Advanced Infection Prevention and Control Training

Injection safety and safe injection practices: trainer's guide

Outline of the module

The "Injection safety and safe injection practices" advanced training module is part of a broader infection prevention and control (IPC) training package targeting individuals and teams in IPC who work or intend to work as IPC focal points. Trainees are expected to possess at least basic experience and competence in IPC. They could include IPC professionals, IPC hospital teams, facility administrators, hospital epidemiologists, microbiologists and other relevant health care professionals, among others. The package complements a basic training package intended for all front-line health care workers.

Objectives of the module

The module aims to equip the IPC focal point to:

1. describe the reasons and factors behind unnecessary and unsafe injection practices;
2. explain the risks associated with unsafe injection practices and key epidemiological data of the infections caused by them;
3. list the key WHO recommendations for injection safety;
4. understand the mechanisms of safety-engineered syringes;
5. list the seven steps to safe injections;
6. explain how to collect, handle and dispose of needles and other sharps safely;
7. give details of needle-stick injuries and associated prevention strategies;
8. describe multimodal strategies to implement injection safety.

Overview

This module is to be delivered during a half-day training session. It comprises a blend of PowerPoint slides, audiovisual material and a student handbook. The training is divided into four sessions:

Session 1: the problem of unsafe injections (75 minutes: 45 minutes plenary, 30 minutes group work);

Session 2: IPC best practices and guidance for safe injections (60 minutes, including breaks);

Session 3: needle-stick injury prevention (60 minutes: 30 minutes plenary, 30 minutes group work);

Session 4: injection safety implementation strategies (90 minutes: 30 minutes plenary, 60 minutes group work)

Materials needed

All materials should be collected and reviewed prior to starting the training:

- PowerPoint slide deck;
- trainer's guide;
- student handbooks (these include handouts and group work instructions);
- WHO guideline on the use of safety-engineered syringes for intramuscular, intradermal and subcutaneous injections in health care settings;
- injection safety training and educational videos;
- laptop and data projector capable of playing video and audio;
- flip chart and pens;
- paper for students to use during group work.

Evaluation

The same pre- and post-training test (Annex 1) will be distributed to participants at the beginning and end of this module to help gauge their knowledge of injection safety. The pre-training test will develop a baseline, measuring existing knowledge, and identify knowledge gaps. The post-training test will assess the knowledge gained through the module.

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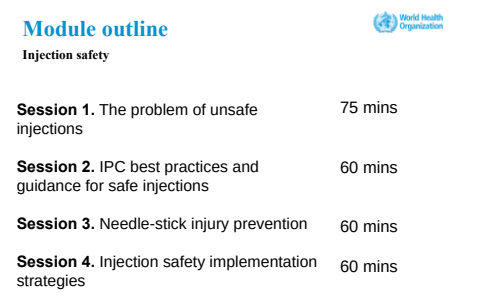
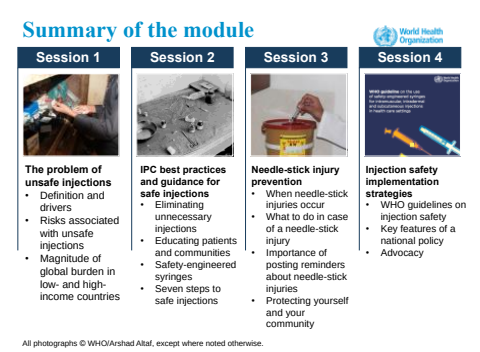
Details of presentation slides, with guidance for the trainer

Slide no.	Slide image	Notes and suggestions for trainer	Resources required
1		**Welcome** participants and **introduce** yourself and the topic for this module. **Ask** if there are any questions before advancing to the next slide.	–
2		**Give** a 1–2-minute overview of the whole workshop **State** that this module will cover different aspects of injection safety, including the importance of a multimodal improvement strategy with practical examples – the module is divided into four sessions to make different aspects of injection safety clear. **Read** the slide. **Emphasize** that each session builds on the previous one.	–
3		• **Talk through** the slide so that the student has a little more understanding of the content of each session. • **Emphasize** how each session links to build on the previous one.	–

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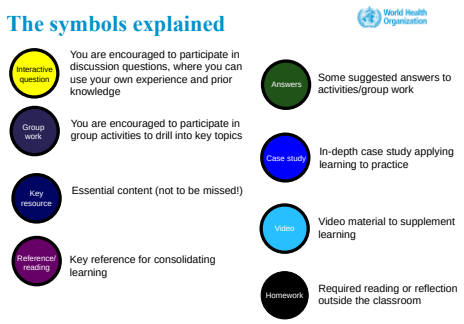
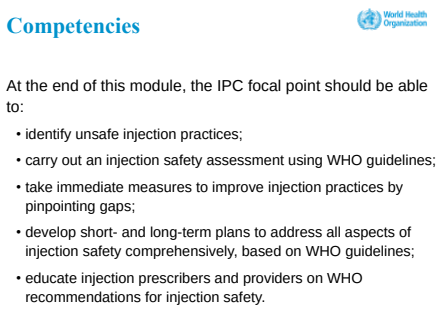
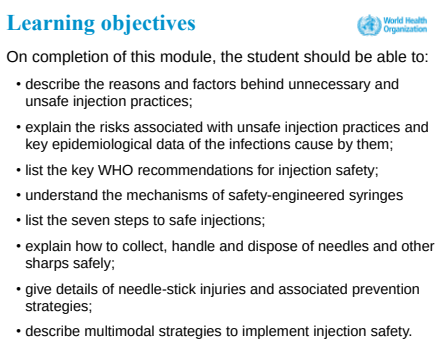
4		**Read** the explanations of the symbols from the screen.	–
5		• **Read** the slide or ask a participant to read it. • **Emphasize** that these are the learning outcomes the attendees will attain through completion of the module.	–
6		• **Read** the slide or ask a participant to read it. • **Emphasize** that these objectives are the knowledge and skills the attendees will be able to demonstrate on completion of this module. **Ice breaker** • At this point, **ask** the participants to introduce themselves to the person next to them and share with them one fact about why they are interested in IPC and injection safety. • **Allow** a couple of minutes to exchange the information. • Then **allow** 10 minutes for participants to tell the class what they have learned from each other: the name and fact about their partner.	–

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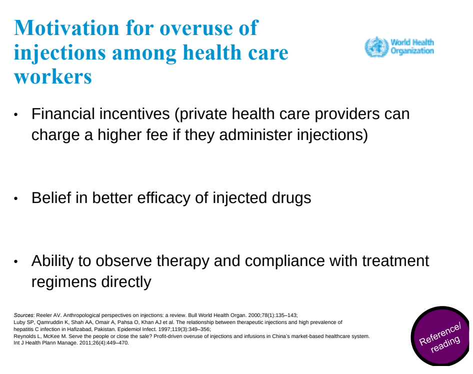
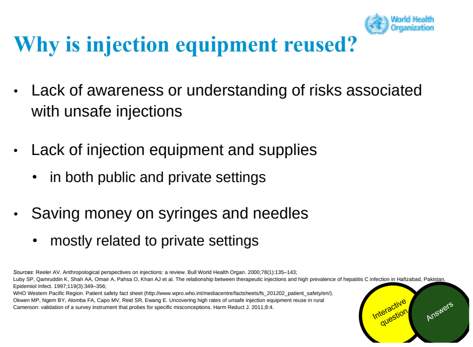
7	Session 1: World Health Organization The problem of unsafe injections	**Say:** "The first session describes the problem of unsafe injections."	–
8	What is a "safe injection"? World Health Organization ***A safe injection does not harm the recipient, does not expose the provider to any avoidable risk and does not result in any waste that is dangerous for others.*** Source: WHO injection safety glossary: http://www.who.int/infection-prevention/tools/injections/training-education/en/	**Click once** and **ask:** "What is a safe injection?" Then **show** the definition of a safe injection to the participants and read it.	–
9	Drivers of unsafe injection practices World Health Organization Prescribers  Providers   Patients	**State** that there are three drivers of unsafe injection practices. They are: • prescribers, who write the prescription for an injection (prescriber could be trained or untrained); • providers, who give the injections to patients (provider could be trained or untrained); • patients, who sometimes insist on receiving an injection even for conditions that can easily be treated with oral medications, such as seasonal flu or minor aches and pains.	–

10	**How can an injection be unsafe?** If any of the steps to make an injection safe are not undertaken appropriately. ***In particular, if:*** • the injection is given in an environment that is not clean and hygienic; • the needle or the syringe are used for more than one patient; • the package is not sterile or new and sealed; • the vial is used multiple times; • the skin is not properly disinfected; • the needle is not disposed of safely; • an injection is unnecessary and may cause harm (e.g. antibiotics, which can cause resistance); • the injection is given incorrectly, which can cause damage to the nerve and lead to paralysis of the area. Interactive question / Answers	Beyond the definition, **ask:** "What do you think makes an injection unsafe?" Then **click** and show the most frequent causes: • the injection is given in an environment that is not clean and hygienic; • the needle or the syringe are reused for more than one patient; • the package is not sterile or new and sealed; • the vial is used multiple times; • the skin is not properly disinfected; • the needle is not disposed of safely; • an injection is unnecessary and may cause harm (e.g. antibiotics, which can cause resistance); • the injection is given incorrectly, which can cause damage to the nerve and lead to paralysis of the area.	–
11	**Why do patients prefer injections?** • Belief that injections are **stronger medication** (Pakistan) • Belief that injections **work faster** (Romania) • Belief that **injection pain is a marker of efficacy** (southern African countries) • Belief that a drug is **more efficient** when entering the body directly (Cambodia, Thailand) • Belief that injections represent a **more developed technology** (many countries, including high-income ones) Sources: Reeler AV. Anthropological perspectives on injections: a review. Bull World Health Organ. 2000;78(1):135–142. Dentinger C, Parsai L, Popa M, Hutin Y J, Mast EE. Injection practices in Romania: progress and challenges. Infect Control Hosp Epidemiol. 2004;25(1):30–35; Altaf A, Fatmi Z, Ajmal A, Hussain T, Qahir H, Agboatwalla M. Determinants of therapeutic injection overuse among communities in Sindh, Pakistan. Ayub Med Coll Abbottabad. 2004;16(3):25–30. Interactive question / Answers	**Click once** and **ask:** "Why do patients prefer injections?" **Mention** that: • studies from Pakistan have shown that patients believe injections are stronger medication; • patients from Romania believe that injections work faster; • studies from southern African countries have documented that patients believe that injection pain is a marker of efficacy; • patients from South-East Asian countries like Thailand and Cambodia think that a drug is more efficient when it enters the body directly;	**Refer to handout 1 in the student handbook for a summary of the Reeler et al. paper.**

		• in many high-income countries injections are considered a more developed technology.	
12		**Mention** the motivating factors among health workers to overuse injections. • There is a financial incentive, especially among private practitioners who can charge a higher fee if they administer an injection at their health centre. • Some health care providers believe that injections have better efficacy, so they prescribe unnecessary injections. • Injection prescribers and providers in some settings believe that by giving injections they are ensuring compliance with the treatment they have prescribed.	**Refer to handouts 1 and 2 in the student handbook for further reading.**
13		**Click once** and **ask:** "What, in your opinion, are the reasons for reuse of injection equipment?" Click again to show the reasons documented by studies. • There is lack of awareness or understanding of risk associated with unsafe injections among prescribers and providers. • In some public and private settings shortage of injection equipment has led to its reuse. • Private practitioners want to save money on syringes and needles.	**–**
14		**Explain in detail** the risks associated with unsafe injection practices. • For example, there is a risk of transmission of bloodborne infections such as hepatitis B virus (HBV), hepatitis C virus (HCV) and HIV because of reuse of syringes and needles and contamination. • Unsafe injections can also lead to abscesses.	**–**

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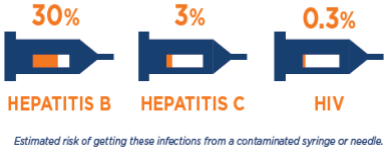
		• Cases have been reported of permanent nerve damage due to incorrect technique of administration of intramuscular injections in both arm and thigh regions. It is therefore important to have proper training and anatomical understanding of the nerve course. • In some studies, haemorrhagic fevers and malaria transmission due to reuse of injection equipment have also been reported.	
15	**Risk of HIV, HBV and HCV transmission in health care settings**  *Estimated risk of getting these infections from a contaminated syringe or needle.* Referencial reading	**State** that the estimated risk of transmission of hepatitis B from a syringe that has been used on an infected patient or source is 30%; for hepatitis C it is 3%; and for HIV it is 0.3%. While the estimated risk of HIV transmission is low, its severity cannot be undermined. **State** that these factors are also related to the bore of the needle and viral load among patients.	**Refer to handout 3 in the student handbook for further reading.**
16	**How long can HBV, HCV and HIV survive outside the human body?** • HBV can survive for seven days outside the human body and can cause infection if it enters the body of a person who is not infected. • HCV can survive for up to three weeks on environmental surfaces at room temperature. • HIV can survive in dried blood at room temperature for up to three days. Interactive question / Answers	**Click once** and **ask:** "Do you know how long some dangerous viruses such as HBV, HCV and HIV can survive outside the human environment?" **Click again** and **show** that: • HBV can survive for a week outside the human body and cause infections if it enters the body of a person who is not infected; • HCV can survive up to three weeks on environmental surfaces at room temperatures • HIV can survive in dried blood at room temperature for up to three days.	–

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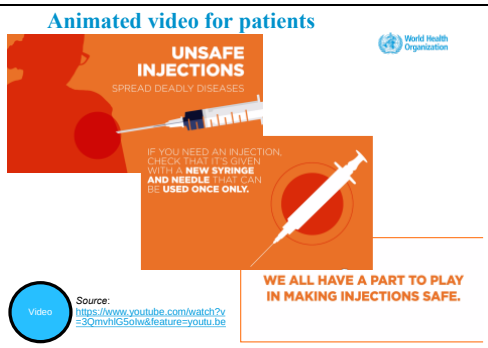
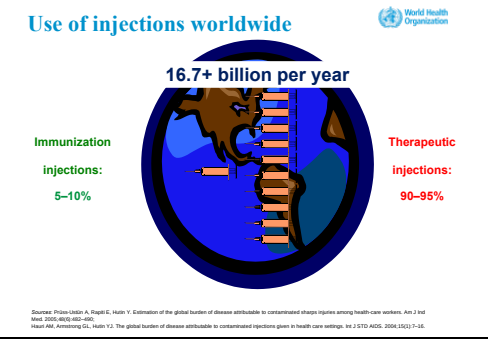
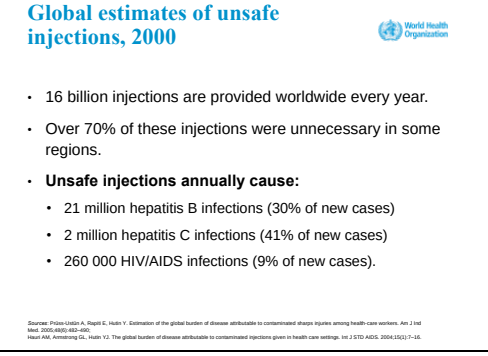
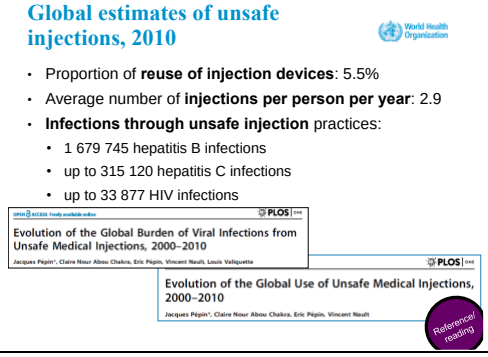
17		**State** that the animated video developed for patients and health workers describes the problem of unsafe injections, risks associated with reuse of injection equipment and WHO's recommendation on resolving the problem of injection safety. **Play** the video from the link provided.	**Making injections safe, we all have a part to play: https://www.youtube.com/watch?v=3QmvhlG5olw&feature=youtu.be**
18		**State** that it is estimated that over 16 billion injections are provided every year, of which 90–95% are therapeutic or medical injections. The remaining injections include immunizations and other injection types.	–
19		**State** that the global burden of disease study in 2000 estimated that over 70% of these injections were unnecessary and caused 21 million cases of hepatitis B, two million cases of hepatitis C and 260 000 HIV infections.	–
20		**State** that a 2010 study estimated that as many as 33 800 people were infected with HIV, up to 1.7 million with HBV and up to 315 000 with HCV. It was based on population surveys and various sources of information, including injection safety assessments and published studies on injection practices.	**Refer to handout 4 in the student handbook for a summary of the Pépin et al paper.**

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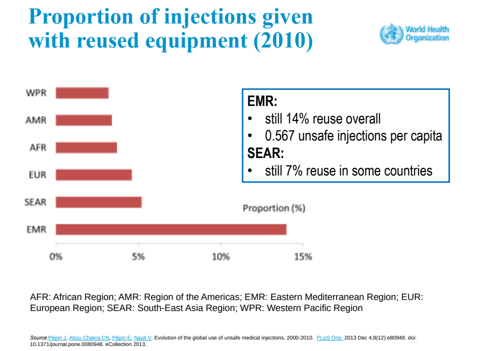

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Mention that, of all WHO regions:

in the Eastern Mediterranean Region 14% of injections still involve reuse and there is a high number of unsafe injections per capita (0.567) – three and a half times the worldwide average (up to 15 times higher than in the poorest regions of the world);
the South-East Asia Region remains an area of concern, with an average of 7% reuse in some countries.

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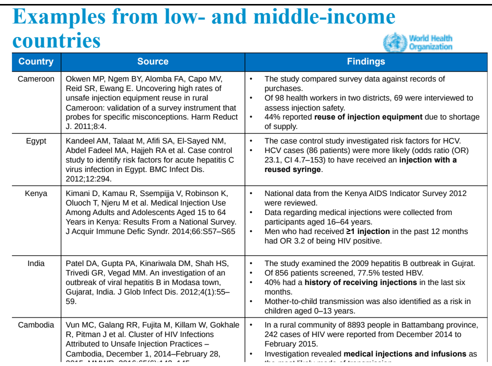

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Mention some of the recent epidemiological studies from low- and middle-income countries, which have attributed unsafe injections to disease transmission or identified the reasons for unsafe injections.

A study from Cameroon published in 2011 found that 44% of injections were given with reused injection equipment, mostly due to shortage of supply. In many parts of the world shortage of supply has been documented as a reason for reuse of needles in syringes. Many of you may be aware that, in the public sector, the process of emergency procurement is very complicated.
A case control study from Egypt published in 2012 investigated risk factors for hepatitis C and found that cases had an extremely high odds ratio of receiving an injection with a reused syringe – especially those who had HCV and had received injections in the last six months. Other risk factors included receiving intravenous fluids in a hospital or outpatient department, having a minor surgical procedure or being injection drug users.
A study published in 2014 used national data from the Kenya AIDS Survey 2012 and found that, among

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		men aged between 16 and 64 years, those who had received higher number of injections in the past 12 months had a higher chance of being HIV positive. • A study from India investigated a hepatitis B outbreak in the State of Gujarat in 2009. It found that 40% of positive cases had history of receiving injections in the last six months from private practitioners. • An outbreak of HIV in a rural community in Cambodia was reported in 2016. Of 242 cases, 22% were children aged less than 14 years. Investigation revealed that HIV-positive cases were five times more likely to have received an intramuscular or intravenous injection in the last six months and four times more likely to have received an intravenous infusion.	
23	**Examples from high-income countries** World Health Organization **Country** / **Source** / **Findings** United States of America — Taylor L, Greeley R, Dinitz-Sklar J, Mazur N, Swanson J, Wolick J et al. Injection Safety and Vaccine Administration Errors at an Employee Influenza Vaccination Clinic — New Jersey, 2015. MMWR. 2015;64(49):1363–1364. — • The study described **reuse of syringes** on 67 people for flu vaccines in 2015 in New Jersey by an experienced nurse in a flu immunization clinic. • On three multidose vials, two syringes were used multiple times after wiping with alcohol. • A new needle was used on every person. • The incident resulted in a lengthy investigation and follow-up. South Korea — Jung S, Kim BG, Kwon D, Park JH, Youn SK, Jeon S et al. An outbreak of joint and cutaneous infections caused by non-tuberculous mycobacteria after corticosteroid injection. Int J Infect Dis. 2015;36:62–69. — • A retrospective case control study in 2012 investigated risk factors of an outbreak of joint and cutaneous infections among patients injected at a single clinic in South Korea. • 61 cases of septic arthritis identified were linked with **inappropriate preparation of injections and site of injections**. • Alcohol swab was prepared using boiled tap water. France — Germain JM, Carbonne A, Thiers V, Gros H, Chastan S, Bouvet E et al. Patient-to-patient transmission of hepatitis C virus through the use of multidose vials during general anesthesia. Infect Control Hosp Epidemiol. 2005;26 (9):789–792. — • In 2001 in Western France an outbreak of hepatitis C was investigated in a private surgery care clinic. • Four HCV negative patients with no history or exposure to risks were found HCV positive. • The investigation revealed that **same syringe and needles** were used from two different vials from the index patient.	**Mention** that the problem of unsafe injections is not limited to low- and middle-income countries. High-income countries are also affected. • In New Jersey, United States of America, an experienced nurse at an immunization clinic used multidose vials and syringes multiple times on 67 people who came for flu immunizations. She changed the needle every time but only wiped the syringe with alcohol. There was a lengthy investigation and follow-up. • A retrospective case control study from South Korea investigated an outbreak of joint infections at a single clinic. There were 61 cases and 64 controls. Cases were more likely to have been exposed to unsafe preparation of injections and unhygienic cleaning of injection sites. • In 2001 an outbreak of hepatitis C in a surgery care clinic was investigated in Western France. The investigation	–

		revealed that the same syringe and needles were used from two different vials from the index patient on four patients who had no risk factor for HCV.	
24	**Discussion** 1. What are the reasons for unnecessary and unsafe injections in your health care setting? 2. Can you give an example of when you observed breaks in injection safety? 3. What did you do when it happened? Interactive question	**Ask:** "What are the reasons for unnecessary and unsafe injections in your health care setting?" "Can anyone give an example of when you observed breaks in injection safety?" "What did you do when it happened?" Allow 10 minutes for this discussion (2–3 minutes per question).	**–**
25	**Health care risk factors among women and personal behaviors among men explain the high prevalence of hepatitis C virus infection in Karachi, Pakistan.** NZ Janjua, HB Hamza, M Islam, SFA Tirmizi, A Siddiqui, W Jafri, S Hamid, Journal of Viral Hepatitis, 2010;17(5):317–326. **Summary** To estimate the prevalence and identify factors associated with hepatitis C virus (HCV) infection among men and women in Karachi, Pakistan. We conducted a cross-sectional study of adult men and women in a peri-urban community of Karachi (Jam Kandah). Households were selected through systematic sampling from within all villages in the study area. All available adults within each household were interviewed about potential HCV risk factors. A blood specimen was collected to test for anti-HCV antibodies by enzyme immunoassay. We used generalized estimating equations while accounting for correlation of responses within villages to identify the factors associated with HCV infection. Of 1997 participants, 476 (23.8%) were anti-HCV positive. Overall, HCV infection was significantly associated with increasing age, ethnicity, and having received ≥2 blood transfusions, ≥3 hospitalizations, dental treatment and >5 injections among women. Among women, ≥2 blood transfusions [adjusted odds ratio (aOR) = 2.32], >5 injections during the past 6 months (aORs = 1.47), dental treatment (aOR = 1.31) and increasing age(aOR = 1.49), while among men, extramarital sexual intercourse (aOR = 2.77), at least once a week shave from barber (aOR = 5.04), ≥3 hospitalizations (aOR = 2.50) and increasing age (aOR = 1.28) were associated with HCV infection. A very high prevalence of HCV was found in the study population. Among women, unsafe health care practices, while among men extramarital sex, shaving from a barber and hospitalizations were associated with HCV infection. Efforts are needed to improve the safety of medical procedures to reduce the transmission of HCV in Pakistan. Group work	**Say:** "Please spend 10 minutes and read the summary of the published paper from your handbook then proceed to group work 1 in your student handbook (p. 35)."	**For students: see group work 1 – student handbook, p. 35.** **For trainer: see group work 1 – Annex 1, p. 50.**
26	**Group work 1** • Work in groups of 5–7 people. 30 minutes total. • Please read the summary of the paper by Janjua et al. • In your groups answer the questions as per the student handbook: 1. What were the significant risks identified in the study? 2. Why was increasing age identified as a risk? 3. What kind of intervention or interventions could be designed if this were the community and area you were assigned to work with? 4. Do you see any role for safety-engineered syringes in this scenario? Group work	**Say:** "Divide yourself in groups of 5–7 and work in your groups to answer the questions related to the summary that you have just read." **Lead** a plenary discussion after groups have answered these questions. Allow each group to share their responses for each question, one at a time. **Allow** 30 minutes for this activity: 10 minutes to read, 10 minutes for group discussion and 10 minutes for group plenary.	**–**

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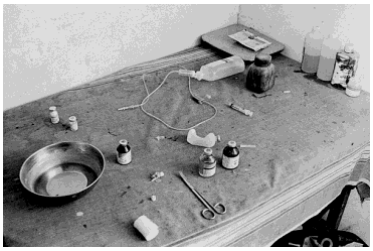
27	**Suggested readings** Reeler AV. Anthropological perspective on injections: a review. Bull World Health Organ. 2000;78(1):135-43. Pépin J, Abou Chakra CN, Pépin E, Nault V. Evolution of the global use of unsafe medical injections, 2000-2010. PLoS One. 2013 Dec 4;8(12):e80948. doi: 10.1371/journal.pone.0080948. eCollection 2013. Janjua NZ, Butt ZA, Mahmood B, Altaf A. Towards safe injection practices for prevention of hepatitis C transmission in South Asia: Challenges and progress. World J Gastroenterol 2016; 22(25): 5837-5852. Reference/ reading	No need to read the slide – just explain that there are further reading materials on all of the topics addressed here.	
28	**Session 2:** **IPC best practices and guidance for safe injections**	**Mention** that, following the background information on unsafe injections and the epidemiological data establishing a strong link between unsafe injections and infections, discussion will now turn to IPC best practices and guidance for safe injections.	**Best injection practices guidelines: http://www.who.int/infection-prevention/tools/injections/communications/en/**
29	**Is this the making of a safe injection?**  Interactive question	**Ask** participants to describe what they see in this image: what elements can they identify that may contribute to an unsafe injection? **Allow** 5 minutes in total for this discussion.	–
30	**Eliminating unnecessary injections** AVOID GIVING INJECTIONS FOR HEALTH CONDITIONS WHERE ORAL FORMULATIONS ARE AVAILABLE AS THE FIRST-LINE TREATMENT.	**State** that eliminating unnecessary injections is the key: to do that, as health care providers, we must avoid giving injections for ailments that can be treated with oral formulations where they are recommended as the first-line treatment.	–

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31	**Eliminating unnecessary injections contd.**
	World Health Organization
	• Eliminating unnecessary injections should be a high priority for preventing infections associated with unsafe infections.
	• Injections should only be prescribed and administered **when medically indicated**.
	  • If a medication is prescribed, consider the method of administration.
	  • Ask yourself: is an injection really needed, or is there an oral alternative?
	 
		Read or invite a participant to read the slide.
		• An injection should only be prescribed and administered when it is medically indicated.
		• The method of administration of a medication should be carefully reviewed.
		• Ask yourself if an injection is really needed or if an oral alternative is available. Many common ailments and minor aches and pains can be treated with oral formulations.
			–

32	**Educational leaflet for patients and communities** World Health Organization  Source: http://www.who.int/infection-prevention/tools/injections/IS_medical-treatement_leaflet.pdf?ua=1 Key resource	**State** that the educational leaflet for patients and communities can be downloaded from the link on this slide. It talks about making safe injection choices, the consequences of unsafe injections and why prevention is the best medicine. It educates patients to ask their prescribers about the need for an injection and to say that they would prefer oral medicines.	**Educational leaflet for patients and communities (handout 5 in the student handbook): http://www.who.int/infection-prevention/tools/injections/IS_medical-treatement_leaflet.pdf?ua=1**
33	**Postcard for patients and communities** World Health Organization  Source: http://www.who.int/infection-prevention/tools/injections/IS_postcard.pdf?ua=1 Key resource	**State** that this postcard or health card has been specifically developed to be placed in patient waiting areas; it could also be distributed within communities. It highlights three things to ask the health care provider before having an injection: is an injection needed; is the syringe new and opened from a new packet; and is the syringe is a smart syringe which can only be used once?	**Postcard for patients and communities (handout 5 in the student handbook): http://www.who.int/infection-prevention/tools/injections/IS_postcard.pdf?ua=1**
34	**Animated video for patients and communities** World Health Organization  Source: https://www.youtube.com/watch?v=3QmvhlG5olw&feature=youtu.be Key resource Video	**State**, as mentioned in the previous session, that the animated video developed for patients and health workers describes the problem of unsafe injections, risks associated with reuse of injection equipment and WHO's recommendation on resolving the problem of injection safety. The video can be downloaded from the link.	**Animated video for patients and communities: https://www.youtube.com/watch?v=3QmvhlG5olw&feature=youtu.be**

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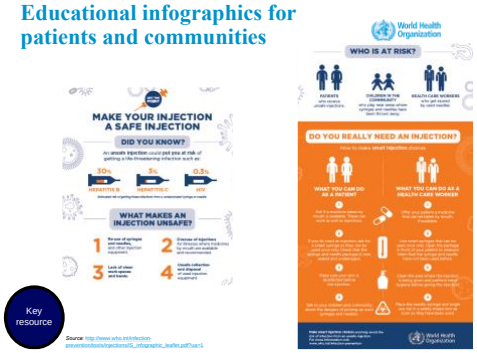
35	**Educational infographics for patients and communities** 	**State** that these attractive and easy to understand educational infographics have been developed for patients and communities. They describe in easy-to-understand language: • the risk of getting a life-threatening illness from unsafe injections; • what makes an injection unsafe; • how to identify whether the patient really needs an injection.	**Educational infographics for patients and communities (handout 6 in the student handbook):** http://www.who.int/infection-prevention/tools/injections/IS_infographic_leaflet.pdf?ua=1
36	**Poster promoting oral medicines** 	**State** that this educational poster, developed for patients and communities, promotes oral medicines (in patients' language: "medicines taken by mouth").	**Poster promoting oral medicines (handout 6 in the student handbook):** http://www.who.int/infection-prevention/tools/injections/IS_oral-formulation_poster.pdf?ua=1
37		**State** that WHO recommends that all countries should transition by 2020 to the exclusive use of WHO prequalified (or equivalent) safety-engineered injection devices, including reuse prevention (RUP) syringes and sharps injury protection (SIP) devices for therapeutic injections, and develop related national policies to bring about a smooth transition. The guideline was developed to reduce reuse of injection equipment and avoid needle-stick injuries, overuse of injections and unsafe handling of sharps. Implementers have to ensure rational use of injectable drugs and sufficient supplies of injection equipment.	**WHO guideline on the use of safety-engineered syringes for intramuscular, intradermal and subcutaneous injections in health care settings (handout 7 in the student handbook):** http://apps.who.int/iris/bitstream/10665/250144/1/9789241549820-eng.pdf?ua=1

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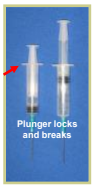
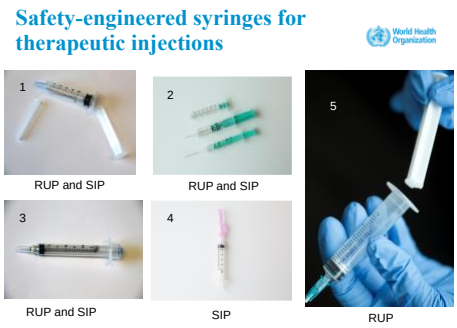
38	**2015 WHO policy: key elements** • Recommendations for transition to **auto-disable (AD), reuse prevention (RUP) or sharps injury protection (SIP) devices** for both immunizations and therapeutic injections • Recommendation to develop standards for rational use and supply of standard disposable syringes where they remain necessary • Call to partners to fund procurement of safety engineered injection devices in all projects • Call to industry to switch to "safe" syringes • Call to countries to develop national policies and implementation strategies, with a special focus on curative settings Source: http://apps.who.int/iris/bitstream/10665/250144/1/9789241549820-eng.pdf?ua=1 World Health Organization  Plunger locks and breaks  Example of SIP: needle is covered Key resource	**Ask a student to read the slide.** The policy includes the following key aspects: • descriptions of safety-engineered injection devices known as auto-disable (AD) and RUP syringes, which are specifically designed to block syringes from being reused – these also exist with SIP mechanisms to prevent needle-stick injuries to health care workers and the community; • recommendations for transition to the exclusive use of WHO prequalified AD/RUP/SIP devices for therapeutic injections in all countries, and development of related national policies; • a recommendation to develop standards for rational use and supply of standard disposable syringes for specific procedures and settings where they remain necessary; • requests to donor agencies and development partners to fund procurement of safety-engineered injection devices in all projects including injectable medications, and to finance appropriate quantities of safety-engineered injection devices, single-dose diluents and safety boxes and the cost of sharps waste management, as well as health care workers' training; • a request to international and local manufacturers to switch to safety-engineered injection device production as soon as possible and to seek WHO prequalification for their products; • a recommendation for countries to develop and put in place a strategy for implementing their national	**2015 WHO policy: key elements:** http://apps.who.int/iris/handle/10665/63650

		policies, based on WHO-recommended key components.	
39		**Say:** "These are some examples of safety engineered syringes." **1.** Photos 1 and 2 are examples of RUP and SIP syringes, as after the injection the needle is pulled back inside the plunger and the plunger breaks if a little force is applied. **2.** Photo 3 is also an RUP and SIP syringe: after giving the injection, while the needle is inside the muscle, the needle can be retracted by pushing a small button on top of the plunger. **3.** Photo 4 is an SIP syringe: after giving the injection a sheath or shield is gently pushed to cover the needle, thereby offering protection from needle-stick injury. **4.** Photo 5 is an example of an RUP syringe in which the plunger is broken after use, rendering the syringe unreusable.	–
40		**Say** that: • these are "auto-disable" or AD syringes used in immunization programmes worldwide; • they are usually fixed-dose syringes with a fixed needle and have a metal clip inside the plunger attached to the barrel; • once the vaccine has been given the vaccinator has to push it slightly and the syringe is locked and cannot be reused; • the syringe has to be discarded in the sharps box.	–

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41		**Say:** "All health workers must follow these seven steps to ensure injection safety in their settings." **Say** that these steps are: 1. a clean work space; 2. hand hygiene; 3. a sterile, safety-engineered syringe; 4. a sterile vial of medication and diluent; 5. skin cleaning; 6. appropriate collection of sharps; 7. appropriate waste management.	**Refer to handout 8 in the student handbook**
42		**Say** that these guidelines provide details on adhering to principles of injection safety in a succinct manner, ensuring that the injection is safe for the patient and the health care worker.	**Best injection practices guidelines: http://www.who.int/infection-prevention/tools/injections/communications/en/**
43		**Say** that this educational video describes in detail the mechanism of RUP and SIP syringes and provides information about the seven steps to safe injections.	**Video on how to give a safe injection (handout 8 in the student handbook): https://www.youtube.com/watch?time_continue=15&v=nzv4wkQkqQo**

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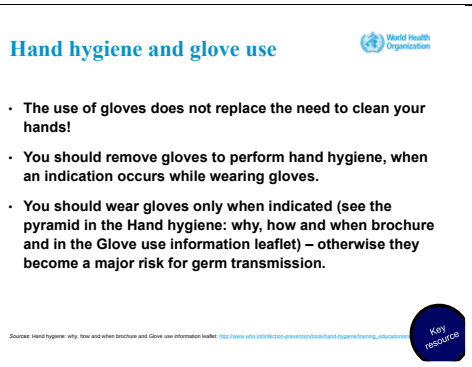
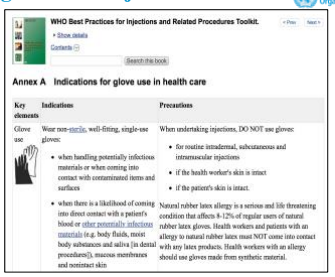
44	**Step 1: clean work space** World Health Organization A clean work space or workstation is necessary to avoid contamination and allow safe injection preparations.  Nursing stations in South Asia	**Ask a student to read the slide.** • The first and foremost step in preparing an injection of any kind is a clean and uncluttered injection preparation area. • It is absolutely imperative that contamination should be avoided. • The survival time of some viruses outside the human environment was mentioned in an earlier slide. • Special attention should be given to contamination for the safety of patients as well as that of health workers.	–
45	**Step 2: hand hygiene** World Health Organization Always perform hand hygiene: • before preparing injection material, before giving an injection, and after giving an injection.  • Also, avoid giving injections if skin integrity is compromised by local infection of another skin condition (e.g. weeping dermatitis). Key resource *See also: WHO's Hand hygiene in outpatient and home-based care and long-term care facilities (2012): http://www.who.int/infection-prevention/tools/hand-hygiene/en/*	**Say:** "As shown in the training video, hand hygiene must always be performed before preparing injection material, before giving an injection and after giving an injection. This is the second step in giving a safe injection." Avoid giving injections if skin integrity is compromised due to local infection or any other skin condition, such as weeping dermatitis.	**Hand hygiene in outpatient and home-based care and long-term care facilities (handout 9 in the student handbook): http://www.who.int/infection-prevention/tools/hand-hygiene/en/**
46	**Hand hygiene contd.** **5 moments for hand hygiene** **1 Before patient contact** — **When?** Clean your hands before touching a patient when approaching him or her. **Why?** To protect the patient against harmful germs **2 Before an aseptic task** — **When?** Clean your hands immediately before any aseptic task. **Why?** To protect the patient against harmful germs, including the patient's own germs, entering his or her body **3 After body fluid exposure risk** — **When?** Clean your hands immediately after an exposure to body fluids. **Why?** To protect yourself and the health care environment from harmful patient germs **4 After patient contact** — **When?** Clean your hands after touching a patient and his or her immediate surroundings when leaving. **Why?** To protect yourself and the health care environment from harmful patient germs **5 After touching patient's surroundings** — **When?** Clean your hands after touching any object in the patient's surroundings, when leaving – even if the patient has not been touched. **Whey?** To protect yourself and the health care environment from harmful patient germs	**Say:** "Continuing with hand hygiene, this slide provides the details of five moments of hand hygiene and when they should be performed." • Moment 1: clean your hands before touching the patient in order to protect him or her from harmful germs. • Moment 2: hands must be cleaned before any aseptic procedure in order to protect the patient from harmful germs, including the patient's own germs. • Moment 3: hands must be cleaned after exposure to body fluids in order	–

		to protect yourself and the health care environment. • Moment 4: clean your hands after patient contact or after touching the patient's immediate surroundings. • Moment 5: clean your hands after touching any object in the patient's surroundings when leaving, even if the patient has not been touched. This is needed protect yourself and the health care environment from harmful patient germs.	
47		**Say:** "Please remember that the use of gloves does not replace the need to clean your hands." **Say** that gloves should be used when indicated, as explained further in the following slides. In many settings, health workers continue to wear the same gloves and manage multiple patients; this can also pose a risk of disease transmission.	**Hand hygiene: why, how and when brochure and Glove use information leaflet: http://www.who.int/infection-prevention/tools/hand-hygiene/training_education/en/**
48		**State** that the glove pyramid can help in making decisions on when to wear or not wear gloves. • Gloves must be worn according to standard and contact precautions. The pyramid details some clinical examples in which gloves are not indicated, and others in which examination or sterile gloves are indicated. • As stated earlier, hand hygiene should be performed when appropriate, regardless of the indication for glove use. • Briefly, sterile gloves are indicated for any surgical procedure. • Examination gloves are indicated in clinical situations wherever there is potential for touching blood, body	**Hand hygiene: why, how and when brochure and Glove use information leaflet: http://www.who.int/infection-prevention/tools/hand-hygiene/training_education/en/**

		fluids, excretions or items visibly soiled by body fluids. • Gloves are not indicated when there is no potential for exposure to blood or body fluid or contaminated environments.	
49	**Use of gloves and injections**  WHO Best Practices for Injections and Related Procedures Toolkit. Annex A Indications for glove use in health care Key elements / Indications / Precautions Glove use Wear non-sterile, well-fitting, single-use gloves: • when handling potentially infectious materials or when coming into contact with contaminated items and surfaces • when there is a likelihood of coming into direct contact with a patient's blood or other potentially infectious materials (e.g. body fluids, moist body substances and saliva [in dental procedures]), mucous membranes and nonintact skin When undertaking injections, DO NOT use gloves: • for routine intradermal, subcutaneous and intramuscular injections • if the health worker's skin is intact • if the patient's skin is intact. Natural rubber latex allergy is a serious and life threatening condition that affects 8–12% of regular users of natural rubber latex gloves. Health workers and patients with an allergy to natural rubber latex must NOT come into contact with any latex products. Health workers with an allergy should use gloves made from synthetic material. Source: Annex A in *WHO best practices for injections and related procedures toolkit*: http://www.who.int/infection-prevention/publications/best-practices_toolkit/en/ Key resource	**State** that use of gloves while giving injections needs some clarity. For example, gloves are not required for routine intradermal, subcutaneous or intramuscular injections if your skin is intact or the patient's skin is intact. However, if contact with a patient's blood or infectious body fluids is anticipated, gloves must be used. If you have to, wear non-sterile, well fitting and single-use gloves. **State** that you must not use the same pair of gloves for more than one patient or wash them for reuse. **State** that gloves should be used during venous access injections because of the possibility of blood exposure at the puncture site. **State** that it is important to bear in mind that gloves do not provide protection against needle-stick injuries. **State** that gloves must be used if the health care worker's skin is not intact or if the patient's skin is not intact – for example, in the presence of eczema, burns or skin infections.	**Refer to handout 10 in the student handbook: https://www.ncbi.nlm.nih.gov/books/NBK138494/**

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50		**Say:** "Step 3 in giving a safe injection is the use of sterile injection equipment. It must be used to avoid risk of disease transmission." WHO recommends RUP syringes for all injections. Always use a new syringe and a needle opened from a new packet.	**WHO guideline on the use of safety-engineered syringes for intramuscular, intradermal and subcutaneous injections in health care settings** http://www.who.int/injection-prevention/publications/is_guidelines/en/
51		**Say:** **"**Ensure that the package is intact and there is no moisture inside the package. If there is any suspicion of break in packaging please discard the syringe and use a new one."	**–**
52		**State** that a visual inspection of the package provides ample detail to decide whether or not to use the syringe. • While doing a visual inspection check for the type of syringe, volume (e.g. 2, 3 or 5 ml), needle size (e.g. 23 gauge), it is also very important to check the lot number and expiry date . • **Mention** that some packaging also describes how the syringe was sterilized and what kind of packaging is used (e.g. blister packaging, which is most common, and comprises a permeable membrane that allows the ethylene oxide gas to pass through during the sterilization process).	**–**

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53		**Say** that a substandard syringe can also be identified on visual inspection. **Click once** to show substandard printing. Explain, further, that printing on the packaging will not be consistent or the expiry date and lot number may not be mentioned. **Click a second time.** Point out that a substandard syringe will not be straight and may have inconsistent graduation lines. **Click a third time**. Mention the foreign body inside the syringe, suggesting compromised sterility.	–
54		**Click once. Say:** "Step 4 in giving a safe injection is preventing contamination." Ask the participants why it is important to use single-dose vials rather than multidose ones. **Click a second time.** Explain that there have been many outbreaks associated with use of multidose vials. **Mention** that the preservatives inside the multidose vial do not eradicate the chances of microbial contamination.	–
55		**Say** that a literature review on infection control practices published in 2012 assessed the contribution of single-dose vials independently for infection. After reviewing 60 reports the authors found good evidence that contamination of multidose or single-dose vial can contribute to infections.	–

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56	**Preventing contamination – vial usage**
	• Always pierce the septum of the vial with a sterile needle.
	• Avoid leaving the needle in the stopper.
	  • A needle left in the septum of a multidose vial is a door open to contamination.
	  • This practice, associated with reuse of injection equipment on another or even the same patient, leads to cross-infection.
	 
		Say:
		
		"Always pierce the vial with a sterile needle and avoid leaving the needle in the stopper."
		
		Ask the participants why.
		
		Click once. Explain that a needle left in the septum is an open door for contamination.
		
		Click a second time. Mention that this practice, along with the reuse of injection equipment on another or even on the same patient, can lead to cross-infection.
			–

57	**How multidose vials can be used** • Multidose vials should be dedicated to a single patient whenever possible. • If a multidose vial is found in a patient treatment area, it should be dedicated for single-patient use only. • A treatment area could be an operating or procedure room.	**Say** that multidose vials should be dedicated to a single patient whenever possible. **Say** that if a multidose vial must be used in some situations, it should only be kept and accessed from the nursing station. **Say** that if a multi dose vial is found in a patient treatment area, it should be dedicated for single-patient use only. **Say** that "treatment area" means any operating or procedure room.	–
58	**Preventing contamination – ampoule usage** Select "pop open" ampoules rather than ampoules that require use of a metal file. • Ampoules that require a metal file can break more easily and lead to laceration of fingers. • Bleeding lacerations can lead to contamination of injectable substances. 	**Click once** and **say:** "Use 'pop open' ampoules rather than the ones that require a metal file to open them." **Ask the participants why.** **Click a second time** and **explain** that ampoules that require a metal file can break more easily and lead to laceration of fingers: lacerations can	–

		lead to contamination of injectable substances.	
59	**Preventing contamination – protecting fingers** • Protect fingers with a clean barrier (e.g. a small gauze pad) when opening ampoules. • A clean barrier may protect fingers from ampoule breaks. 	**State** that protecting fingers with a clean barrier like a gauze while opening ampoules can prevent injury to fingers if ampoule breaks.	–
60	**Step 5: skin cleaning** • Apply 60–70% alcohol-based solution (isopropyl alcohol or ethanol) on a single-use swab or cotton wool ball. • DO NOT use methanol or methyl alcohol as these are not safe for human use. • Wipe the area from the centre of the injection site working outwards, without going over the same area. • Apply the solution for 30 seconds, then allow it to dry completely. • DO NOT use cotton balls stored wet in a multiuse container. 	**Say:** "Step 5 in giving a safe injection is skin disinfection." **Explain** that disinfecting the skin is necessary prior to giving injections. Mention that methanol or methyl alcohol should not be used as skin disinfectants. These are not suitable for human use. **State** that 60–70% alcohol-based solution should be used on a cotton wool ball or single-use swab and the area wiped from the centre working outwards, avoiding the same area. It should be allowed to dry for 30 seconds. **State** that cotton balls stored in a multiuse container should be avoided, as they may be a source of infection.	–

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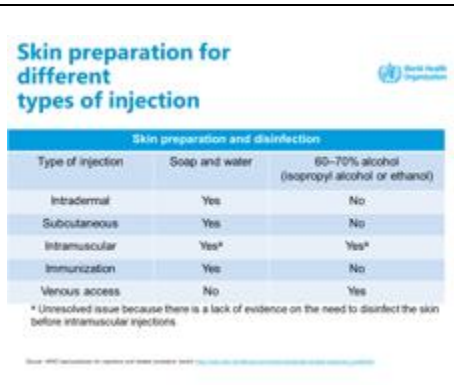
61		**Say** that: • for intradermal and subcutaneous injections soap and water is sufficient; • for intramuscular injections, the evidence is lacking, so soap and water and 60–70% alcohol should be used; • for immunization injections soap and water is sufficient; • for venous access 60–70% alcohol is required.	**Refer to handout 11 in the student handbook.**
62		**Say:** "Step 6 is one of the most important steps in injection safety: appropriate collection of sharps." **Say:** "After giving an injection, do not attempt to recap the needle; place the syringe and the needle in the sharps container. The sharps container should ideally be placed within arm's reach."	**–**
63		**Say:** "Do not attempt to open the sharps container or safety box. It should be stored in a secure place prior to its final disposal. The sharps container must not be filled more than three quarters full."	**–**

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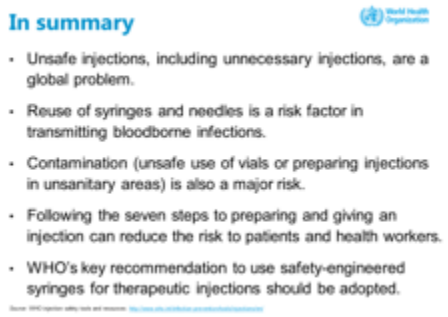
64		**Say** that this educational poster has been developed to raise awareness within communities that children may play with syringes dumped on community waste sites. Children should be told to not to play with any sharps found.	**Educational poster for communities – needles and syringes are not toys** http://www.who.int/infection-prevention/tools/injections/IS_syringes-are-not-toys-poster.pdf?ua=1
65		**Say** that: • opening the sharps container can lead to needle-stick injuries; • in some countries, syringes are reprocessed and repackaged, becoming a source of infection; • a study from Pakistan published in 2003 found that dealers of used plastic were willing to sell used syringes to investigators after washing them.	–
66		**Say:** "The seventh and final step in giving a safe injection is managing sharps." It has been observed that in many countries contaminated sharps can be found in the surroundings; this can expose the community to injuries and, as mentioned earlier, children can pick up the syringes and play with them as if they were toys.	–

67	**Selection of treatment technologies**
	• Treatment options should comply with national and international standards.
	• Depending on local conditions and logistical approaches, the following options can be considered:
	  • environmental and safety factors
	  • waste characteristics and quantity
	  • technology capabilities and requirements
	  • cost considerations
	  • operations and maintenance requirements.
		Say that health care waste treatment should depend on local policies and prevalent conditions. When considering options, the following factors should be kept in mind:
		• environmental factors;
		• quantity and characteristics of waste;
		• requirements of technology;
		• cost;
		• operation and maintenance requirements.
			–

68	**Technology options** Steam-based treatment • Used to decontaminate (disinfect/sterilize) infectious and sharp waste by subjecting it to moist heat and steam for a defined period of time, depending on the size and load of the content Burning • A dry oxidation process that reduces waste volume and weight – because it releases a wide variety of pollutants, it requires flue gas treatment to minimize pollutants such as sulfur oxide and heavy metals Chemical treatment • Infectious waste decontamination using chemicals	**Say** that: • the process of steam-based treatment consists of decontaminating infectious and sharps waste by subjecting it to moist heat and steam for a defined period of time, which depends on the size and load of the content; • another option is burning, which reduces waste volume and weight, but releases pollutants and requires flue gas treatment to minimize pollutants such as sulfur oxide or heavy metals; • in chemical treatment, infectious waste is decontaminated using chemicals.	–
69	**Technology options contd.** Autoclaving • Using a metal vessel designed to withstand high-pressure steam, which is introduced into and removed from the vessel – after treatment waste is considered nonhazardous and can be disposed of accordingly • Requires electricity between 220 and 400 volts Microwave technologies • Microwave energy produces moist heat and steam • Requires electricity between 230 and 400 volts	**Say** that: • autoclaving of waste is carried out in a metal vessel designed to withstand high-pressure steam, which is introduced in the vessel and then removed (the water used in the process is considered nonhazardous and can be disposed of accordingly); • microwave technology works around microwave energy and produces moist heat and steam; it requires electricity between 230 and 400 volts.	–

70	**Incinerators** Dual chamber without flue gas treatment • Primary chamber burns at or above 850ºC • Secondary chamber has burners that burn at 1100–1200ºC • Requires electricity between 220 and 400 volts or fuel for generator	**Say** that: • the dual chamber incinerator has two chambers and can be used without flue gas treatment; • it is one of the most common methods of handling health care waste and is widely utilized worldwide; • there are two chambers: the first burns at or above 850ºC and the secondary chamber burns at 1100–1200°C; • it requires electricity between 220 and 400 volts or fuel for generator.	–
71	**Incinerators contd.** Single chamber without flue gas treatment • Drum and brick and designed to meet immediate need • Can work on wood, coconut shells etc. 	**Say** that: • the single-chamber incinerator is made of drum and brick and designed to meet immediate need; • it can even work on wood or coconut shells; • the efficiency of this type of incinerator may reach 80–90% and result in destruction of 99% of microorganisms and a dramatic reduction in the volume and weight of waste; • however, many chemical and pharmaceutical residues will persist if temperatures do not exceed 200°C; • in addition, the process will cause massive emission of black smoke, fly ash and potentially toxic gases.	–
72	**A useful website** http://medwastetech.info/ 	**State** that this is a useful website related to health care waste management. • The database is a web tool, developed by the Health Care Without Harm Global Team, to help staff responsible for procuring health care waste treatment technologies to identify alternatives to incinerators. • Searching the database involves four steps: select country, select	**Health-care waste treatment technologies database (handout 12 in the student handbook):** http://medwastetech.info/

		technology, calculate approximate capacity and hit search. • If the Internet is available, provide an example search for your local context.	
73		**State** that: • unsafe injections are a global problem; • bloodborne infections can be transmitted when syringes and needles are reused; • preparing injections in a contaminated environment is a serious risk factor, and so is use of single-dose vials on more than one patient or multidose vials; • by following these seven steps the chances of infection transmission can be eliminated for patients and health workers; • health systems should adopt WHO's recommendation to use safety-engineered syringes.	**–**
74		**Ask** one or two participants to summarize the seven steps to safe injections. **State** that this leaflet covers all key aspects of injection safety such as: • the responsibility of injection providers to ensure that each injection given is safe; • types of syringes to be used; • preventing contamination; • needle-stick injury protection; • hand hygiene; • managing sharps appropriately.	**Refer to handout 8 in the student handbook.**

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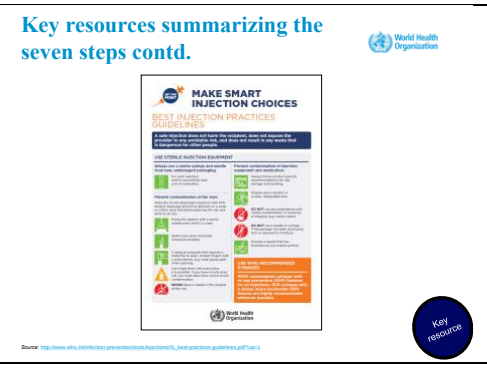
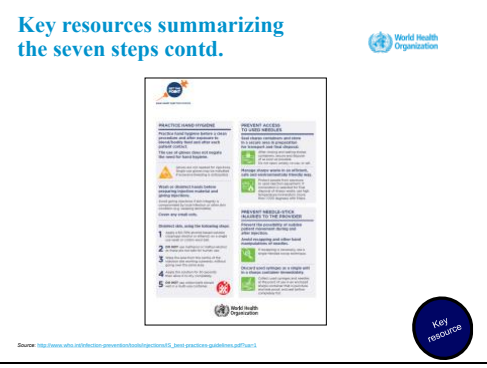
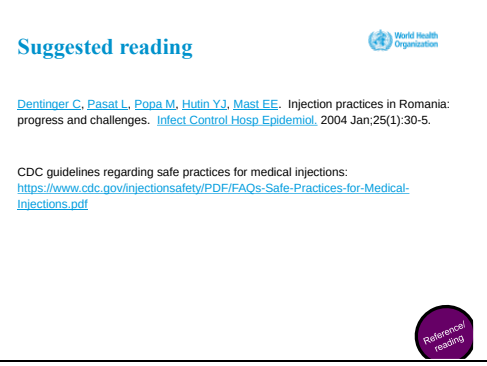
75		Further, the next three slides showcase additional resources available, summarizing the seven key steps to giving a safe injection.	–
76		–	–
77		–	–
78		No need to read the slide – just explain that there are further reading materials on all of the topics addressed here.	

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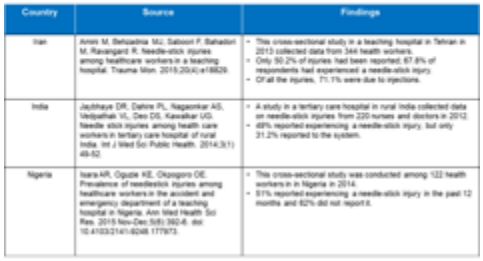
79	Session 3 Needle-stick injury prevention	**Say:** "Building on the steps for giving a safe injection, session 3 of this module will cover needle-stick injuries and prevention."	–
80	Needle-stick injuries in low-income countries 	**State** that there are many examples from low- and middle-income countries where needle-stick injuries and their reporting is a problem. • Studies from Iran, India and Nigeria indicate that needle-stick injuries occur among almost 50% of health care workers, but their reporting is quite low. • A cross-sectional study in a teaching hospital in Tehran in 2013 collected data from 344 health workers. Only 50.2% of injuries had been reported, while 67.8% of respondents had experienced a needle-stick injury. A point to note is that of all the injuries, 71.1% were due to injections. • A study in a tertiary care hospital in rural India collected data on needle-stick injuries from 220 nurses and doctors in 2012. 49% reported experiencing a needle-stick injury but only 31.2% reported it. • Another cross-sectional study was conducted among 122 health workers in Nigeria in 2014. 51% reported experiencing a needle-stick injury in the past 12 months and 62% did not report it.	–

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81	**Types of needle that cause needle-stick injuries** World Health Organization • Hypodermic needles  • Blood collection needles  • Suture needles  • Needles used in intravenous delivery systems 	**State** that these are the types of needle that can cause a needle-stick injury. They include: • hypodermic needles, which are commonly used on conventional disposable syringes; • blood collection and suture needles; • needles used in intravenous delivery systems.	–
82	**When needle-stick injuries occur** World Health Organization  	**State** that there are certain situations in which a health care worker is vulnerable to injuries, for example: • if the patient makes sudden movement while giving an injection; • when recapping needles, which is a common practice; • while transferring body fluids between containers; • if used needles are not properly disposed of in a safety box or sharps container.	–
83	**If you get a needle-stick injury** World Health Organization Take the following actions immediately. 1. Wash the wound with soap and water. 2. Inform your supervisor and follow the needle-stick injury reporting mechanism of your health facility. 3. Identify the source patient, who should be tested for HIV, hepatitis B and hepatitis C infections. Note: tests should be carried out after patient counselling and consent. 4. Be tested for HIV, hepatitis B and hepatitis C infections. 5. Read *WHO best practices for injections and related procedures toolkit.*  Key resource Source: http://www.who.int/infection-prevention/publications/best-practices_toolkit/en/	**Say:** "If you experience a needle-stick injury, take the following actions." 1. Wash the wound with soap and water. 2. Inform your supervisor and follow the needle-stick injury reporting mechanism in your health facility. 3. Identify the source patient, who should be tested for HIV, hepatitis B and hepatitis C after counselling and taking informed consent. 4. Be tested for HIV, hepatitis B and hepatitis C. 5. Follow WHO guidelines.	**Best practices for injections and related procedures toolkit:** **http://www.who.int/infection-prevention/publications/best-practices_toolkit/en/**

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84	**Exposure to HBV and management** • Risk of HBV infection is related to the degree of contact with blood and the hepatitis B e antigen (HBeAg) status of the source patient. HBeAg is an indicator of high infectivity. • Studies have shown that among health care workers who sustained injuries with blood containing HBV, the risk of developing clinical hepatitis if the blood was both hepatitis B surface antigen (HBsAg) and HBeAg positive was 22% to 31%. • The risk of developing clinical hepatitis from a needle contaminated with HBsAg positive and HBeAg negative blood was 1% to 6%.	Say that the risk of acquiring HBV depends on three things. • First is the degree of contact with blood. • Second, if the source is both hepatitis B surface antigen and hepatitis B e antigen positive the chances are higher and range from 22% to 31%: hepatitis B e antigen is an indicator of high infectivity. • Third, if the blood is only contaminated with hepatitis B surface antigen the chances are between 1% and 6%.	–
85	**Follow-up for HBV exposure** • Post-exposure prophylaxis (PEP) for HBV is based on hepatitis B vaccine, either alone or combined with hepatitis B immune globulin (HBIG). • Among nonvaccinated health care workers, the initial dose of vaccine must be administered soon after exposure. Source of exposure / Unvaccinated or incomplete (< 3 doses) / Vaccinated (3 or more doses) Unknown or hepatitis B positive / • Initiate and complete vaccination • Give HBIG (where available) / No PEP Negative / Initiate and complete vaccination / No PEP	**State** that post-exposure prophylaxis (PEP) for HBV is based on hepatitis B vaccine given either alone or combined with hepatitis B immune globulin (HBIG). • Health workers who are not vaccinated against hepatitis B must be given the initial dose immediately after exposure. • If the source of the exposure is unknown or is hepatitis B positive, among unvaccinated health workers or those with incomplete vaccination, vaccination should be initiated and doses should be completed, and if HBIG is available it should be given. • For those vaccinated with three or more doses no PEP is required. • If the source is hepatitis B negative and the health worker is unvaccinated or has incomplete vaccination, all doses should be completed. • For those vaccinated with three or more doses no PEP is required.	–

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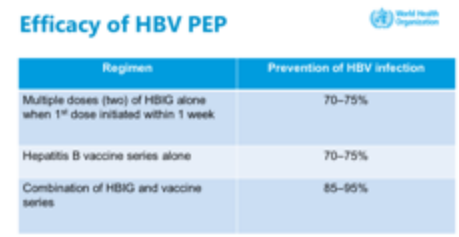
86	**Efficacy of HBV PEP**  World Health Organization **Regimen** / **Prevention of HBV infection** Multiple doses (two) of HBIG alone when 1st dose initiated within 1 week — 70–75% Hepatitis B vaccine series alone — 70–75% Combination of HBIG and vaccine series — 85–95%	**Say** that: • the efficacy of multiple doses of HBIG alone, if initiated within one week of exposure, has found to be in the range of 70–75%; • the efficacy of the HBV vaccine series alone has been found to be in the range of 70–75%; • combining HBIG and the HBV vaccine series increases efficacy to 85–95%.	–
87	**Follow-up for HBV-exposed health workers** World Health Organization • Follow-up testing for antibodies to hepatitis B should take place among those who receive vaccine in response to exposure. • Testing should be done 1–2 months after the last dose. • If HBIG has been given in the past 3–4 months it is not possible to determine the response to the vaccine. Source: WHO (2010) Best practices for injections and related procedure toolkit. Available at: http://www.who.int/infection-prevention/publications/best-practices_toolkit/en/	**Say** that: • testing should be conducted after 1–2 months to determine whether antibodies are formed; • if HBIG has been given in the last 3–4 months then it may not be possible to determine the vaccine response.	–
88	**Exposure to HCV** World Health Organization • Risk of HCV transmission is relatively low. • Seroconversion rate after accidental percutaneous exposure from an HCV source is 1.8% (range 0–7%). • One study indicated transmission from hollow-bore needles only. • HCV is rarely transmitted from exposure of mucous membrane or nonintact skin to contaminated blood	**Say** that: • risk of HCV transmission is relatively low; • one study indicated that HCV transmission is possible only from hollow-bore needles; • HCV is rarely transmitted from the mucous membrane.	–

89	**Management of HCV exposure**
	World Health Organization
	• No PEP is recommended following injury involving HCV-positive blood.
	• Immunoglobulin and antiviral agents are not recommended.
	• There is no vaccine against HCV.
	• Identify infection and refer for evaluation of treatment options.
	• Steps after HCV exposure are:
	  • baseline testing for antibodies
	  • alanine aminotransferase (ALT).
	Source: WHO (2010) Best practices for injections and related procedure toolkit. Available at: http://www.who.int/infection-prevention/publications/best-practices_toolkit/en/
		State that:
		• there is no recommended PEP for HCV-positive blood and immunoglobulins or antiviral agents are not recommended;
		• there is no vaccine for HCV yet;
		• after HCV exposure, baseline testing for antibodies should be performed, along with alanine aminotransferase (ALT);
			–

		• once infection is identified the health care worker should be referred to a specialist for treatment.	
90	**Follow-up for HCV exposure** World Health Organization • Test for anti HCV and ALT 4–6 months after exposure. • Test for ribonucleic acid 4–6 weeks after exposure if early diagnosis is desired. • Confirm repeatedly positive results in anti-HCV enzyme immunoassays with supplemental tests. • If health care worker is seroconverted refer to a specialist. Source: WHO (2010) Best practices for injections and related procedure toolkit. Available at: http://www.who.int/infection-prevention/publications/best-practices_toolkit/en/	**State** that: • the health care worker should be tested for anti-HCV and ALT 4–6 months after exposure; • if early diagnosis is desired a ribonucleic acid test called PCR can be performed 4–6 weeks after exposure; • supplemental tests may be needed for a definitive diagnosis; • once infection is confirmed, the health care worker should be referred to a specialist for treatment.	–
91	**Exposure to HIV** World Health Organization • Risk of HIV transmission after a percutaneous injury is approximately 0.3%. • Risk may be higher in countries with higher prevalence or in health care settings where reuse of medical supplies and equipment is higher and overall safety standards are low. Source: WHO (2010) Best practices for injections and related procedure toolkit. Available at: http://www.who.int/infection-prevention/publications/best-practices_toolkit/en/	**Say** that: • the risk of HIV transmission after a percutaneous injury is approximately 0.3%; • it should be noted that risk may be higher in countries that have higher prevalence or in health care settings where reuse of medical equipment is higher and safety standards are low.	–
92	**HIV PEP following occupational exposure** World Health Organization **PEP recommended**: PEP is recommended if exposure meets **all** the following criteria: • the exposure took place within 72 hours; • the exposed individual is not known to be HIV infected; • the source of exposure is HIV infected or of unknown status; • exposure was caused by one or more of the following: • blood, body tissue, visibly blood-stained fluid, concentrated virus, cerebrospinal fluid, synovial fluid, peritoneal fluid, pericardial fluid, amniotic fluid. **PEP not recommended**: PEP is not recommended if **any** of the following apply: • more than 72 hours has elapsed since the exposure; • the exposed person is already HIV positive; • exposure was to body fluids from a person known to be HIV negative (unless suspected of being high risk and in the "window period"); • exposure was to noninfected body fluid (faeces, saliva, urine or sweat); • only intact skin was exposed. Source: WHO (2010) Best practices for injections and related procedure toolkit. Available at: http://www.who.int/infection-prevention/publications/best-practices_toolkit/en/	**State** that the table describes in detail in which situations PEP is recommended and when it is not recommended. • PEP is recommended if the exposure took place within 72 hours and the exposed individual is HIV negative. • PEP is recommended if the source of exposure is HIV infected or of unknown status. • PEP is also recommended if exposure was to blood, body tissues, visibly blood-stained fluid, or cerebrospinal, synovial,	–

		peritoneal, pericardial or amniotic fluid. • PEP is not recommended if the time elapsed has been longer than 72 hours and the exposed person is already HIV positive. • PEP is not recommended if exposure was to body fluids from an HIV-negative individual unless the person is suspected of being high risk and may be in the "window period". • No PEP is required if intact skin was exposed.	

93	**HIV PEP following occupational exposure contd.**
	World Health Organization
	PEP recommended
	• exposure was through one or more of the following:
	  • skin penetration with spontaneous bleeding or deep puncture
	  • splash of significant amount of fluid to mucous membrane
	• if skin penetration occurred, exposure was from a recently used hollow-bore needle or other sharp object visibly contaminated with blood
	PEP not recommended
	Source: WHO (2010) Best practices for injections and related procedure toolkit. Available at: http://www.who.int/infection-prevention/publications/best-practices_toolkit/en/
		Say that:
		• if the exposure was such that there was a deep puncture or spontaneous bleeding, or the splash was significant to the mucous membrane, then PEP is recommended;
		• if the puncture was through a hollow-bore needle or other sharp object that was visibly contaminated with blood, PEP is recommended.
			–

94	**Evaluation of HIV infection** World Health Organization Source: WHO (2010) Best practices for injections and related procedure toolkit. Available at: http://www.who.int/infection-prevention/publications/best-practices_toolkit/en/	**Say** that this slide provides detail of the type of exposure, status of the source and whether or not PEP should be provided. • In first row, please note that if the percutaneous injury was severe and the source is HIV positive, the two-drug regimen is recommended, but if the HIV status of the source is unknown then HIV prevalence in the population or subpopulation should be considered before deciding whether or not to initiate PEP. • With a serious percutaneous injury, if the source is HIV negative, PEP is not recommended provided there is assurance that the source person is now in the "window period".	–

Type of exposure	Source HIV positive	Source HIV status unknown	Source HIV negative
Percutaneous injury, more severe	Recommend two-drug regimen	Consider HIV prevalence in population or subgroup	DO NOT recommend PEP, provided there is no risk that the source patient might be in the "window period"
Percutaneous injury, less severe	Recommend two-drug regimen	DO NOT recommend PEP	DO NOT recommend PEP
Splash, more severe	Recommend two-drug regimen	Consider HIV prevalence in population or subgroup	DO NOT recommend PEP provided there is no risk that the source person might be in the "window period"
Splash, less severe	DO NOT recommend PEP; two-drug regimen optional	DO NOT recommend PEP	DO NOT recommend PEP

		• The second row shows that if the percutaneous injury was less severe and the source person is HIV negative and not in the "window period", no PEP is required. PEP will be required if the source person is HIV positive and the percutaneous injury is less severe. • The same is applicable to splashes, as set out in the last two rows.	
95	**Issues of PEP counselling** World Health Organization • PEP is for 28 days only and is not a treatment for HIV. • HIV treatment is based on a combination of antiretrovirals to be taken continuously. • Adherence is of high importance. • Recommendations should include use of condoms and avoidance of donating blood, sperm or organs until a test six months after exposure is negative. • Information on contraception should be given to women of childbearing age. • Information on alternatives to breastfeeding should be given to lactating mothers. Source: WHO (2010) Best practices for injections and related procedure toolkit. Available at: http://www.who.int/infection-prevention/publications/best-practices_toolkit/en/	**Say** that it must be emphasized to the health care worker that PEP is not a treatment for HIV, as it only lasts for 28 days. • HIV treatment comprises a combination of antiretrovirals, which have to be taken continuously and with good compliance. • After exposure it is recommended that condoms should be used in sexual acts and blood, organ and sperm donation should be avoided until a test at least six months after the exposure is negative. • If the health care worker is a woman of childbearing age, contraception should be emphasized. • If the health care worker is a lactating mother, alternatives to breastfeeding should be recommended.	–

96	**Follow-up for HIV exposure**
	World Health Organization
	• The aim of follow-up visits is to:
	  • support PEP adherence
	  • prevent or treat side-effects of PEP
	  • identify possible seroconversion
	• Evaluation within 72 hours is important to monitor possible drug reactions.
	• Test for HIV antibodies at baseline, six weeks and six months after exposure.
	  • If seroconversion occurs, refer for treatment, care and support.
	• Test for HIV antibodies if illness compatible with an acute antiretroviral syndrome occurs.
	Source: WHO (2010) Best practices for injections and related procedure toolkit. Available at: http://www.who.int/infection-prevention/publications/best-practices_toolkit/en/
		Say that the purpose of follow-up visits is to ensure adherence to PEP, prevent or treat any side-effects of PEP and to identify possible seroconversion.
		• Drug reactions have to be monitored within 72 hours of initiating treatment.
		• HIV testing is recommended at baseline, six weeks and six months after the exposure – if at any stage there is seroconversion the
			–

		individual should be referred for treatment, care and support. • If there are signs and symptoms of illness compatible with acute antiretroviral syndrome occurrence, HIV antibody testing should be performed.	

97	**Reporting HIV exposure**
	• Reporting of the incident is important to evaluate the safety of working conditions and appropriate measures.
	• All reports should be confidential.
	• Information will be useful for future prevention.
	  • For example, an incident of exposure can be helpful in evaluating health practices, policies and even products in use.
	• Data collected are of two kinds:
	  • data for risk assessment and post-exposure engagement
	  • data that describe the circumstances of exposure – these are helpful in making recommendations for future prevention.
	Source: WHO (2010) Best practices for injections and related procedure toolkit. Available at: http://www.who.int/infection-prevention/publications/best-practices_toolkit/en/
		Say that it is essential that all needle-stick injury incidents are reported in order to assess the safety of working conditions and take appropriate measures.
		• It is important that all reporting is confidential.
		• This kind of information will be useful for future prevention.
		• The data are of two types: data for risk assessment and post-exposure engagement, and data that describe the situation when the incident occurred.
			–

98	**Questions** • Have you ever experienced a needle-stick injury? • In your opinion what factors contributed to your needle-stick injury? • Did you report it or not? • Have you ever noticed a sharp being disposed of inappropriately? Did you report it to someone? • How would you initiate a needle-stick reporting system in your facility and at the country level? Interactive session	**Ask** these questions. • How would you initiate a needle stick reporting system in your facility? • How would you initiate similar reporting mechanism at the country level? **Allow** 5 minutes for interactive discussion.	**–**
99	**Group work 2** *Scenario* Amanda was working late in the afternoon and her shift was about to finish when her colleague informed her that she was having difficulty collecting a blood sample from a patient. Amanda took the sample successfully and, after taking the needle out and keeping pressure on the patient's hand to stop the bleeding, she tried to reach the sharps box, which was behind her. In doing so, she was stuck by another needle in the sharps box. Amanda thought that the needle had been exposed to the environment for some time and it seemed dry, so there was limited risk of acquiring an infection. She therefore refused post-exposure prophylaxis for HIV. At a subsequent follow-up, however, she found out that she had contracted HCV and HIV. *Questions* 1. What factors contributed to the exposure? 2. Would it have been possible to prevent this exposure? 3. Would it have been possible to use a safety-engineered syringe to prevent the needle-stick injury? If yes, what type of syringe? 4. What kind of practice at work could have prevented this needle-stick injury? Group work	**Ask** a participant to read the scenario and questions. **Say:** "Divide yourself in groups of 4–5 and work together to answer these questions." **Allow** 30 minutes for group work and responding to questions.	**For students: see group work 2 – student handbook, p. 37.** **For trainer: see group work 1 – Annex 1, p. 55.**

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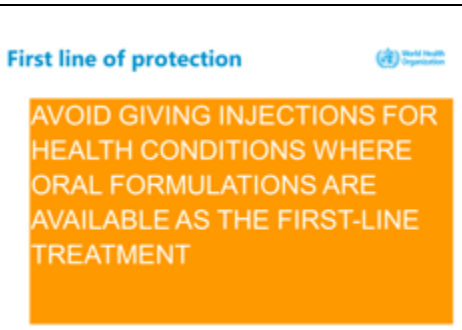
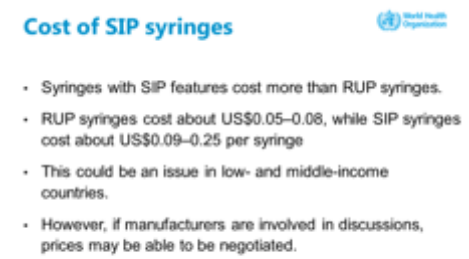
100		**State** that the fewer unnecessary injections are given, the lower the chance of injury to health workers. **Say:** "In other words, 'less is more!'"	–
101		**State** that this has already been mentioned in previous slides but is emphasized here as a reminder. • WHO recommends syringes with RUP features. • WHO also recommends syringes with SIP features. • For example, in the syringe in the left picture the needle retracts inside and the syringe becomes locked. • In the picture on the right there is a hood on the needle: this should be pushed gently after the injection is given – it covers the needle, limiting the risk of needle-stick injury to the health worker.	–
102		**State** that: • syringes with SIP features cost more than RUP syringes; this could be an issue in some low- and middle-income countries; • however, manufacturers can be involved in discussions and prices may be negotiated; • further, the ministry of health can work on reducing levies and taxes to bring prices down.	–

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103	**Protecting yourself and others** • Ensure that all staff in your area are educated on the risks of needle-stick injuries and given appropriate training. • This is especially important for housekeeping staff or sanitation workers who do not have medical or nursing training. • Take time to explain risks, especially if you observe risky or dangerous procedures or behaviours.	**State that this is an important slide.** • It must be ensured that all staff in your area are educated on the risks of needle-stick injuries and given appropriate training. • One group that is often neglected, even though it is also at risk, is housekeeping and sanitation staff. • They do not have medical or nursing training and are often less well educated. • They should be included in these efforts and any incorrect practices should be corrected.	**–**
104	**Reminder: protect the community** • Ensure waste is disposed of properly within the facility. It is your responsibility to ensure that **NO** infected waste reaches the community, where these items can be attractive to children to play with. 	**State the following, as a further reminder.** The definition of a safe injection includes the imperative that an injection must not result in waste that is dangerous to others. It is the responsibility of health care workers and all others to ensure that waste is disposed of properly and does reach community waste sites.	**–**
105	**Leaflet on needlestick injuries** 	**State:** "This is a leaflet on preventing needle-stick injuries. It provides information about types of needle that can cause a needle-stick injury, when such an injury might occur and what to do if it happens."	**Refer to handout 13 in the student handbook.**

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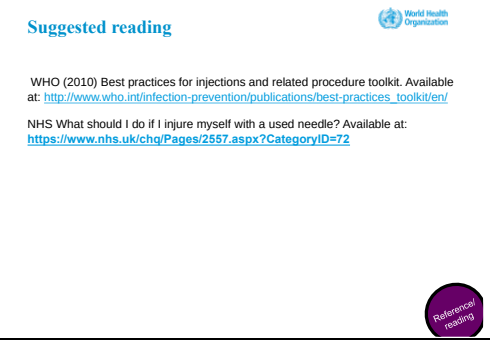
106		**State:** "Page two of the same leaflet provides guidance on protection and how, as a health care worker, you can protect others."	–
107		No need to read the slide – just explain that there are further reading materials on all of the topics addressed here.	
108		**State:** "In this last session we are going to cover implementation strategies for injection safety."	–

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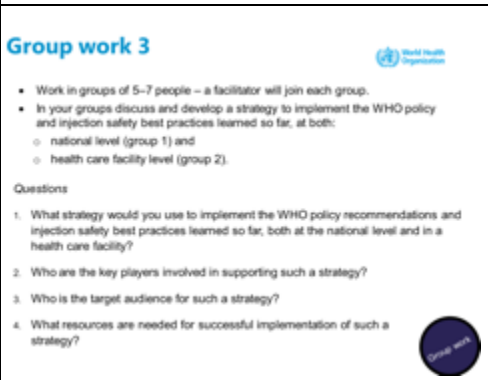
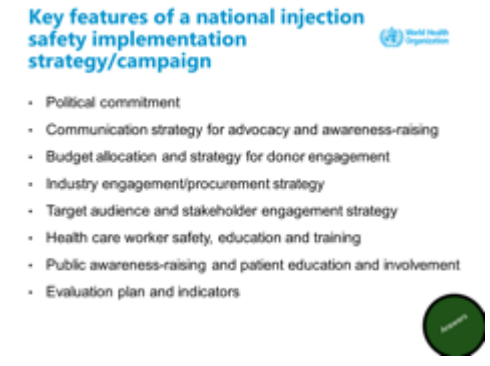
109		**State** that, as mentioned previously: • WHO recommends that all Member States should switch to exclusive use of RUP syringes for all injections; • WHO's guideline was developed to curtail the reuse of injection equipment, avoid needle-stick injuries, prevent overuse of injections and reduce unsafe management of sharps; • it aims to ensure rational use of injectable drugs and sufficient supplies of injection equipment.	**WHO guideline on the use of safety-engineered syringes for intramuscular, intradermal and subcutaneous injections in health care settings: http://apps.who.int/iris/bitstream/10665/250144/1/9789241549820-eng.pdf?ua=1**
110		**Ask the participants to divide themselves into groups of 4–5.** They should be asked to discuss and develop a strategy to implement the WHO policy and injection safety best practices learned so far, at both: • national level (group 1) and • health care facility level (group 2). The activity should last one hour: allow 30 minutes for group discussion and 15 minutes for reporting from each group.	**For students: see group work 3 – student handbook, p. 38.** **For trainer: see group work 1 – Annex 1, p. 57.**
111		**Say** that the key features of any national or state or provincial injection safety implementation strategy include the following: • political commitment from the ministry of health and other key stakeholders; • a communication strategy for advocacy and awareness-raising for patients and communities; • budget allocation for injection safety and a donor engagement strategy; • target audience and stakeholder engagement; • education and training for health care workers;	**–**

		• evaluation plans with indicators to assess progress.	
112		**State** that the previous slide referred to stakeholders at the macro level, such as the ministry of health and state/provincial health departments. In order to improve injection safety at the facility level, the key features are more or less the same, with some modifications: • commitment by facility management (director or medical superintendent) to address the problem; • sensitizing all categories of health worker in the facility; • a training plan for all health care workers; • allocation of budget to address the problem; • distribution of educational material for patients in outpatient and inpatient settings; • ongoing evaluation.	–
113		**Say** that injection safety is a complex problem and requires a multimodal strategy and collective effort • There is no quick fix, as there is with many other public health problems. • However, a multimodal campaign will produce positive results, preventing infections among patients as well as health care workers	–

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114		**Say:** "To give a national example, I would like to share the progress made in injection safety in India since the start of the WHO injection safety campaign in 2016. As a result of targeted and well planned advocacy by WHO, and by the country office in particular, the Ministry of Health and Family Welfare realized the gravity of the problem and showed great leadership and commitment to address the issue. The State of Punjab, where the injection safety pilot intervention is in progress, has developed a comprehensive plan. The key features include conducting a baseline assessment and introducing safety-engineered syringes to the health system. In addition, 40 model injection safety centres were established at the district level, as well as teaching and nursing institutes, to serve as training sites. A communication campaign was also rolled out, targeting patients and communities."	**–**
115		**State** that the next three slides show advocacy leaflets developed for key targets groups such as ministries of health, donors and clinicians.	**Advocacy leaflets for ministries of health, donors and clinicians:** http://www.who.int/infection-prevention/tools/injections/communications/en/

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116		**State** that other target groups include health care providers, professional associations and industry members.	**Advocacy leaflets for health care providers, professional associations and industry members:** http://www.who.int/infection-prevention/tools/injections/communications/en/
117		**State** that these advocacy leaflets highlight the role each of these key groups can play and the kind of action required from them to improve injection safety. They also address the kind of strategies needed to address the problem.	**Advocacy leaflets for patient associations, civil society and media organizations:** http://www.who.int/infection-prevention/tools/injections/communications/en/
118		**Say:** "This is WHO's injection safety page."	**WHO injection safety page:** http://www.who.int/infection-prevention/campaigns/injections/en/
119		No need to read the slide – just explain that there are further reading materials on all of the topics addressed here.	

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120	WHO Infection Prevention and Control Global Unit HEALTH CARE WITHOUT AVOIDABLE INFECTIONS	**State** that the field of injection safety at WHO headquarters comes under the remit of the Infection Prevention and Control Global Unit. **Thank** the participants for their time and attention.	**–**

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Annex 1

The same pre- and post-training test (p. 49 below) should be distributed to participants at the beginning and end of this module to gauge their knowledge of injection safety. The pre-training test will develop a baseline, measuring existing knowledge, and identify knowledge gaps. The post-training test will assess the knowledge gained through the module.

This page contains the answers to the test; please ensure two copies of the master form on p. 49 are printed for each student. Hand one out at the start of the session to collect initial data from participants and the other at the end to assess progress.

FORM WITH ANSWERS – for trainer

Advanced IPC knowledge exam: injection safety

All questions are multiple choice. Please circle one answer or all that apply as per each question's instructions.

Injection safety

1. Which bloodborne infection has the highest chance of transmission due to unsafe injections? (Please circle one answer.)

    a. HIV
    b. Hepatitis C virus infection (HCV)
    c. Hepatitis B virus infection (HBV)
    d. HBV and HCV
    e. HIV has no chance of transmission due to an unsafe medical injection

2. For skin disinfection, which of the following can be used? (Please circle one answer.)

    a. Methanol or methyl alcohol
    b. 60–70% alcohol-based solution (isopropyl alcohol or ethanol)
    c. Cotton balls stored in a wet container
    d. A, B and C

3. Needle-stick injuries can be prevented by using which of the following? (Please circle one answer.)

    a. Reuse prevention (RUP) syringes
    b. Sharp injury prevention (SIP) syringes
    c. Disposable syringes
    All of the above

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Master form – for use in session

Advanced IPC knowledge exam: injection safety

All questions are multiple choice. Please circle one answer or all that apply as per each question's instructions.

Injection safety

1. Which bloodborne infection has the highest chance of transmission due to unsafe injections? (Please circle one answer.)
   a. HIV
   b. Hepatitis C virus infection (HCV)
   c. Hepatitis B virus infection (HBV)
   d. HBV and HCV
   e. HIV has no chance of transmission due to an unsafe medical injection

2. For skin disinfection, which of the following can be used? (Please circle one answer.)
   a. Methanol or methyl alcohol
   b. 60–70% alcohol-based solution (isopropyl alcohol or ethanol)
   c. Cotton balls stored in a wet container
   d. A, B and C

3. Needle-stick injuries can be prevented by using which of the following? (Please circle one answer.)
   a. Reuse prevention (RUP) syringes
   b. Sharps injury protection (SIP) syringes
   c. Disposable syringes
   d. All of the above

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Group work 1

Instructions

- Work in groups of 5–7 people – a facilitator will join each group.
- First, read the abstract below of a paper by Janjua et al.
- In your groups answer the questions presented at the end.

Health care risk factors among women and personal behaviors among men explain the high prevalence of hepatitis C virus infection in Karachi, Pakistan.

NZ Janjua, HB Hamza, M Islam, SFA Tirmizi, A Siddiqui, W Jafri, S Hamid, Journal of Viral Hepatitis, 2010;17(5):317–326.

Summary

To estimate the prevalence and identify factors associated with hepatitis C virus (HCV) infection among men and women in Karachi, Pakistan. We conducted a cross-sectional study of adult men and women in a peri-urban community of Karachi (Jam Kandah). Households were selected through systematic sampling from within all villages in the study area. All available adults within each household were interviewed about potential HCV risk factors. A blood specimen was collected to test for anti-HCV antibodies by enzyme immunoassay. We used generalized estimating equations while accounting for correlation of responses within villages to identify the factors associated with HCV infection.

Of 1997 participants, 476 (23.8%) were anti-HCV positive. Overall, HCV infection was significantly associated with increasing age, ethnicity, and having received ≥2 blood transfusions, ≥3 hospitalizations, dental treatment and >5 injections among women. Among women, ≥2 blood transfusions [adjusted odds ratio (aOR) = 2.32], >5 injections during the past 6 months (aORs = 1.47), dental treatment (aOR = 1.31) and increasing age (aOR = 1.49), while among men, extramarital sexual intercourse (aOR = 2.77), at least once a week shave from barber (aOR = 5.04), ≥3 hospitalizations (aOR = 2.50) and increasing age (aOR = 1.28) were associated with HCV infection.

A very high prevalence of HCV was found in the study population. Among women, unsafe health care practices, while among men extramarital sex, shaving from a barber and hospitalizations were associated with HCV infection. Efforts are needed to improve the safety of medical procedures to reduce the transmission of HCV in Pakistan.

Questions

1. What were the significant risks identified in the study?
2. Why was increasing age identified as a risk?
3. What kind of intervention or interventions could be designed to address this problem if this were the community and area you were assigned to work with?
4. Do you see any role for safety-engineered syringes in this scenario?

Trainer answer notes

1. The most significant risk identified is exposure to unsafe injections. Other risks identified include: ethnicity and having received ≥2 blood transfusions, ≥3 hospitalizations, dental treatment and >5 injections among women. *Note: looking closely at the data it seems that among women the OR for blood transfusion is higher than that for injections, but the authors have emphasized the risks related to injections.*

2. HCV was significantly associated with increased age because the longer the person lived, the more she/he was exposed to risky health care practices, or to repeated visits to the barber in the case of men.

3. In line with WHO's five key elements of a multimodal strategy to improve IPC in a health context (see http://www.who.int/infection-prevention/publications/ipc-cc-mis.pdf?ua=1), examples might include:

a. using WHO-recommended RUP syringes in order to reduce the risk of reuse of (system change – "build it");
e. educating health providers on the appropriate steps for preparing and using injections (training and education – "teach it");
f. performing routine audits of safe injection practices in the catchment area and providing feedback on performance, including gaps identified (evaluation and feedback – "check it");
g. educating the community to understand the risk of unsafe health care practices, such as reuse of injection equipment (communications and awareness-raising – "sell it");
h. empowering the community to question the need for an injection and the type of syringe used – often the social structure is such that community members are intimidated by health care providers and do not ask any questions (safety climate – "live it");
i. requiring the health administration body for the area to enforce regulation to ensure that all injections are safe and only prescribed when needed (safety climate – "live it").

4. RUP syringes are designed to prevent reuse. After administering the injection, with a slight push these syringes are disabled and cannot be used again. They have been specifically designed to prevent reuse.

Advanced Infection Prevention and Control Training

Group work 2

Instructions

- Work in groups of 5–7 people – a facilitator will join each group.
- First, read the scenario below.
- In your groups answer the questions presented at the end.

Scenario

Amanda was working late in the afternoon and her shift was about to finish when her colleague informed her that she was having difficulty collecting a blood sample from a patient. Amanda took the sample successfully and, after taking the needle out and keeping pressure on the patient's hand to stop the bleeding, she tried to reach the sharps box, which was behind her. In doing so, she was stuck by another needle in the sharps box.

Amanda thought that the needle had been exposed to the environment for some time and it seemed dry, so there was limited risk of acquiring an infection. She therefore refused post-exposure prophylaxis for HIV. At a subsequent follow-up, however, she found out that she had contracted hepatitis C virus and HIV.

Questions

1. What factors contributed to the exposure?
2. Would it have been possible to prevent this exposure?
3. Would it have been possible to use a safety-engineered syringe to prevent the needle-stick injury? If yes, what type of syringe?
4. What kind of practice at work could have prevented this needle-stick injury?

Trainer answer notes

1. Three factors contributed:

a. lack of knowledge of the health care workers – had she been exposed to a training or refresher course she would have remembered the risk factors for acquiring bloodborne infections;
b. not following WHO guidelines, which recommend that sharps/safety boxes should always be in easy reach while performing an injection-related procedure on a patient;
c. not handling the puncture site appropriately, as recommended by the WHO guidelines.

2. Yes: if the sharps/safety box was within arm's reach she could have seen the needles protruding from the aperture and would have been more careful.

3. Yes. Beside a RUP syringe, another type of safety-engineered syringe is one with SIP features, as covered in the session. This type of syringe has a protective mechanism. In some syringes there is a shield on top of the needle which covers the it after the injection procedure is completed. In another type, the needle retracts inside the barrel, either with a push of a button on the plunger or by gently pulling the plunger backwards after the injection procedure.

4. Adhering to universal precautions would have prevented it:

a. having the sharps/safety box within arm's reach
b. using SIP syringes
c. having updated knowledge of what to do after a needle-stick injury.

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Group work 3

Instructions

- Work in groups of 5–7 people – a facilitator will join each group.
- In your groups discuss and develop a strategy to implement the WHO policy and injection safety best practices learned so far, at both:
  - national level (group 1) and
  - health care facility level (group 2).

Questions

1. What strategy would you use to implement the WHO policy recommendations and injection safety best practices learned so far, both at the national level and in a health care facility?
2. Who are the key players involved in supporting such a strategy?
3. Who is the target audience for such a strategy?
4. What resources are needed for successful implementation of such a strategy?

Trainer answer notes

1. The strategy would include the following elements:

   a. introducing RUP syringes to the health system;
   b. educating injection prescribers on rational prescription of injections;
   c. educating the health workforce on injection safety;
   d. empowering the community by increasing their knowledge and awareness of risks associated with unsafe injections.

2. At the national level, key players are within the ministry of health, such as the minister, commissioner, secretary or director-general of health. At the facility level, it would be the individual(s) in charge of the facility, such as the medical director or manager, the person responsible for procurement of medical equipment and senior nursing, paramedical and housekeeping/janitorial staff.

3. At the national level, the ministries of health and finance are target audiences, along with regulatory bodies responsible for maintaining the quality of injection equipment. Individuals in charge of central stores are crucial at all levels.

At the facility level, the audience would be similar. Some examples include the hospital administration (leadership) for decision-making and acquiring the necessary resource allocation, central stores for aiding in procurement and health care workers and other front-line users of injection equipment (including those responsible for waste disposal).

4. Budget allocation for injection equipment is the critical factor. Identifying the decision-makers responsible for injection safety is important, as is ensuring that WHO-recommended syringes are used in the health system.

At the facility level, the individual in charge of hospital administration needs to work on the budget to procure injection equipment and related products such as sharps/safety boxes. Moreover, budget lines need to be allocated for training of health workers and housekeeping/janitorial staff, and money also needs to be allocated for printing and posting job aides at nursing stations and in patient waiting areas.