



Injection Safety



at a glance

Why tackle injection safety?

Injections are one of the most common health care procedures, with some 16 billion injections administered world-wide each year. Most injections (90 to 95%) are given for therapeutic purposes, and only 5 to 10% are given for immunization.

Injections are often unnecessary and are frequently unsafe. Unsafe injections are responsible for millions of cases of Hepatitis B and C, and an estimated one quarter of a million cases of HIV annually. Re-use of injection equipment without sterilization is frequently a key problem.

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Diseases that unsafe injections can cause:

Hepatitis B virus—Hepatitis B (HBV) is well-known as a highly infectious disease. Unsafe injections account for about one-third of new HBV infections in developing countries, equal to an estimated total of nearly 21 million people infected each year.

Hepatitis C virus—Unsafe injections are the most common cause of Hepatitis C (HCV) infection in the developing world, causing two million new infections each year, over 40% of HCV cases. In some countries (e.g., Egypt and Pakistan), evidence suggests that HCV has reached high levels due to unsafe injection practices.

HIV/AIDS—The World Health Organization (WHO) estimates that unsafe injections cause an estimated 250,000 new HIV infections each year, about 5% of all new HIV infections. Research indicates that most of the HIV infections that are caused by unsafe injections occur in South Asia and Africa.

Unnecessary injections are part of the problem

In certain regions of the world, use of injections has completely overtaken the real need, reaching proportions that go well beyond rational medical practice. In some developing countries, over 90% of patients visiting a primary health care provider receive at least one injection. In Indonesia and Tanzania, e.g., studies show that well over 70% of the injections given are considered unnecessary or could be given instead through an oral formulation (e.g., a pill).

What human and environmental health hazards are associated with unsafe injections?

- Syringes, needles and other sharps are often reused without being sterilized.
- Dirty sharps (e.g. needles, syringes) are often handled in a way that exposes health care workers to needlestick injuries.
- Unsafe management and improper disposal of sharps waste can cause contamination. Sharps waste, e.g., is thrown in the environment where waste pickers and other people can be pricked and infected.

What can be done to promote safe and appropriate use of injections?

National governments, WHO, and others working with the Safe Injection Global Network (SIGN) continue to collect compelling evidence of infections associated with medical injections, and actively work to promote safe injection practices and policies. Introducing an injection safety component at the design phase of relevant projects is a useful way to initiate a national safe injection plan in a systematic way.

The recommended core interventions and activities are listed on pages 2 and 3. A key “Best Practice” is to deliver all supplies of injectables (e.g., vaccines, contraceptives, anti-TB drugs), with matching quantities of new disposable syringes—preferably auto-disable (AD) syringes, diluents and safety boxes. This “bundling” of goods facilitates safe practice.

The first step should be an [assessment of the extent of safe and unsafe injection practices](#) and key problem areas. WHO and the USAID-funded project BASICS, in cooperation with SIGN, have developed a rapid assessment and response guide. This tool allows practitioners to quickly assess the frequency and safety of injections through a sample survey of people who prescribe and administer injections and of patients. The rapid assessment generates key injection practice indicators, including: the annual number of injections per person, and the proportion of injections administered with injection equipment reused in the absence of sterilization. A rapid assessment typically takes about three weeks of field work and costs about US\$10,000–15,000.

Choosing Interventions: Research has shown that in most developing countries, sterilization of syringes is not systematic and is frequently unsafe. Auto-disable syringes should be used for immunization, and new disposable syringes should be used for therapeutic purposes. The table below offers the key interventions designed to change injection practices.

Costs: A typical 5 litre safety box costs approximately 1 US\$ and holds up to 100 syringes. The estimated international retail price for immunization auto-disable (AD) syringes is approximately 5 to 7 US cents. The international retail price for a disposable syringe ranges from 4 (2ml) to 8 (5ml) US cents.

| Objectives and Core Interventions | Main Activities | Beneficiaries/ Target Groups | Indicators |
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| <p>Assess the extent and type of unsafe injection practices as a basis for planning and budgeting</p> | | | |
| <p>Assess frequency and safety of injections and key areas of concern.</p> <p>Integrate injection safety (IS) into other health interventions when designing relevant projects.</p> | <ul style="list-style-type: none"> Use rapid assessment surveys of health care providers and patients. In health projects and HIV/AIDS interventions (such as Multi-country AIDS Projects), find out if there is a comprehensive plan for safe injections, or do a rapid assessment to determine what is needed. Determine what actions need to be taken, baseline data, goals, funding needs. Ensure that safe injection plans are adequately funded. | <p>people who give injections</p> <p>patients</p> | <ul style="list-style-type: none"> number of injections per person per year ✓ % of injection equipment reused in the absence of sterilization ✓ |
| <p>Make sterile syringes and sharps collection boxes available in every health care facility</p> | | | |
| <p>Ensure access to safe injection equipment and safety boxes.</p> | <p>“Bundle” injectable medications with related essential equipment and supplies. Make all injectable substances available with matching quantities of injection equipment and safety boxes.</p> <ul style="list-style-type: none"> Bundle syringes, needles, diluents and safety boxes in essential drug programs. Work with the national regulatory authority to ensure the quality of injection equipment by promoting standards and specifications, and strong enforcement of regulations for safe injection equipment. | <p>public and private health care facilities (i.e.; providers and patients); and procurement officers</p> <p>healthcare providers, legal advocates, legal advisors, and the national regulatory authorities</p> | <ul style="list-style-type: none"> % of health care facilities with adequate quantities of injection equipment, diluents and sharps boxes in stock ✓ % of orders of injectable substances with matching numbers of syringes (ADs for immunization, and disposable for therapeutic injections), and with an adequate supply of safety boxes ✓ |

Communicate about safe injection practices, and the risks of infection associated with poor injection practices

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| <p>Promote the use of disposable syringes (preferably auto-disable for immunization), promote the proper use of injection equipment, and promote safety issues among health providers and patients</p> | <p>Develop Communications for Behavioral Change (CBC) strategies to promote new, disposable, single-use injection equipment and proper sterilization of equipment</p> <ul style="list-style-type: none"> • Build demand for AD syringes for immunization • Support CBC to educate healthcare workers and others about injection overuse and to promote the elimination of unnecessary injections • Offer pre-service and in-service training and conduct spot checks | <p>injection providers (e.g., nurses and doctors), patients and the community at large</p> | <ul style="list-style-type: none"> ✓ % of health care facilities where therapeutic injections are given with new, disposable, single use injection equipment ✓ % of health care facilities where used contaminated injection equipment can be observed in places where they expose health care workers and others to needlestick injuries |
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Prevent injection overuse within the national drug policy

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| <p>Reduce injection overuse</p> | <p>Where appropriate, use CBC activities to promote oral medication through:</p> <ul style="list-style-type: none"> • posters and leaflets • mass media | <p>patients</p> | <ul style="list-style-type: none"> ✓ % of patients expressing a preference for injections in the case of fever |
| <p>Educate on the need to reduce prescriptions of injectable medications by using:</p> <ul style="list-style-type: none"> • posters and leaflets • mass media • standard treatment guidelines • policy statements from national medical associations and government • patient-provider interactive group discussions | <p>health care workers who prescribe injections (e.g., physicians, nurses, medical assistants)</p> | <ul style="list-style-type: none"> ✓ % of outpatient visits including at least one injection | |
| <p>Reduce the number of injectable medications used</p> | <p>Work with regulatory authorities to review, update and improve the list of essential drugs to remove unnecessary injectable medications</p> | <p>pharmacies and depots; medical and pharmaceutical regulatory boards, authorities and distributors</p> | <ul style="list-style-type: none"> ✓ number of injectable medications on the essential drugs list |

Do's and Don'ts

- **DO conduct an initial assessment.** Injection practice issues vary in each country. Simple rapid assessment tools are available to take stock of the situation in countries.
- **DO promote auto-disable (AD) syringes for immunization, and educate the general public about the importance of sterile injections and equipment.**
- **DON'T implement safe and appropriate use of injection policies as a separate program, but incorporate these into existing programs in the health system.**
- **DO engage all relevant programs and partners.** Involve nursing and professional associations, and national medical associations, as well as those involved in HIV/AIDS prevention and care, essential drugs, immunization, family planning, TB and other programs in the health system.
- **DO practice bundling of equipment.** Safe injection technologies can facilitate safer practices, particularly when paired with other medical supplies.
- **DO work with the national regulatory authority to make regulations for injection equipment consistent with quality standards and specifications.** Follow WHO recommendations for sterilizing equipment.
- **DO create a system of accountability for the use of secure, safe and effective technologies to address sharps waste.** Work to prevent the unauthorized reuse or repackaging of syringes, and foster adequate waste care management using effective technologies.
- **DO ensure adequate financing of safe injection plans, including of the Communications for Behavioural Change (CBC) components.** Likewise, ensure that waste management plans are adequately budgeted, monitored and staffed.
- **DON'T assume that injection safety is difficult to achieve.** The simple, inexpensive introduction of safe injection practices is highly effective and can show results quickly.

Resources

- The Safe Injection Global Network (SIGN) Secretariat, WHO Headquarters, Geneva, Switzerland. Email: sign@who.int
- "First, do no harm" Introducing auto-disable syringes and ensuring injection safety in immunization systems of developing countries. WHO/V&B/O.2.26
- Aide-memoire for a national strategy for the safe and appropriate use of injections, WHO, 2000: <http://whqlibdoc.who.int/aide-memoire/a71914.pdf>
- Simonsen L, Kane A, Lloyd J, Zaffran M, Kane M. Unsafe injections in the developing world and transmission of blood-borne pathogens: a review. Bulletin of the World Health Organization 1999; 77(10):789-800.
- Dicko M, Oni AQ, Ganivet S, Kone S, Pierre L, Jacquet B. Safety of immunization injections in Africa: not simply a problem of logistics. Bulletin of the World Health Organization 2000; 78:163-9.
- Kane A, Lloyd J, Zaffran M, Simonsen L, Kane M. Transmission of hepatitis B, hepatitis C and human immuno-deficiency viruses through unsafe injections in the developing world: Model-based regional estimates. Bulletin World Health Organization 1999, 77:801-807.
- Best practices for intradermal, subcutaneous and intramuscular injections. WHO/BCT/DCT01.03
- WHO-UNICEF-UNFPA Joint Statement on Use of Auto-Disable Syringes in Immunization Services (1999) World Health Organization. (WHO/V&B/99.25) <http://www.who.int/vaccines-documents/DocsPDF99/www9948.pdf>

Key web sites

- Safe Injection Global Network (SIGN) www.injectionsafety.org
- International Association for Safe Injection Technologies www.iasit.org
- WHO's Healthcare Waste web site <http://www.healthcarewaste.org>
- Children's Vaccine Program at PATH: www.childreenvaccine.org/html/safe_injection.htm

Key Contacts at the World Bank

- Contact the Public Health Thematic Group: E-mail healthpop@worldbank.org
- Contact: Jmercier@worldbank.org for World Bank Environmental and Health care Waste Management Guidelines

Expanded versions of the "at a glance" series, with e-linkages to resources and more information, are available on the World Bank Health-Nutrition-Population web site: www.worldbank.org/hnp