

UNNECESSARY & UNSAFE INJECTIONS REPLACE DISPOSABLE BY AUTO-DISABLE SYRINGES

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ABSTRACT

Injections are a skin procedure performed with a syringe and needle to introduce a substance for prophylactic, curative, or recreational purpose. Injections can be given intravenously, intramuscularly, intradermally, or subcutaneously. Injections are among the most frequently used medical procedures, with an estimated 12 billion injections administered worldwide. A large majority (more than 90%) of these injections are administered for curative purpose (for every vaccination, 20 curative injections are administered).

Injections have been used effectively for many years in preventive and curative healthcare. In preventive healthcare, injections have been used to administer vaccinations that have had major impact in reducing childhood mortality due to measles and other vaccine preventable diseases. While injections are still necessary today to administer most vaccination, the number of vaccination injections could be reduced through the use of combination vaccines. In curative healthcare, injections have been used to administer such antibiotics as Penicillin, Streptomycin, as well as many other life saving medications. Today, safe and effective alternatives to injected medications are available and most medications used in primary care can be administered orally. Injections are predominantly needed for treatment of severe diseases, mostly in hospital settings. Nevertheless, injections are overused to administer medications in many countries because of an ingrained preference for injections among health workers and patients.

A safe injection does no harm to the recipient, does not expose the healthcare worker to any risk, and does not result in waste that is dangerous for the community. To achieve this, an injection needs to be prepared with clean hands in a clean area, using a syringe and a sterile needle. After administration, sharp equipments such as needle need to be discarded in a puncture proof container for appropriate disposal. When these rules are not followed, injections are unsafe and may expose recipients, healthcare workers, or the community to infections. Among unsafe practices, syringe or needle reuse between patients without sterilization is associated with a high risk of blood-borne pathogen transmission. Unsafe injections occur in many parts of the world and more particularly in developing countries where up to 50% of injections are administered with reused syringes and needles.

To reduce the overuse of injections, and to assure safe injection practice, multidisciplinary strategies comprising of various elements have been discussed in this article.

KEYWORDS: Sterilization, Auto-disable syringe

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In test conducted recently at the consumer education and research centre(CERC)laboratory in Ahmadabad in India , 13 out of 19 brands of syringes were found unclean, matter would get absorbed by the injection fluid, enter the body, and even cause life threatening complications.

Diabetics routinely inject themselves with insulin of 4 brands in insulin syringe tested, none met all the marking requirements of the bureau of India standards (bus). In all, 32 samples each of 40 brands were bought in the open market, from various regions of India tested against national and international safety and reliability standards. In tests carried earlier on intravenous (i.v.) fluids, one brand (sold widely in south India) even failed the sterilization test. Around 320 million units of i.v. sets are used around the country annually. Laxity in standards could increase the risk of aggravating illness rather than hastening recovery. The national human rights commissions have sent a recommendation to the Indian union government urging a revamp of the system of licensing and certification to prevent spurious and standard i.v. fluids reaching the market.

Test reports from consumer groups in Germany, Austria and United States have resulted in product recall in such items

DOCTORS, GIVE ME AN INJECTION

Have you ever felt that a quick shot in the arm would overpower your tiresome ailments and boost your disease ailments and boost your disease fighting power? Think again, the injection could more easily give you HIV than anything else. Data from the Indian council of medical research (ICMR) has revealed some astonishing facts.

1. Doctors at the primary health care centers all over the country are being forced to prescribe unnecessary injections to naïve patients who believe in the omnipotence of an injection.
2. The patients made complaints to the local politicians if they were refused by the doctors. Analysis of 2953 during prescriptions at 2 primary health care centers in Pondicherry state south India showed that nearly half of them contained at least one injection. Of the injections prescribed, almost 60% were of vitamin B complex but none of the patient had the symptoms of vitamin B deficiency.

Most of these centers don't have limited needles, but also limited resources to sterilize them. Thus the more the needles used, the higher the chances of them being improperly sterilized, and therefore infected.

INJECTION SAFETY

(REPORT BY WHO EXECUTIVE BOARD SECRETARIAT)

1. A Literature review published in 1999 indicated that, of all procedures, injections are probably the most common. About 12000 million injections are administered each

year throughout the world. Less than 10% are for immunizations. Many of the therapeutic injections, the widest application could be avoided. In many countries, both the patients and health care workers prefer medicines to be administered by injection. Reportedly, patients ask for injections because they believe that medication is more efficacious by that route and that the pain of the injection is the marker of efficacy. Reasons for health care workers to inject excessively include the desire to respond to a perceived patient preference, the wish to monitor compliance directly and in some instances, the possibility of charging a higher fee for service. Overall, unnecessary injections lead to high out-of-pocket health care expenses for patients.

2. Many injections administered worldwide are unsafe. Of particular concern is the reuse of the injection equipment without sterilization-a frequent practice in developing countries , injection account for a high proportion of new infections with hepatitis B virus, 2.3 to 4.7 million infections with hepatitis C virus , and 18000 to 16000 infections with HIV. Together these injections are responsible for an estimated 1.3 million early deaths and 26 million of years of life lost, and lead to US\$ million indirect medical costs.
3. To reduce overuse of injections and to assure safe injection practices, multidisciplinary strategies comprising 3 elements should be implemented. First, there needs to be a change in behavior. Patients and health care workers should be encouraged to adopt safe practices and to avoid unnecessary injections. Second, sufficient quantities of clean injection equipment should be available in each health care facility. Third, mechanisms should be in place so that "sharp" (i.e. needles and syringes) are so disposed off as to ensure that dirty injection equipment is not reused and the risk of accidental needle-stick injuries is minimized.
4. Interventions based on each of these 3 elements have proven to be successful and demonstrated that poor injection practices can be eliminated. For example, in Indonesia, behavioral change interventions have resulted in a substantial decrease in the overuse of injections. In Burkina Faso, increasing the availability of clean, disposable injection practices. In a pilot project in Cote d'Ivoire, the introduction of small scale, locality built incinerators, and at the same time training of health care workers has successfully eliminated dangerous needles and other sharp waste from the environment.
5. In every country, efforts to ensure safe and appropriate use of injections require collaboration between all partners. Because multidisciplinary interventions are needed, the basis of preventive activities should be careful coordination of already existing initiatives rather than the creation of integrated management of childhood illness and blood transfusion services should promote

safer behavior among patients and health care workers. Similarly, national authorities should increase the availability of clean injection equipment. It is recommended that responsibility for safe management of health care waste should be assigned to health care services.

6. Injections are given in most health care facilities. Poor practices can potentially lead to a high burden of diseases. Markers of injection practice may therefore be considered as critical indicators of quality for health-system assessment, particularly in countries that are reforming such systems.
7. With 3 different types of injection equipment available for use in health care facilities countries needed to make choices. Although reusable syringes can be effectively sterilized with steam, evidences show that the result is difficult to ensure and that breakdown in such systems lead to lack of sterilization. Use of disposable injection equipment may create a consumer demand for safety as patients can be encouraged to ask to witness the breaking for the sterility seal of new injection equipment. The quality of injection equipment should be regulated by national authorities so that international standards can be met and unsafe reuse of disposable equipment can be actively prevented. Finally "auto-disable syringes", which are inactivated automatically after one use, provide an additional opportunity to prevent dangerous reuse of injection equipment. In 1999, WHO formulated guidelines calling for universal use of auto-disable syringe by immunization services by the year 2003. Auto-disable syringes for immunization are now widely available in the market at a cost close to that of standard disposable syringes, but the availability of larger size auto-disable syringes designed for therapeutic injections is still limited. Auto disable syringes are now used in Nepal in all immunization schedule vaccinations.
8. Unsafe injections may cause infections by blood-borne pathogens. Other sources of such infections include transfusion of unsafe blood and blood products and other unsafe per-cutaneous or per-mucosal procedures. Thus, injection safety strategies should be integrated within a national strategy to prevent blood borne pathogens from all sources.
9. Because unsafe injections waste precious health care resources, transmit blood-borne pathogens on a large scale and can be eliminated, WHO hosts the secretariat of the safe injection global network, a coalition, created in 1999, of stakeholders who strive for safe and appropriate use of injections worldwide. Working within a common strategic framework, the secretariat coordinates the activities of the network. Second, WHO has coordinated its relevant activities, which include safety of immunization injections, rational use of medicines, blood transfusion safety, laboratory safety, medical devices, management of health care waste, prevention of viral

hepatitis, and prevention of injection drug use.

When breaks in safe injection practices occur, overuse of injections increase opportunities for blood borne pathogen transmission. Reason for popular demand for injections include beliefs that are stronger medications(Pakistan), that injections work faster(Romania), that the pain of the injection is a marker of efficacy(some African countries), that a drug is more efficient when entering the body directly (Columbia, Thailand) and that injections represent a more advanced technology (many developing countries). Among healthcare workers, motivations for overuse of injections include belief of a better efficacy of injected drugs (Romania), ability to directly observe therapy and thus compliance with treatment regimens and sometimes, financial incentives. In some healthcare systems (e.g. Pakistan), healthcare providers can charge a higher fee if they administer an injection.

Reasons that explain unsafe injection practices include lack of awareness regarding the risks associated with unsafe injection, lack of injection supplies and lack of disposal infrastructure for injection equipment. Injection technology has developed considerably since its beginnings in the eighteenth century, moving from glass syringe that require sterilization after each use of plastic disposable syringes designed to be discarded after one single use. More recently, auto-disable disposable syringes modified to disable themselves automatically by the plunger blocking after one single use have been developed. Nevertheless, many countries cannot afford these more advanced technologies, which may cost twice as much as standard injection equipment. In some countries, such as Africa, syringes and needles are reused until they break, as culturally, waste is not acceptable. For health budgets with limited resources purchasing policies can only address the most immediate concerns and thus cannot ensure safe and increased supplies.

A HEAVY BURDEN OF DISEASE

To many countries where hepatitis B and hepatitis C are highly endemic, unsafe injection practices account for a large proportion of infections. The proportion of new cases of hepatitis B that are attributable to unsafe injections was 60% in Taiwan. In 1977 and 25% in Moldova in 1994. In Egypt, the proportion of new cases of hepatitis C that are attributable to unsafe injections exceeded 40% in 1996. The burden of disease associated with hepatitis B virus (HBV) and hepatitis C virus (HCV) has been linked to silent epidemic as these diseases typically take twenty years to evolve from infection to symptomatic chronic liver diseases (Cirrhosis and Liver cancer).

Depending on the age at which infection occurs, 10% to 70% of persons infected with HBV develop a chronic infection. The younger the age at which infection occurs, the higher the risk of chronic diseases. Of the 370 million people chronically infected with hepatitis B virus worldwide, more than one million die each year because of their infection; overall, 25% will eventually die of chronic liver disease. Hepatitis B is the

fifth leading cause of death from infectious diseases in the world. The proportion of individuals contracting HCV who develop chronic infection is even higher than for HBV. With 170 million people infected with HCV throughout the world, the burden of chronic liver disease and death associated with HCV infection is increasingly recognized, although no estimate is yet available.

Taken together, hepatitis B and C account for 75% of all chronic liver disease worldwide and, while no estimate is available for the whole world, the annual cost of hepatitis B and hepatitis C in the United States alone has been estimated at \$1.3 billion (medical and work loss). As the diseases progress and symptoms become more acute, loss of health incurs absence from work, inability to support family, and loss of social position. Every carrier of the disease, whether symptomatic or asymptomatic, is a potential source of infection to others.

In addition to hepatitis B and C, unsafe injection may cause HIV infection. However, because HIV is less efficiently transmitted through injections than the hepatitis viruses, unsafe injections account for far less infections than unprotected sexual intercourse in countries where HIV infection is highly endemic.

IMPROVING PUBLIC HEALTH THROUGH SAFE AND APPROPRIATE INJECTION PRACTICE

To prevent the transmission of blood-borne pathogens that result from unsafe injection, injection use must be related and injection safety must be achieved. To move populations away from injection overuse and toward oral medications, behavioural change of patients and healthcare workers should be encouraged through the combination of a supportive environment and information, Education, and Communication (IEC) activities. Health infrastructures must be adapted and the issue of negative incentive (e.g., higher fee for services when an injection is prescribed) must be addressed, bearing in mind that oral treatment is less labor-intensive (require less health workers) and often more cost-effective (Cheaper drugs, less staff involved). In addition to achieve injection safety, a combined strategy to improve awareness and healthcare worker performance, provide injection supplies, and strengthen disposal safer technology that is adapted to national public health requirements and government budget capabilities.

To prevent the adverse effect of unsafe injection practices, United Nations Organizations, Non-governmental Organizations, Government, donors and universities sharing a common interest in a safe and appropriate use of injections joined their forces in a Safe Injections Global Network (SIGN). Because of the complexity of the problem, assistance from different types of professionals will be needed (e.g. public health officers, infection control practitioners, epidemiologists, anthropologists, specialists in behavior development, researches in administration technology,

environmentalists). Because little experience is available regarding integrated programs that link the community with the health system to aim at safe and appropriate use of injections, the Safe Injection Global Network to identify strategies that work to develop a large scale initiative to ensure that safe and appropriate use of injections is a priority for all.

RECOMMENDATIONS

The safe injection global network recommends a three part, multi disciplinary approach to achieve safe and appropriate use of injections. First, the behavior of health care provider and patients must be changed to decrease infection over use, and achieve safety. Second, sufficient quantities of appropriate injection equipments and infection control supplies should be available. Third a sharp waste management system should be set to ensure that disposable equipment is regularly used to destroy used syringes, and not reused.

However replacement of disposable syringes with Auto-disable syringes is the only alternative.

In this context medical college hospitals can play an important role in training the medical and Para medical students, residents and thus serving as a demonstration centre giving safe injections.

REFERENCES

1. Hutin Y JF, Chen RT. *Injection Safety- A Global Challenge, Bulls WHO, 1999, 777,787,788.*
2. *India Clen Program Evaluation Network, Assessment of Injection Practices in India, Draft Report 2004.*
3. Dziekan, Chisholm, Johns B, Rovira J, Hutin YJF. *The cost effectiveness of policies for the safe and appropriate use of injection in health care settings, Bull. WHO, 2003, 81,277-285.*
4. Hutin YJF, Hauri IS. *Use of injections in health care settings world wide, 2000 BMJ-2003, 1075-1078.*
5. Anand K, Pandey CS, Kapoor SK. *Injection use in a village in north India, Nat Med. J.India 2001, 14,143-144.*
6. Ashwath D, Latha C. *Un Necessary injections given in children under five years, Indian Journal of Pediatrics 1993, 60,451-454*
7. Srivastava VK. *The Indian Journal of Community Health, Published By Deptt. of Community Medicine, GSVM Medical College Kanpur (India), Jan-June 2006, 2.*