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ASSESSMENT OF INJECTION SAFETY IN SELECTED LOCAL GOVERNMENT AREAS IN FIVE STATES IN NIGERIA

2011 BASELINE REPORT

AIDSTAR-One
AIDS SUPPORT AND TECHNICAL ASSISTANCE RESOURCES

MARCH 2012

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ACRONYMS

FMOH	Federal Ministry of Health
HCWM	health care waste management
IV	intravenous
LGA	local government area
MMIS	Making Medical Injections Safer
SIGN	Safe Injection Global Network
Tool C-Revised	Revised Injection Safety Assessment Tool
TST	temperature, steam, time
WHO	World Health Organization

EXECUTIVE SUMMARY

This baseline assessment of injection safety in Nigeria was conducted in five states designated as priorities by the U.S. Agency for International Development: Bauchi, Benue, Cross River, Lagos, and Sokoto. The assessment used an adaptation of the Revised Injection Safety Assessment Tool (Tool C-Revised) developed by the World Health Organization and covered all injection and blood drawing procedures in 80 public sector health care settings and laboratories. The assessment, which entailed interviews, observations, and stock assessments in 20 hospitals and 60 lower-level facilities where AIDSTAR-One is working, found several major risk factors, which are summarized as follows.

RISKS TO THE PATIENT

Loose used sharps waste was a major risk, existing in 78.7 percent of facilities observed. Used sharps waste included loose disposable intravenous infusion equipment, disposable phlebotomy equipment, and used disposable needles and syringes. Facilities for handwashing were not readily available to the providers. Less than half of injections were prepared on a clean, dedicated table or tray where contamination of the equipment with blood, body fluids, or dirty swabs was unlikely. Though the majority of providers used sterile injection equipment, some risk was still present. In 2.2 percent of the injections observed in facilities, the needle and syringe were not taken from a sterile package. Standard disposable syringes were used most frequently for therapeutic, family planning, phlebotomy, and intravenous injections. This survey found that over 30 percent of facilities did not have enough standard disposable injection equipment to last at least two weeks. Additionally, 70 to 80 percent of supervisors reported having had stockouts of syringes or puncture-resistant sharps containers in the previous six months.

RISKS TO THE PROVIDER

The study revealed that few facilities had copies of essential policies to guide health care workers in safe medical injection and waste management practices. Such documents, when they were available, were most likely to be found in hospitals rather than in lower-level facilities.

In 72.1 percent of facilities, sharps containers were not available in every area where injections took place. Only one-tenth of facilities had communication materials that encouraged safe injection practices. Less than one-fifth of providers observed used new gloves during injection administration. Re-capping¹ occurred more among the providers of therapeutic injections (42.4 percent) than among other types, such as vaccination, family planning, or dental. Needle removers² were very rare and were only observed in two cases, both of which were vaccinations. Providers reported that accidental needle-stick injuries had not been a common occurrence in the last six months, though 7.8 percent did experience such an injury during that period. Despite the constant risk of possible injury, only 14.3 percent of providers reported that there were guidelines outlining post-exposure

¹ The practice of replacing a protective sheath on a needle. Two-handed re-capping increases the risk of needle-stick injuries and is not recommended. However, where such action is unavoidable, the one-hand scoop technique is an acceptable alternative.

² Needle removers are used by health care workers to separate the needle and hub from the syringe and disable the syringe.

management procedures. Less than a third of injection providers (30.1 percent) surveyed had received training on injection safety in the last two years.

RISKS TO THE WASTE HANDLER

The majority (86.2 percent) of waste handlers had not been trained in safe handling of medical waste. One-third (33.8 percent) had no protective equipment available and were thus exposed to the risk of needle-stick injuries. Even among those who were provided with some forms of protection, the most common form consisted of latex gloves, which do not offer much protection. Though a fairly low proportion (13.7 percent) had had accidental needle-stick injuries with used equipment during the six months preceding the survey, it is worth noting that over half did not report the injury to their supervisors. Of the waste handlers who reported the injury, only 40 percent were offered testing for infectious diseases. Sixty percent of waste handlers had not been vaccinated against hepatitis B, and of the 32 waste handlers who had received the vaccination, only one-third (34.4 percent) had received three or more doses.

RISKS TO THE COMMUNITY

One-fourth of health facilities observed had pierced or overflowing safety boxes, which posed a risk to the community. In addition, sharps in open containers were found in 31 percent of facilities. The majority of facilities used unsafe disposal methods. Only two facilities met the requirements for a minimum package for health care waste management consisting of proper waste segregation; storage in a locked area; treatment using medium- or high-temperature incineration, dumping in a protected pit, or transportation for offsite treatment; and disposal in an ash pit if on-site high-temperature incineration was used (ash disposal was not assessed in this survey).

This study provides baseline results for local government areas in five states where project activities were not previously underway. These results will be used by the Federal Ministry of Health, the five states and focal local government areas, and the AIDSTAR-One project for planning evidence-based interventions in the second year of the AIDSTAR-One Nigeria program, and will be used as evaluation materials to gauge the effectiveness of project interventions.

The primary recommendations are as follows:

- The Federal Ministry of Health should ensure that sufficient quantities of national guidelines and other essential policy documents are available in all health facilities.
- The project should conduct an outreach campaign that uses media to educate patients and community members on the dangers of unsafe injections and build awareness of the community's role in ensuring safety during injections.
- The project should train all cadres of health workers in injection safety and health care waste management.
- Proper personal protective equipment and job aids should be made available, and post-exposure prophylaxis should be routinely provided in the event of accidental needle-sticks.
- All facilities should institute procedures for sharps waste management.

Specific subrecommendations pertaining to particular elements of injection procedures are included in the full document.

INTRODUCTION

According to the World Health Organization (WHO), every year unsafe medical injections are responsible for approximately 8 to 16 million cases of infection with the hepatitis B virus, 2.3 to 4.7 million cases of infection with the hepatitis C virus, and 80,000 to 160,000 cases of HIV infection globally (Kane et al. 1999). Certain high-risk practices, in particular the reuse of non-sterile needles and syringes, increase the risk of transmitting disease (Akpan et al. 2009).

Given this grave situation, WHO, in collaboration with partners through the Safe Injection Global Network (SIGN), developed an intervention strategy for reducing overuse of injections and promoting the administration of safe injections. The SIGN strategy is articulated around three basic principles:

1. Promote behavior change by health care workers and patients to ensure safe injection practices and reduce unnecessary injections.
2. Ensure availability of equipment and supplies necessary for injection safety.
3. Manage waste safely and appropriately.

In a majority of developing countries, the WHO strategy is justified by the fact that beyond vaccination programs, the issues of injection safety and waste management are not given the appropriate attention by governments or community of development partners.

IMPROVING INJECTION SAFETY IN NIGERIA

One of the objectives of the Federal Ministry of Health (FMOH) is to improve the quality of care provided at all levels of the health care pyramid. Previous studies revealed that injection safety and health care waste management (HCWM) comprise a serious health problem in Nigeria (Akpan et al. 2009). The U.S. Agency for International Development/Nigeria asked AIDSTAR-One to provide technical assistance in the area of injection safety to the Government of Nigeria and implementing partners of the U.S. President's Emergency Plan for AIDS Relief for a two-year period (October 2010 through September 2012). AIDSTAR-One is providing training and capacity building, commodity management, HCWM, and behavior change communication and advocacy.

This work is a follow-on to previous injection safety work that began in 2004 by Making Medical Injections Safer (MMIS) to address the high burden of injections (4.9 per patient per year [Government of Nigeria 2004]), high demand for injections, and common occurrences of stockouts (about one-quarter of patients bring their own syringe for injection procedures). Results from two baseline studies conducted at health facilities indicated that two-handed recapping³ was a common practice among health workers, almost half of health workers interviewed had experienced a needle-stick injury, and facilities lacked appropriate disposal of health care waste (Government of Nigeria 2004). Over the course of five years, MMIS worked with U.S. Government teams and the ministries and departments of health at the federal, state, and local government area (LGA) levels to improve

³ Two-handed re-capping increases the risk of needle-stick injuries and is not recommended.

injection practices. By the end of MMIS in 2010, the project had covered 1,041 public and private health facilities in five target states (Anambra, Cross River, Edo, Kano, and Lagos) and the Federal Capital Territory. In collaboration with U.S. Government teams, the project also covered an additional 198 health facilities in 21 non-target states.

The current study provides baseline results for LGAs in three new states where MMIS has not yet worked (Bauchi, Benue, and Sokoto) and for expansion areas within Cross River and Lagos. Findings from this study will be used as evaluation materials to gauge the effectiveness of project interventions in public sector health care settings and laboratories across the five states.

METHODOLOGY

This assessment of the status of injection safety is a survey-based baseline study using an adapted version of the Revised Injection Safety Assessment Tool (Tool C-Revised) developed by WHO. It includes interviews, observations, and stock assessments in a sample of 80 health facilities (20 hospitals and 60 lower-level facilities).

STUDY OBJECTIVES

The overall objective was to assess baseline practices in the safety of injections, phlebotomies, lancet procedures, and intravenous (IV) injections and infusions in the project's three new and two expansion states. The information derived from this survey will be used to inform additional project interventions and to measure the effectiveness of these interventions. The specific objectives are as follows:

1. To determine if facilities meet requirements for practices, equipment, supplies, and waste disposal
2. To determine whether critical steps for performing procedures comply with best practices
3. To identify unsafe practices that may lead to infections and that should be targeted for interventions
4. To estimate the proportion of facilities where procedures are safe.

SAMPLING

The survey unit for the assessment is the health facility. The sample of health care facilities for this assessment was obtained through a mix of purposeful selection of hospitals and random selection of other types of health care facilities in the districts. The study used a 90 percent confidence level, with an 8.75 percent margin of error, for the sampling of 80 health facilities in eight clusters in accordance with the cluster sampling frame of WHO's Tool C-Revised.

The selection of the five states for the survey was determined by the U.S. Agency for International Development in consultation with the FMOH based on the health indices and the need for technical assistance in the states chosen. Six LGAs in each of the new states (Bauchi, Benue, and Sokoto) were selected for survey, while in Cross River and Lagos, where MMIS had previously worked, three LGAs were selected in both so that only the LGAs that had not been reached were included. LGAs for each state were then grouped into clusters of three, for a total of eight clusters, in line with the WHO Tool C-Revised sampling method.

The sample was stratified by facility type; tertiary and secondary facilities were categorized as hospitals. Public health centers, health posts, or dispensaries were categorized as lower-level facilities. In each cluster, all existing hospitals were purposefully selected, while lower-level facilities were randomly sampled using an electronic randomized table based on the total population of the lower-level facilities in each LGA. A total of 20 hospitals and 60 lower-level facilities were covered

in this survey. (For details, see Appendices 1 and 2). For each cluster, two replacement facilities were also randomly selected.

The study was conducted through observation of various types of injections and interviews with facility personnel who used or handled injection equipment (injection providers, laboratory technicians, laboratory supervisors, supervisors of injection providers, and staff in charge of waste management [i.e., waste handlers]).

Details of the sampling of facilities and types of injections or blood draws are shown in Table 1. The procedures covered by this survey included the following:

- Intramuscular, intradermal, and subcutaneous injections for vaccination, therapeutic, family planning, and dental services
- Phlebotomy through venous and capillary (lancet) procedures
- IV procedures using infusions and injections, either directly into a vein or into an existing IV system.

Table 1. Sampling by Type of Facility

	Sampling	Planned
Observations		
Health care facilities	1 observation per facility	80 facilities
Injection practices	4 observations per facility	320 observations
Phlebotomies, lancets, intravenous (IV) infusions, and IV injections	4 observations per facility	320 observations
Sterilization practices	1 observation per facility	80 facilities
Disposable injection equipment	1 observation per facility	80 observations
Interviews		
Injection providers	8 interviews per hospital/1 interview per lower-level facility	220 interviews
Supervisors of injection providers	8 interviews per hospital/1 interview per lower-level facility	220 interviews
Waste handlers	1 interview per facility	80 interviews

ETHICAL CONSIDERATIONS

This survey had confidentiality protections incorporated in its planning and implementation. An application was made to the National Health Research Ethics Committee for the approval of the study. The study was approved on June 24, 2011, after a review of its methodology, tools, and other essential documentations.

Additionally, each observation was conducted with prior permission by the facility authorities and ensured the privacy of patients during the procedure. An informed consent form was developed and read to injection providers, supervisors of these providers, and facility waste handlers before each interview. All participation was voluntary, and each form was signed by the data collectors.

To ensure confidentiality, the results presented in this report are not linked to individual facilities or to the providers' names and locations.

DATA COLLECTION TOOL

Data were collected using an adaptation of the WHO Tool C-Revised designed to determine the extent to which injections, phlebotomies, lancet procedures, and IV injections and infusions were consistent with national safety standards (see Appendix 4).

The questionnaire included eight sections, as follows:

- Section 1: Structured observations of the facility
- Section 2: Structured observations of injection practices
- Section 3: Structured observations of phlebotomies (blood collection), lancets, IV infusions, and IV injections
- Section 4: Structured observations of sterilization practices
- Section 5: Interview with providers
- Section 6: Interview with supervisors of injection providers
- Section 7: Structured observations of disposable injection equipment
- Section 8: Interview with waste handlers.

It is important to note that some revisions were made to the tool used for this survey. For instance, the Tool C-Revised does not have a section for waste handler interviews, so Section 8 was adapted from the MMIS Health Facility Assessment tool. Another significant amendment was the administration of Sections 2 and 3 in hospitals and lower-level facilities. In hospitals, observations were made in separate departments or units that provided injections; in lower-level facilities, all services are rendered in the same area. Therefore, a decision was made that every observed injection provider in each hospital unit, and the supervisor of each injection provider, would be interviewed (Sections 5 and 6), while only one injection provider and supervisor was interviewed in the lower-level facilities. This resulted in a larger sample of injection, phlebotomy, lancet, IV infusion, and IV injection observations and interviews of providers and supervisors of providers.

DATA COLLECTION

The data were collected over 14 days during the period from March 4 through May 14, 2011, in all five states. The data collection period was extended due to the national elections and disruptions in service provision in Benue and Lagos. Data were not collected in the Federal Capital Territory because previous surveys had covered the area adequately.

A total of 15 data collectors and 10 supervisors were identified and trained to participate in the collection of data in the health care facilities. Training for the data collectors and supervisors lasted three days; during the training, the tool was reviewed and finalized following pilot testing in four Abuja health care facilities with similar characteristics as those to be surveyed. Following the training, four teams were formed consisting of three to four data collectors with two to three supervisors for each state.

Each supervisor was placed in charge of a team to ensure the proper implementation of the survey. Supervisors were rotated during the two weeks of data collection. Leaders from the FMOH and the AIDSTAR-One Nigeria project provided joint coordination.

ORGANIZATION AND COORDINATION OF DATA ENTRY AND ANALYSIS

Data were entered using Microsoft Access and analyzed using SPSS software. This required the contribution of 10 data entry operators with prior training on the use of the data entry program, including double entry of each dataset. Each completed questionnaire was reviewed and validated by the supervisor team before being entered and analyzed.

The proportions of observations were calculated for each component of the form using either the number of health care facilities, individuals surveyed, or injections observed as denominators.

LIMITATIONS

Though the selection of facilities was based on a list of functional facilities that had been verified by the Ministry of Health of the participating states, some facilities were found to be locked without explanation. Replacement facilities were used in these cases.

Some facilities did not necessarily offer the complete range of the services under examination, thus limiting the number of injection observations attained in the sample. Across all facilities, few dental units existed. Additionally, in some hospitals, immunization was not offered, or it was offered only on select days of the month. Others did not have family planning units or lancet procedures. In some hospitals, there were no functional laboratories or operating theaters. Additionally, no injections were observed in two of the selected facilities despite attempts by data collectors to coordinate schedules with ward supervisors.

During the data collection period, the secondary facilities commenced an industrial strike in Benue State that did not come to an end until after the survey ended. Hence, four hospitals in Benue state were replaced with lower-level facilities. The data collection could not be held in Lagos for a time because of a doctors' strike that later expanded to include nurses. Once the strike was called off in Lagos, data collectors and consultants of the AIDSTAR-One project were able to collect the data. The strikes resulted in an extension to the data collection period. In all, a total of 22 facilities were replaced during the survey from the replacement facilities identified during sampling plus additional health facilities chosen from a random selection table during data collection (see Appendix 3).

DESCRIPTION OF DATA COLLECTED IN THE ASSESSMENT

A total of 80 health facilities were surveyed, including 20 hospitals and 60 lower-level facilities. Details on the type of facilities by state can be found in Table 2, and the planned and actual sample sizes can be found in Table 3. Table 4 shows the number and proportion of injections observed.

Table 2. Type of Facilities Assessed by State

	Hospital	Lower-Level Facilities	Total Facilities
Bauchi	8	12	20
Benue	3	17	20
Cross River	2	8	10
Lagos	3	7	10
Sokoto	4	16	20
Total	20	60	80

Table 3. Sampling by Type of Facility

	Planned	Hospitals (Actual)	Lower-Level Facilities (Actual)	Total (Actual)
Observations				
Health care facilities	80 facilities	20 facilities	60 facilities	80 facilities
Injection practices	320 observations	48 observations	91 observations	139 observations
Phlebotomies, lancets, intravenous (IV) infusions, and IV injections	320 observations	67 observations	32 observations	99 observations
Sterilization practices	80 facilities	10 facilities	11 facilities	21 facilities
Disposable injection equipment	80 facilities	20 facilities	57 facilities	77 facilities
Interviews				
Injection providers	220 interviews	124 interviews	93 interviews	217 interviews
Supervisors of injection providers	220 interviews	114 interviews	75 interviews	189 interviews
Waste handlers	80 interviews	20 interviews	60 interviews	80 interviews

Table 4. Distribution of Observed Injections and Intravenous and Blood Draw Procedures

Type	Number Observed	Percentage of the Total Observed
<i>Injections</i>	<i>139</i>	
Vaccinations	59	42.5
Therapeutic injections	60	43.2
Family planning injections	15	10.8
Dental injections	5	3.6
<i>Intravenous (IV) and Blood Draw Procedures</i>	<i>99</i>	
Phlebotomies	30	30.3
Lancets	28	28.3
IV injections	24	24.2
IV infusions	17	17.2

ASSESSMENT OF RISKS TO THE PATIENT

This section examines risks to the patient, including how injection providers handled equipment and staff behaviors during 139 injections and 99 IV and blood draw procedures in 80 health care facilities. Risks were assessed through observations of the facilities, observations of practices, and interviews with providers and supervisors.

DISPOSAL OF USED SHARPS AND STERILIZATION

Used sharps that have not been properly disposed of inside a sharps container pose a risk to providers and patients who may come in contact with them. In total, 73.8 percent of all health facilities had no used sharps of any type, including needles and syringes, phlebotomy, and IV infusion equipment, lying around inside the facility (see Table 5 for types of used sharps disposed of inside the facilities). There was no evidence of attempted sterilization of disposable injection equipment.

Table 5. Disposal of Used Sharps Inside the Health Facility

	# (n)	%
Health facilities <i>without</i> loose disposable needles and syringes inside the facility	77 (n = 80)	96.3
Health facilities <i>without</i> loose disposable phlebotomy equipment inside the facility	36 (n = 36)	100
Health facilities <i>without</i> loose disposable intravenous infusion equipment inside the facility	38 (n = 59)	64.4

LOOSE INFECTIOUS WASTE

Half of the 80 health facilities had infectious waste (non-sharps) outside of an appropriate container. The most common observations by data collectors were used cotton wool, swabs, or dressings found outside of an appropriate container, as well as a lack of waste segregation.

HAND HYGIENE

Hand hygiene is a cornerstone of proper infection prevention and control. In order for health care providers to do this vital practice, they must have handwashing facilities available to them. Of the health facilities observed, only 23 (28.8 percent) had soap and running water for cleansing hands, and no facility had alcohol-based hand rub available. The facilities with hand cleansing capacity included 7 out of 20 hospitals and 16 out of 60 lower-level facilities.

OBSERVATION OF VACCINATION, THERAPEUTIC, FAMILY PLANNING, AND DENTAL INJECTIONS

A total of 139 injection practices were observed, of which 42.5 percent were vaccinations, 43.2 percent were therapeutic, 10.8 percent were family planning, and 3.6 percent were dental (see Table 4). Observations could not be done in two facilities because these facilities had scheduled injection days outside the survey days. Therefore, observations were done in only 78 facilities.

PREPARATION OF INJECTIONS ON A CLEAN WORK TABLE OR TRAY

The data collectors observed the hygienic conditions of the injections—in particular, whether the injection providers had taken care to prepare the injection on a clean work table or tray to prevent contamination of the injection equipment with blood, dirty swabs, or other biological waste. Overall, fewer than half of all injections observed were prepared on a clean surface (see Table 6 and Figure 1).

Table 6. Preparation of Injection on Clean Work Table and Hand Hygiene

	Vaccination (n = 59)	Therapeutic (n = 60)	Family Planning (n = 15)	Dental (n = 5)	Total (n = 139)
Preparation of injection on a clean work table	28 (47.5%)	22 (36.7%)	7 (46.7%)	5	62 (44.6%)
Provider washed hands with soap and water before preparation ¹	7 (11.9%)	5 (8.5%)	4 (26.7%)	2	18 (13.0%)

¹ Observations were not made in one case.

HAND HYGIENE BEFORE VACCINATION, THERAPEUTIC, AND FAMILY PLANNING INJECTIONS

Another aspect of general hygiene that the data collectors analyzed was handwashing. They observed whether injection providers washed their hands with soap and running water or with an alcohol-based hand sanitizer prior to beginning the injection. They found that injection providers only washed their hands in 13 percent of cases; none used an alcohol-based hand rub (see Table 6 and Figure 1).

CLEANING PATIENTS' SKIN BEFORE THE INJECTION

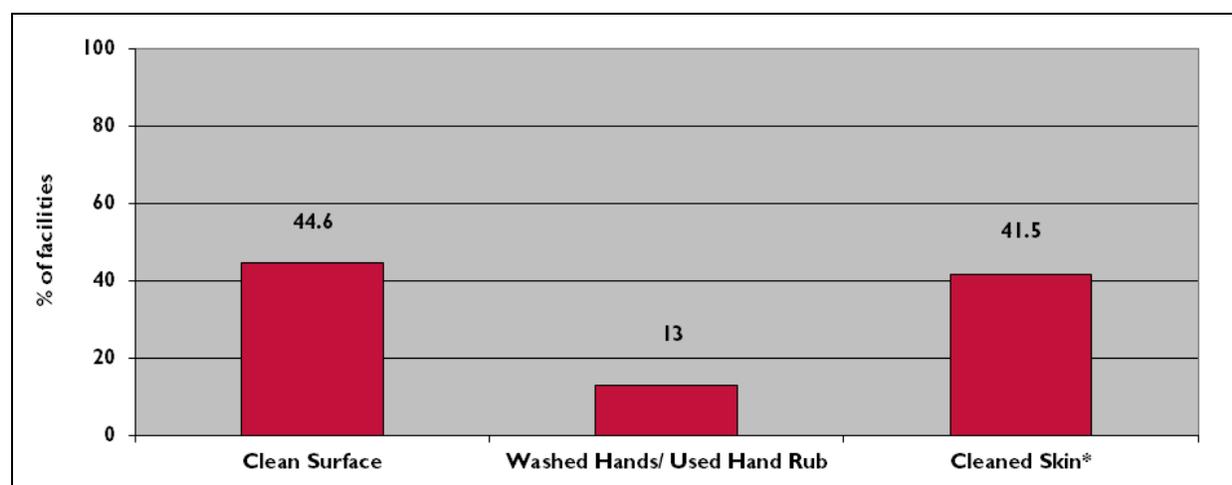
Data collectors were able to observe the practice of cleaning the patient's skin. Fewer than half of the providers were seen to use water or a clean wet swab to clean the skin before vaccination, therapeutic, and family planning injections (see Table 7 and Figure 1). Notably, four providers were observed to have cleaned the skin with antiseptic for vaccination, which could compromise the efficacy of the vaccination. Of the 130 total injections observed, the patient's skin was cleaned in an appropriate manner (with water or a clean wet swab for vaccination and antiseptic for therapeutic and family planning injections) in 41.5 percent of observations.

Table 7. Patient's Skin Cleaned¹

	Vaccination (n = 59)	Therapeutic (n = 60)	Family Planning (n = 15)	Total (n = 134)
Water or a clean, wet swab	21 (36.2%)	14 (23.7%)	3 (23.1%)	38 (29.2%)
Antiseptic	4 (6.9%)	24 (40.7%)	9 (69.2%)	37 (28.5%)
Dry cotton	7 (12.1%)	9 (15.3%)	—	16 (12.3%)
Dirty swab	12 (20.7%)	6 (10.2%)	—	18 (13.9%)
Skin not cleaned and it is clean	12 (20.7%)	3 (5.1%)	1 (7.7%)	16 (12.3%)
Skin not cleaned and it is dirty	2 (3.4%)	3 (5.1%)	—	5 (3.9%)

¹ Observations were not made in four cases.

Figure 1. Summary of the Observations Related to Infection Prevention and Control



* "Cleaned Skin" includes the use of water or a clean wet swab for vaccination and antiseptic for therapeutic or family planning observations.

TYPE OF SYRINGE USED

The data collectors observed the types of syringes used for the various procedures. For vaccination, in 79.7 percent of cases, auto-disable syringes⁴ were used. For therapeutic and family planning injections, most providers used standard disposal syringes (78.3 percent and 80 percent, respectively). However, for dental procedures, there were two observations where providers used sterilizable syringes, and of these two, one of them also used a sterilizable needle (see Table 8).

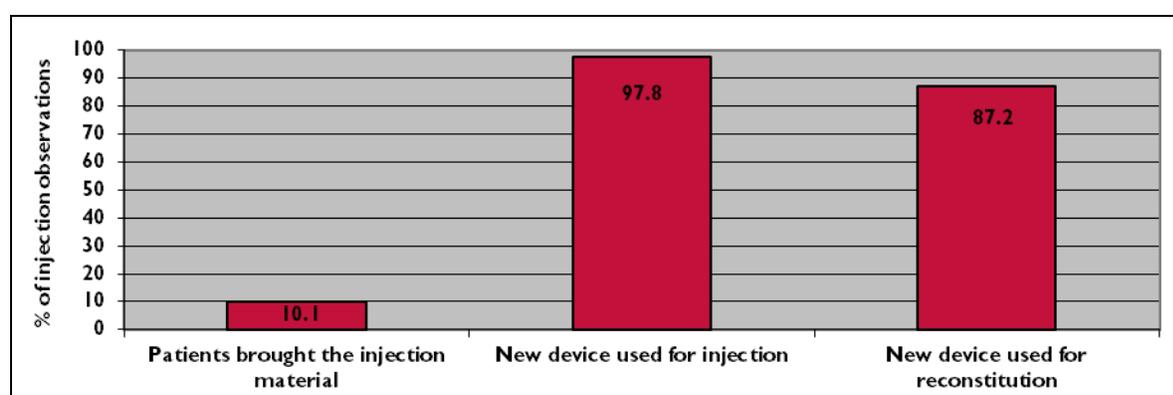
In 10.1 percent of cases, patients brought their injection equipment to the facility (see Figure 2). This included 12 (20 percent) who brought for them for therapeutic injections, 1 (1.7 percent) for a vaccination, and 1 for a family planning injection. This was confirmed by the providers during their interviews. When asked how often patients brought their injection equipment, 12 providers (5.5 percent) answered "always" and 15 (6.9 percent) said "sometimes." Nearly half (48.4 percent) of providers said that they were aware of needles and syringes for sale outside of their facility.

⁴ A syringe designed to prevent reuse by locking or disabling after giving a single injection (as defined by WHO).

Table 8. Syringe Type Used

	Vaccination (n = 59)	Therapeutic (n = 60)	Family Planning (n = 15)	Dental (n = 5)	Total (n = 139)
Standard disposable	12 (20.3%)	47 (78.3%)	12 (80%)	—	71 (51.1%)
Auto-disable	47 (79.7%)	13 (21.7%)	3 (20%)	1	64 (46.0%)
Retractable	—	—	—	—	—
Sterilizable	—	—	—	2	2 (1.4%)
Other safety syringe or disposable	—	—	—	2	2 (1.4%)

Figure 2. Sources and Practices of Using New Needles and Syringes



USE OF NEW NEEDLES AND SYRINGES FOR INJECTIONS AND TO RECONSTITUTE MEDICATIONS

In nearly all the 137 injections where this practice could be observed, the needle and syringe were taken from a sterile unopened package. Both of the sterilizable dental syringes were taken from a sterilizer using a sterile technique.

Almost all needles and syringes (98.3 percent) used in the therapeutic injections and vaccinations were in sterile unopened packages, while 93.3 percent of those used in the family planning sessions were taken from sterile unopened packages. Material for all three dental injections was taken from sterile unopened packages.

For injections using reconstituted medications, a lower proportion of new, sterile materials was used—90.3 percent for the 31 vaccines and 81.3 percent for the 16 therapeutic injections observed. Figure 2 summarizes the sources and use of injection equipment.

DILUENT FOR RECONSTITUTION

Using a diluent from the same manufacturer of the vaccines is one facet of injection safety, and overall, 97.6 percent of all observed injections followed this practice. During the course of this assessment, the data collectors noted that the diluent from the same manufacturer of the vaccine was used in all 31 reconstituted vaccinations in which this practice could be observed, and in 90.9

percent of the reconstituted therapeutic injections observed ($n = 11$). Appropriate diluents were used during all observations in hospitals and in 96.7 percent of lower-level facilities.

MULTI-DOSE VIALS

Injectable medications can be contaminated if the multi-dose vials are not properly cared for by wiping the rubber cap with a clean antiseptic swab. In 10.7 percent of vaccination injections with a multi-dose vial, the provider cleaned the rubber cap of the vial with antiseptic before inserting a needle into the vial. Providers cleaned the cap in five therapeutic injections (27.8 percent) and two dental observations. However, 7.1 percent of providers used a dirty swab to clean the rubber cap during vaccinations. No providers used a dirty swab during therapeutic injections; one did so during a dental procedure (see Table 9).

If a needle remains in the rubber cap of a multi-dose vial, it can become a route by which microbes gain access to and contaminate the injectable medication. In 82.5 percent of vaccinations that used a multi-dose vial, the needle was removed from the rubber cap after withdrawing the dose. Providers withdrew the needle in nine therapeutic injections (52.9 percent) and two dental observations (see Table 9). This is consistent with data collectors' observations of the facilities where 18.7 percent had a needle left in the diaphragm of a multi-dose vial.

Table 9. Use of Multi-Dose Vials

	Vaccination ($n = 57$)	Therapeutic ($n = 18$)	Dental ($n = 3$)	Total ($n = 78$)
Cap of multi-dose vial cleaned with antiseptic ¹	6 (10.7%)	5 (27.8%)	2	13 (16.9%)
Cap of multi-dose vial cleaned with a dirty swab ²	4 (7.1%)	—	1	5 (6.7%)
Needle removed from rubber cap of multi-dose vial ³	47 (82.5%)	9 (52.9%)	2	58 (76.3%)

¹ Observations were not made in one case.

² Observations were not made in three cases.

³ Observations were not made in two cases.

USE OF CLEAN BARRIERS TO PROTECT FINGERS WHEN BREAKING GLASS AMPOULES

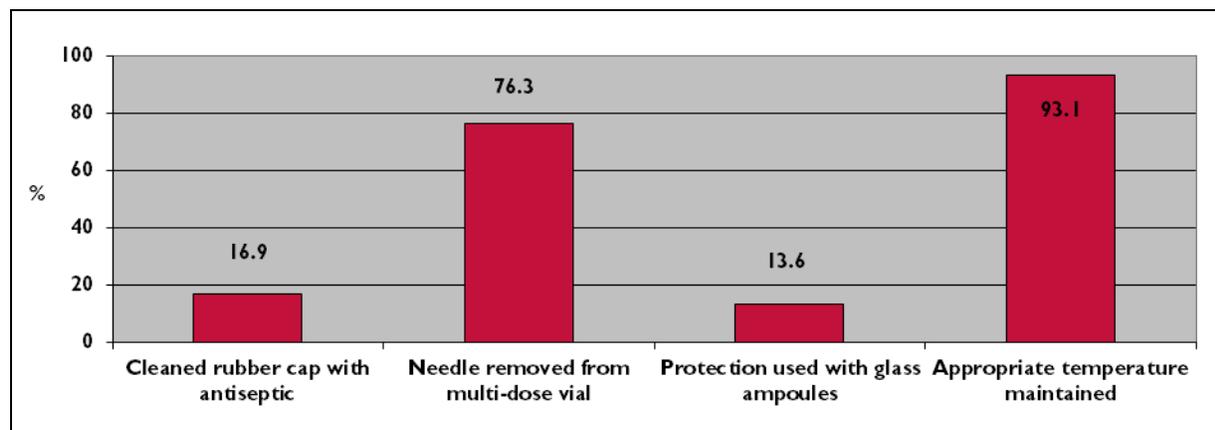
Injection providers can be injured when opening or breaking glass vials, which in turn can lead to contamination of the injectable medication or injection equipment. For this reason, data collectors noted what material (i.e., a sponge, cotton, or gauze) providers used as a barrier to protect their fingers when breaking the ampoules. When glass ampoules were used during vaccination, the providers used a clean barrier in 1 of the 11 vaccination injections observed. Providers used a clean barrier in the only such dental injection observed, 3 of 11 family planning injections, and 4 of 43 therapeutic injections observed (9.3 percent).

TEMPERATURE AT WHICH HEAT-SENSITIVE MEDICATIONS AND VACCINES WERE STORED

Heat-sensitive medications must be stored within a specific range of temperatures. Data collectors observed that medicines were stored at an appropriate temperature between 2 and 8 degrees Celsius in 93.1 percent of the 58 vaccination injections observed where this variable applied.

Figure 3 summarizes the measures providers took to prevent contamination of injectable materials.

Figure 3. Protecting Injectable Medications from Contamination or Deterioration



OBSERVATIONS OF PHLEBOTOMIES, LANCETS, INTRAVENOUS INFUSIONS, AND INTRAVENOUS INJECTIONS

Table 10. Device Type Used¹

	Phlebotomy (n = 30)	Lancet (n = 28)	Intravenous Infusion (n = 17)	Intravenous Injection (n = 24)
Holder/adaptor and vacuum tubes	4 (13.3%)	—	—	—
Standard disposable needle and syringe	21 (70%)	5 (17.9%)	6 (37.5%)	14 (58.3%)
Auto-disable syringe	4 (13.3%)	1 (3.6%)	1 (6.3%)	5 (20.8%)
Retractable syringe	—	—	—	3 (12.5%)
Winged collection set	1 (3.3%)	—	9 (56.3%)	2 (8.3%)
Lancet	—	22 (78.6%)	—	—
Sterilizable needle or syringe	—	—	—	—

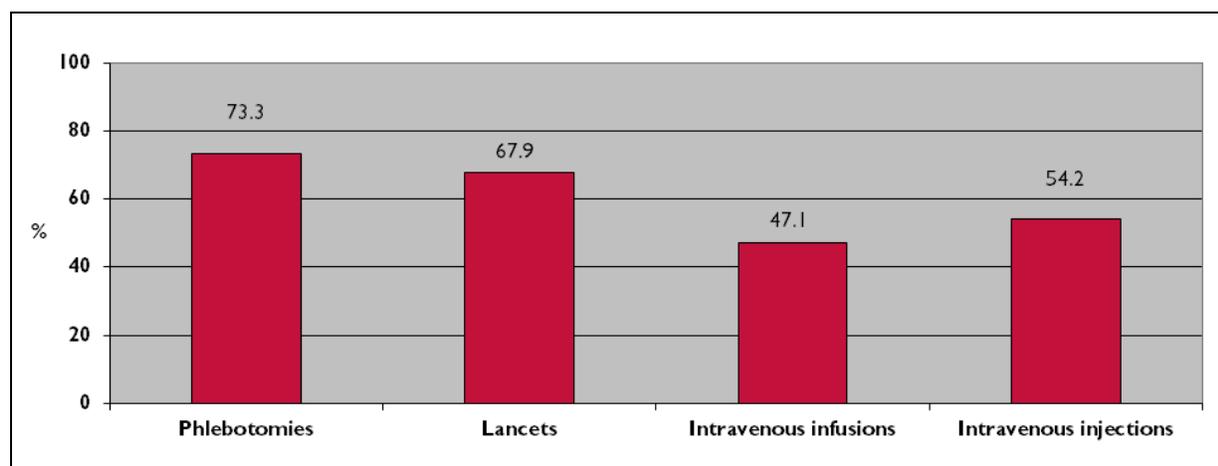
¹ Observations were not made in one case.

A total of 30 phlebotomies, 28 lancets, 17 IV infusions, and 24 IV injections were observed. Providers generally used standard disposable needles and syringes (70 percent) for phlebotomy procedures, and lancets for procedures requiring lancing (78.6 percent). Providers were rarely seen to use safety devices such as auto-disable and retractable syringes, as shown in Table 10.

PREPARATION ON A CLEAN WORK TABLE OR TRAY

Overall, 62.6 percent of procedures were prepared on a clean, dedicated table or tray where contamination of the equipment with blood, body fluids, or dirty swabs was unlikely (in 42 out of 67 hospitals and 20 out of 32 lower-level facilities). This occurred most frequently for phlebotomies and least frequently for IV infusions (see Figure 4).

Figure 4. Procedures Prepared on a Clean Work Table or Tray



HAND HYGIENE BEFORE BLOOD DRAWS AND INTRAVENOUS PROCEDURES

Overall, providers washed their hands with soap and running water in only 2 of the 99 observations. Both of these observations were in lower-level facilities. This included one phlebotomy observation and one IV injection. No provider used an alcohol-based hand sanitizer (see Table 11).

Table 11. Hand Hygiene before Phlebotomies, Lancets, Intravenous Infusions, and Intravenous Injections

	Phlebotomy (n = 30)	Lancet (n = 28)	Intravenous Infusion (n = 17)	Intravenous Injection (n = 24)
Washed hands with soap and running water	1 (3.3%)	—	—	1 (4.2%)
Cleansed hands with alcohol-based hand sanitizer	—	—	—	—

CLEANING PATIENTS' SKIN BEFORE THE PROCEDURE

Data collectors also observed the practice of cleaning the patient's skin prior to the procedures. In over half of all procedures, providers used antiseptic to clean the patient's skin before the procedure. Dry cotton and water or a clean, wet swab were also frequently used. In a few cases, a dirty swab was used in phlebotomies, lancets, and infusions, but not in IV injections (see Table 12).

During the 62 IV procedures observed (phlebotomies, infusions, and injections), 59.7 percent of providers used an antiseptic. Of those, providers of 9 of the 19 phlebotomies, 4 of 7 IV infusions, and 2 of 11 IV injections palpated the venipuncture site after skin preparation with an antiseptic (40.5 percent of 37 applicable IV injections).

Table 12. Patient's Skin Cleaned¹

	Phlebotomies (n = 30)	Lancets (n = 28)	Intravenous Infusions (n = 17)	Intravenous Injections (n = 24)
Water or a clean, wet swab	4 (13.3%)	3 (10.7%)	2 (14.3%)	2 (11.1%)
Antiseptic	19 (63.3%)	20 (71.4%)	7 (50.0%)	11 (61.1%)
Dry cotton	5 (16.7%)	4 (14.3%)	3 (21.4%)	3 (16.7%)
Dirty swab	1 (3.3%)	1 (3.6%)	1 (7.1%)	—
Skin not cleaned and it is clean	1 (3.3%)	—	—	1 (5.6%)
Skin not cleaned and it is dirty	—	—	1 (7.1%)	1 (5.6%)

¹ Observations were not made in nine cases.

USE OF NEW DEVICES

For all four observed phlebotomies where a holder/adaptor was used, no holder had blood on it before it was used to perform the procedure. For all the other procedures, the devices were taken from a sterile, unopened packet or fitted with caps for each procedure.

PROCEDURES FOR INTRAVENOUS INFUSIONS AND INJECTIONS

Data collectors observed that patients shared a bed or stretcher with another patient in 17.6 percent of IV infusions. This was also the case for 4.5 percent of IV injection patients.⁵ Among patients with an existing IV catheter site (12 infusion patients and 14 injection patients), the sites were clean without visible soiling.

For the 23 total IV procedures that used an IV system with a needle and syringe, the IV system was accessed from an IV port in 73.9 percent of observations. This was the case for 10 of 14 IV injections and 7 of 9 IV infusion procedures. When accessing an IV port, providers first cleaned the port with chlorhexidine gluconate 2 percent, povidone-iodine, or alcohol in 2 of 14 IV injections and 1 of 6 IV infusions observed.

During some procedures, the IV medication was taken from a glass bottle. Fewer than one-fourth (3 of 13) of providers cleaned the rubber stopper on the bottle top with an alcohol pad before inserting the needle through the stopper (1 of 6 infusions and 2 of 7 IV injections).

APPLICATION OF PRESSURE AFTER THE PROCEDURE

Data collectors observed that in 69.3 percent of cases, the provider used a clean gauze pad and gently applied pressure to the puncture site to stop bleeding after the procedure. For the three cases where a hematoma developed, the providers terminated the procedure and applied pressure to the hematoma to prevent its expansion (see Table 13).

⁵ Observations were not made in two cases.

Table 13. Pressure After the Procedure¹

	Phlebotomies (n = 30)	Lancets (n = 28)	Intravenous Infusions (n = 17)	Intravenous Injections (n = 24)
Observations in which the provider used a clean gauze pad and gently applied pressure to the puncture site to stop bleeding after the procedure	25 (83.3%)	22 (78.6%)	5 (41.7%)	9 (50%)

¹ Observations were not made in 11 cases.

CLEANING AFTER THE PROCEDURE

Only 10.5 percent of providers cleaned their hands with soap and water or an alcohol-based hand rub following the observed procedures. In the 35 cases in which there was blood or body fluid contamination in the work area, the area was cleaned with disinfectant in 20 percent of observations (see Table 14).

Table 14. Cleaning After the Procedure

	Phlebotomies (n = 30)	Lancets (n = 28)	Intravenous Infusions (n = 17)	Intravenous Injections (n = 24)
Observations in which the provider cleansed his or her hands after the procedure with soap and clean water or with an alcohol-based hand rub ¹	3 (10%)	2 (7.4%)	2 (13.3%)	3 (13%)
For cases with a contaminated work area, observations in which the provider cleansed with a disinfectant	2 (n = 11)	2 (n = 11)	1 (n = 5)	2 (n = 8)

¹ Observations were not made in four cases.

STERILIZATION PRACTICES

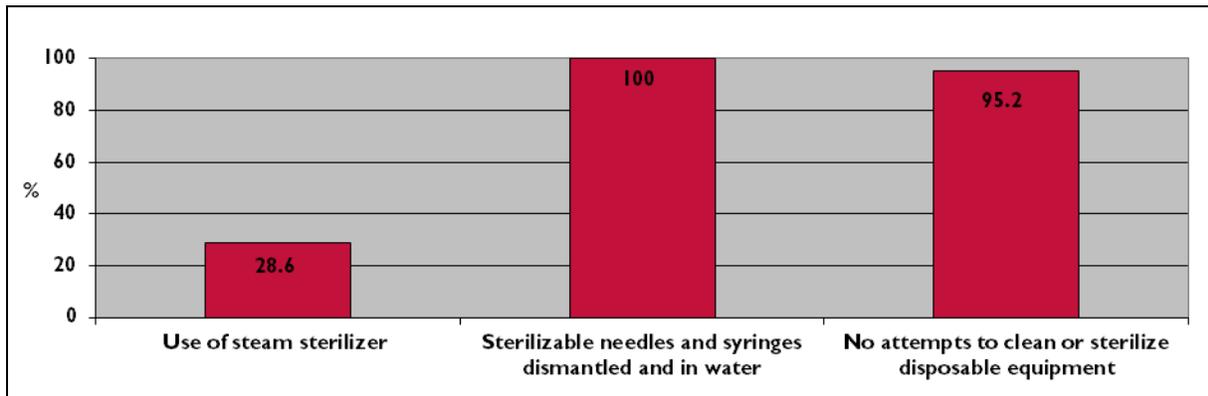
Sterilization practices were assessed in 21 health facilities. Based on observations, data collectors found six facilities (28.6 percent) that used steam sterilization to sterilize devices for injections, venous phlebotomies, or IV procedures, while two other facilities used other sterilization methods (see Figure 5). The seal on the steam sterilizer was intact at all six facilities. Additionally, four of the six facilities had an updated TST (*t*emperature, *s*tream, *t*ime) spot register for at least one sterilizer. Of the two sterilizers with no updated TST, data collectors asked for a sterilization to be performed; there was no steam leak observed in the two sterilizers.

In 95.2 percent of the facilities, there was no evidence of attempts to clean or sterilize disposable devices. In addition, there was no evidence that any other method of cleansing, such as boiling, was used instead of sterilization in 77.8 percent of facilities.⁶ Furthermore, of the 15 facilities where applicable, data collectors observed that all facilities had sterilizable needles and syringes either in a sterilizer, in use, or dismantled and immersed in water (see Figure 5).

⁶ Observations were not made in three cases.

During interviews, five percent of providers (11 out of 217) reported that they used sterilizable needles in injections, phlebotomies, IV injections, or infusions. Of the 5 out of 187 supervisors who reported use of sterilizable syringes and needles, three said that fuel was always available to run the sterilizer, while the remaining two reported that fuel had been unavailable for less than one month at some point.

Figure 5. Sterilization Practices



SUPPLY LEVELS OF DISPOSABLE EQUIPMENT

Supervisors of injection providers were asked how many procedures of the different types were performed per week in their department or facility. The data collector then compared the number of devices available at the procedure site and in stock with supervisors' responses to gauge if there was enough stock for at least two weeks. The majority (75 percent) of facilities had enough auto-disable injection equipment for at least two weeks, while 68.1 percent had enough disposable and safety syringes and disposable IV cannulas (see Table 15).

Table 15. Supply Levels of Disposable Equipment

	#/N	%
Health facilities with enough auto-disable injection equipment for at least two weeks	48 (n = 64)	75
Health facilities with enough disposable and safety syringes for at least two weeks	49 (n = 72)	68.1
Health facilities with enough disposable phlebotomy equipment for at least two weeks	21 (n = 33)	63.6
Health facilities with enough lancets for at least two weeks	22 (n = 33)	66.7
Health facilities with enough disposable intravenous cannula for at least two weeks	19 (n = 36)	52.8
Health facilities with enough intravenous sets for at least two weeks	22 (n = 37)	59.5

FACILITIES USING STERILIZABLE EQUIPMENT

Of the 217 injection providers interviewed, 5.5 percent reported using sterilizable equipment for injections or procedures, including almost 4 percent of providers who used them to administer injections (see Table 16).

Table 16. Use of Sterilizable Equipment

	# (n = 217)	%
Providers who reported use of sterilizable needles and syringes to administer injections	8	3.7
Providers who reported use of sterilizable needles and syringes for phlebotomies	2	0.9
Providers who reported use of sterilizable equipment for intravenous injections or infusions	4	1.8

STOCKOUTS OF SHARPS EQUIPMENT AND SHARPS CONTAINERS

Less than one-quarter of the supervisors interviewed reported that they had experienced a stockout of injection equipment during the previous six months. Stockouts of sharps containers, on the other hand, occurred more frequently, at around 30 percent. This was confirmed by 31.3 percent of the injection providers surveyed who reported stockouts of puncture-resistant sharps containers in the last six months (see Table 17).

Of the 52 supervisors who reported a stockout of sharps containers, 36.5 percent said that the stockout lasted less than a month, while 23.1 percent said it lasted less than three months and 40.4 percent reported four to six months.

Table 171. Stockouts of Disposable Equipment and Sharps Containers

	#/N	%
Supervisors who reported no stockouts of any standard disposable or safety syringes in the last six months	134 (n = 170)	78.8
Supervisors who reported no stockouts of any disposable phlebotomy equipment in the last six months	29 (n = 41)	70.7
Supervisors who reported no stockouts of lancets in the last six months	23 (n = 34)	67.6
Supervisors who reported no stockouts of any equipment for intravenous infusions in the last six months	39 (n = 50)	78
Supervisors who reported no stockouts of puncture-resistant sharps containers in the last six months	126 (n = 181)	69.6

PLACEMENT OF EMERGENCY ORDERS

Supervisors were asked if there was a way to place an emergency order for equipment when they ran short. About half (53.3 percent) stated that there was a procedure for placing emergency orders for injection devices.⁷ Of the 97 supervisors who said there was a procedure, 26 (26.8 percent) had placed such an order in the last six months. Of those who had placed orders, 20 (75 percent) said it took less than one week for the order to arrive. For those 85 supervisors whose facility had no procedures for emergency orders, 37 would ask patients to buy the supplies themselves, 10 would collect them from government stores, and others would go to nearby pharmacies or outlets and buy the supplies.

⁷ Data were missing in seven cases.

ASSESSMENT OF RISKS TO THE PROVIDER

Another aspect to the survey was to assess the risks to providers, including practices and behaviors, through observations of the facility, observations of practices, and interviews with providers and supervisors. Observations were made at 80 health care facilities.

PRESENCE OF SHARPS CONTAINER IN LOCATIONS WHERE PROCEDURES ARE PERFORMED

Though the majority of health facilities surveyed had sharps containers, only 27.9 percent had containers in each place where procedures were performed ($n = 61$). Specifically, 77 percent had sharps containers where therapeutic injections were administered, 63.6 percent where phlebotomy procedures took place, 64.9 percent where IV procedures were being performed, and 53.8 percent where vaccinations took place. In addition, 63.8 percent of facilities had one or more sharps containers “in stock,” meaning containers in addition to those currently in use (see Table 18).

Table 18. Observations on the Presence of Sharps Containers

	# ($n = 80$)	%
Health care facilities with at least one puncture-resistant and leakproof sharps container in all areas where vaccinations are given	43	53.8
Health care facilities with at least one puncture-resistant and leakproof sharps container in all areas where therapeutic injections are given ¹	47	77
Health care facilities with at least one puncture-resistant and leakproof sharps container in all areas where phlebotomies are performed	14 ($n = 22$)	63.6
Health care facilities with at least one puncture-resistant and leakproof sharps container in all areas where intravenous procedures are performed	24 ($n = 37$)	64.9
Health care facilities with one or more puncture-resistant sharps container “in stock”	51	63.8

¹ Observations were not made in 19 cases.

OBSERVATIONS ON JOB AIDS

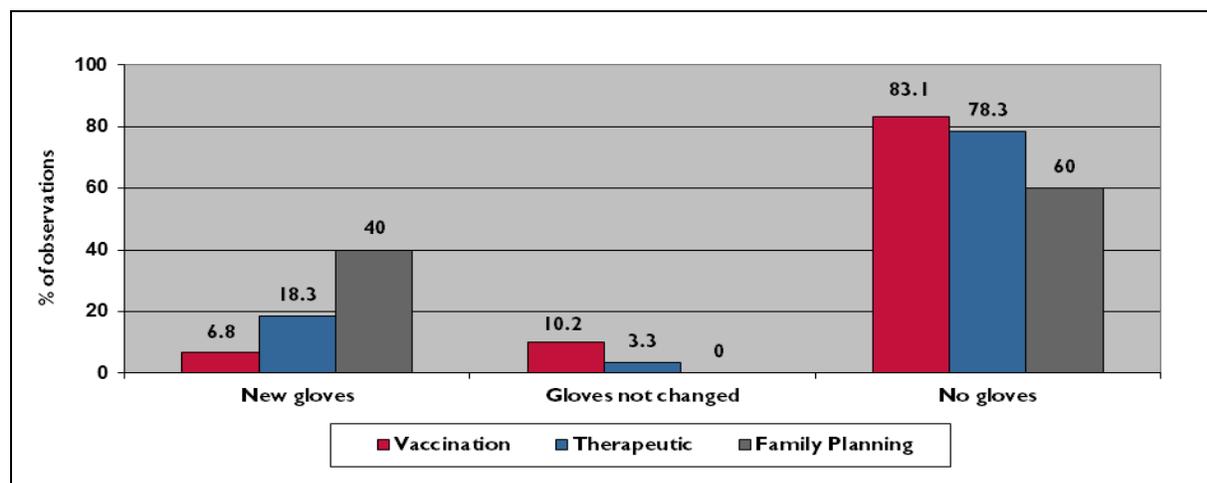
During their visits to the health facilities, data collectors observed whether there were communication materials (such as reminders and/or job aids) posted that promote reducing the use of injections, safe administration of injections, or safe disposal of used injection equipment. They saw these kinds of materials displayed in only 11.3 percent of the health facilities. Some examples of the communication materials observed included job aids promoting oral medication, the steps in waste management, and phlebotomy procedures.

USE OF NEW GLOVES

As mentioned previously, observers were present during 139 injections and evaluated practices for 59 vaccinations, 60 therapeutic injections, 15 family planning injections, and 5 dental procedures.

Data collectors observed whether providers used new gloves, used gloves but did not change them, or wore no gloves for the injection. New gloves were used in only 18 percent of observations, and were used in about twice as many hospitals than lower level facilities. The majority of providers did not use gloves while administering vaccinations, therapeutic injections, or family planning procedures. Notably, new gloves were used in four of the five dental procedures. Overall, no gloves were used in 76.3 percent of observations (see Figure 6).

Figure 6. Use of New Gloves



RE-CAPPING NEEDLES AFTER ADMINISTERING INJECTIONS

The practice of re-capping entails risk for injection providers because it exposes them to blood-borne pathogens. These results show that for the injection observations where this variable could be assessed, 68.1 percent of used syringes were disposed of without being re-capped and 10.4 percent with one-handed re-capping. In 21.5 percent of injections, providers performed two-handed re-capping (see Table 19). It should be noted that one-handed re-capping is an acceptable practice for therapeutic injections.

Table 19. Re-capping of Used Needles¹

	Vaccination (n = 59)	Therapeutic (n = 60)	Family Planning (n = 15)	Dental (n = 5)	Total (n = 139)
One handed re-capping	4 (7.0%)	6 (10.2%)	2 (14.3%)	2	14 (10.4%)
Two handed re-capping	6 (10.5%)	19 (32.2%)	2 (14.3%)	2	29 (21.5%)
No re-capping	47 (82.5%)	34 (57.6%)	10 (71.4%)	1	92 (68.1%)

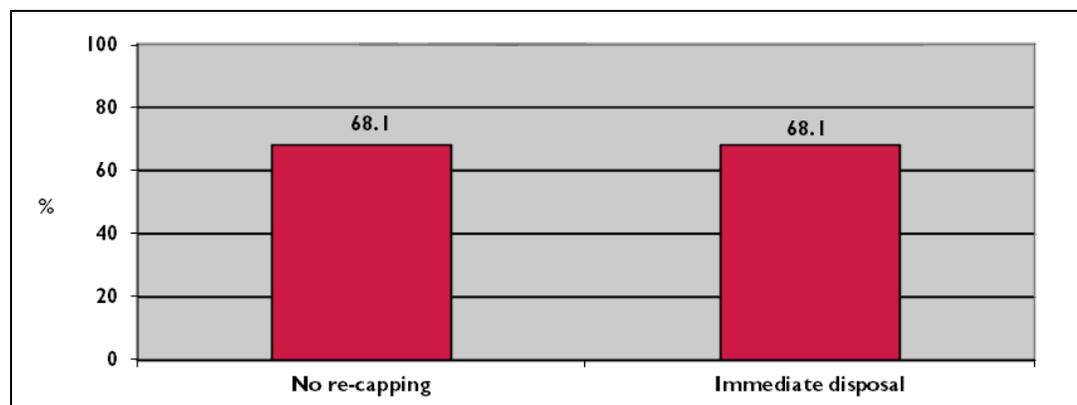
¹ Observations were not made in four cases.

USE OF A SHARPS CONTAINER FOR IMMEDIATE DISPOSAL OF USED SHARPS

It is important that injection equipment be safely disposed of as soon as injections are administered to protect injection providers, patients, and waste handlers from accidental needle-stick injuries. Observers noted whether providers safely disposed of the used needle and syringe in a sharps container, or if they used a needle removal device, immediately after administering the injection. In 68.1 percent of the injections observed,⁸ providers appropriately disposed of the injection equipment immediately after the injection (see Figure 7). This included appropriate and immediate disposal of injection equipment in 87.9 percent of vaccinations, 54.2 percent of therapeutic injections, and 64.3 percent of family planning injections. None of the four dental injections disposed of equipment immediately in an appropriate sharps container.

There were two dental procedures where sterilizable equipment was used and data collectors noted that the equipment was immediately disassembled and immersed in a container of water for both of these procedures. Needle removers were used in only two observations (1.5 percent overall), both for vaccinations.

Figure 7. Observations on Disposal of Sharp Objects After Injections



OBSERVATIONS OF PHLEBOTOMIES, LANCETS, INTRAVENOUS INFUSIONS, AND INTRAVENOUS INJECTIONS

A total of 30 phlebotomies, 28 lancets, 17 IV infusions, and 24 IV injections were observed.

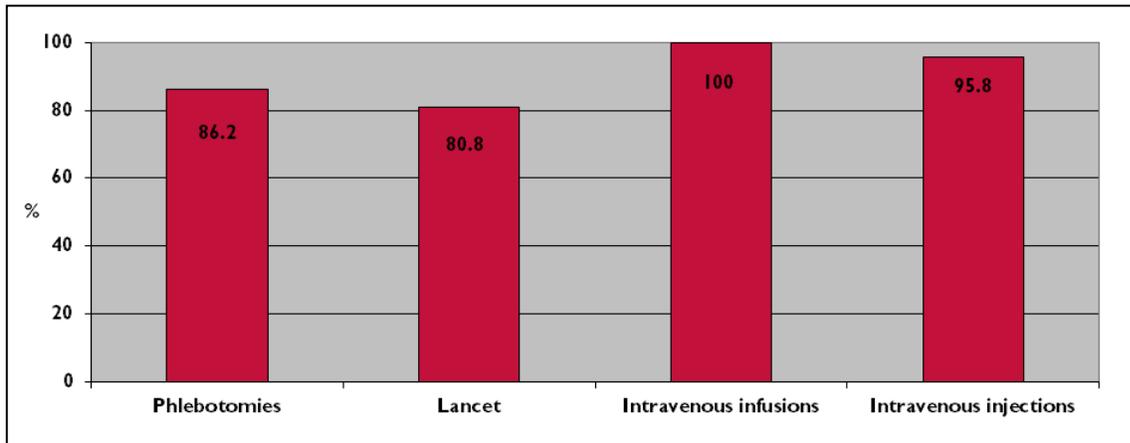
SECURE POSITIONING OF THE PATIENT

Providers were observed⁹ to see if they securely positioned the patient and the intended puncture site so that the patient could not move during the procedure. Patient movement could result in an accidental needle-stick injury. Overall, 89.6 percent of providers securely positioned the patient's body (see Figure 8).

⁸ Observations were not made in four cases.

⁹ Observations were not made in three cases.

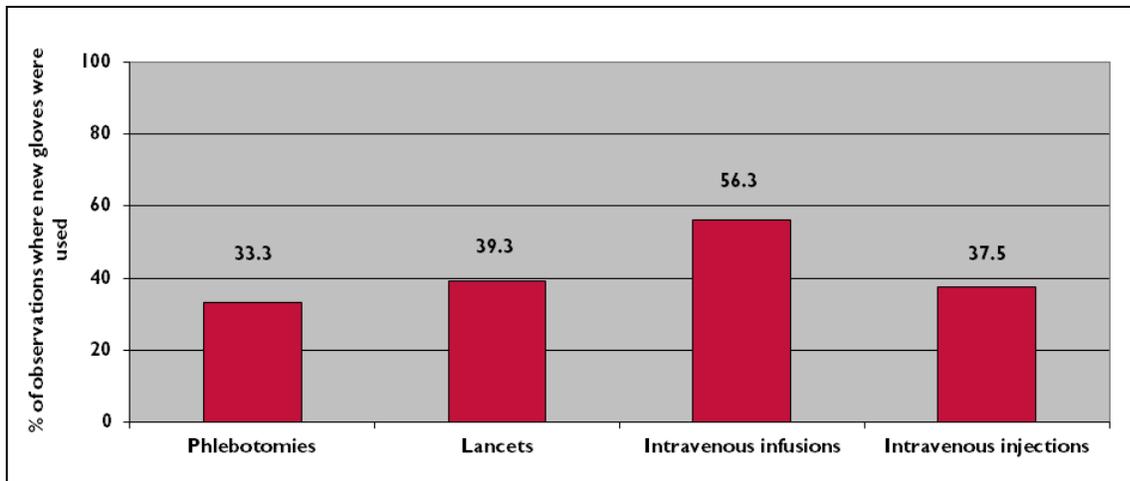
Figure 8. Secure Positioning of the Patient



USE OF NEW GLOVES

Data collectors observed¹⁰ whether providers used new gloves, used gloves but did not change them, or wore no gloves for the procedures they performed. Overall, 39.8 percent of providers used new gloves for the procedures observed (see Figure 9). In 33.3 percent of phlebotomies, 28.6 percent of lancets, 8.3 percent of injections, and 6.3 percent of infusions, providers used gloves but did not change them between procedures. Notably, 38.8 percent of providers did not use gloves at all for the procedures.

Figure 9. Use of New Gloves During Procedures



RE-CAPPING NEEDLES AFTER PROCEDURES

As with injections, data collectors observed re-capping behavior for phlebotomies, lancets, IV injections, and IV infusions. Overall, in 82.3 percent of observations, providers did not use only their hands to remove an uncapped needle from a device. Likewise, there was no two-handed recapping of any needles following a procedure in 75 percent of observations. Of the 19

¹⁰ Observations were not made in one case.

phlebotomy observations with a blood transfer, 15.8 percent of the providers did not use a two-handed transfer technique (see Table 20).

Table 20. Re-capping of Needles

	Phlebotomies (n = 30)	Lancets (n = 28)	Intravenous Infusions (n = 17)	Intravenous Injections (n = 24)
Observations in which no uncapped needles were removed from a device using only hands ¹	19 (63.3%)	25 (100%)	14 (82.4%)	21 (87.5%)
Observations in which there was no two-handed recapping ²	18 (60%)	25 (100%)	15 (88.2%)	14 (58.3%)
Observations in which blood was not transferred from a syringe/needle directly into a vacuum tube using a two-handed technique	3 (15.8%) (n = 19)	—	—	—

¹ Observations were not made in three cases.

² Observations were not made in three cases.

USE OF AN APPROPRIATE CONTAINER FOR DISPOSAL OF WASTE

Half of providers who were observed performing IV injections, IV infusions, lancets, and phlebotomies immediately disposed of used sharps in a sharps container. A needle remover or needle destroyer was not used in any of the observed procedures. This was confirmed in the interviews where only 7 out of 217 injection providers reported having used a needle remover or needle destroyer in the last six months. Non-sharps infectious waste was appropriately disposed of in 42.6 percent of observations (see Table 21). None of the procedures used sterilizable equipment.

Table 21. Immediate Disposal of Waste

	Phlebotomies (n = 30)	Lancets (n = 28)	Intravenous Infusions (n = 17)	Intravenous Injections (n = 24)
Observations in which the used sharp was immediately disposed of in a sharps container ¹	17 (56.7%)	17 (60.7%)	4 (28.6%)	10 (43.5%)
Observations in which a needle remover or needle destroyer was used	—	—	—	—
Observations in which non-sharps infectious waste was disposed of in an appropriate container ²	16 (55.2%)	11 (40.7%)	5 (33.3%)	8 (34.8%)

¹ Observations were not made in four cases.

² Observations were not made in five cases.

INTERVIEWS WITH INJECTION PROVIDERS

A total of 217 injection providers were interviewed.

CHARACTERISTICS OF THE PROVIDERS

Forty percent of the injection providers were community health officers or extension workers, while 26.9 percent were nurses and 20.4 percent consisted of laboratory scientists or technicians. Very few, 3.2 percent, were physicians.

The largest proportion of providers was aged 31 to 40 years (37.8 percent), though a significant proportion was over the age of 41 (28.6 percent). A majority of the providers were female (53 percent). Over half of the providers had between 1 and 10 years of post-qualification experience (55.2 percent; see Table 22).

Table 22. Provider Characteristics

	# (n = 217)	%
Type of health care provider¹		
Community health officer/community health extension worker	88	40.7
Nurse	58	26.9
Laboratory scientist/technician	44	20.4
Physician	7	3.2
Dentist	4	1.9
Other	15	6.9
Age of health care provider		
< 20	—	—
21–30	73	33.6
31–40	82	37.8
41–50	47	21.7
51–60	15	6.9
> 60	—	—
Gender of health care provider		
Female	115	53
Male	102	47
Years of post-qualification experience²		
< 1 year	6	2.8
1–10 years	117	55.2
11–20 years	55	25.9
21–30 years	28	13.2
> 30 years	6	2.8

¹ Data missing in one case.

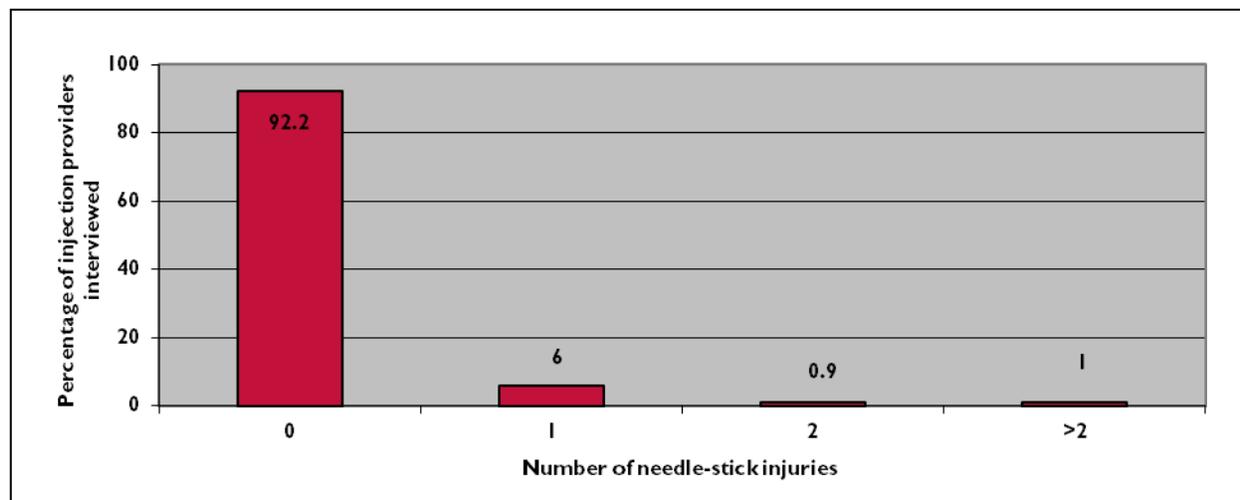
² Data missing in five cases.

ACCIDENTAL NEEDLE-STICK INJURIES AND POST-EXPOSURE PROPHYLAXIS

The data collectors asked the injection providers whether they had experienced any accidental needle-stick injuries in the six months prior to the survey. The majority (92.2 percent) reported that

they did not have injuries during this period (see Figure 10). Among those who had at least one needle-stick injury, the average was 1.25 needle-stick injuries.

Figure 10. Frequency of Accidental Needle-Stick Injuries Among Injection Providers Interviewed



Only 14.3 percent of the providers said that guidelines outlining post-exposure management procedures were available, and 7.4 percent did not know if such guidelines existed in their facilities. About one-third of providers reported that their facility offered support and counseling for providers who were exposed to blood and body fluids, and another third said that post-exposure prophylaxis medication was provided for high-risk exposures, though about 10 percent did not know if such medications were available. While at the facilities, data collectors saw documents such as “Guidelines for Providing Post-Exposure Prophylaxis” produced by the Global HIV/AIDS Initiative Nigeria (GHAIN) and “Managing Occupational Exposure to HIV” produced by FHI/GHAIN.

Table 23. Post-Exposure Prophylaxis and Disease Testing

	# (n = 217)	%
Providers who reported that guidelines outlining all post-exposure management procedures were available	31	14.3
Providers who reported availability of support and counseling for blood and body fluid exposures	81	37.3
Providers who reported that post-exposure prophylactic medication was provided for high-risk exposures ¹	62	29.1
Of providers who had a needle-stick injury, proportion who reported the injury to their supervisor	7 (n = 17)	41.2
Of those providers who reported their injury, proportion who were offered infectious disease testing	4 (n = 7)	
Of those providers who did not report their injury, proportion who went for infectious disease testing on their own	7 (n = 14)	

¹ Data missing in four cases.

Seven of the seventeen providers who reported having at least one needle-stick injury in the last six months stated that they reported the injury to their supervisors and, of these, four were offered infectious disease testing. Of those who sustained an unreported injury, half went for infectious disease testing on their own (see Table 23).

INJECTION PROVIDERS WHO RECEIVED TRAINING ON INJECTION SAFETY

Fewer than one-third (30.1 percent) of the injection providers surveyed reported having received training on injection safety in the last two years in a formal lecture or workshop.¹¹

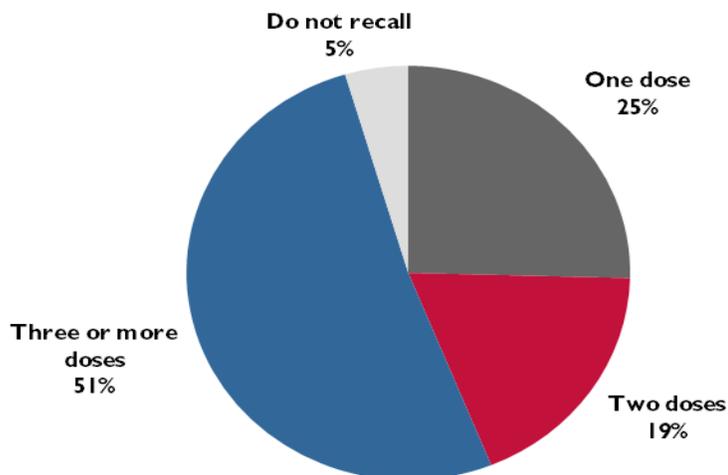
PROVIDERS' KNOWLEDGE OF DISEASES TRANSMITTED BY REUSE OF NON-STERILE NEEDLES

Nearly all (97.2 percent) of the injection providers interviewed were aware of at least one disease that can be transmitted by unsafe injections. A majority (91.7 percent) mentioned HIV, 67.7 percent mentioned hepatitis B, and 31.8 percent mentioned hepatitis C; only 25.3 percent of providers mentioned all three diseases. In addition to these common diseases, 28.6 percent of those interviewed mentioned other diseases including tetanus, tuberculosis, yellow fever, sexually transmitted infections, malaria, and infections or abscesses.

INJECTION PROVIDERS VACCINATED AGAINST HEPATITIS B

Sixty percent of injection providers reported that they had received the hepatitis B vaccine. Of those who had received the vaccine, 51.5 percent had received three or more doses, which is the full protective dosage. Six providers did not remember the number of hepatitis B vaccines they had received (see Figure 11).

Figure 11. Number of Hepatitis B Vaccine Doses Received by Injection Providers (n = 130)¹²



¹¹ Data missing in one case.

¹² Data missing in three cases.

INTERVIEWS WITH SUPERVISORS OF INJECTION PROVIDERS

A total of 189 supervisors were interviewed.

CHARACTERISTICS OF THE SUPERVISORS

Of the supervisors interviewed, 114 were in hospitals and 75 were in lower-level facilities. Slightly over half (52.4 percent) of supervisors were men, and the largest proportion were nurses (38.8 percent; see Table 24).

Table 24. Supervisors' Characteristics

	# (n = 189)	%
Type of supervisor¹		
Nurse	73	38.8
Community health officer/community health extension worker	61	32.4
Laboratory scientist/technician	37	19.7
Physician	7	3.7
Dentist	5	2.7
Other	5	2.7
Age of supervisor²		
< 20	—	—
21–30	20	10.6
31–40	53	28.2
41–50	77	41
51–60	38	20.2
> 60	—	—
Gender of supervisor³		
Male	98	52.4
Female	89	47.6
Years of post-qualification experience⁴		
< 1 year	—	—
1–10 years	45	24.5
11–20 years	57	31
21–30 years	64	34.8
> 30 years	18	9.8

¹ Data missing in one case.

² Data missing in one case.

³ Data missing in two cases.

⁴ Data missing in five cases.

AVAILABILITY OF POLICIES AND GUIDELINES

Of supervisors interviewed, 22.3 percent reported that there was an infection prevention and control committee at their facility.

Supervisors were asked about the availability of injection safety and HCWM policies and guidelines within their unit/facility.¹³ The majority (80.6 percent) did not have a copy of either policy. Only 5.3 percent of supervisors were able to show data collectors a copy of the injection safety policy, guidelines, or standard operating procedures when asked, while 16 percent said that they had the policy document but could not show it to the data collectors. An even lower proportion of supervisors (2.2 percent) showed a copy of the health care waste disposal policy, guidelines, or standard operating procedures; 15.1 percent reported having such a document but did not show it.

POST-EXPOSURE PROPHYLAXIS

When asked during the interview whether records were maintained for occupational exposures in their facility, 10.7 percent of supervisors reported that they were.¹⁴ Overall, 35.4 percent of supervisors also reported that post-exposure prophylaxis was provided for high-risk exposures. Of the 67 supervisors who reported that post-exposure prophylaxis was available, 58.2 percent said antiretrovirals and 11.9 percent said hepatitis B were the most common types of prophylaxis offered. Counseling and testing was mentioned by 16.4 percent of supervisors as a service provided to all staff; 4.5 percent of supervisors mentioned that tetanus toxoid was provided; and 17.7 percent of supervisors¹⁵ did not know what type of post-exposure prophylaxis was provided in their facilities.

¹³ One case was missing for injection safety policy and three cases were missing for HCWM policies.

¹⁴ Data missing in two cases.

¹⁵ Data missing in five cases.

ASSESSMENT OF RISKS TO THE WASTE HANDLER

INTERVIEWS WITH WASTE HANDLERS

Data was collected to assess risks to waste handlers through interviews with 80 waste handlers and 189 supervisors. The majority (65 percent) of waste handlers interviewed were women, and half were older than 40 years old (see Table 25).

Table 25. Waste Handler Characteristics

	# (n = 80)	%
Gender of waste handler		
Male	28	35
Female	52	65
Age of waste handler		
< 20	—	—
21–30	20	25
31–40	20	25
41–50	23	28.8
51–60	16	20
> 60	1	1.3

TRAINING OF WASTE HANDLERS

Only 13.8 percent of waste handlers reported that they had received training on safer ways of handling and disposing of waste. When interviewed, 82.5 percent of supervisors stated that there was designated staff to dispose of health care waste in their facility, of which only 23.7 percent had received formal training on waste management.

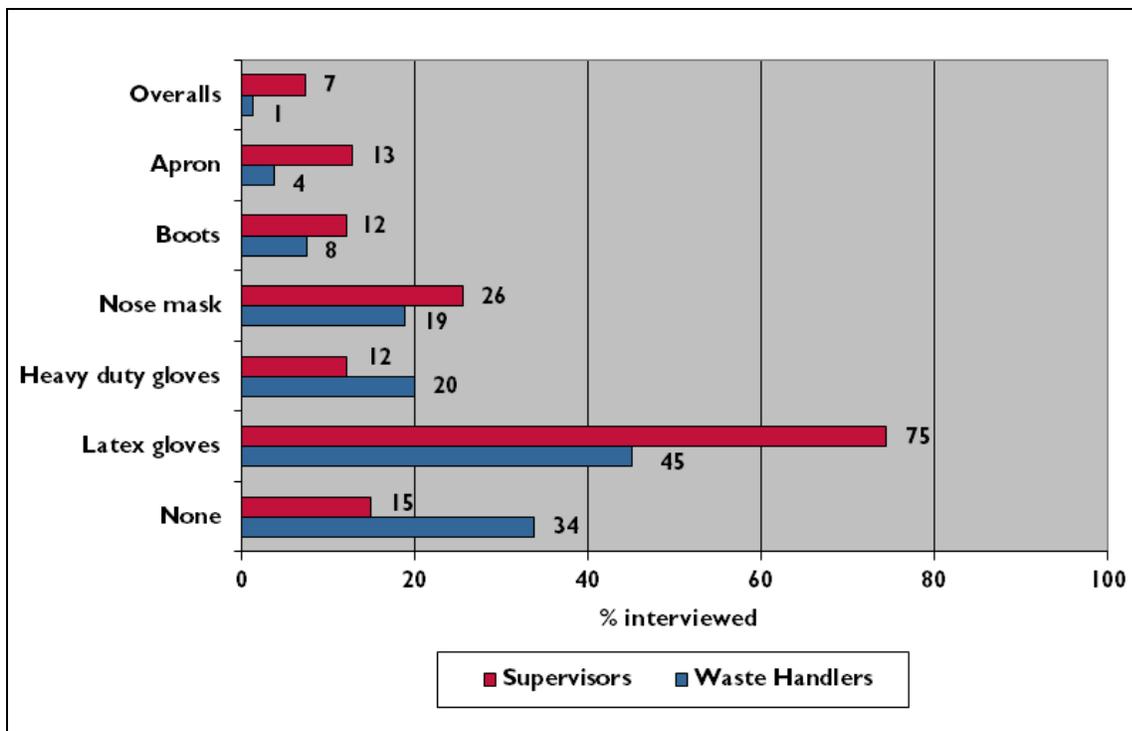
AVAILABILITY OF PERSONAL PROTECTIVE EQUIPMENT

When asked about the availability of personal protective equipment, 66 percent of waste handlers mentioned that at least one type of equipment was available to protect them from injuries at their place of work. The other 34 percent stated that they had no protective equipment available. When asked about availability of personal protective equipment, only 14.9 percent of supervisors¹⁶ reported that equipment was not available for waste handlers (see Figure 12). The most common

¹⁶ Data missing in one case.

types of available equipment mentioned by waste handlers and supervisors were latex gloves, heavy-duty gloves, masks, and boots.

Figure 12. Type of Protective Equipment Available According to Type of Interviewee



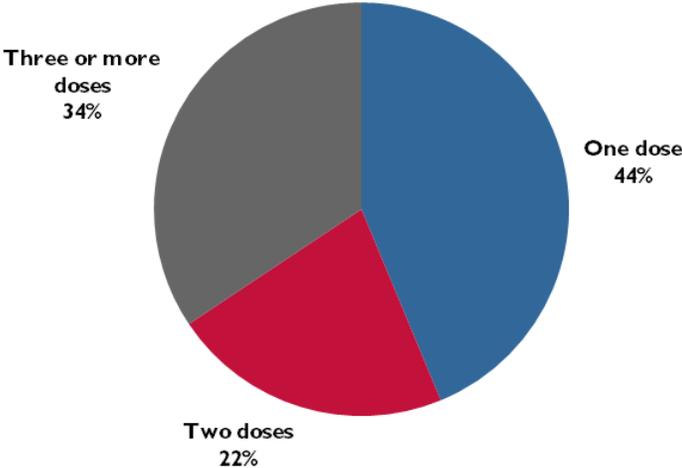
ACCIDENTAL NEEDLE-STICK INJURIES

The majority (86.3 percent) of waste handlers interviewed said that they had not had any accidental needle-stick injuries with used equipment during the six months preceding the survey. Of the 11 (13.8 percent) who did report a needle-stick injury, 5 reported the injury to their supervisor; 2 of the 5 were offered testing for infectious disease. Of those who sustained an injury but did not report it to their supervisor, one waste handler went for infectious disease testing on his or her own.

HEPATITIS B VACCINATION OF WASTE HANDLERS

Forty percent of the waste handlers interviewed were vaccinated against hepatitis B. Of the 32 waste handlers who were vaccinated, 34.4 percent received three or more doses, which is the full protective dosage, 21.9 percent received two doses, and 43.8 percent had received only one dose (see Figure 13).

Figure 13. Number of Hepatitis B Vaccine Doses Received by Waste Handlers (n = 32)



ASSESSMENT OF RISKS TO THE COMMUNITY

To assess risks to the community, data gatherers conducted observations of procedures and conditions at the 80 participating facilities.

CONDITION OF SHARPS CONTAINERS

The presence of sharps containers in facilities does not guarantee injection safety if the containers are in poor condition. Data collectors, therefore, looked for pierced or overflowing boxes at all of the facilities. In three-quarters of facilities, data collectors did not see pierced or overflowing safety boxes or sharps in an open container in any area.

Additionally, sharps containers awaiting final destruction must be tightly sealed and stored in a locked area away from public access. Data collectors observed that containers were completely closed and stored away from public access in fewer than half of facilities surveyed (see Table 26).

Table 26. Condition of Sharps Containers

	# (n = 80)	%
Health facilities in which there were no overflowing or pierced sharps container in any area of the facility	60	75
Health facilities in which there were no sharps in an open container in any area of the facility	55	68.8
Health facilities in which all sharps containers awaiting final destruction were completely closed ¹	30	38
Health facilities in which all sharps containers awaiting final destruction were stored in a locked area or otherwise stored safely away from public access ²	34	43

¹ Observations were not made in one case.

² Observations were not made in one case.

WASTE SEGREGATION

One strategy for reducing the volume of used sharps and infectious waste generated by injections is to segregate it into different containers for used sharps waste, infectious waste, and non-infectious waste. Data collectors found that waste was sorted in 20 percent of the health facilities surveyed.

SHARP OBJECTS OUTSIDE OF THE HEALTH CARE FACILITY

Data collectors evaluated the grounds outside of each health facility surveyed to see whether there were any loose sharps lying around. During this survey, they found that 65 percent of the facilities had no used sharps on the ground immediately outside the health facility or around the disposal site.

WASTE DISPOSAL METHODS

Data collectors observed types of final waste disposal for used sharps waste. The most common methods were open burning in a hole or enclosure (48.8 percent) and open burning on the ground (32.5 percent). Only 18.8 percent of facilities used a safe method such as closed burning in a medium- or high-temperature incinerator or furnace, dumping in a secure pit, or transport for offsite treatment for final disposal of sharps waste (see Table 27).

Table 27. Main Methods Used to Dispose of Sharps Waste

	# (n = 80)	%
Open burning in a hole or enclosure	39	48.8
Open burning on the ground	26	32.5
Dumping in an unprotected pit	13	16.3
Transportation for offsite treatment	14	17.5
Low-temperature incineration/burning	8	10
Dumping in an unsupervised area	6	7.5
Burial	4	5
High- or medium-temperature incineration	1	1.3
Other	1	1.3

MINIMUM PACKAGE FOR HEALTH CARE WASTE MANAGEMENT

A health facility is considered to have the minimum required package for HCWM if they adhere to the following: 1) proper waste segregation; 2) storage in a locked area; 3) treatment using medium- or high-temperature incineration, dumping in a protected pit, or transportation for offsite treatment; and 4) disposal in an ash pit if on-site high-temperature incineration is used. In this survey, it was possible to assess the first three of the four steps (final disposal of ash from incineration was not assessed). Only 2 of 80 (2.5 percent) of health facilities met the requirements for a minimum package for HCWM.

CONCLUSION

The study revealed that patients, providers, waste handlers, and the general community all face risks of exposure to HIV or other blood-borne pathogens due to unsafe injection safety and HCWM practices.

RISK TO THE PATIENT

A lack of key infection prevention and control practices contributed to increased patient risk of infection with HIV or other blood-borne pathogens.

WASTE DISPOSAL

A major risk observed in most facilities was of the lack of containment of injection waste—including having disposable IV infusion and phlebotomy equipment and used needles and syringes lying around the facility. Additionally, half of health facilities were found to have infectious waste (non-sharps) outside of an appropriate container.

HYGIENE

Hand hygiene was a problematic practice in the facilities. Running water and soap for handwashing were only available in one-third of the facilities, and no facilities had alcohol-based hand rub for cleansing hands. Injection providers failed to wash or sanitize their hands in 87 percent of cases before any vaccination, therapeutic, family planning, or dental injections were administered. The situation was even worse with phlebotomies, lancet, IV infusions, and IV injections, where only two percent of providers washed their hands and none used an alcohol-based hand sanitizer. Additionally, data collectors reported that providers did not clean patients' skin appropriately before injections in 59 percent of cases.

In over 50 percent of the observed vaccination, therapeutic, family planning, and dental injection procedures, the hygienic conditions of the work table or tray was questionable. A greater proportion of providers of phlebotomies, lancets, IV infusions, and IV injections (62.6 percent) prepared the injections on a clean, dedicated table or tray where contamination of the equipment with blood, body fluids, or dirty swabs was unlikely.

INJECTION PRACTICES

Injectable medications can be contaminated if multi-dose vials are not properly cared for, and this survey showed that very few providers cleaned the rubber cap of the vial with antiseptic before inserting a needle into the vial. During the facility observations, data collectors recorded that in 24 percent of the observations, a needle was left in the diaphragm of a multi-dose vial. Also, injection providers frequently (86.4 percent) did not use a barrier to protect their fingers when breaking the ampoules.

INJECTION SUPPLIES

This survey found that almost one-third of the facilities did not have enough standard disposable injection equipment to last at least two weeks. Additionally, 20 to 30 percent of supervisors reported having had stockouts of puncture-resistant sharps containers and syringes in the previous six months. Almost half of the facilities (47 percent) did not have procedures for placing emergency orders for injection devices. Despite challenges with supply levels, in almost all injections and procedures observed, the needle and syringe were taken from a sterile package.

RISK TO THE PROVIDER

Providers were exposed to risk in many aspects of their routine responsibilities. It was found that there was a low proportion (less than one-third) of providers who had received training on injection safety in the past two years. This was evidenced in risky practices such as re-capping of used needles and a lack of immediate disposal. The work environment also did not support safe practices, with a lack of policy and guidelines, inadequate post-exposure management procedures, and low hepatitis vaccination rates with just 34.4 percent of waste handlers and 51.5 percent of providers having received three or more doses of the vaccine.

POLICY AND GUIDELINES

Policies and guidelines provide the foundation for safe practices. Few facilities had copies of essential policies to guide safety of medical injections and waste management. Additionally, only 22 percent of supervisors interviewed reported that there was an infection prevention and control committee at their facilities.

WASTE DISPOSAL

This survey also explored unsafe disposal practices that could expose injection providers, patients, and waste handlers to accidental injuries from used sharps. In over 70 percent of facilities, sharps containers were not available in each place where procedures were performed. This absence was most notable in areas where vaccinations were administered. This problem may have been compounded by the approximately one-third of facilities that did not have one or more sharps containers in stock.

Immediate disposal of used sharps into an appropriate container prevents loose sharps from being out in the open where someone could accidentally suffer a needle-stick injury. Providers appropriately disposed of the injection equipment immediately after the injection in 68 percent of injections observed and in only half of the blood draws observed.

PRESENCE OF JOB AIDS

Only 11 percent of facilities had communication materials (such as reminders or job aids) posted to promote safe injection procedures, safe disposal of used injection equipment, or limiting the use of injections.

USE OF GLOVES

Data collectors observed that less than one-fifth of the providers used new gloves while administering injections and many did not change gloves between procedures. Use of a new pair of gloves for blood collection procedures was better, though still low at 40 percent of observations.

RE-CAPPING OF USED SHARPS

The practice of re-capping entails risk for injection providers because it exposes them to blood-borne pathogens. This survey showed that 32 percent of used syringes were re-capped before disposal. This proportion was lower at 25 percent for phlebotomies, lancets, IV injections, and IV infusions. Re-capping brings unnecessary risk to the provider, and it can be avoided with training and proper placement of sharps containers.

ACCIDENTAL NEEDLE-STICK INJURIES AND POST-EXPOSURE PROPHYLAXIS

Providers reported that needle-stick injuries were rare; 92 percent interviewed had not had needle-stick injuries in the past six months. Even if needle-stick injuries are a rare occurrence, it is inevitable that they will occur at some point in a health facility, and procedures and post-exposure prophylaxis medications should be in place. Only 14 percent of providers interviewed reported that there were guidelines outlining post-exposure management procedures, and only one-third said that post-exposure prophylaxis medication was provided for high-risk exposures. The supervisors confirmed this. Additionally, of the 17 providers who reported having at least one needle-stick injury in the last six months, less than half of them reported the injury.

Hepatitis B vaccination rates were also low: only 60.4 percent had received the hepatitis B vaccine, of which only half had received a full course with three or more doses.

RISK TO THE WASTE HANDLER

The majority of waste handlers reported that they had not been trained to handle waste. One-third of the waste handlers had no protective equipment and were thus exposed to the risk of needle-stick injuries. In addition, the most common protective equipment was latex gloves, which do not offer much protection.

Though a fairly low proportion (13.7 percent) had had accidental needle-stick injuries with used equipment during the six months preceding the survey, fewer than half reported the injury to their supervisors, and of these, only 40 percent were offered testing for infectious disease. Sixty percent of waste handlers were not vaccinated against hepatitis B, and of the 32 waste handlers who had received the vaccination, only a third had received the full course of three or more doses.

RISK TO THE COMMUNITY

Poor waste management practices were found in many facilities. These poor practices resulted in used sharps being out in the open where community members could come into contact with them. Some of these practices included pierced or overflowing safety boxes in 25 percent of the health facilities; sharps in open containers in 31 percent of facilities; improper closure of sharp containers in 62 percent of facilities; a lack of segregating waste into different containers for used sharps, infectious, and non-infectious waste in 80 percent of the health facilities; and 35 percent of facilities

that had used sharps on the ground immediately outside the health facility or around the disposal site.

Overall, only two facilities met the requirements for a minimum package for HCWM: proper waste segregation; storage in a locked area; treatment using medium- or high- temperature incineration, dumping in a protected pit, or transportation for offsite treatment; and disposal in an ash pit if on-site high-temperature incineration is used (ash disposal was not assessed in this survey).

RECOMMENDATIONS

All cadres of health personnel in the target states should receive appropriate training. This training should include management of injection supplies, including HCWM, and logistics to support safe injection practices. Providers, supervisors, and managers should be trained together in each facility to ensure compliance with safe practices. A cascade training approach could be used to ensure that large hospitals with many departments are covered. Also, providing personal protective equipment and job aids are important to ensure compliance and sustain learning. In addition, advocacy to policymakers should be aimed at outlining the responsibilities of the federal, state, and LGA levels and ensure that a budget line for procurement of essential commodities is secured at all levels.

Overall recommendations include the following:

- *National level:* The FMOH should disseminate sufficient quantities of national guidelines and support development of procedures and guidelines, including waste disposal guidelines, at the district and facility levels.
- *Provider and waste handler safety:* Proper personal protective equipment and job aids should be made available, and post-exposure prophylaxis should be routinely provided in the event of accidental needle-sticks. Hepatitis B vaccination should also be provided on a routine basis and free of cost for workers at all levels.
- *Waste management:* All facilities should institute proper sharps waste management through to final disposal. Waste should be properly segregated at the point of generation into sharps containers and bins for infectious and non-infectious waste with color coded bin liners.
- *Community level:* A culturally appropriate outreach campaign that uses media to address risks to patients and community members on the dangers of unsafe and unnecessary injections should be conducted in order to build awareness of the community's role in ensuring safety during injections.

Additional national-level recommendations include the following:

- Ensure government support for a similar assessment in private sector facilities for comparison
- Support the establishment of reporting and documentation of needle-stick injuries in all facilities
- Establish a monitoring team with rewards for good practices (e.g., rewarding the two top-performing facilities to encourage others to increase their efforts).

At the facility level, it is vital to ensure that all staff members understand the dangers of unsafe injection practices. All facilities should have, and ensure that all providers understand, essential documents about injection safety and safe handling of injection waste. Other recommendations to ensure safe injection practices in facilities—including practices that protect providers—include the following:

- Operationalize national guidelines by developing facility-level guidelines, standard operating procedures, waste management guidance, and enforcement mechanisms at each facility, covering every type of injection provided and each unit that provides injections. These guidelines should be monitored and reviewed annually.
- Establish an infection prevention and control committee at each facility for implementation of safe injection practices as a component of infection prevention and control.
- Provide continuous training and on-the-job training for health care workers.
- Develop clear plans and policies for the proper management and disposal of waste to ensure continuity and clarity in management practices. They need to be integrated into routine employee training and continuing education.
- Provide a full supply of personal protective equipment and enforce its use.
- Have in place a procurement plan for all commodities and an emergency plan to address unanticipated demands for supplies. Facility management should be able to improvise locally manufactured equipment for infrastructural amenities, such as water receptacles (buckets with taps in the absence of running water in rural settings) to ensure proper handwashing practices.
- Advocate for appropriate policy and guidelines to ensure adequate availability, training, and systems in place for the provision of post-exposure prophylaxis for all health care workers in the event of an accidental needle-stick or injury.
- Advocate for appropriate policy and guidelines to ensure that all health care workers who are in contact with injection equipment receive the full course of the hepatitis B vaccination.

Additional recommendations to ensure safe disposal of injection-related waste include the following:

- Encourage the designation of full-time waste handlers to ensure consistent waste handling procedures.
- Institute proper sharps management in all health facilities to reduce the risk of disease transmission from medical waste. This would include wide distribution of sharps containers and essential equipment in every unit where sharps are used, as well as proper training of all personnel on the handling and management of sharps and personnel protection.
- Establish waste handling processes and procedures in line with the national policy and guidelines on HCWM, and include these procedures in all training.
- Provide waste management training to providers, supervisors, and waste handlers in facilities, covering the risks that waste poses, how to manage waste, and how to prevent exposure to diseases transmitted through infectious waste and non-sterile needles.
- Promote the minimum standard for waste disposal (i.e., proper waste segregation; storage of waste in a locked area; treatment using medium- or high-temperature incineration, dumping in a protected pit, or transportation for offsite treatment; and disposal in an ash pit if on-site high-temperature incineration) in all facilities.
- Use environmental health officers to inspect the health care facility for waste management. This cadre can be used for continuous monitoring, enforcement, and follow-up for safe disposal practices at the federal, state, and LGA levels. In addition, teams from the FMOH should be

trained to check for compliance and provided support to allow them to conduct routine supervision.

At the community level, mobilization strategies should be used to discourage community members from reusing syringes. Outreach efforts should adopt a community-based approach that engages stakeholders, community leaders, and youth leaders, but should also involve and include health professionals and organizations. Campaigns to raise awareness might include the use of simple flyers and radio messages to provide information. Community-level recommendations include the following:

- Use local languages to furnish information on safer injection practices
- Ensure key roles for the LGAs and primary health care in implementation of interventions
- Support communities to provide sign posts and warnings at dumping sites for medical waste.

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APPENDIX I: PROPOSED AND ACTUAL SAMPLING OF THE FACILITIES

SUMMARY				Proposed		Achieved	
				# of facilities to be sampled at 90% confidence		# of facilities to be sampled at 90% confidence	
STATE	LGA	No. of facilities	No. of clusters	Hospital	Lower-Level	Hospital	Lower-Level
Bauchi	Bauchi	77	1	2	3	2	3
	Dambam	37		1	1	1	1
	Darazo	51		1	2	1	2
	Gamawa	54	1	1	3	1	3
	Shira	45		1	2	1	2
	T/Balewa	52		2	1	2	1
Benue	Agatu	50	1	1	2	0	3
	Buruku	36		1	2	0	3
	Guma	57		1	3	1	3
	Logo	28	1	1	2	0	3
	Makurdi	35		2	2	2	2
	Vandeikya	29		1	2	0	3
Sokoto	Gwadabawa	36	1	1	3	0	4
	Yabo	19		1	1	1	1
	Bodinga	30		1	3	1	3
	Gudu	13	1	0	2	0	2
	Rabah	21		1	3	0	4
	Sokoto South	11		2	2	2	2
Lagos	Alimosho	23	1	1	3	1	3
	Apapa	5		1	1	1	1
	Ibeju-Lekki	21		1	3	1	3
Cross River	Abi	22	1	1	1	1	1
	Boki	53		0	4	0	4
	Ogoja	39		1	3	1	3
TOTAL	24	844	8	25	55	20	60

APPENDIX 2: AIDSTAR-ONE 2011 BASELINE HEALTH FACILITY LIST

CODE	LGA	NAME OF HEALTH FACILITY	LEVEL
BAUCHI STATE			
A 1	Bauchi	Gudun PHC	Lower-level (LL)
A 2	Bauchi	Kagere Maternity	LL
A 3	Bauchi	Police Clinic	LL
A 4	Bauchi	Bauchi S H	Hospital (H)
A 5	Bauchi	Bayara General Hospital	H
A 6	Dambam	Dagauda PHC	LL
A 7	Dambam	Gen. Hosp. Dambam	H
A 8	Darazo	Darazo Health Center	LL
A 9	Darazo	Kari Health Center	LL
A 10	Darazo	General Hospital Darazo	H
A 11	Gamawa	Wabu Maternity	LL
A 12	Gamawa	Gadiya Modern Health Centre	LL
A 13	Gamawa	Gololo Model Health Clinic	LL
A 14	Gamawa	General Hospital Gamawa	H
A 15	Shira	Yana General Hospital	H
A 16	Shira	Disina PHC	LL
A 17	Shira	Foggo Mat/PHC	LL
A 18	Tafawa Balewa	Boto General Hospital	H
A 19	Tafawa Balewa	T/Balewa General Hospital	H
A 20	Tafawa Balewa	Gambar Health Clinic	LL
BENUE STATE			
B 1	Agatu	Aila Primary Health Centre	LL
B 2	Agatu	Okokolo Primary Health Centre	LL
B 3	Agatu	Obagaji Comprehensive Health Centre	LL
B 4	Buruku	Anvambe Primary Health Centre	LL
B 5	Buruku	Tyowane Primary Health Centre	LL
B 6	Buruku	Utsombi Modern Primary Health Centre	LL
B 7	Guma	Leemp Clinic Angyom	LL
B 8	Guma	FSP Dauda	LL
B 9	Guma	HC Adai	LL
B 10	Guma	General Hospital, Guma	H
B 11	Logo	Ugba Comprehensive Centre	LL
B 12	Logo	Indyer LG Health Centre	LL

CODE	LGA	NAME OF HEALTH FACILITY	LEVEL
B 13	Logo	Anyiin Isaiah Memorial Comprehensive Health Centre	LL
B 14	Markurdi	Family Practice Comprehensive Health Centre	LL
B 15	Markurdi	Federal Medical Centre	H
B 16	Markurdi	North Bank General Hospital	H
B 17	Markurdi	Origbo Primary Health Centre	LL
B 18	Vandeikya	Tyam Community Health Centre	LL
B 19	Vandeikya	Tyemimongo LG Health Centre	LL
B 20	Vandeikya	Tse-Kpum Comprehensive Health Centre	LL

SOKOTO STATE

C 1	Gwadabawa	Kangiye Dispensary	LL
C 2	Gwadabawa	RHC/General Hospital Gwadabawa	H
C 3	Gwadabawa	Zugana Dispensary	LL
C 4	Gwadabawa	Kalaba Dispensary	LL
C 5	Yabo	Toronkawa Dispensary	LL
C 6	Yabo	General Hospital Yobo	H
C 7	Bodinga	General Hospital Bodinga	H
C 8	Bodinga	PHC Danchadi	LL
C 9	Bodinga	Dingyadi Up-Graded Dispensary	LL
C 10	Bodinga	Kaura Buba Dispensary	LL
C 11	Gudu	PHC Balle	LL
C 12	Gudu	PHC Kurdula	LL
C 13	Rabah	Alikiru Dispensary	LL
C 14	Rabah	General Hospital Rabah	H
C 15	Rabah	PHC Gandhi	LL
C 16	Rabah	Sabaru Dispensary	LL
C 17	Sokoto South	Gidan Dahala Dispensary	LL
C 18	Sokoto South	Specialist Hospital	H
C 19	Sokoto South	Mabera BHC	LL
C 20	Sokoto South	Maryam Abacha Women & Children Hospital	H

LAGOS STATE

D 1	Alimosho	Ipaja PHC	LL
D 2	Alimosho	Agbado PHC	LL
D 3	Alimosho	Amikanle PHC	LL
D 4	Alimosho	General Hospital	H
D 5	Apapa	Ijora PHC	LL
D 6	Apapa	General Hospital Apapa	H
D 7	Ibeju Lekki	Orimedu PHC (24 hours)	LL
D 8	Ibeju Lekki	Awoyaya PHC	LL

CODE	LGA	NAME OF HEALTH FACILITY	LEVEL
D 9	Ibeju Lekki	Lekki PHC	LL
D 10	Ibeju Lekki	General Hospital	H
CROSS RIVER			
E 1	Abi	Isong Inyang	LL
E 2	Abi	Eja Memorial Hospital	H
E 3	Boki	Agba Osokom Health Centre	LL
E 4	Boki	PHC Isobendeghe	LL
E 5	Boki	H/P Ubong	LL
E 6	Boki	Okubushuyu HC	LL
E 7	Ogoja	Ekuano HC	LL
E 8	Ogoja	PHC Ekumtack	LL
E 9	Ogoja	Nkem H/C	LL
E 10	Ogoja	GH, Ogoja	H

APPENDIX 3: LIST OF REPLACEMENT FACILITIES USED IN THE SURVEY

Code	Local Government Area	Name of Health Facility	Level	Replacements
BAUCHI STATE				
A 1	Bauchil	Juwara Maternity	Lower-level (LL)	Gudun PHC (Dandango)
A 6	Dambam	Fagam Dispensary	LL	Dagauda PHC
A 8	Darazo	Kaugama Dispensary	LL	Darazo Health Center
A 9	Darazo	Lagon Wahu Dispensary	LL	Kari Health Center
A 11	Gamawa	Yada Dispensary Clinic	LL	Wabu Maternity
A 12	Gamawa	Kadikadi Dispensary Clinic	LL	Gadiya Modern Health Centre
A 13	Gamawa	Kaisawa Dispensary	LL	Gololo Model Health Clinic
A 16	Shira	Jahn Dispensary	LL	Disina PHC
A 17	Shira	Jama'a Dispensary	LL	Foggo Mat/PHC
BENUE STATE				
B 3	Agatu	General Hospital, Agatu	Hospital (H)	Obagaji Comprehensive Health Centre
B 6	Buruku	General Hospital, Buruku	H	Utsombi Modern Primary Health Centre
B 11	Logo	Wende Primary Health Centre	LL	Ugba Comprehensive Centre
B 13	Logo	General Hospital Logo	H	Anyiin Isaiah Memorial Comprehensive Health Centre
B 20	Vandeikya	Vandeikya General Hospital	H	Tse-Kpum Comprehensive Health Centre
SOKOTO STATE				
C 10	Bodinga	PHC Bagarawa	LL	Kaura Buba Dispensary
C 11	Gudu	Kukoki Dispensary	LL	PHC Balle
C 12	Gudu	Chilas Dispensary	LL	PHC Kurdula
C 15	Rabah	Tsamiya Dispensary	LL	PHC Gandhi
C 19	Sokoto South	Tudunwada Clinic	LL	Mabera BHC
LAGOS STATE				
D 8	Ibeju Lekki	Aboreji HP	LL	Awoyaya PHC
D 9	Ibeju Lekki	Okun Ise HP	LL	Lekki PHC
CROSS RIVER				
E 3	Boki	MCH Enyi Boje	LL	Agba Osokom Health Centre

APPENDIX 4: WORLD HEALTH ORGANIZATION TOOL C-REVISED



AIDSTAR-One Nigeria
AIDS SUPPORT AND TECHNICAL ASSISTANCE RESOURCES



Health Facility Baseline Assessment

Date: _____

Name of Facility: _____

Facility Code: _____

Address of Facility: _____

State: _____

LGA: _____

Type of Facility (*circle one*): 1. Hospital 2. Lower-level

Name of Head of Institution: _____

Telephone No.: _____

Email: _____

Names of the Assessors: _____

Name of Team Leader: _____

Name of Facility: _____ Facility Code: _____

SURVEY SECTION I: 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	<p>Are there any loose disposable needles and syringes inside the facility (for example, outside of packaging and not disposed of in a waste container)?</p> <p><i>[Including standard disposable, auto-disable, and other safety syringes.]</i></p>	<p>1. Yes 2. No</p>
Q102	<p>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)?</p>	<p>1. Yes 2. No 3. N/A</p>
Q103	<p>Is there any loose disposable intravenous infusion equipment inside the facility (for example, outside any packaging and not disposed of in a waste container)?</p>	<p>1. Yes 2. No 3. N/A</p>
Q104	<p>Is there any evidence that an attempt was made to sterilize disposable injection equipment for reuse?</p> <p><i>[For example, needles and syringes in a steam sterilizer, autoclave, boiler, pot, or dish of water.]</i></p>	<p>1. Yes 2. No</p>
Q105	<p>If you answered "Yes" to Q104, describe what you saw.</p>	<hr/>
Q106	<p>Is there any infectious waste other than used sharps (for example, bloody swabs or dressings) that is not in an appropriate container?</p> <p><i>[Infectious waste other than sharps should be placed in a container that is specific for non-sharps infectious waste. The 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></p>	<p>1. Yes 2. No</p>

	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>
Q106A	If you answered “Yes” to Q106, 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 leakproof sharps container in all areas where vaccinations are given?	1. Yes 2. No
Q112	Is there at least one puncture-resistant and leakproof sharps container in all areas where therapeutic injections are given?	1. Yes 2. No
Q113	Is there at least one puncture-resistant and leakproof sharps container in the area where phlebotomies are performed?	1. Yes 2. No 3. N/A
Q114	Is there at least one puncture-resistant and leakproof sharps container in areas where intravenous procedures are performed?	1. Yes 2. No 3. N/A
Q115	Is there one or more puncture-resistant and leakproof 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

	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>
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 "Yes" to Q118, 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> <i>Instructions: Multiple codes are permitted. Circle the answers that apply to this facility (for example: A + H for open burning on the ground hole followed by burial). Do not select "incinerator" if it is not working.</i>	A. Open burning on the ground B. Open burning in a hole or in an enclosure C. High- or medium-temperature incineration (two-chamber, Rotary Kiln, industrial, Demont forte or Waste Disposal Unit) 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 H. Dumping in an unsupervised area I. Transportation for offsite treatment (specify what type of transportation) _____ J. Other (specify): _____
Q124	Comments: <i>[Enter anything you are concerned about that is not captured by the questionnaire.]</i>	

Name of Facility: _____ Facility Code: _____

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: one vaccination, one therapeutic, one family planning, and/or one 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	<i>Please circle "Yes," "No," or "N/A" (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" <i>Vaccination</i>	"B" <i>Therapeutic</i>	"C" <i>Family Planning</i>	"D" <i>Dental</i>
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
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

	Injection Practices Observed	<i>Please circle "Yes," "No," or "N/A" (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" Vaccination	"B" Therapeutic	"C" Family Planning	"D" Dental
Q205	What type of syringe was used for the injection you observed? 1. Standard disposable 2. Auto-disable 3. Retractable 3. Other safety syringe 4. Sterilizable 5. Disposable – type unknown (If 4 sterilizable, then go to Q205A; others go to Q206.)	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.
Q205A	Are needles 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 (or sterile packs) using sterile technique?				Yes No N/A
Q208	For reconstitution , was a syringe and needle each taken from a sterile unopened packet or fitted with caps? <i>[Instructions: Code as N/A (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
Q210	If a multi-dose 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

	Injection Practices Observed	<i>Please circle “Yes,” “No,” or “N/A” (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” Vaccination	“B” Therapeutic	“C” Family Planning	“D” Dental
Q210A	If a multi-dose vial was used, did the provider clean the rubber cap with a dirty swab?	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A
Q211	If a multi-dose vial was used, was the needle removed from the rubber cap of each multi-dose vial after withdrawing each dose for administration? <i>[Instructions: Code as N/A (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, was 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 N/A (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 to 8 degrees Celsius during the period of use? <i>[A vial that is in contact with a combination of ice and water will be between 2 and 8 degrees Celsius.]</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
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.

	Injection Practices Observed	Please circle "Yes," "No," or "N/A" (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
Q215	<p>What was the patient's skin cleaned with before the injection was given?</p> <ol style="list-style-type: none"> 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 is clean 6. The skin was not cleaned and it is dirty 7. Not observed <p><i>[Select the most appropriate response.]</i></p> <p><i>[Instructions: If the provider used any unclean material to swab the skin including any swab soaking in a liquid, circle "4. A dirty swab".]</i></p>	<ol style="list-style-type: none"> 1. 2. 3. 4. 5. 6. 7. 	<ol style="list-style-type: none"> 1. 2. 3. 4. 5. 6. 7. 	<ol style="list-style-type: none"> 1. 2. 3. 4. 5. 6. 7. 	
Q216	<p>Did the provider re-cap the used needle and syringe?</p> <ol style="list-style-type: none"> 1. Yes, with one hand 2. Yes, with two hands 3. Not recapped 4. Not observed 	<ol style="list-style-type: none"> 1. 2. 3. 4. 	<ol style="list-style-type: none"> 1. 2. 3. 4. 	<ol style="list-style-type: none"> 1. 2. 3. 4. 	<ol style="list-style-type: none"> 1. 2. 3. 4.
Q217	<p>Was a needle remover or needle destroyer used?</p>	<p>Yes</p> <p>No</p>	<p>Yes</p> <p>No</p>	<p>Yes</p> <p>No</p>	<p>Yes</p> <p>No</p>
Q218	<p>If disposable or safety syringe was used, did the provider immediately dispose of the needles and syringes used for the injection (and reconstitution if applicable) in an appropriate sharps container after the injection?</p>	<p>Yes</p> <p>No</p> <p>N/A</p>	<p>Yes</p> <p>No</p> <p>N/A</p>	<p>Yes</p> <p>No</p> <p>N/A</p>	<p>Yes</p> <p>No</p> <p>N/A</p>
Q219	<p>If sterilizable equipment was used, was the equipment disassembled and immersed in a container of water immediately after the injection?</p>	<p>Yes</p> <p>No</p> <p>N/A</p>	<p>Yes</p> <p>No</p> <p>N/A</p>	<p>Yes</p> <p>No</p> <p>N/A</p>	<p>Yes</p> <p>No</p> <p>N/A</p>

Name of Facility: _____ Facility Code: _____

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: one phlebotomy, one lancet procedure, one intravenous injection, and one 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		<i>Please answer “Yes,” “No,” or “N/A” (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
Q301	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
Q302	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
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
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

	Injection Practice/Blood Drawing Observed	<i>Please answer “Yes,” “No,” or “N/A” (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
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 4. Not observed	1. 2. 3. 4.	1. 2. 3. 4.	1. 2. 3. 4.	1. 2. 3. 4.
Q308	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 is clean 6. The skin was not cleaned and it is 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 “4. 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.	1. 2. 3. 4. 5. 6. 7.
Q309	Did the provider palpate the venipuncture site after skin preparation with an antiseptic?	Yes No	Yes No	Yes No	Yes No

	Injection Practice/Blood Drawing Observed	<i>Please answer “Yes,” “No,” or “N/A” (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
Q310	For the procedure observed what device was/were used? 1. Holder/adapter and vacuum tubes 2. Standard disposable needle and syringe 3. Auto-disable syringe 4. Retractable syringe 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.
Q311	Was the device used 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
Q312	For each procedure performed on an IV system using a needle/syringe, was the IV system accessed from an IV port? <i>[That is, 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
Q312A	If you answered “No” to Q312, 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 percent, 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			

	Injection Practice/Blood Drawing Observed	<i>Please answer “Yes,” “No,” or “N/A” (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
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 re-cap a needle using two hands at any stage of the procedure?	Yes No	Yes No	Yes No	Yes No
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 was used, was the equipment immediately disassembled after the procedure using forceps?	Yes No N/A	Yes No N/A	Yes No N/A	Yes No N/A
Q322A	After disassembling, was the equipment immediately 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

	Injection Practice/Blood Drawing Observed	<i>Please answer “Yes,” “No,” or “N/A” (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
Q324	If a hematoma developed during a procedure, did 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
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

Name of Facility: _____ Facility Code: _____

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	<p>Is steam sterilization being used to sterilize any devices used for injections, venous phlebotomies, or intravenous procedures?</p> <p><i>[Ask staff whether steam sterilization 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></p>	<ol style="list-style-type: none"> 1. Yes 2. No [go to Q405] 3. Do not know
Q402	<p>Is the seal on the sterilizer currently used intact?</p>	<ol style="list-style-type: none"> 1. Yes 2. No 3. Do not know/not sure
Q403	<p>Is there an updated TST (temperature, steam, time) spot register for at least one sterilizer?</p>	<ol style="list-style-type: none"> 1. Yes 2. No
Q404	<p>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.</p>	<ol style="list-style-type: none"> 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	<p>Is any other sterilization method being used to sterilize devices used for injections, venous phlebotomies, or intravenous procedures?</p>	<ol style="list-style-type: none"> 1. Yes 2. No
Q405a	<p>If you answered "Yes" to Q405, specify method.</p>	<p>_____</p> <p>_____</p>
Q406	<p>Are there any sterilizable needles and syringes outside of a sterilizer, not currently in use, and not dismantled and immersed in water?</p> <p><i>[Needles and syringes currently in use might be laid on a clean dedicated area for preparation or performing a procedure.]</i></p>	<ol style="list-style-type: none"> 1. Yes 2. No 3. N/A
Q407	<p>Is there any evidence that indicates boiling or another cleansing method is used instead of sterilization?</p>	<ol style="list-style-type: none"> 1. Yes If yes, describe the evidence: _____ _____ 2. No
Q408	<p>Is there any evidence that indicates there have been attempts at cleaning or sterilizing disposable devices?</p>	<ol style="list-style-type: none"> 1. Yes 2. No

Name of Facility: _____ Facility Code: _____

SURVEY SECTION 5: INTERVIEW OF A PROVIDER

In Section 5, interview one injection provider in each lower level facility and one for each procedure observed in Sections 2 and 3 (maximum of eight) in each hospital. 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 three 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
Q50I	What type of health care provider is being interviewed?	1. Nurse 2. Physician 3. Laboratory scientist/technician 4. Community health officer/community health extension worker 5. Dentist 6. Other (<i>specify</i>): _____
Q50IA	What was your age at your last birthday?	1. < 20 2. 21–30 3. 31–40 4. 41–50 5. 51–60 6. > 60

	Interview of a Provider	Response
Q501B	Gender	1. Male 2. Female
Q501C	How many years of post-qualification experience do you have?	1. < 1 year 2. 1–10 years 3. 11–20 years 4. 21–30 years 5. > 30 years
Q502	Do you use any sterilizable needles and syringes to administer injections in this unit/department/facility?	1. Yes 2. No 3. Do not know/not applicable to the provider
Q503	Do you use any sterilizable needles and syringes during performance of phlebotomies (blood collection) at this unit/department/facility?	1. Yes 2. No 3. Do not know/not applicable to the provider
Q504	Do you use any sterilizable equipment during performance of intravenous injections or infusions at this unit/department/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. Do not know/not applicable to the provider
Q505	In the last six months, have clients brought their own injection devices for an immunization at this unit/department/facility?	1. Always 2. Sometimes 3. Never 4. Not applicable
Q506	In the last six months, have patients brought their own injection devices for a therapeutic injection at this unit/department/facility?	1. Always 2. Sometimes 3. Never 4. Not applicable
Q507	In the last six months, have patients brought their own injection devices for a contraceptive injection at this unit/department/facility?	1. Always 2. Sometimes 3. Never 4. Not applicable
Q508	Are you aware of any needles and syringes for sale outside your facility?	1. Yes 2. No 3. Do not know

	Interview of a Provider	Response
Q509	Have there been any stockouts of puncture-resistant sharps containers during the last six months in this unit/department/facility?	1. Yes 2. No
Q510	Have you used a needle remover or needle destroyer in this unit/department/facility during the last six months?	1. Yes 2. No 3. Do not know
Q511	Are guidelines outlining all post-exposure management procedures available? <i>If yes, ask to see the document, Comments:</i> _____ _____	1. Yes 2. No 3. Do not know
Q512	Is there support and counseling for blood and body fluid exposures?	1. Yes 2. No 3. Do not know
Q513	Where possible, is post-exposure prophylactic medication for high-risk exposures provided?	1. Yes 2. No 3. Do not know
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 _____ <i>(If Q514=0, go to Q518.)</i>
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?	1. Yes 2. No <i>[If "yes," ask Q516; if "no," go to Q517.]</i>
Q516	If you reported your most recent needle-stick or sharps injury, were you offered infectious disease testing?	1. Yes 2. No
Q517	If you had accidental needle-stick or sharps injury, did you go for infectious disease testing on your own?	1. Yes 2. No
Q518	Was training regarding injection safety available to you within the last two years in a formal lecture or workshop?	1. Yes 2. No
Q519	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>	1. Hepatitis B 2. Hepatitis C 3. HIV 4. Others (specify): _____ 5. Do not know

	Interview of a Provider	Response
Q520	<p>Have you yourself ever received the vaccine against hepatitis B?</p> <p><i>[One or more.]</i></p>	<p>1. Yes</p> <p>2. No</p> <p>3. I cannot remember</p>
Q521	<p>If yes, how many hepatitis B vaccine doses have you received?</p> <p><i>[Let the provider respond without prompting with any of the answers.]</i></p>	<p>1. One</p> <p>2. Two</p> <p>3. Three or more</p> <p>4. I cannot remember</p>

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SURVEY SECTION 6: INTERVIEW OF A SUPERVISOR OF INJECTION PROVIDERS

In Section 6, interview one supervisor of injection providers in each lower-level facility and one supervisor for each provider interviewed in Section 5 (maximum of eight) in each hospital. 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 three 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.

Questions	Interview of a Supervisor	Response
Q600	What type of health care provider is being interviewed?	<ol style="list-style-type: none"> 1. Nurse 2. Physician 3. Laboratory scientist/technician 4. Community health officer/community health extension worker 5. Dentist 6. Other (specify): _____
Q600A	What was your age at your last birthday?	<ol style="list-style-type: none"> 1. < 20 2. 21–30 3. 31–40 4. 41–50 5. 51–60 6. > 60

Questions	Interview of a Supervisor	Response
Q600B	Gender	<ol style="list-style-type: none"> 1. Male 2. Female
Q600C	How many years of post-qualification experience do you have?	<ol style="list-style-type: none"> 1. < 1 year 2. 1–10 years 3. 11–20 years 4. 21–30 years 5. > 30 years
Q601	<p>Are there any injection safety policy/guidelines/standard operating procedures by the ministry or other government agencies available in your unit/department/facility?</p> <p>If so, can you show it to me?</p>	<ol style="list-style-type: none"> 1. Yes, and it was shown 2. Yes, but it was not shown 3. No, there is no policy 4. Do not know
Q602	<p>Is there a health care waste disposal policy/guidelines/standard operating procedures by the ministry or other government agencies available in your unit/department/facility?</p> <p>If so, can you show it to me?</p>	<ol style="list-style-type: none"> 1. Yes, and it was shown 2. Yes, but it was not shown 3. No, there is no policy 4. Do not know
Q603	<p>On average, how many immunizations are performed per week in this unit/department/facility?</p> <p><i>[At any stage of administration (i.e., cumulative number each week).]</i></p>	<p>Number: _____</p> <p>N/A (if no immunization given)</p>
Q604	<p>On average, how many therapeutic injections are performed per week in this unit/department/facility?</p> <p><i>[At any stage of administration (i.e., cumulative number each week).]</i></p>	<p>Number: _____</p> <p>N/A (if no therapeutic injections given)</p>
Q605	<p>On average, how many phlebotomies (blood collection) are performed per week in this unit/department/facility?</p> <p><i>[At any stage of administration (i.e., cumulative number each week).]</i></p>	<p>Number: _____</p> <p>N/A (if no phlebotomies performed)</p>
Q605A	<p>On average how many lancet procedures are performed per week in this unit/department/facility?</p> <p><i>[At any stage of administration (i.e., cumulative number each week).]</i></p>	<p>Number: _____</p> <p>N/A (if no lancet procedures performed)</p>

Questions	Interview of a Supervisor	Response
Q606	<p>On average, how many intravenous infusions are performed each week at this unit/department/facility?</p> <p><i>[At any stage of administration (i.e., cumulative number each week).]</i></p>	<p>Number: _____</p> <p>N/A (if no intravenous infusions are performed)</p>
Q607	<p>On average, how many intravenous injections are performed each week at this unit/department/facility?</p> <p><i>[At any stage of administration (i.e., cumulative number each week).]</i></p>	<p>Number: _____</p> <p>N/A (if no intravenous injections are performed)</p>
Q608	<p>In this unit/department/facility, are any sterilizable syringes and needles used for performing any procedures?</p>	<ol style="list-style-type: none"> 1. Yes 2. No 3. Do not know <p><i>(If no, skip to Q610.)</i></p>
Q609	<p>If sterilizable equipment was 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?</p> <p><i>(Note to interviewer—check the fuel supply to the generator for the last six months.)</i></p>	<ol style="list-style-type: none"> 1. Fuel was always available 2. Less than one month 3. One to three months 4. Four to six months 5. Not applicable/no sterilizable equipment
Q610	<p>In the last six months, if there have been any stockouts 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?</p>	<ol style="list-style-type: none"> 1. Stock was always available 2. Less than one month 3. One to three months 4. Four to six months 5. Not applicable 6. Do not know/do not remember
Q611	<p>In the last six months, if there have been any stockouts 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?</p>	<ol style="list-style-type: none"> 1. Stock was always available 2. Less than one month 3. One to three months 4. Four to six months 5. Not applicable/do not use disposable needles with holder/adapters 6. Do not know/do not remember

Questions	Interview of a Supervisor	Response
Q612	In the last six months, if there have been any stockouts of disposable syringes/needles used for phlebotomy (blood collection) in any of the units that you supervise, for how long in total were you out of stock?	<ol style="list-style-type: none"> 1. Stock was always available 2. Less than one month 3. One to three months 4. Four to six months 5. Not applicable/do not use disposable syringes/needles for phlebotomy 6. Do not know/do not remember
Q612A	In the last six months, if there have been any stockouts of lancets used for blood collection in any of the units that you supervise, for how long in total were you out of stock?	<ol style="list-style-type: none"> 1. Stock was always available 2. Less than one month 3. One to three months 4. Four to six months 5. Not applicable/do not use disposable syringes/needles for phlebotomy 6. Do not know/do not remember
Q613	In the last six months, if there have been any stockouts of equipment for intravenous infusions in any of the units that you supervise, for how long in total were you out of stock?	<ol style="list-style-type: none"> 1. Stock was always available 2. Less than one month 3. One to three months 4. Four to six months 5. Not applicable/do not do infusions 6. Do not know/do not remember
Q614	In the last six months, if there have been any stockouts of puncture-resistant sharps containers in any of the units that you supervise, for how long in total were you out of stock?	<ol style="list-style-type: none"> 1. Stock was always available 2. Less than one month 3. One to three months 4. Four to six months 5. Not applicable 6. Do not know/do not remember
Q615	<p>Which kind of protective equipment is available to those that handle health care waste?</p> <p><i>[Indicate all that apply.]</i></p>	<ol style="list-style-type: none"> 1. None 2. Latex gloves 3. Heavy-duty gloves 4. Boots 5. Nose mask 6. Apron 7. Overalls 8. Other (specify): _____

Questions	Interview of a Supervisor	Response
Q616	Are there designated staff that dispose of health care waste?	1. Yes [go to Q617] 2. No [go to Q618] 3. Do not know [go to Q618]
Q617	Has the designated staff that handles health care waste received any formal training in waste management?	1. Yes 2. No 3. Do not know
Q618	When you run short of injection equipment, is there a way to place an emergency order for equipment?	1. Yes 2. No (go to Q621)
Q619	Have you placed any emergency orders for injection equipment in the last six months?	1. Yes 2. No (go to Q621)
Q620	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. One or two weeks 3. More than two weeks 4. Not applicable 5. Do not know/do not remember
Q621	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: _____ _____ _____ _____
Q622	Is there an infection prevention and control committee in your facility?	1. Yes 2. No
Q623	Where possible, is post-exposure prophylactic medication for high-risk exposures provided?	1. Yes 2. No
Q624	If you answered "Yes" to Q623, specify what kind of prophylaxis is offered.	_____ _____
Q625	Are records maintained for occupational exposures in your facility? [If yes, request to see the records.]	1. Yes 2. No

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SURVEY SECTION 7: STRUCTURED OBSERVATIONS OF DISPOSABLE EQUIPMENT OF INJECTIONS

	Disposable Equipment Tabulations	Circle the best answer
Q701	<p>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?</p> <p><i>[That is, at least enough for two weeks of immunizations according to the interview of the supervisor.]</i></p>	<p>1. Yes</p> <p>2. No</p> <p>3. N/A (No vaccination activity)</p>
Q702	<p>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?</p> <p><i>[That is, enough for two weeks according to the interview of the supervisor.]</i></p> <p><i>[Safety syringes have a reuse prevention feature, as is the case for AD and retractable syringes.]</i></p>	<p>1. Yes</p> <p>2. No</p>
Q703	<p>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?</p> <p><i>[That is, at least enough for two weeks of phlebotomies according to the interview of the supervisor.]</i></p>	<p>1. Yes</p> <p>2. No</p> <p>3. N/A (No phlebotomy procedures)</p>
Q703A	<p>Is the number of lancets available at the procedure site and in stock together greater than two times the response given for Q605?</p> <p><i>[That is, at least enough for two weeks of phlebotomies according to the interview of the supervisor.]</i></p>	<p>1. Yes</p> <p>2. No</p> <p>3. N/A (No lancet procedures)</p>
Q704	<p>Is the number of disposable intravenous cannula available at the procedure site greater than two times the response for Q606?</p> <p><i>[That is, enough for two weeks according to the interview of the supervisor.]</i></p>	<p>1. Yes</p> <p>2. No</p> <p>3. N/A (No IV injections or infusions)</p>
Q705	<p>Is the number of intravenous sets available at the procedure site greater than two times the response for Q606?</p> <p><i>[That is, enough for two weeks according to the interview of the supervisor.]</i></p>	<p>1. Yes</p> <p>2. No</p> <p>3. N/A (No IV injections or infusions)</p>

Name of Facility _____ Facility Code: _____

SURVEY SECTION 8: INTERVIEW OF WASTE HANDLER

Instructions: This section is based on the waste handler's answers only. If more than one is present on the day of the interview, interview the one who is the primary person in charge of managing health care waste. Only one form will be filled out per facility.

	Interview of Waste Handler	Circle best answer
Q801	What was your age at your last birthday?	1. < 20 2. 21–30 3. 31–40 4. 41–50 5. 51–60 6. > 60
Q802	Gender	1. Male 2. Female
Q803	Have you received any training on handling waste, such as safer ways of handling and disposing waste?	1. Yes 2. No
Q804	What protective equipment (if any) is available for waste handlers at this facility? <i>Instructions: Circle all that are mentioned. Do not read the list aloud.</i>	1. None 2. Latex gloves 3. Heavy-duty gloves 4. Boots 5. Nose mask 6. Apron 7. Overalls 8. Other (specify): _____
Q805	Have you had accidental needle-stick or sharps injuries (with used equipment) in the last six months?	1. Yes 2. No (go to Q809)
Q806	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?	1. Yes (go to Q807) 2. No (go to Q808)
Q807	If you reported your most recent needle-stick or sharps injury, were you offered any testing?	1. Yes 2. No (go to Q809)
Q808	If you had accidental needle-stick or sharps injury, did you go for infectious disease testing on your own?	1. Yes 2. No

	Interview of Waste Handler	Circle best answer
Q809	Have you ever received the vaccine against hepatitis B? <i>[One or more doses.]</i>	1. Yes 2. No 3. I cannot remember
Q810	If yes, how many hepatitis B vaccine doses have you received? <i>[Let the waste handler respond without prompting with any of the answers.]</i>	1. One 2. Two 3. Three or more 4. I cannot remember

For more information, please visit aidstar-one.com.

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