



World Health
Organization

REVISED INJECTION SAFETY ASSESSMENT TOOL

(TOOL C – REVISED)

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Tool for the Assessment of Injection Safety and
the Safety of Phlebotomy, Lancet Procedures,
Intravenous Injections and Infusions

World Health Organization

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Tool for the Assessment of Injection Safety and the Safety of Phlebotomy, Lancet Procedures, Intravenous Injections and Infusions

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Abbreviations

AD	auto-disable (syringes)
BASICS II	Basic Support for Institutionalizing Child Survival II
CHG	Chlorhexidine gluconate
DAP	Drug Action Programme (WHO)
EPI	Expanded Programme on Immunization (WHO)
HCP	health care provider
HIV/AIDS	human immunodeficiency virus/acquired immunodeficiency syndrome
IMCI	integrated management of childhood illness
IRB	Institutional Review Board
MEASURE	monitoring and evaluation to assess and use results
OPD	Out-patient department
RPF	Re-use Prevention Features
SIGN	Safe Injection Global Network
TST	time, steam and temperature
UNAIDS	Joint United Nations Programme on HIV/AIDS

Introduction

Tool C for the assessment of the safety of injections was first implemented in 2000, and has been used in over 90 national injection safety assessments since then. Owing in part to the use of *Tool C*, awareness about the importance of injection safety has improved in many countries, and an increased awareness of the importance of safety for other invasive procedures in health services has been stimulated. To respond to that need, WHO reviewed the lessons learned during field implementation of *Tool C* and applied those when designing an updated tool (*Tool C – Revised*), a tool for the assessment of unsafe practices associated with injections, phlebotomies, lancet procedures and intravenous procedures.

The safety of injections, phlebotomies, lancet procedures and intravenous procedures should be assessed using standardized, representative, simple and flexible methods that allow for a reliable assessment of the country situation and for comparisons with other countries. Additionally, if an assessment is done before the introduction of interventions to improve procedure safety, repetition of an assessment can measure safety achievements over time. *Tool C – Revised* proposes a standardized methodology including concepts, study designs, sampling procedures, data collection methods and templates, and a plan for analysis and reporting for country safety assessments.

An assessment using *Tool C – Revised* can estimate the risk of infections associated with unsafe practices for each procedure type, determining whether a facility meets requirements for equipment, supplies and waste disposal, identifying unsafe practices and estimating the proportion of health care facilities in which practices are safely or unsafely performed. To incorporate an ability to assess the safety of procedures in the private sector, the sampling strategy has been adjusted to include sampling of service sites located in the same geographic areas as the public facilities randomly sampled from government facility lists. The ability to focus an assessment on a particular type of service, facility or procedure enables an assessment to target areas of concern within a health system; however, *Tool C – Revised* can be used in a comprehensive assessment of the most common invasive procedures used throughout healthcare services in both the public and private sectors.

Training materials included in the package permit standardization of data collection, which remains both observational and interview-based. Data entry, analysis and reporting templates are also provided to facilitate the process of developing raw data into a report that can transfer knowledge to health care providers, system administrators and policy decision makers. Recommendations following from an assessment can focus on three major considerations that are especially relevant in the assessment of practices: 1) the safety of the procedure recipient; 2) the safety of the health care worker; and, 3) the safety of the community.

Although the main purpose for this assessment tool is to assess procedure safety at a national level, it also may be used at other levels. If a country is large and has many health facilities, assessments can be performed at a sub-national level (province or state) without changes in the sampling strategy. An abbreviated version of the questionnaire that is included can be used for supervision of practices at a district level or within a facility, or even for self-assessment by providers.

Tool C – Revised is designed to target public and private facilities providing primary care, including first and second level hospitals. It is not designed for assessment of tertiary care

hospitals, such as university hospitals and specialty hospitals. The out-patient departments (OPD) of larger hospitals may also be appropriate sites to evaluate in an assessment if they have an administration and equipment supply (for the procedures evaluated in this assessment) that are separate from other units of the hospital.

To enable countries to conduct assessments efficiently, *Tool C – Revised* is also designed so that most countries will be able to implement the methodology without external assistance and with a minimum of time and resources. That efficiency and its adaptability make *Tool C – Revised* suitable for assessment of the safety of injections, phlebotomies, lancet procedures and intravenous procedures in a wide variety of contexts using methods that are standardized, representative and reliable.

Definitions: Safe Injection, Phlebotomy, Lancet Procedure or Intravenous Device Insertion

There are three levels of definitions for a safe procedure. The first level is an ideal reference definition which is similar to that stated for a safe injection in the original ‘*Tool C – Tool for the assessment of injection safety*’ (© WHO 2001). The second level represents international best practices, which are a translation of the reference definition into an explicit list of critical steps on the basis of (a) best available evidence, or (b) expert consensus in the absence of evidence. The third level is the adaptation of international best practices into a national standard that takes into account operational constraints in the field.

1. Reference definition for a safe injection, phlebotomy, lancet procedure or intravenous device insertion

“A safe injection, phlebotomy, lancet procedure or intravenous device insertion 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 other people.” This reference definition is ideal, but it cannot be used as a checklist of practices for assessment or evaluation.

2. Best practices for the safety of injections, phlebotomy, lancet procedures and intravenous device insertions

The reference definition can be translated into a list of critical steps for which best practices should be followed. For example:

- i. In order not to harm the patient, each procedure should be administered with a new sterile single-use device, using the right medication, vaccine or fluid for infusion.
- ii. In order not to expose the provider to any avoidable risk, in general any needles used during a procedure should be placed in a puncture-proof closed container immediately after use without recapping. (Among the procedures considered within this assessment tool, the only exception to this rule is when a used two-ended phlebotomy needle is recapped using one hand prior to unscrewing it from an adapter.) In addition, providers of these procedures should be fully vaccinated against Hepatitis B.
- iii. In order that any waste produced during performance of a procedure does not become a hazard for other people, used sharps waste and infectious non-sharps waste should be safely managed and the final disposal of sharps containers and other medical waste should be conducted according to local and international health and environmental standards.

The international best injection practices document is available on the WHO web site at (www.injectionsafety.org).

3. National standards

At country level, international best practices should be adapted into national standards. These should be developed through a participatory approach that involves all stakeholders (e.g. those who administer procedures, those who order or prescribe them, those who are in charge of the logistics, etc.). Guidelines to develop country-level standards have been proposed (2).

Procedures That Can Be Assessed Using Tool C – Revised

Tool C – *Revised* is designed to assess the safety of the most common procedures within health services that puncture the skin – including injections of various types, phlebotomy, lancet procedures and common intravenous procedures such as infusions. It is important to note that some people reserve the word *injection* for a procedure in which a medication, vaccine or other solution is *deposited into* to a patient, while other people use the word injection in a more general sense that includes needle insertions either to *deposit* these types of fluids into a patient or *withdraw* blood or other bodily fluids.

Procedure types:

1. Intradermal, subcutaneous and intramuscular needle injections;
2. Dental injections;
3. Phlebotomies;
4. Lancet procedures; and,
5. Intravenous infusions and injections

The most common procedure type is the injection that is intradermal, subcutaneous or intramuscular. These – together with lancet procedures – do not access the intravascular compartment, and therefore do not require patient skin preparation unless the skin at the intended insertion site is visibly dirty. They do not require that the provider use gloves unless it is likely that the provider will be exposed to blood or bodily fluids due to active bleeding or exudation.

Phlebotomy and other intravenous procedures including injections and infusions require skin preparation at the intended puncture site with 2% chlorhexidine, tincture of iodine, an iodophor, or 70% alcohol, with drying of the skin after skin preparation and prior to performing the procedure also being required. A new pair of single-use disposable gloves is also required for all of these intravenous procedures. These measures also are required if any of these procedure types are performed on an existing intravenous system instead of directly into a vein, and in which case they should only be performed at injection ports.

All of these procedures may commonly occur in outpatient departments (OPD) of various types. Injections occur in Expanded Programme on Immunization (EPI) and OPD services, phlebotomies and lancet procedures occur in laboratories and blood transfusion services, and intravenous infusions and injections may occur in both first and second-level hospitals. The settings in which each of these procedures occurs may vary by country.

Best practices for intradermal, subcutaneous and intramuscular needle injections, phlebotomy and intravenous procedures are itemized below. If a country-level standard exists that is different than what is described here, certain items in the questionnaire may be deleted or modified and other items can be included if necessary.

Best Infection Control Practices for injections, phlebotomy, lancet procedures and intravenous injections or infusions

1. Use sterile devices:

- i. Use a new sterile single-use device for each procedure.
- ii. Use a new sterile single-use syringe and needle to reconstitute each unit of medication or vaccine.
- iii. Inspect packaging of devices for breaches in barrier integrity. Discard any device if the package has been punctured, torn, or damaged by exposure to moisture or if the manufacturer's expiration date has already passed.
- iv. Maintain an adequate supply of single-use devices to enable providers to use new devices each time they perform a procedure.

2. Prevent contamination of devices, medication and fluids for infusion:

- i. Prepare procedures in a clean, dedicated table or tray where contamination of the equipment with blood, body fluids or dirty swabs is unlikely.
- ii. Never leave a needle in place in the stopper of the vial.
- iii. Use single-dose vials rather than multi-dose vials whenever possible.
- iv. If multi-dose vials must be used, always pierce the septum with a sterile needle.
- v. Select pop-open ampoules rather than ampoules that require use of a metal file to open whenever possible.
- vi. In all cases, protect fingers with a clean barrier (e.g., small gauze pad) when opening the ampoule.
- vii. Inspect for and discard medications and fluids for infusion with visible contamination (e.g., cloudy) or breaches of integrity (e.g., cracks, leaks) or which are expired.
- viii. Follow product-specific recommendations for use, storage (including maintenance of the cold chain where needed), and handling.
- ix. Discard a needle that has touched any non-sterile surface.
- x. Ensure that reusable phlebotomy holder-adapters used for performing phlebotomies are clean.

3. Prevent needlestick and other used sharps injuries to the provider:

- i. Anticipate and take measures to prevent sudden patient movement during and after performing a procedure.
- ii. Avoid recapping and other hand manipulations of needles. If recapping is necessary (e.g., if performing a procedure in a situation in which sudden patient movement is possible and not totally preventable), use a single-handed scoop technique for recapping.
- iii. Collect used sharps at the point of use in a sharps container that is puncture and leak-proof and that can be sealed-shut when $\frac{3}{4}$ full.
- iv. Maintain an adequate supply of sharps containers that are puncture and leak-proof to enable providers to always have a sharps container available when they perform a procedure.

4. Prevent access to used devices:

- i. Seal sharps containers and containers for infectious non-sharps waste for transport to a secure area in preparation for disposal. After closing and sealing these containers, do not open, empty, reuse, or sell them.

- ii. Manage sharps waste and infectious non-sharps waste in an efficient, safe, and environmentally friendly way to protect people from voluntary and accidental exposure to used devices including ensuring that there are no loose, used devices anywhere inside or outside the facility or in open or overflowing sharps containers or infectious non-sharps waste containers.

Other practice issues

1. Engineered technology: Whenever possible, use devices with safety features that are activated either automatically or manually which are designed to prevent reuse and needlestick injuries and which have been shown to be effective in protecting patients and providers. Auto-disable (AD) syringes prevent reuse of injection equipment, and should be the only type of injection equipment used in immunization services. All partners of immunization services should finance not only the procurement of the vaccines themselves, but also the safe administration of vaccines, provision of AD syringes, and safe management of waste. Partners should do this by planning and implementing immunization services in this way, as well as by supporting related training, logistics, supervision and sensitization activities (WHO-UNICEF-UNFPA joint statement on the use of AD syringes in immunization services – 1999).

2. Provider's hand hygiene and skin integrity: Perform hand hygiene (i.e., wash or disinfect hands) prior to preparing injection material and giving injections. The need for hand hygiene between injections will vary based on whether there was contact with soil, blood or body fluids. Avoid giving injections if skin integrity is compromised by local infection or other skin condition (e.g., weeping dermatitis, skin lesions or cuts). Cover any small cuts on health care provider's hands.

3. Gloves: Gloves are not needed for intramuscular, subcutaneous and intradermal injections. Single-use gloves may be indicated if excessive bleeding is anticipated or when performing intravenous device insertions, infusions or phlebotomies.

4. Swabbing of vial tops or ampoules: Swabbing of vial tops or ampoules with an antiseptic or disinfectant is unnecessary. If swabbing with an antiseptic is selected for use, use a clean, single-use swab and maintain product-specific recommended contact time. Do not use cotton balls stored wet in a multi-use container, and do not use an antiseptic where preparing a vaccination with a live attenuated virus.

5. Skin preparation prior to intramuscular, subcutaneous, and intradermal injections and lancet procedures: Wash skin that is visibly soiled or dirty. Swabbing of the clean skin prior to giving an injection is unnecessary. If swabbing with an antiseptic is selected for use, use a clean, single-use swab and maintain product-specific recommended contact time. Do not use cotton balls stored wet in a multi-use container, and do not use an antiseptic where preparing a vaccination with a live attenuated virus.

6. Skin preparation prior to intravenous device insertions, including phlebotomy, intravenous injections, infusions, and intravenous catheter insertions: Cleanse skin at the intended puncture site and injection ports with 2% chlorhexidine, tincture of iodine, an iodophor, or 70% alcohol, and allow drying prior to performing the procedure.

7. Insertion of needles into existing intravenous systems: Only use injection ports as a site for entry into the intravenous system. Cleanse the injection ports with 2% chlorhexidine, tincture of

iodine, an iodophor, or 70% alcohol, and allow drying prior to administering an infusion into an existing intravenous system.

8. Guidelines and reminders of best practices: Ensure that guidelines, job aids and reminders of these best practices are available to providers to facilitate and reinforce the safety of common invasive procedures. These could be found at the following WHO website:

http://www.who.int/injection_safety/en/

Requirements of an ‘injection safety’ assessment tool

Tool C – Revised attempts to meet the following three requirements:

1. Simplicity

The assessment tool is intended to be as simple to use as possible, so that an assessment can be conducted rapidly and with limited resources. This tool is fully structured for ease of use, from the assessment planning stage through to data analysis and reporting. It comes with training materials to standardize the administration of this tool. Although the tool includes a large number of data collection items (interview questions and observation items), it should be feasible to train fieldworkers already familiar with health care practices to collect this data.

2. Standardization

The assessment tool includes a core set of items that constitutes a checklist based upon the critical steps that make each procedure safe. Response types are mostly restricted to categorical options in order to both standardize the assessment and simplify data management and analysis.

3. Flexibility

The assessment tool is compatible with various circumstances, but is intended for implementation in the range of facilities in which these procedures are performed. If the facility sampling procedure is followed as described, assessments performed using the tool will be more representative of the primary health care sector than secondary and tertiary care facilities. In addition, the flexibility of the tool accommodates the following:

- 1) Need for an assessment of one or more procedure types.
- 2) Need for an assessment at country, district, facility, or health post level.
- 3) Need for an assessment of the public and private sectors.
- 4) Need for an assessment of different facility types – e.g. all health facilities offering outpatient services including first and second level hospitals, laboratories, blood transfusion services, doctors’ offices, etc.
- 5) Need for an assessment of different services – e.g. EPI, Maternity, STD, TB, HIV/AIDS, and other special services.
- 6) Need for an assessment with levels of accuracy and precision adequate for policy decision-making.
- 7) Need for an assessment that samples facilities and health care points-of-service with a probability proportionate to population size.
- 8) Need to adjust the comprehensiveness of an assessment to the availability of various human, material and financial resources.

Objectives of an Assessment

The objectives of an assessment of the safety of injections, phlebotomies, lancet procedures and intravenous injections and infusions are:

- 1) To determine whether facilities where procedures are performed meet necessary requirements for practices, equipment, supplies and waste disposal.
- 2) To determine whether the critical steps of performing procedures are executed according to recommended best practices.
- 3) To identify unsafe practices that may lead to infections and that should be targeted by interventions to improve procedure safety.
- 4) To estimate the proportion of health care facilities where procedures are safe.

Study design

1. Type of study

Tool C – Revised is a cross-sectional, observational study.

2. Types of procedures

Tool C – Revised is designed to enable determination of the extent to which injections, phlebotomies, lancet procedures and intravenous injections and infusions are consistent with national safety standards.

3. Types of provider, facilities and services

Various providers may perform each of the procedures, and these may include doctors, nurses and phlebotomists for most procedures, but technicians and others may perform lancet procedures. The facilities and services involved include various primary care settings, dispensaries and offices, first and second level hospitals, and services for EPI, maternity, STD, TB, HIV/AIDS, other special services.

The health care services and procedures that can be included in an assessment include those found in Table 1.

Table 1: Health care services included in assessments using *Tool C – Revised**

Service	Procedure/s
OPD Services: 1. Both curative and preventive 2. Broad range of categories, e.g. maternity, STD, TB, HIV/AIDS and other special services	1. Injections – intramuscular, subcutaneous and intradermal 2. Phlebotomy 3. Lancet procedures 4. Intravenous infusions and injections
EPI	1. Injections – intramuscular, subcutaneous and intradermal
Laboratories	1. Lancets 2. Phlebotomy
Blood transfusion services	1. Phlebotomy 2. Lancets

*These lists may vary by country

The country or agency should define which facilities, programs and activities will be evaluated, and use this as a guide to determine how sampling should be performed. For most countries, a representative assessment of the public health service should be conducted, including primary health care services and first and second level hospitals in the base sample, and selecting one tertiary hospital in each survey area.

If desired there could be a focus on particular services or procedures within the assessment by restricting the sample to facilities providing a particular service and/or restricting observations to particular procedures. Because many countries do not have complete lists of private sector facilities and most countries will want an assessment of the safety of procedures in the public

sector, it is recommended that private sector facilities be sampled separately from public facilities.

Facilities and services for which the assessment tool is not designed include in-patient departments, haemodialysis services and other higher levels of care, so that the tool is not designed for examination of procedures specific to those services, including more complex procedures and longer durations of intravenous infusions. *Tool C – Revised* is not specifically designed for all of the procedures in these settings; however, it may be used to assess any of the procedure types specifically listed in the questionnaire.

An assessment using Tool C – Revised may not be representative of the safety of other invasive procedures or in other health care settings. Additional tools will be developed in the future to evaluate infection control procedures for other skin piercing procedures.

In order to evaluate the desired procedure types in the desired settings, it is important to plan ahead to make sure that the data collection teams will have a higher likelihood of observing a number of the desired procedures in each setting. The questionnaire is designed so that observations on one of each procedure can be recorded.

To be able to assess practices of providers in certain facility types that may not be listed on government-maintained facility lists, especially in the private sector, the proposed sampling strategy accesses non-listed providers and facilities after a mapping exercise that will identify the locations of private facilities for those cases in which the government does not have an up-to-date listing.

4. Integration with facility surveys conducted for other purposes

4.1 Integrated management of childhood illness (IMCI) facility surveys

4.1.1 Background

In the context of the IMCI, health care facility surveys are conducted to assess the management of sick children.

4.1.2 The collection of information relevant to injection safety

During the IMCI health care facility surveys, information is collected regarding issues that are relevant to the safety of injections, phlebotomies, lancet procedures and intravenous procedures. Such issues include: sources of clean water, availability of devices for the procedures targeted in this tool, presence of a functional sterilizer, and the presence of a refrigerator.

4.1.3 Potential for integrated surveys

If IMCI health care facility surveys are planned, arrangements may be made to simultaneously conduct an ‘injection safety’ assessment.

4.2 Facility Surveys by WHO/UNAIDS/MEASURE (Monitoring and Evaluation to Assess and Use Results)

The WHO/UNAIDS/MEASURE project [kvr1] which defines standardized packages to evaluate HIV/AIDS prevention activities contains a facility assessment package with which the injection safety assessment tool may be integrated.

Sampling procedure

Sampling should be done at least one month before the planned date for the start of data collection to allow sufficient time to investigate the existence of the sample (some listed facilities may not be operational, and therefore will need to be replaced), plan travel schedules and obtain relevant administrative authorizations.

1. Principle

The sampling unit will be the health care facility. To minimize travel within the country, a two-stage, cluster-sampling method is proposed as the easiest method to obtain a representative sample of health care facilities (3). In such a cluster sampling, self-weighting is ensured through (1) choice of regions in which clusters are selected using probability proportional to population size, and (2) equal numbers of sampling units within each cluster.

1.1 First stage

1.1.1 Division of the country into regions

Using existing administrative divisions within the country, the country should be divided into more than eight subdivisions, (or other administrative areas, e.g. districts, provinces, states, etc.) that are (1) non-overlapping (i.e.: no village should be located in two regions), and (2) exhaustive (i.e.: all geographic areas of the country should be included). The level of subdivisions should be chosen so that (1) there are more than eight of them, and (2) each contains at least 10 health care facilities of the desired type or types. If necessary, the country's subdivisions may be combined to form larger subdivisions containing a sufficient number of health care facilities. Please check against old tool C for more relevant information

Note: If some regions of the country cannot be visited for any reason (e.g. civil unrest), they should be excluded at this stage from the list of regions to be sampled, and the fact that they were excluded should be mentioned in the survey report.

1.1.2 Selection of subdivisions with a probability proportional to population size

From the whole country, eight geographic regions will be selected with a probability proportional to population size. For this selection, the following six steps should be followed:

Step 1: Rank all country subdivisions in a table

All subdivisions should be displayed in the first column of a table, in whatever order is most convenient (see example, Table 2).

Step 2: Determine the population size for each subdivision

The population size should be obtained for each subdivision and written in column 2, next to the subdivision name (e.g.: 900, 000 for Region 10, Table 2). Census data or the most up-to-date information available should be used.

Step 3: Calculate the cumulative population size

When listing each country subdivision with its population, the cumulative population should be calculated by adding each subdivision's population to the total for all previously listed subdivisions and written in column 3 next to the subdivision population. For Subdivision 1, the cumulative population size is the population of Subdivision 1. For Subdivision 2, the cumulative population size is the population of Subdivision 1 + population of Subdivision 2. For Subdivision n, the cumulative population size is the population of Subdivision 1 + population of Subdivision 2 + (...) + population of Subdivision n. For example: 4,850,000 for Subdivision 10 (Table 2).

For the last Subdivision, the cumulative population size is the population of Subdivision 1 + population of Subdivision 2 + (...) + (...) + population of the last Subdivision. The total should be equal to the country's population.

Step 4: Calculate the sampling interval

The sampling interval 'S' should be calculated by dividing the country population by eight (the number of Subdivisions [*or Clusters*] to be selected). For example: If the total country population is 8,150,000, the sampling interval 'S' would be $8,150,000/8 = 1,018,750$ (Table 2).

Step 5: Choose a random number between 1 and the sampling interval

A number 'R' should be selected at random between 1 and the sampling interval (country population divided by eight calculated in Step 4). A random number within this range can be selected by a number of methods, two of which are described here. Only **one** of these methods would need to be used. For the purposes of illustrating the use of these numbers, the examples provided below are presented with the result being same random number. This number is used later in Table 1 to illustrate the sampling of the country Subdivisions:

1. Choose a random number between zero and one using a random number table and multiply the result by the sampling interval:

A random number table contains random digits (0 to 9) arranged in rows. In a true random number table, all digits appear with equal probability, and the probability of any digit is not affected by the digits that precede it. A starting point is selected by closing your eyes and pointing randomly on a page near its center to identify the first digit selected, and then moving either left or right, or up or down, to obtain the desired number of random digits.

For example, the following is a section of a random number table, in which the highlighted digit (**6**) was the one selected by closing your eyes and pointing randomly near the center of the page:

```
39651 48277 63902 79453 87521 80385 89402 61142 67208
73190 32574 89403 74613 05156 19742 84290 21186 28947
79210 43227 37189 09843 78632 16788 76653 90827 76489
86....
```

Use a random number table in this way to identify nine consecutive digits that will be used as the nine consecutive decimal places of a random number between 0 and 1. The result from our example would be 0.613051561.

Multiply the random number obtained by the sampling interval 'S' (e.g. $0.613051561 \times 1,018,750 = 624,546.3$) and round this number to the nearest digit to get a random number between 1 and 'S' (**R = 624,546**).

2. Choose 5 single digits from 5 randomly selected currency bills, and use them to form the five consecutive decimal places of a random number between 0 and 1; then, multiply this random number by the sampling interval 'S' to obtain a random number between 1 and 'S':

Most local currency bills have serial numbers that can be considered random numbers if selected digits are used, as in the following example. Choose 5 local (national) currency bills and label them 1 through 5. From the serial number on bill number 1, select the last digit on the right: this will be the digit in the first decimal place of the random number between 0 and 1. From the serial number on bill number 2, select the last digit on the right: this will be the digit in the second decimal place of the random number between 0 and 1. After you have done this five times using the 5 different currency bills, you will have selected 5 digits in a consecutive order (e.g. '6', '1', '3', '0', '5', '1'). Use these digits consecutively to form your random number between 0 and 1 (e.g. 0.62454). Multiply the random number by the sampling interval 'S' (e.g. $0.613051 \times 1,018,750 = 624,545.7$) and round this number to the nearest digit to get a random number between 1 and 'S' (**R = 624,546**).

Step 6: Identify the clusters

Column 4 of Table 2 should be used to identify the country Subdivisions that are selected.

First cluster: The first Subdivision selected will be that for which the cumulative population size (Column 3) is greater than the random number *R*, while the random number *R* is greater than the cumulative population size of the preceding Subdivision. The random number *R* should then be marked in Column 4 opposite that Subdivision. For example: 624,546 is smaller than 850,000 (cumulative population size for Subdivision 3) but greater than 550,000 (cumulative population size for Subdivision 2), so Subdivision 3 is selected as containing the first cluster (Table 2).

Second cluster: The second Subdivision selected will be that in which the cumulative population size (column 3) is greater than $R + S$, while $R + S$ is greater than the cumulative population size of the preceding Subdivision. The number $R + S$ should then be marked in the fourth column facing the region. For example: $624,546 + 1,018,750 = 1,643,296$ is smaller than 2,700,000 (cumulative population size for Subdivision 6) but greater than 1,900,000 (cumulative population size for Subdivision 5), so Subdivision 5 is selected as containing the second cluster (Table 2).

Following clusters: Proceeding in the same way eight times, the Subdivisions will be selected by adding the sampling interval *S* each time to the number in column 4, and by identifying the Subdivision for which the number of cumulative population size (column 3) is greater than the new number, while the new number is greater than the cumulative population size of the preceding Subdivision. In some cases, the new number may fall in the same Subdivision. If so, the Subdivision is selected twice, and 20 facilities (2×10) will be selected from this Subdivision. For example: Because of its large population, Subdivision 13 is selected twice in our example (Table 2).

Table 2: Example of selection of Subdivisions with a probability proportional to population size

Country Subdivision	Subdivision Population	Cumulative Population	Random Number (R)** plus zero or more sampling intervals (S) *		Subdivisions selected	Number of Facilities to be selected
Subdivision 01	100 000	100 000				
Subdivision 02	450 000	550 000				
Subdivision 03	300 000	850 000	624 546	Random number (R)	Subdivision 03	10
Subdivision 04	500 000	1 350 000				
Subdivision 05	1 550 000	1 900 000	1 643 296	R + Sampling interval (S)	Subdivision 05	10
Subdivision 06	800 000	2 700 000	2 662 046	R + 2S	Subdivision 06	10
Subdivision 07	300 000	3 000 000				
Subdivision 08	250 000	3 250 000				
Subdivision 09	700 000	3 950 000	3 680 796	R + 3S	Subdivision 09	10
Subdivision 10	900 000	4 850 000	4 699 546	R + 4S	Subdivision 10	10
Subdivision 11	600 000	5 450 000				
Subdivision 12	300 000	5 750 000	5 718 296	R + 5S	Subdivision 12	10
Subdivision 13 (Capital)	2 400 000	8 150 000 Total country population	6 737 046 7 755 796	Twenty facilities will be sampled in Region 13. R + 6S R + 7S	Subdivision 13 Subdivision 13	10 10
					Total sample =	80

* In this example, the sampling interval $S = 8,150,000 / 8 = 1,018,250$

** In this example, the random number between 1 and 1,018,250 using a random number generator was 624,546.

1.2 Second stage¹

Since most countries will want an assessment of public health services, a list of all public facilities in each country Subdivision should be obtained that includes all facilities: primary health care facilities, first level hospitals, second level hospitals and tertiary care hospitals. The list should then be divided based on the level of care – one group including primary health care facilities and first and second level hospitals, and the other including tertiary hospitals (including university hospitals and specialty hospitals).

For each of the eight Subdivision's areas selected in the first sampling stage, 10 health care facilities are to be selected. Tertiary care hospitals should be selected separately from the other facilities. The 80 facilities that make up the 8 public facility clusters would consist of 72 primary care or lower level hospitals and 8 tertiary hospitals.

In addition, three additional facilities should be randomly selected in each region to allow for replacements, in case they are needed (See 1.3).

If it is also desired to perform an assessment of private facilities, for most countries it is recommended that private facilities are sampled separately from public facilities. (If a country has a list of private facilities that is complete, private facilities could be included with public facilities in one list and one random sample of health facilities could be assessed; however, this approach would provide safety estimates of the overall health system and conclusions about either the public or the private system may not be appropriate.)

1.2.1 Random sampling

From the two lists of public facilities for each country Subdivision, 10 facilities are selected at random, 9 from the list of primary health care facilities and first and second level hospitals, and one from the list of tertiary hospitals, each time selecting a random number between zero and one using one of the methods described above (Section 1.1.2, Step 5), and then multiplying the result by the number of facilities on the Subdivision list.

1.3 Third stage - Identification of additional facilities from the private health sector that are to be evaluated

If a complete list of private facilities is available, sampling of private facilities could take place for each selected Subdivision as described for selection of public facilities in 1.2 above.

If a complete list of private facilities is not available (which is often the case), the identification of non-listed facilities and services can occur by performing a mapping exercise in each selected country Subdivision before the assessment.

A mapping exercise to identify private sector facilities and service points can be as thorough as the amount of time and resources devoted to it. To limit the time and resources required for mapping, the exercise could be limited to the selected Subdivisions in which the selected facilities are located.

¹ The indicators and collection tool could be used also with different sampling strategies, but the one presented in Tool C – Revised has been shown to be feasible and usually produces a representative result.

2. Sample size

The total sample size would be 160 facilities: $8 \times 10 = 80$ health care facilities selected directly from a current list of public facilities, and $8 \times 10 = 80$ private sector facilities selected from lists of private facilities in each country subdivision identified during the mapping exercise.

3. Replacements

Care should be taken to visit all selected facilities in the base sample without replacement wherever possible. Replacement should be limited to facilities that are found to be not eligible once teams are in the field (e.g. facilities where the procedure/s of interest are never given, facilities that are closed or facilities only yet under construction).

Replacement of facilities should occur by the following method:

Each survey area should be over-sampled by three facilities of each sector assessed (that is, 13 facilities should be selected instead of 10 as explained in Section 1.2) before going to the field. Each team will carry a list of replacement facilities and their locations. If a team determines that a selected facility is ineligible, the team should replace it with the replacement facility that is closest in terms of driving distance or estimated travel time. A public facility can only be replaced with another public facility, and a private one can only be replaced with a private facility.

Replacement of facilities simply because they are difficult to access should be avoided as this could lead to a bias through over-representation of easily accessible facilities that may receive better staffing, equipment and supplies. Hard-to-reach facilities should be identified at as early a stage as possible to plan for extra access efforts, special transport arrangements, etc., so that they are not omitted from the survey. In those cases where access is temporarily difficult due to factors that may change within days, the team should attempt access at least once more at a later date before resorting to choosing a replacement.

Human subjects

This tool is designed for the assessment of the safety of injections, phlebotomies, lancet procedures and intravenous procedures performed during routine healthcare delivery. However, before conducting this assessment, evaluators should check with the Ministry of Health and donor organizations that might be involved, if any, on the need for an ethics review by an Institutional Review Board (IRB).

During the process of making observations for the assessment, surveyors should intervene to prevent potential harm if they are about to witness health care procedure practices that are of particular danger to a procedure recipient (e.g. re-use of equipment for an invasive procedure without sterilization).

Data collection procedure

In order to obtain accurate information, this tool proposes methods which obtain information using a combination of interviews and structured observations.

Information to be collected includes:

- 1) Structured observations of facilities and worksites, including available supplies.
- 2) Structured observations of practices.
- 3) Reported availability of equipment and supplies, and
- 4) Occupational health issues.

Collected information sometimes is to be used to determine other items in the assessment. For example, the fieldworkers must determine whether the number of equipment pieces available is at least twice the average number of procedures performed per week, as stated by the supervisor. A sample data collection instrument is provided in Annex 2. (The choice of two weeks is based on the assumption that most facilities receive deliveries of equipment once per month. The two-week limit can be adjusted based on the country's logistic cycle.)

1. Pilot testing of the data collection instrument in the country

The proposed data collection instrument should be pilot-tested in each country to ensure that each data collection item is suitable for the particular circumstances and that the right nomenclature is used. The pilot test can be conducted in a limited number of health care facilities prior to training the fieldworkers. Following the pilot-test, minor adaptations to the data collection instrument may be relevant for specific items, for example according to the type of equipment used or other local circumstances. These changes should be kept to the minimum in order to maintain standardization.

2. Recruitment of the fieldworkers

A sufficient number of fieldworkers should be identified so that the fieldwork can be completed within two weeks. For an assessment involving 80-160 facility evaluations (80 in the base sample plus an additional 80 private facilities) it is estimated that eight teams, each with three fieldworkers and one driver, can complete the fieldwork in 10 days during which health facilities are operational (Table 4). It may be necessary to have an additional more experienced person supervise the data collection of each team. The supervisor would be responsible for the overall quality of the data, and for ensuring that the completed questionnaires are kept safe and delivered to the lead investigator in a timely manner.

Table 4: Estimated parameters for fieldwork for an ‘injection safety’ assessment of 80-160 facilities*

	Calculations for 80 facilities	Calculations for 160 facilities
Survey time spent in each facility on average	5 hours	5 hours
Number of facilities or service points visited by 1 Survey Team in 1 day	1 -3 ***	1 -3 ***
Number of facilities or service points to visit for each Survey Team	10 (assuming 10 public facilities)	20 (assuming 10 public facilities and 10 private facilities)
Number of working days needed for each Survey Team to complete one region (assuming a sample that contains one hospital and nine lower-level facilities per region)	5	10
Number of survey regions to visit	8	8
Number of survey teams	4	4
Number of working days it will take to complete an assessment of health facilities*****	10	20

*A sample of 80 ‘base sample’ facilities and up to 160 additional facilities (or other service points) that are in the local areas of the base sample facilities and assessed on the same day.

** If there are less than five days per week for which health facilities are operational would usually make it necessary to allocate more days for the data collection period.

*** 1 selected lower-level public or private facility can be completed per day by each data collector in the same local area. Each hospital typically requires one day with the entire team working together.

**** The schedule for fieldwork should take into account two non-operational days per week for facilities for the weekend as well as any local holidays. The budget may still need to include per diem costs for the field workers, however, if they are not able to return to their homes for the weekend.

3. Training of the fieldworkers

3.1 Objective

The purpose of the training of fieldworkers is to ensure that all fieldworkers will collect information appropriately using the same methodology. Because of the need for all data collectors to be approaching the data collection in the same way, the trainers should consider limiting the number of teams. Generally, the more fieldworkers that are hired for a survey, the more difficult it will be to standardize all of them to ensure good quality data. Four teams is suggested in Table 4 above.

3.2 Initial training

Fieldworkers should be trained to collect data in an exhaustive and standardized way while remaining respectful of patients and the health care workers and their work. The purpose of the assessment and the importance of its sampling methodology should be explained. Some background material on injection safety should be presented that includes the proper performance of each procedure that is to be observed. (? Also available on the Internet at www.injectionsafety.org). Samples of the various devices likely to be found in use within facilities in the country should be shown to the fieldworkers. The data collection instrument should then be reviewed with the fieldworkers line by line – including all skips and instructions – to ensure that all of the questions / survey items are understood and that fieldworkers clearly understand what is required of them. Field workers and supervisors should also be instructed to

review the data collection questionnaires for accuracy and completion before leaving each health facility.

In addition, it is often helpful to have other materials such as skits to practice injection observations and pictures of common issues for this training. Data collectors can be asked to code a sample questionnaire while looking at the pictures or observing “pretend” injections and then the results can be discussed as a large group. [kvr2]Any questions that arise on the questionnaire can be addressed at this time. Data collectors can also practice interviewing each other to familiarize themselves with those sections of the questionnaire. Typically, the initial classroom part of the training will require at least two full days.

3.3 Standardization of the data collection procedure

Fieldworkers should be taken to several health care facilities to practice assessments before actual data collection so that they become accustomed to the assessment tool and data collection process. In the first facility, all fieldworkers could collect data on separate questionnaires while the investigator collects her/his data, in order to compare results after the visit. Once fieldworkers feel confident with the tool, and the results across observers are uniform, the team may be split in smaller groups to assess different facilities while still comparing results obtained by different observers in the same facility. This procedure should be continued until the principal investigator is confident that all fieldworkers will collect data in the same way and obtain uniform results.

Standardization of the data collection procedure should be conducted in facilities that are not included in the assessment. Specific administrative authorizations may therefore be needed in addition to that obtained for fieldwork in the selected clusters. When it is not possible to do otherwise, the standardization of the data collection procedure may be conducted in one of the clusters selected for the survey. Because of its large population size, the capital city will often be a region that is included in the sample and yet still may have larger facilities that were not selected, but that could be a site for practice assessments. Since most training sessions for fieldworkers would occur in the capital or a larger center this provides an opportunity to simplify and economize fieldworker training. For example, if the city in which the training is conducted is large enough, three health facilities that are not selected for the sample and are close to the training centre might accommodate teams for practice assessments.

Organization of the fieldwork

1. Timing of visits

To ensure observation of procedures in a high proportion of selected health care facilities, care should be taken to visit them at a time when most procedures are performed, which is usually in the morning in most tropical and subtropical countries. To be able to complete an assessment of both a public and private facility, and also travel to the next selected facility in one day, teams will need to start early in the day, arriving at selected facilities when they open.

Each team will have about five hours at each selected facility. In most countries this should allow sufficient time for travel to the next facility in order to arrive there by the early evening. Since data must be collected on days in which facilities are operational (i.e.: working days not including weekends and holidays), about four weeks will be required for data collection for 80 facilities if four data collection teams are used.

Informing facilities about the upcoming arrival of fieldworkers who will perform an assessment needs to be balanced against the potential change induced if sites prepare for the visit. If facilities are informed weeks in advance they may make changes in their practices for the assessment, a phenomenon known as the Hawthorne effect (a change in behavior that occurs when one knows they are being observed).

2. Cross-checking and supervision of data collection

Whenever possible, fieldworkers should be supervised in the field during and after data collection. At the end of each day, fieldworkers should check their questionnaires and cross-check data collected by team members as appropriate. In the evenings, the data collected that day should be reviewed by supervisors and their teams to ensure consistency and completeness of data collection, and clarity of any notes made. Any difficulties in completing the assigned facilities should be explained to the supervisor and carefully documented.

3. Completing the data collection instrument (Annex 2)

3a) Introduction

A short word of introduction is proposed which may be adapted for different countries by changing terminology used for government departments, country sub-regions and professional titles. It is important that health care workers working at facilities feel comfortable about the assessments being performed in their facilities and thus are able to give informed consent. They need to know that their individual participation is voluntary, that refusal to participate will not be penalized, and that the information gathered in the assessment will remain confidential. If the fieldworkers bring a letter from a regional or national official authorizing the assessment at the facility and the name of an official who is available to be contacted to verify the validity of the assessment, it may increase rates of participation.

3b) Part 1: Facility observation

Part 1 is a structured observation of the facility. For this section the form should be completed only on the basis of what is **observed**; *this section is not an interview*. The observations include

the worksite and health care worker hygiene, procedure preparations including equipment selection, equipment disposal and waste handling.

3c) Parts 2 and 3: Procedure observations

Parts 2 and 3 are used to record observations of the injections, phlebotomies and intravenous procedures administered during the visit. Because of its importance, the fieldworkers should be prepared to observe procedures immediately after informed consent for the assessment is obtained. They may ask to be informed when and where a given procedure is about to take place. Fieldworkers should be prepared to interrupt data collection as needed if emergency procedures occur, and they should try to minimize disruption to patient care to the extent possible.

The fieldworkers should attempt to observe as many of the different types of procedures related to the assessment as possible, but they should not ask for a procedure to be performed if it was not already a planned part of the patient's treatment. For intravenous procedures, since insertions and changes of intravenous catheters are a priority, conducting observations for a number of hours will maximize the number of observations on procedures that access the intravenous system. Inquiring about whether there is a routine or schedule for any of the procedures in the assessment may enable the fieldworkers to be in the right place at the right time for observations.

Fieldworkers should also note any observations regarding safety made that are not captured by the questionnaire. If they are about to observe practices that may expose the injection recipient to substantial risks (e.g. re-use of injection equipment in the absence of sterilization), fieldworkers should tactfully interrupt the procedure to protect the patient. However, the dangerous procedure that was about to occur should be recorded on the data collection form as if it had actually occurred. It is recommended that fieldworkers be given instructions and/or role-play *how* to interrupt tactfully as part of their initial training.

3d) Part 4: Sterilization

If the health care facility uses sterilizable equipment for any of the procedures pertaining to this assessment, Part 6 of the data collection instrument should be completed. If steam sterilization is used, the sterilizer should be tested by boiling water in it to check for steam leaks (Survey item Q404).

3e) Part 5 and 6: Interviews of an injection provider and a supervisor

The questionnaires in Parts 5 and 6 should be used to interview the health care provider (HCP) performing the procedure and the immediate supervisor of the HCP, respectively. If possible, the provider who performed most of the injections observed and his/her immediate supervisor should be interviewed, or if this is not possible and there is more than one provider present in the facility on the day of the interview, the provider who administers the most injections in the same unit or area where you observed most of the injections should be interviewed. The supervisor of the provider who performed most of the injections and other procedures observed should be interviewed if possible, or as a second priority select the supervisor of the unit(s) in which most of the injections and other procedures were observed. If either of these two options is not possible, select the supervisor of the unit or area that performs the most injections and other procedures. And

finally, if there is no supervisor working at the facility, you may interview the senior injection provider on site.

3f) Part 7: Disposable Equipment

In order to determine whether the amount of disposable equipment (including auto-disable or other types of safety syringes and other disposable equipment for any procedure) is adequate for at least two weeks of service, the interviews of the HCP and her supervisor must be completed before Part 7 of the data collection instrument is completed.

3g): Leaving the facility

All parts of the data collection forms should be checked for completeness, agreement between the surveyors, accuracy and clarity before the team leaves the facility. The team should thank the staff and say goodbye to the facility director before leaving.

Data entry and analysis

In order to simplify data entry and analysis, *Tool C – Revised* is accompanied by a data entry template for *Epi InfoTM* and instructions on how to download the most recent version of *Epi InfoTM* from the CDC website (Annex 3). Other software programs may be used to enter and analyze data if the technical expertise is available, but minimal computer skills are needed to follow the instructions for *Epi InfoTM* that are provided. *Epi InfoTM* is in the public domain, so its use is unrestricted and free of charge.

Analysis should be done using the cluster effect and reporting should be done using 95% confidence intervals. Confidence intervals are a statistical range with a specified probability that the proportion of facilities having the characteristic lies within the range. It is common to use 95% confidence intervals, as a matter of tradition. The methods described allow calculation of 95% confidence intervals taking into account the cluster sampling method used (Annex 4).

Reporting

Injection safety assessment reporting should use the standard tables below:

As the analysis is performed, the proportion of facilities having the desired response for each item can be calculated and entered into the space for each of the indicators below, item by item, along with the confidence intervals of the proportion. The reference numbers for each combined assessment variable (e.g. I101) correspond to those for the combined assessment questionnaire (e.g. Q101) by matching numerical digits.

When the values for each item are completed, it must be kept in mind which response option to each question in the questionnaire is the correct one to use for the numerator of the proportion for the indicator. Often the indicator is the proportion of the data collection instrument responses that have the response 'Yes' (e.g. I116 - Presence of running water and soap for cleansing hands. This corresponds to Q116 - Is there running water and soap for cleansing hands?). However, sometimes the desirable attribute is negative (e.g. I101 - Absence of loose disposable injection equipment outside of packaging), and in this case the indicator is the proportion of the corresponding data collection instrument responses that have the response 'No' (e.g. Q101 - Are there any loose disposable needles and syringes inside the facility?).

Notes on the plan to analyze and present the data in the survey report:

1. In the report, always indicate the source of the data: observations, interviews with injection providers, interviews with patients, etc.
2. Use the wording of the questions themselves to guide you in writing up the report.
3. If the source of a piece of data on injections is an *interview* of the providers of the injections and not an *observation* on their practices, note this fact in the report saying: "X % of the injection providers state that they do Y". It is possible that the injection providers will make statements that do not agree closely with the observations made on their practices in reality. Presenting the results saying that they *report* doing something makes the source of the data clearer to everyone who reads the report.
4. In the report, always indicate the denominator for each section of the survey (number of injection providers, number of patients, etc.)
5. For several questions, there are notes that suggest how to present the results "in terms of" something. The idea is to indicate in the report where there is a filter in the preceding question that changes the denominator of the results that follow. Typically, in the report these statements will be worded as "Of the providers (or supervisors) reporting that they do X, Y%"
6. For cases where the respondent can provide multiple answers, make a note in the text or table of results to note for the reader the reason why the percentages do not necessarily add to 100%.
7. In writing the reports, you may change the order of the results to combine related topics.

Table 5a: Assessment items reflecting risks to patients

Reference	Item	#/N	%	95%CI
Facility Observation				
I101	Proportion of facilities with no loose disposable injection equipment outside of packaging anywhere inside the facility	—/—	—%	xx-xx
I102	Proportion of facilities with no loose disposable phlebotomy equipment outside of packaging anywhere inside the facility	—/—	—%	xx-xx
I103	Proportion of facilities with no loose disposable intravenous equipment outside of packaging anywhere inside the facility	—/—	—%	xx-xx
I104	Proportion of facilities with evidence of attempted sterilization of disposable injection equipment	—/—	—%	xx-xx
I106	Proportion of facilities with no non-sharps infectious health care waste of any type outside of containers specific for non-sharps infectious waste	—/—	—%	xx-xx
I107	Proportion of facilities with no multi-dose vials with needles left in the diaphragm	—/—	—%	xx-xx
I116	Proportion of facilities with running water and soap for cleansing hands	—/—	—%	xx-xx
I117	Proportion of facilities with alcohol-based hand rub for cleansing hands	—/—	—%	xx-xx
Injection Practices				
	Proportion of facilities in which injections are prepared on a clean, dedicated table or tray where contamination of the equipment with blood, body fluids or dirty swabs is unlikely			
I201	• Vaccinations	—/—	—%	xx-xx
	• Therapeutic	—/—	—%	xx-xx
	• Family Planning	—/—	—%	xx-xx
	• Dental	—/—	—%	xx-xx
	• Total	—/—	—%	xx-xx
I205	Proportion of facilities in which a sterilizable syringe or needle was used for an observed procedure:			
	• Vaccinations	—/—	—%	xx-xx
	• Therapeutic	—/—	—%	xx-xx
	• Family Planning	—/—	—%	xx-xx
	• Dental	—/—	—%	xx-xx
	• Total	—/—	—%	xx-xx
I206	Proportion of facilities in which for injections , syringes and needles were taken from a sterile packet or fitted with caps.			
	• Vaccinations	—/—	—%	xx-xx
	• Therapeutic	—/—	—%	xx-xx

	• Family Planning	—/—	—%	XX-XX
	• Dental	—/—	—%	XX-XX
	• Total	—/—	—%	XX-XX
I208	Proportion of facilities in which for reconstitutions, a syringe and needle were taken from a sealed packet or fitted with caps.	—/—	—%	XX-XX
I209	Proportion of facilities in which for vaccine reconstitutions, the diluent used is from the same manufacturer that made the vaccine	—/—	—%	XX-XX
I210	Proportion of facilities in which providers cleansed the access diaphragm of multi-dose vials with antiseptic before inserting a needle into the vial	—/—	—%	XX-XX
I211	Proportion of facilities in which the provider used a clean barrier to protect fingers when opening a glass ampoule.	—/—	—%	XX-XX
I212	Proportion of facilities in which temperature sensitive vaccines were kept between 2°C - 8°C during the period of use	—/—	—%	XX-XX

Phlebotomy Practices

I303	Proportion of facilities in which phlebotomies are prepared on a clean, dedicated table or tray where contamination of the equipment with blood, body fluids or dirty swabs is unlikely	—/—	—%	XX-XX
I308	Proportion of facilities for which before a phlebotomy skin at the puncture site is prepared using CHG 2%, povidine-iodine or alcohol before skin puncture	—/—	—%	XX-XX
I311	Proportion of facilities in which for each phlebotomy, the device used was taken from a sterile packet or fitted with caps	—/—	—%	XX-XX

Lancet Procedures

I303	Proportion of facilities in which lancet procedures are prepared on a clean, dedicated table or tray where contamination of the equipment with blood, body fluids or dirty swabs is unlikely	—/—	—%	XX-XX
I311	Proportion of facilities in which for each lancet procedure, a lancet is taken from a sterile packet, or fitted with a cap.	—/—	—%	XX-XX

Intravenous Injections And Infusions

I303	Proportion of facilities in which intravenous procedures are prepared on a clean, dedicated table or tray where contamination of equipment with blood, body fluids or dirty swabs is unlikely			
	Proportion of facilities in which intravenous injections	—/—	—%	XX-XX
	Proportion of facilities in which intravenous infusions	—/—	—%	XX-XX
I308	Proportion of facilities in which before an intravenous procedure skin at the puncture site is prepared using CHG 2%, povidine-iodine or alcohol, which is allowed to dry before skin puncture <i>[Although a 2% chlorhexidine-based preparation is preferred, tincture of iodine, an iodophor, or 70% alcohol can be used]</i>	—/—	—%	XX-XX
I309	Proportion of facilities in which during intravenous procedures (including phlebotomies) in which providers palpate the venipuncture site after skin preparation with an antiseptic <i>[Cross-tab of Q308 and Q309]</i>	—/—	—%	XX-XX

I311	Proportion of facilities for which at each start of an intravenous infusion of intravenous catheter change, the device was taken from a sterile packet	—/—	—%	XX-XX
I312	Proportion of facilities in which for each procedure performed on an IV system using a needle/syringe, the IV system was accessed from an IV port <i>[i.e. – No injections are administered directly into IV bags, plastic bottles or tubing.]</i>	—/—	—%	XX-XX
I314	Proportion of facilities in which injection ports are cleansed with CHG 2%, povidone-iodine or alcohol before accessing the intravenous system	—/—	—%	XX-XX

Sterilization Practices

I401	Proportion of facilities in which steam sterilization is used to sterilize devices used for injections, phlebotomies, lancet procedures or intravenous procedures	—/—	—%	XX-XX
I403	Proportion of facilities with at least one updated TST spot register or analogous register if sterilization in use	—/—	—%	XX-XX

Disposable Equipment

I701	Proportion of facilities in which there is enough autodisable injection equipment for at least two weeks <i>[This is dependent on statements of the average numbers of procedures per week from interviews]</i>	—/—	—%	XX-XX
I702	Proportion of facilities in which there is enough disposable and re-use prevention feature (safety syringes) injection equipment for at least two weeks <i>[This is dependent on statements of the average numbers of procedures per week from interviews]</i>	—/—	—%	XX-XX
I703	Proportion of facilities in which there is enough disposable phlebotomy equipment for at least two weeks <i>[This is dependent on statements of the average numbers of procedures per week from interviews]</i>	—/—	—%	XX-XX
I704	Proportion of facilities in which there is enough disposable intravenous catheters for at least two weeks <i>[This is dependent on statements of the average numbers of procedures per week from interviews]</i>	—/—	—%	XX-XX
I705	Proportion of facilities in which there is enough disposable intravenous sets for at least two weeks <i>[This is dependent on statements of the average numbers of procedures per week from interviews]</i>	—/—	—%	XX-XX

Interview Of The Provider

I502	Proportion of facilities exclusively using sterile, single-use needles and syringes for injections	—/—	—%	XX-XX
I503	Proportion of facilities exclusively using sterile, single-use phlebotomy needles, or sterile, single-use needles and syringes for phlebotomies	—/—	—%	XX-XX
I504	Proportion of facilities exclusively using sterile, single-use needles and catheters during performance of intravenous infusions or other procedures accessing intravenous systems	—/—	—%	XX-XX
I509	Proportion of facilities in which there were no stock-outs of puncture-resistant sharps containers during the entire last six months	—/—	—%	XX-XX
I514	Proportion of facilities in which the provider interviewed did not experience any needlestick injury in the last six months	—/—	—%	XX-XX
I517	Proportion of facilities in which the provider interviewed had injection safety training available to them within the last two years in a lecture or workshop	—/—	—%	XX-XX

I520	Proportion of facilities in which the provider interviewed had received at least three doses of Hepatitis B vaccine	—/—	—%	xx-xx
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Interview Of The Immediate Supervisor Of The Provider

(Note: If the immediate supervisor was not available, the most responsible staff member of the facility was interviewed, which may have been the provider already interviewed)

I601	Proportion of facilities surveyed in which the supervisor interviewed showed the data collector an ‘injection safety’ policy or guidelines	—/—	—%	xx-xx
I602	Proportion of facilities surveyed in which the supervisor interviewed showed the data collector a ‘health care waste management’ policy/guidelines or similar	—/—	—%	xx-xx
I608	Proportion of facilities surveyed in which the supervisor interviewed reported that no injections are administered using sterilizable syringes and needles in their facilities	—/—	—%	xx-xx
I610	Proportion of facilities surveyed in which no stock-outs of any standard disposable or safety syringes occurred during the last six months [<i>‘Safety’ syringes have a re-use prevention feature, as do retractable syringes</i>]	—/—	—%	xx-xx
I614	Proportion of facilities surveyed in which there were no stock-outs of puncture-resistant sharps containers in the last six months	—/—	—%	xx-xx
I615	Proportion of facilities surveyed in which a procedure for placing an emergency order for injection devices exists	—/—	—%	xx-xx

Table 5b: Indicators reflecting risk to the provider

Reference	Item	#/N	%	95%CI
Facility Observation				
I106	Proportion of facilities surveyed with no non-sharps infectious health care waste of any type outside of containers specific for non-sharps infectious waste	—/—	—%	xx-xx
I108	Proportion of facilities surveyed with no overflowing or pierced sharps containers of any type in any area of the facility	—/—	—%	xx-xx
I109	Proportion of facilities surveyed with no used sharps in an open container in any area of the facility	—/—	—%	xx-xx
I111	Proportion of facilities surveyed with at least one puncture resistant and leak proof sharps container in all areas where vaccinations are given	—/—	—%	xx-xx
I112	Proportion of facilities surveyed with at least one puncture resistant and leak proof sharps container in all areas where therapeutic injections are given	—/—	—%	xx-xx
I113	Proportion of facilities surveyed with at least one puncture resistant and leak proof sharps container in all areas where phlebotomies are performed	—/—	—%	xx-xx
I114	Proportion of facilities surveyed with at least one puncture resistant and leak proof sharps container in all areas where intravenous procedures are performed	—/—	—%	xx-xx
I115	Proportion of facilities surveyed with one or more puncture-resistant safety container/s “in stock”	—/—	—%	xx-xx
Injection Practices				
I215	Proportion of facilities surveyed in which there was an absence of recapping of needles after administering a vaccination (Response 3 /[Total of 1+2+3])	—/—	—%	xx-xx
I215	Proportion of facilities surveyed in which there was an absence of two-handed recapping of needles after administering a therapeutic injection (Response 1 + 3 /[Total of 1+2+3])	—/—	—%	xx-xx
I217	Proportion of facilities surveyed for which after vaccinations, the provider immediately disposed of the used needle/syringe in an appropriate sharps container (Response: Yes/[Yes + No])	—/—	—%	xx-xx
I217	Proportion of facilities surveyed for which after therapeutic injections, the provider immediately disposed of the used needle/syringe in an appropriate sharps container (Response: Yes/[Yes + No])	—/—	—%	xx-xx
Phlebotomy Practices				
I306	Proportion of facilities surveyed in which providers appropriately secured the patient and the intended puncture site so that the patient could not move during the procedure	—/—	—%	xx-xx

I307	Proportion of facilities surveyed in which Phlebotomists wear a new pair of gloves for a phlebotomy (Response: 1 / [1+2+3])	—/—	—%	xx-xx
I316	Proportion of facilities surveyed in which uncapped needles were not removed from phlebotomy holder/adapters using only hands	—/—	—%	xx-xx
I317	Proportion of facilities surveyed in which no two-handed recapping of any needles after performing phlebotomies occurred	—/—	—%	xx-xx
I318	Proportion of facilities in which blood was not transferred from a syringe/needle directly into a vacuum tube using a two-handed technique	—/—	—%	xx-xx
I319	Immediately after the procedure, the provider disposed of sharps in an appropriate sharps container	—/—	—%	xx-xx
I320	Proportion of facilities surveyed in which, immediately after the procedure, the provider disposed of non-sharps infectious waste in a container specific for non-sharps infectious waste	—/—	—%	xx-xx
Lancet Procedures				
I306	Proportion of facilities surveyed in which providers appropriately secured the patient and the intended puncture site so that the patient could not move during the procedure	—/—	—%	xx-xx
I319	Proportion of facilities surveyed in which, immediately after the procedure, the provider disposed of sharps in an appropriate sharps container	—/—	—%	xx-xx
I320	Proportion of facilities surveyed in which, immediately after the procedure, the provider disposed of non-sharps infectious waste in a container specific for non-sharps infectious waste	—/—	—%	xx-xx
Intravenous Injections and Infusions Practices				
I306	Proportion of facilities surveyed in which providers appropriately secured the patient and the intended puncture site so that the patient could not move during the procedure	—/—	—%	xx-xx
I307	Proportion of facilities surveyed in which providers wore a new pair of gloves for each intravenous injection (Response 1 / [Total of 1+2+3])	—/—	—%	xx-xx
	Proportion of facilities surveyed in which providers wore a new pair of gloves for each time an intravenous infusion was started or an intravenous catheter was changed (Q307 Response C1 / [Total of C1+C2+C3]) + (Q307 Response D1 / [Total of D1+D2+D3])	—/—	—%	xx-xx
I317	Proportion of facilities surveyed in which no two-handed recapping of any needles after performing intravenous injections occurred	—/—	—%	xx-xx
I319	Proportion of facilities surveyed in which, immediately after the procedure, the provider disposed of sharps in an appropriate sharps container	—/—	—%	xx-xx
I320	Proportion of facilities surveyed in which, immediately after the procedure, the provider disposed of non-sharps infectious waste in a container specific for non-sharps infectious waste	—/—	—%	xx-xx

Table 5b (continued): Indicators reflecting risk to the provider

Interview Of The Provider				
I509	Proportion of facilities surveyed in which no stock-outs of puncture-resistant sharps containers during the entire last six months	—/—	—%	xx-xx
I512	Proportion of facilities surveyed in which providers that reported sharps injuries were offered support and counselling	—/—	—%	xx-xx
I514	Proportion of facilities surveyed in which providers have had no needlestick or sharps injuries in the last six months	—/—	—%	xx-xx
I517	Proportion of facilities surveyed in which training for injection safety in a formal workshop was last available to providers within the last two years	—/—	—%	xx-xx
I519	Proportion of facilities surveyed in which providers have had at least one Hepatitis B vaccination	—/—	—%	xx-xx
I520	Proportion of facilities surveyed in which providers have had 3 or more doses? Hepatitis B vaccinations	—/—	—%	xx-xx
Interview Of The Immediate Supervisor Of The Provider				
<i>(Note: If the immediate supervisor was not available, the most responsible staff member of the facility was interviewed, which may have been the provider already interviewed)</i>				
I601	Proportion of facilities surveyed in which an injection safety policy or guidelines was available for viewing	—/—	—%	xx-xx
I602	Proportion of facilities surveyed in which an health care waste disposal policy or guidelines was available for viewing	—/—	—%	xx-xx
I614	Proportion of facilities surveyed in which there were no stock-outs of puncture-resistant sharps containers for the previous six months	—/—	—%	xx-xx
I618	Proportion of facilities surveyed in which staff that handle health care waste have access to 'heavy gloves' <i>[Heavy gloves are more resistant to puncture than latex gloves]</i>	—/—	—%	xx-xx

Table 5c: Indicators reflecting risk to the community

Reference	Indicator	#/N	%	95%CI
Facility Observation				
I106	Proportion of facilities surveyed in which there were no non-sharps infectious health care waste of any type outside of containers specific for non-sharps infectious waste	—/—	—%	xx-xx
I108	Proportion of facilities surveyed in which there were no overflowing or pierced sharps containers of any type in any area of the facility	—/—	—%	xx-xx
I109	Proportion of facilities surveyed in which there were no sharps in an open container in any area of the facility	—/—	—%	xx-xx
I110	Proportion of facilities surveyed in which there were separate waste containers for infectious non-sharps waste in each injection area	—/—	—%	xx-xx
I111	Proportion of facilities surveyed in which all sharps containers awaiting final destruction were completely closed	—/—	—%	xx-xx
I112	Proportion of facilities surveyed in which all sharps containers awaiting final destruction are stored in a locked area or otherwise are stored safely away from public access	—/—	—%	xx-xx
I113	Proportion of facilities surveyed in which there were no used sharps on the ground immediately outside the health facility and/or around the disposal site	—/—	—%	xx-xx
I118	Proportion of facilities surveyed in which there was one or more puncture-resistant safety containers “in stock” <i>[‘in stock’ means beyond those currently in use]</i>	—/—	—%	xx-xx
I119	Proportion of facilities surveyed in which the final disposal for sharps waste generated by the facility was by closed burning in a medium or high temperature incinerator /furnace, dumping in a secure pit or transport off-site for treatment (Q119 options [3 + 4 + 7 + 10]/total)	—/—	—%	xx-xx
Interview Of The Provider				
I517	Proportion of providers interviewed that had injection safety training available to them within the last two years in a formal lecture or workshop	—/—	—%	xx-xx

References

1. **Van Staa A, Hardon A.** *Injection practices in the developing world: A comparative review of field studies in Uganda and Indonesia.* 1996 Geneva, World Health Organization (unpublished document WHO/DAP/96.4; available from Drug Action Programme, World Health Organization, 1211 Geneva 27, Switzerland).
2. **MacAulay C.** *Guidelines to develop standards.* The Quality Assurance Project, URC, for the Center of Human Services, 7200 Wisconsin Ave., Suite 600, Bethesda, MD, September 2, 1999.
3. **Bennett S, Woods T, Liyanage WM, Smith DL.** A simplified general method for cluster-sample surveys of health in developing countries. *World Health Statistics Quarterly* 1991; 44: 98-106.

Annex 1: Proposed schedule for an assessment of 160 facilities

In addition to the fieldwork, time must be scheduled for preparation and reporting. Including preparation work before the start of the assessment, completion of the assessment will normally require about four months. Table 6 below is presented as a reference to indicate many of the detailed planning components that should be considered in advance of fielding the survey.

Table 6. Proposed overall schedule for an injection safety survey of 160 facilities

Time	Proposed Activities
Begin eight weeks before the assessment	• Obtaining Ministry consent and identify budget • Establish a Planning Committee • Recruit and hire a lead consultant to manage this assessment • Conduct sampling exercise to identify regions to be surveyed • Planning committee decides whether the assessment will include only public facilities or public and private. - o If private facilities are to be included, investigate the availability of a listing. - o If there is no listing, recruit and hire a cartographer or other mapping expert to prepare a listing of private facilities - o For all facilities, ensure that the listing includes the full address of each facility and a phone number if possible - o Prepare the listing of replacement facilities • Inform and obtain consent of the appropriate regional authorities • Begin recruitment of fieldworkers, data entry staff and the lead data analyst if separate from the study coordinator • Planning committee reviews the Tool C questionnaire and begins adapting and reviewing training materials
Begin six weeks before the assessment	• Set a calendar period for the training and survey • Prepare hire letters and salary offers for all selected fieldworkers. Invite them to training and survey for day 1 of the identified calendar period. • Identify and secure vehicles and drivers for the survey • Pilot test the survey instrument • Identify training site
One week before the assessment	• Finalize plans and budget for fieldworker per diem payments and honorariums/consultant fees • Make copies of the questionnaire. • Purchase any materials needed to support the fieldworkers (ie: bags to carry questionnaires, etc.)
Assessment Day 1 - 3	• Training of surveyors – Basic principles and best practices; Description and measurement of indicators; Data management; Questionnaire (in full) • Logistics Planning - Formation of Survey Teams; Confirm availability of vehicles and drivers, access to fuel for vehicles; Confirm lodging arrangements for survey teams, etc. • Practice assessments
Assessment Day 4 - 5	• Further practice assessments if necessary • Arrange training on program for data entry staff using field test questionnaires as practice. N.B.: If the survey coordinator is also the lead analyst who will be training data entry staff, this step can be postponed until the fieldwork has begun running smoothly. • Logistics Planning – Each survey team makes a plan for travel during the two week data collection period and learns the locations of the facilities that have been identified for use as replacement facilities in the case that a facility among those sampled are not available for data collection for any reason • Distribute the following to fieldworkers: per diems, lists of facilities to be assessed and how to locate them, data collection instruments and lists of key government and health system contacts for each survey region
Assessment Day 6 - 7	• Travel to Regions
Assessment	• One hospital and up to three lower-level facilities can be visited by each team on each

Day 8 - 27	work day in the field • Survey teams must account for weekends (when facilities are closed) in their fieldwork schedules • Make arrangements for completed questionnaires to be sent to the data entry location periodically
Assessment Day 28	• Survey teams travel back to Capital (or other Origin) • Final receipt of data from survey teams • Debriefing of survey teams
Three or more weeks after data collection is complete	• Data entry • Data cleaning • Data analysis • Preparation of the draft report
Two to three weeks after the draft report is written	• Technical review of the draft report by the planning committee • Development and prioritizing of the conclusions and recommendations
Two to three weeks after comments are received on the draft report	• Presentation of draft results to key stakeholders • Finalizing the report • Forwarding the final report to the responsible government entity

Annex 2: Data Collection Instrument

This data collection instrument that begins on the following page can be used for a combined safety assessment of injections, phlebotomy, lancet procedures and intravenous procedures

Structured observations (Sections 1 - 4)

Section 1 is a structured observation of the facility. Section 1 should be completed on the basis of what is observed only and not on the basis of anything stated by health facility staff.

Sections 2 and 3 cover observations of injections, phlebotomies, lancet procedures and intravenous procedures. Prioritize these procedure observations, as there may be few of them on any given day, especially at smaller health facilities. The waste disposal site, exterior of the facility and store room can always be assessed during quieter periods such as the lunch break.

Section 4 covers steam sterilization and should be completed if there is any indication that the facility uses sterilizable equipment for any of the procedures of interest. If the healthcare facility is using a steam sterilizer, it should be operated to check for steam leaks if a complete updated TST spot register for it cannot be located.

Interviews of a health care provider and a supervisor are performed in **Sections 5 and 6**. If possible, interview the provider who performed most of the injections observed, or if this is not possible and if there is more than one provider present in the facility on the day of the interview, ask to interview the provider who administers the most injections in the same unit or area where you observed most of the injections. The questionnaires should be completed on the basis of answers to the interview questions and not based on what is observed. It is important to wait until **after** observing procedures before interviewing the providers. Otherwise, their actions during the procedures may not be a true reflection of their normal practices.

Interview the supervisor of the provider who performed most of the injections and other procedures observed if possible, or as a second priority select the supervisor of the unit(s) in which most of the injections and other procedures were observed. If either of these two options is not possible, select the supervisor of the unit or area that performs the most injections and other procedures. If there is no supervisor working at the facility, you may interview the senior injection provider on site.

Interview these people **AFTER** you complete the observations unless you have waited the full 3 hours and no more injections are expected.

Section 7 covers disposable equipment supplies and is designed to detect whether there are adequate supplies in the facility for at least two weeks. Once the number of procedures that performed (according to the immediate supervisor of the provider) is known (or estimated), it should be possible to determine how many supplies for each procedure category are adequate for two weeks and to enter a response in Section 7 indicating whether or not supplies are adequate for at least two weeks. For this reason, **Section 7 can only be completed after the interview in Section 6.**

It is important that all items are completed before leaving the health facility. Missing data will affect the accuracy of the national estimates obtained for each measure and

Document Serial Number ID) _____

(Entered by data entry personnel)

[Greetings] My name is _____, and I am working with a team that is conducting an assessment on the safety of injections, phlebotomies and intravenous procedures in Oman for the Ministry of Health. Our survey team will ask a series of questions and make observations of supplies and injection practices. Your healthcare facility has been chosen at random to take part in this survey. The questions will take approximately 15 minutes to complete, but I will also observe your working conditions and will be around for a couple of hours.

Your name will not be recorded anywhere on our survey forms, and our report will never identify you or any other health worker. Moreover, no health facility's results will be individually identified in the report; the study only will analyze the data from all of the facilities together so that an assessment for the whole of Oman is obtained. The report will be important for improving injection safety and health care waste management in Oman.

Taking part is your choice; you can choose not to answer any of the questions or tell us to stop at any time. If you decide you do not want to take part, you will not lose any employee benefits that you normally get. If you have any questions about the survey you may ask them now or you can contact _____ and ask them before you agree to participate.

Please make sure any questions you have are answered before you agree to participate.

Instruction to fieldworker: If possible, an introduction letter from the Ministry of Health or from the district should be presented.

Survey Cluster: _____ (Region): _____
 Facility name: _____
 Date of facility assessment: _____ Starting Time: _____
 Leaving Time: _____
 Health sector: Public _____ Private _____
 Facility Ownership Class: Public _____ Private _____ Missionary / Donor _____
 Facility Type: Primary Health Clinic _____ Secondary Hospital _____
 Tertiary Hospital _____

Affirmation of fieldworker:

I have read the informed consent aloud to the most responsible administrator or staff available at _____ (*insert name of the facility*), and their agreement was obtained to conduct an injection safety assessment of the facility using the methodology of WHO Tool C for injection Safety, etc... – Revised.

Signature of fieldworker:

Name of fieldworker:

Injection procedures observed

Vaccination :	1 Yes ☐	2 No ☐	Therapeutic :	1 Yes ☐	2 No ☐
Family Planning :	1 Yes ☐	2 No ☐	Dental	1 Yes ☐	2 No ☐
Phlebotomy :	1 Yes ☐	2 No ☐	Lancet :	1 Yes ☐	2 No ☐
Intravenous :	1 Yes ☐	2 No ☐	Infusion	1 Yes ☐	2 No ☐

Facility name:

Date of facility assessment:

WHO Tool C – Revised –**Tool for the assessment of the safety of injections, phlebotomy, lancet procedures and intravenous injections and infusions****Survey Section 1: Structured observations of the facility**

Complete these items based on your observations of the entire facility.

	FACILITY OBSERVATION ITEMS	<i>Please circle “Yes,” “No,” or “N/A” (Not applicable / not observed) for each item. If an item asks about a type of equipment that is not used at all in the facility, select ‘N/A’.</i>
Q101	Are there any loose disposable needles and syringes inside the facility (for example, outside of packaging and not disposed of in a waste container)? <i>[Including standard disposable, auto-disable and other safety syringes]</i>	1. Yes 2. No
Q102	Is there any loose disposable phlebotomy equipment (other than needles and syringes) inside the facility (for example, outside any packaging and not disposed of in a waste container)?	1. Yes 2. No 3. N/A
Q103	Is there any loose disposable intravenous infusion equipment inside the facility (for example, outside any packaging and not disposed of in a waste container)?	1. Yes 2. No 3. N/A
Q104	Is there any evidence that an attempt was made to sterilize disposable injection equipment for reuse? <i>[For example - needles and syringes in a steam sterilizer, autoclave, boiler, pot, or dish of water]</i>	1. Yes 2. No
Q105	If you answered Q104 “Yes”, describe what you saw	
Q106	Is there any infectious waste other than used sharps (for example, bloody swabs or dressings) that is not in an appropriate container? <i>[Infectious waste other than sharps should be placed in a container that is specific for non-sharps infectious waste. The</i>	1. Yes 2. No

Facility name:

Date of facility assessment:

	FACILITY OBSERVATION ITEMS	<i>Please circle “Yes,” “No,” or “N/A” (Not applicable / not observed) for each item. If an item asks about a type of equipment that is not used at all in the facility, select ‘N/A’.</i>
	<i>type of container may vary by health system. If any infectious waste is not in any container, or is in an inappropriate container, answer “1. Yes”.]</i>	
Q106A	If you answered Q104 “Yes”, describe what you saw	_____ _____ _____
Q107	Is there any multi-dose vial with a needle left in the diaphragm? <i>[Be sure to look around the facility, especially where injections are prepared and in the fridge]</i>	1. Yes 2. No
Q108	Are there any overflowing or pierced sharps containers of any type in any area of the facility?	1. Yes 2. No
Q109	Are there used sharps in an open container in any area of the facility? <i>[A standard safety box that does not have the top cardboard flaps folded over and inserted into the top of the box is an open container. Any other container with a wide opening at the top (wide enough to insert fingers and touch used sharps) also is an open container.]</i>	1. Yes 2. No
Q110	Are there separate waste containers in each of the injection areas of the facility for each of the following types of waste: sharps, infectious and non-infectious?	1. Yes 2. No
Q111	Is there at least one puncture resistant and leak proof sharps container in all areas where vaccinations are given?	1. Yes 2. No
Q112	Is there at least one puncture resistant and leak proof sharps container in all areas where therapeutic injections are given?	1. Yes 2. No
Q113	Is there at least one sharps container in the area where phlebotomies are performed?	1. Yes 2. No 3. N/A
Q114	Is there at least one sharps container in areas	1. Yes

Facility name:

Date of facility assessment:

	FACILITY OBSERVATION ITEMS	<i>Please circle “Yes,” “No,” or “N/A” (Not applicable / not observed) for each item. If an item asks about a type of equipment that is not used at all in the facility, select ‘N/A’.</i>
	where intravenous procedures are performed?	2. No 3. N/A
Q115	Is there one or more puncture-resistant sharps container “in stock”? <i>[‘In stock’ means in addition to those currently in use]</i>	1. Yes 2. No
Q116	Is there running water and soap for washing hands?	1. Yes 2. No
Q117	Is there alcohol-based hand rub for cleansing hands?	1. Yes 2. No
Q118	Are there reminders and/or job aids posted that promote reducing the use of injections, safe administration of injections or safe disposal of used injection equipment at this facility?	1. Yes 2. No
Q119	If you answered Q118 “Yes”, describe what you saw	
Q120	Are all used sharps containers awaiting final destruction completely closed?	1. Yes 2. No
Q121	Are full sharps containers stored in a locked area or otherwise stored safely away from public access?	1. Yes 2. No
Q122	Are there any used sharps on the ground immediately outside the health facility or around the disposal site? <i>Answer yes if there are any sharps outside of the facility around any of the buildings or on the ground.</i>	1. Yes 2. No
Q123	What types of final waste disposal are used for sharps at this facility? <i>[Select all that apply]</i>	A. Open burning on the ground. B. Open burning in a hole or in an enclosure C. High or medium temperature incineration (2 chamber, industrial, or De Monfort) D. Low temperature incineration /burning (Single-chamber, “Drum”, brick) E. Burial F. Dumping in a protected (secure) pit (including a needle pit) G. Dumping in an unprotected pit

Date of facility assessment:

Survey Section 2: Structured observations of injection practices

Up to four injections are to be observed and reported on in Survey Section 2. One injection of each of the following types that are performed during the facility evaluation should be included if possible: 1 vaccination, 1 therapeutic, 1 family planning, and/or 1 dental.

The fieldworker should ask where each type of injection might be performed and check with staff at each of these locations to see when injections are likely to occur on that day. If the facility has more than one location where a particular type of injection is performed, ask to be informed when and where the first injection of each type might be observed. If more than one location or department might perform the same type of injection at the same time, select outpatient over inpatient departments. Remember to verify what type of injection is about to be performed before entering data.

	Injection practices observed	Please circle “Yes,” “No,” or “NA” (Not applicable / not observed) in the designated column. Use a single column below to record all of your observations for a given injection. The goal is to observe ONE injection of each type that is provided in each service unit that is included in the survey.			
		“A” Vaccination	“B” Therapeutic	“C” Family Planning	“D” Dental
Q201	Was the injection prepared on a visibly clean, dedicated table or tray where contamination of the equipment with blood, body fluids or dirty swabs is unlikely	Yes No	Yes No	Yes No	Yes No
Q202	Did the provider wash her/his hands before preparing an injection with soap and running water?	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A
Q203	Did the provider cleanse her/his hands before preparing an injection by using alcohol-based hand rub?	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A

Facility name:

Date of facility assessment:

	Injection practices observed	Please circle “Yes,” “No,” or “NA” (Not applicable / not observed) in the designated column. Use a single column below to record all of your observations for a given injection. The goal is to observe ONE injection of each type that is provided in each service unit that is included in the survey.			
		“A” Vaccination	“B” Therapeutic	“C” Family Planning	“D” Dental
Q204	Did any patients bring their own syringe and needle for the observed injection?	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A
Q205	What type of syringe was used for the injection you observed? 1. Standard disposable 2. Auto-disable 3. Other safety syringe 4. Sterilizable 5. Disposable – type unknown	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.
Q205A	Are needle sterilizable				Yes No
Q206	For this injection, was a syringe and needle taken from a sterile unopened packet or fitted with caps ?	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A
Q207	For each injection given with a sterilizable syringe and needle, were they taken from a sterilizer using sterile technique ?	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A
Q208	For reconstitution , were a syringe and needle each taken from a sterile unopened packet or fitted with caps ? <i>Instructions: Code as NA (not applicable) if there was no reconstitution step.</i>	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A
Q209	Is reconstitution of a powdered vaccine or medicine performed using diluent from the same manufacturer ?	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A

	Injection practices observed	Please circle “Yes,” “No,” or “NA” (Not applicable / not observed) in the designated column. Use a single column below to record all of your observations for a given injection. The goal is to observe ONE injection of each type that is provided in each service unit that is included in the survey.			
		“A” Vaccination	“B” Therapeutic	“C” Family Planning	“D” Dental
Q210	If a multidose vial was used, did the provider clean the rubber cap with antiseptic?	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A
Q210A	If a multidose vial was used, did the provider clean the rubber cap with dirty swab?	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A
Q211	If a multidose vial was used, was the needle removed from the rubber cap of each multidose-vial after withdrawing each dose for administration? <i>Instructions: Code as NA (not applicable) if no multi-dose vials were used for the injection you observed.</i>	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A
Q212	If glass ampoules are used is a clean barrier (e.g. small gauze pad or cotton) used to protect fingers when breaking the top from the glass ampoule? <i>Instructions: If no glass ampoules were used, code as “NA” (not applicable). If an unsafe procedure was used such as forceps, knife or scissors, code as “no.”</i>	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A
Q213	If using temperature sensitive vaccines or medications, is the vial kept between 2°C - 8°C during the period of use? <i>[A vial that is in contact with a combination of ice and water will be between 2°C - 8°C.]</i> <i>[Instructions: If no heat sensitive vaccines and medication were used, code as “N/A” (not applicable).]</i>	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A

Facility name:

Date of facility assessment:

	Injection practices observed	Please circle “Yes,” “No,” or “NA” (Not applicable / not observed) in the designated column. Use a single column below to record all of your observations for a given injection. The goal is to observe ONE injection of each type that is provided in each service unit that is included in the survey.			
		“A” Vaccination	“B” Therapeutic	“C” Family Planning	“D” Dental
Q214	Did the provider use a new pair of gloves? 1. New gloves used 2. Gloves not changed 3. No gloves used 4. Not observed	1. 2. 3. 4.	1. 2. 3. 4.	1. 2. 3. 4.	1. 2. 3. 4.
Q215	What was the patient’s skin cleaned with before the injection was given? 1. Water or a clean, wet swab 2. An antiseptic 3. Dry cotton 4. A dirty swab 5. The skin was not cleaned and it’s clean 6. The skin was not cleaned and it’s dirty 7. Not observed <i>[Select the most appropriate response.]</i> <i>Instructions: If the provider used any unclean material to swab the skin including any swab soaking in a liquid, circle “3. A dirty swab”.</i>	1. 2. 3. 4. 5. 6. 7.	1. 2. 3. 4. 5. 6. 7.	1. 2. 3. 4. 5. 6. 7.	
Q216	Did the provider recap the used needle and syringe? 1. Yes, with one hand 2. Yes, with two hands 3. Not recapped 4. Not observed	1. 2. 3. 4.	1. 2. 3. 4.	1. 2. 3. 4.	1. 2. 3. 4.
Q217	Was a needle-remover or needle-destroyer used?	Yes No	Yes No	Yes No	Yes No
Q218	If disposable or safety syringe was used, after the injection did the provider immediately dispose of the needles and syringes used for the injection (and reconstitution if applicable) in an appropriate sharps container?	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A

Survey Area (cluster):

Facility name:

Date of facility assessment:

	Injection practices observed	Please circle “Yes,” “No,” or “NA” (Not applicable / not observed) in the designated column. Use a single column below to record all of your observations for a given injection. The goal is to observe ONE injection of each type that is provided in each service unit that is included in the survey.			
		“A” Vaccination	“B” Therapeutic	“C” Family Planning	“D” Dental
Q219	If sterilizable equipment was used, immediately after the injection was the equipment disassembled and immersed in a container of water?	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A

Survey Section 3: Structured observations of phlebotomies (blood collection), lancets, intravenous infusions and intravenous injections

Up to four procedures are to be observed and reported on in Survey Section 3. One procedure of each of the following types that are performed during the facility evaluation should be included if possible: 1 phlebotomy, 1 lancet procedure, 1 intravenous injection and 1 intravenous infusion.

The fieldworker should ask where each type of procedure might be performed and check with staff at each of these locations to see when procedures are likely to occur on that day. If the facility has more than one location where a particular type of procedure is performed, ask to be informed when and where the first procedure of each type might be observed. If more than one location or department might perform the same type of procedure at the same time, select outpatient over inpatient departments. Remember to verify what type of procedure is about to be performed before entering data.

	Injection practice / blood drawing observed	Please answer “Yes,” “No,” or “NA” (Not applicable / not observed) in the designated column. Use a single column below to record all of your observations for a given injection. The goal is to observe ONE injection of each type that is provided in each service unit that is included in the survey.			
		“A” Phlebotomy (Blood Collection)	“B” Lancets	“C” Intravenous injections	“D” Intravenous infusions
Q301	Did the provider wash her/his hands before preparing an injection with soap and running water ?	Yes No	Yes No	Yes No	Yes No
Q302	Did the provider cleanse her/his hands before preparing an injection by using alcohol-based hand rub ?	Yes No	Yes No	Yes No	Yes No
Q303	Was the procedure prepared on a clean, dedicated table or tray where contamination of the equipment with blood, body fluids or dirty swabs is unlikely?	Yes No	Yes No	Yes No	Yes No
Q304	Are any patients with an IV on a bed or stretcher with another patient?			Yes No N/A	Yes No N/A

	Injection practice / blood drawing observed	Please answer “Yes,” “No,” or “NA” (Not applicable / not observed) in the designated column. Use a single column below to record all of your observations for a given injection. The goal is to observe ONE injection of each type that is provided in each service unit that is included in the survey.			
		“A” Phlebotomy (Blood Collection)	“B” Lancets	“C” Intravenous injections	“D” Intravenous infusions
Q305	If the patient has an existing IV catheter-site dressing, is it visibly soiled?	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A
Q306	Did the provider appropriately secure the patient and the intended puncture site so that the patient could not move during the procedure?	Yes No	Yes No	Yes No	Yes No
Q307	Did the provider use a new pair of gloves ? 1. New gloves used 2. Gloves not changed 3. No gloves used	1. 2. 3.	1. 2. 3.	1. 2. 3.	1. 2. 3.
Q308	Was the patient’s skin cleaned before the injection was given? 1. Water 2. CHG 2%, povidone-iodine or alcohol 70% 3. Other antiseptic 4. Dirty swab [If any of 1-4 were selected, go to Q309] 5. Not cleaned [Go to Q310] [Select the most appropriate response.] [If the provider used any unclean material to swab the skin, circle “dirty swab”.]	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.
Q309	Did the provider palpate the venipuncture site after skin preparation with an antiseptic?	Yes No		Yes No	Yes No
Q310	For the procedure observed what device was/were used? 1. Holder/adaptor and vacuum tubes 2. Standard disposable needle and syringe 3. Auto-disable syringe 4. Retractable 5. Winged collection set 6. Lancet 7. sterilizable needle or syringe	1. 2. 3. 4. 5. 6. 7	1. 2. 3. 4. 5. 6. 7	1. 2. 3. 4. 5. 6. 7	1. 2. 3. 4. 5. 6. 7

	Injection practice / blood drawing observed	Please answer “Yes,” “No,” or “NA” (Not applicable / not observed) in the designated column. Use a single column below to record all of your observations for a given injection. The goal is to observe ONE injection of each type that is provided in each service unit that is included in the survey.			
		“A” Phlebotomy (Blood Collection)	“B” Lancets	“C” Intravenous injections	“D” Intravenous infusions
Q311	Was the device used taken from a sterile unopened packet or fitted with caps ?	Yes No	Yes No	Yes No	Yes No
Q312	For each procedure performed on an IV system using a needle/syringe, was the IV system accessed from an IV port? <i>[i.e. – If any injections are administered directly into IV bags, plastic bottles or tubing, code as “no”.]</i>	Yes No N/A		Yes No N/A	Yes No N/A
Q312 A	If Q312=” No” describe what you saw	_____ _____ _____	_____ _____ _____	_____ _____ _____	_____ _____ _____
Q313	If the IV solution is in a glass bottle, did the provider first clean the rubber stopper on the bottle top with an alcohol pad before inserting the spike through the rubber stopper?			Yes No N/A	Yes No N/A
Q314	Were injection ports cleansed with CHG 2%, povidone-iodine or alcohol before accessing the intravenous system?	Yes No N/A		Yes No N/A	Yes No N/A
Q315	If a holder / adapter was used, was there blood on it before it was used for performing a phlebotomy?	Yes No N/A			
Q316	Did the provider remove an uncapped needle from any device using only her/his hands? <i>[If the provider did not remove any needles from devices, or only removed a capped needle from a device, select “No”]</i>	Yes No	Yes No	Yes No	Yes No
Q317	Did the provider recap a needle using two hands at any stage of the procedure?	Yes No	Yes No	Yes No	Yes No

	Injection practice / blood drawing observed	Please answer “Yes,” “No,” or “NA” (Not applicable / not observed) in the designated column. Use a single column below to record all of your observations for a given injection. The goal is to observe ONE injection of each type that is provided in each service unit that is included in the survey.			
		“A” Phlebotomy (Blood Collection)	“B” Lancets	“C” Intravenous injections	“D” Intravenous infusions
Q318	If the provider transferred blood from a syringe/needle into a vacuum tube by inserting the needle directly into the tube, did she/he use a two-handed transfer technique? <i>[If there was no direct transfer of blood from a syringe/needle to a vacuum tube, select N/A, not applicable]</i>	Yes No N/A			
Q319	For each procedure, was the used sharp immediately disposed of into a sharps container?	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A
Q320	Immediately after the procedure, did the provider dispose of non-sharps infectious waste in an appropriate container?	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A
Q321	Was a needle-remover or needle-destroyer used?	Yes No	Yes No	Yes No	Yes No
Q322	If any sterilizable equipment is used, was the equipment immediately disassembled after the procedure using forceps and immersed in a container of liquid?	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A
Q323	After the procedure, did the provider use a clean gauze pad and gently apply pressure to the puncture site to stop bleeding?	Yes No	Yes No	Yes No	Yes No
Q324	If a hematoma developed during a procedure does the provider terminate the procedure and apply pressure to the hematoma to prevent its expansion?	Yes No N/A		Yes No N/A	Yes No N/A
Q325	Did the provider cleanse the work area with disinfectant after the procedure if there is blood or body fluid contamination? <i>[If there was no blood or body fluid contamination of the work area during the procedure circle “N/A”]</i>	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A

Survey Area (cluster):

Facility name:

Date of facility assessment:

	Injection practice / blood drawing observed	<i>Please answer “Yes,” “No,” or “NA” (Not applicable / not observed) in the designated column. Use a single column below to record all of your observations for a given injection. The goal is to observe ONE injection of each type that is provided in each service unit that is included in the survey.</i>			
		“A” Phlebotomy (Blood Collection)	“B” Lancets	“C” Intravenous injections	“D” Intravenous infusions
Q326	After the procedure, did the provider cleanse her/his hands by washing with soap and clean water or using alcohol-based hand rub?	Yes No	Yes No	Yes No	Yes No

Survey section 4: Structured observations of sterilization practices

This section is intended for health facilities that still use sterilizable injection equipment.

	Sterilization practices	Observation
Q401	Is steam sterilization being used to sterilize any devices used for injections, venous phlebotomies or intravenous procedures? <i>[Ask staff whether steam sterilisation is used and to show you the sterilizer(s) and make observations, selecting “1. Yes” if staff informs you that sterilization is used or you observe evidence of its occurrence.]</i>	1. Yes 2. No [Go to Q405] 3. Don’t know
Q402	Is the seal on the sterilizer currently used intact?	1. Yes 2. No 3. Don’t know / not sure
Q403	Is there an updated TST(Temperature,Steam,Time) spot register for at least one sterilizer?	1. Yes 2. No
Q404	If there is no updated TST spot register, ask for a sterilization to be performed and indicate whether or not there was any steam leak observed.	1. There was no steam leak 2. There was a steam leak 3. Not applicable (e.g. there was an updated TST spot register)
Q405	Is any other sterilization method being used to sterilize devices used for injections, venous phlebotomies or intravenous procedures?	1. Yes 2. No Q405a. If yes, specify method: _____
Q406	Are there any sterilizable needles and syringes outside of a sterilizer, not currently in use, and not dismantled and immersed in water? <i>[Needles and syringes currently in use might be laid on a clean dedicated area for preparation or performing a procedure]</i>	1. Yes 2. No 3. N/A
Q407	Is there any evidence that indicates boiling or another cleansing method is used instead of sterilization? <i>[If yes, please explain what the evidence is.]</i>	1. Yes If yes, describe the evidence: _____ 2. No
Q408	Is there any evidence that indicates there have been attempts at cleaning or sterilizing disposable devices?	1. Yes 2. No

Survey section 5: Interview of a Provider

In Section 5, interview 1 injection provider. If possible, interview the provider who performed most of the injections observed. Interview this person **AFTER** you complete the observations unless you have waited the full 3 hours and no more injections are expected.

If it is not possible to interview the provider who performed most of the observed injections, and if there is more than one provider present in the facility on the day of the interview, ask to interview the provider who administers the most injections in the same unit or area where you observed most of the injections.

The interviews of the provider should be conducted in as private a setting as you can find, and must be done individually. Data collectors should introduce themselves and explain the purpose of the survey saying that we are trying to find ways that our project can support the health services to improve injection safety to protect providers and the community from unsafe injections and used equipment. Inform the person that the interview will take about 10 minutes, the data you collect are confidential and that he/she will not be identified by name. Then request permission to conduct the interview.

Do not ask or write down the name of the person you are interviewing. If the person refuses to participate, accept the refusal and request to interview a different provider who is giving injections at the time of your visit if another one is available. If no one else is available or willing, report to your supervisor that the interview could not be completed at that department in that facility.

This section is based on the injection provider's answers only.

	Interview of a Provider	Response
Q501	What type of health care provider is being interviewed?	1. Nurse 2. Physician 3. Phlebotomist 4. Dentist 5. Other If other, specify: _____
Q502	Do you use any sterilizable needles and syringes to administer injections in this facility?	1. Yes 2. No 3. Don't know / Not applicable to the provider

Facility name:

Date of facility assessment:

	Interview of a Provider	Response
Q503	Do you use any sterilizable needles and syringes during performance of phlebotomies (blood collection) at this facility?	1. Yes 2. No 3. Don't know / Not applicable to the provider
Q504	Do you use any sterilizable equipment during performance of intravenous injections or infusions at this facility? <i>[Consider sterilizable injection equipment used in injections administered into intravenous systems as well as other sterilizable equipment.]</i>	1. Yes 2. No 3. Don't know / Not applicable to the provider
Q505	In the last six months, have clients brought their own injection devices for an immunization at this facility?	1. Always 2. Sometimes 3. Never 4. N / A
Q506	In the last six months, have patients brought their own injection devices for a therapeutic injection at this facility?	1. Always 2. Sometimes 3. Never 4. N / A
Q507	In the last six months, have patients brought their own injection devices for a contraceptive injection at this facility?	1. Always 2. Sometimes 3. Never 4. N / A
Q508	Are you aware of any needles and syringes for sale in the community (this area)?	1. Yes 2. No 3. Don't know
Q509	Have there been any stock-outs of puncture-resistant sharps containers during the last six months?	1. Yes 2. No
Q510	Have you used a needle remover or needle destroyer in this facility during the last six months?	1. Yes 2. No
Q511	Are guidelines outlining all post-exposure management procedures available?	1. Yes 2. No
Q512	Is there support and counselling for blood and body fluid exposures?	1. Yes 2. No

Facility name:

Date of facility assessment:

	Interview of a Provider	Response
Q513	Where possible, is post-exposure prophylactic medication for high-risk exposures provided?	1. Yes 2. No
Q514	How many accidental needle-stick or sharps injuries have you had (with used equipment) in the last six months? <i>[Allow the Provider to state a number without prompting.]</i>	Number _____ If Q514=0 Go to Q517
Q515	If you have had any needle-stick or sharps injuries (with used equipment) in the last six months, did you report the injury to your supervisor, or whoever is in charge of reports of needle-stick injuries? <i>[If yes ask questions Q516; if no, go to Q517.]</i>	1. Yes 2. No 3. N/A
Q516	If you reported your most recent needle-stick or sharps injury, were you offered counselling?	1. Yes 2. No
Q516A	If you reported your most recent needle-stick or sharps injury, were you offered disease testing?	3. Yes 4. No
Q517	Was training regarding injection safety available to you within the last two years in a formal lecture or workshop?	1. Yes 2. No
Q518	Can you tell me the names of diseases that are transmitted to health workers and patients by unsafe injections <i>[Circle all that apply. Let the provider respond without prompting with any of the answers.]</i>	A. Hepatitis B B. Hepatitis C C. HIV D. Other – specify:
Q519	Have you yourself ever received the vaccine against Hepatitis B? <i>[One or more]</i>	1. Yes 2. No 3. I don't know
Q520	If yes, how many Hepatitis B vaccine doses have you received? <i>[Let the Provider respond without prompting with any of the answers]</i>	1. One 2. Two 3. Three or more 4. I don't know

Facility name:
_____Date of facility assessment:

Survey section 6: Interview of a Supervisor of Injection Providers

In Section 6, interview 1 Supervisor of injection providers. Interview the supervisor of the provider who performed most of the injections (Section 2) and other procedures (Section 3) observed if possible, or as a second priority select the supervisor of the unit(s) in which most of the injections and other procedures were observed. If either of these two options is not possible, select the supervisor of the unit or area that performs the most injections and other procedures. Interview this person AFTER you complete the observations unless you have waited the full 3 hours and no more injections are expected.

If there is no supervisor working at the facility, you may interview the senior injection provider on site.

The interview of the supervisor should be conducted in as private a setting as you can find, and must be done individually. Data collectors should introduce themselves and explain the purpose of the survey saying that we are trying to find ways that our project can support the health services to improve injection safety to protect patients, providers and the community from unsafe injections and used equipment. Inform the person that the interview will take about 10 minutes, the data you collect are confidential and that he/she will not be identified by name. Then request permission to conduct the interview.

Do not ask or write down the name of the person you are interviewing. If the person refuses to participate, accept the refusal and request to interview a different supervisor at the time of your visit if another one is available. If no one else is available or willing, report to your supervisor that the interview could not be completed at that facility.

This section is based on the supervisor's answers only, not your observations.

	Interview of a Supervisor	Response
Q600	What type of health care provider is being interviewed?	6. Nurse 7. Physician 8. Phlebotomist 9. Dentist 10. Other If other, specify: _____

Facility name:

Date of facility assessment:

	Interview of a Supervisor	Response
Q601	Is there an 'injection safety policy/guidelines' (or similar) by the Ministry (or other)? If so, can you show it to me?	1. Yes, and it was shown 2. Yes, but it was not shown 3. No, there is no policy 4. I don't know
Q602	Is there a 'health care waste disposal policy/guidelines' or similar by the Ministry (or other)? If so, can you show it to me?	1. Yes, and it was shown 2. Yes, but it was not shown 3. No, there is no policy 4. I don't know
Q603	On average, how many immunizations are performed per week in this facility?	Number: _____ N/A (if no immunization in this facility)
Q604	On average, how many therapeutic injections are performed per week in this facility?	Number: _____
Q605	On average how many phlebotomies (blood collection) are performed per week in this facility?	Number: _____ NA (if no phlebotomies performed in the health facility)
Q606	On average, how many intravenous infusions are performed each week at this facility? <i>[At any stage of administration, i.e. cumulative number each week]</i>	Number: _____ NA (if no phlebotomies performed in the health facility)
Q607	On average, how many intravenous injections are performed each week at this facility?	Number: _____
Q608	In this facility, are any sterilizable syringes and needles used for performing any procedures?	1. Yes 2. No 3. I don't know
Q609	If sterilizable equipment is used in the last six months, was there any point when fuel or power to run the sterilizer was not available? If yes, how long in total was it not available?	1. Fuel was always available 2. Less than one month 3. 1-3 months 4. 3-6 months 5. Not applicable / no sterilizable equipment

Facility name:

Date of facility assessment:

	Interview of a Supervisor	Response
Q610	In the last six months, if there have been any stock-outs of disposable injection equipment or safety syringes in any of the units that you supervise, for how long in total were you out of stock?	1. Stock was always available 2. Less than one month 3. 1-2 months 4. 3-6 months 5. Not applicable 6. Don't know / don't remember
Q611	In the last six months, if there have been any stock-outs of disposable phlebotomy (blood collection) needles used with holder/adapters in any of the units that you supervise, for how long in total were you out of stock?	1. Stock was always available 2. Less than one month. 3. 1-2 months. 4. 3-6 months. 5. Not applicable / Don't use disposable needles with holder/adapters 6. Don't know / don't remember
Q612	In the last six months, if there have been any stock-outs of disposable syringe/needles used for phlebotomy (blood collection) in any of the units that you supervise, for how long in total were you out of stock?	1. Stock was always available 2. Less than one month. 3. 1-2 months. 4. 3-6 months. 5. Not applicable / Don't use disposable syringes/needles for phlebotomy. 6. Don't know / don't remember
Q613	In the last six months, if there have been any stock-outs of equipment for intravenous infusions in any of the units that you supervise, for how long in total were you out of stock?	1. Stock was always available 2. Less than one month 3. 1-2 months 4. 3-6 months 5. Not applicable / Don't do infusions 6. Don't know / don't remember
Q614	In the last six months, if there have been any stock-outs of puncture-resistant sharps	1. Stock was always available

Facility name:

Date of facility assessment:

	Interview of a Supervisor	Response
	containers in any of the units that you supervise, for how long in total were you out of stock?	2. Less than one month 3. 1-2 months 4. 3-6 months 5. Not applicable 6. Don't know / don't remember
Q615	Which kind of protective equipment is available to those that handle health care waste? <i>[Indicate all that apply]</i>	A. None B. Latex gloves C. Heavy gloves D. Boots E. Mask F. Apron G. Overalls H. Other (specify): _____
Q616	Is there designated staff that dispose of health care waste?	1. Yes <i>[Go to Q617]</i> 2. No <i>[Skip Q617]</i> 3. I don't know <i>[Skip Q617]</i>
Q617	Has the designated staff that handles healthcare waste received any formal training in waste management?	1. Yes 2. No 3. I don't know 4. No designated staff
Q619	When you run short of injection equipment is there a way to place an emergency order for equipment?	1. Yes 2. No 3. I don't know
Q620	Have you placed any emergency orders for injection equipment in the last six months?	1. Yes 2. No 3. I don't know
Q621	If you have placed an emergency order for injection equipment, how long did it take for the order to arrive?	1. Less than a week 2. 1-2 weeks 3. More than two weeks 4. Not applicable 5. Don't know/ don't remember
Q622	If you have had shortages of injection equipment in the past and there is no protocol for placing an emergency order, how did you deal with that situation?	Write in response _____ _____

Facility name:
_____Date of facility assessment:

	Interview of a Supervisor	Response
Q623	Where possible, is post-exposure prophylactic medication for high-risk exposures provided?	1. Yes 2. No
Q624	If Q623="Yes" specify what kind of prophylaxis ^[k1] Is offered?	_____ _____

Survey section 7: Structured observations of disposable equipment of Injections

	Disposable equipment tabulations	Circle best answer
Q701	Is the number of auto-disable syringes available at the procedure site and in stock together greater than two times the response given for Q603? <i>[i.e. – at least enough for two weeks of immunizations according to the interview of the supervisor.]</i>	1. Yes 2. No 3. NA (No vaccination activity)
Q702	Is the number of disposable and safety syringes available at the procedure site and in stock together greater than two times the response given for Q604? <i>[i.e. - enough for two weeks according to the interview of the supervisor.]</i> <i>[Safety syringes have a re-use prevention feature, as is the case for AD and 'retractable' syringes]</i>	1. Yes 2. No
Q703	Is the number of disposable needles and syringes and holder/adaptor needles available at the procedure site and in stock together greater than two times the response given for Q605? <i>[i.e. – at least enough for two weeks of phlebotomies according to the interview of the supervisor.]</i>	1. Yes 2. No 3. NA (No phlebotomy procedures)
Q704	Is the number of disposable intravenous catheters available at the procedure site greater than two times the response for Q606? <i>[i.e. - enough for two weeks according to the interview of the supervisor?]</i>	1. Yes 2. No 3. NA (No IV injections or infusion)
Q705	Is the number of intravenous sets available at the procedure site greater than two times the response for Q606? <i>[i.e. - enough for two weeks according to the interview of the supervisor?]</i>	1. Yes 2. No 3. NA (No IV injections or infusion)



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