



World Health Organization

Safe Injection Global Network (SIGN)

Annual Meeting Report

24-25 October 2002

Includes the report of the
SIGN Working Group on
Injection and Waste
Management Technology
26 October 2002



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Hotel Cambodiana, Phnom Penh, Kingdom of Cambodia

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Table of contents

TABLE OF CONTENTS.....	V
CHAIRPERSONS	VI
RAPPORTEUR.....	VI
EXECUTIVE SUMMARY	1
SIGN MEETING.....	3
OPENING SESSION: BRIDGING IMMUNIZATION AND ESSENTIAL MEDICINE PROGRAMMES.....	4
ASSESSING INJECTION PRACTICES.....	8
PLANNING FOR THE SAFE AND APPROPRIATE USE OF INJECTIONS	13
COMMUNICATING, PROVIDING INJECTION EQUIPMENT AND MANAGING SHARPS WASTE.....	17
EVALUATION	22
INJECTION AND WASTE MANAGEMENT TECHNOLOGIES	26
INJECTION TECHNOLOGIES.....	27
WASTE MANAGEMENT	32
APPENDICES	38
APPENDIX 1: LIST OF PARTICIPANTS	39
APPENDIX 2: PROGRAMME OF WORK	48

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Executive summary

Background

The annual SIGN meeting was hosted by the Ministry of Health of the Kingdom of Cambodia on 24-26 October 2002.

Organization

Substantial progress was noted during the two days of the SIGN meeting as many countries were able to share their experience in managing the safe and appropriate use of injections through a systematic approach that included assessment, planning, implementation and evaluation. On the third day, that was dedicated to a SIGN working group on injection equipment and waste management technologies, a field visit provided an opportunity to review operational issues in the use of auto-disable syringes and auto-combustion incinerators. In addition, discussion took place regarding the accelerated introduction of auto-disable syringes in immunization and other services and the available strategies to manage sharps waste.

Key conclusions

With respect to assessment, the SIGN participants underlined the importance of engaging stakeholders so that assessment can be followed by action. At the planning phase, the need of well coordinated multidisciplinary coalitions that bridge public and private partners was emphasized. For the implementation of activities in the area of behaviour change, provision of supplies and sharps waste management, there is a need to build in monitoring strategies as part of routine activities. Finally, at the evaluation stage, a combination of input, process and outcome indicators must be examined, including the incidence of injection-associated infections. SIGN participants expressed satisfaction with respect to the partnership with the industry that is progressively allowing a systematic approach to ensure the quality and safety of injection equipment through national regulations enforcing international standards. However, for waste management, unresolved issues persist with respect to the potential role of plastic recycling combined with needle removal and with respect to the risk-benefit ratio of incineration as a waste management option.

Future perspectives

SIGN participants agreed on a list of recommendations and proposed to hold the 2003 meeting in sub-Saharan Africa through an organization that would allow a stronger engagement of the international public health community in the role of safe and appropriate use of injections as a component of HIV prevention and care programmes.

SIGN meeting



Thursday 24 October 2002

Friday 25 October 2002

Opening session: Bridging immunization and essential medicine programmes

Safe and appropriate use of injections within national drug policies

Kathy Holloway
WHO, Geneva, Switzerland

National drug policies can reduce the risks associated with injections and their cost

Governments may promote rational use of drugs through essential drug lists, regulations, training and other components of national medicines policy. In recent studies in developing countries, up to 56% of primary care patients receive injections, of which over 90% may be unnecessary. Unsafe and unnecessary injections add significantly to government and private health care expenses. Drugs represent 20% to 40% of national health budgets. Antibiotics and injections are most expensive.

Interventions can reduce the irrational use of medicines

Studies in developing countries consistently show decreases in drug use with a variety of interventions, including training, guidelines for case management, supervision, audit and economic strategies. In Indonesia, after interactive group discussions and seminars the proportion of health care visits with injections fell from 75% to less than 20%. In five regional hospitals in Laos the proportion of prescriptions with an injection fell from 60% to 20% with management, training and planning.

Reviewing injectable medications in WHO's model Essential Drugs List

The WHO 11th model Essential Drugs List had 306 active ingredients, of which 136 were included as injectable forms. With advice from the department of Blood Safety and Clinical Technology, WHO's expert committee agreed to review all these injectable medications so that fewer injectable medications can be included the 13th Essential Drug List to be published in 1-2 years. In addition, in the 12th List, the expert committee advises that "when injectable medications are being supplied, the necessary equipment for sterile injections should be supplied."

National strategies to promote rational use of drugs

An essential drugs list along with government procurement can discourage use of unnecessary injectable medications and improve access to safe equipment. Other coordinated elements include public education, professional degree training, continuing medical education, regulations, financial incentives to favour the prescription of non-injectable medications, drug and therapeutic committees in hospitals and drug information.

Key discussion points:

- Injection overuse can be measured as the difference between prescribed and recommended treatments. There are huge variations in injection use by country.
- Strategies are needed to influence injection use in the private formal and informal sectors, which are large and growing in many countries. It is rarely possible to enforce prescriptions by law.

Ensuring injection safety within immunization services: More than just AD syringes and safety boxes

Angus Pringle
WHO, Hanoi, Socialist Republic of Viet Nam

Components of a safe injection

Over 1 billion injections are given worldwide each year for immunization. This is expected to increase in the near future with supplemental activities for measles immunization. Immunizations are estimated to represent 5%-10% of total worldwide injections. A safe injection requires sterile equipment, an adequate injection technique, safe disposal of sharps and appropriate waste management.

The challenge of disposing sharps waste from immunization activities safely

Immunization services must be designed to ensure the safe disposal of sharps waste. Safe disposal is linked to other issues such as management of all health care waste and environmental concerns about burning. Solutions must be local and appropriate. They also must be budgeted along with other immunization activities. However, it is beyond the scope of EPI to solve the problems associated with all health care waste.

Options and issues

Open burning is cheap but creates toxic emissions and waste scatter. Incineration reduces toxic emissions and waste volume but is expensive and demanding. Burial sites must be designed to ensure that people do not come into contact with waste. Other options include waste transport for off-site treatment and new technologies, including plastic recycling.

Key discussion points:

- The management of incineration requires keeping waste that should not be incinerated out of incinerators
- It may be difficult to get sufficiently high temperatures in De Montfort and other small incinerators.
- Although De Montfort incinerators are reported to cost \$1 000 only, higher costs have been reported from sub Saharan Africa and heat-resistant bricks are sometimes not available.

A register to monitor waste treatment activities, Kingdom of Cambodia



Poor injection practices: The challenge remains

According to the latest estimates produced for the 2000 Global Burden of Disease Study, unsafe injections are annually responsible for 20 million hepatitis B virus (HBV) infections, two million hepatitis C virus (HCV) infections and 260 000 HIV infections. According to these same estimates, the average number of injections per capita per year is as high as 11.3 for Eastern and Central Europe and the proportion of injections administered with reused equipment is as high as 75% in South Asia.

Interventions to reduce unsafe injections are highly cost-effective

In recent studies, 5 interventions have reduced the proportion of unsafe injections by an average of 95% and 19 interventions have cut the number of injections by an average of 30%. Interventions for the safe and appropriate use of injections cost 1% to 32% of an annual GDP per capita per Disability Adjusted Life Year (DALY) averted, far less than the 300% that is considered the cut-off for a cost-effective health intervention.

Achievements based on action points formulated in New Delhi, 2001

The status of the action points formulated in New Delhi is summarized on Table 1. While significant success has been achieved with immunizations, there is much still to be done to improve the safety of curative injections. Safe and appropriate use of injections has gained international visibility. SIGN members have moved the agenda forward with country-level achievements. A more focused list of recommendations could better guide future work for the SIGN alliance.

Key discussion points:

- More public education about injections as a risk for HIV could support efforts for safe injections.
- Prioritization of recommendations is important to guide SIGN participants.

Injections given with sterile and non-sterile injection equipment worldwide, by region, 2000

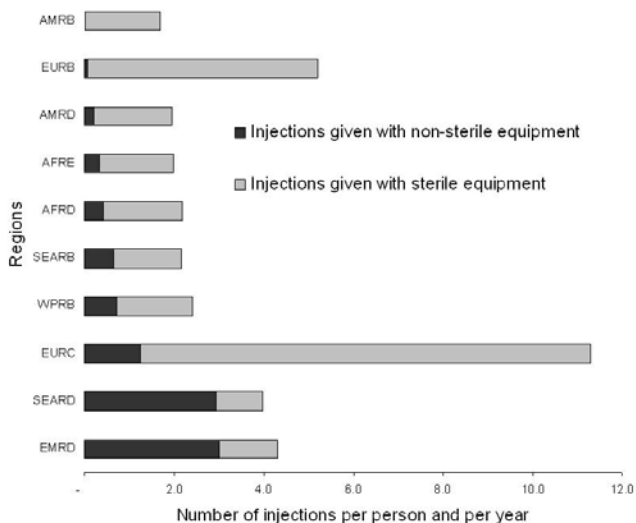


Table 1: Review of the status of the action points formulated in New Delhi in August 2001

<i>Action point</i>	<i>Status</i>	<i>Comment</i>
Practical "Injection safety planning aid"	Achieved	<ul style="list-style-type: none"> ▪ Draft planner discussed at the 2002 meeting
Policy statements by professional associations	Achieved	<ul style="list-style-type: none"> ▪ Endorsement of best practices by the International Council of Nurses (ICN) ▪ Policy statement in preparation by the World Medical Association (WMA)
Improved mechanism for setting standards	Achieved	<ul style="list-style-type: none"> ▪ Draft ISO standards for immunization auto-disable syringes available ▪ ISO standards for curative auto-disable syringes in preparation
Policy for better access to injection equipment	Achieved	<ul style="list-style-type: none"> ▪ Policy statement from the 12th expert committee on essential drugs (April 2002)
Assistance to AD syringes introduction	Achieved	<ul style="list-style-type: none"> ▪ Guides for AD syringes introduction in immunization services available
Waste management option database	Achieved	<ul style="list-style-type: none"> ▪ 30 new options added to the database
Advocacy kit	Partially achieved	<ul style="list-style-type: none"> ▪ "First do no harm" brochure distributed
National SIGN coalitions	Partially achieved	<ul style="list-style-type: none"> ▪ Coalitions functional in many countries, including Egypt, India, Cambodia and Uzbekistan
Health care worker protection working group	Partially achieved	<ul style="list-style-type: none"> ▪ Global Burden of Disease estimates published in the World Health Report 2002
SIGN working groups in WHO regional offices	Partially achieved	<ul style="list-style-type: none"> ▪ Focal point in WPRO. Other regional offices in the process of being organized
Better communication with IASIT	Partially achieved	<ul style="list-style-type: none"> ▪ Collaboration for all quality, safety and access documents
Synergies with other programme areas	Partially achieved	<ul style="list-style-type: none"> ▪ SIGN meeting 2002 organized back-to-back with a meeting of National Drug Policy managers of the Western Pacific WHO region
Progress towards plastic recycling	Partially achieved	<ul style="list-style-type: none"> ▪ Progress made for needle removal devices (PATH)
Joint resource mobilization efforts	Not achieved	<ul style="list-style-type: none"> ▪ Unclear whether the network can fundraise collectively
Pilot projects on AD syringes introduction	Not achieved	<ul style="list-style-type: none"> ▪ To be organized
Quantification of the importance of illegal recycling	Not achieved	<ul style="list-style-type: none"> ▪ Contract about to be issued by WHO for a country in South Asia
National Regulatory Authority assessment tool	Not achieved	<ul style="list-style-type: none"> ▪ Contract about to be issued by WHO
Option paper on waste management	Not achieved	<ul style="list-style-type: none"> ▪ Unmet need
Local production of sharps containers	Not achieved	<ul style="list-style-type: none"> ▪ Unmet need
Environment-friendly syringes	Not achieved	<ul style="list-style-type: none"> ▪ Unmet need
Engagement of environmental stakeholders	Not achieved	<ul style="list-style-type: none"> ▪ Unmet need
Centralized waste management	Not achieved	<ul style="list-style-type: none"> ▪ Unmet need

Assessing injection practices

Injection practices in Mongolia: Results and outcomes of the rapid assessment of injection practices

Gochoo Soyolgerel
Ministry of Health, Ulaanbaatar, Mongolia

Initiating an assessment of injection practices

Anecdotal reports of unsafe practices and a high prevalence of HCV infection suggest that unsafe use of injections may transmit bloodborne pathogens in Mongolia. To achieve safe and appropriate use of injections, the Ministry of Health of Mongolia conducted a rapid assessment.

The rapid assessment tool: A method adapted to the Mongolian setting

Information on injection practices, their determinants and their consequences was collected through interviews and observations of a small convenience sample of prescribers, injection providers and members of the general population.

Injection practices in Mongolia: Progress and challenges

The 65 members of the general population reported receiving an average of 13 injections per year. New, locally produced, disposable injection equipment was used in the 20 health care facilities visited. There were breaks in infection control practices while administering injections, including observations of 500 ml intravenous infusion bottles used as multi-dose diluent vials and eight of the 28 providers (28%) reporting reusing syringes and/or needles for the same patient. Injection providers reported an average of 2.6 needle-stick injuries per year. Contaminated sharps were burned in a drum, without any incinerator. Among persons interviewed, 19 of the 21 prescribers (90%) and 49% of the population was aware of the potential risk of HIV transmission through unsafe injections.

Follow up to the assessment

Behaviour change interventions from October 2001 promoted health care worker safety, oral drugs and consumer demand for safe injections. A national workshop in May 2002 drafted a national injection safety policy, nominated an injection safety committee, and prepared a budget for injection safety activities. Posters, leaflets and brochures have been prepared and distributed from August 2002. Further steps are proposed, including discussions among consumers and providers on rational use of injections, AD syringe production in Mongolia and improvements in sharps waste management.

Key discussion points:

- Most injections in the home are for vitamins or antibiotics. They are given by home injectors who are not trained. Most injections in hospitals are for antibiotics or intravenous infusion.
- The reported average of 2.6 needle-stick injuries per year for health workers is high, but no information is available on the prevalence of hepatitis B and C virus infection among health care workers.

Rapid assessment of injection practices in Northern areas of the Islamic Republic of Pakistan

Lubna Samad
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Objectives and design of the rapid assessment

The rapid assessment was designed to gather information on existing injection practices in Gilgit and Ghizar Districts, Pakistan. We translated the instruments proposed in the WHO rapid assessment and response guide into Urdu and used them to interview 13 physician prescribers, 14 injection providers and 26 members of the general population.

Injection practices in Northern areas

Interviews and review of records indicated that about 15% of prescriptions included one or more injections. All providers reported using new disposable syringes for each injection, but just over half had insufficient quantities of injection equipment available. Providers reported an average of two needle-stick injuries per year. Approximately 20% of injection providers had access to sharps boxes and most had not been vaccinated for HBV. Among the general public, 19% reported an injection in the last 3 months (average of 2-3 per person per year), two-thirds remembered the syringe and needle came from a sealed plastic package and 77% preferred oral medications.

Poor knowledge of the risks associated with injections

All prescribers recognized an association between reuse of injection equipment and HIV, while 92% and 77% recognized a similar association for HBV and HCV, respectively. Among providers, recognition of an association ranged from 43% for HIV to 7% only for HCV. Only 12% of the general public recognized reuse of injection equipment as a risk factor for HIV and none did so for HCV or HBV.

Progress since assessment

Gilgit hospital has improved monitoring of injection equipment supplies, improved waste management and introduced HCV screening prior to blood transfusions. A market survey of injection equipment is planned for 2003 and preparations have been made to raise public awareness through radio, including "healthy minutes," expert interviews and dramatizations/serials.

Key discussion points:

- The Northern areas have had a strong health programme for years, so injection safety and use are better than in Karachi. Repackaging after re-processing is not a problem in the North, but it is possible that repackaged equipment is brought in from other areas, including Karachi.
- Waste management is an area of weakness. In several instances, individuals have introduced safe practices, including sharps boxes and burial.
- Pakistan has a policy to introduce AD syringes for immunizations but does not have a policy to ensure the safety of therapeutic injections yet.

From assessment to planning: Injection safety assessments coordinated by the WHO Department of Vaccines and Biologicals in the Eastern Mediterranean region

Carsten Mantel,
Institute of Tropical Medicine,
Humboldt University,
Berlin, Germany

Assessing injection safety with WHO's standardized tool

The WHO tool for the assessment of injection safety (WHO/V&B/01.30) guides injection safety assessment. It uses a two-stage cluster sampling strategy to generate data that are representative of the country situation. The objectives of these injection safety assessments are to determine if health facilities meet requirements for safe injections, to assess if injections are safe, to identify practices that may result in unsafe injections, and to determine the proportion of facilities with safe injections. Reports are available from standard injection safety assessments conducted during 2000-2002 in 20 countries in Africa, Asia and Latin America.

Injection safety assessments in the WHO Eastern Mediterranean region

Standard assessments have been performed in nine of the 23 countries in the region that represent 65% of the population. Based on data from these assessments, other reports and expert knowledge, it was estimated that 74% of immunizations and 61% of therapeutic injections in the region are safe (weighted averages of national data). Health care workers have an average of four needle-stick injuries per year. Only 33% of injection equipment from immunizations and 11% from therapeutic injections is deposited in sharps waste boxes, 60% of health workers practice two-handed recapping, sharps are found around almost 50% of health facilities and dumping and open burning account for more than 80% of sharps waste disposal.

WHO's 2002-2005 injection safety plan for the Eastern Mediterranean region

WHO's plan has eight targets for all countries in the Eastern Mediterranean region. These are (1) baseline data on injection safety by the end of 2003, (2) government commitment and national plans for injection safety by the end of 2003, (3) public information and behaviour change campaigns under way by the end of 2005, (4) improved management and human resources development for injection safety by the end of 2004, (5) no syringe reuse and bundling of vaccines, syringes and safety boxes by the end of 2004, (6) safe collection and disposal of dirty sharps by the end of 2005, (7) improved injection safety monitoring by the end of 2005 and (8) extension of injection safety from vaccinations to therapeutic injections by the end of 2005. Unmet financial needs for these activities are US \$ 655 000 for the regional level and \$805 000 for the national level.

Analyzing the rapid assessment results with national stakeholders, Mongolia, 2001



Collection and disposal of used syringes and needles in immunization services: A study in north-west China

Nakae Noguchi
JICA immunization Project, Beijing, People's Republic of China

Assessment leads to waste management study

An assessment conducted in 1999 in China indicated that syringes were reused in 11.2% of villages and burned in 12.4% of cases. In addition, health care waste was observed in the environment. Following this assessment a one-year study with one-year follow-up was organized in 10 counties. The project monitors waste management including collection and disposal of used syringes, procurement of new syringes, disinfection, needle-stick exposures and a number of other indicators.

Waste management practices in Northern China

In eight of 10 cases, syringes are disinfected at least twice before disposal. In one village, syringes are disposed without disinfection. While needles are disposed at village level in one case, all villages send syringes to a higher level for disposal. Final disposal methods include recycling (one village), storage for recycling (six villages) and burning/incineration (three villages). Reprocessing involves collection, disinfection, destruction, drying and packaging.

Conclusions

Monitoring shows that dangerous waste is segregated and collected periodically with a collection rate of 95%-100%. Sustainability may be influenced by factors including the work load of staff involved in immunization activities, the availability of vehicles to collect waste and business interest in recycling.

Key discussion points:

- Sodium hypochloride may not be a suitable method to decontaminate sharps waste prior to incineration since that may increase the production of dioxins
- Changes introduced during the project might not be sustainable. A review is planned after one year so that another pilot can be proposed in 5-10 other counties
- Recycling has been selected on the basis of environmental concerns. However, cost is a problem. In the last three years, recycling generated 30 000 yuan for a cost of 300 000 yuan. Plastic is shredded and sold for other products while needles and rubber components are burned or incinerated.

Segregating the various pieces of used syringes after disinfection, China



Recommendations regarding assessment:

Assessment is critical to advocacy and behaviour change. While two main tools are available - The WHO tool for the assessment of injection safety and the "rapid assessment and response guide", a number of principles should apply:

- **Engage other partners doing surveys for various purposes** (e.g., UNICEF multi-indicator cluster surveys, demographic and health surveys) to add items regarding to injection safety and injection use.
- **Include private and informal providers** in the scope of the assessment
- **Identify the situations that result in needle-stick injuries** through specific items in the assessment tool.

From assessment to prevention: A poster developed in Mongolia after the rapid assessment



Planning for the safe and appropriate use of injections

Plans of action for the safety of immunization and therapeutic injections in the Socialist Republic of Viet Nam

Nguyen Van Cuong
National Institute of Hygiene and Epidemiology, Hanoi, Viet Nam

Pham Duc Muc
Ministry of Health, Hanoi, Viet Nam

A seven-point plan to ensure the safety of all immunization injections by 2006 in Viet Nam

The strategy of the Ministry of Health of Viet Nam to ensure the safety of all immunization injections includes seven points. These are (1) use of auto-disable syringes for all immunization injections by the end of 2002, (2) safe waste collection and incineration, (3) investigation of alternative waste management options, (4) training of health care workers and managers, (5) establishment of reliable estimates of equipment requirements and stock levels, (6) monitoring and supervision at all levels and (8) adequate budget to support these activities. During 2003-2006, the expanded programme on immunization will require 20-25 million syringes and an average of 250 000 safety boxes each year. Health care workers will be trained to use auto-disable syringes and safety boxes, to dispose and destroy used syringes and to manage stocks. An advocacy plan will be implemented from 2003. Monitoring will be built into supervisory visits and surveys may be arranged to validate information on injection safety. Budget estimates are available.

Initiating a safe injection programme in the curative sector

Viet Nam has 970 hospitals with 120 000 beds, 98.5% of which are in the public sector. In 2001, a pilot study of injection safety was conducted in Hanoi and the National Nurses Association launched a national safe injection campaign. A local company secured technology transfer for auto-disable syringe production in Viet Nam. All relevant institutions have been brought into planning for injection safety.

Next steps towards injection safety

The overall objective is to reduce risk to patients, health care workers and the public by (1) eliminating reuse of injection equipment, (2) reducing unnecessary injections and (3) handling and disposing of injection waste safely. Further plans include local production of curative auto-disable syringes, a national assessment of injection practices, regular monitoring and advocacy through workshops and publications.

Key discussion points:

- It's noteworthy that the National Nurses' Association has played a central role in initiating Viet Nam's injection safety activities. Mr Duc, as head of the National Nurses' Association, received support from members to push for injection safety. Strong nurses' associations can play an important role in building strong and safe health care systems.
- Auto-disable syringes will be compulsory for immunizations from the end of 2002. For curative injections, AD syringes will be introduced first in selected parts of the country.

India Injection Safety Coalition established in March 2002

Injection safety is emerging as a major health concern in India, where unsafe injections are one of the most important routes for transmitting hepatitis viruses and HIV. In March 2002, the Indian Injection Safety Coalition was established, with members including the Government of India, the Indian Medical Association, the Indian Academy of Pediatrics, the Indian Clinicians' Association, the Nursing Council, local injection equipment manufacturers, WHO, UNICEF, World Bank, prominent non governmental organization (NGOs) and individual experts. The Program for Appropriate Technology in Health (PATH) functions as the secretariat for the coalition.

Promoting coordinated efforts for injection safety

The Coalition aims to promote organized efforts in the area of injection safety by various means, including advocating for a national policy, behaviour change, safe prescription practices, training at various levels, networking with NGOs for technical assistance at the grassroots' level and serving as liaison between global coalitions and involved Indian agencies.

Early activities and accomplishments

Subgroups on immunization injections, curative injections and injection waste disposal prepared action plans. Subgroups for communication and advocacy, implementation, toolkit development and evaluation have developed strategies. The Coalition has been able to foster collaboration among partners and is working to improve coordination for implementation through networks at state and district levels.

Challenges and constraints

Challenges and constraints include ensuring sustained partner commitment, widening the resource base, the lack of interdepartmental coordination among different government departments and ensuring that results of Coalition efforts are disseminated at state and district levels.

The way forward for India

The India Injection Safety Coalition plans to promote and demonstrate injection safety through workshops at state and district levels, partner networks, model hospitals for safe injections and demonstration projects in selected large hospitals, outpatient departments, injection rooms and immunization centres.

Key discussion points:

- Because rural medical practitioners give most injections in India, the Coalition is trying to bring them on board.
- Epidemiological studies might be useful to get a better idea about the proportion of HIV infections in India from unsafe injections.

Synergy and partnership for injection safety: The Senegal experience

Jules Millogo
BASICS II Project, Dakar, Republic of Senegal

Fear of HIV motivates injection safety

The public is increasingly afraid of contracting HIV through unsafe injections. Donors sharing this concern have stimulated government action to promote injection safety.

Contributions from World Bank, USAID, UNICEF, PATH, WHO and the SIGN secretariat

The World Bank asked that injection safety be a part of Senegal's 2002 Multisectoral AIDS Control Program (MAP). The United States Agency for International Development (USAID) through the BASICS II Project provides coordination and support. The Children's Vaccine Program at PATH has supported waste management, assessment and policy development. UNICEF and WHO, with technical advice from the SIGN secretariat, have supported the initial assessment, guidelines and equipment

Risks exist for patients, health workers and the public

The results of an assessment conducted in Senegal suggested that vaccinations and therapeutic injections exposed patients to unnecessary risks as 15% of health care workers reported reusing equipment without sterilization. In addition, 70% of health care workers reported needle-stick injuries in the last year as two-handed recapping was common. Finally, sharps waste was found around 45% of health facilities.

Next steps for Senegal

To ensure the safe and appropriate use of injections in Senegal, the challenges for the future include maintaining the coalition, formulating a safe injection policy in a national workshop, developing the policy in a national plan of action and implementing a safe injection policy in the upcoming measles immunization campaign.

Key discussion points:

- Senegal has so far not considered options other than incineration for the management of sharps waste from immunization activities.

Using locally produced safety boxes in Viet Nam



Recommendations regarding planning:

Planning for the safe and appropriate use of injections is a multidisciplinary process that will benefit from a number of elements

- **Prepare implementation through dissemination of the results of a standardized assessment** through a process that involves all stakeholders
- **Ensure and strengthen the commitment of stakeholders**
- **Build a coalition** to facilitate the planning process with the national drug policy bodies, the essential drug unit, immunization services, HIV prevention and care, professional associations (e.g., nurses), non governmental organizations (NGOs) and other public and private organizations
- **Seek closer collaboration with national and international HIV prevention initiatives** to encourage public reporting and investigation into iatrogenic HIV cases.

Injection safety seminar in Uzbekistan



Communicating, providing injection equipment and managing sharps waste

MTP experience to reduce injection overuse in Lao PDR

Amphayvanh Paryanouvong
Ministry of Health, Vientiane, Lao

Bundiono Santoso
WHO/WPRO, Manila, Philippines

Monitoring-training-planning (MTP): A tool to organize local initiatives

From 1992, Lao established a National Drug Policy and from 1998 the Ministry of Health formulated standard treatment guidelines. From 1999, Drug and Therapeutic Committees (DTC) were established in selected central and provincial hospitals to design and implement DTC indicators. Hospital Committees were dependent on the Ministry of Health as in the absence of funding and initiative from the central level, no impact was possible. To solve this, the Ministry initiated a MTP (monitoring-training-planning) process for DTC committees in each hospital so that they could manage their own programmes, decide what could be improved and set their own targets. The process is iterative and is implemented through regular meetings.

Impact of MTP in two hospitals

In Bokeo provincial hospital, baseline data indicated that 78% of patients in the emergency department were given intravenous fluids. The hospital DTC set a goal to reduce this to 30% through the MTP process. Through five rounds of MTP, this goal was achieved and sustained. In Xayabury provincial hospital, baseline data indicated that 96% of patients presenting with malaria were treated with injections. A goal was established to reduce this to 30%. In three rounds of MTP, this goal was exceeded, with the latest monitoring indicating that only 10% received injections.

Next steps

DTCs and MTP programmes will be established in all central, regional and provincial hospitals. The Swedish International Development Assistance (SIDA) will support DTC workshops in selected provincial hospitals. The government of Laos intends to ask WHO support to implement MTP in all district hospitals.

Key discussion points:

- The MTP process looks like a tool that could be useful in many organizations and programmes.

MTP: A continuous activity



A national programme for promotion of infection control and safe injections in the Arab Republic of Egypt

Maha Talaat
US Naval Medical Research Unit No. 3 (Namru-3), Cairo, Egypt

Overview of Egypt's infection control challenge

The prevalence of hepatitis C virus (HCV) infection in Egypt is 10%-15% in the general population. This represents one of the highest prevalences in the world. In addition, three iatrogenic HIV outbreaks have been reported over the years. Responding to these risks, a national programme for the promotion of infection control and safe injections in Egypt has been created. Its objectives are to promote safe injections in the community, infection control in health facilities and safe blood transfusions. To demonstrate initial achievements, a pilot project was initiated in two governorates.

Assessment finds risks and wrong ideas

As part of a baseline assessment conducted for the pilot project, 4 197 persons from the general public were interviewed in six villages and two cities. Health care practices were assessed in 53 public health facilities, 16 private hospitals and 29 dental clinics. People received an average of 4.2 injections per year. Many persons in the general population think that injections are better than oral medications. Infection control in health facilities is very weak. Health workers experience an average of 4.9 needle-stick injuries per year while only 16% have been vaccinated against the hepatitis B virus infection. Two-handed recapping is common.

A strategy for information, education and communication (IEC)

To support the introduction of safer injection practices, a communication strategy was developed on the basis of the template developed by WHO. Key messages to the public were to reduce injection overuse and not to receive injections given with reused syringes. These have been delivered through field-tested posters, non-governmental organizations, religious leaders, volunteers, press releases and other community outreach. Mass media, including radio and TV spots are planned for 2003. Key messages to doctors are to promote rational use of injections. To this effect, the project prepared and distributed a good prescribers' guide. Finally, the message to nurses is to give safe injections. Information, education and communication for nurses includes posters and a movie that shows risks to nurses. These communication activities have been effective in raising the awareness about the risks associated with exposure to blood for themselves and their patients.

Key discussion points:

- While initial funding came from the United States Agency for International Development (USAID) and from the Ford Foundation, the project is currently short of funds for evaluation.
- Once health workers internalize risks with blood they change their practices. In Egypt, over 50% of health workers have acquired hepatitis B virus infection, mainly through occupational exposures. Vaccination against hepatitis B is not so expensive, but health workers need to take the initiative to be vaccinated.
- Egypt's experience has many lessons for IEC. Pre-testing communication materials with the target audience is important. Messages can be delivered through religious leaders if the right connections can be made.

Countries' experiences on access to injection equipment

Sophie Logez
WHO, Geneva, Switzerland

Access to safe injection equipment: A core strategy

Behaviour change, access to safe injection equipment and better waste management are the three elements of a coordinated strategy for the safe and appropriate use of injections. In 1999, WHO, UNICEF and UNFPA issued a joint statement recommending that those who purchase vaccines should also supply auto-disable syringes and safety boxes. In 2002, the WHO expert committee for the selection and the use of essential medicines recommended linking supply of injectable medicines with single-use injection equipment.

Country experiences: Factors affecting access

Studies in Burkina Faso, the Republic of Guinea, the Kingdom of Cambodia and Mongolia and an informal survey of countries in the WHO Western Pacific region explored factors affecting access to safe injection equipment. Parameters that may be associated with a better access to equipment and safe injections include the inclusion of injection equipment in the national list of essential medicines, procurement of injection equipment through the national drug procurement system, joint distribution of medicines and injection equipment and local production.

A WHO guide to facilitate the procurement of injection equipment

WHO is in the process of preparing a guide to assist procurement of good injection equipment at affordable prices. The guide is intended for use by procurement officers and programme managers. It offers practical tools for product selection, forecasting demand, method of procurement and selection of suppliers. A draft is available for public comments from the WHO Department of Blood Safety and Clinical Technology.

Key discussion points:

- Shortages may occur at local level despite adequate supplies at the national level. An effective distribution system as part of the procurement cycle is also a key point to ensure access to injection equipment

Locally-produced syringes in Mongolia



Injection safety programme from 1999

Cambodia's Safe Injection Committee works with the HIV Prevention Programme, the National Immunization Programme (NIP), Reproductive Health, Essential Drugs, the Ministry of Environment and the health system at all levels from national to commune. The programme promotes three key technologies: auto-disable syringes, safety boxes and incineration for waste management.

Achievements through 2002

In immunization services, the use of auto-disable syringes increased from 10 000 in 1999 to 24 million in 2002. By the end of 2002, the switch to auto-disable syringes will have been completed for all immunization injections. In 2002, over 20 000 safety boxes have been used in supplementary immunization activities, hospitals, blood collection facilities and HIV/AIDS treatment centres. Arrangements are in place to collect full safety boxes, which are incinerated in over 30 incinerators throughout the country.

Training and training materials

Training materials produced include a movie on injection and immunization safety, posters and guidelines. Training has been provided on the appropriate use of auto-disable syringes, assembly and use of safety boxes, waste management and incineration.

Key discussion points:

- Cambodia has an impressive number of incinerators. When Cambodia's injection safety programme began several years ago, incinerators seemed to be the best available option. The national immunization programme is willing to look at other options.
- Cambodia's injection safety efforts are integrated in a broader infection control programme that involves hospital managers among others. The government wants to coordinate the management of all health care waste with the waste management programme that has been set up for immunization services.

Hands-on training on the preparation of safety boxes in Cambodia



Recommendations regarding implementation:

Experience acquired in demonstration and pilot projects suggest a number of practical recommendations for implementation:

- **Recover experiences regarding successful coordinating mechanisms** at the global, regional and national level for injection safety systems, with attention to the respective roles of the public and private sectors.
- **Base Information, Education and Communication (IEC) activities targeting health care consumers on sound research** into local conditions, culture and media options. National committees are encouraged to share experiences and materials with other national committees, including through posting of materials on the Internet site of the Safe Injection Global Network (SIGN) at www.injectionsafety.org.
- **Build evaluation within IEC activities** programmes through up-front identification indicators to measure impact
- **Ensure the compatibility of locally developed IEC material** with the national policies
- **Encourage national essential drug programmes to coordinate the procurement and distribution of sufficient injection equipment** based on the quantities of medicine bought and distributed.
- **Prepare and distribute information on regulatory and other factors** affecting private imports, production and local trade of injection equipment, including auto-disable syringes in countries.
- **Ensure that monitoring is part of the implementation plan.**
- **Include indicator on injection safety in the health information** that is collected, analyzed and fed back to the local level.
- **Draft a consensus document on options for waste management through the WHO health care waste working group**, with attention to technical and organizational options.

In Egypt, pilot-testing identified that calendars were a popular way to get the message across



Evaluation

Prevention of sepsis among neonates admitted to intensive care units through promotion of infection control

Amr Kandeel
Ministry of Health and Population, Cairo, Arab Republic of Egypt

Unsafe intravenous infusions are a hazard in neonatal intensive care units

Preliminary information indicated high rates of sepsis and associated mortality in neonatal intensive care units (NICU). These sepsis begin soon after admission and are characterized by a poor response to antibiotics. A rapid assessment in 36 units indicated that 71% of blood cultures, 64% of samples taken from intravenous fluids and 21% of samples from medications grew bacteria. Unsafe practices that may have been associated with this high prevalence of contamination and infection included complicated regimen of mixing of various intravenous fluids and medications that took place in the absence of appropriate infection control practices. An intervention to improve infection control practices

A tool was developed to monitor key infection control practices, with a scoring system for critical procedures. Critical control points included hand washing before procedures, techniques used for the preparation of intravenous fluids, techniques used for the preparation of medications and cannula insertion. The project trained health care workers, distributed infection control supplies, monitored and supervised.

Evaluation shows results

Following the intervention, the proportion of intravenous fluids contaminated fell from 63.4% to 31.1%. Concurrently, the mortality rate among hospitalized neonates fell from 25% to 15%. Improvements were due primarily to better hand washing practices and to improved aseptic techniques.

Key discussion points:

- Contamination occurred through handling. Unopened intravenous fluids were not contaminated. To correct this, specific nurses were assigned for intravenous fluids and cannula insertion and places were designated for the preparation of intravenous fluids.
- Monitoring evidence-based output indicators – infections and deaths – and not just process indicators was important for gaining the support of hospital managers. On the basis of these results, hospital managers decided to assign more resources into infection control. In addition, the heads of NICU units realized savings through less prescription of antibiotics for sepsis.

Rational use of injection: An integrated tool for monitoring injection prescription in the Kingdom of Cambodia

Sok Srun
Ministry of Health, Phnom Penh, Cambodia

Designing a tool to monitor the prescription of medicines and injections

The Department of Hospitals developed a one-page form to record a patient's medicine and intravenous infusion use. The objectives of the tool are to promote the rational use of antibiotics in public hospitals, to monitor prescribing practices in terms of injectable antibiotics and intravenous fluids and to evaluate the impact of training on rational use of drugs.

Implementing the intervention

The activity was carried out in eight hospitals, with doctors and pharmacists organized to collect data. The interventions targeted four conditions: adult malaria, acute respiratory tract infections among children, normal deliveries and follow up after surgery. In a first survey in 1999, 20 patients' files were reviewed for each condition, to collect information regarding the proportions of patients who received injectable antibiotics and intravenous fluids. After training in rational use of drugs, a second survey was carried out in 2000 for the same conditions and in the same hospitals. The programme was limited to public sector health care.

Evaluating the impact

When treatments in 1999 and 2000 were compared, the evaluation indicated that the proportion of patients receiving injectable antibiotics, antibiotics or IV fluids had not changed. However, there was a consistent reduction in the duration of treatment for injectable antibiotics, antibiotics and intravenous fluids. The monitoring tool was well received and appreciated.

Key discussion points:

- The tool has many indicators. It was designed not only to reduce injections but to address the rational use of all medicines. Development of the tool was a participatory exercise. This improved its acceptability.
- It is common in hospitals in many countries to limit antibiotic use, e.g., to 48-72 hours, after which prescriptions must be renewed. Using such automatic "stop orders" could help to reduce injection overuse in hospitals.
- The second survey to measure impact was only conducted three months after training on rational use of drugs. Thus it is unclear whether there was enough time for changes to occur.

Evaluation of a safe injection project in the Republic of Uzbekistan

Erkin Musabayev
Ministry of Health, Tashkent, Uzbekistan

Situation and assessment

In Uzbekistan, 6%-7% of blood donors are infected with hepatitis C virus. In addition, HIV is spreading fast among injection drug users. An assessment of injection practices was carried out in 2001 with the support of the Swiss Development Cooperation. The WHO rapid assessment and response guide was used. Over 52% of prescriptions included at least one injection. No reuse of injection equipment in the absence of sterilization could be observed (Uzbekistan now produces disposable syringes locally). However, waste collection and waste management were unsafe and the awareness regarding the risks of unsafe injections was low among the population and health care workers.

A pilot intervention in Samarkand

A pilot intervention was implemented in four clinics in Samarkand. This intervention was based upon training of health workers, information, education and communication (posters) for the general population, provision of sharps boxes and set up of a waste management system, which included the construction of a De Montfort incinerator in one of the polyclinics.

Evaluation and next steps

In April 2002, an evaluation was conducted using the tool that had been used the previous year. Nurse behaviour has changed significantly as recapping was much less common. A system of safety boxes and waste incineration has been established and was associated with a lower number of reported needle-stick injuries. There was also a reduction in the proportion of prescriptions that included injections. However, this reduction that only took place in the four clinics of the pilot project was insufficient to affect the frequency of injections in the general population. A national project for injection safety began in May 2002. The experience acquired during this pilot will be very useful for the framing of the nationwide initiative.

Key discussion points:

- There may not have been enough activities to influence public opinion. Posters may not have been enough. The plan was to use TV, but it was not possible to do so in a pilot project. Religious leaders may be enlisted.

Show-and-tell session with district health managers around an incinerator, Samarkand, Uzbekistan

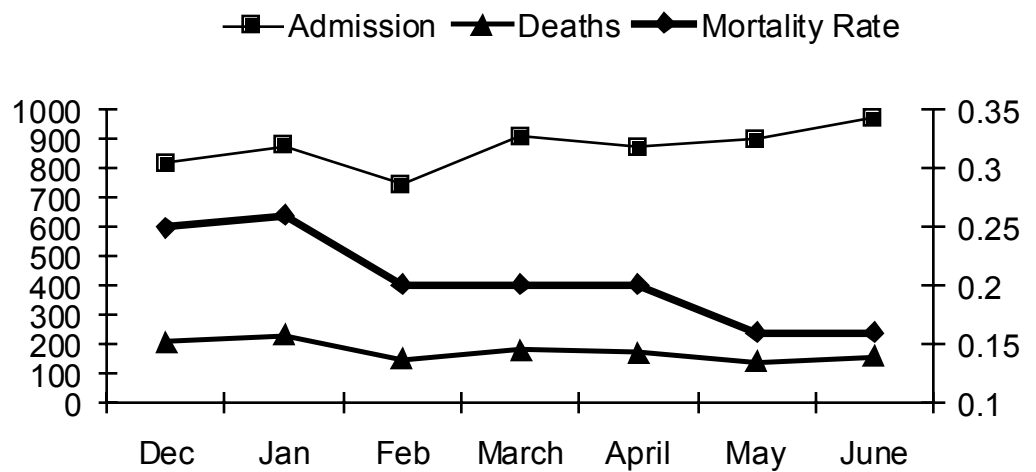


Recommendations regarding evaluation:

Monitoring and evaluation can be more useful if built within the implementation strategy:

- **Use information from evaluation** to redesign interventions.
- **Prepare up-front the measurement of the impact of an intervention** through identification of indicators and the use of control groups when relevant
- **Evaluate the impact of policies for the safe and appropriate use of injection** on the incidence of injection-associated infections.

Effective interventions: Admissions, deaths and mortality rates in 22 neonatal intensive care units, Egypt, December 01 - June 02



Injection and Waste Management Technologies



Saturday 26 October 2002

Injection technologies

Development of ISO standards for auto-disable (AD) syringes

Gerald Verollet
WHO, Geneva, Switzerland

Every medical device carries some risk

An optimal injection safety device requires cooperation between the government, the manufacturer, the vendor, the user and the public. Shared understanding is achieved through communication. Syringes intended for global use should follow international standards.

A new ISO standard for auto-disable syringes: From proposal to approval

The International Organization for Standardization (ISO) agreed to work on a new standard for auto-disable syringes. An ad-hoc group was established and has prepared a draft that is labelled ISO/CD 7886-3, "Sterile hypodermic syringes for single use – part 3: Auto-disable syringes for fixed dose immunization." This draft was circulated to national member bodies for comments and vote by 31 January 2003. Following the six stages of development for ISO standards, WHO will support the same procedure for auto-disable syringes for general purposes. At each stage, significant agreement should be reached in the preparation of the standard as standards are developed through consensus. In the absence of ISO standards, WHO will provide procurement specifications, but will refer to ISO standards when available.

Recognition and use of international standards at national level

Government should have a procedure to recognize and adopt the standard as part of the national regulation. The role of the National Regulatory Authority is to ensure that the manufacturer has adequately implemented the risk management process. Conformity of the device can then be assessed by accredited third party agencies.

Patient safety objective

By developing quality control and reinforcing medical device regulations, more countries will be able to maximize the benefits to the patient so that injection use can be appropriate and consistent with an approach that minimizes the risks.

Auto-disable syringes will now be covered with an ISO standard



Technology transfer for auto-disable (AD) syringe production

Gordon Larsen
WHO, Geneva, Switzerland

AD syringes for immunization

WHO has pre-qualified auto-disable syringes from eight companies for UNICEF tenders, while at least one other syringe is under consideration. Syringes with “user voluntary” disabling mechanisms do not meet current specifications for immunizations, but they may meet specifications for curative auto-disable syringes.

AD syringe demand, supply and technology transfer

In 2002-2003, UNICEF purchases of auto-disable syringes are estimated at 400-500 million each year. In contrast, the production capacity for auto-disable syringes is estimated at 2-3 times the quantity being procured through UNICEF. These figures are still far less than the estimated quantity of auto-disable syringes that would be required for all immunizations worldwide. Europe currently accounts for most AD production in the world. By 2005, Asia’s share of production is projected to increase. Technology transfer supports auto-disable production in India and is possible or under consideration in other regional countries, including Indonesia and Bangladesh.

Pre-filled devices: Another option for safer injections

Pre-filled devices offer advantages, including auto-disable feature, ease of use and sterility. On the other hand, both vaccine and device must be in the cold chain. Glass and plastic designs are available, including the Uniject ® device. Although Uniject ® is an attractive technology, so far only tetanus toxoid and hepatitis B vaccines are available. Production has been slow to develop. Uniject ® pre-filled device production is projected to increase from near 0 in 2001 to just over 50 million units in 2005.

Key discussion points:

- WHO does not only promote Uniject ®. Rather, WHO encourages technology transfer for all safe devices.
- WHO’s current and intended role in auto-disable technology transfer is not yet clear. The idea that WHO acts as a bridge between the industry and the national producer must be clarified.
- AD demand might be different from some current estimates. India, for example, that buys outside UNICEF channels, could order 290 million syringes per year (cf UNICEF purchases of 400-500 million per year).
- The purpose of technology transfer must be clarified. One should not assume that in-country production will ensure sustainable supply at a lower cost.

What are the needs?

The number of curative injections far exceeds the number of immunization injections. Unsafe practices are common in the curative sector and many of these injections take place in the private and informal sectors. At the 2002 Barcelona AIDS conference, WHO announced a milestone for exclusive use of single-use injection equipment by 2005 as an HIV prevention strategy.

What is available? How do we set standards?

Through the International Association for Safe Injection Technology (IASIT), WHO identified two auto-disable syringe designs with capacities exceeding 1 ml currently available on the market. The definition of an auto-disable syringe may be different with curative injections, since with large volumes it is theoretically possible to give several injections from one filled syringe. A procedure is under way through ISO to set standards for auto-disable curative syringes (projected ISO standard 7886-4). However, this will take some time. An initial step is for WHO to set procurement specifications for curative auto-disable syringes for the Global TB Drug Facility (GDF). An initial tender is projected for end 2002.

How do we move forward?

The Global TB Drug Facility (GDF) procures and distributes medicines for the treatment of tuberculosis worldwide. An agreement has been reached for them to procure and bundle auto-disable syringes with injectable tuberculosis treatment (e.g., streptomycin). GDF is thus the first partner to extend the concept of bundling to curative injections. Another early possibility might be to promote auto-disable syringes for treating sexually transmitted diseases through HIV prevention and care programs.

Key discussion points:

- Defining safe syringes for the curative market as “auto-disable” may become a slippery slope if disabling depends on actions by syringe users. Finding another name may be better to maintain clarity in the definition of AD syringes as AD syringes may not provide the same solution for the syringes used in the curative sector.
- The goal is to reduce a maximal reduction of nosocomial transmission of blood-borne pathogens related to injection. Promoting AD syringes is just a means to this goal.
- Promoting auto-disable syringes for curative injections is not necessarily a task for UNICEF that has a primary focus on immunization. For curative injections, work must be undertaken with other partners.

The International Association of Safe Injection Technology (IASIT)

IASIT is a non-profit industry association that was registered in Switzerland in May 2001. Members produce about 90% of all syringes in the world. Members include producers (class I members) and developers (class II members) of safe injection technology as well as individuals or organizations who are interested in preventing syringe reuse through technology (class III members). IASIT's role is to coordinate the industry as a group in relation to (a) regulators and standard setters, (b) international agencies that procure syringes and (c) the public health community.

First year's activities

In its first year, IASIT has taken part in WHO, SIGN and ISO meetings. IASIT took part as well in the 2002 HIV/AIDS conference in Barcelona.

Estimated demand for all injection equipment

IASIT estimates 30 billion syringes are used worldwide each year, of which 1.5 billion are designated for immunization practices. Roughly half of all syringes are consumed in the US, Europe, Japan, Canada and Australia.

Manufacturers ask for consistent standards

To satisfy demand for safe injection technology, manufacturers need consistent performance criteria and guidelines, committed syringe quantities and consistent and transparent quality guidelines equitably applied. Currently there is no world standard for safe syringes or auto-disable syringes.

Key discussion points:

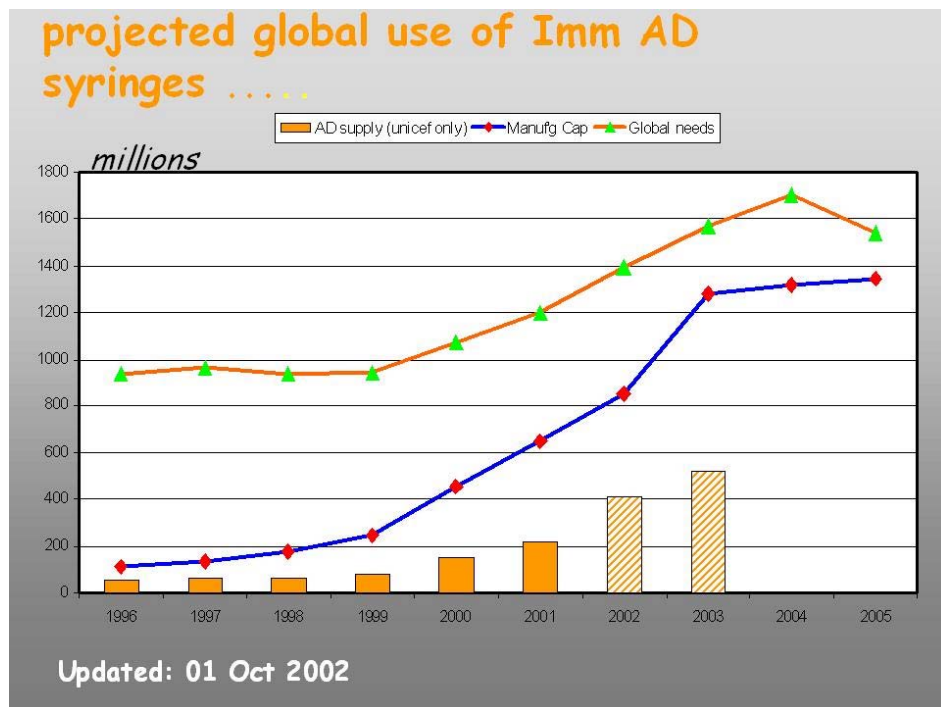
- The role of the industry in waste management must be clarified. Pressure by donor organizations to keep syringe prices low is not conducive to the request for syringe manufacturers to provide and pay for waste disposal. WHO, donor organizations and Governments are not necessarily interested in contracting out this waste management tasks to the needle and syringe industry.
- The IASIT board will consider a collaboration between IASIT and WHO to facilitate technology transfer.

Recommendations regarding injection technologies :

Work should continue along the action points that were proposed at the 2001 SIGN meeting in New Delhi:

- **Continue to support an improved, peer-reviewed mechanism to formulate WHO specifications for AD syringes** so that the process can progressively evolve towards ISO standards.
- **Generate more evidence regarding requirements for and the use of AD syringes in curative services.**
- **Generate more evidence on the public health importance of illegal reprocessing and repackaging** of used disposable injection equipment
- **Develop practical guidelines to strengthen National Regulatory Authorities** in the area of medical devices regulations, including injection equipment

Work remains to be done to ensure the use of auto-disable syringes for all immunization injections
(slide from the presentation of Gordon Larsen)



Waste management

WHO health care waste management

Richard Carr
WHO, Geneva, Switzerland

Management of health care waste

Policy for safe health care waste management entails designation of responsible authority, regulations and integration into overall waste management. Comprehensive systems for health care waste management involve assignment of responsibilities, budgets, attention to waste minimization, waste segregation, collection, treatment and disposal. Awareness and training are required. Choice of management and technology options depends on many considerations including workers' safety, sustainability and acceptability.

Technology options for management waste

There are many options. No one size fits all solution. Safety boxes are a first line of defense. Needle-cutters reduce waste volume, but splatter may be a problem. Waste burial pits are easy to use, but take space and may not be suitable for sites with high water tables. Low temperature burning is low cost but may be the most dangerous solution due to pollution and incomplete destruction. Incineration requires investment in an incinerator, waste segregation, management and training. Advanced autoclaving are good for large facilities and urban areas. Other options include encapsulation, melting ovens and plastic recycling.

WHO resources for health care waste management

Tools available include an aide-memoire for health care waste management, a rapid assessment tool, an Internet site (www.healthcarewaste.org) and a technical options database on the web.

Key discussion points:

- The community should be included in the choice of health care waste management options.
- Plastic recycling may be the best option if safety can be assured. Recycling was reported from Pakistan, but it was not safe.

Reusable metal safety box developed in Africa



The needle remover concept

PATH has been developing and evaluating technologies to "de-fang" syringes, i.e., to remove and contain needles. Needles are captured in a secure container while syringes without the sharps can be collected in safety boxes. This technology must be part of an overall sharps waste disposal system.

Advantages and disadvantages

The key advantage is greater than 90% reduction in the volume of infectious sharps waste and the associated cost savings in handling and transport. Other advantages include a reduced number of safety boxes, the prevention of reuse of syringes and needles and a decreased risk of needle-stick injury during the handling of safety boxes. Disadvantages include the capital cost of the needle remover, the costs to arrange supplies of disposable needle containers, the increased handling of used syringes and the possible splatter during the needle removal process.

A contamination study shows no droplet splatter

PATH arranged a qualitative study to measure droplets during needle removal. Five devices from four manufacturers were evaluated along with a WHO safety box and removal by pliers. No devices resulted in any surface splatter except removing needles with pliers.

Design tradeoffs

Further evaluation of needle remover devices in the field is required to better understand design tradeoffs including cost versus durability, portability versus static use, reusable versus disposable needle container and syringe disabling options.

Key discussion points:

- In the past, needle-cutters were widely used in the United States, but in 1991 the Occupational Safety and Health Administration (OSHA) issued guidelines that stated "contaminated needles and other contaminated sharps will not be bent, sheared or broken" due in part to concerns about aerosol contamination. An adequate design may be able to contain splatter.
- Some participants worried about the handling and emptying of full needle containers, and possible unsafe practices such as batching of syringes for later needle removal.
- Participants encouraged field projects to demonstrate appropriate use of these devices.

Philippe Jaillard
AMP, Abidjan, the Republic of Cote d'Ivoire

Planning a health care waste management system

Health care waste management addresses risks to health workers and the community. A system involves collection, method of final disposal, location of final disposal and monitoring. Options for collection include placing intact or de-fanged syringes in safety boxes. Options for disposal include incineration, burning in a pit or burying. Disposal may be done near health centres or at remote locations. Monitoring involves counting syringes supplied and used and full safety boxes destroyed. Planning for waste management requires information on sites, expected waste and existing incinerators.

Assessments find unsafe injections and unsafe waste disposal

A national injection safety assessment in April 2002 and an EPI review in May 2002 indicated that there were problems in Senegal. These included 25% of health care facilities reusing syringes in the absence of sterilization, 53% of health care workers reporting needle-stick injuries in the last year, the absence of a waste management policy, 67% of facilities using sterilizable equipment while only 58% had steam sterilizers, two-handed recapping and 68% of facilities burning waste.

Intervention to improve EPI waste management in Senegal

A workshop in September 2002 set a programme for injection safety interventions in two pilot regions, St Louis and Matam. Incinerators have been ordered in June 2002. Other plans include use of AD syringes and safety boxes, waste collection and transport, assignment of responsibilities and involvement of local authorities.

Next steps

A national policy on injection safety and waste management has yet to be approved. More incinerators are planned. Needle removing will be tested. By 2003, every district should have a functioning waste management system.

Needle remover



Changes and lessons in urban health care waste management

From 1995, the emphasis shifted from technology to management solutions. National legislation from 1998 sets standards. Waste management is a part of housekeeping and infection control. Health care staff have a steep learning curve. Simple technologies with training and awareness often work best. Training and awareness play critical roles. Non-incineration technologies have become more important, including needle-cutting, waste pits, encapsulation, autoclaving and smelting.

Existing rural and peri-urban health waste management is deficient

Legislation mandates waste management from end 2002. Deep burial is allowed in towns and rural areas, but incinerating is discouraged. Existing practices fall short. Waste is generally mixed in a single bag, but sometimes segregated. Waste bins are often open and not bagged, collection is irregular and spills are common. Waste handlers do not wear protective gear, they are not immunized and no record is kept of occupational injuries. Waste is often dumped or burned openly, which allows scavengers to have access to health care waste. Staff are often not aware of the concept of waste management.

Interventions are possible

Waste management can be incorporated into housekeeping and infection control. It is important to raise the awareness of the staff about occupational safety. Systems and training can be introduced for waste segregation and transport. Safe, easy to use and low cost technologies are available. Off-site disposal is often best, allowing health managers to focus on other issues.

Key discussion points:

- In a 300 bed hospital in New Delhi, it took six months to implement a new waste management system.

Deep burial pit in India



Environmentally-responsible management of health care waste with a focus on immunization waste

Jorge Emmanuel
Health Care Without Harm, Washington DC, USA

Health programmes should not lead to harmful incinerator emissions

A safe injection is safe to the patient, worker and the environment. Health Care Without Harm advocates safe handling, treatment and disposal of health care waste. Incinerator emissions, including dioxins, furans, mercury, lead, cadmium, particulates, acid gases, and carbon monoxide, have been linked to increased risk of cancers, hypertension and heart disease among incinerator workers and residents.

Promoting incinerators obstructs better alternatives

De Montfort incinerators that are promoted as a low-cost alternative cannot maintain high temperatures and combustion efficiencies. They have no pollution control and do not meet international standards. Field investigations in India indicated that De Montforts are poorly maintained and operated. They are used to burn all waste including recyclable waste, chlorinated plastics and mercury. Thus, they undermine waste segregation and minimization. Health care personnel are not aware of alternatives.

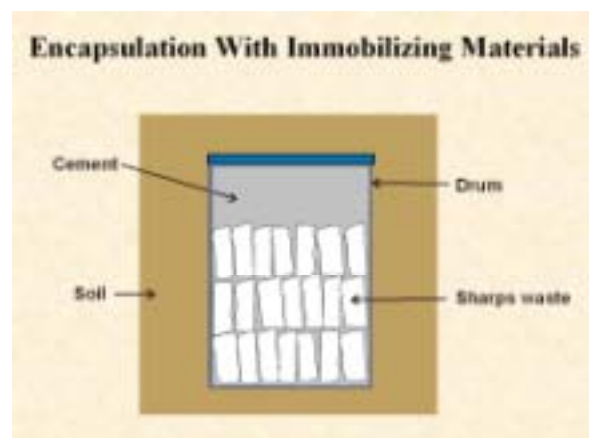
Many cleaner, cost-effective options exist

Alternatives include simple autoclaves, advanced autoclaves, microwaves, dry heat (non-burn) systems and chemical-based technologies. Low-cost technologies include cement encasing, encapsulation/immobilization, waste burial pits, needle destruction, portable autoclaves with traditional grinders and collection for transport and treatment in a central autoclave. Some options cost less than De Montfort or Sicim incinerators.

Planning for waste management

Waste management is a process, not a technology. The success of waste management programmes depends on planning, proper tools, training (and reinforcement of training), monitoring and evaluation. In a systems approach, segregation, appropriate containerization, secure storage and transport and safe treatment and disposal sites are important.

Encapsulation: Another way to manage health care waste



Recommendations regarding waste management:

Three recommendations are proposed to move the waste management agenda:

- **Assess the safety and cost-effectiveness of plastic recycling.**
- **Assess the relevance of needle-removing devices** for developing countries through demonstration projects monitored for selected critical end points.
- **Distribute comparative assessments of incineration and non-incineration options**, with a priority on health risk assessments.

Appendices

Appendix 1: List of participants

Page 39

Appendix 2: Programme of work

Page 48

Appendix 1: List of participants

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Appendix 2: Programme of work

Thursday 24 October 2002

Opening session

8:00-8:30	Welcome, election of chairperson and rapporteur	SIGN Secretariat
8:30-8:50	Safe and appropriate use of injections within national drug policies	Kathy Holloway
8:50-9:10	Ensuring injection safety within immunization services	Angus Pringle
9:10-9:30	Reviewing progress since SIGN meeting 2001	Yvan Hutin
9:30-10:00	<i>Coffee break</i>	

Assessing injection practices

10:00-10:20	Rapid assessment of injection practices in Mongolia	G. Soyolgerel
10:20-10:40	Rapid assessment of injection practices in Pakistan Northern areas	Lubna Samad
10:40-11:00	Injection safety assessments coordinated by the WHO department of Vaccines and Biologicals in the Eastern Mediterranean region: From assessment to planning	Carsten Mantel
11:00-11:20	Collection and disposal of used syringes & needles in EPI – A study in north-west China	Nakae Noguchi
11:20-11:45	Potential synergies between immunization services and essential drugs programmes in assessment	Group discussion
11:45-12:30	Recommendations	Group discussion
12:30-14:00	<i>Lunch</i>	

Planning for safe and appropriate use of injections

14:00-14:20	Plans of action for the safety of immunization and therapeutic injections in Viet Nam	Dr Cuong and Mr Muc
14:20-14:40	The India Injection Safety Coalition	Madhu Krishna
14:40-15:00	Synergy and partnership for injection safety: the example of Senegal	Jules Millogo
15:00-15:30	<i>Coffee break</i>	
15:30-16:00	Sectorwide planning for safe and appropriate use of injections	Group discussion
16:00-16:45	Recommendations	Group discussion
16:45-17:30	Take home messages for the day	Group discussion
17:30-18:00	Film on injection safety in Cambodia	

Update from the rapporteur

8:00-8:20 Summary recommendations from day one Rapporteur

Communicating, providing injection equipment and managing sharps waste

8:20-8:40 MTP strategy to decrease injection overuse in Lao Dr. Amphayvanh and Bundiono Santoso
8:40-9:10 Communication for injection safety and infection control in Egypt Maha Talaat
9:10-9:40 Managing supplies of injection equipment country experience Sophie Logez
9:40-10:00 Managing sharps waste in Cambodia Chea Kim Ly
10:00-10:30 *Coffee break*
10:30-11:15 What programmes and services are in the best position to conduct what interventions? Group discussion
11:15-12:00 Recommendations Group discussion
12:00-13:30 *Lunch*

Evaluation

13:30-13:50 Evaluation of an intervention to improve the safety of intravenous infusion in neonatal care, Egypt Amr Kandeel
13:50-14:10 Evaluation of intervention strategies to decrease injection overuse in Cambodia Sok Srun
14:10-14:30 Evaluation of a safe injection project in Uzbekistan Erkin Musabayev
14:30-15:30 Injection practices as a quality indicator of health systems Group discussion
15:30-16:00 *Coffee break*
16:00-16:30 Recommendations Group discussion

Closing session

16:30-17:30 Action points for the network Group discussion

Saturday 26 October 2002. SIGN working group on injection and waste management technologies

Morning: Field visit

8:00-12:00	Short trip to neighbouring districts to observe safe immunization sessions and auto-combustion incinerators in action	Coordinated by the Department of immunization, Cambodia Ministry of Health
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(Registration necessary)

12:00-13:30 *Lunch*

Afternoon: Injection and waste management technologies

Injection technologies

13:30-13:50	Development of ISO standards for AD syringes	Gerald Verollet
13:50-14:10	Technology transfer in AD syringes production	Gordon Larsen
14:10-14:30	Opening the way to the broader use of AD syringes in curative services	Yvan Hutin
14:30-15:30	News from the industry	Lillian Salemo for IASIT
15:30-16:00	<i>Coffee break</i>	

Afternoon: Waste management

16:00-16:20	Review of available waste management options	Richard Carr
16:20-16:40	Evaluation of needle-removing devices	Janet Vail
16:40-17:20	The PATH disposal system planning guide and its application in Senegal	John Lloyd and Philippe Jaillard
17:20-17:40	Health care waste management in rural India	Ravi Agarwal
17:40-18:00	Health care waste management	Jorge Emmanuel
18:00-18:30	Group discussion	

Executive Summary

The annual SIGN meeting was hosted by the Ministry of Health of the Kingdom of Cambodia on 24-26 October 2002.

Substantial progress was noted during the two days of the SIGN meeting as many countries were able to share their experience in managing the safe and appropriate use of injections through a systematic approach that included assessment, planning, implementation and evaluation. On the third day, that was dedicated to a SIGN working group on injection equipment and waste management technologies, a field visit provided an opportunity to review operational issues in the use of auto-disable syringes and auto-combustion incinerators. In addition, discussion took place regarding the accelerated introduction of auto-disable syringes in immunization and other services and the available strategies to manage sharps waste.

With respect to assessment, the SIGN participants underlined the importance of engaging stakeholders so that assessment can be followed by action. At the planning phase, the need of well coordinated multidisciplinary coalitions that bridge public and private partners was emphasized. For the implementation of activities in the area of behaviour change, provision of supplies and sharps waste management, there is a need to build-in monitoring strategies as part of routine activities. Finally, at the evaluation stage, a combination of input, process and outcome indicators must be examined, including the incidence of injection-associated infections. SIGN participants expressed satisfaction with respect to the partnership with the industry that is progressively allowing a systematic approach to ensure the quality and safety of injection equipment through national regulations enforcing international standards. However, for waste management, unresolved issues persist with respect to the potential role of plastic recycling combined with needle removal and with respect to the risk-benefit ratio of incineration as a waste management option.

SIGN participants agreed on a list of recommendations and proposed to hold the 2003 meeting in sub-Saharan Africa through an organization that would allow a stronger engagement of the international public health community in the role of safe and appropriate use of injections as a component of HIV prevention and care programmes.