & Pisani estimate that these infections are expected to cause 1.3 million deaths annually in the future for a total of 26 million years of life lost and a direct medical cost of US$ 535 million (*3*).

Injections given in formal and informal health care settings are probably the most common percutaneous procedure worldwide. WHO estimates that currently over 12 billion (12 thousand million) injections are administered annually. For each vaccination injection, nine therapeutic injections are given. Since most medications used in primary health care can now be administered orally, these estimates along with population-based injection frequency surveys (*1*) indicate overuse of therapeutic injections.

In the industrialized world, recognition of the risks associated with unsafe injections led to improvements in infection control practices, with disposable injection equipment becoming the standard in the 1970s. Today, against a background of high awareness, sufficient supplies, and appropriate waste disposal, in developed countries injection-associated bloodborne pathogen infections occur almost exclusively among health care workers through needlestick injuries and among injecting drug users.

In contrast, in developing countries, the introduction of disposable injection equipment without adequate training, supplies, or waste disposal has led to the large-scale reuse of such equipment without sterilization and to improperly disposed sharps as an environmental hazard. Use of sterilizable syringes and needles is cost-effective and produces smaller quantities of waste (*4*). However, the training, supervision, adequate supplies, and maintenance that this option requires may not be sustainable in all countries. New "auto-disable" (AD) syringes (previously called "auto-destruct") should limit reuse since they automatically inactivate themselves by locking the plunger after use. The decreasing price of AD syringes is resulting in their improved availability for use in immunization and family planning efforts. Large-scale field testing of this technology in primary health care will determine whether other new prevention opportunities exist.

In immunization activities, where safe injections are particularly important, many initiatives have been launched to improve injection safety. Through the efforts of the Expanded Programme on Immunization (EPI), equipment developed and supplied to the field has included steam sterilizers, AD syringes, combination vaccines, and puncture-proof safety boxes for disposal of sharps. Training has been conducted at all levels on the appropriate use of this equipment. The WHO/UNICEF "bundling strategy" now recommends the inclusion of the costs of injection safety in estimates for the expense of routine and emergency vaccination programmes, before donors are solicited for funding. Finally, a new generation of safer needle-free "jet" injectors is being developed.

Although EPI has made efforts to improve injection safety, few initiatives have been taken to prevent the transmission of bloodborne pathogens through therapeutic injections. Because injections are overused to administer medications, injection safety programmes should also aim at reducing the number of therapeutic injections. Such programmes may be better conducted if initial assessments are made to estimate the frequency of injections and to identify the determinants of injection overuse among patients and health care workers.

Regardless of the choice of injection technology, only a broad, multidisciplinary approach addressing technologies, policies, standards, systems, and behaviour can ensure injection safety. In an activity coordinated by WHO, the partners, who share a common interest in preventing adverse effects of injections and propose to combine their efforts through a Safe Injection Global Network (SIGN) include WHO, UNICEF, US Centers for Disease Control and Prevention (CDC), United States Agency for International Development (USAID), Basic Support for Institutionalizing Child Survival

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(BASICS), the CHANGE project, and Program for Appropriate Technology in Health (PATH). New members are welcome. SIGN aims to coordinate activities, advocate for changes in policy, define standards for safe injections, develop new behaviours, take advantage of health care reform, increase the availability of safer injection technologies, promote appropriate waste disposal, and define adapted information, education, and communication strategies. We challenge potential partners to join SIGN in developing solutions and evaluating their cost-effectiveness. We urge the international community to call for a right to safe and appropriate use of injections worldwide. ■

References

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