

Single Use of Injection Devices

Patient Safety Solutions

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► STATEMENT OF PROBLEM AND IMPACT:

One of the biggest global concerns is the spread of the human immunodeficiency virus (HIV), the hepatitis B virus (HBV), and the hepatitis C virus (HCV) due to the reuse of injection devices. This problem is worldwide, affecting developed countries as well as developing countries, and many studies have demonstrated the extent and the severity of the problem.

According to the United States Centers for Disease Control and Prevention, four of the largest outbreaks of hepatitis in the United States were traced back to health-care workers in doctor's offices reusing needles and employing other unsafe procedures (1). Outbreaks of HBV and HCV in the states of New York, Oklahoma, and Nebraska between 2000 and 2002 infected more than 300 people. The infections stemmed from "unsafe injection practices, primarily reuse of syringes and needles or contamination of multiple-dose medication vials" (1).

A mathematical model developed by the World Health Organization suggests that in developing and transitional countries in 2000, the reuse of injection devices accounted for an estimated 22 million new cases of HBV infection (about one third of the total), 2 million cases of HCV infection (about 40% of the total), and about a quarter-million cases of HIV infection (about 5% of the total) for the whole world. These infections acquired in 2000 alone are expected to lead to an estimated nine million years of life lost, and disability, between 2000 and 2030 (2). In addition, all those who inject drugs and may at some time share needles, syringes, or other paraphernalia are at risk of bloodborne infections. There were an estimated 13.2 million people who injected drugs around the world at the end of 2003, with 10.3 million of them living in developing countries (3).

While there is significant variation between countries, WHO estimates that in sub-Saharan Africa, approximately 18% of injections are given with reused syringes or needles that have not been sterilized. However, unsafe medical injections are believed to occur most frequently in South Asia, the Eastern Mediterranean, and the Western Pacific regions. Together, these account for 88% of all injections administered with reused, unsterilized equipment (4). The severe consequences of needle reuse also underscored the need to reinforce fundamental infection control techniques among health-care workers (2).

Three papers published in 2003 contended that the AIDS epidemic in Africa was fueled by unsafe medical practices, including injections and blood transfusions using unsterile needles (5-7). As part of the \$15 billion Global AIDS Initiative, the United States Senate recently heard debate in a public forum regarding evidence of unsafe medical practice being implicated in the spread of HIV. As a result, the Senate accepted an amendment designed to help stop the transmission of HIV/AIDS in Africa through unsafe medical injections and unscreened blood transfusions. The Senate directed the United States federal Government to spend at least US\$75 million on injection and blood safety programmes in Africa.

These facts emphasize the need for immediate and decisive action to prevent the unsafe re-use of injection devices. A safe injection should not harm the patient, expose the health-care worker to any avoidable risks, or result in waste that is dangerous to the community. The widespread publication and distribution of solutions to address this global problem is urgently required to reduce the risk to patients due to poor medical care.

► ASSOCIATED ISSUES:

Reasons contributing to the reuse of injection equipment are complex and involve combinations of socio-cultural, economic and structural factors which include:

- Inaccurate patient beliefs
 - ▶ *Some patients believe that injected medications are more effective than those administered orally.*
 - ▶ *Family members believe that needle sharing among family members carries the same risk as casual contacts. Patients also view needle sharing with neighbours as being good neighbourly practice.*
 - ▶ *Patients believe they will not become infected simply because it has not yet happened. (It may take years for bloodborne pathogens such as HIV, HBV, or HCV to significantly affect patient populations before the risk is acknowledged.)*
- Practitioners' and health-care workers' beliefs and actions
 - ▶ *Practitioners and health-care workers are unable to help patients understand that oral medications are effective.*
 - ▶ *Practitioners and health-care workers fear that patients will not complete the prescribed oral medication regimen.*
 - ▶ *There is insufficient training for practitioners and health-care workers in infection control practices due to the lack of resources.*
 - ▶ *Health-care workers often fail to adhere to infection control practices and interventions.*
- Limited resources
 - ▶ *There are equipment shortages.*
 - ▶ *There are insufficient funds for adequate supplies.*
 - ▶ *There are inadequate disposal options. For example, open burning creates toxic emissions and waste scatter. Incineration reduces toxic emissions and waste scatter but is expensive, and burial sites may allow exposure to waste.*

► SUGGESTED ACTIONS:

The following strategies should be considered by WHO Member States.

1. Promote the single use of injection devices as a health-care facility safety priority that requires leadership and the active engagement of all frontline health-care workers.
2. Develop ongoing training programmes and information resources for health-care workers that address:
 - ▶ *Infection control principles, safe injection practices, and sharps waste management.*

- ▶ *The effectiveness of non-injectable medications.*
- ▶ *The education of patients and their families about alternatives to using injectable medications (e.g. oral medication).*
- ▶ *New injection technologies (e.g. "needle-less" systems).*

3. Evaluate and measure the effectiveness of health-care worker training on injection safety.
4. Provide patients and their families with education regarding:
 - ▶ *Treatment modalities that are as effective as injections in order to reduce injection use.*
 - ▶ *Transmission of bloodborne pathogens.*
 - ▶ *Injection safety practices.*
5. Identify and implement safe waste management practices that meet the needs of individual health-care organizations.
6. Promote safe practices as a planned and budgeted activity that includes the procurement of equipment. Specifically consider implementation of "needle-less" systems.

► LOOKING FORWARD:

1. Consider participating in the WHO Safe Injection Global Network (SIGN), which assembles all major stakeholders to promote and sustain injection safety worldwide. Through the network, WHO provides advice and a series of policy, management, and advocacy tools to help countries access safe, affordable equipment, and promote the training of health staff and the rational use of injections.
2. Urge donors and lenders who finance injectable products to also finance appropriate quantities of injection devices and the cost of sharps waste management.

► STRENGTH OF EVIDENCE:

- ▶ Expert opinion, consensus and case reports.

► APPLICABILITY:

- ▶ All facilities and health-care settings where injections are given (e.g. hospitals, ambulatory care, long-term care, ambulatory surgery centers, psychiatric facilities, office-based practices, and home care).

▶ OPPORTUNITIES FOR PATIENT AND FAMILY INVOLVEMENT:

- ▶ Patients and their families should receive education on the principles of infection control and different modalities for treatment.
- ▶ Educate patients to directly observe and encourage providers to immediately dispose of injection devices within accepted standards of practice and into appropriate sharp instrument waste receptacles after their use.
- ▶ Assist patients and families in the safe disposal of needles if injectable medications must be used in the home setting—reinforce that the safest number of times to use a needle is once.

▶ POTENTIAL BARRIERS:

- ▶ Cultures and beliefs.
- ▶ Cost of solutions.
- ▶ Practicality of solutions.
- ▶ Financial incentives for the injection providers when giving injections.
- ▶ Ongoing needs for generally accepted research, data, and economic rationale regarding cost-benefit analysis or return on investment (ROI) for implementing these recommendations.

▶ RISKS FOR UNINTENDED CONSEQUENCES:

- ▶ Increased cost related to change in equipment.
- ▶ Patients may not receive care (i.e. immunizations) due to the lack of sterile equipment.
- ▶ Some patients may not seek care if injections are not given as part of standard treatment because there is an expectation by the patient to receive an injection from the providers.

▶ REFERENCES:

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