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# EVALUATION OF INJECTION SAFETY AND HEALTH CARE WASTE MANAGEMENT IN NIGERIA

## 2009 COMPARISON REPORT

**SEPTEMBER 2009**

This publication was produced for review by the United States Agency for International Development. It was prepared by the Making Medical Injections Safer (MMIS) project.



**MMIS**  
Making Medical Injections Safer



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## Acknowledgements

The MMIS team is grateful to the Federal Ministry of Health (FMOH) for their permission and cooperation during the time of data collection and to the management of the health centers involved in this assessment for allowing the data collectors access to their facilities and staff. Special thanks go to the MMIS/Nigeria team under the leadership of Dr. Abimbola Sowande, MMIS/Nigeria Country Director, for their participation in training, supervision, and logistical coordination.

A very big thank you to the local consultants who served as study coordinators—Taiwo Adekanmbi and Toyin Akpan and to the teams of data collectors.

Additional thank you to Ms. Karen Van Roekel, Senior Monitoring and Evaluation Advisor, for serving as Principal Investigator for this study as well as other staff from MMIS/HQ, Ms. Deepa Bhat Shanadi, Monitoring and Evaluation Consultant; Mr. Ethan Collins, M&E Advisor; Ms. Megan Noel, M&E Technical Officer; and Dr. Iqbal Hossain, MMIS Technical Officer,.

MMIS thanks USAID and the President's Emergency Plan for AIDS Relief whose financial support has made the survey and the MMIS interventions in Nigeria possible.

This study would not have been possible without the participants who provided the information upon which the report is based. Our gratitude goes to all the service providers, supervisors, waste handlers, and patients.

Assessment Team Members  
2005

Data collectors	Data collectors	Data collectors
<b>Lagos</b> Dr. Adesola Oshin: Team Leader Mrs. Gladys Ihunda Mrs. Titi Obasa	<b>Kano</b> Zubaida A Nagee: Team Leader Mrs. M. Salami Muhammed Salim Mr. R. O Kelani	<b>FCT</b> Mr. Yakubu Mohammed Larry Okpako Chuks Okoh
<b>Edo</b> George Ayua Dr. Omokhoa Adeleye Mohammed Salim Dr. Peter Idafiogho	<b>Cross River</b> Mr. Felix Okocha: Team Leader Oginni Oshodi Bassey Egbe	<b>Anambra</b> Dr. Anthony Okwuosah Dr. Obi Ezeaku Mrs. O. F. Adegoke
<b>Analysis Team</b> Quail Rogers-Bloch Uche Ohawe Dr. Funke Jibowu Mr. Kunle Adegoke	<b>Report writing</b> Quail Rogers-Bloch Abimbola Sowande Toyin Akpan	<b>Logistics Team</b> Mr. William Cobham Maria Elejire
<b>2008 Team</b> <b>Cross River</b> Mr. Felix Okocha: Team Leader Idi Perpetua Alice Erejuwa Dr. Ngozi Agbanusi : Supervisor	<b>Kano</b> Zubaida A Nagee: Team Leader Rukaiyyat Yahaya Bala Muazu Roselyn Gabriela Dr. Funke Jibowu : Supervisor	<b>FCT</b> Salim Mohammed Adama Elelu: Team leaders Aminu Bashir Ruth Ajayi Clement Akintimi : Supervisor
<b>Lagos</b> Dr. Toriola Femi Adebayo Dr. Kayode Osisanmi: Team Leaders Bamke Okunribido Yakubu Mohammed Safurat Agoro Omolola Adegoke Toyin Akpan : Supervisor	<b>Edo</b> Jamiu Ganiyu : Team leader Kome Esi Kate Agbadua Kelechi Amaefule : Supervisor	<b>Anambra</b> Chuks Okoh : Team Leader Glory Ezenwafor Eno Ajuogu Hamisu Hassan : Supervisor
<b>Logistics Team</b> Mr. William Cobham Maria Elejire	<b>Analysis Team</b> Taiwo Adekanmbi Toyin Akpan Deepa Bhat Shanadi Dr. Funke Jibowu Megan Noel	<b>Report writing</b> Toyin Akpan Deepa Bhat Shanadi Ethan Collins Megan Noel Abimbola Sowande

# EVALUATION OF INJECTION SAFETY AND HEALTH CARE WASTE MANAGEMENT IN NIGERIA

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**Abstract:** The United States President's Emergency Plan for AIDS Relief (PEPFAR), through the United States Agency for International Development (USAID), has funded JSI Inc. for the implementation of the *Making Medical Injections Safer (MMIS)* project in Nigeria. JSI and its partners are responsible for implementing other similar projects in 10 other countries in Africa and the Caribbean. This report describes the results of the final evaluation on the status of injection safety and health care waste management, which took place in Nigeria, during the month of October 2008 in six states.

Recommended citation: Akpan, Toyin; Bhat Shanadi, Deepa; Noel, Megan; Sowande, Abimbola; Van Roekel, Karen; Collins, Ethan; *Evaluation of Injection Safety and Health Care Waste Management in Nigeria: 2009 Final Report*, March edition. MMIS for the Office of the Global AIDS Coordinator (OGAC) and USAID.



The Making Medical Injections Safer (MMIS) project is a five-year initiative funded by the President's Emergency Plan for AIDS Relief through the US Agency for International Development. Financial support was provided through contract # GHS-I-00-03-0026-00.



Making Medical Injections Safer is implemented by JSI Inc. in collaboration with the Program for Appropriate Technology in Health (PATH), the Academy for Educational Development (AED), and the Manoff Group.

Development of this publication was supported by USAID, contract # GSA-GS-10F-0453. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of OGAC or USAID.

Making Medical Injections Safer  
John Snow, Inc./Nigeria  
90, Nelson Mandela Street,  
Asokoro,  
Abuja  
Tel: +234 7034051033  
[www mmis.jsi.com](http://www.mmis.jsi.com)

MMIS Headquarters  
John Snow, Inc.  
1616 N. Fort Myer Drive, 11th Floor  
Arlington, Virginia 22209 USA  
Tel: 1 (703) 528-7474  
Email: [info@mmis.jsi.com](mailto:info@mmis.jsi.com)  
[www.mmis.jsi.com](http://www.mmis.jsi.com)

Office of the Global AIDS Coordinator  
SA-29, 2nd floor  
2201 C. Street NW  
Washington, DC 20522-2920 USA  
Tel: 1 (202) 663-2708  
[www.pepfar.gov](http://www.pepfar.gov)

U.S. Agency for International Development  
Bureau of Global Health  
Office of HIV/AIDS  
Ronald Reagan Building  
1300 Pennsylvania Avenue NW  
Washington, DC 20523 USA  
Tel: 1 (202) 712-4810  
Email: [inquiries@usaid.gov](mailto:inquiries@usaid.gov)  
[www.usaid.gov](http://www.usaid.gov)

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# TABLE OF CONTENTS

<b>ACKNOWLEDGEMENTS.....</b>	<b>3</b>
<b>TABLE OF CONTENTS .....</b>	<b>7</b>
<b>LIST OF ABBREVIATIONS.....</b>	<b>11</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>13</b>
<b>1. GENERAL INTRODUCTION .....</b>	<b>21</b>
<b>2. METHODOLOGY.....</b>	<b>23</b>
2.1 OBJECTIVES OF THE STUDY.....	23
2.2 SAMPLING.....	23
2.3 DATA COLLECTION TOOL.....	24
2.4 DATA COLLECTION.....	25
2.5 ORGANIZATION AND COORDINATION OF THE DATA ENTRY AND ANALYSIS.....	25
2.6 LIMITATIONS.....	25
<b>3. DESCRIPTION OF THE ATTAINED SAMPLE.....</b>	<b>27</b>
<b>4. RESULTS OF THE STOCK OF INJECTION EQUIPMENT AND PRODUCTS IN THE MAIN STOCKROOMS OF THE HEALTH FACILITIES.....</b>	<b>29</b>
4.1 ANALYSIS OF THE STOCKCARDS: AVAILABILITY, UPDATE, AND EVIDENCE OF STOCKOUTS BY PRODUCT.....	29
4.1.1 SAFETY BOXES.....	29
4.1.2 STANDARD DISPOSABLE SYRINGES.....	30
4.1.3 DISPOSABLE SYRINGES WITH FEATURES THAT PREVENT REUSE.....	31
4.1.4 DISPOSABLE SYRINGES WITH FEATURES THAT PREVENT REUSE AND ACCIDENTAL NEEDLESTICK INJURIES.....	31
4.2 COMPARISON OF STOCK OF SAFETY BOXES WITH THE STOCK OF SYRINGES.....	34
4.3 PRESENCE OF ORAL FORMULATIONS OF COMMON MEDICINES.....	34
<b>5. OBSERVATIONS ON MATERIALS, EQUIPMENT, AND WASTE MANAGEMENT.....</b>	<b>37</b>
5.1 PRESENCE AND USE OF SAFETY BOXES IN LOCATIONS WHERE INJECTIONS ARE ADMINISTERED.....	37
5.2 INDIVIDUAL INDICATORS OF THE DISPOSAL OF USED SHARP OBJECTS.....	37
5.3 STORAGE OF FULL SAFETY BOXES.....	39
5.4 TIGHTLY SEALED SAFETY BOXES.....	39
5.5 WASTE SEGREGATION.....	40
5.6 LOOSE BIOLOGICAL WASTE.....	40
5.7 EVIDENCE OF STERILIZATION OF USED INJECTION DEVICES.....	40
5.8 OBSERVATIONS ON PERSONAL PROTECTIVE EQUIPMENT.....	40
5.9 WASTE DISPOSAL METHODS.....	41
5.10 OBSERVATIONS ON JOB AIDS.....	42
<b>6. OBSERVATIONS ON INJECTION ADMINISTRATION PRACTICES .....</b>	<b>43</b>
6.1 PREPARATION OF INJECTIONS ON A CLEAN WORK TABLE OR TRAY.....	44
6.2 HAND HYGIENE AND USE OF NEW GLOVES.....	44
6.3 CLEANING THE PATIENT'S SKIN BEFORE THE INJECTION.....	44
6.4 TYPE OF EQUIPMENT USED FOR PROCEDURE.....	45
6.5 PATIENTS AS THE SOURCE OF INJECTION EQUIPMENT.....	46
6.6 USE OF NEW NEEDLES AND SYRINGES FOR INJECTIONS AND TO RECONSTITUTE MEDICATIONS.....	46
6.7 DILUENTS FOR RECONSTITUTION.....	47
6.8 REMOVING NEEDLES FROM THE CAP OF MULTIDOSE VIALS.....	47
6.9 USE OF CLEAN BARRIERS TO PROTECT FINGERS WHEN BREAKING GLASS AMPOULES.....	48
6.10 TEMPERATURE AT WHICH HEAT-SENSITIVE VACCINES WERE STORED.....	48
6.12 USE OF A SAFETY BOX FOR IMMEDIATE DISPOSAL OF USED SHARPS.....	49
6.13 PHLEBOTOMY PRACTICES.....	50

6.14 BEHAVIOR CHANGE COMMUNICATION .....	52
6.15 FOLLOW-UP INSTRUCTIONS GIVEN TO PATIENTS .....	53
<b>7. INTERVIEWS WITH INJECTION PROVIDERS.....</b>	<b>55</b>
7.1 AVAILABILITY OF INJECTION EQUIPMENT IN COMMUNITY .....	55
7.2 USE OF ANY DISPOSABLE SAFETY SYRINGES .....	55
7.3 RECALL OF STOCKOUTS OF SAFETY BOXES AND SYRINGES .....	55
7.4 REUSE OF A NEEDLE OR SYRINGE .....	57
7.5 USE OF NEEDLE REMOVAL DEVICES.....	57
7.6 ACCIDENTAL NEEDLESTICK INJURIES.....	57
7.7 PROVIDERS' KNOWLEDGE OF DISEASES TRANSMITTED BY REUSE OF NONSTERILE NEEDLES .....	59
7.8 INJECTION PROVIDERS VACCINATED AGAINST HEPATITIS B .....	59
7.9 INJECTION PROVIDERS WHO RECEIVED TRAINING ON INJECTION SAFETY .....	60
7.10 DESCRIPTION OF A SAFE INJECTION.....	61
7.11 SOURCES OF INJECTION SAFETY MESSAGES .....	62
7.12 BARRIERS TO BEHAVIOR CHANGE.....	62
7.13 PROVIDER PREFERENCE FOR INJECTIONS IN TREATING FEVER.....	63
<b>8. INTERVIEWS WITH SUPERVISORS OF INJECTION PROVIDERS.....</b>	<b>65</b>
8.1 AVAILABILITY OF POLICIES AND GUIDELINES .....	65
8.2 STOCKOUTS OF SYRINGES AND SAFETY BOXES .....	65
8.3 DELIVERY OF VACCINES AND OTHER MEDICATIONS WITH CORRESPONDING QUANTITIES OF INJECTION EQUIPMENT AND SAFETY BOXES .....	66
8.4 SUPERVISORS' PERCEPTION OF THE QUANTITIES OF SYRINGES AND SAFETY BOXES FOR CURATIVE SERVICES .....	68
8.5 SUSTAINING BEHAVIOR CHANGE .....	69
<b>9. INTERVIEWS OF WASTE HANDLERS .....</b>	<b>71</b>
9.1 MAIN METHODS OF WASTE DISPOSAL USED .....	71
9.3 AVAILABILITY OF PERSONAL PROTECTIVE EQUIPMENT.....	75
9.4 ACCIDENTAL NEEDLESTICK INJURIES.....	76
9.5 WASTE HANDLERS' KNOWLEDGE OF DISEASES TRANSMITTED BY NEEDLESTICK INJURIES .....	77
9.7 HEPATITIS B VACCINATION OF WASTE HANDLERS .....	78
9.8 TRAINING OF WASTE HANDLERS .....	79
9.9 SOURCES OF INFORMATION FOR WASTE HANDLERS .....	79
<b>10. EXIT INTERVIEWS WITH PATIENTS .....</b>	<b>81</b>
10.1 SOCIODEMOGRAPHIC CHARACTERISTICS OF THE PATIENTS.....	81
10.2 PATIENTS' KNOWLEDGE OF THE AVAILABILITY OF NEW NEEDLES AND SYRINGES IN THE COMMUNITY .....	82
10.3 SOURCE OF THE INJECTION EQUIPMENT USED ON THE DAY OF THE SURVEY.....	82
10.4 PATIENTS' RECALL OF INJECTIONS RECEIVED IN THE HEALTH FACILITY SURVEYED.....	84
10.5 PATIENTS' RECALL OF INJECTIONS RECEIVED OUTSIDE THE HEALTH FACILITY SURVEYED.....	85
10.6 PATIENTS' ATTITUDES ON INJECTIONS.....	85
10.7 SOURCE OF INFORMATION ABOUT INJECTIONS OR NEEDLES OR SYRINGES .....	87
10.8 SAFE INJECTION KNOWLEDGE BY PATIENTS .....	89
<b>11. DISCUSSION AND CONCLUSIONS.....</b>	<b>91</b>
<b>12. RECOMMENDATIONS.....</b>	<b>95</b>
<b>APPENDIX 1: STATE LEVEL ANALYSIS .....</b>	<b>99</b>
<b>APPENDIX 2: LIST OF HEALTH FACILITIES .....</b>	<b>101</b>
<b>APPENDIX 3: SURVEY FORM .....</b>	<b>103</b>



## List of Tables

Table 1: Table summarizing the sampling of the target population by section of the survey.....	24
Table 2: Sampling by type of organization .....	27
Table 3: Summary of the availability of stockcards, by product.....	33
Table 4: Summary of the updating of stockcards for health facilities that have them, by product .....	33
Table 5: Comparison of the stock of safety boxes and syringes .....	34
Table 6: Stock of oral medications .....	35
Table 7: Observations on the use of safety boxes .....	37
Table 8: Observations on the condition of the safety boxes and used sharps .....	38
Table 9: Observations on the storage of full safety boxes.....	39
Table 10: Observations on segregation of waste and biological waste .....	40
Table 11: Waste management observations.....	41
Table 12: Observations on the main methods used to dispose of sharps waste at baseline and follow-up .....	41
Table 13: Types of health care workers observed administering an injection .....	43
Table 14: Distribution of the injections based on type at baseline and follow-up .....	43
Table 15: References to communication materials .....	53
Table 16: Follow-up instructions given to patients.....	53
Table 17: Injection providers' spontaneous description of a safe injection.....	61
Table 18: Providers source of information on injection safety .....	62
Table 19: Difficulties faced by injection providers in following safe injection and waste disposal practices .....	62
Table 20: What supervisors need to remind injection providers to do .....	70
Table 21: Comparison of the distribution of health facilities surveyed according to disposal methods for the three types of medical waste: sharp, infectious, and noninfectious at baseline .....	73
Table 22: Comparison of the distribution of health facilities surveyed according to disposal methods for the three types of medical waste: sharp, infectious, noninfectious at follow-up .....	73
Table 23: Problems encountered in waste management .....	75
Table 24: Waste handlers' source of information on injection safety.....	80
Table 25: Distribution of the sampling of patients by state at baseline and follow-up .....	81
Table 26: Sociodemographic characteristics of the adult patients interviewed at baseline .....	82
Table 27: Reasons for preference for injections.....	87
Table 28: Reasons for preference for tablets .....	87
Table 29: Patients' source of information on injection safety, at follow-up .....	88
Table 30: Common risk factors for health care workers and patients.....	92
Table 31: Risk factors specific to injection providers.....	93
Table 32: Risk factors specific to waste handlers.....	93
Table 33: Risk factors related to patients and visitors at health facilities.....	94

## List of Figures

Figure 1 : Summary of satisfactory disposal practices at baseline and follow-up.....	39
Figure 2: Availability of injection safety materials at health facilities.....	42
Figure 3: Summary of the observations related to infection prevention and control .....	45
Figure 4: Summary of the distribution of observations on the sources and practices of using new needles and syringes .....	47
Figure 5: Summary of the variables on protecting injectable medications from contamination or deterioration .....	49
Figure 6: Summary of the observations on disposal of sharp objects after injections .....	50
Figure 7: Proportion of providers reporting stockouts of safety boxes and syringes in the six months prior to the survey .....	57
Figure 8: Providers' recall of needlestick injuries in the six months prior to the survey .....	59
Figure 9: Injection providers who declared receiving the hepatitis B vaccine at baseline and follow-up .....	60
Figure 10: Injection providers who reported receiving training on injection safety at baseline and follow-up .....	61
Figure 11: Which is more effective for fever—orals or injections.....	63
Figure 12: Vaccines delivered in quantities corresponding to the injection equipment and safety boxes at baseline and follow-up .....	68
Figure 13: Other medications delivered in quantities corresponding to the injection equipment and safety boxes at baseline and follow-up .....	68
Figure 14: Supervisors' perception that the quantities of injection equipment were adequate for curative services they provide at baseline and follow-up .....	69
Figure 15: Supervisors' perception that the quantities of safety boxes were adequate for curative services they provide at baseline and follow-up .....	69
Figure 16: Overall summary of the distribution of health facilities surveyed according to the general categories of sharps waste disposal at baseline and follow-up.....	74
Figure 17: Distribution of waste handlers according to the type of protective equipment available at the health facilities surveyed.....	76
Figure 18: Distribution of waste handlers according to the number of accidental needlestick injuries in the six months preceding the survey.....	77
Figure 19: Waste handlers who declared having received the hepatitis B vaccine at baseline and follow-up.....	78
Figure 20: Training of waste handlers at baseline and follow-up .....	79
Figure 21: Patients who declared that a needle and syringe from a sealed package were used for the injection received on the day of the survey .....	83
Figure 22: Patients Who recall of the number of injections received in the health facility surveyed in the six months prior to the survey .....	84
Figure 23: Preferences expressed by patients regarding formulations of medications at baseline and follow-up .....	86
Figure 24: Information seen/ heard on injections by patients, at follow-up.....	88

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## List of Abbreviations

AD	Auto-Disable Syringe
ACT	Arthemisin-based combination therapy (ACT)
AIDS	Acquired immune deficiency syndrome
BCC	Behavior Change Communication
FCT	Federal Capital Territory
FP	Family Planning
FMOH	Federal Ministry of Health
GOPD	General Outpatient Department
HCWM	Health Care Waste Management
HIV	Human immunodeficiency virus
MMIS	Making Medical Injections Safer project
OGAC	Office of the Global AIDS Coordinator
PEPFAR	President's Emergency Plan for AIDS Relief
PPE	Personal Protective Equipment
SIGN	Safe Injection Global Network
USAID	United States Agency for International Development
WHO	World Health Organization



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## Executive Summary

One of the objectives of the FMOH is to improve the quality of care provided on all levels of the health care pyramid. Previous studies revealed that the problem of injection safety and the management of waste generated by health care activities is acute. Through PEPFAR, Nigeria received technical and financial support to promote injection safety and health care waste management (HCWM) through the support of USAID. This injection safety and HCWM project resulted in the activities of the MMIS project. With the goal of conducting a broad assessment to measure the impact of project activities the FMOH and MMIS organized a comprehensive evaluation of injection safety and HCWM at project's intervention sites. The injection safety intervention continued through September 30, 2009.

This report presents a comparison of the baseline and final evaluation surveys that were carried out through interviews, observations, and an inventory of materials in a sample of health facilities in six states. Data were collected in September 2005 for the baseline and in October 2008 for a final evaluation in the project expansion states of Anambra, Cross Rivers, Edo, Kano, FCT, and Lagos.

The survey units of this evaluation on injection safety and HCWM are the general outpatient department (general outpatient department [GOPD]), medicine, pediatrics, gynecology-obstetrics, surgery, central storerooms, and laboratory departments of the 81 hospitals as well as 142 lower-level health facilities in these states. The target populations for this survey were the central stockrooms, injection providers, supervisors of the staff responsible for administering injections, waste handlers, and health care recipients (patients who just received one or more injections in the facilities covered by this evaluation).

The results obtained through observations in each health facility surveyed and interviews of the target populations are presented below—accompanied by their main recommendations—in the following areas:

- The availability of reference documents and management tools
- Stock management in the main stockrooms of the health facilities
- Availability of injection equipment and material for managing waste
- Material and equipment for managing waste vis-à-vis accidental needlestick injuries
- Injection administration practices vis-à-vis accidental needlestick injuries
- Training and knowledge of blood-borne diseases
- Health care worker protection

### **1. Availability of Reference Documents and Management Tools**

At baseline, less than 5 percent of the supervisors in sampled facilities had each of the reference documents including national policy document, norms, standards, and guidelines for injection safety and HCWM. The presence of each of these documents significantly improved at the time of the follow-up survey. Still, less than 50% of supervisors reported having each of the documents at follow-up, and work needs to be done. An important strategy of improving injection safety is to establish and provide these reference documents to all stakeholders as essential support for the preservice and in-service training of health care professionals. The

FMOH has the statutory right for the development and dissemination of these essential policy documents, while the state ministries are expected to adapt and reprint the documents.

These documents also were not in existence in virtually all facilities at baseline because they were not developed at that time. The documents were developed during the life of the project though. The guidelines or norms for injection safety and the guidelines for medical waste management should be made available by the FMOH in all supported facilities.

Therefore, it is recommended that the FMOH should improve on the dissemination of these essential documents; and all the 36 states Ministries of Health should adapt these policy documents, reprint sufficient quantities for each facility including the private facilities within their administrative jurisdictions, and distribute immediately.

## **2. Stock Management in the Main Stockrooms Of The Health Facilities**

The results obtained through observations in the main stockroom of each health facility surveyed highlighted inadequacies in management tools for monitoring the stock of various products such as sharps boxes and disposable syringes. For any of the standard disposable syringes (10ml, 5ml, 2ml, 1ml), the percent of facilities that had stockcards did not significantly improve in the follow-up. This is a serious area for improvement. In the follow-up, where at least 20 facilities had auto-disables and retractables, at least 50% of those facilities had a stockcard for those products.

It is common knowledge that the availability and proper maintenance of management tools facilitate better monitoring of consumption patterns and regular supply of the health facilities with materials. Therefore, it is recognized that the lack of a stock management system—updated regularly with each change in inventory—is a factor that not only limits *knowing* whether there were stockouts but also *avoiding* them.

Therefore, it is recommended that the improvement at the facilities level in recordkeeping should be further encouraged and supported. Stockcards should be reproduced and included in regular logistic management training for facility staff. Procurement of *auto-disable syringes (AD) and retractable syringes* has improved in the facilities; however, this supply chain needs to be sustained upon the expiration of the current MMIS project in these states. It is desirable that the FMOH further support the procurement of these injection equipments from local industries.

A strategy for improving the injection safety is to reduce injections to the minimum necessary, but this strategy assumes that the health care workers who write the prescriptions for medications have a choice. At follow up, data collectors looked for the oral forms of five commonly used medications: chloroquine, ampicillin, paracetamol, tetracycline, and arthemisin-based combination therapy (ACT). ACT was not monitored at baseline. There has been an improvement in the availability of these medications at the facilities since the baseline survey.

The availability of paracetamol significantly increased in the follow-up from the baseline. Chloroquine and tetracycline significantly decreased in the follow-up from the baseline. The national treatment guidelines had since changed due to widespread chloroquine and tetracycline abuse, side effects, and resistance, so these two drugs are not as available and in circulation at follow up time period. . ACT has replaced chloroquine as a first-line antimalarial treatment oral drug.

### **3. Availability of Injection Equipment and Waste Management Materials**

During the interviews with injection providers at baseline, 77% out of 235 commented that safety boxes had not been used in their facilities; and in the follow-up, it was found that only 1 provider out of 284 declared that safety boxes were never used. In the baseline, 85% of providers reported some sort of stockout, compared to only 5% in the follow-up; 1 provider in the baseline and 6 providers in the follow-up did not remember.

Supervisors also confirmed that stockouts of safety boxes were uncommon as 95% of supervisors declared that there were no stockouts at follow-up, which was a significant increase from 17% of supervisors at baseline. While 69% of supervisors reported never having safety boxes at all in the baseline, this significantly decreased in the follow-up to 4%. In the cases in which safety boxes were not available, the use of inappropriate receptacles increased the exposure of providers and other people to accidental needlestick injuries.

The improvement of the availability of safety boxes is corroborated also through observations in the facilities. Almost all the facilities surveyed (98%) at follow-up had safety boxes that were available in injection areas, compared with only 14% at baseline. This is a tremendous step toward ensuring safe disposal of needles.

Availability of injection equipment also improved according to supervisors and injection providers. While 75% of injection providers reported no stockouts of injection equipment in the baseline, this significantly improved to 92% of injection providers in the follow-up. Once again, the percent of supervisors reporting no stockouts significantly increased in the follow-up (93%) from the baseline (72%).

It is recommended that in line with the FMOH Standards for Universal Precautions and Health Care Waste Management Practices each facility should have a designated and trained infection control focal person. Moreover, adequate supply of safety boxes should be made regularly to all facilities. It is also recommended that all supplies of injection equipments should be from the facilities and not supplied by the patients.

### **4. Material and Equipment for Managing Waste Vis-à-Vis Accidental Needlestick Injuries**

The results obtained through observations of the health care facilities surveyed showed that 27% of facilities at baseline and 98% of facilities at follow-up had sharps containers in each place where injections were administered; and similarly 14% of facilities at baseline and 98% at follow-up had nothing but safety boxes. Among the health care facilities surveyed, 15% at baseline and 63% at follow-up showed evidence of all three good practices for sharps object disposal; i.e., there were no overflowing or punctured safety boxes and no used sharps lying around inside any facilities or outside on their grounds. The facilities not complying with this indicator of good sharps waste disposal tended to have problems with used sharps outside the facilities.

All these variables show that current HCWM practices presents factors that put the health care staff and public at risk of accidental needlestick injuries. It is worth noting that the exposure to

risk of accidental needlestick injuries has reduced. In spite of these successful steps at reducing the risks, the lack of waste segregation in the vast majority of health facilities continues to contribute to a situation in which all waste that contain used injection equipment pose a risk of accidental needlestick injuries to the waste handlers. Even though waste segregation significantly improved from being observed in 11% of the facilities at baseline to 52% of facilities in follow-up, there were still about half the facilities observed not segregating waste at follow-up.

Chapter 9 presents details of the specific methods of sharps waste disposal, which were obtained through interviews of waste handlers. These methods were analyzed into three general categories of “good,” “acceptable,” and “poor” according to the level of safety of each method and the combination of methods (if more than one was used in a health facility). When the overall results were calculated on the various combinations of methods using these three categories, the data from the interviews of waste handlers showed that most health facilities used off-site transportation and open-air burning in a hole/enclosure to eliminate their waste in the follow-up. The percent of facilities having “good” waste disposal in the follow-up (35%) increased from the baseline (29%), but this increase was not significant. Clearly, this is an area to improve upon urgently.

Following the question about problems encountered in waste management, the data collectors asked questions about the availability of personal protection equipment (PPE). There were more waste handlers with PPE at follow-up than at baseline. The types of available equipment mentioned by these waste handlers included masks (48%), boots or closed-toed shoes (48%), aprons (42%), and heavy-duty gloves (55%). Percentages for these PPE more than doubled from the baseline and, thus, significantly improved from the baseline. Both at baseline and follow-up no waste handler mentioned having goggles as a protective equipment.

In light of this situation, it is recommended that there should be provision of expanded training reinforcing good practices to all providers and waste handlers. There also should be continued provision of PPE and appropriate working tools.

## **5. Injection Administration Practices vis-à-vis Accidental Needlestick Injuries**

The results obtained on general hygiene as it relates to injections showed that 78% of injections at baseline and 84% of injections at follow-up are prepared in a clean space. Providers were observed to clean the patient’s skin in 82% of injection observations at baseline and 88% of injection observations at follow-up. In only 12% of injection observations at baseline and 25% of injection observations at follow-up, the providers did wash their hands prior to administering the injections. All three of these increases were significant, but clearly these are easy practices to adopt, and more work needs to be done on this front.

The results on injection equipment and injection administration practices showed that the needle and syringe were removed from a sterile package in 94% of injections at baseline, which increased significantly to 99% of injections at follow-up. Also, in 90% of injection observations at baseline, the injection providers were as careful to take the needle and syringe for reconstitution from a sealed package, and this increased significantly to 97% of injection observations at follow-up. In 63% of the injection observations at baseline, the injection



providers removed the needle from a multidose bottle. This also increased significantly to 86% at follow-up.

In 59% of injection observations (curative, family planning [FP], and vaccinations), the injection providers at baseline did not recap the needle (which is the correct procedure). This increased significantly to 98% at follow-up. At baseline, in 62% of curative, FP, and vaccinations injections, the provider immediately disposed of the used needle and syringe by using a safety box or a needle remover. This increased significantly to 95% at follow-up. These practices if not carried out properly may place providers, waste handlers, and/or patients at risk of a blood-borne disease such as HIV or hepatitis. In fact, 19% of injection providers interviewed at baseline reported at least 1 injury in the 6 months prior to the survey. This significantly decreased to 7% at follow-up survey. Similarly, 16% of waste handlers at baseline and 12% at follow-up had had 1 or more accidental needlestick injuries in the 6 months prior to the survey.

Recapping and lack of immediate disposal are two potential causes of needlestick injuries. Although both improved significantly over time, there is still more room for improvement to address the continued injuries seen at follow-up. Despite the significant improvement recorded, these practices are not yet universal.

Considering these results, it is recommended that more training and community education on safety is needed.

## **6. Training and Knowledge of Blood-Borne Diseases**

Training increased significantly from baseline to follow-up. The results of this survey showed that 72% of the injection providers surveyed at follow-up and 55% waste handlers at follow-up had received training on injection safety and waste management. At baseline, 33% of providers and 14% of waste handlers reported being trained. In the follow-up, 98% of the injection providers interviewed mentioned HIV spontaneously when the data collectors asked if they knew of diseases that could be transmitted by reuse of a non sterile needle or by an accidental injury from a contaminated needle. Hepatitis B, on the other hand, was mentioned by 66% of injection providers interviewed, while hepatitis C was mentioned by only 26% of injection providers. Among the waste handlers interviewed, 89% said that they knew of diseases that could be transmitted by accidental injuries with a contaminated or by reuse of a needle. HIV was mentioned by 97% of the waste handlers interviewed.

Paradoxically, there seemed to be better awareness of diseases at baseline than at follow-up. The providers awareness of possible HIV transmission from needlestick injuries did not change from baseline to follow-up, while awareness of hepatitis B significantly decreased in the follow-up from the baseline. As 99% of injection providers were aware of HIV, 76% spontaneously mentioned hepatitis B, and 19% spontaneously mentioned hepatitis C. Level of awareness is lower among the waste handlers as 89% mentioned HIV when asked the details of their awareness, 16% mentioned hepatitis B, and 7% mentioned hepatitis C.

Given these results, it is recommended that training be extended to all waste handlers and injection providers through either cascade or step-down training, especially among waste handlers. More education and materials for self-tutoring is needed. It is also desirable that

continuous education during supervision and on-the-job training is essential for all cadres of health care personnel.

## **7. Protection of Health Care Workers**

In the follow-up, 70% of the injection providers declared that they had received the hepatitis B vaccine; but of those who had received it, 6% had had all 3 doses at follow-up and were really completely protected against this disease. Among the waste handlers interviewed, 39% reported receiving the hepatitis B vaccination; 20 waste handlers were completely protected.

Availability of masks, aprons, boots/closed-toed shoes, and gloves significantly improved in the follow-up from the baseline.

Given these results, universal protection against hepatitis is recommended and advocated for all injection providers and waste handlers. Provision for complete vaccination against hepatitis B is essential and important. Provision for appropriate PPE for all cadres of health workers, especially the waste handlers, is a necessity.

## **8. Behavior Change Communications (BCC)**

During their visits to the health facilities, data collectors observed whether one or more communication materials (such as reminder charts and/or job aids) were posted to encourage the rational use of injections or medical waste management, promote the safe administration of injections, or promote the safe disposal of used injection equipment. Overall, across all 3 messages included in these observations, 11% of the facilities at baseline had 1 or more behavior BCC materials posted compared to 86% at follow-up.

At follow-up, during the injection observations, some interpersonal communications between patients and providers were observed. From the facility observations, during clients and provider interactions, the providers rarely referred the clients to BCC materials. Follow-up instructions were given in 36% of injection observations, fewer providers told the patients about side effects (8%), and 4% told clients how to treat the side effects. This finding highlights an important lost opportunity for injection providers to communicate injection safety messages to patients on avoiding loose sharps in the community, insisting on new injection devices every time and in every location where they receive injections, and other similar messages that could protect them from contaminated devices or accidental injuries.

When asked where they had seen or heard injection safety messages, training workshops, radio, and television were the most frequently mentioned sources in the follow-up. Only 9% of the providers (and 21% of the waste handlers) interviewed mentioned their supervisor as a source, in spite of the fact that 72% of the supervisors interviewed at the same facilities said that they reminded providers about injection safety. This conflicting data suggest that either the supervisors overestimate the amount of time that they invest in reinforcing key injection safety messages or that they need to reevaluate the way in which they communicate the messages to ensure that the messages are received and understood.

Patient preferences for injections versus oral medications also appeared to shift over time from 38% citing a preference for injections at baseline compared to 31% at follow-up. This is an important step in reducing the need for unnecessary injections. When data collectors asked

whether patients had heard or seen messages on injection safety, only 44% reported that they recalled these messages. Once again, radio (31%) and television (28%) were by far the most common sources of the messages. Those sources were followed by health staff/personnel (15%).

It is recommended that the FMOH should reproduce the various BCC materials developed in the project for a wider distribution to all facilities. Providers should be taught how to use the job aids in counseling and other services.

## **9. Observations of Phlebotomy**

During the follow-up survey only, the data collectors observed the phlebotomy practices in the facilities assessed. In the follow-up, 184 cases were categorized as blood-drawing procedures. The most common injection equipment used for blood drawing was standard disposables (45%), followed by auto-disables (36%), and vacuum sets (13%). For all blood drawn, 93% of 153 applicable cases, the providers transferred blood from a disposable syringe to a tube or any other container. The data collectors observed the needle removal processes and found that out of 145 applicable cases 84% of the providers removed the needle prior to blood transfer. In all these observations, the data collectors found that only 1 provider used something (gauze) other than needle removal in this process. Using 2 hands in removing the needle was more common with 18 providers, whereas only 4 providers used 1 hand (the correct technique).

New gloves were used in 87% of the cases. A new device was used in 100% of the cases. Other unsafe blood-drawing practices with standard disposable syringes observed: Uncapped needles were removed from syringes using bare hands (121 cases), two-handed transfer of blood to vial through exposed needle (18 cases), recapping with two hands (1 case), and lack of immediate disposal of used sharp (9 cases). For vacuums and winged collection sets, no problems with safety were observed.

## **10. Report Structure**

The following report is organized into 12 chapters. After the introduction in Chapter 1, the methodology and a summary of the attained samples are presented in Chapters 2 and 3, respectively. The specific results drawn from the observations and interviews are detailed in Chapters 4 through 10. The conclusions in Chapter 11 are focused on an analysis of the results vis-à-vis their contribution to the risks of transmitting a blood-borne pathogen such as HIV and the hepatitis B or C virus. Finally, Chapter 12 presents a summary of the main recommendations that are also described in the text.



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# 1. GENERAL INTRODUCTION

One of the objectives of the FMOH is to improve the quality of care provided on all levels of the health care pyramid. Previous studies revealed that injection safety and HCWM is a serious health problem in Nigeria. Through PEPFAR, Nigeria received technical and financial support to promote injection safety and HCWM through the support of USAID. This injection safety and HCWM project is known as MMIS. Under the premise of having a broad assessment of the impact of project activities as well as to evaluate sustainability of achievements following the project's pullout, injection safety, and its partners, the FMOH, with the technical and financial support of MMIS organized a comprehensive evaluation of injection safety and HCWM at project's intervention sites.

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 hepatitis C, and 80,000 to 160,000 cases of HIV infection globally. Certain high-risk practices, in particular the reuse of nonsterile needles and syringes, increase the risk of transmitting disease.

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

1. Behavior change of 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 granted appropriate attention by the governments or community of development partners.



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## 2. METHODOLOGY

This evaluation of the status of injection safety and HCWM is a descriptive follow-up study. It includes interviews, observations, and stock assessments in a sample of health facilities in the project's five expansion states, namely, Anambra, Cross Rivers, Edo, Kano, Lagos as well as the Federal Capital Territory (FCT).

### 2.1 OBJECTIVES OF THE STUDY

The overall objective is to evaluate the general status of injection safety and HCWM in the health facilities of the six project expansion states. The specific objectives are as follows:

1. Evaluate the availability of the injection equipment/materials/products and stock management methods,
2. Evaluate the availability of the collection equipment/materials, transportation, and removal of waste, as well as the HCWM practices,
3. Describe the conditions and steps for administering injections in the treatment rooms,
4. Evaluate the existence of reference documents (national policy, norms, guidelines) with the health care staff and managers of health facilities,
5. Evaluate the adequacy of the quantities of injectable products ordered (vaccines, medications), injection equipment (syringes/needles), and HCWM equipment,
6. Describe the experiences related to injections in the health facilities and community of patients (or parents/families of patients) who received injections on the day of the survey.

### 2.2 SAMPLING

The survey units and target populations of the injection safety and HCWM evaluation are the general medicine, pediatrics, gynecology-obstetrics, and surgery wards as well as central stores, immunization, and laboratories. This survey obtained a sample of health facilities to evaluate through a mix of purposeful and random selection. In each state evaluated, the survey used purposeful selection to sample hospitals, and random selection for other types of health care facilities.

The target populations, which were planned for this survey, were the stockrooms (for equipment/medications/vaccines, etc.), injection providers, supervisors of the staff responsible for administering injections, waste handlers, health care recipients (patients who had just received an injection[s] in the study facilities) according to the following distribution:

- One central stockroom in each health facility, or **216 stockrooms total**, visited at baseline and follow-up (114 baseline, 102 follow-up).
- Providers administering the largest number of injections in the health care units or **521 injection providers total** (237 at baseline, 284 at follow-up).

- **A total 484 supervisors** of the staff responsible for administering injections (199 baseline, 285 follow-up).
- **A total 198 waste handlers** with one participant per health facility (97 baseline, 101 follow-up).
- **1,316 total recipients of health care services** coming for an injection(s) procedure in the evaluation centers (514 baseline; 781 follow-up), with 4 clients per hospital and 4 per health care center.
- In addition to the people interviewed, data collectors observed **1,601 total injection procedures** (557 baseline, 1,044 follow-up). Data collectors observed up to 4 procedures by ward in each hospital and in each lower-level health center or private facility. Injection procedures observed included the following types: Vaccinations, curative injections, diagnostic injections including phlebotomy and FP.

**Table 1: Table summarizing the sampling of the target population by section of the survey**

Section	Target Population	Baseline			Follow-up		
		Hospitals	Lower-Level Facilities	Total	Hospitals	Lower-Level Facilities	Total
1	Stockrooms	40	74	114	41	61	102
2	Health care facilities	42	63	105 <sup>^</sup>	39	63	102
3	Injections observed	449	101	550 <sup>*</sup>	825	219	1,044
4	Injection providers	134	93	227 <sup>+</sup>	223	61	284
5	Supervisors of the staff responsible for administering injections	137	54	191 <sup>**</sup>	224	61	285
6	Waste handlers	37	60	97	41	60	101
7	Patients coming for an injection(s) at the centers	353	161	514	637	144	781

<sup>^</sup> No response recorded for two cases at baseline

<sup>\*</sup> No response recorded for seven cases at baseline

<sup>+</sup> No response recorded for ten cases at baseline

<sup>\*\*</sup> No response recorded for eight cases at baseline

## 2.3 DATA COLLECTION TOOL

Data were collected in the field with the aid of an MMIS questionnaire adapted to the context of the health care system in Nigeria (See Appendix 1). The MMIS questionnaire includes seven components or sections related to the specific intervention areas of injection safety and medical waste management. These sections apply to the different stakeholders, which are:

- Stockrooms (equipment/medications/vaccines, etc.): “Section 1.”
- Observations on the structure of care and the waste in each health facility: “Section 2.”
- Observations on the practices of the injection providers: “Section 3.”
- Interviews with injection providers: “Section 4.”



- Supervisors of the staff responsible for administering injections: “Section 5.”
- Waste handlers: “Section 6.”
- Recipients of health care services who had just received one or more injections at the health care facilities surveyed: “Section 7.”

## **2.4 DATA COLLECTION**

Baseline data were collected from August 15 through September 3, 2005, in the expansion states of Kano, Lagos, Edo, Anambra, and Cross River and the FCT. A total of 12 data collectors and 5 supervisors were identified and trained to participate in the collection of data in the health facilities. Training for the data collectors and supervisors lasted 4 days and was conducted from August 9 through 12, 2005. Following the training, 5 teams were formed with 2 data collectors and a supervisor on each team. Data collectors worked in the field over a 15-day period. MMIS project staff coordinated activities.

Mirroring the process carried out at baseline, follow-up data were collected from November 10 through 19, 2008, in the same geographic expansion areas. A total of 23 data collectors and 7 supervisors were identified and trained to participate in the collection of data for the follow-up survey. Training for the data collectors and supervisors lasted 3 days including 1 day for a pretest. Following the training, 6 teams of 3 to 4 persons each were formed. One supervisor was assigned to each team except for the Lagos team, which had two supervisors.

Prior to the fieldwork, the forms were reviewed and validated through a pretest conducted in 2 health facilities with the same characteristics as those surveyed. In 2005, the field testing took place in Niger state and in 2008 in Nasarawa state. These health facilities were not included in the survey proper or the results presented in this report.

Each supervisor was placed in charge of a team to ensure the proper implementation of the survey. In all the health facilities surveyed, the informed consent of the staff facilitated the collection of data.

## **2.5 ORGANIZATION AND COORDINATION OF THE DATA ENTRY AND ANALYSIS**

The data were analyzed using SPSS software. This required the contribution of data entry operators with prior training on the use of the data entry program. Each completed questionnaire was reviewed and validated with the team supervisors before being entered into the SPSS software and analyzed.

## **2.6 LIMITATIONS**

- Some facilities had incorrect addresses, making them difficult to identify quickly. In some cases, the facilities had changed their names.
- In some cases, listed facilities were closed or could not be found and as such were not assessed.

- Health facility staffs were sometimes hesitant to allow data collectors to observe injection administration and in other cases were sometimes reluctant to participate in the study. This caused some delays and, in some cases, restricted the study sample.
- A byproduct of the promotion of oral medications is that the number of injection observations was difficult to obtain because there were fewer injections to observe.
- Patients were often ready to leave after their visit and did not want to spend a lot of time providing interview responses.

### 3. DESCRIPTION OF THE ATTAINED SAMPLE

In 2005, there were 227 health facilities in the project's expansion states (Anambra, Cross Rivers, Edo, Kano, Lagos and FCT), including both public and private facilities. Section 2.2 above presents the overall results of the sample made by target type and by level of health facility. This chapter presents the sample by type of organization (public or private). At baseline, public and private sector facilities were included in the survey with the understanding that MMIS project activities would expand to cover both types of facilities over the course of implementation. However, due to an approved change in strategy that focused project activities primarily in the public sector, the final evaluation included only one privately owned facility. Hence, the majority of private facilities from the baseline survey were not included in the comparison analysis, and a useful comparison at this level was not feasible. The final sample by type of organization is outlined below (Table 2).

**Table 2: Sampling by type of organization**

	Baseline			Follow-up		
	Public	Private	Total	Public	Private	Total
<b>Observations</b>						
Health facilities	104	1	105*	101	1	102
Stockrooms	113	1	114	101	1	102
Injections observed	540	10	550+	1025	19	1,044
<b>Interviews</b>						
Injection providers	224	3	227**	277	7	284
Supervisors of the staff responsible for administering injections	188	3	191++	279	6	285
Waste handlers	96	1	97	100	1	101
Patients or parents of patients coming for an injection(s) at the centers	504	10	514*+	765	16	781

\* Ownership of two facilities not specified

+ Ownership of seven facilities not specified

\*\* Ownership of ten facilities not specified

++ Ownership of eight facilities not specified



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## **4. RESULTS OF THE STOCK OF INJECTION EQUIPMENT AND PRODUCTS IN THE MAIN STOCKROOMS OF THE HEALTH FACILITIES**

In the health facilities participating in this survey, data collectors evaluated the stockcards for various products such as safety boxes and injection equipment. They noted the availability of a stockcard for each product, whether it had been updated in the 30 days preceding the survey, stockouts, and the balance indicated on the stockcard. After collecting card data, the data collectors took a physical inventory by counting all products in the stockroom in order to compare the data from the updated stockcards to the physical stock in the stockrooms. Finally, the stocks of some common oral medications were examined. This section contains these results on products available in the main stockroom of each health facility surveyed.

At baseline, 114 facilities were surveyed, and this comprises of 113 public facilities and 1 privately owned facility; 35.1% of the 114 facilities were hospitals, and 64.9% of them were classified as lower-level facilities.

The facilities surveyed during follow-up survey were 102, comprising 101 public facilities and 1 privately owned facility; 40.2% were hospitals and the remaining (59.8%) were lower-level facilities. All facilities were visited to determine if stockcards exist for the product.

### **4.1 ANALYSIS OF THE STOCKCARDS: AVAILABILITY, UPDATE, AND EVIDENCE OF STOCKOUTS BY PRODUCT**

#### **4.1.1 SAFETY BOXES**

Of the 44 health facilities surveyed at baseline and where data were recorded, data collectors found stockcards available for the 5L safety boxes in 2 health facilities (1 each in Kano and Lagos). For each stockcard found, the data collector evaluated whether the card had been updated during the 30 days prior to this survey. One of the stockcards was “up-to-date” in Lagos. One stockcard each was found in the hospital and lower-level facility.

At follow-up, there was some improvement of the situation. Of the 102 health facilities surveyed, only two facilities were found where safety boxes were not available at all times. Of the remaining 100 facilities, data collectors found stockcards available for 5L safety boxes in 46 health facilities (46.0%). In 70.7% of hospitals and 28.8% of lower-level facilities, the stockcards were available for 5L safety boxes. The data collectors found that 38 (84.4%) of these stockcards were updated 30 days prior to this survey. Of the 38 updated cards, only 1 facility showed a stockout during the 6 months prior to the survey.

#### 4.1.2 STANDARD DISPOSABLE SYRINGES

Stockcards were more common for standard single-use (disposable) syringes than for safety boxes. Of the 77 health facilities assessed at baseline, 54.5% had stockcards for the *standard 10ml disposable syringes*. Stockcards were available in 84.8% of hospitals at baseline and 31.8% of lower-level facilities. Of the 42 stockcards assessed, 26 had been updated in the 30 days prior to this survey (63.4%). For the standard 10ml disposable syringes, 13 of the updated stockcards showed a stockout in the last 6 months. Seven of the facilities *without* stockcards, nevertheless, had a stock of this size of standard disposable syringes with no system for monitoring this stock.

For 71 out of the 102 health facilities surveyed, the product was not available at all. Out of 31 facilities assessed, 41.9% had stockcards for the *standard 10ml disposable syringes*. In 12 out of 15 hospitals and in only 1 out of 16 lower-level facilities, stockcards were available for the product. Of these 13 stockcards, 12 had been updated in the 30 days prior to this survey. This was not able to be assessed in the other stockcard. For the standard 10ml disposable syringes, 1 of the 12 updated stockcards showed a stockout in the last 6 months. While 11 of the facilities *without* stockcards, nevertheless, had a stock of this size of standard disposable syringes with no system for monitoring this stock.

For the *standard 5ml disposable syringes* at baseline, 46 health facilities surveyed (54.1%) had a stockcard available on the day of the survey. Stockcards were available for 5ml standard disposable syringes in 86.1% of hospitals and 30.6% of lower-level facilities. Thirty-two stockcards had been updated (71.1%). Of the 32 updated stockcards, 18 showed stockouts. It is important to note that 29 of the facilities *without* stockcards had a stock of this size of standard disposable syringes without any mechanism for monitoring this stock.

At follow-up, for the *standard 5ml disposable syringes*, out of 45 health facilities surveyed, 20 facilities (44.4%) had a stockcard available on the day of the survey. In 85% of hospitals and 12% of lower-level facilities, stockcards were available for 5ml standard disposable syringes. Fifteen of them had been updated. Of the 15 updated stockcards, 5 showed stockouts. Twenty-two of the facilities *without* stockcards had a stock of this size of standard disposable syringes without any mechanism for monitoring this stock.

Continuing with the *standard 2ml disposable syringes*, 40 of the 83 health facilities surveyed (48.2%) had a card available on the day of the survey, and 22 had been updated. In 72.7% of hospitals, stockcards were available for this product, and in 32.0% of lower-level facilities, stockcards were available for this product. Twelve facilities with an updated card had experienced a stockout during the last 6 months. Twenty-nine of the facilities *without* stockcards had a stock of this size of standard disposable syringes without any mechanism for monitoring this stock.

At follow-up, 19 of the 37 health facilities surveyed for *standard 2ml disposable syringes* (51.4%) had a stockcard available on the day of the survey, and 16 had been updated. Fourteen out of 16 hospitals had stockcards for this product while only 5 out of 21 lower-level facilities had stockcards for this product. Among facilities with an updated stockcard, 4 of the 16 had experienced a stockout during the last 6 months; 10 of the facilities *without* stockcards had a stock of this size of standard disposable syringes without any mechanism for monitoring this stock.

*At baseline, the standard 1cc disposable syringes were only monitored in 17 facilities (29.3%) out of the 58 health facilities. In 63.2% of hospitals and in 12.8% of lower-level facilities, stockcards were found to be available for standard disposable syringes of 1cc size. Eight of the available stockcards had been updated, and 5 updated cards each showed a stockout. Eighteen facilities without stockcards had a stock of syringes in this size with no mechanism for monitoring this stock.*

*At follow-up, the standard 1cc disposable syringes were found in only 1 facility (hospital).*

#### **4.1.3 DISPOSABLE SYRINGES WITH FEATURES THAT PREVENT REUSE**

Data collectors investigated the status of disposable syringes equipped with devices that prevent reuse (known as auto-disable or AD), and the recordkeeping practices for ADs. Overall, this type of syringe was much less common than standard disposable syringes. For 10ml, 5ml, 2ml and 1cc AD, stockcards were not available in all facilities at baseline assessment. However, at follow-up, 48 health facilities were assessed; 50% had stockcards for the 10ml AD. Out of the 24 facilities that had stockcards, 17 of these facilities were hospitals and the remaining seven were lower-level facilities. Of these 24 stockcards, 17 had been updated in the 30 days prior to this survey (70.8%). For the 10ml AD, 2 of the 24 updated stockcards showed a stockout in the last 6 months. Nineteen of the facilities without stockcards, nevertheless, had a stock of this size of 10ml AD with no system for monitoring this stock.

For the 5ml AD, of the 86 health facilities surveyed, 51.2% had a card available on the day of the survey. Stockcards were available in 67.6% of hospitals and in 38.8% of lower-level facilities. Of the 43 cards in which data were available, 34 had been updated (79.1%) and only 2 showed stockouts. It is important to note that 39 of the facilities without stockcards had a stock of this size of AD without any mechanism for monitoring this stock.

Over half or 44 of the 76 health facilities surveyed for 2ml auto disable syringes (57.9%) had a card available on the day of the survey, and 32 (72.7%) had been updated. Over half of the 44 facilities (26 facilities) were hospitals and the remaining (18 facilities) were lower-level facilities. Three facilities with an updated card had experienced a stockout during the last 6 months. Of the facilities without stockcards, 30 had a stock of this size of AD without any mechanism for monitoring this stock.

For 1cc AD, they were monitored in only 2 facilities (one hospital and one lower-level facility) out of the 13 health facilities surveyed at follow-up. One facility had a stockcard that had been updated, and it did not show a stockout. Seven facilities without stockcards had a stock of syringes in this size with no mechanism for monitoring this stock.

#### **4.1.4 DISPOSABLE SYRINGES WITH FEATURES THAT PREVENT REUSE AND ACCIDENTAL NEEDLESTICK INJURIES**

The data collectors asked to see the stockcards for disposable syringes equipped with features that prevent reuse and accidental needlestick injuries (known as *retractable syringes*) in the

health facilities surveyed. There were no stockcards for the *10ml, 5ml, 3ml, and 1cc retractable syringes at baseline survey*. This, though, was because the supply of this type of syringe was not available at all in MMIS facilities when the baseline survey was carried out.

At follow-up, 42 health facilities were assessed; 50% had stockcards for the *10ml retractable syringes*; 16 of these facilities were hospitals, and the remaining five were lower-level facilities. Of these 21 stockcards, 10 had been updated in the 30 days prior to this survey (47.6%). For the *10ml retractable syringes*, 1 updated stockcard showed a stockout. Seventeen of the facilities *without* stockcards, nevertheless, had a stock of this size of *10ml retractable syringes* with no system for monitoring this stock.

For the *5ml retractable syringes*, of the 68 health facilities surveyed, 50% had a card available on the day of the survey; 69.7% of hospitals had stockcards and 31.4% of lower-level facilities had stockcards; 19 had been updated, and none showed stockouts. It is important to note that 28 of the facilities *without* stockcards had a stock of this size of *retractable syringes* without any mechanism for monitoring this stock.

Of the health facilities surveyed for *3ml retractable syringes* at follow-up, 35 of the 60 (58.3%) had a card available on the day of the survey, and 21 had been updated; 74.1% of hospitals had stockcards, and 45.5% of lower-level facilities had stockcards. Two facilities with an updated card had experienced a stockout during the last 6 months prior to the survey; 21 of the facilities *without* stockcards had a stock of this size of *retractable syringes* without any mechanism for monitoring this stock.

Clearly, while there is improvement, the logistic system needs to be considered. For all products, more hospitals than lower-level facilities had stockcards available.



**Table 3: Summary of the availability of stockcards, by product**

	Baseline			Follow-up		
Products	Cards Available	Facilities Surveyed with Data	Percentage	Cards Available	Facilities Surveyed with Data	Percentage
New, unused safety boxes	2	44	4.5	46	100	46.0
Standard disposable syringes						
10 ml	42	77	54.5	13	31	41.9
5 ml	46	85	54.1	20	45	44.4
2 ml	40	83	48.2	19	37	51.4
1 ml	17	58	29.3	1 out of 10	10	10
Disposable syringes equipped with features preventing reuse (auto-disable)						
10 ml	0	23	0	24	48	50.0
5 ml	0		0	44	86	51.2
2 ml	0		0	44	76	51.4
1 ml	0		0	2	13	15.4
Disposable syringes equipped with features preventing reuse <i>and</i> needlestick injuries						
10 ml	0	23	0	21	42	50.0
5 ml	0		0	34	68	50.0
3 ml	0		0	35	60	58.3
1 ml	NA		NA	NA	NA	NA

NA: Not applicable, facility does not have the product in use.

**Table 4: Summary of the updating of stockcards for health facilities that have them, by product**

Products	Baseline			Follow-up		
	Updated Cards	Available Cards	Percentage	Updated Cards	Available Cards	Percentage
<b>New, unused safety boxes</b>	1	2	-	38	45	84.4
<b>Standard disposable syringes</b>						
10 ml	26	41	63.4	12	13	-
5 ml	32	45	71.1	15	19	78.9
2 ml	22	38	57.9	16	18	88.9
1 ml	8 of 17	17	47.1	1 of 1	1	-
<b>Disposable syringes equipped with features preventing reuse (auto-disable)</b>						
10 ml	-	0	0	17	24	70.8
5 ml	-	0	0	34	43	79.1
2 ml	-	0	0	32	44	72.7
1 ml	-	0	0	(1) of 2	2	-
<b>Disposable syringes equipped with features preventing reuse <i>and</i> needlestick injuries</b>						
10 ml	-	0	0	10	21	47.6
5 ml	-	0	0	19	33	57.5
3 ml	-	0	0	21	35	60.0
1 ml	NA	NA	NA	NA	NA	NA

Note: Facilities with fewer than 20 cases are shown in brackets.

Percentages are not calculated for cases with fewer than 15 cards.

## 4.2 COMPARISON OF STOCK OF SAFETY BOXES WITH THE STOCK OF SYRINGES

It is hard to estimate the number of syringes that can be disposed of in a single sharps box because in reality safety boxes are filled with a mixture of various sizes and types of syringes. Logically, more 1ml or 2ml syringes can be disposed of in a single box than 10ml syringes. In addition, retractable syringes, where the needle is retracted into the hub of the syringe after the injection, should not take up as much space in a sharps box as syringes equipped with fixed needles. However, if estimated that it is possible to place 80<sup>1</sup> syringes of various types and sizes into a sharps box, it is possible to calculate the number of syringes that could be disposed of in the safety boxes existing in the stockrooms. In the 2005 baseline study, 27 health facilities (36.2%) had enough safety boxes at the time of this survey. However, this improved in the 2008 follow-up survey in which 59 facilities (59%) had enough safety boxes (Table 5).

**Table 5: Comparison of the stock of safety boxes and syringes**

	Baseline		Follow-up	
	Percentage	Number of Health Facilities	Percentage	Number of Health Facilities
Health facilities with a stock of safety boxes for every 80 syringes	36.2	47	59.0	100

## 4.3 PRESENCE OF ORAL FORMULATIONS OF COMMON MEDICINES

A strategy for improving injection safety is to reduce the number of injections to the minimum necessary to treat patients' diseases appropriately. However, this strategy assumes that the health care personnel who prepare the medication prescriptions and the injection providers have a choice. In order to evaluate the presence or absence of this "choice," the data collectors took notes on the availability of oral forms of five medicines commonly used in the health facilities surveyed. For each medication, the data collectors evaluated whether there was a stock (in any amount) in the facility at the time of their visit.

The results are similar for the 5 medications chosen for this analysis: chloroquine, ampicillin/Ampiclox, paracetamol, tetracycline, and ACT. There was a significant improvement in the availability of 3 of the 4 medications at the facilities since the baseline survey was implemented. ACT was not monitored at baseline. Chloroquine was available in 85.9% of facilities in baseline, compared to 66.3% of facilities in follow-up. This decrease was statistically significant ( $p \leq .001$ ). Ampicillin was available in 77.3% of facilities in baseline, compared to 85.7% of facilities in follow-up. Paracetamol significantly improved from being available at 87.9% of facilities in baseline to 96.9% of facilities in follow-up ( $p < .05$ ). Availability of tetracycline significantly decreased in the follow-up (51.5%) from the baseline (77.6%) ( $p < .001$ ). ACT was available in 93.9% of the facilities at follow-up. It is important that all of these medications be available to encourage the reduction of unnecessary injections.

<sup>1</sup> The current calculation of 80 syringes per safety box is because the former calculation of 100 per safety box was based on the 2ml immunization syringes.  
Nigeria Comparison Report 2009

Overall, at baseline, 84.6% of surveyed facilities had a stock of at least 1 medication on this list, in comparison to 95.1% of the facilities at follow-up that had at least 1 medication. None of the facilities during baseline had stock of all five of these oral medications, but at follow-up, 35.3% of surveyed facilities had a stock of all five medications (Table 6).

**Table 6: Stock of oral medications**

	Baseline		Follow-up	
	Percentage	Number of Health Facilities	Percentage	Number of Health Facilities
<b>Chloroquine</b>	85.9	99	66.3	98
<b>Ampicilin/Ampiclox</b>	77.3	97	85.7	98
<b>Paracetamol</b>	87.9	99	96.9	98
<b>Tetracycline</b>	77.6	98	51.5	97
<b>ACT</b>	-		93.9	98
Stock of at least <b>one</b> oral medication on this list	84.6	104	95.1	102
Stock of <b>all</b> oral medications on this list	0	104	35.3	102



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## 5. OBSERVATIONS ON MATERIALS, EQUIPMENT, AND WASTE MANAGEMENT

In this section of the survey, the data collectors observed waste management in hospitals and other health care facilities. A total of 1,072 health facilities (42 hospitals and 63 lower-level facilities) participated in these observations at baseline while there were 102 facilities at follow-up (39 hospitals and 64 lower-level facilities).

### 5.1 PRESENCE AND USE OF SAFETY BOXES IN LOCATIONS WHERE INJECTIONS ARE ADMINISTERED

In the health facilities surveyed, more facilities (98%) had sharps containers in each place where injections were being administered at follow-up compared with 27.4% at baseline in 2005. This increase was statistically significant ( $p < .001$ ). In each of these places, the data collectors evaluated whether all sharps containers were safety boxes. They found that in 14.2% of the health facilities all of the sharps containers being used for disposing of sharps in the injection areas were safety boxes in 2005; however, a significant improvement was recorded in 2008 where 98% of these facilities were using safety boxes for sharps in the injection areas ( $p < .001$ ) (Table 7).

**Table 7: Observations on the use of safety boxes**

	Baseline		Follow-up	
	Percentage	Number of Health Facilities	Percentage	Number of Health Facilities
Health facilities with sharps containers for sharp objects in each location where injections are administered	27.4%	106	98.0%	102
Health facilities that only use safety boxes in locations where injections are administered	14.2%		98.0%	

### 5.2 INDIVIDUAL INDICATORS OF THE DISPOSAL OF USED SHARP OBJECTS

#### 5.2.1 OVERFLOWING OR PIERCED SAFETY BOXES

Just safety boxes in the locations where injections are administered do not guarantee injection safety if the condition of the boxes is not adequate. For this reason, data collectors evaluated the health facilities in order to see whether there were cases of pierced or overflowing boxes. In 89.0% of the health facilities that could be observed for this variable they found no pierced or overflowing safety boxes in 2008, compared with 71.6% in 2005 (Table 8).

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<sup>2</sup> Typology of two facilities was not stated  
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## 5.2.2 SHARP OBJECTS INSIDE THE HEALTH FACILITY

At baseline, 43% of the facilities had *no* used sharp objects lying around the facilities. This had improved significantly to 90.2% in 2008 ( $p<.001$ ). In the rest of the health facilities, the data collectors found sharp objects lying around where they could expose the injection providers or public to the risk of accidental needlestick injuries (Table 8).

## 5.2.3 SHARP OBJECTS OUTSIDE OF THE HEALTH FACILITY

Data collectors evaluated the grounds outside of each health facility surveyed to see whether there were any loose sharps lying around. During this follow-up survey, they found that 73.1% of the facilities that could be observed for this variable had *no* loose (visible) sharps lying around outside. This is an improvement over the situation in 2005 when 26.9% of the facilities observed had no loose (visible) sharps lying around outside the facilities (Table 8).

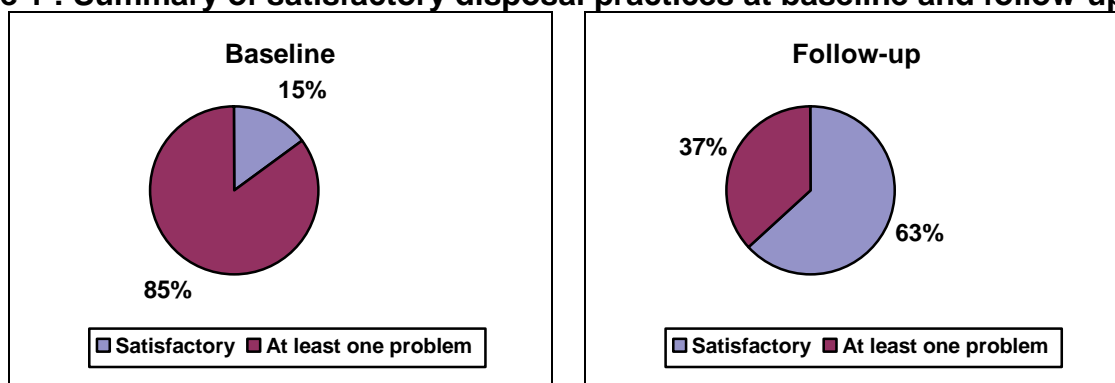
**Table 8: Observations on the condition of the safety boxes and used sharps**

	Baseline		Follow-up	
	Percentage	Number of Health Facilities	Percentage	Number of Health Facilities
Health facilities <i>without</i> overflowing or pierced safety boxes	71.6%	102	89.0%	100
Health facilities <i>without</i> used sharps in open containers or loose <i>inside</i> the health facilities	43.0%	107	90.2%	102
Health facilities <i>without</i> used sharp objects <i>outside</i>	26.9%	104	74.5%	102

## 5.2.4 SUMMARY OF SATISFACTORY DISPOSAL PRACTICES

After analyzing the three individual variables of the practice of sharps waste disposal—i.e., no pierced or overflowing boxes and no sharps lying around inside or outside the facility—it is useful to look at a summary of the results for the satisfactory practice of sharps disposal overall. These results showed in 2005 that there were only 16 out of 104 health facilities in which the data collectors collected all 3 variables (15.4%) that had the 3 good practices throughout the entire facility and its grounds. Three facilities could not be assessed in 2005. During the follow-up survey, 2 facilities could not be assessed because at least one of the variables was missing. However, in 2008 after 3 years of consistent interventions across facilities in Nigeria, 63% of all sampled facilities (63 facilities out of 100) had the 3 good practices throughout the entire facility and its grounds (Figure 1). This is good news, but there is room for improvement.

**Figure 1 : Summary of satisfactory disposal practices at baseline and follow-up**



### 5.3 STORAGE OF FULL SAFETY BOXES

Once safety boxes become full, they must be stored somewhere until their final destruction. The data collectors evaluated whether full safety boxes were stored in a closed location inaccessible to the public on the day of the survey. In 12 health facilities at baseline and 45 facilities during follow-up survey, they could not make these observations (for example, in cases where there were no full boxes). At baseline, 68 facilities did not have safety boxes at all. For facilities that had safety boxes and were assessed, boxes were inaccessible to the public in 37.0% of the 27 facilities at baseline and there was a significant improvement at follow-up with 48 facilities out of 57 facilities (84.2%) evaluated for this indicator, ( $p < .001$ ). (Table 9)

### 5.4 TIGHTLY SEALED SAFETY BOXES

Normally, safety boxes awaiting final destruction must be tightly sealed. The data collectors evaluated whether this was the case during both surveys. They recorded their observations for 20 of the 121 health facilities surveyed at baseline and 55 out of 102 facilities at follow-up. They found that in 2005 only 4 out of 20 (20%) of the facilities evaluated for this variable had tightly sealed full boxes. This improved significantly in 2008 during the follow-up survey in which 40 out of 55 (72.7%) of the facilities able to be assessed had tightly sealed full boxes ( $p < .001$ ) (Table 9).

**Table 9: Observations on the storage of full safety boxes**

	Baseline		Follow-up	
	Percentage	Number of Health Facilities with Full Safety Boxes	Percentage	Number of Health Facilities with Full Safety Boxes
Health facilities in which all full safety boxes are stored in a closed locations inaccessible to the public	37.0%	27	84.2%	57
Health facilities in which all safety boxes awaiting final destruction are tightly sealed	20.0%	20	72.7%	55

## 5.5 WASTE SEGREGATION

A strategy for reducing the amount of used sharps and infectious waste generated by injections is to segregate it into different containers for used sharps, infectious waste, and noninfectious waste. Data collectors found that waste was only segregated in 11.2% of the 107 health facilities surveyed in 2005. The implementation of this strategy had improved significantly to 52% of 102 facilities in the follow-up ( $p<.001$ ) (Table 10).

## 5.6 LOOSE BIOLOGICAL WASTE

The data collectors' next observations concerned biological (infectious) waste. Specifically, they evaluated whether there was any loose biological waste lying around, visible, in any location inside or outside a health facility. At baseline, in 61.3% of the 106 health facilities surveyed, they did not find any loose biological waste where it could pose a risk of contamination to providers or the public. This increased significantly to 75.5% at follow-up ( $p<.05$ ) (Table 10).

**TABLE 10: Observations on segregation of waste and biological waste**

	Baseline		Follow-up	
	Percentage	Number of Health facilities	Percentage	Number of Health facilities
Health facilities that segregate their waste in different containers for used sharps, infectious waste and noninfectious waste	11.2%	107	52.0%	102
Health facilities <i>without</i> loose biological waste	61.3%	106	75.5%	102

## 5.7 EVIDENCE OF STERILIZATION OF USED INJECTION DEVICES

At the time of the baseline, 4 facilities out of 106 facilities where data was collected were found to have evidence of sterilization of injection equipment. In the follow-up, there was no facility that had such evidence of an attempt being made to sterilize injection equipment for reuse.

## 5.8 OBSERVATIONS ON PERSONAL PROTECTIVE EQUIPMENT

Data collectors in this survey were instructed to observe waste handlers as they handled waste on the day of the survey to the extent that this was possible. The goal was to compare these observations with the data obtained from interviews of waste handlers. The data collectors had the opportunity to observe 21 waste handlers during the baseline and 35 during the final evaluation. At baseline, 2 waste handlers wore boots or closed-toed shoes. At follow-up, 17 waste handlers were observed to be wearing boots or closed-toed shoes. Heavy-duty gloves were observed on four waste handlers at baseline and 14 at follow-up. Goggles were worn by 1 waste handler at baseline and 2 at follow-up (Table 11).



**Table 11: Waste management observations**

	Baseline		Follow-up	
	Number of Waste Handlers	Number of Health Facilities	Number of Waste Handlers	Number of Health Facilities
Health facilities in which the waste handlers were observed	21	107	35	102
Health facilities in which the waste handlers used at least one type of effective personal protective equipment				
Boots/closed-toed shoes	2	21	17	35
Heavy-duty gloves	4		14	
Lightweight gloves	8		16	
Aprons	3		14	
Goggles	1		2	
Masks	3		16	
Long-sleeved shirts	1		0	

## 5.9 WASTE DISPOSAL METHODS

During their visits to the health facilities, the data collectors observed the main waste disposal method(s) used for sharps waste. The most common method at baseline was *transportation for off-site processing* (34.6%) followed by *dumping in an unsupervised location* (26.7%). However, during the follow-up survey, there was a change in the most common methods of waste disposal. The most common method was still transportation for off-site processing, which was recorded in 52.9% of the health facilities. This was followed by *open-air burning in a hole or in an enclosure*, 43.1% of health facilities.

*High/medium-temperature* incineration was only seen at 4 facilities at baseline and 5 facilities at follow-up. *Low-temperature incineration* was equally common (6 facilities at baseline and 4 facilities at follow-up).

*Dumping in an unprotected pit* (1 facility each at baseline and follow-up) was rarely seen. It should be noted that in the cases where several methods were observed the sum of the results might exceed 100 % (Table 12).

**Table 12: Observations on the main methods used to dispose of sharps waste at baseline and follow-up**

	Baseline		Follow-up	
	Number of Health Facilities Where Method Was Observed	Percentage	Number of Health Facilities Where Method Was Observed	Percentage
Transportation for off-site processing	37	34.6	54	52.9
Dumping in an unsupervised location	27	26.7	2	2.0
Open-air burning on the ground	23	22.8	14	13.7
Open-air burning in a hole or an enclosure	21	20.8	44	43.1
Dumping in a latrine or other protected pit	13	12.9	3	2.9
Burial	10	9.9	4	3.9
High or medium-temperature incineration	4	3.9	5	4.9
Low temperature incineration	6	5.9	4	3.9
Dumping in an unprotected pit	1	1.1	1	1.0

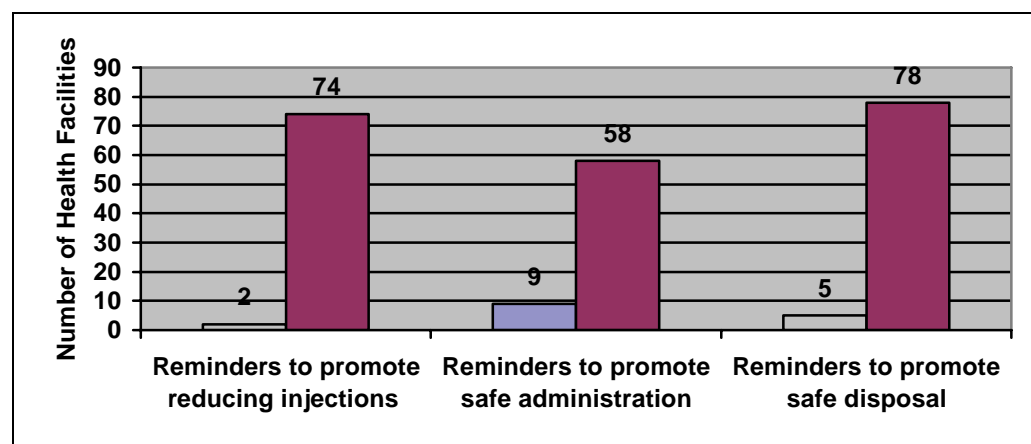
## 5.10 OBSERVATIONS ON JOB AIDS

During their visits to the health facilities, data collectors observed whether there were communication materials (such as reminder charts and/or job aids) encouraging the rational use of injections or medical waste management. They saw materials displayed that *encouraged* the reduction in the use of injections in more facilities at follow-up, with 75 (73.5%) out of 102 surveyed health facilities in the follow-up. This is a significant increase from 1.9% at baseline ( $p<.001$ ). None of the facilities at baseline had the “Promote Oral Medication” poster. All 75 facilities at follow-up that were observed to have reminders reducing injections did.

While only 10 (9.3%) of the 107 facilities had the materials to “Promote Safe Administration” at baseline, 59 (57.8%) facilities of the 102 at follow-up the poster. This also was a significant increase ( $p<.001$ ). Out of these, there were 9 facilities at baseline and 30 at follow-up that had the job aid pamphlet “Nine Rights to Ensuring Safe Injections.” Of 9 facilities observed at baseline and 35 facilities at follow-up, the job aid pamphlet “Be Needle Smart” was found in only 1 facility at baseline but in 21 (60%) of facilities at follow-up. None of the observed facilities had the job aid “Used Needles Spread Infection” at baseline. However, 11 facilities or 31.4% of the 35 facilities had these. The job aid “What You Need to Know about Injection Safety” was found only at baseline in 3 facilities.

In terms of materials promoting safe disposal of used injection equipment, 5 facilities of 107 (4.7%) were observed to have any materials at baseline, while 80 of 102 facilities (78.4%) observed at follow-up possessed reminders or job aids to promote safe disposal. This increase also was significant ( $p<.001$ ). While the “Safe Waste Disposal Management” poster was observed in 1 facility at baseline, this had increased to 53.8% of the 80 facilities at follow-up. Likewise, the “Safe Waste Disposal Saves Lives” poster was found in 2 facilities at baseline and in 33 of 80 facilities (41.3%) at follow-up (Figure 2).

**Figure 2: Availability of injection safety materials at health facilities**



## 6. OBSERVATIONS ON INJECTION ADMINISTRATION PRACTICES

For this survey, up to 4 injection observations per ward where injections were being administered on the day of the survey were planned for hospitals as well as up to 4 injection observations per lower-level facility. A total of 557 injections observed during baseline and 1,044 injections observed during the follow-up survey were administered by various types of health care personnel; 81.6% of the 550 observed injections were in the hospitals during the baseline, and a similar proportion (79.0%) was observed in hospitals during the follow-up; 2 injections were not classified in the follow-up.

**Table 13: Types of health care workers observed administering an injection**

Type of Health Care Worker	Baseline N=557	Follow-up N=1, 044
	Percentage of the Total Observed	Percentage of the Total Observed
Doctor	5.3	5.7
Nurse	52.0	60.1
Community Health Officer	15.0	15.0
Lab Scientist/Technician	24.2	15.4
Auxiliary Nurse	0	1.1
Phlebotomist	0	0.4
Environmental Health Officer	0	0.8
Other	0	0.4
No responses recorded	3.5	1.1
<b>Total</b>	<b>100%</b>	<b>100%</b>

At baseline, diagnostic injections were the most frequently observed injections followed by FP injections and curative injections. This may be due to the fact that phlebotomy was included with the diagnostic injections at baseline. In the follow-up, by far the most frequent type of injections observed were curative injections followed by vaccinations and blood draws. (Table 14)

**Table 14: Distribution of the injections based on type at baseline and follow-up**

Type of Injection	Baseline		Follow-up	
	Number of Injections Observed	Percentage of the Total Observed	Number of Injections Observed	Percentage of the Total Observed
Therapeutic Injections	121	21.7%	558	53.4%
FP Injections	146	26.2%	50	4.8%
Preventive Injections (Vaccinations)	8	1.4%	237	22.7%
Diagnostic Injections (Laboratory)	282	50.6%	2	0.2%
Finger Prick			13	1.2%
Phlebotomy <sup>3</sup>			182	17.6%
No responses recorded	0	0.0%	2	0.2%
<b>Total</b>	<b>557</b>	<b>100%</b>	<b>1044</b>	<b>100%</b>

<sup>3</sup> Finger pricks and phlebotomy injections were included in the “diagnostic” group at baseline. At follow-up, they were separated for more detailed analysis.

## **6.1 PREPARATION OF INJECTIONS ON A CLEAN WORK TABLE OR TRAY**

The data collectors began their observations by focusing on the hygienic conditions of the injections, in particular, whether the injection providers had taken care to prepare the injection on a clean worktable or tray where contamination of the injection equipment with blood, dirty swabs or other biological waste would be unlikely. Overall, 77.7% of 543 injections observed at baseline were prepared on a clean surface, compared to 84.3% of 1,038 injections at follow-up. This increase was statistically significant ( $p < .001$ ) (Figure 3).

In the baseline, injections were observed to be prepared on a clean, worktable or tray in 78.4% of observations in hospitals and 74.0% of lower-level facilities. In the follow-up, both groups increased significantly to 83.7% and 86.6%, respectively.

## **6.2 HAND HYGIENE AND USE OF NEW GLOVES**

The other aspect of general hygiene that the data collectors analyzed was hand washing. 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 or in cases where there was a risk of contact with soil, blood, or organic fluids. They found that injection providers only washed their hands in 12.3% of 551 injections in which the observations were made at baseline. This increased significantly to 24.8% ( $p < .001$ ) of 984 injection observations at follow-up (Figure 3).

This result seems to be higher among injection providers in lower-level facilities where 20% of injection providers at baseline and 34.8% of injection providers at follow-up washed their hands, compared to 10.5% of injection providers at baseline and 22.2% of injection providers at follow-up of the injection providers in hospitals. The difference between hospitals and lower-level facilities from baseline to follow-up was both statistically significant ( $p < .001$  and  $p < .05$ , respectively). While improved, this is an area that should be addressed as it can easily affect change.

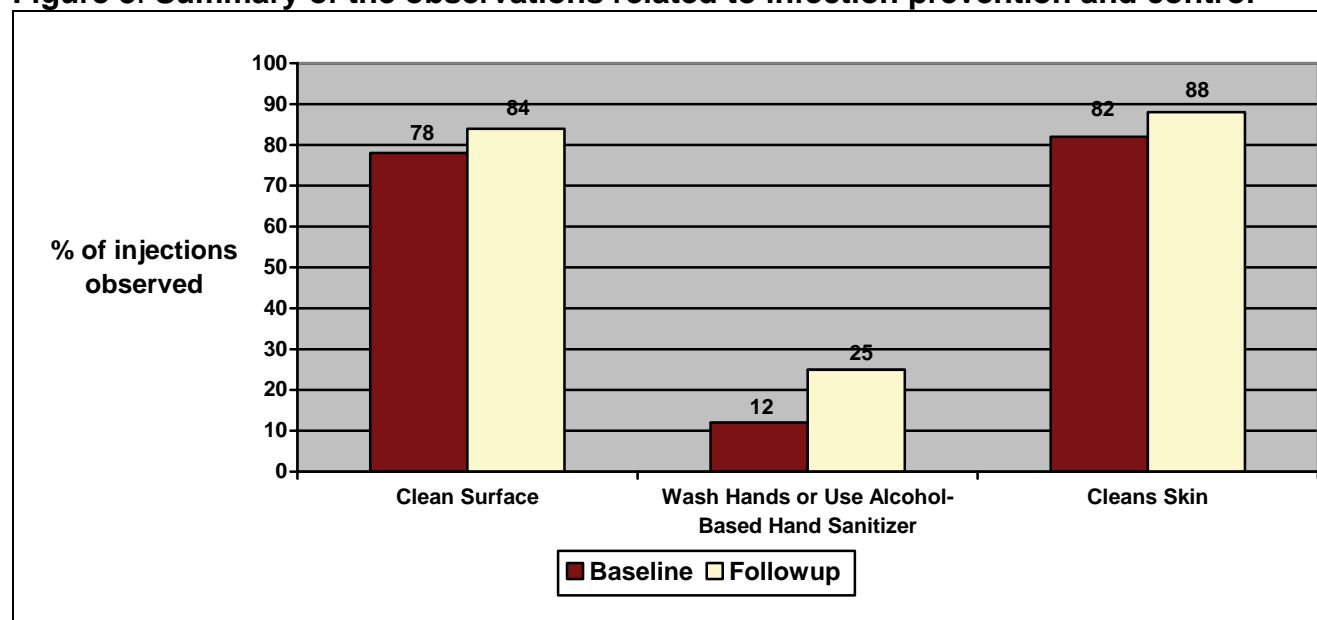
At follow-up only, the data collectors observed if providers wore new gloves for each injection administered. Of 887 observations, 53.2% of the providers used new gloves for each injection. Only 0.8% did not change the gloves between patients, and 46% did not use any gloves while administering the injections. This result appeared to be higher among providers in hospitals where 62.1% wore new gloves for each injection, compared with 22.9% of the providers in lower-level facilities. In 84.2% of injections, which were categorized as diagnostic, phlebotomies, and finger pricks, the providers were observed to wear new gloves before each injection observation.

## **6.3 CLEANING THE PATIENT'S SKIN BEFORE THE INJECTION**

In this survey, data collectors were able to observe the practice of cleaning the patient's skin. In 82.3% of the 537 injection observations at baseline and 87.9% of 1,008 injections observed at follow-up for this indicator, the provider cleaned the skin with a clean swab or a disinfectant before the injection was given. The increase was statistically significant ( $p < .05$ ) (Figure 3).

This result seemed higher among injection providers in the hospitals where in 86.0% injection observations at baseline and 89.8% of injection observations at follow-up cleaned the patient's skin, compared to 65.3% at baseline and 80.8% at follow-up in the lower-level facilities. The increase was statistically significant in both hospitals and lower-level facilities ( $p < .05$ ).

**Figure 3: Summary of the observations related to infection prevention and control**



In the EPI program, use of antiseptic is not promoted as some vaccines contain live (attenuated) virus. They recommend use of swab soaked in clean water.

A further analysis of the use of antiseptic with vaccination revealed that for 7 of 8 observations at baseline the providers kept this practice. However, at follow-up, in 78% of 236 observations, the providers cleaned the patient's skin before administering vaccination. This is an area for provider training. However, this increase is not significant.

## 6.4 TYPE OF EQUIPMENT USED FOR PROCEDURE

The types of equipment used for each injection were not observed during the baseline survey. At follow-up, the data collectors observed the types of equipments used for the injection procedures. They found that in 460 of 1,032 injections where the observations were able to be made the provider used auto-disable needle and syringe (44.6%); in 447 injection observations, the provider used the standard disposable needles and syringes (43.3%); 62 providers used retractable needle and syringe (6.0%); 24 used disposable needle and syringe of an unknown type (2.3%); 24 used vacuum set (2.3%); 6 used lancet (0.6%); and 2 used winged collection set (0.2%). Other types listed were a cannula and an insulin syringe.

## **6.5 PATIENTS AS THE SOURCE OF INJECTION EQUIPMENT**

In some health facilities, if the health care systems do not supply injection providers with sufficient quantities of injection equipment, the patients may be obliged to bring their own needles and syringes. At baseline, 9.7% of the patients in 556 injection observations brought their own needles and syringes for the injections they received on the day of the survey. This significantly decreased to 4.8% of 1,034 injections at follow-up ( $p < .001$ ) (Figure 4). This would indicate that people knew that appropriate equipment was available at facilities.

Patients bringing their own injection equipment appeared higher among injection providers in the lower-level facilities at baseline where 24.8% brought their own needle and syringes, compared to the 6.3% observed in the hospitals; however, the results were higher in the hospitals during follow-up survey where 5.4% brought their own syringes, compared to the 2.8% in the lower-level facilities.

## **6.6 USE OF NEW NEEDLES AND SYRINGES FOR INJECTIONS AND TO RECONSTITUTE MEDICATIONS**

The needle and syringe were taken from a sterile package in 94.4% of the 552 injection observations at baseline and nearly all of the 1,023 (all but 7 observations) injection observations at follow-up (99.3%) where this practice could be observed.<sup>4</sup> This increase was statistically significant ( $p < .001$ ). This is an important increase, nearing 100% (Figure 4).

In 6 of the cases in which a new needle and syringe were not used, there was suspected reuse found during observations of injections. In 3 cases, the data collectors noted that the reuse was for scarce insulin syringes; there were no details collected on the other 3 cases. There was no evidence of reuse in the other 1 injection.

In the baseline, in hospitals, in 96.2% of injections observed, the needle and syringe came from sterile packs. This increased to 99.1% of injection observations in hospitals in the follow-up. However, it was 100% at follow-up for lower-level facilities, and it remained at 100% in lower-level facilities.

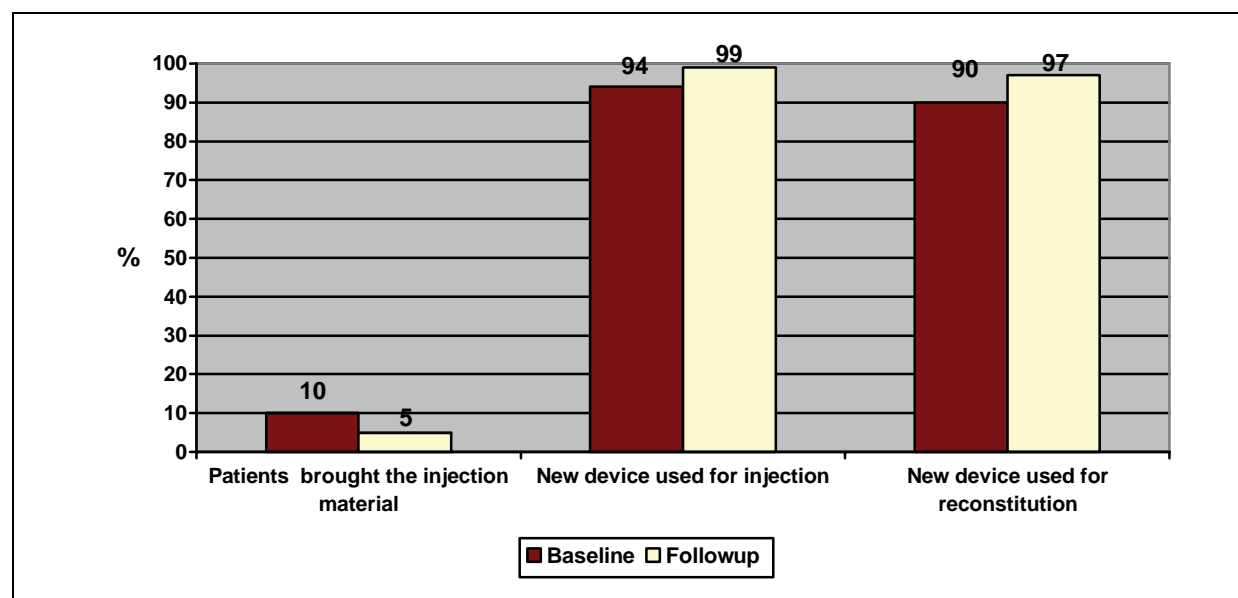
The result of using new needles and syringes for reconstituted vaccines and medication (89.6% for 77 injections at baseline and 96.8% of 283 vaccinations at follow-up) was lower than overall injections in general. This increase was significant ( $p < .05$ ).

The use of new needles was higher among injection providers in the hospitals at baseline where all providers used needle and syringes from sealed pack for reconstitutions, compared to the 80% at the lower-level facilities. However, at follow-up, more providers at lower-level facilities had a higher proportion (98.5%) that used needle and syringes from sealed pack for reconstitutions compared with 96.3% in hospitals. The change in lower-level facilities was significant ( $p < .001$ ).

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<sup>4</sup> If reuse of injection equipment was about to occur without sterilization, data collectors were instructed to intervene to interrupt the procedure as tactfully as possible.

**Figure 4: Summary of the distribution of observations on the sources and practices of using new needles and syringes**



## 6.7 DILUENTS FOR RECONSTITUTION

Although there are cases in which it is not necessary to use diluents from the same manufacturer as the medications (for example, cases of reconstitution that only use sterile saline), in general, using diluents from the same manufacturer as the vaccines is one facet of injection safety. During the course of this follow-up evaluation, the data collectors noted that the diluents from the same manufacturer as vaccine were used in 98.7% at follow-up of the reconstituted injections in which this practice could be observed (n=76 observations in 75 locations). In applicable cases of vaccination, in all 45 and 31 injection observations at hospitals and lower-level facilities, respectively, used diluents from the same manufacturer as vaccine.

## 6.8 REMOVING NEEDLES FROM THE CAP OF MULTIDOSE VIALS

A needle that remains in the rubber cap of a multidose vial risks becoming a route by which microbes gain access to and will contaminate the injectable medication. Removing the needle from the rubber cap after withdrawing the dose to be administered is, thus, a measure of injection safety. For this variable, the data collectors were able to make 389 observations at follow-up of injections in which this variable was relevant (i.e., a multidose vial was used). The rubber stopper of the medicine vial was cleaned with disinfectant before withdrawing the dose for 45.8% of 389 injection observations at follow-up.

The overall result for the 473 injection observations (117 at baseline and 356 at follow-up) made by data collectors involving one or more injections with a multidose bottle showed that 63.2% at baseline and 86.0% at follow-up removed the needle from the rubber cap after withdrawing the dose to be administered *every time* that they prepared an injection as required for good infection

prevention. This increase was statistically significant ( $p<.001$ ) (Figure 5). This is an important step toward reducing transmission through this route.

The injection provider removed needles from multidose vials in 71.0% of the injection observations at hospitals at baseline and 82.4% of injection observations at follow-up, compared with 53.2% of injection observations and 82.4% of injection observations in lower-level facilities at follow-up. These changes were statistically significant ( $p\leq.002$ ).

## **6.9 USE OF CLEAN BARRIERS TO PROTECT FINGERS WHEN BREAKING GLASS AMPOULES**

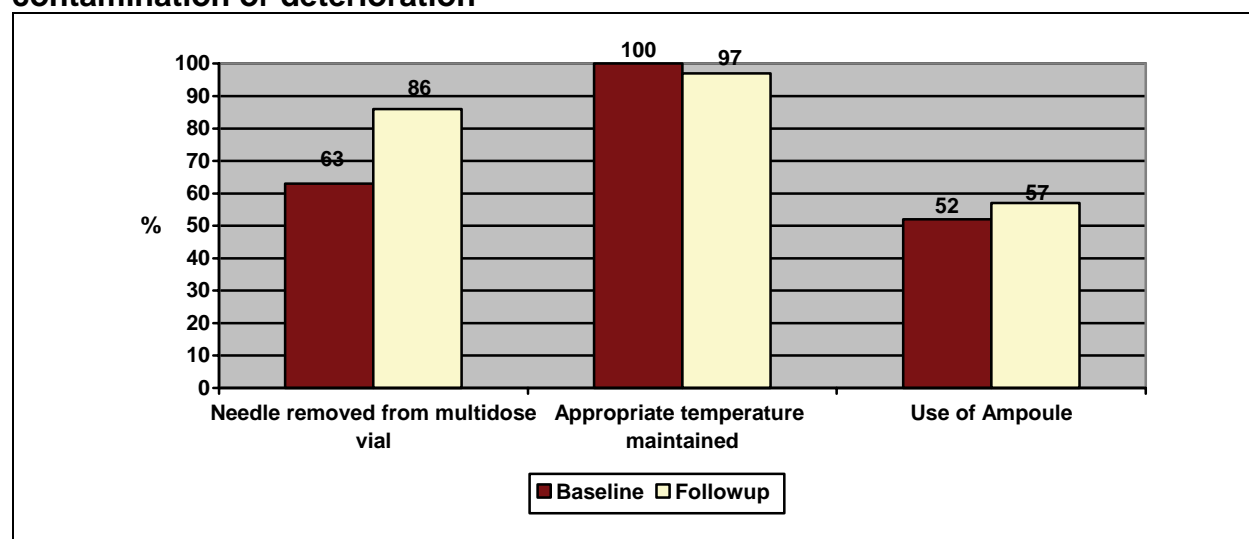
Injection providers can be injured when opening or breaking glass vials, which risks contaminating the injectable medication or injection equipment. For this reason, injection providers were observed while they were preparing injections. The data collectors noted what material (i.e., a sponge, cotton, or gauze) was used by the providers as a barrier to protect their fingers when breaking the ampoules. In the cases in which this observation was relevant (i.e., glass ampoules were used) and in which it could be evaluated, the providers used a clean barrier in 51.5% of injections observed at baseline (of 33 observations) and 57.4% at follow-up (of 390 observations) (Figure 5).

## **6.10 TEMPERATURE AT WHICH HEAT-SENSITIVE VACCINES WERE STORED**

The data collectors observed the temperature at which heat-sensitive vaccines were stored. They were stored at an appropriate temperature between 2-8° C in all the observations at baseline (3 observations) and in 96.5% of 226 injection observations at follow-up where this variable applies. In the baseline, there were 2 observations in hospitals and one observation at a lower-level facility. (Figure 5) In both hospitals and lower-level facilities, the vaccine was stored properly before administration. This result appeared to be higher among injection providers in the hospitals 99.2% (127 observations) compared to 92.9% (98 observations) at the lower-level facilities at follow-up.



**Figure 5: Summary of the variables on protecting injectable medications from contamination or deterioration**



## 6.11 RECAPPING NEEDLES AFTER ADMINISTERING INJECTIONS

The practice of recapping entails risks for injection providers because it exposes them to blood-borne pathogens. Unlike the preceding surveys that were focused on recapping with *two hands*, for this survey, any recapping of the injection equipment—with one or two hands—was considered unsafe. The used syringes were disposed of *without ever recapping* in only 39.9% of 544 injection observations at baseline. This increased significantly to 95.7% of 967 injection observations at follow-up ( $p<.001$ ). This is a tremendous achievement for Nigeria and the MMIS project.

When diagnostic injections were removed in the baseline, in 44.6% of the 267 remaining injections (curative, FP, vaccinations), they were observed to be disposed without recapping. In the follow-up, when diagnostic injections and phlebotomy injections were excluded from analysis, this percent increased significantly to 97.5% of remaining 795 injections ( $p<.001$ ) (Figure 6). In all states, the percent of used injections that were disposed without recapping increased significantly ( $p<.001$ ).

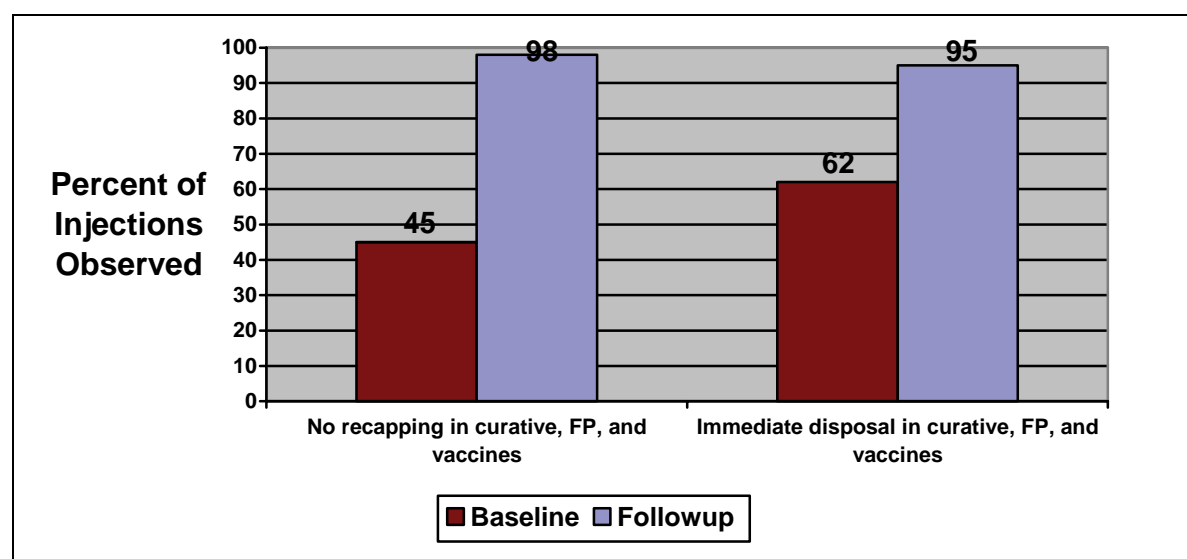
## 6.12 USE OF A SAFETY BOX FOR IMMEDIATE DISPOSAL OF USED SHARPS

It is important that injection equipment be safely disposed of as soon as injections are administered so that injection providers, patients, and waste handlers are protected from accidental injuries from used sharps. Injection providers were observed to evaluate whether they safely disposed of the used needle **and** syringe in a safety box or if they used a needle removal device *immediately* after administering the injection. In fact, providers appropriately disposed of the injection equipment *immediately* after the injection in 61.5% of the 275 vaccinations, FP, and curative injections for which this variable was observed in the baseline survey and in 95.4% of 841 injection observations at follow-up in this survey. This was statistically significant ( $p<.001$ ) (Figure 6). In all states, the percent of used injections equipment that were immediately disposed increased significantly ( $p<.001$ ).

Immediate disposal was higher among lower-level providers where 61.4% of injection providers at baseline and 100% at follow-up disposed used injection equipment immediately, compared to 61.1% and 93.9% of injections providers at baseline and follow-up, respectively, at hospitals.

In the cases where disposals were not safe, the data collectors provided more details on their observations, noting that in some hospitals doctors tended to leave used recapped needles on injection table claiming it is nurses' duty to dispose them. In other cases, data collectors noted that there were not safety boxes in some facilities as such disposal was unsafe.

**Figure 6: Summary of the observations on disposal of sharp objects after injections**



### 6.13 PHLEBOTOMY PRACTICES

Phlebotomy is a common health care procedure used to collect venous or arterial blood for diagnostic or treatment purposes. Phlebotomy practices were added to the follow-up portion of this survey in order to collect some initial data that could be used to identify areas of risk and potential for improvement.

In the follow-up, 184 cases were categorized as blood drawing procedures. They were carried out with a standard disposable needle and syringe in 45.1% of cases, auto-disable needle and syringe in 36.4% of cases, vacuum sets in 13.0% of cases, an unidentified type of disposable needle and syringe in 2.2% of cases, retractables in 1.6% of cases. A winged collection set was used in 1 blood draw. The type of equipment used was not recorded in 2 observations.

In all 181 blood draws in which the observations were made, a new needle and syringe was used; 82.4% of 182 blood draws were carried out on a clean table or tray. The patient's skin was cleaned with a clean swab or antiseptic in 92.3% of blood draws. Out of 120 phlebotomy

injections in which the observation was made, the provider wore new gloves in 86.7% of cases. Gloves were not changed in 1 case, and no gloves were used in 15 cases or 12.5% of observations. In all of the cases where it was observed (163), hand washing was observed in only 19.9% of the cases. The used needle was not immediately disposed or cut with a needle remover in 9 cases.

Out of 161 cases in which the observations were made, one-handed recapping was observed in 20 cases; and in 1 case, 2-handed recapping was observed.

In analyzing the practices for the phlebotomy observations that were made in this survey, the analysis distinguished between closed systems (e.g., vacuum sets and winged collection sets), which are considered to be the safest options than syringes. A vacuum set or a winged collection set was used in 25 phlebotomy observations. In all 24 cases in which only a vacuum or winged collection set were used and the observation was made, a new device from an unopened pack was used. The device was immediately disposed in all cases. No recapping was observed in these 21 cases. The observations were not made in the other 4 cases.

As mentioned above, the other devices used for the rest of the phlebotomy procedures were standard disposable needles and syringes. As with any phlebotomy procedure, a new device must be used, and the used device should be disposed of immediately.

The use of a syringe adds additional steps to the phlebotomy procedure because once the blood is drawn with a syringe it must be transferred to a test tube for analysis. Generally, the needle needs to be removed prior to the transfer to avoid hemolyzing the sample (which would then result in the need for a new sample to be drawn). The analysis of recapping practice for blood drawn with syringes depends on the circumstances surrounding removal of the needle prior to transferring the blood to a test tube. The general principles are as follows:

Two-handed recapping is considered unsafe at all times because of the increased risk of an accidental needlestick injury.

One-handed recapping of the used sharp is acceptable if the providers would otherwise have to use their bare hands to remove the needle prior to the transfer.

If the needle is not removed, then a one-handed technique is needed to transfer the blood to the test tube through the exposed sharp. (A two-handed transfer technique with an exposed, attached sharp is not acceptable for the same reason that two-handed recapping is not acceptable.)

If a device was used to remove the exposed (uncapped) sharp prior to transferring the blood to a test tube, then the device must be a safe one. Forceps, needle removers, and devices to unscrew the needles are considered acceptable. Needle cutters are not acceptable because of the risk of a blood splash and the danger of an injury from the protruding part of the needle.

Since the transfer process, thus, involves several components (i.e., removal or not of the needle, technique, and device used), MMIS analyzed the overall pattern in each blood transfer for a summary analysis to determine whether the transfers were done safely or not. Any instance of an unsafe practice in any of the variables used for this analysis rendered the entire case unsafe, and any instance of a case in which any of these variables was missing meant that the case as a whole could not be assessed.

For all blood drawn, the data collectors sought to see if blood was transferred from a disposable syringe to a tube or any other container.

Out of 155 applicable cases, 93.5% of the providers transferred disposable syringe to a tube or any other container. The data collectors observed the needle removal processes and found that out of 145 applicable cases 84.1% of the providers removed the needle prior to blood transfer, leaving 23 cases where the needle was still attached when the blood transfer took place. In all these observations, the data collectors found that only 1 provider used something else other than needle remover in this process; this provider used gauze. In the 23 cases in which the needle was not removed, using 2 hands in transferring the blood was more common with 18 providers practicing this, thus, *increasing* the risk of an accidental needlestick injury; and only 4 providers used 1 hand.

Regarding blood draws carried out with a needle and syringe, recapping depended upon whether the needle was removed prior to transfer to a test tube, whether bare hands were used for this transfer, and whether one hand or two hands were used for the transfer with an exposed sharp. Two-handed recapping is considered unsafe in all circumstances.

In the cases in which the needles were removed, the providers first recapped the needle with one hand (the safest alternative) in 20 cases. The provider recapped the needle with 2 hands in 1 case, thus, increasing the risk of an accidental needlestick injury. In the rest of the cases (84.8% or 117 cases), the providers did not recap the needle at all before removing it with bare hands.

## **6.14 Behavior Change Communication**

There was a dearth of communication materials being referred to in the facilities visited for the survey. Out of 557 and 1,043 injection observations at baseline and follow-up, the poster “Promote Oral Medication” was referred to in 5.0% of observations at baseline and 3.4% of observations at follow-up. Similarly, the poster “Used Needle are Dangerous, Don’t use Them” was referred to by 3.5% at follow-up only. The poster “Be Needle Smart” was referred to by only 1.1% at baseline and by only 1 provider at follow-up. Similarly, the poster “If it Isn’t New, It Won’t do” was referred to by only 3 providers at baseline and none at follow-up. Other references comprised of conversations on how to comply with instruction on how to take medications and providers assuring patients to be calm so that they would not injure themselves (Table 15).

**Table 15: References to communication materials**

Poster referred to by providers	Baseline		Follow-up	
	Percentage	Number of Injection Observations	Percentage	Number of Injection Observations
Poster to Promote Oral Medication	5.0	557	3.4	1043
Poster: Needle Smart	1.1	557	.7	1043
Poster: Used Needles and Syringes are Dangerous, Don't Use Them	0	557	3.5	1043
Poster: If it isn't New, it Won't do	0.5	557	0	1043

## 6.15 FOLLOW-UP INSTRUCTIONS GIVEN TO PATIENTS

The data collectors observed the conversations between the providers and patients. Out of 557 and 1,043 observations at baseline and follow-up, follow-up instructions were given in 35.8% of the injection observations in the follow-up. This increased significantly from the baseline in which in only 8.5% of injections follow-up instructions were given. Potential side effects were mentioned in 8.1% of the cases at follow-up. This also significantly increased from the baseline ( $p < .001$ ). Patient told what to do after adverse reaction also significantly increased ( $p < .001$ ). The name of medication significantly decreased from the baseline from 5.0% to 0%. Even though there was a significant increase, in less than 10% of the observations, any type of follow-up instructions were given in the follow-up.

**Table 16: Follow-up instructions given to patients**

Follow-up instructions	Baseline		Follow-up		Statistically Significant?
	Percentage	Number of Injection Observations	Percentage	Number of Injection Observations	
Name of medication	5.6	557	0	1043	Yes $p < .001$
Follow-up instructions	9.5	557	35.9	1043	Yes $P < .001$
Potential side effects	3.8	557	8.1	1043	Yes $P < .001$
Patient told how to treat side effects	3.4	557	4.0	1043	No
Patient told what to do if adverse reaction	2.7	557	3.8	1043	No



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## 7. INTERVIEWS WITH INJECTION PROVIDERS

This section contains data on interviews with the injection providers. A total of 237 interviews were conducted at baseline and 284 during follow-up survey, generally one per ward at the hospital or up to 4 providers at lower-level facilities. At baseline, the interviews included 93 (41%) injection providers from health centers and 134 (59%) from hospitals; 10 providers did not specify their type of facilities. At follow-up, 223 (78.5%) of providers were from hospitals and 61 (21.5%) were from health centers. Of the 386 interviewed, 144 respondents did not specify the ward they worked in. The remaining did, and the breakdown is as follows: 57 interviewed in the operating rooms (surgery); 36 interviewed in the general medicine wards; 63 interviewed in the laboratories; 43 interviewed in the gynecology/maternity wards; 59 interviewed in pediatrics wards; 50 interviewed in general consultation (GOPD) wards; and 49 interviewed in immunization units. The data collectors were able to observe 288 of the total 300 providers during injection administration prior to interviewing them in the follow-up survey.

### 7.1 AVAILABILITY OF INJECTION EQUIPMENT IN COMMUNITY

Data collectors asked the injection providers whether it was possible to buy new disposable needles and syringes in the community around the health facility surveyed. Overall, at baseline, 88.2% of the injection providers indicated that it was possible to buy injection equipment in their communities, 9.3% of the injection providers said that it was *not* possible and the rest (2.5%) did not know. Fewer providers (70.4%) at follow-up declared it was possible to buy injection equipment in their communities, 20.8% of the injection providers said that it was *not* possible and the rest (8.8%) did not know.

### 7.2 USE OF ANY DISPOSABLE SAFETY SYRINGES

Among the 304 providers surveyed at follow-up, 90.8% of the providers had used any kind of disposable safety syringes. The data collectors asked these 258 providers the types of disposable safety syringes they used. Further investigation of those who use safety syringes revealed that two types of disposable safety syringes are in use in health facilities in Nigeria, that is, reuse prevention/auto-disable (AD) type (used by 36.4% of the injection providers) and reuse and needlestick injury prevention/retractables (used by 8.9% of the injection providers); 54.7% used both the reuse prevention and needlestick injury prevention syringes.

### 7.3 RECALL OF STOCKOUTS OF SAFETY BOXES AND SYRINGES

At baseline, 77.4% declared that safety boxes were never used. At follow-up, almost all respondents (99.6%) had never used a safety box. This is a tremendous increase. It is interesting

to note a potential relationship between the availability of safety boxes and needlesticks: All providers who did not report any needlestick injuries had safety boxes in their wards.

At the baseline, 85.1% had a stockout of safety boxes; 14.5% had no stockouts of safety boxes, and the rest (0.4% or 1 provider) did not remember.

Of the 53 providers who had safety boxes and who had a stockout, 1 reported that it lasted less than a week, 5 reported that it lasted 1 to 4 weeks, 1 said that it lasted over 1 month, and 11 reported that it lasted over 3 months.

In the follow-up, 92.9% of 284 providers never reported a stockout, 4.9% reported a stockout, and 2.1% did not remember. The difference between 85.1% reporting a stockout at baseline and 4.9% at follow-up was statistically significant ( $p \leq .001$ ) and represents a tremendous improvement (Figure 7).

Stockouts of single-use disposable sterile syringes (including standard, auto-disable, or retractable syringes) in the 6 months prior to this survey showed that stockouts of syringes were more common and long lasting than safety boxes. At baseline, 75.0% of 236 injection providers interviewed had not had a stockout of syringes during the 6 months prior to the survey. This improved significantly to 91.5% during the follow-up survey ( $p < .001$ ).

At baseline, among those who experienced stockouts (17.3% of injection providers), 5.9% had a stockout for less than 1 week. Of the remaining, 2.5% reported having had a stockout for 1 to 4 weeks, 8.90% had had stockouts lasting over 1 month, and 7.6% did not remember any stockouts.

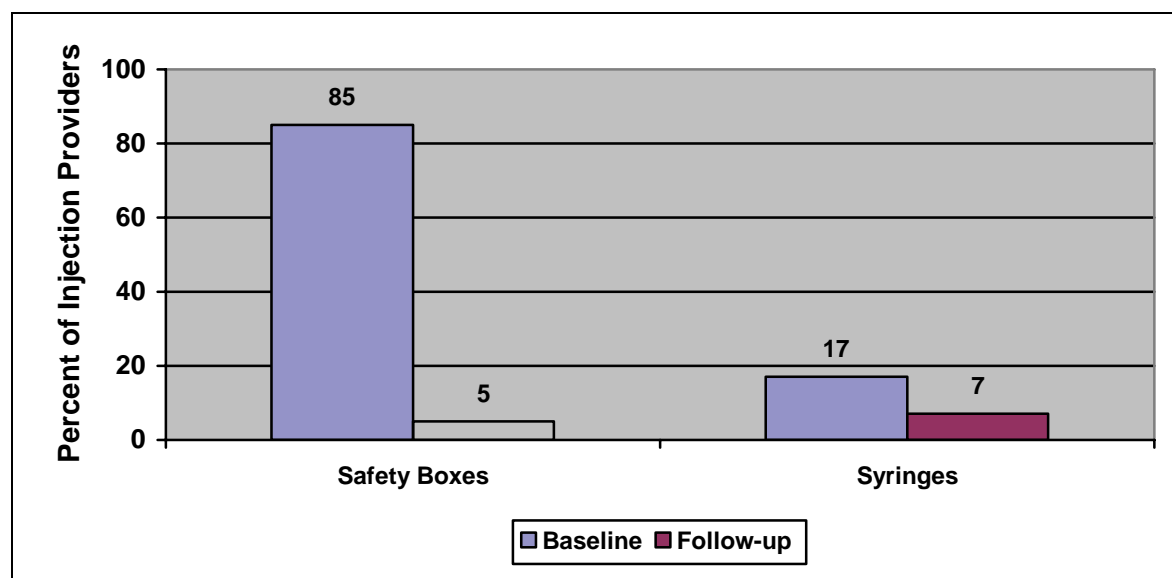
At follow-up, similar to the findings for safety boxes, stockouts of syringes were less frequent. Only 5 providers (1.8%) reported that they had a stockout for less than 1 week. Of the remaining, 2.8% reported having had a stockout for 1 to 4 weeks, 2.5% had had stockouts lasting over 1 month, and only 1.4% did not remember any stockouts (Figure 7).

The data collectors asked the 41 providers at baseline and later 20 providers at follow-up who had had stockouts of injection equipment at any time in the 6 months prior to this survey and asked an additional question in order to determine what providers had done during the stockout. At baseline, in response to this question, 24 asked patients to go buy them, 4 said that they had stopped administering injections, and 3 providers reported that they used a different size or gauge. None of the providers sterilized for reuse or borrowed from another facility. One provider said that the patient borrowed from other patients. Two patients bought their injection equipment from a chemist.

At follow-up, 12 providers reported that they used a different size or gauge, 4 providers asked patients to go buy them, 2 said that they borrowed equipment from another facility, and 1 declared that the stockout lasted less than 1 week and did not impact the work. Similar to the finding, at baseline none of the providers sterilized for reuse.



**Figure 7: Proportion of providers reporting stockouts of safety boxes and syringes in the six months prior to the survey**



## 7.4 REUSE OF A NEEDLE OR SYRINGE

At baseline, when data collectors asked whether the injection providers had reused a syringe on another patient, only 2 providers (0.9%) of the 237 providers interviewed answered affirmatively.

During the follow-up survey, data collectors asked whether the injection providers were aware of any cases of reuse of a syringe on another patient; 2.3% of the providers said “yes,” and 2 providers (0.4%) said they do not know.

## 7.5 USE OF NEEDLE REMOVAL DEVICES

Data collectors asked the injection providers whether they used a needle removal device in the hospital ward or health facility where they worked. Overall, 3.4% of the injection providers at baseline declared that they used them. This number almost doubled during the follow-up survey, when 5.3% declared they used them. Of these 15 providers at follow-up, 13 were working in hospitals and two in health centers.

## 7.6 ACCIDENTAL NEEDLESTICK INJURIES

The data collectors asked the injection providers whether they had experienced any accidental needlestick injuries in the 6 months prior to the survey. Among the 236 providers interviewed at baseline, 78.4% reported that they had **not** sustained any injuries within that period, while 18.6% reported having 1 or more injuries. The remaining 3% did not remember whether they had had

any injuries. Among the 44 providers with an injury, 25 had only 1 injury, 14 had 2 injuries, 3 had 3 injuries, and 1 had 5 injuries.

Among the 284 providers who responded to this question at follow-up, 92.6% reported no injuries, 2 providers could not remember, 17 reported 1 injury, 1 reported 2 injuries, and 1 other provider reported 32 injuries. The drop in injuries over time was statistically significant ( $p \leq .001$ ) and an important step in reducing the transmission of HIV and hepatitis through needlestick injuries (Figure 8).

The providers were asked to mention the types of procedures the needle or sharp object that injured them were used. Of the 19 providers that received a needlestick injury in the follow-up, 12 were for curative injections, 4 were from drawing blood, 1 was immunization, and 1 was during suturing.

The data collectors asked the providers what type of needle or sharp caused the injury. For 9 providers, it was needle on standard disposable syringes; it was ADs for 7 providers; for 1 provider each it was a retractable syringe, a suturing needle, an IV/cannula, and a lancet that caused the injury.

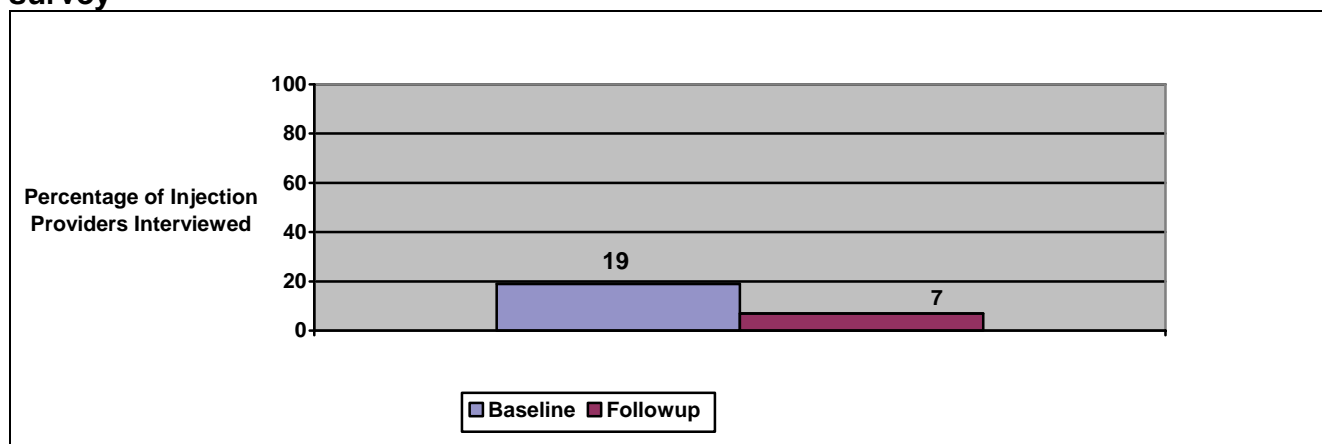
Eight of these providers reported the injuries to their supervisors.

Circumstances surrounding the injections were giving curative injections (12 providers), drawing blood (4 providers), giving a vaccination (1 provider), suturing (1 provider), recapping (1 provider), and opening a pack (1 provider).

Reasons for lack of reporting included that 1 provider did not know where to make the report; another said that there was no policy for reporting, and another said that it happened in the night, and another said that the patient was HIV negative; 5 providers each said the needles and syringes were new or were not contaminated at the time of the injury; 3 providers thought it was not serious; 1 provider said that the supervisor was not on duty.

At follow-up, provision of postexposure prophylaxis (PEP) was available according to 50.7% of 284 providers that responded; 16.2% of providers reported “don’t know.”

**Figure 8: Providers' recall of needlestick injuries in the six months prior to the survey**



## 7.7 PROVIDERS' KNOWLEDGE OF DISEASES TRANSMITTED BY REUSE OF NONSTERILE NEEDLES

All but 4 injection providers (98.3%) of the injection providers interviewed at baseline declared that they were aware of the diseases that can be transmitted by reuse of a nonsterile needle or by a needlestick injury. In the follow-up survey, 99.3% of the providers (all but 2) reported being aware. The data collectors then asked *what* diseases could be transmitted in this way. Only diseases mentioned spontaneously by the providers are included in this analysis.

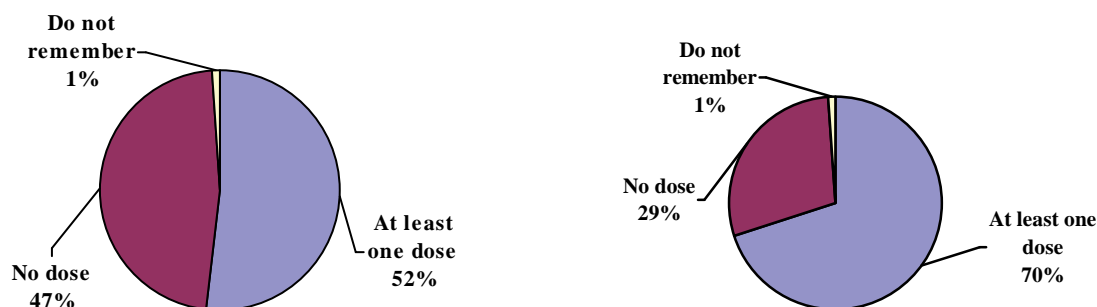
At baseline, 98.7% of those interviewed mentioned HIV. Hepatitis B was mentioned by 75.5% of the providers interviewed, while hepatitis C was mentioned by only 19.3%. In the follow-up, hepatitis A was mentioned by 1.4% of the providers. Tetanus was mentioned by 2.4% of the providers. Other diseases mentioned more than once was abscess and tuberculosis.

At follow-up, HIV was mentioned by 97.5% of providers. Hepatitis B was mentioned by 66.3% of the providers interviewed, while hepatitis C was only mentioned by 25.9% of the providers. Tetanus was mentioned by 4.6% of providers. Hepatitis A was mentioned by 23.0% of providers. Other diseases mentioned more than once were abscess, malaria, syphilis, tuberculosis, and yellow fever.

## 7.8 INJECTION PROVIDERS VACCINATED AGAINST HEPATITIS B

Of the 236 injection providers surveyed at baseline and 284 at follow-up, 51.7% at baseline and later 70.1% at follow-up declared that they had received the hepatitis B vaccine. This change in time was statistically significant ( $p < .001$ ) and an important step in providing protection to hepatitis B for all providers (Figure 9).

**Figure 9: Injection providers who declared receiving the hepatitis B vaccine at baseline and follow-up**



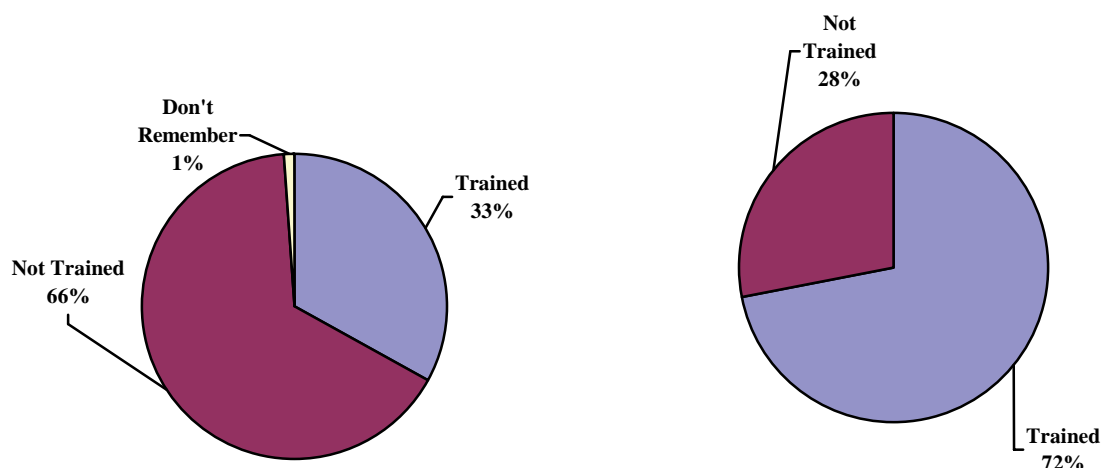
During the baseline survey, 52.5% of 122 reported to have received 3 doses of the vaccination against hepatitis B, while 22.1% and 25.4% had 1 and 2 doses, respectively. However, at follow-up, though, there is a marked improvement in receiving all the required doses. In fact, 10.1% of the injection providers had received only 1 dose and 22.1% had received 2 doses. Thus, in reality, 65.3% of the 199 injection providers interviewed at follow-up were completely protected against this disease. The rest of the providers reported receiving over 3 doses.

## 7.9 INJECTION PROVIDERS WHO RECEIVED TRAINING ON INJECTION SAFETY

At baseline, 33.3% of the injection providers surveyed declared having received training on injection safety. This improved significantly in the follow-up with 71.5% of providers who declared to have received the training ( $p < .001$ ) (Figure 10). The injection providers who received this training at baseline were distributed among hospitals (45 persons or 33.6%) and the primary level (30 persons or 32.3%). Similarly, at follow-up, the providers were distributed among hospitals (160 persons or 71.7%) and the lower-level facilities (43 persons or 70.5%).

Among the 79 providers who had received the training on injection safety at baseline, 18 providers (22.8%) had had accidental needlesticks in the past 6 months prior to the survey, whereas in the follow-up only 10 providers (4.9%) reported such injuries out of 203 who had received the training.

**Figure 10: Injection providers who reported receiving training on injection safety at baseline and follow-up**



## 7.10 DESCRIPTION OF A SAFE INJECTION

In the follow-up survey, the data collectors asked the 284 providers how they would describe a safe injection. Out of these providers, 4 providers did not know how to describe it. The most frequent spontaneous responses were “a safe injection as one, which does not harm the recipient, provider and community” (58.1%), “new and sterile injection equipment” (43%), and “safe disposal of used injection devices” (42.6%) (Table 17).

**Table 17: Injection providers’ spontaneous description of a safe injection**

Safe Injection	Proportion of Providers Interviewed (n=284)
Injection which does not harm the recipient, the provider and the community	58.1%
New/sterile injection equipment	43.0%
Safe disposal of used injection devices	42.6%
Right dose	33.8%
Right route	25.0%
Right anatomic/body site	23.9%
Right medication	23.6%
Wash hands	20.8%
Wear gloves	14.8%
Right volume	12.7%
Mixed correctly	3.5%
No recapping	2.5%
Check expiration date	1.4%
Don't know	1.4%

## 7.11 SOURCES OF INJECTION SAFETY MESSAGES

The data collectors asked all the injection providers to mention where they have seen or heard about injection safety. Four providers at baseline and 3 providers at follow-up did not remember the sources of information on safe injection. The 3 major sources of information in the baseline were television (23.2%), radio (17.7%), and training workshop (16.1%); 22.8% of providers replied “none.”

In the follow-up, the 3 major sources of information were radio and television (42.3% each), poster (40.5%), and training (36.9%). These increases in the follow-up from the baseline were all statistically significant ( $p < .001$ ). The percent of providers reporting “none” decreased to 2.1%. This decrease also was statistically significant ( $p < .001$ ) (Table 18).

**Table 18: Providers source of information on injection safety**

Source	Baseline (N=237)	Follow-up (N=84)
	%	%
Preservice training	-	6.7
Training workshop	16.1	36.9
Radio	17.7	42.3
Television	23.2	42.3
Poster	2.1	40.5
Other health staff or personnel	14.3	14.1
Supervisor	10.5	9.2
Newspaper/Magazine	4.2	6.7
Booklet/brochure	3.8	3.5
Billboards/banners	0.4	1.4
Drama group/Road show	0	0.4
None/Nowhere	22.8	2.1
Don't know	1.7	1.3

## 7.12 BARRIERS TO BEHAVIOR CHANGE

In the follow-up survey, a question was added to find out what difficulties, if any, injection providers were finding in following safe injection and waste disposal practices for every injection. The difficulties mentioned most often were shortage of gloves (24.6%), not having enough time (15.0%), and no water/soap to wash hands (11.6%) (Table 19).

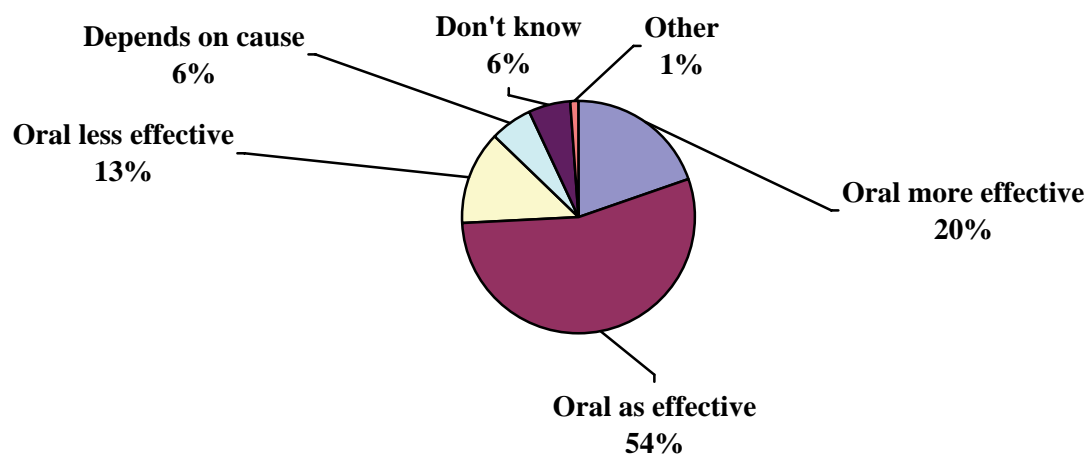
**Table 19: Difficulties faced by injection providers in following safe injection and waste disposal practices**

Difficulties	Percent of Providers Interviewed (n=284)
Shortage of gloves	24.6
Not enough time	15.0
No water/soap to wash hands	11.6
Don't know	10.2
Shortage of needles/syringes	7.7
Other waste disposal issues	6.7
Shortage of safety boxes/sharps containers	4.9
Issues with patients (uncooperative)	3.9
Shortage of oral medications / alternatives to injectables	2.1
Recapping of needle	1.1

### 7.13 PROVIDER PREFERENCE FOR INJECTIONS IN TREATING FEVER

In the follow-up only, the 284 injection providers were asked which method is more effective for fever; 19.7% of the providers responded that “orals are more effective.” A majority (54.9%) said that orals are just as effective as injections, while 5.6% responded that it depended on the cause of the fever; 13.4% declared their preference for injections over oral medications; 6% did not have a preference (Figure 11).

**Figure 11: Which is more effective for fever—orals or injections**







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## **8. INTERVIEWS WITH SUPERVISORS OF INJECTION PROVIDERS**

During the baseline, 199 supervisors of injection providers were interviewed, and 285 supervisors were interviewed during the follow-up including 1 per health center and 1 per ward in the hospital. The total, thus, included 54 supervisors at baseline and 61 at follow-up who were from health centers. A total of 137 supervisors at baseline and 224 at follow-up were from the hospitals. There was no specification of the type of facilities for 8 supervisors at baseline.

### **8.1 AVAILABILITY OF POLICIES AND GUIDELINES**

Putting policies in writing enables workers of all cadres to be familiar with them by reading them from time to time and serve as reminders when posted on walls in the workplace. Of the 199 supervisors surveyed at baseline, 2% had a copy of an injection safety policy. This increased significantly to 50.9% out of 285 supervisors at follow-up ( $p<.001$ ). This is an important step in improvement safety protocols and adherence to safety protocols.

In the baseline, 4.5% of the 198 supervisors who responded said that they had a copy of the guidelines or norms for injection safety. This increased significantly to 46.7% of the 285 supervisors in the follow-up ( $p<.001$ ).

At baseline 3.5% also said that they had a copy of the guidelines for waste management guidelines. In the follow-up, 46.7% of the supervisors reported having a copy. This increase also was statistically significant ( $p<.001$ ).

Unfortunately, when the data collectors asked to see these documents, many of the supervisors who said they had a copy of the documents could not show these documents to the data collectors. In the baseline, out of 4 supervisors who reported having the injection safety policy, no supervisor showed their copies to the data collectors. In the follow-up, 59.3% of the 145 supervisors showed the data collectors a copy of the injection safety policy ( $p<.05$ ). Work remains to be done on this front.

### **8.2 STOCKOUTS OF SYRINGES AND SAFETY BOXES**

The data collectors asked the supervisors whether they had a stockout of single-use disposable syringes or safety boxes in any ward they supervised during the six months prior to the survey. If they answered in the affirmative, the data collectors asked how long the stockout lasted in total. Of the 199 supervisors interviewed at baseline, 72.4% never had a stockout of syringes during this period; 2 supervisors (1%) said that this question did not apply to them because they had never had any stock of disposable syringes; 5.5% did not know. Of the rest, 13.6% reported having had stockouts of syringes for less than 1 week, and 2.0% had had a stockout lasting between 1 week and 1 month; others (5.5%) had stockouts lasting for over 1 month.

However, at follow-up, it had become very infrequent to have stockouts as 93% declared that they had not experienced any stockouts of disposable syringes; 1 supervisor (0.4%) said that this question did not apply because the facility had never had any stock of disposable syringes; only 1.1% did not know; of the rest, 1.4% reported having had stockouts of syringes for less than 1 week; and 0.7% had a stockout lasting between 1 week and 1 month; others (3.6%) had stockouts lasting from over 1 month. The data collectors noted that it was more common for facilities during the follow-up survey to experience stockout of VanishPoint syringes. The improvement in stockout is an important achievement to note for the Nigerian health context.

Next, the data collectors asked the supervisors if they used safety boxes in the wards that they supervised and whether they had been out of safety boxes in the 6 months prior to the survey. Of the 199 supervisors surveyed at baseline, 68.1% had never had any safety boxes in the unit. Of the remaining supervisors, 16.8% declared that they had never had a stockout of safety boxes during the last 6 months, and 2.1% did not know. Of the 25 supervisors who had experienced stockouts, 9 (4.7%) reported that the stockout lasted less than 1 week; 1 supervisor said it lasted more than a week but less than a month; 2 supervisors said it lasted over 1 month; and 13 supervisors said it lasted over 1 month.

Data collectors asked supervisors during the follow-up survey if they ever had had safety boxes in the unit they supervise. Of the 285 supervisors surveyed, 96.4% had had safety boxes in the unit that they supervised. Of the 274 of the supervisors that had safety boxes in their units, 98.2% declared that they had never had a stockout of safety boxes during the last 6 months; and 0.4 % did not know. Four supervisors had experienced stockouts; 2 reported that the stockout lasted more than 1 week but less than 1 month; 1 supervisor reported that the stockouts lasted over 1 month and another over 3 months. These results are consistent with the results of the interviews of injection providers at follow-up and continue to show a strong improvement in the reduction of stockouts.

### **8.3 DELIVERY OF VACCINES AND OTHER MEDICATIONS WITH CORRESPONDING QUANTITIES OF INJECTION EQUIPMENT AND SAFETY BOXES**

Data collectors asked the supervisors whether the stock of *vaccines* were always delivered (or available) with appropriate (corresponding) quantities of injection equipment and safety boxes. Of the supervisors interviewed at baseline, 23.1% declared that the questions about vaccines did not apply to them because there were no vaccinations in their health facilities. In addition, 8 providers (4.0%) did not respond to this question. Of the remaining 145 supervisors to whom the questions about vaccines applied at baseline, 35.9% declared that the vaccines were delivered with the corresponding quantities of *injection equipment*, 62.1% said that the quantities were not adequate, and 2.1% did not know.

At follow-up, 2.5% of supervisors declared that the questions about vaccines did not apply to them because there were no vaccinations in their health facilities, and an additional 57.2% declared that this question was not applicable to the unit that the respondent supervises. In addition, 2 supervisors did not know.

Of the remaining 115 supervisors to whom the questions about vaccines applied, 90.4% declared that the vaccines were delivered with the corresponding quantities of *injection equipment*; only 7.8% said that the quantities were not adequate, and 1.7% did not know. This increase in the follow-up was statistically significant ( $p<.001$ ).

In response to the question about *safety boxes for vaccines* in the baseline, of the 125 supervisors to which the questions about vaccines applied, 16.8% of the supervisors declared that the quantities were adequate, 80% said they were not adequate, and 3.2% of supervisors said they did not know (Figure 12).

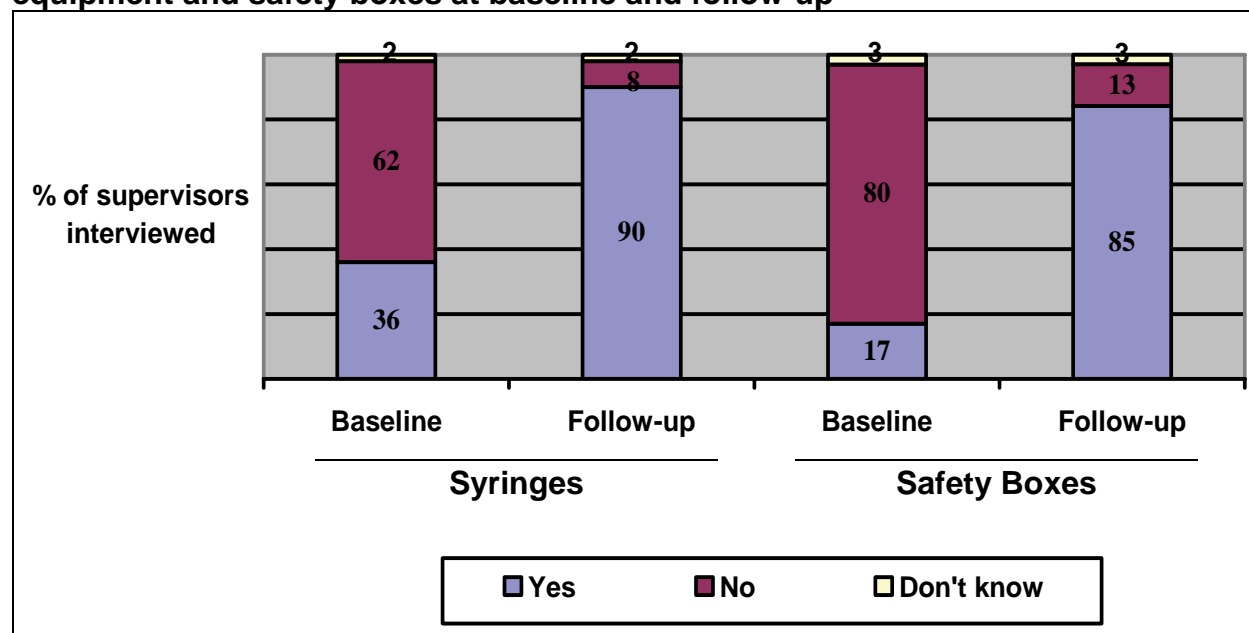
In the follow-up, in response to the question about *safety boxes for vaccines*, of 120 supervisors to which the questions about vaccines applied, 85% declared that the quantities were adequate, 12.5% said they were not adequate, and 2.5% did not know. This increase was statistically significant ( $p<.001$ ) (Figure 12).

Stocks of *other injectable medications* were delivered (or available) with the corresponding quantities of *injection equipment* according to 54.7% of all supervisors (192) who responded at baseline; 41.1% said that the quantities did *not* correspond, and 4.2% of supervisors did not know (Figure 13).

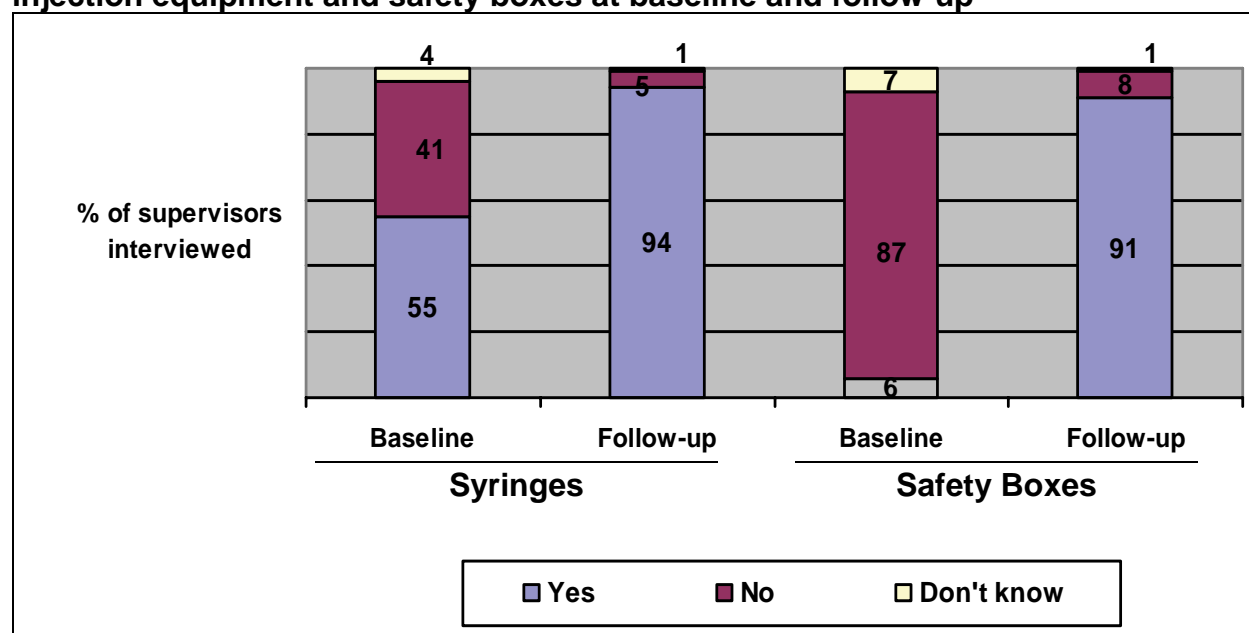
At follow-up, a significant improvement was recorded of the adequacy of *other injectable medications with injection equipment* delivered according to 94.0% of all supervisors (217) interviewed; only 5.5% said that the quantities did *not* correspond (Figure 13); and 1 supervisor (0.5%) did not know.

In comparison with the delivery of the injection equipment, it was more common to find adequate quantities of *safety boxes* delivered with the stock of other injectable medications. In fact, at baseline only 6.0% of 168 supervisors interviewed declared that the quantities corresponded; 86.9% said they did not. At follow-up, significantly more supervisors said they were adequate (Figure 13). The percentage of interviewees who declared that the quantities of safety boxes corresponded to the injectable medications was 90.6%; 7.6% of supervisors said no, and 4 supervisors (1.8%) did not know.

**Figure 12: Vaccines delivered in quantities corresponding to the injection equipment and safety boxes at baseline and follow-up**



**Figure 13: Other medications delivered in quantities corresponding to the injection equipment and safety boxes at baseline and follow-up**



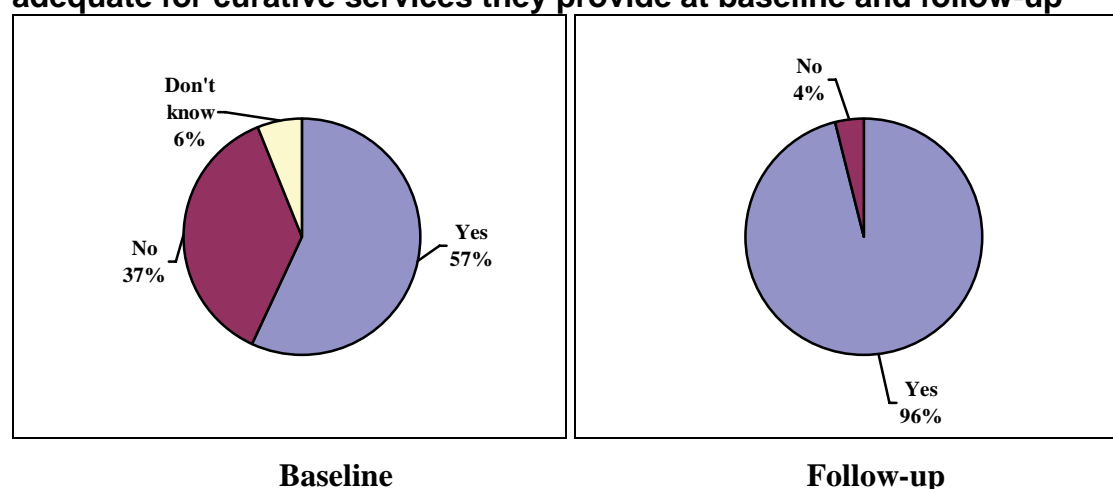
#### 8.4 SUPERVISORS' PERCEPTION OF THE QUANTITIES OF SYRINGES AND SAFETY BOXES FOR CURATIVE SERVICES

Data collectors asked the supervisors whether they thought the quantities of needles and syringes provided to them were adequate for the provision of curative services in their health facilities. Nigeria Comparison Report 2009

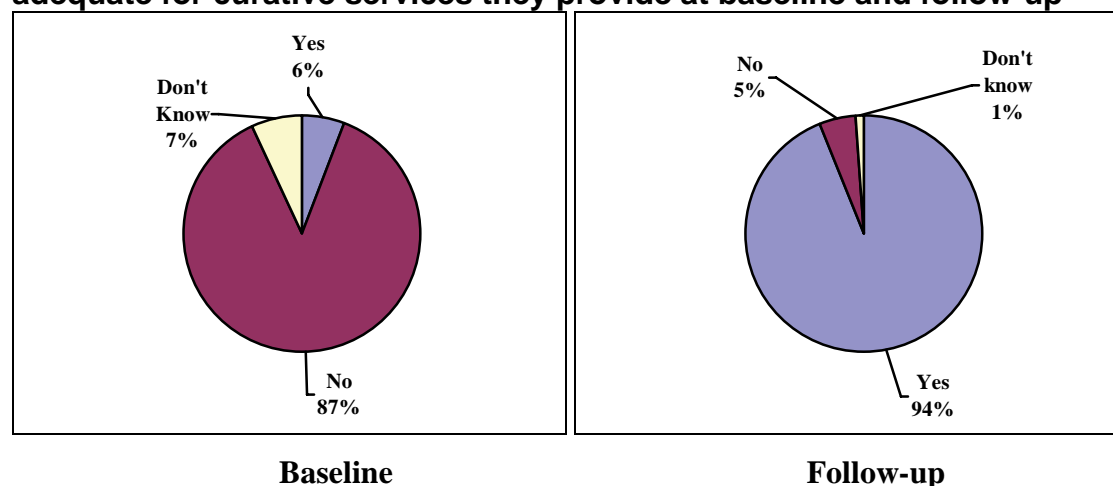
Overall, if one considers only the supervisors with curative services in their health facilities, (194 supervisors at baseline and 285 at follow-up), the supervisors' general perception of the correspondence between the quantities of injection equipment delivered for vaccines *and* other medications, over half or 56.7% of these supervisors thought that *syringes and needles* were adequate at baseline. However, during follow-up, 96.1% of the supervisors thought that the quantities were adequate. This increase was statistically significant ( $p < .001$ ).

Only 5.7% of the 194 supervisors at baseline thought that the quantities of safety boxes were adequate for curative services. A marked improvement was recorded during follow-up as 94.4% of the supervisors thought that the quantities were adequate (Figures 14 and 15).

**Figure 14: Supervisors' perception that the quantities of injection equipment were adequate for curative services they provide at baseline and follow-up**



**Figure 15: Supervisors' perception that the quantities of safety boxes were adequate for curative services they provide at baseline and follow-up**



## 8.5 SUSTAINING BEHAVIOR CHANGE

In the follow-up survey only, supervisors were asked whether they had to remind injection providers about injection safety. In the baseline, 76.4% of the supervisors had to remind

injections providers about injection safety. In the follow-up, 71.9% of supervisors had to remind injection providers about injection safety. The most common reminders in the follow-up were immediate disposal (63.9%), do not recap needle (51.2%), and wash hands (41.5%). While 12 supervisors in baseline reminded providers to recap the needle, only 2 supervisors in the follow-up reminded supervisors on recapping (Table 20).

**Table 20: What supervisors need to remind injection providers to do**

Reminders	Baseline (N=152)	Follow-up (N=205)	Statistically significant?
Immediately dispose of needles/use needle remover	25.7	63.9	Yes: $P \leq .001$
Do not recap needle	23.0	51.2	Yes: $P \leq .001$
Wear gloves	27.0	31.2	No
Use new, sealed, needle/syringe	22.4	31.2	No
Wash hands	16.4	41.5	Yes: $P \leq .001$
Do not overfill safety boxes	2.0	21.5	Yes: $P \leq .001$
Clean patient's skin	15.1	17.1	No
Check dosage of medications	9.2	9.8	No
Use clean table/tray	5.3	16.1	Yes: $P \leq .001$
Be careful of needlesticks	30.9	29.3	No
Remove needle from cap of multidose vial	1.3	10.7	Yes: $P \leq .001$
Use clean barrier when opening a glass ampoule	.7	4.9	Yes: $P \leq .05$

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## 9. INTERVIEWS OF WASTE HANDLERS

During baseline, 97 waste handlers were interviewed; and 101 were interviewed during the follow-up, i.e., one participant per health facility. Where the surveyors found several waste handlers, they interviewed the main person responsible for waste management. Like other sections of the survey, **99.1%** of the waste handlers interviewed during this survey were interviewed in public health facilities in comparison with **0.9 %** in private facilities (1 waste handler each in both baseline and follow-up). At baseline, 37 waste handlers (38.1%) worked in hospitals and 60 (61.9%) in other health facilities. During the follow-up survey, 41 waste handlers (40.6%) worked in hospitals and 60 (59.4%) in other health facilities.

### 9.1 MAIN METHODS OF WASTE DISPOSAL USED

Data collectors asked the waste handlers to list the main disposal methods used for medical waste in their health facilities with individual questions about sharps waste, infectious waste, and noninfectious waste. All waste handlers mentioned at least 1 method. Some waste handlers responded by citing several methods. (In cases where several methods were mentioned, the sum of the results may exceed 100%.)

The most common method of disposing of **sharps waste** at baseline was *transportation for off-site processing*, which was mentioned by 32% of the waste handlers interviewed, followed by *dumping into an unsupervised location*, which was mentioned by 21.6% of the waste handlers. *Open-air burning in a hole or enclosure* was mentioned by 20.6% of waste handlers. *Open-air burning on the ground* was mentioned by 16.5%, and *burial* by 10.3% of the waste handlers interviewed. *Dumping into a latrine or other protected hole* (with or without subsequent burning of the waste) was mentioned by 11.3% of waste handlers.

At follow-up, the pattern of waste disposal was different. The most common method of disposing of **sharps waste** was *open-air burning in a hole/enclosure*, which was mentioned by 46.5% of the 101 waste handlers interviewed, followed by *off-site transportation*, which was mentioned by 34.7% of the waste handlers. *Open-air burning on the ground* was mentioned by 12.9% of waste handlers. *Burial* was mentioned by 5.9%, and *dumping into a latrine or other protected hole* (with or without subsequent burning of the waste) was mentioned by 3% of the waste handlers interviewed. *Low-temperature incineration* (as for example, a single combustion chamber, “drum,” or brick) was mentioned by 4 waste handlers, but 5% (5 waste handlers) mentioned *medium or high-temperature incineration* (i.e., incineration in “SICIM” or “De Montfort” incinerators, which are capable of operating at over 800°C).

The results for disposal methods for **infectious waste** at baseline was similar to the disposal of sharps with transportation for off-site processing (34.0% of waste handlers interviewed) as most common method; followed by dumping in an unsupervised area (19.6%); open-air burning on the ground (20.2%); open-air burning in a hole or enclosure (18.6%); burial (10.3%); dumping in a latrine or other protected pit (12.4%); low-temperature incineration (8.2%); and, lastly, medium or high-temperature incineration (3.1%).

At follow-up, the results for disposal methods for infectious waste showed that the most common method was transportation for off-site processing (43.6% of waste handlers interviewed), followed by open-air burning in a hole or enclosure (32.7%), open-air burning on the ground (16.8%), dumping in a latrine or other protected pit (7.9%), burial (4%), low-temperature incineration (3%), and medium or high-temperature incineration (3%).

The results for **noninfectious waste** disposal methods are also similar, with a few exceptions. At baseline, the most common method of disposal was off-site transport followed by open-air burning on the ground and dumping into unsupervised locations.

Therefore, the results are transportation for off-site processing (39.2%), open-air burning on the ground (22.7%), dumping in an unsupervised area (19.6%), open-air burning in a hole or enclosure (19.6%), burial (9.2%), dumping into a latrine or other protected pit (8.2%), low-temperature incineration (8.2%), and high and medium-temperature incineration (0%).

At follow-up, the results for **noninfectious waste** disposal method follow the same pattern, with a few exceptions. Therefore, the results are: Transportation for off-site processing (47.5%), open-air burning in a hole or enclosure (33.7%), open-air burning on the ground (18.8%), dumping in an unsupervised area (3%), burial (2%), dumping into a latrine or other protected pit (2%). At follow-up, low-temperature incineration and high and medium-temperature incineration (0%) were not used for disposing noninfectious waste.

In the baseline, the top 3 methods mentioned by waste handlers in disposing sharps waste was transportation to off-site treatment, followed by dumping in an unsupervised location, and open-air burning. In the follow-up, the methods were open-air burning in a hole, followed by transportation to off-site treatment, and open-air burning on the ground. The increase for open-air burning in a hole from 20.6% to 46.5% was statistically significant ( $p<.001$ ). The decrease in dumping in an unsupervised location from 21.6% to 2.0% also was statistically significant ( $p<.001$ ). Dumping in a protected pit decreased from 11.3% in the baseline to 3% in the follow-up ( $p<.05$ ).

For infectious waste disposal, in the baseline, the top 3 methods mentioned also were transportation for off-site treatment, dumping into unsupervised location, and open-air burning on the ground. In the follow-up, the methods continued to be transportation for off-site treatment, dumping into unsupervised location, and open-air burning on the ground. Once again, the increase in open-air burning in a hole from 20.6% at baseline to 32.7% at follow-up was statistically significant ( $p<.05$ ). The decrease in dumping in an unsupervised location from 19.6% at baseline to 2.0% at follow-up also was statistically significant ( $p<.001$ ).

For noninfectious waste, in the baseline, the top three methods mentioned also were transportation for off-site treatment, dumping into unsupervised location, and open-air burning on the ground. In the follow-up, the methods were transportation for off-site treatment, open-air burning in hole, and open-air burning on the ground.

Tables 21 and 22 present a summary of the disposal methods used for various types of medical waste. These results are largely consistent with the observations of the methods used on the days of the surveys (see Chapter 5).



**Table 21: Comparison of the distribution of health facilities surveyed according to disposal methods for the three types of medical waste: sharp, infectious, and noninfectious at baseline**

Medical Waste Disposal Method(s)	Infectious: Sharps	Infectious: Not Sharp	Noninfectious	Number of Waste Handlers Interviewed
High or medium-temperature incineration (>800 C)	4.1	3.1	0	97
Low-temperature incineration (< 800 C)	8.2	8.2	6.2	
Open-air burning in a hole or enclosure	20.6	20.6	19.6	
Open-air burning on the ground	16.5	18.6	22.7	
Dumping into a latrine or other protected location	11.3	12.4	8.2	
Dumping into an unsupervised location	21.6	19.6	19.6	
Transportation to another site for processing	32.0	34.0	39.2	
Burial	10.3	10.3	9.3	
Dumping in unprotected pit	0.8	0	0	

Note: The sum of the results is over 100% because some waste handlers mentioned several methods.

**Table 22: Comparison of the distribution of health facilities surveyed according to disposal methods for the three types of medical waste: sharp, infectious, noninfectious at follow-up**

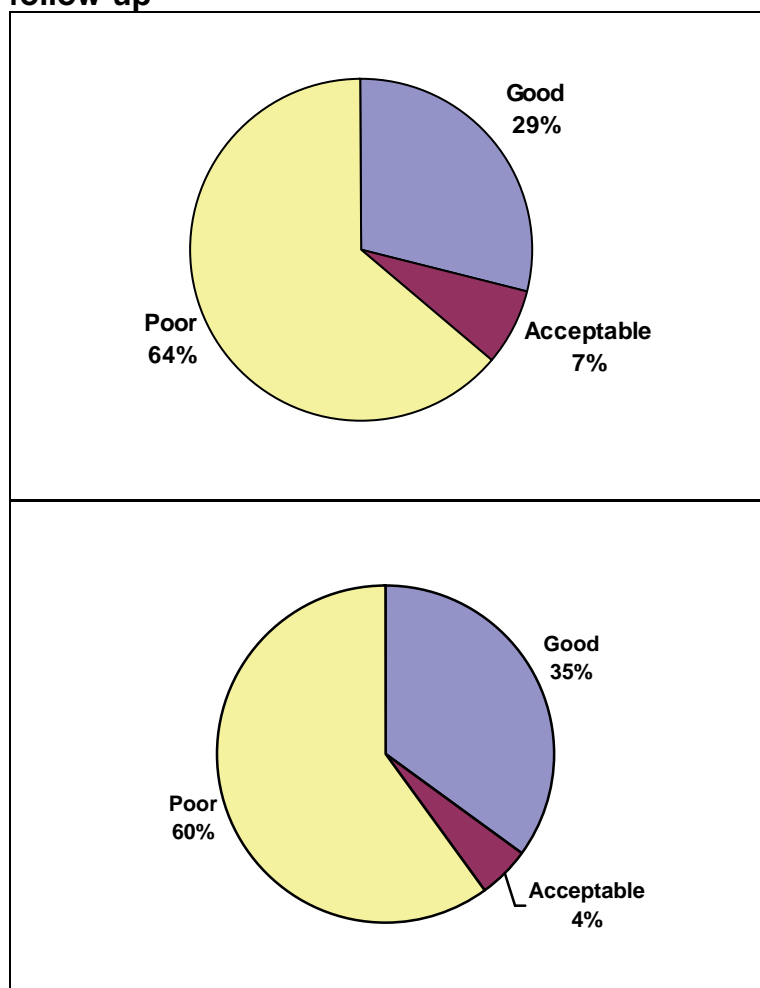
Medical Waste Disposal Method(s)	Infectious: Sharps	Infectious: Not Sharp	Noninfectious	Number of Waste Handlers Interviewed
High or medium-temperature incineration (>800 C)	5.0	3.0	0	101
Low-temperature incineration (< 800 C)	4.0	3.0	0	
Open-air burning in a hole or enclosure	46.5	32.7	33.7	
Open-air burning on the ground	12.9	16.8	18.8	
Dumping into a latrine or other protected location	3.0	7.9	2.0	
Dumping into an unsupervised location	2.0	2.0	3.0	
Transportation to another site for processing	34.7	43.6	47.5	
Burial	5.9	4.0	2.0	
Dumping in unprotected pit	1.0	1.0	0.0	

Note: The sum of the results is over 100% because some waste handlers mentioned several methods.

To summarize these results, all the particular methods could be grouped into three general categories of waste disposal: “good,” “acceptable,” and “poor.” The “good” disposal category includes high or medium-temperature incineration, dumping into a latrine or other protected pit, followed by burial, and/or transportation off-site for processing. Low-temperature incineration,

on the other hand, is considered “acceptable” disposal. “Poor” disposal is composed of the other, less secure methods: Open-air burning on the ground or in a hole or enclosure, burial alone, and dumping into an unsupervised area or latrine or other location if this dumping is not followed by burial. When the overall results of the sharps waste disposal methods are calculated based on these three categories, the data from interviews of the waste handlers showed that at baseline the methods are 64% poor, 7% acceptable, and 29% good. This improved during the follow-up survey: 60% poor, 5% acceptable, and 35% good (Figure 16). Clearly, more work needs to be done, and this should be a priority concern for Nigeria.

**Figure 16: Overall summary of the distribution of health facilities surveyed according to the general categories of sharps waste disposal at baseline and follow-up**



## 9.2 COMMON PROBLEMS WITH MEDICAL WASTE DISPOSAL

Data collectors asked the waste handlers what problems they encounter in disposal of medical waste; 44.3% of the waste handlers responded at baseline and 39.6% at follow-up by saying that they do not have any problems. The rest of the waste handlers spontaneously mentioned one or more problems. At baseline, the problems were generally that the waste handler lacked PPE, specifically boots, gloves, goggles, and aprons (18 waste handlers or 18.6% of the interviewees), lacked incinerator (10.3%), and lacked safety boxes (8.2%). The lack of equipment for the waste

handlers work such as a wheelbarrow and shovel was mentioned by 7 waste handlers or 5.9%; nonexistence of a site for burial was mentioned by 2.1% of waste handlers; and delays and or changes in waste collection by off-transport agencies was mentioned by 3.1% of waste handlers. Lastly, some waste handlers mentioned shortage of fuel (3.1%) to run the incinerators.

At follow-up, the distribution is similar, with a few exceptions. The lack of PPE was mentioned by 10.9% of the interviewees, and lack of incinerator and shortage of fuel was mentioned by 8.9%. Lack of equipment for their work, the nonexistence of a site for burial, and delays and changes in waste collection by off-transport agencies were mentioned by 6.9% of the waste handlers for each category. The decrease in waste handlers who mentioned lack of safety boxes from baseline to follow-up was statistically significant ( $p<.05$ ). The overall results of the problems mentioned by the waste handlers are in Table 23.

**Table 23: Problems encountered in waste management**

Problem	Baseline		Follow-up	
	Percentage of all waste handlers interviewed who mentioned it	Number of waste handlers interviewed	Percentage of all waste handlers interviewed who mentioned it	Number of waste handlers interviewed
No disposal problem	44.3	97	39.6	101
Lack of personal protective equipment	18.6		10.9	
No incinerator	10.3		8.9	
Lack of safety boxes	8.2		2.0*	
Lack/inadequate working materials	3.1		6.9	
Nonexistence of site for burial	2.1		6.9	
Delays and changes in collection by off transportation	3.1		6.9	
Lack of fuel	3.1		8.9	
No/Poor waste segregation	2.1		4.0	
Lack/inadequate waste management staff	2.1		3.0	
Unfilled safety boxes	1.0		1.0	
Falling boxes during transportation	0.0		1.0	
Others (poor provider and patients attitude to waste management, odor, lack of incentive, environmental issues)	5.2		5.0	

\*Statistically significant.

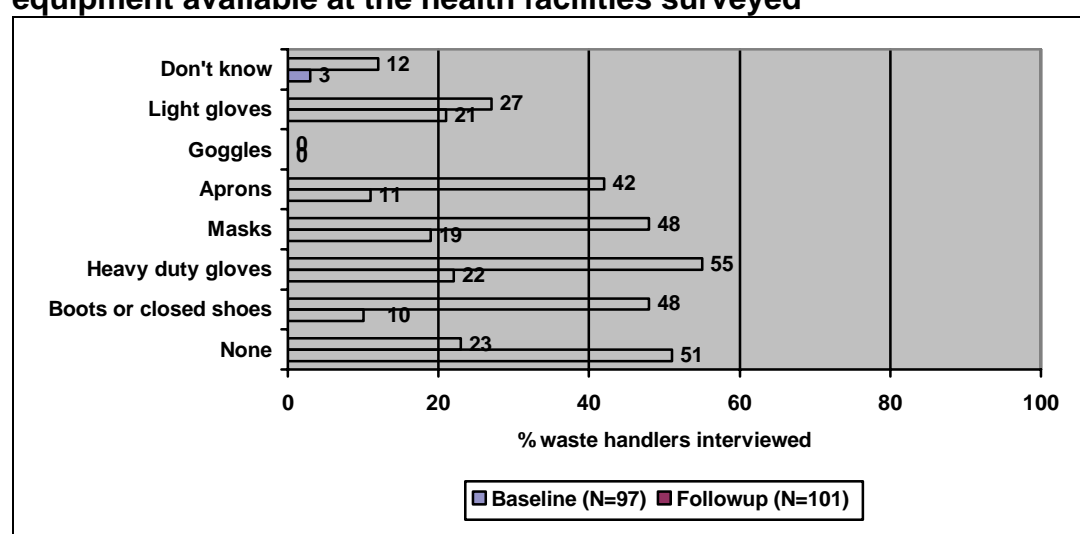
### 9.3 AVAILABILITY OF PERSONAL PROTECTIVE EQUIPMENT

The data collectors asked questions about the availability of PPE. More waste handlers reported having PPE at follow-up than at baseline; 50.5% of waste handlers at baseline affirmed that they

did not use any protective equipment; and at follow-up survey, this proportion reduced significantly to 22.8% ( $p<.001$ ). Still, all waste handlers should have PPE.

Availability of several types of PPE increased significantly from baseline to follow-up. Boots and closed-toed shoes were available for 10.3% of waste handlers at baseline. This increased significantly at the time of the follow-up to 47.5% of the waste handlers interviewed ( $p\leq.001$ ). Similarly, the proportion of waste handlers who reported having heavy-duty gloves increased significantly from 21.6% at baseline to 55.4% at follow-up ( $p\leq.001$ ). Availability of masks increased from 18.6% to 47.5% ( $p<.001$ ), and availability of aprons increased significantly from 11.3% at baseline to 41.6% at follow-up ( $p\leq.001$ ) (Figure 17).

**Figure 17: Distribution of waste handlers according to the type of protective equipment available at the health facilities surveyed**



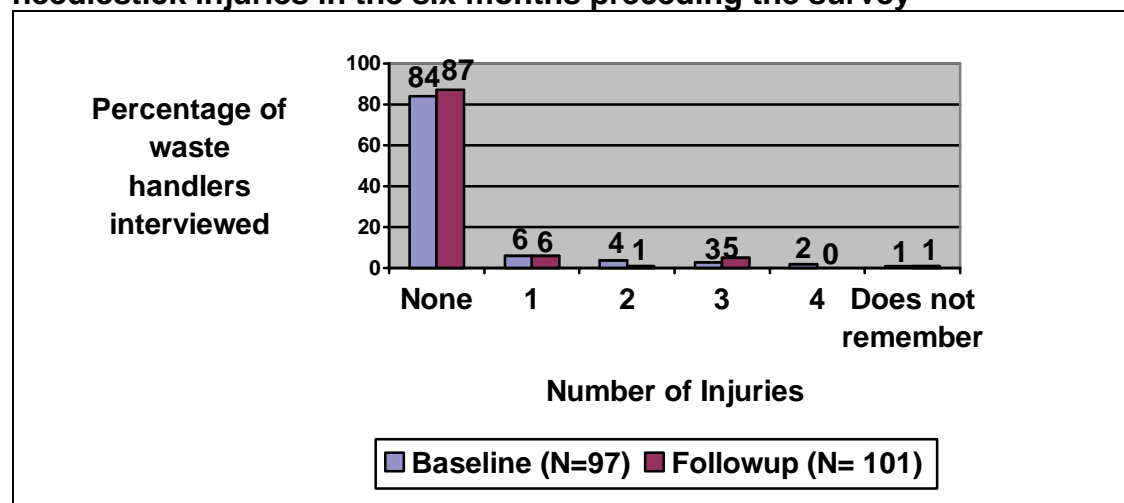
## 9.4 ACCIDENTAL NEEDLESTICK INJURIES

At baseline, 83.5% of the waste handlers interviewed confirmed they had not had any accidental needlestick injuries during the 6 months preceding the survey. While 6.2% declared that they had 1 needlestick injury, 4.1% had 2 needlestick injuries, 3.1% had 3 needlestick injuries, and another 2.1% had 4 needlestick injuries. Of the 16 waste handlers who declared having 1 or more needlestick injuries, 6 worked in hospitals and 9 in other health facilities.

At follow-up, 87.1% of the waste handlers interviewed confirmed they had not had any accidental needlestick injuries during the 6 months preceding the survey. This increase from 83.5% at baseline was not significant; 5.9% declared that they had one needlestick injury; 1 waste handler had 2 needlestick injuries; and 5% had 3 needlestick injuries (Figure 18). Of the 12 waste handlers who declared having 1 or more needlestick injuries, 6 worked in hospitals and 6 in other health facilities. More emphasis needs to be placed on examining how to reduce accidental needlestick injuries.

One waste handler in both the baseline and follow-up did not remember.

**Figure 18: Distribution of waste handlers according to the number of accidental needlestick injuries in the six months preceding the survey**



## 9.5 WASTE HANDLERS' KNOWLEDGE OF DISEASES TRANSMITTED BY NEEDLESTICK INJURIES

Of the 96 waste handlers who responded at baseline, 87.5% reported being aware of diseases that could be transmitted by accidental injuries with a contaminated needle or by reuse of a needle or syringe. The waste handlers who knew of the link between unsafe injections and these diseases were distributed between hospitals (32 out of 37 waste handlers interviewed) and health centers (52 out of 59 waste handlers who responded).

There was a reduction in the proportion of waste handlers that reported being aware of diseases transmitted by needlestick injuries during the follow-up survey. As many as 88.5% of waste handlers interviewed were aware of such diseases. However, this decrease is not significant. There were 87.8% of these waste handlers in hospitals (36 out of 41 waste handlers interviewed) and 89.0% in health centers (49 out of 55 respondents).

All waste handlers who had reported that they were aware of the diseases were able to name any diseases when the data collector asked them for details during the follow-up survey. The percent of waste handlers mentioning each disease increased except for hepatitis C. Those waste handlers mentioning HIV increased from 89.3% in baseline to 96.5% in follow-up. Hepatitis B was mentioned by 15.5% of waste handlers at baseline and by 17.6% of waste handlers surveyed at follow-up. Hepatitis C was mentioned by 7.1% of waste handlers at baseline and by 4.7% of waste handlers at follow-up.

## 9.6 PERCEPTION OF RISK

When asked if they felt they were at risk, 50.0% of waste handlers at baseline felt very much at risk. This remained at 51.0% at follow-up.

At baseline, 3 waste handlers did not respond to this question. For waste handlers that responded, most were aware of the risks of their jobs, the use or lack of use of PPE, and high HIV prevalence in the communities.

At follow-up, 5 waste handlers did not respond to the question. When the waste handlers were asked for the reasons for their responses, many stated that they felt very much at risk because of increased exposure to used injection equipment and lack of PPE.

## 9.7 HEPATITIS B VACCINATION OF WASTE HANDLERS

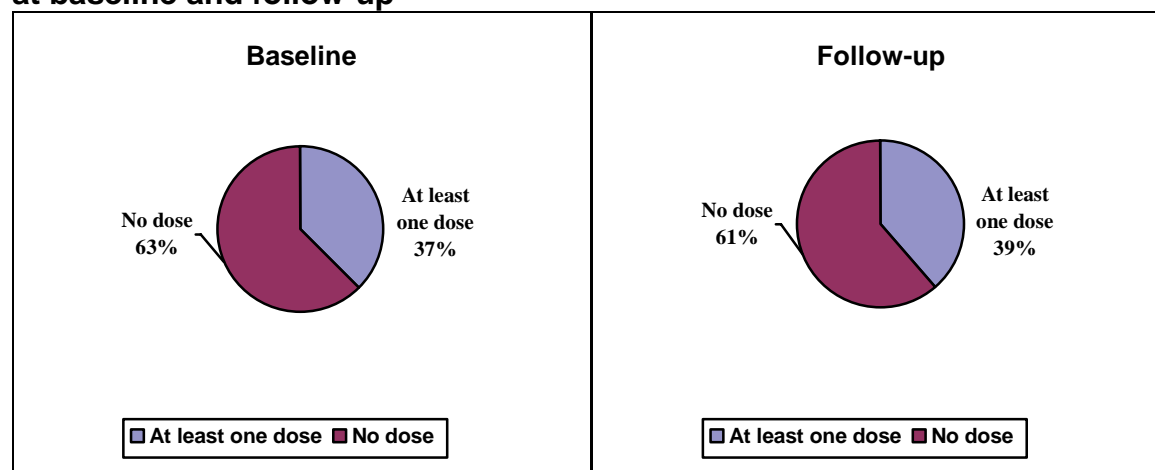
Among the 96 waste handlers surveyed at baseline and who responded, 63.5% were not vaccinated against hepatitis B. The other 36.5% of the waste handlers reported that they had received the hepatitis B vaccination. A slight improvement was recorded at follow-up as 38.5% of the waste handlers reported that they had received the hepatitis B vaccination. The other 61.5% reported they were not vaccinated. This increase was not statistically significant.

Of the 35 people who had received the hepatitis B vaccination at baseline, 14 worked in a hospital, while 21 worked in health centers. Of the 35 waste handlers who had received the vaccination, 20 (10 at hospitals and 10 at health centers) had received 3 doses; 2 waste handlers did not know the number of doses they had taken.

In the follow-up, of the 37 people who had received the vaccination, 13 worked in a hospital, while 24 worked in health centers. Of the 37 waste handlers who had received the vaccination, 20 (7 at hospitals and 13 at health centers) had received 3 doses, similar to the baseline (Figure 19).

This remains an area for improvement as all waste handlers should be vaccinated against hepatitis B for the full 3 doses.

**Figure 19: Waste handlers who declared having received the hepatitis B vaccine at baseline and follow-up**



## 9.8 TRAINING OF WASTE HANDLERS

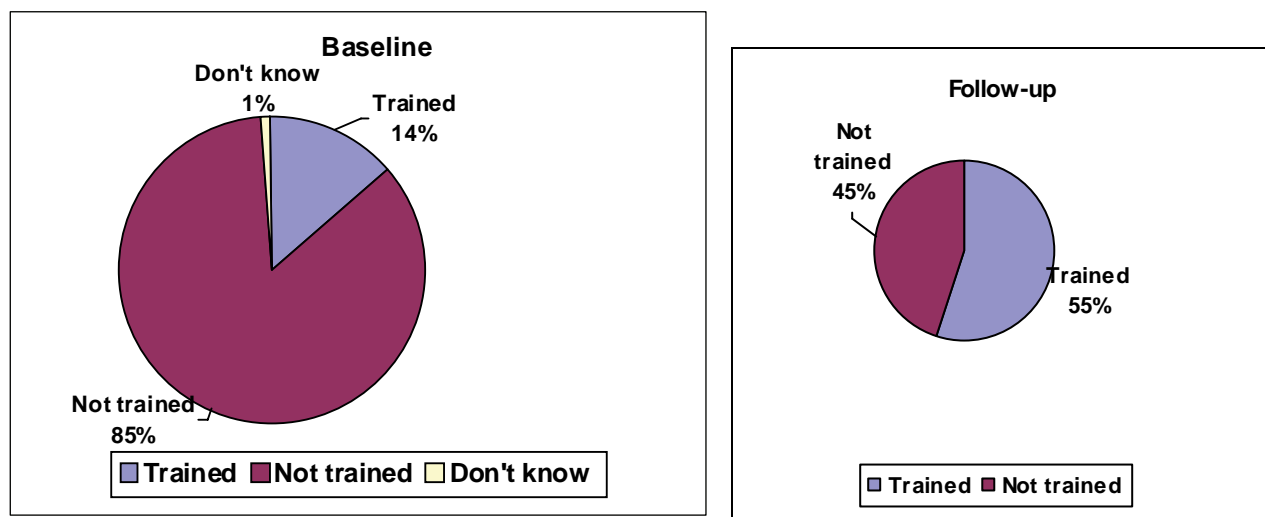
At baseline survey, 14 of the waste handlers interviewed (14.4%) reported receiving training on sharps waste management. The result of the follow-up survey showed that there was a significant improvement ( $p < .001$ ) in the proportion of waste handlers (55.4% or 56 of 101) that reported training on waste management (Figure 20).

In the baseline, of the 14 who were trained, 6 worked in hospitals and 8 on the primary level; 1 waste handler's type of facility was not specified. In the follow-up, of the 56 waste handlers who were trained, 23 worked in hospitals and 33 on the primary level.

One of the 14 waste handlers trained in sharps waste management declared reported having had an accidental needlestick injury in the 6 months prior to this survey. At baseline, 7 of 14 waste handlers had their training less than 6 month prior to the survey, 6 of 14 waste handlers had their training more than 6 months prior to the survey, and 1 could not remember when the training took place.

At follow-up, 76.8% (43 waste handlers) had their training within the 6 months preceding the survey, and 19.6% (11 waste handlers) had their training more than 6 months before the survey; 2 waste handlers could not recall when the training took place.

**Figure 20: Training of waste handlers at baseline and follow-up**



## 9.9 SOURCES OF INFORMATION FOR WASTE HANDLERS

In order to establish the sources of information on waste management, the data collectors asked the waste handlers if they have heard or seen information about safe disposal. At baseline, 44.3% of the waste handlers reported not hearing or seeing information about safe disposal practices. In the follow-up, there was a significant reduction in the proportion of waste handlers reporting the same (12.9%) ( $p < .001$ ).

In the baseline, out of waste handlers who had sources of information, other health staff/personnel (27.8%), supervisors (16.5%), and television (8.2%) constituted the major sources of information on waste management. Other sources included training workshops (11.5%) and radio (5.2%). The least mentioned sources were the poster (2.1%) and newspaper/magazines (1.0%).

There was a remarkable improvement in the availability of information to waste handlers through all sources during the follow-up survey. The training workshops provide the waste handlers with information as mentioned by 49.5%. The supervisors and other health staff/personnel continue to serve as sources of information to the waste handlers. In addition, the media (radio and TV) is increasingly being a source of information to waste handlers as 20.8% reported. Very few respondents mentioned the other BCC tools (billboard/banners, booklets, newspapers) (Table 24).

In summary, waste handlers reporting training workshops ( $p<.001$ ), radio ( $p<.001$ ), television ( $p<.05$ ), and posters ( $p<.001$ ) as sources of injection safety information all increased significantly from the baseline. The percent of waste handlers reporting none decreased significantly from the baseline ( $p<.001$ ).

**Table 24: Waste handlers' source of information on injection safety**

Sources	Baseline		Follow-up	
	%	Number of waste handlers	%	Number of waste handlers
None/No where	44.3	97	12.9*	101
Preservice training	-		11.9	
Training workshop	10.1		49.5*	
Radio	5.2		22.8*	
Television	8.2		20.8*	
Poster	2.1		20.8*	
Other health staff or personnel	27.8		15.8	
Supervisors	16.5		20.8	
Newspaper/Magazine	1.0		1.0	
Booklet/brochure	0		1.0	
Billboards/banners	0		2.0	
Don't know/Don't remember	2.1		3.0	

\*Statistically significant



## 10. EXIT INTERVIEWS WITH PATIENTS

A total of 514 patients who had received an injection on the days of the survey (excluding children) were interviewed at baseline, and 781 were interviewed during the follow-up; 68.7% of the interviews (353) took place in hospitals, in comparison with 31.3% (161) in primary health facilities during the baseline. However, during the follow-up, 81.6% of the interviews (637) took place in primary health facilities, in comparison with 18.4% (144) in hospitals. Table 25 presents the distribution of the sampling by state of the facilities at baseline and follow-up.

**Table 25: Distribution of the sampling of patients by state at baseline and follow-up**

State	Baseline (N=514) %	Follow-up (N=781) %
Anambra	7.2	7.2
Kano	26.1	20.7
Lagos	17.9	28.8
FCT Abuja	22.8	24.5
Edo	9.9	8.8
Cross Rivers	16.1	10.0

### 10.1 SOCIODEMOGRAPHIC CHARACTERISTICS OF THE PATIENTS

The data collectors asked the adult patients interviewed whether they were between the ages of 18 and 49 years of age. In fact, at baseline, 87.7% of the 351 adult patients who received an injection on the day of the survey and where data were recorded were of reproductive age, and 99.4% out of 775 patients were of reproductive age during follow-up survey.

At baseline, 39.0% of the adults who were of reproductive age interviewed were male, and 61.0% were female. At follow-up, it was 35.6% and 64.4%, male and female, respectively (Table 26).

**Table 26: Sociodemographic characteristics of the adult patients interviewed at baseline**

Characteristics	Baseline		Follow-up	
	Percentage	Number of Patients Interviewed	Percentage	Number of Patients Interviewed
Age of the adult patients interviewed				
18-49 years old	87.7	351	99.4	775
Other	12.3		0.6	
No responses recorded (Frequency)	163		6	
Gender of the patients interviewed <sup>5</sup>				
Male	39.0	308	35.6	770
Female	61.0		64.4	
No responses recorded (Frequency)	0.0		1	

For the exit interviews of the patients, data collectors tried as much as possible to interview patients who they had seen receive an injection. In the baseline, out of 513 patients who responded, 87.5% of the patients who were interviewed had been observed receiving an injection. In the follow-up survey, 92.2% of 781 patients interviewed had been observed receiving an injection.

## 10.2 PATIENTS' KNOWLEDGE OF THE AVAILABILITY OF NEW NEEDLES AND SYRINGES IN THE COMMUNITY

The data collectors began the interview by asking the patients whether they knew if it was possible to obtain needles and syringes in new, sealed packages outside of the health facilities and private pharmacies. At baseline of the 504 patients interviewed, 67.3% (338 people) answered in the affirmative. Moreover, 15.4% did not know, and 10 patients did not respond to this question. However, at follow-up fewer patients (59.4%) knew about availability of needles and syringes in the communities. In addition, 20.4% did not know. This decrease was statistically significant ( $p < .001$ ).

## 10.3 SOURCE OF THE INJECTION EQUIPMENT USED ON THE DAY OF THE SURVEY

At baseline, 15.2% of 505 patients interviewed reported bringing their own equipment for the injection, which was administered to them on the day of the survey. This was similar to follow-up in which 13.4% reported bringing their own equipment. In the baseline, more patients in health centers (25.5%) reportedly brought their needles and syringes, compared with 10.5% at the hospitals. However, during follow-up, 14.6% of patients at the hospitals brought their needles

<sup>5</sup> Baseline data on gender are limited to the adults who received injections.  
Nigeria Comparison Report 2009

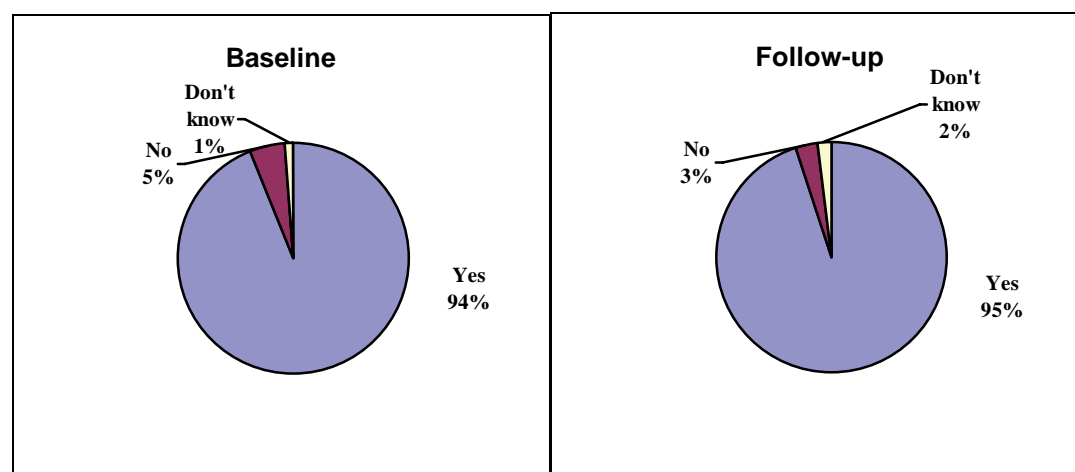
and syringes, compared with 8.3% at the health centers. These differences were statistically significant (hospitals,  $p<.05$ ; lower-level facilities,  $p<.001$ ).

The 77 patients at baseline and 105 at follow-up who declared having brought their own equipment for the injection they had just received answered an additional question about the source of the equipment; 73.7% of 76 patients that brought their own injection equipment and where data were recorded mentioned that the injection equipment came from new packages. This increased significantly at follow-up when 97.1% of 105 attested that their injection equipment came from new packages also ( $p<.001$ ).

For the 419 patients at baseline and 676 at follow-up who did *not* bring the equipment (i.e., the equipment used belonged to the health facility), 98.1% at baseline declared that the needle and syringe used for the injection that they had just received on the day of the survey were taken from a sealed package. Fewer patients declared that their needles and syringes came from sealed packages (94.5%) during follow-up; 1.2% at baseline and 3% declared that the equipment was already open or detached.

In summary, at baseline, 94.3% of all the patients interviewed declared that the needle and syringe used for the injection they had just received on the day of the survey were taken from a sealed package, and 5.1% said they were not. This improved slightly, with 94.9% at follow-up mentioning that the needle and syringe used for the injection they had just received on the day of the survey were taken from a sealed package, and 2.9% of mentioned that the needle and syringe were not were taken from a sealed package, and another 2.2% did not know (Figure 21).

**Figure 21: Patients who declared that a needle and syringe from a sealed package were used for the injection received on the day of the survey**

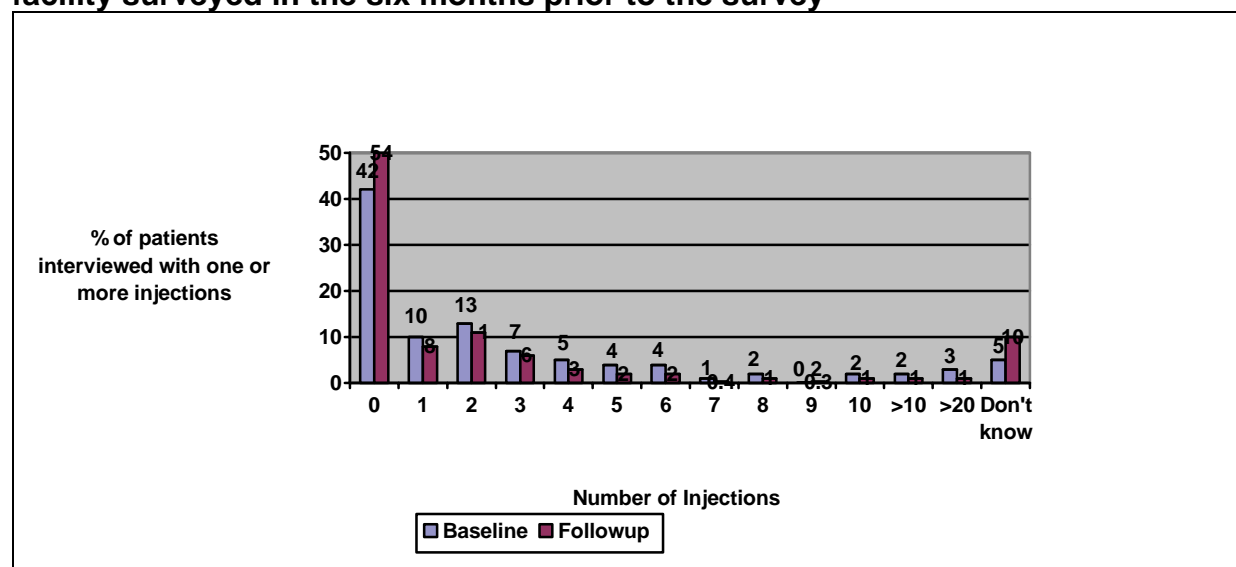


For the adults ages 15 to 49, the percentage of men who knew the origin of the injection equipment and who declared that the needle and syringe used for the injection that they had just received were taken from a sealed package (97.4%) was similar to that of women (97.8%) at baseline. However, at follow-up, the percentage of women who knew the origin of the injection equipment and who declared that the needle and syringe used were taken from a sealed package (95.6%) was higher than that of men (93.8%)

## 10.4 PATIENTS' RECALL OF INJECTIONS RECEIVED IN THE HEALTH FACILITY SURVEYED

After all the preceding data on the injections received on the day of the survey had been collected, the data collectors continued the interview by asking the patients if they had received any other injections in the same health facility where they were being interviewed in the 6 months prior to this survey; 41.7% of patients at baseline and 54.4% of patients in follow-up had not receive any other injections; 52.9% of the patients at baseline and 35.2% at follow-up received other injections; 5.4% of patients at baseline and 10.4% of patients in the follow-up did not remember the exact number. The number of injections varied from 1 to 70 (Figure 22).

**Figure 22: Patients Who recall of the number of injections received in the health facility surveyed in the six months prior to the survey**



The next question the data collectors asked the patients who had received at least 1 injection in the 6 months prior to the survey was how many times they had brought their own needles and syringes. At baseline, 85.1% of the patients and a higher proportion of 87.2% at follow-up declared that they had *never* brought needles and syringes; 3.7% at baseline and 6.5% at follow-up said that they brought needles and syringes *sometimes*; and 11.2% at baseline and 6.2% at follow-up answered that they *always* brought needles and syringes.

The data collectors posed an additional question to the **229** patients at baseline and **308** patients at follow-up who declared that they did *not always* bring the needles and syringes used to administer their injection. The data collectors asked whether the patients remembered the source of the injection equipment; 97.3% at baseline and 93.8% at follow-up responded that the injection equipment was taken from a sealed package. For 6 patients (2.7%) at baseline, the injection equipment was loose, while 10 patients (3.2%) at follow-up said the injection equipment was loose; 4 patients in baseline did not answer, and 2.3% at follow-up did not know or see the preparation.

## 10.5 PATIENTS' RECALL OF INJECTIONS RECEIVED OUTSIDE THE HEALTH FACILITY SURVEYED

Once the data collectors had finished the questions about the patients' experiences in the health facility surveyed, they asked questions about the injections received *outside* of this facility in the 6 months prior to the survey. Of the 501 patients interviewed and who responded at baseline and 781 patients interviewed at follow-up, **27.9%** (140 people) responded that they had received injections somewhere else in the community at baseline. A lower proportion of 20.2% (158 people) responded the same at follow-up.

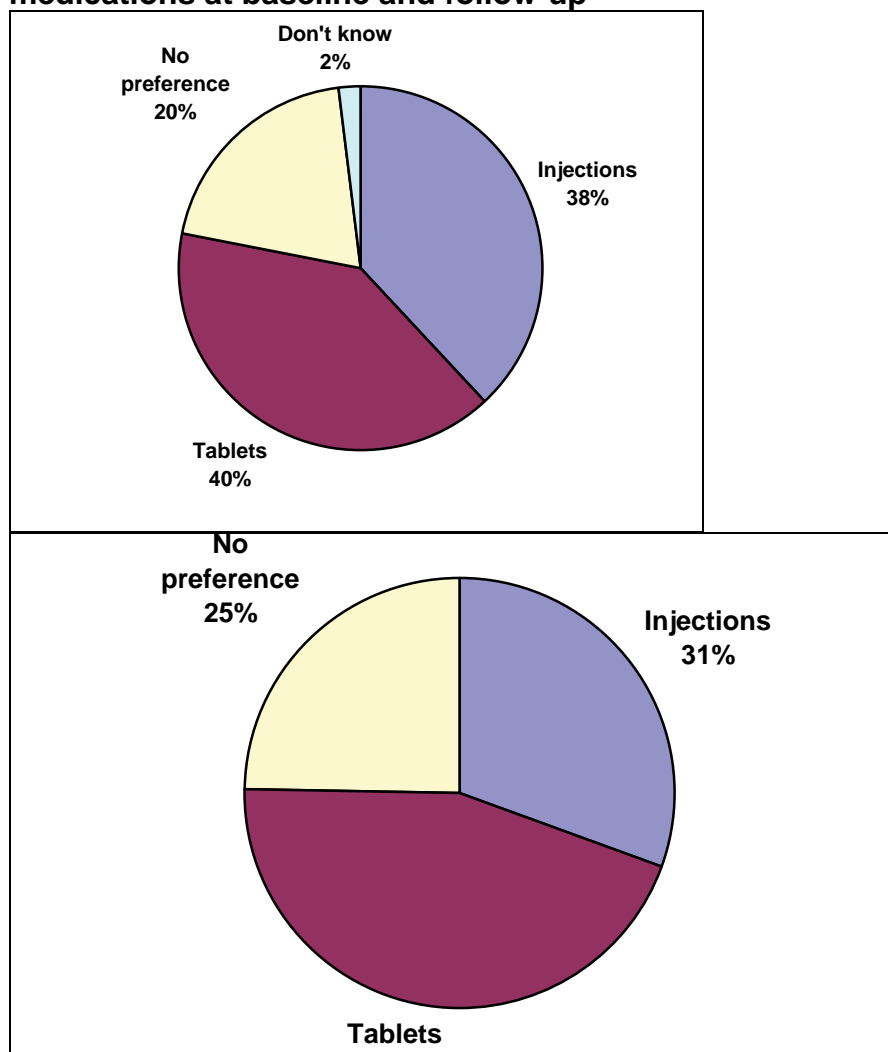
Overall, **14.3%** of these patients at baseline and 18.4% at follow-up did not remember the number of injections. For the other patients, the results varied from 1 to **20** injections, and **50** patients only had 1 or 2 injections at baseline.

Among the patients who received injections in the community, 140 at baseline and 158 at follow-up mentioned the source of the injection. Both at the baseline and also at follow-up the most common source was a private clinic (40.9% out of 83 patients who responded in baseline and 47.5% out of 158 patients at follow-up); 38.9% of patients at baseline mentioned government health units, and this proportion increased slightly to 41.8% at follow-up; 12 patients and 15 patients at baseline and follow-up mentioned the pharmacy/patient medicine stores, respectively. The rest of the patients mentioned other sources: Members of the community or traditional healers (2 persons at baseline and 2 at follow-up). At follow-up one person each mentioned a military hospital, university, and private laboratory.

## 10.6 PATIENTS' ATTITUDES ON INJECTIONS

With regard to the preference of an administration route for medication (injection or tablet), when the patient or someone in his family has a fever, 39.6% of all patients interviewed at baseline declared that they preferred tablets, and 38.2% preferred injections. The rest did not express a preference (20.2%) or did not know (2%). This pattern is similar to the follow-up results: 44.7% of patients interviewed declared that they preferred tablets, and 30.6% preferred injections. The rest did not know (1.2%) (Figure 23).

**Figure 23: Preferences expressed by patients regarding formulations of medications at baseline and follow-up**



Data collectors asked the patients who declared preferring injections the reasons for their preference.

Some patients mentioned several reasons; all mentioned at least 1. Among patients, the ones who mentioned *advantages of injections* talked about it being fast and efficient (59.7% at baseline and 75.7% at follow-up); some patients said that it is better and makes one stronger (20.0% at baseline and 40.8% at follow-up); another 18% of patients at follow-up noted that they know and feel the injection working in their bodies; and lastly, some patients mentioned that the injection had a shorter treatment (9.6% at follow-up). Others patients said that the injection was easy to administer.

Other patients mentioned *problems with tablets*: Pills are hard to swallow (10.0% at baseline and 25.1% at follow-up) and that pills taste bad (3.7% at baseline and 12.1% at follow-up). Other patients mentioned that they could overdose or could forget to take the drugs as prescribed.

Those who preferred injections replied the following:

**Table 27: Reasons for preference for injections**

Reason	Baseline N=191	Follow-up N=239
Faster	59.5%	75.7%
Better/stronger	20.0%	40.8%
Know/can feel it working	0.0%	18.0%
Shorter treatment	0.0%	9.6%
Pills hard to swallow	10.0%	25.1%
Pills taste bad	3.7%	12.1%
No reason	1.6%	0.4%
Don't remember to take pills	0.0%	0.4%

Those who preferred orals provided the following reasons:

**Table 28: Reasons for preference for tablets**

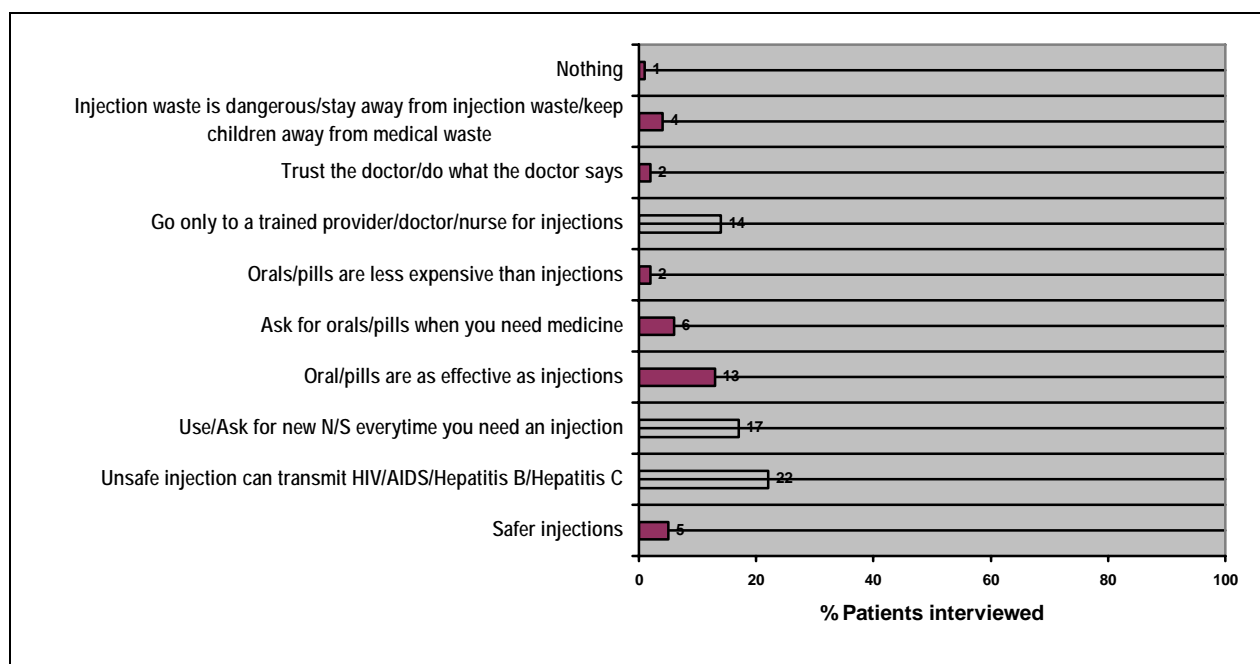
Reason	Baseline N=198	Follow-up N=349
Faster	3.5%	9.5%
Better/Stronger	15.7%	9.7%
Know/can feel it working	1.0%	6.9%
Don't like needles injections	74.7%	76.8%
Shorter treatment	0.0%	3.4%
No reason	1.5%	4.0%
Easy to swallow	0.0%	1.6%
Oral medication is safer	0.0%	0.4%
Prefer to start with tablets	0.0%	0.5%

## 10.7 SOURCE OF INFORMATION ABOUT INJECTIONS OR NEEDLES OR SYRINGES

Among patients interviewed at follow-up, data collectors asked if they had seen or heard any information about injection safety in the last 6 months prior to the survey. Overall, 43.9% of patients answered in the affirmative that they had seen or heard any of the information about injection safety in the last 6 months prior to the survey; 4.4% did not remember, while as many as 51.7% had not seen or heard any information.

Of 343 patients who had seen or heard any information, the data collectors asked an additional question about what they had seen or heard. Results are reported in Figure 24 as a proportion of all patients interviewed. Among all patients, 21.5% had seen the information on “*Unsafe Injection can Transmit HIV/acquired immune deficiency syndrome (AIDS/hepatitis B/hepatitis C.*” This was followed by “*Use/Ask for New Needle and Syringes Every Time You Need an Injection*” as mentioned by 17.4% of the patients; 14.3% of patients mentioned seeing or hearing the advice “*Go Only to a Trained Provider/Doctor/Nurse for Injections,*” and 13.7% of patients mentioned “*Oral/Pills are More Effective.*” Others messages are shown in Figure 24 below.

**Figure 24: Information seen/ heard on injections by patients, at follow-up**



The same patients were then asked the source of their information on injections. Again, results are reported in Table 29 as a proportion of all patients interviewed. When these patients were asked the sources of the information they have seen or heard during the follow-up survey, the media was the most commonly mentioned source; 30.7% mentioned the radio, and 28.4% of the patients mentioned the television; 14.7% of patients identified the health staff or personnel as the source of the information, while 10.8% mentioned posters. Friends, neighbors, and relatives were identified by 7.8% of the patients as the source of information on injection safety. Other sources of information also are listed in Table 31.

**Table 29: Patients' source of information on injection safety, at follow-up**

Sources	Follow-up, N=781
	%
Radio	30.7
Television	28.4
Health staff or personnel	14.7
Poster	10.8
Friends, neighbors, and relatives	7.8
Newspaper/Magazine	1.4
Pharmacy, market, and drug stores	.9
School	.9
Church, mosque and religious leaders	.8
Calendar	.8
Booklet/brochure	0.5
Billboards/banners	0.5
Women's group	0.4
Drama	0.3
Video	0.1
Don't know	0.1

Clearly, more efforts need to be made so that all patients can identify materials on this important subject matter.



## 10.8 SAFE INJECTION KNOWLEDGE BY PATIENTS

The 781 (in follow-up only) patients were also asked what “safe injection” meant to them. As many as 21.5% of the patients did not know what it meant. Among those who indicated that they knew, 45.6% said that safe injection meant that *“Closed/new package of needle and syringe”* was used; 38.8% believed that it meant that the *“Injection was given by a trained/professional provider”*; 17.4% said it meant *“No reaction/side effects”*; 10.2% believe that it meant that *“If provider says it is safe”* then it is safe injection; 8.5% said that it meant *“an injection which does not harm the patient, the provider and the community”*; and for 5.2%, it meant that the *“Injection site was cleaned”*; 1.8% said that it meant that the *“Provider wears gloves.”*

These patients were asked what they think they can do to ensure that they and their families receive safe injections. As many as 60.1% said they would go only to a trained/professional provider for injections administration, and another 47.6% responded that they would make sure needle and syringe come from a new, sealed package for every injection administration. Other measures include 3.6% of the patients who would ensure that they bring their own needle/syringe for each injection administration, and a remaining 4.4% who go to the hospital for injections said they would ensure new equipment was used and also monitor the cleanliness of the facility. It is worth noting that 1.8% of patients said they would do nothing, and 14.6% did not know what to do to ensure safe injection for themselves and their families.

The data collectors also asked the patients the measures that they could take to avoid being stuck by used needles/syringes; 40.6% said they would not touch or pick up any used needles/syringes; 30% would tell their children to stay away from used needles and syringes; 37.1% would dispose of used injection equipment in pits or latrine or dispose of them safely. For 16.8% of the patients, they would wear shoes, and 10.8% would not bring used needles home. Other actions include 4.1% who reported that they would burn needles/syringes; 4.6% would ensure that they do not use injections anymore but would use only orals. It is worth noting that 1.4% said they would do nothing, and 13.3% did not know what to do to avoid being stuck by used needles/syringes; 6 patients said to receive injection from trained person/hospital, and five patients said not to reuse needles.



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## 11. DISCUSSION AND CONCLUSIONS

The progress in African injection safety projects has been reviewed by other researchers from which lessons for scaled-up approaches have been learned.<sup>6</sup> Progress in reducing syringe and needle reuse in public hospitals in Africa to date has been impressive and is enabling the move toward other infection control issues.

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The results of this survey revealed improvement in most of the indicators of safe injection practices, and the MMIS program in Nigeria should continue to build on successes to date.

Once an injection has been administered, the used needle and syringe present a major risk for the transmission of blood-borne pathogens such as HIV and the hepatitis B or hepatitis C virus. This study revealed that the practices of health care personnel and the lack of safe methods for disposal of used needles and syringes create conditions in which injection providers, waste handlers, patients, or other members of the community are exposed to the risk of injuries from sharps that are tainted and improperly discarded. The preceding chapters presented the results of the key indicators for injection safety at the time of this comparison report for baseline and follow-up surveys. In comparison with the presentation of results in the body of this report, this chapter emphasizes *progress to date*, in other words, achievements made over the past three years in the health care system in Nigeria with regard to specific variables, which affect each target population studied in this survey. The tables below focus on the improvements in regards to the specific variables, which affect each target population studied in this survey.

In addition to this possibility of transmitting a blood-borne pathogen through used needles and syringes, it is also important to consider the risk associated with other infectious material. It is for this reason that all types of infectious waste in a health facility pose a risk to the health care personnel, patients, and other people using or visiting the health facility.

For injection providers and waste handlers, an injection safety policy, norms, and guidelines on HCWM are key documents, which establish standards and norms for behaviors and actions that minimize the risk of a needlestick injury.

The absence of these documents, as well as the lack of appropriate equipment for injection safety, is a factor that increases the risk to health care personnel. Similarly, the lack of a reminder or job aids is a missed opportunity to remind health care personnel of the desired injection safety practices.

Table 30 presents a summary of the results of this survey in relation to these risk factors. These data show despite improvement in the follow-up survey, 43.5% of those interviewed reported not having the reference documents such as injection safety policy, the guidelines, or norms for injection safety. There is a remarkable improvement in the availability of safety boxes in facilities as only 2% of surveyed facilities did not have a stock; the remaining 98% did. The

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<sup>6</sup> [http://www.who.int/injection\\_safety/Final-SIGNHanoiReport22March06.pdf](http://www.who.int/injection_safety/Final-SIGNHanoiReport22March06.pdf).  
Nigeria Comparison Report 2009

immediate disposal of used sharps increased to 5.6 % of facilities surveyed. The survey also revealed that 75.5% of the facilities had no infectious waste lying around inside or outside the facility. Finally, a third of the facilities were observed to have safe methods of *final* disposal for sharps (i.e., “good” and “acceptable” methods such as incineration, transportation for off-site processing, and dumping into a latrine or other protected pit followed by burial) at follow-up. These are all tremendous achievements in a three-year period.

**Table 30: Common risk factors for health care workers and patients**

	<b>Risk Factors</b>	<b>Baseline Result of the Survey (%)</b>	<b>Follow-up Result of the Survey (%)</b>
1	Presence of safe injection policy or guidelines	4.5% of supervisors interviewed	56.5% of supervisors interviewed
2	Existence of a stock of safety boxes (No stockouts)	14.5% of injection providers interviewed	92.6% of injection providers interviewed
3	Presence of safety boxes in each location where injections are administered	14.2% of facilities surveyed	98.0% of facilities surveyed
4	Immediate disposal of used sharps	53.8% of all injections observed	95.4% of all injections observed
5	Satisfactory disposal of waste inside or outside the facility	15.4% of facilities surveyed	63.0% of facilities surveyed
6	Facilities with no infectious waste lying around inside or outside the facility	61.3% of facilities surveyed	75.5% of facilities surveyed
7	Good methods for final disposal of sharps waste	28.7% of waste handlers interviewed	34.7% of waste handlers interviewed

Table 31 highlights the risk factors specific to *injection providers*. One important factor, which could contribute to the risk to injection providers, is the lack of training in safe injection practices such as, for example, the immediate disposal—without recapping—of needles and syringes used in medical injections. The absence of the hepatitis B vaccination (and the complete course) is also something to note and consider for future programming.

These data show that a marked improvement has been recorded over the past 3 years: The percent of injection providers who reported receiving training on injection safety doubled in the follow-up; and in only 3% of all FP, curative, and vaccination injections observed, the providers placed themselves at risk by recapping used needles. Even though the percent of providers reporting receiving the hepatitis B injection increased in the follow-up, a third (30%) had not received the hepatitis B vaccine to protect them in the event of a needlestick injury.

**Table 31: Risk factors specific to injection providers**

	<b>Risk Factors</b>	<b>Baseline Result of the Survey (%)</b>	<b>Follow-up Baseline Result of the Survey (%)</b>
1	Training on injection safety	33.3% of injection providers interviewed	71.5% of injection providers interviewed
2	Recapped needles	55.4% of curative, FP injections and vaccinations observed	2.5% of curative, FP injections and vaccinations observed
3	Hepatitis B vaccination (any dose)	52.5% of injection providers interviewed	70.4% of injection providers interviewed

Just as with injection service providers, there are risk factors specific to *waste handlers* such as a lack of training and lack of hepatitis B vaccinations. In addition, the lack of PPE such as heavy-duty gloves or boots or closed-toed shoes (for those working in health facilities where there are loose sharps) as well as waste that can contain used sharps (in the case where safety boxes are not used or waste is not segregated) pose a risk to these health care waste handlers.

Table 32 presents a summary of the results of this survey related to the factors that affect waste handlers. This data show that the percent of waste handlers who reported receiving training in the follow-up tripled. The percent of waste handlers who had not received any doses of the hepatitis B vaccine remained unchanged.

**Table 32: Risk factors specific to waste handlers**

	<b>Risk Factors</b>	<b>Baseline Result of the Survey (%)</b>	<b>Follow-up Result of the Survey (%)</b>
1	Training on safe HCWM	14.4% of waste handlers interviewed	55.4% of waste handlers interviewed
2	Hepatitis B vaccine (any dose)	36.5% of waste handlers interviewed	38.5% of waste handlers interviewed
3	Lack of personal protective equipment (none)	66.0% of waste handlers interviewed	35.6% of waste handlers interviewed

From the perspective of *patients* who receive an injection, the lack of key infection prevention and control practices contributes to the risk of patients being infected with HIV or hepatitis. Some examples of these key practices are hand washing by the injection providers and preparing the injection on a clean working surface or tray where contamination of the injection device by blood, dirty swabs, or other biological waste would be improbable. Stockouts of new needles and syringes can place patients in a situation where the injection provider is tempted to reuse the syringe. In fact, the use of something other than a new needle and syringe for each injection administered to each patient and for each reconstitution of a medication places the patient at risk.

In addition to injections received in the facilities participating in this survey, some patients receive injections from other sources. The presence of materials for BCC on subjects that emphasize injection safety such as, for example, the importance of using a new needle and

syringe for each injection received, regardless of the source; the importance of not touching used syringes; and the promotion of oral medications as alternatives to injectables could contribute to reducing the risks to patients of being contaminated by a pathogenic agent, while their absence contributes to increasing these risks. In parallel, the lack of interpersonal communications between injection providers and patients represents a missed opportunity to reinforce the key messages.

Table 33 presents a summary of the results of this survey related to patients and other members of the community. This data show that using a new needle and syringe from a sterile, sealed package is 99% for injections, but in the context of AIDS prevention, it would be desirable to try to make this practice *universal* and, of course, to ensure that *each case* of reconstitution of a medication be carried out with a new needle and syringe from a sterile, sealed package. Stockouts of new needles and syringes were not common, but it must be recognized that a complete stockout means that the injection equipment supply system needs to be reinforced. Other infection prevention practices such as hand washing doubled in the follow-up. Use of a clean working table or tray on which to prepare injections increased in the follow-up to 84.3% of the injections observed, but this practice needs to be universal.

**Table 33: Risk factors related to patients and visitors at health facilities**

	<b>Risk Factors</b>	<b>Baseline Result of the Survey (%)</b>	<b>Follow-up Result of the Survey (%)</b>
1	Use of a new needle and syringe from a sterile, sealed package for the injection	94.4% of all injections observed	99.3% of all injections observed
2	Use of a new needle and syringe from a sterile, sealed package to reconstitute a medication	89.6% of injections observed	96.8% of injections observed
3	No stockouts of new needles and syringes	75.3 % of injection providers interviewed	91.5% of injection providers interviewed
4	Hand washing prior to administering an injection	12.3% of all injections observed	24.8% of all injections observed
5	Clean working table or tray to prepare injections	77.7% of all injections observed	84.3% of all injections observed

Implementation of the recommendations presented in following chapter is necessary to improve the safety of injections and HCWM in health facilities, thereby contributing to better quality of care.

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## 12. RECOMMENDATIONS

The main recommendations provided in this chapter are focused on sustaining the behaviors that are positive and improving those that are less than optimal as shown in this evaluation.

In view of the findings of this evaluation, the following recommendations are given.

### **Training, Knowledge of Blood-Borne Diseases, and Equipment for the Protection of Health Care Workers**

Use feedback during supportive supervision visits as a way of providing on-the-job training to providers and waste handlers who were not able to attend training workshops on the key components of injection safety and/or use previously trained individual as trainers to continue these workshops in new areas and with newly arriving staff.

Consider adopting a policy of expanding hepatitis B coverage to injection providers and waste handlers to protect them from contracting this disease from accidental sharps injuries. Advocate for policies and vaccines to support hepatitis B vaccination for health care workers as part of a commitment to improving health system human resources. Currently, health workers do not enjoy this protection, and providing it would serve to reduce their risk of contracting hepatitis infections on the job.

Increase availability of PPE to protect workers from accidental occupational injuries.

Availability of documentation:

- An important strategy of improving injection safety is to establish and provide reference documents to all stakeholders as essential support for the preservice and in-service training of health care professionals. This evaluation finds that at baseline only 1.5% of all surveyed supervisors reported having all of the three essential reference documents. However, in the final evaluation in 2008, 35.8% of all supervisors surveyed possess all three essential documents.

Therefore, it is recommended that FMOH should improve on the dissemination of these essential documents, and all the 36 state Ministries of Health and FCT should adapt these policy documents, reprint sufficient quantities for each facility including the private facilities within their administrative jurisdictions, and distribute immediately.

- From the baseline, there was an increase in the availability of stockcards for 10ml, 5ml, 2ml, and 1ml syringes of all types. Still, there is much room for improvement. It is common knowledge that the availability and proper maintenance of management tools facilitate better monitoring of consumption patterns and regular supply of the health facilities with materials. Therefore, overall, it is recognized that the lack of a stock

management system—updated regularly with each change in inventory—is a factor that not only limits *knowing* whether there were stockouts but also *avoiding* them.

It is recommended that the improvement at the facilities level in record keeping should be further encouraged and supported. Stockcards should be reproduced and included in regular logistic management training for facility staff.

- Procurement of *AD and retractable syringes* needs to be sustained upon the expiration of the current MMIS project in these states. It is desirable that FMOH further support the procurement of these injection equipments from local industries.

### **Availability of Injection Equipment and Waste Management Materials**

Continue to monitor stock levels to ensure that there are no stockouts of safety boxes or syringes.

Use supervision visits to continue to monitor the satisfactory disposal of used sharps and waste segregation to maintain the results achieved to date.

Seek additional approaches or partnerships to continue to improve final disposal methods to the “good” level.

- Procurement of *AD and retractable syringes* needs to be sustained upon the expiration of the current MMIS project in these states. It is desirable that FMOH further support the procurement of these injection equipments from local industries.

### **Stock Management in the Main Stockrooms of the Health Facilities**

Institute individual stock tracking mechanisms such as stockcards or registers for safety boxes and for each type of syringes in the facilities that lack them.

Train stockroom managers to keep these documents up-to-date and conduct spot checks as needed to check the stock records against the physical inventory.

It is recommended that additional efforts be made in identifying the essential, noninjectable medications that can replace the most common injections and ensuring that all facilities have a regular, adequate stock of these medications.

Increase information directed to patients and the community to motivate them to improve their injection safety behaviors, focusing on increasing the acceptance of oral medications. Suggested approaches include:

Improve capacity of health providers to communicate interpersonally with patients.

Play TV/radio materials at health facilities for patient and visitors in waiting OPD rooms and care and treatment centers.

Broadcast TV and/or radio materials on air or use other channels such as video vans, video “houses” in the community, etc.



## Waste Management:

In spite of improvements of addressing waste management, the lack of waste segregation in the vast majority of health facilities continues to contribute a situation in which all waste that contains used injection equipment poses a risk of accidental needlestick injuries to the waste handlers.

It is recommended that there should be provision of expanded training to all providers and waste handlers on waste management and prevention of diseases.

Provision of PPE and working tools is essential for all facilities.

FMOH should enforce the use of safety boxes in all facilities, thus, encouraging proper and appropriate disposal of wastes.

## Avoiding Needlesticks

Although equipping health workers with appropriate skills in injection administration and provision of proper sharps containers for immediate safe disposal of the used sharps reduced the prevalence of needlestick injuries, as demonstrated here, exposure through sharps by other means continues to be problem.

- There is need for health unit managers to continuously assess circumstances leading to needlestick injuries with the aim of identifying the persisting risk factors.
- Immediate supervisors should continue to promote one-handed recapping *when necessary* to reduce needlestick injuries.

## General Hygiene:

The results obtained on general hygiene as it relates to injections showed that all injections are not prepared in a clean space generally and in less than 25% of injection observations at follow-up the provider washed their hands prior to administering the injections.

Once again, it is recommended that more training and community education on injection safety is desirable.

Develop strategies to improve availability of water (such as simple tippy-taps) and soap for injection providers to facilitate being able to wash their hands.



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## Appendix 1: State Level Analysis



## Appendix 1: State Level Data

(Frequencies are presented when *N* is less than 20).

### Store Rooms

Proportion of facilities that use safety boxes for sharps waste disposal  
Table 1

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 1		N= 0	N= 23	N= 11	N= 4	N= 44
<b>Baseline</b>	0	0	-	0	(1)	(1)	4.5%
	N= 9	N= 17	N= 10	N= 20	N= 24	N= 20	N= 100
<b>Follow-up</b>	(7)	(5)	(8)	25%	33.3%	65.0%	46.0%

Proportion of facilities with supply of “tracer” oral formulations of common medications at the time of assessment (all 4)  
Table 2

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 10	N= 17	N= 11	N= 26	N= 27	N= 23	N= 114
<b>Baseline</b>	(0)	(0)	(0)	0.0%	0.0%	0.0%	0.0%
	N= 9	N= 17	N= 10	N= 21	N= 24	N= 21	N= 102
<b>Follow-up</b>	(7)	(6)	(4)	47.6%	4.2%	38.1%	35.3%

## Observations of Waste Management

Proportion of facilities that reprocess and reuse needles and syringes (including sterilization and high level disinfection)

Table 3

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 9	N= 17	N= 12	N= 21	N= 27	N= 20	N= 106
Baseline	(4)	0.0	0.0	0.0	0.0	0.0	3.7%
	N= 9	N= 17	N= 10	N= 21	N= 24	N= 21	N= 102
Follow-up	(0)	0.0	0.0	0.0	0.0	0.0	0.0%

Proportion of facilities with BCC materials available/posted (on display) promoting rational use of injectable preparations

Table 4

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 9	N= 17	N= 12	N= 21	N= 27	N= 20	N= 106
Baseline	(1)	(0)	(0)	0.0%	0.0	5.0%	1.9%
	N= 9	N= 17	N= 10	N= 21	N= 24	N= 21	N= 102
Follow-up	(8)	(9)	(10)	57.1%	87.5%	71.4%	73.5%

Proportion of facilities that use safety boxes for sharps waste disposal

Table 5

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 9	N= 17	N= 12	N= 21	N= 27	N= 20	N= 106
Baseline	(0)	(3)	(0)	14.3%	22.2%	15.0%	14.2%
	N= 9	N= 17	N= 10	N= 21	N= 24	N= 21	N= 102
Follow-up	(9)	(17)	(10)	95.2%	95.8%	100%	98.0%

Proportion of facilities with satisfactory disposal of used injection equipment  
**Table 6**

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 9	N= 17	N= 12	N= 19	N=27	N= 20	N= 104
Baseline	(0)	(1)	(4)	0.0%	29.6%	15.0%	15.4%
	N= 8	N= 16	N= 10	N= 21	N=24	N= 21	N= 100
Follow-up	(5)	(7)	(8)	47.6%	58.3%	90.5%	63.0%

Proportion of facilities in which infectious nonsharps waste (including biological waste) is disposed of properly following patient procedures  
**Table 7**

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 9	N= 17	N= 12	N= 21	N= 27	N= 20	N= 106
Baseline	(3)	52.9	(12)	61.9%	51.9%	70.0%	61.3%
	N= 9	N= 17	N= 10	N= 21	N= 24	N= 21	N= 102
Follow-up	(7)	82.4	(9)	81.0%	45.8%	90.5%	75.5%

## Observations of Injections

Proportion of injections prepared in a clean area  
Table 8

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N=32	N=73	N=59	N=124	N=144	N=111	N=543
<b>Baseline</b>	90.6%	83.6%	81.4%	75.0%	71.5%	79.3%	77.7%
	N=71	N=114	N=92	N=232	N=202	N=327	N=1038
<b>Follow-up</b>	71.8%	84.2%	79.3%	95.3%	71.3%	88.7%	84.3%

Proportion of injections where sharps are observed to be reused on patients without reprocessing (follow-up only)  
Table 9

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N=1	N=0	N=1	N=0	N=0	N=5	N=7
<b>Yes, evidence of reuse</b>	(1)		(1)	-	-	(3)	(5)
<b>Yes, evidence of reuse without reprocessing</b>	-	-	-	-	-	(1)	(1)
<b>No evidence of reuse</b>	-	-	-	-	-	(1)	(1)

Proportion of injections given with a new sterile standard or safety syringe  
Table 10

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N=36	N=77	N=59	N=122	N=146	N=112	N=552
<b>Baseline</b>	100.0%	100.0%	91.5%	90.2%	98.6%	89.3%	94.4%
	N=70	N=114	N=91	N=227	N=200	N=321	N=1023
<b>Follow-up</b>	98.6%	100.0%	98.9%	100.0%	100.0%	98.4%	99.3%



Proportion of injections disposed of in a safety box or puncture-proof, leak-proof sharps container (or use a needle remover) immediately after injections (curative, family planning, and vaccinations)

Table 11

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 25	N= 32	N= 19	N= 74	N= 78	N= 47	N= 275
<b>Baseline</b>	44.0%	81.3%	31.6%	63.5%	59.0%	70.2%	61.5%
	N= 58	N= 91	N= 77	N= 187	N= 164	N= 264	N= 841
<b>Follow-up</b>	98.3%	100.0%	98.7%	96.3%	89.0%	95.5%	95.4%

Proportion of used sharps disposed of without recapping them (curative, family planning, and vaccinations)

Table 12

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 25	N= 32	N= 19	N= 73	N= 71	N= 47	N= 267
<b>Baseline</b>	28.0%	18.8%	57.9%	64.4%	31.0%	55.3%	44.6%
	N= 56	N= 88	N= 72	N= 180	N= 151	N= 248	N= 795
<b>Follow-up</b>	98.2%	96.6%	98.6%	99.4%	93.4%	98.4%	97.5%

Proportion of injections in which a new sterile standard or safety syringe is used for each reconstitution of an injectable preparation (curative and vaccinations)

Table 13

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 3	N= 20	N= 0	N= 29	N= 20	N= 5	N= 77
<b>Baseline</b>	(1)	100.0%	-	93.1%	85.0%	(4)	89.6%
	N= 16	N= 15	N= 15	N= 47	N= 94	N= 96	N= 283
<b>Follow-up</b>	100.0%	100.0%	100.0%	97.9%	95.7%	95.8%	96.8%

Proportion of injections in which the provider practiced good hand hygiene with soap and running water before beginning an injection session  
**Table 14**

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 35	N= 77	N= 56	N= 124	N= 148	N=111	N= 551
<b>Baseline</b>	28.6%	5.2%	16.1%	17.7%	10.1%	7.2%	12.3%
	N= 66	N= 108	N= 85	N= 228	N= 178	N=319	N= 984
<b>Follow-up</b>	19.7%	54.6%	67.1%	13.2%	17.4%	16.9%	24.8%

Proportion of injections in which the provider removed the needles from multidose vials between injections (curative, family planning, and vaccinations)  
**Table 15**

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 10	N= 20	N= 9	N= 34	N= 34	N= 10	N= 117
<b>Baseline</b>	(6)	(2)	(3)	64.7%	94.1%	(9)	63.2%
	N= 32	N= 58	N= 21	N= 44	N= 93	N= 108	N= 356
<b>Follow-up</b>	96.9%	65.5%	85.7%	70.5%	91.4%	95.4%	86.0%

Proportion of injections in which the provider used a clean protective barrier when breaking an ampoule (curative injections and vaccinations)  
**Table 16**

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 6	N= 0	N= 2	N= 9	N= 10	N= 6	N= 33
<b>Baseline</b>	(1)	-	(1)	(4)	(7)	(4)	51.5%
	N= 19	N= 30	N= 38	N= 121	N= 78	N= 104	N= 390
<b>Follow-up</b>	(1)	80.0%	76.3%	81.0%	30.8%	46.2%	57.4%

### Interview with Providers:

Proportion of injection providers who report one or more needlestick injuries in the 6 months prior to the survey  
**Table 17**

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 16	N= 35	N= 26	N= 52	N= 57	N= 50	N= 236
Baseline	25.0%	34.3%	19.2%	7.7%	19.3%	16.0%	18.6%
	N= 23	N= 37	N= 26	N= 62	N= 54	N= 82	N= 284
Follow-up	8.7%	0.0%	3.8%	1.6%	16.7%	7.3%	6.7%

Proportion of injection providers who report no stockouts of any size of new sterile standard or safety syringes in the 6 months prior to the survey  
**Table 18**

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 16	N= 35	N= 26	N= 52	N= 56	N= 50	N= 235
Baseline	87.5%	94.3%	73.1%	80.8%	55.4%	76.0%	75.3%
	N= 23	N= 37	N= 26	N= 62	N= 54	N= 82	N= 284
Follow-up	91.3%	94.6%	100.0%	91.9%	79.6%	95.1%	91.5%

Proportion of injection providers who report no stockouts of safety boxes in the 6 months prior to the survey  
**Table 19**

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 16	N= 35	N= 26	N= 52	N= 56	N= 50	N= 235
Baseline	6.3%	25.7%	3.8%	11.5%	19.6%	12.0%	14.5%
	N= 23	N= 37	N= 26	N= 62	N= 54	N= 82	N= 284
Follow-up	95.7%	94.6%	100%	93.5%	81.5%	95.1%	92.6%

Proportion of injection providers who have received the vaccine against the hepatitis B virus (any number of doses)  
**Table 20**

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 16	N= 34	N= 26	N= 53	N= 57	N= 50	N= 236
<b>Baseline</b>	62.5%	44.1%	57.7%	50.9%	57.9%	44.0%	51.7%
	N= 23	N= 37	N= 26	N= 62	N= 54	N= 82	N= 284
<b>Follow-up</b>	47.8%	67.6%	80.8%	53.2%	87.0%	75.6%	70.1%

## Interview with Supervisors:

Proportion of supervisors with health care waste management guidelines

Table 21

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 16	N= 29	N= 27	N= 45	N=34	N= 47	N= 198
<b>Baseline</b>	0.0%	3.4%	0.0%	4.4%	0.0%	8.5%	3.5%
	N= 21	N= 39	N= 24	N= 62	N=56	N= 83	N= 285
<b>Follow-up</b>	66.7%	76.9%	75.0%	43.5%	21.4%	38.6%	46.5%

Proportion of supervisors who receive injectable preparations and injection devices in matching quantities

Table 22

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 9	N= 10	N= 27	N= 23	N= 34	N= 47	N= 150
<b>Baseline</b>	(5)	(5)	25.9%	30.4%	5.9%	17.0%	22.7
	N= 13	N= 15	N= 9	N= 18	N= 29	N= 29	N= 113
<b>Follow-up</b>	(9)	(10)	(6)	(14)	72.4%	62.1%	69.0

Proportion of supervisors with adequate supplies of safety boxes

Table 23

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 9	N= 9	N= 26	N= 23	N= 28	N= 38	N= 133
<b>Baseline</b>	(0)	(1)	0.0%	4.3%	0.0%	5.3%	3.0%
	N= 12	N= 16	N= 11	N= 18	N= 30	N= 30	N= 117
<b>Follow-up</b>	(9)	(10)	(6)	77.8%	53.3%	70.0%	65.0%

### Interview with Waste Handlers:

Proportion of waste handlers who report one or more needlestick injuries in the 6 months prior to the survey

Table 24

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 10	N= 16	N= 9	N= 19	N= 25	N= 18	N= 97
	(0)	(4)	(0)	15.8%	12.0%	27.8%	15.5%
<b>Baseline</b>	N= 9	N= 17	N= 9	N= 21	N= 24	N= 21	N= 101
	(5)	(1)	(1)	9.5%	0.0%	14.3%	11.9%
<b>Follow-up</b>							

Proportion of waste handlers reporting receiving the vaccine against the hepatitis B virus (any number of doses)

Table 25

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 10	N= 16	N= 9	N= 19	N= 24	N= 18	N= 96
	(5)	(3)	(5)	(7)	37.5%	(6)	36.5%
<b>Baseline</b>	N= 5	N= 17	N= 9	N= 21	N= 24	N= 20	N= 96
	(1)	(7)	(7)	(4)	45.8%	(7)	38.5%
<b>Follow-up</b>							

Proportion of waste handlers who report boots, closed-toed shoes, heavy-duty gloves, goggles, aprons, or masks are provided

Table 26

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 10	N= 16	N= 9	N= 19	N= 25	N= 18	N= 97
	(5)	(4)	(4)	15.8%	28.0%	55.6%	34.0%
<b>Baseline</b>	N= 9	N= 17	N= 9	N= 21	N= 24	N= 21	N= 101
	(7)	(15)	(9)	33.3%	50.0%	71.4%	64.4%
<b>Follow-up</b>							

Safe Final Disposal according to waste handlers  
Table 27

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
<b>Baseline</b>	N= 10	N= 16	N= 8	N= 19	N= 23	N= 18	N= 94
<b>Good</b>	(2)	(3)	(3)	(6)	(4)	(9)	63.8%
<b>Marginal</b>		(1)	(2)	(1)	(3)	(0)	7.4%
<b>Poor</b>	(8)	(12)	(3)	(12)	(16)	(9)	28.7%
<b>Follow-up</b>	N= 9	N= 17	N= 9	N= 21	N= 24	N= 21	N= 101
<b>Good</b>	(1)	(1)	(4)	(5)	(4)	(20)	34.7%
<b>Marginal</b>		(1)	(0)	(1)	(2)	(1)	5.0%
<b>Poor</b>	(8)	(15)	(5)	(15)	(18)	(0)	60.4%

### Interview with Patients:

Proportion of women and men ages 18 to 49 who report that the most recent health care injection was given with a syringe and needle set from a new, unopened package

**Table 28**

	Anambra	Cross Rivers	Edo	FCT	Kano	Lagos	Total
	N= 27	N= 54	N= 30	N= 60	N= 81	N= 45	N= 297
<b>Baseline</b>	100%	100%	96.7%	98.3%	95.1%	97.8%	97.6%
	N=55	N= 78	N= 68	N= 187	N= 160	N= 222	N= 770
<b>Follow-up</b>	89.1%	100%	97.1%	98.4%	95.0%	91.0%	94.9%



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## Appendix 2: List of Health Facilities



# **HEALTH FACILITIES LIST FOR 2008 ASSESSMENT**

## **❖ ANAMBRA STATE**

<b>CODE</b>	<b>NAME OF FACILITY</b>	<b>LEVEL</b>
<b>ONITSHA NORTH LGA</b>		
A28	ARMY HOSPITAL ONITSHA	LOWER
A24	ONITSHA GENERAL HOSPITAL	HOSPITAL
A20	BASIC HEALTH CENTRE	LOWER
A6	NNEWUCHI HEALTH CLINIC	LOWER
A26	HOLY ROSARY HOSPITAL	HOSPITAL
<b>NNEWI NORTH LGA</b>		
A2	UMUENEM COMMUNITY HEALTH CLINIC	LOWER
A7	NNAMDI AZIKIWE UNIVERSITY TEACHING HOSPITAL	HOSPITAL
A4	NDIAGBU HEALTH CENTRE	LOWER
A13	INYABA PHC	LOWER

# **HEALTH FACILITIES LIST FOR 2008 ASSESSMENT**

## **❖ CROSS RIVER STATE**

<b>CODE</b>	<b>NAME OF FACILITY</b>	<b>LEVEL</b>
<b>CALABAR MUNICIPAL LGA</b>		
C01	AKIM HEALTH CENTRE	LOWER
C3	GENERAL HOSPITAL CALABAR	HOSPITAL
C22	UNICAL MEDICAL CENTRE	HOSPITAL
C23	UNIVERSITY TEACHING HOSPITAL CALABAR	HOSPITAL
C12	POLICE CLINIC	LOWER
C11	NAVY MEDICAL CENTRE	HOSPITAL
C13	146 BATTALION ARMY	LOWER
C14	NIG. ARMY EBURUTU	LOWER
C55	POLY CLINIC IKOT OMIN	LOWER
C36	PRIMARY HEALTH CENTRE, EDIM OTOP	LOWER
C17	PRIMARY HEALTH CENTRE, EKORINUM	LOWER
C18	PRIMARY HEALTH CENTRE, IKOT ANSA	LOWER
<b>CALABAR SOUTH LGA</b>		
C43	PHC ANATIGHA	LOWER
C35	DUKE TOWN HEALTH POST	LOWER
C38	INFECTIOUS DISEASES HOSPITAL	HOSPITAL
C31	GOLDIE HEALTH POST	LOWER
C45	DOMICILIARY HEALTH CENTRE	LOWER

# **HEALTH FACILITIES LIST FOR 2008 ASSESSMENT**

## **❖ EDO STATE**

<b>CODE</b>	<b>NAME OF FACILITY</b>	<b>LEVEL</b>
<b>EGOR LGA</b>		
E8	PHC UWELU	LOWER
E13	U.B.T.H	HOSPITAL
E10	PHC EVBUOTUBU	LOWER
E7	PHC OGIDA	LOWER
E11	UNIBEN HEALTH CENTRE	LOWER
<b>OREDO LGA</b>		
E35	NEW BENIN HC	LOWER
E16	AIRFORCE MEDICAL CENTRE (NAF)	LOWER
E36	URBAN HEALTH CENTRE	LOWER
E27	MILITARY HOSPITAL	HOSPITAL
E12	UGBOR PHC	LOWER
E20	CENTRAL HOSPITAL BENIN CITY	HOSPITAL

# **HEALTH FACILITIES LIST FOR 2008 ASSESSMENT**

## **❖ KANO STATE**

<b>CODE</b>	<b>NAME OF FACILITY</b>	<b>LEVEL</b>
<b>DALA LGA</b>		
K1	NATIONAL ORTHOPEDIC HOSPITAL DALA	HOSPITAL
<b>FAGGE LGA</b>		
K7	GALADIMA CLINIC	LOWER
K9	INFECTIOUS DISEASES HOSPITAL	HOSPITAL
K50	NIGERIA AIR FORCE MEDICAL CENTRE	LOWER
K6	SHEIK MOHAMMED JIDDA GENERAL HOSPITAL	HOSPITAL
K11	FAAN CLINIC	LOWER
<b>GWALE LGA</b>		
K36	BAYERO UNIVERSITY HEALTH SERVICES	LOWER
K15	DORAYI BABBA HEALTH CLINIC	LOWER
K18	KABUGA HEALTH POST	LOWER
K17	KOFAR NAISA HEALTH POST	LOWER
K19	DUKAWUYA HEALTH CLINIC	LOWER
<b>KUMBOTSO LGA</b>		
K31	DANMALIKI DISPENSARY	LOWER
K28	MAIKALWA DISPENSARY	LOWER
K29	PANSHEKARA BASIC HEALTH POST	LOWER
K30	ZAWACHIKI HEALTH POST	LOWER
<b>KANO MUNICIPAL LGA</b>		
K26	HASIYA BAYERO PAEDIATRIC HOSPITAL	HOSPITAL
K23	MARMAMARA MCH HOSPITAL	LOWER
K24	MURTALA MOHAMMED SPECIALIST HOSPITAL	HOSPITAL
K3	SABO BAKIN ZUWO MATERNITY HOSPITAL	HOSPITAL
K21	SHARADA PRIMARY HEALTH CENTRE	LOWER
K22	YAN AWAKI HEALTH	

## **HEALTH FACILITIES LIST FOR 2008 ASSESSMENT**

	CLINIC	LOWER
<b>NASARAWA LGA</b>		
K65	GIGINYU HC	LOWER
K43	HOTORO HEALTH CLINIC	LOWER
K27	MOHAMMED ABDULLAHI WASE SPECIALIST HOSPITAL	HOSPITAL
K41	GWAGWARMA CLINIC	LOWER
K56	SIR MUHAMMED SUNUSI SPECIALIST HOSPITAL	HOSPITAL
K74	AL-NOURY	LOWER

# HEALTH FACILITIES LIST FOR 2008 ASSESSMENT

## ❖ LAGOS STATE

CODE	NAME OF FACILITY	LEVEL
<b>IKEJA LGA</b>		
L12	ALAUSA CLINIC	LOWER
L5	LAGOS STATE UNIVERSITY TEACHING HOSP	HOSPITAL
L9	NAF HOSPITAL	HOSPITAL
L13	OREGUN PHC	LOWER
L3	FAAN CLINIC	LOWER
<b>LAGOS ISLAND LGA</b>		
L18	GENERAL HOSPITAL LAGOS	HOSPITAL
L22	MASSEY STREET CHILDREN HOSPITAL	HOSPITAL
L27	OKO AWO PHC	LOWER
L21	LAGOS ISLAND MATERNITY HOSPITAL	HOSPITAL
<b>LAGOS MAINLAND</b>		
L35	68 MILITARY HOSPITAL YABA	HOSPITAL
L32	IWAYA PHC	LOWER
L37	NSPMC MINT STAFF HOSPITAL	HOSPITAL
L38	SIMPSON PHC	LOWER
L29	YABA TECH MEDICAL CENTRE	LOWER
L33	MAINLAND HOSPITAL (IDH)	HOSPITAL
L36	FEDERAL MEDICAL CENTER EB	HOSPITAL
L30	EBUTE METTA HEALTH CENTRE	HOSPITAL
<b>MUSHIN LGA</b>		
L45	COKER PHC	LOWER
L56	LAGOS UNIVERSITY TEACHING HOSPITAL (LUTH)	HOSPITAL
<b>SHOMOLU LGA</b>		
L50	NATIONAL ORTHOPEDIC HOSP, IGBOBI	HOSPITAL
<b>SURULERE LGA</b>		
L65	SURULERE GENERAL HOSPITAL, RANDLE	HOSPITAL



# **HEALTH FACILITIES LIST FOR 2008 ASSESSMENT**

## **❖ FEDERAL CAPITAL TERRITORY**

<b>CODE</b>	<b>NAME OF FACILITY</b>	<b>LEVEL</b>
<b>ABAJI AREA COUNCIL</b>		
F56	ABAJI GENERAL HOSPITAL	HOSPITAL
<b>ABUJA MUNICIPAL AREA COUNCIL</b>		
F4	ASOKORO DISTRICT HOSPITAL	HOSPITAL
F26	IDDO PHC	LOWER
F53 A	JIWA PHC	LOWER
F68	MAITAMA DISTRICT HOSPITAL	HOSPITAL
F29	NATIONAL HOSPITAL ABUJA	HOSPITAL
F43	STATE HOUSE CLINIC	HOSPITAL
F27	WUSE GENERAL HOSPITAL	HOSPITAL
F2	GWAGWA PHC	LOWER
F42	KARSHI PHC	LOWER
F8	CENTRAL BANK OF NIGERIA CLINIC	LOWER
F39	POLICE MEDICAL CENTRE, FCT	LOWER
F19	NIPRD	LOWER
F16	HEALTH CENTRE, MABUSHI	LOWER
F21	SHIPHOUSE CLINIC	LOWER
<b>BWARI AREA COUNCIL</b>		
F50	GEN. HOSP KUBWA	HOSPITAL
F53	PHC BWARI	LOWER
<b>KUJE AREA COUNCIL</b>		
F54	PHC KUJE	LOWER
<b>KWALI LGA</b>		
F57	CHC KWALI	LOWER
<b>FEDERAL</b>		
F15	FED. STAFF HOSPITALS	HOSPITAL
F14	FEDERAL STAFF CLINIC 1	HOSPITAL

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## Appendix 3: Survey Form

# MAKING MEDICAL INJECTIONS SAFER (MMIS) PROJECT HOSPITAL AND LOWER-LEVEL ASSESSMENT TOOL FOR \_\_\_\_\_

## Section 1: INVENTORY OF EQUIPMENT AND SUPPLIES AVAILABLE AT THE FACILITY (Central Pharmacy Stores/Main storeroom)

Health Facility Name: \_\_\_\_\_ Type of facility (level): \_\_\_\_\_ Facility Code: \_\_\_\_\_  
Is it Public (government) or Private/NGO?: \_\_\_\_\_ Day \_\_\_\_\_ Month \_\_\_\_\_ Year \_\_\_\_\_

Product	Stockcard (Register) Data											Inventory
	1	2	3	4	5	6	7	8	9	10	11	
	Stockcard (bin) available? (Y/N) <sup>1</sup> → See footnote #1.	Stockcard updated? <sup>2</sup> (Y/N) → If yes and the data are usable, skip to column #5.	Is there a register? (Y/N) <sup>3</sup> → If no stockcard or register exists, go to the inventory column.	Register updated? <sup>4</sup> (Y/N)		Balance on stockcard (or register) (#) <sup>6</sup>	Any stock out in last 6 months? <sup>7</sup> (Y/N) → If there are no stockouts, go to Column #10	Number of stockouts on stockcard (or register) (#) <sup>8</sup>	Total number of days of stockouts (#) <sup>9</sup>	Total amount of product issued (used) in last 3 months (#) <sup>10</sup>	Physical inventory in storeroom (#)	
1.1 New, unused safety boxes <sup>11</sup>												
A 5 L					CR							
B					CR							
1.2. Standard disposable syringes												
A 10 ml					CR							
B 5 ml					CR							
C 2 ml					CR							

<sup>1</sup> In Column #1, if the facility has a stockcard or bin card, write "Y" and proceed to Column #2. If the product exists but there is no stockcard for it, write "N" and request to see the register. If the facility does not have a product **at all** (for example, no safety boxes are ever used), indicate this in the first column with the code "NA" (not applicable) and leave everything else blank on this line

<sup>2</sup> If stockcard has been updated in the past 30 days, answer "yes" (even if the facility is experiencing a stockout on the day of your visit as long as a "0" is recorded for an item) and skip to column 5.

<sup>3</sup> If no register is available for a product, mark this column "N."

<sup>4</sup> If the register has been updated in the past 30 days, answer "yes" (even if the facility is experiencing a stockout on the day of your visit as long as a "0" is recorded for an item.)

<sup>5</sup> Use stock (bin) card data if possible in columns #6-10. If the stock (bin) card does not have the information you need, use the register. Circle C for stock card or R for register to show which source of data used. If neither source has the information write DK (don't know) in columns # 6-10.

<sup>6</sup> Present this as the number of pieces (units), not the number of boxes.

<sup>7</sup> If the facility is experiencing a stockout on the day of the visit, answer Y for "yes."

<sup>8</sup> Record the total number of stockouts during the last six month period.

<sup>9</sup> Record total number of days of all stockouts that were noted in column 8.

<sup>10</sup> Present this as the number of pieces (units), not the number of boxes.

<sup>11</sup> If more than one type of safety box is in use at the facilities in this survey, add additional lines in this section to record the data.

Product	Stockcard (Register) Data										Inventory
	1	2	3	4	5	6	7	8	9	10	
	Stockcard (bin) available? (Y/N) <sup>1</sup> → See footnote #1.	Stockcard updated? <sup>2</sup> (Y/N) → If yes and the data are usable, skip to column #5.	Is there a register? (Y/N) <sup>3</sup> → If no stockcard or register exists, go to the inventory column.	Register updated? <sup>4</sup> (Y/N)		Balance on stockcard (or register) (#) <sup>6</sup>	Any stock out in last 6 months? <sup>7</sup> (Y/N) → If there are no stockouts, go to Column #10	Number of stockouts on stockcard (or register) (#) <sup>8</sup>	Total number of days of stockouts (#) <sup>9</sup>	Total amount of product issued (used) in last 3 months (#) <sup>10</sup>	Physical inventory in storeroom (#)
D 1 cc					C R						
1.3. Disposable syringes with reuse prevention (auto-disable)											
A 10 ml					C R						
B 5 ml					C R						
C 2 ml					C R						
D 1 cc					C R						
1.4 Disposable syringes with reuse and needlestick prevention (such as retractables)											
A 10 ml					C R						
B 5 ml					C R						
C 3 ml					C R						
D 1 cc					C R						

### 1.5 Are the following oral formulations of commonly-used medications in stock at this facility?

- |                        |        |       |                       |
|------------------------|--------|-------|-----------------------|
| A. Chloroquine         | 1. Yes | 2. No | 3. Cannot be assessed |
| B. Ampicillin/Ampiclox | 1. Yes | 2. No | 3. Cannot be assessed |
| C. Paracetamol         | 1. Yes | 2. No | 3. Cannot be assessed |
| D. Tetracycline        | 1. Yes | 2. No | 3. Cannot be assessed |
| E. ACTs                | 1. Yes | 2. No | 3. Cannot be assessed |

*Instructions: Answer with “yes” if any amount of these drugs is in stock or with “no” if none are in stock at the time of this visit. There is no need to count the amount of available drugs. Circle the appropriate response for each medication listed above.*

1.6	Comments <sup>12</sup> :
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## Section 2: OBSERVATIONS OF EQUIPMENT, SUPPLIES, AND WASTE MANAGEMENT AT THE FACILITY

Health Facility Name: \_\_\_\_\_ Facility Code: \_\_\_\_\_

Day \_\_\_\_\_ Month \_\_\_\_\_ Year \_\_\_\_\_

*Instructions: This section is based on your observations only.*

- 2.1 Is there a puncture-proof and leak-proof sharps container in each area where injections are given?
1. Yes
  2. No
  3. Cannot be assessed

- 2.2 Are **all** of the sharps containers being used in the injection areas **safety boxes**?
1. Yes
  2. No
  3. Cannot be assessed

*Instructions: If any sharps containers are not safety boxes, mark as "no."*

- 2.3 Are there any overflowing or pierced safety boxes (or sharps containers)?
1. Yes
  2. No
  3. Cannot be assessed

- 2.4 Are there any used sharps in an open container (other than a safety box) or otherwise loose (improperly disposed of) **inside the health facility**, exposing providers or the public to potential needlestick injuries?
1. Yes
  2. No
  3. Cannot be assessed

*Instructions: If any used sharps are in a safety box that has **not** been properly assembled (for example, the top flap is open), mark as "yes."*

- 2.5 Is there any evidence that an attempt is being made to sterilize **injection equipment** for reuse (such as needles and syringes in a steam sterilizer, autoclave, boiler, pot, or dish of water)?
1. Yes
  2. No → *If no evidence was observed, go to Question 2.7*

*Instructions: Other examples of evidence include observing any bulging syringes or any discolored syringes. This may indicate that someone attempted to boil them.*

- 2.6 Describe the evidence that you observed: \_\_\_\_\_

- 2.7 Is there any evidence of used sharps **outside the health facility** and/or around the waste disposal site?

1. Yes
2. No
3. Cannot be assessed

2.8 Are **all** full safety boxes stored in a locked area that is inaccessible to the public?

1. Yes
2. No
3. Cannot be assessed/no full safety boxes
4. There are no safety boxes at all at this facility

2.9 Are **all** used safety boxes awaiting final destruction completely closed?

1. Yes
2. No
3. Cannot be assessed/no safety boxes awaiting destruction
4. There are no safety boxes at all at this facility

*Instructions: Circle "no" if there are any overflowing boxes. Circle "no" if any overflowing boxes were observed in the injection area.*

2.10 Is there any infectious waste (other than used sharps) disposed of improperly anywhere inside or outside the facility?

1. Yes
2. No

2.11 Is waste being segregated in the injection areas into different containers for used sharps, infectious waste, and noninfectious waste?

1. Yes
2. No

*Instructions: If any area is not segregating waste, code as "no."*

2.12 Were waste handlers<sup>13</sup> observed handling waste during the visit to this facility?

1. Yes
2. No → *If none were observed, go to Question 2.14*

2.13 Did the waste handlers observed utilize any of the personal protective equipment listed below:

- |                            |        |       |
|----------------------------|--------|-------|
| A. Boots/Closed-toed shoes | 1. Yes | 2. No |
| B. Lightweight gloves      | 1. Yes | 2. No |
| C. Heavy-duty gloves       | 1. Yes | 2. No |
| D. Goggles                 | 1. Yes | 2. No |
| E. Aprons                  | 1. Yes | 2. No |
| F. Other (specify)         | 1. Yes |       |

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*Instructions: Record observations for each type of equipment on the lines provided.*

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<sup>13</sup> The definition of waste handlers includes personnel responsible for disposal of safety boxes (which may or may not be injection providers) and any other staff responsible for disposal of human waste products or other potentially hazardous materials.

2.14 What is (are) the main health care waste disposal method(s) used in this facility to dispose of sharp wastes?

- A. Open burning on the ground.
- B. Open burning in a hole or in an enclosure
- C. Medium or high-temperature incineration (De Montfort, >800 °C, 2 chamber, industrial)
- 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 off-site treatment
- J. Other (specify): \_\_\_\_\_

*Instructions: Multiple codes. Circle the answers that apply to this facility (for example, A + E for open burning in a hole followed by burial). Do not mark incinerator if it is not working.*

2.15 Are there reminders and/or job aids posted that promote **reducing the use of injections** at this facility?

- 1. Yes
- 2. No → *If none were observed, go to Question 2.17*

*Instructions: If there are any job aids, counseling cards, posters, or flipcharts on display or in use promoting reductions in the use of injections or increases in oral formulations instead of injections, record as “yes.”*

2.16 Which ones?

- A. Promoting Oral Medication
- B. Other (specify)\_\_\_\_\_

*Instructions: Multiple codes. Circle the answer that applies to this facility for each of the materials listed above.*

2.17 Are there reminders and/or job aids posted that promote **safe administration of injections** at this facility?

- 1. Yes
- 2. No → *If none were observed, go to Question 2.19*

*Instructions: If there are any job aids, counseling cards, posters, or flipcharts on display or in use promoting safe injection practice, record as “yes.”*

2.18 Which ones?

- A. 9 Rights Leaflet
- B. Be Needle Smart
- C. Used Needles Spread Infection
- D. What you need to know about injection safety

*Instructions: Multiple codes. Circle the answer that applies to this facility for each of the materials listed above.*

2.19 Are there reminders and/or job aids posted that promote **safe disposal of used injection equipment** at this facility?

1. Yes

2. No ➔ *If none were observed, go to Question 2.21*

*Instructions: If there are any job aids, counseling cards, posters, or flipcharts on display or in use promoting safe disposal of used injection equipment, record as "yes."*

2.20 Which ones?

A. Safe Waste Disposal Management

B. Safe Waste Disposal Saves Lives

C. Used Needles Spread Infection

D. Other (specify)

\_\_\_\_\_  
*Instructions: Multiple codes. Circle the answer that applies to this facility for each of the materials listed above.*

2.21 Comments <sup>14</sup>: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
<sup>14</sup> Please include comments on any questions in this section which could not be assessed.



### Section 3: OBSERVATION OF INJECTION ADMINISTRATION

Health Facility: \_\_\_\_\_ Facility Code: \_\_\_\_\_ Day \_\_\_\_\_ Month \_\_\_\_\_ Year \_\_\_\_\_

*Instructions for hospitals:* Insert the name of the ward in which data were collected in the space provided below. The goal is to **observe 4 injections in each service ward of each hospital** that is included in the survey. All four injections may be of the same type.

**Instructions for lower level facilities:** Do not enter any information in Ward. The goal is to **observe 4 injections per facility**.

*Record the type of injection observed in Question 3.0. You should observe no more than 1 immunization, 1 family planning, 1 blood draw, and 1 curative injection. Use a separate form for each injection that is observed.*

**Ward:**

1. General Outpatient Department/Emergency
2. Medicine
3. Pediatrics
4. Ob/Gyn
5. Surgery
6. Lab
7. Immunization
8. Other (specify) \_\_\_\_\_

**Injection Code:** \_\_\_\_\_ (Record the code for this observation in this ward/facility from 1 to 4. Use “1” for the first injection observation, “2” for the second, etc.)

**Provider Code:** \_\_\_\_\_ (Insert a number for each injection observed. Code as “1” for all injections given by the first provider observed. Code as “2” if there is a second provider, “3” if there is a third, and “4” if there is a fourth.)

**Category of Provider:**

1. Doctor
2. Nurse
3. Other (specify): \_\_\_\_\_

**3.0 Type of injection:**

1. Vaccination
2. Curative
3. Diagnostic
4. Phlebotomy (blood draw)
5. Finger prick
6. Family planning

**3.1** Was the injection preparation done on a visibly **clean, dedicated working table or tray** where the contamination of the equipment with blood, dirty swabs, or other biological waste is unlikely?

1. Yes
2. No

*Instructions: If the injections are being directly prepared on a blanket, it is likely that the area is not clean, so mark as “no.”*

**3.2** Did the injection providers wash their hands with **soap and running water** or clean them with an **alcohol-based hand sanitizer** before beginning the injection?

1. Soap and running water used
2. Alcohol-based hand sanitizer used
3. Did not clean hands
4. Not observed

3.3 Did the provider use **gloves**? If yes, were they **new**?

1. New gloves used
2. Gloves not changed between patients
3. No gloves used
4. Other (specify): \_\_\_\_\_
5. Not observed

3.4 Did the **patients bring their own syringe** and needle from outside the facility for this injection?

1. Yes
2. No
3. Not observed

3.5 What type of **equipment** is being used for this procedure?

1. Standard disposable needle and syringe
2. Auto-disable needle and syringe
3. Retractable needle and syringe
4. Disposable needle and syringe (type unknown)
5. Lancet
6. Vacuum set (vacutainer)
7. Winged collection set
8. Other (specify): \_\_\_\_\_

3.6 For each injection given, were the needle and syringe either taken from a **sterile, unopened package** or fitted with two caps?

1. Yes → Go to Question 3.8
2. No
3. Not observed/not applicable → Go to Question 3.8

*Instructions: If reuse of injection equipment is about to occur without sterilization, intervene to interrupt the procedure as tactfully as possible, and “No” should be marked for the injection. This question applies to standard disposable syringes and syringes with reuse and/or needlestick prevention feature as well as to equipment for drawing blood. Code lancets for drawing blood as “yes” if you observed the package being opened or if a plastic cap was removed. Code sterilizable syringes as “no.”*

3.7 Was there **evidence** that a used needle and/or syringe was being **reused** on this patient without reprocessing?

1. Yes, evidence of reuse
2. Yes, evidence of reuse without reprocessing
3. No evidence of reuse
4. Don't know

*Instructions: Record the details of your observations in the Comments at the end of this section.*

3.8 For each **reconstitution** was a sterile syringe and needle either taken from a **sterile, unopened pack** or fitted with two caps?

1. Yes
2. No
3. Not observed/Not applicable (no reconstitution)

*Instructions: Code as “Not applicable” if no reconstitution was used for the injection observed. This question applies to standard disposable syringes and syringes with reuse and/or needlestick prevention features. Code sterilizable syringes as “no.”*

3.9 **FOR RECONSTITUTABLE VACCINES:** Was the reconstitution done with **diluent from the same manufacturer** as the vaccine?

1. Yes
2. No
3. Not observed/Not applicable (no reconstitution, not a vaccination)

3.10 Was the **rubber stopper of the medicine vial cleaned** with disinfectant before withdrawing the dose?

1. Yes
2. No
3. Not observed/Not applicable (no vial)

3.11 Was the **needle removed from the rubber cap of each multidose vial** after withdrawing each dose for administration?

1. Yes
2. No
3. Not observed/Not applicable (no multidose vial)

*Instructions: Code as “not applicable” if no multidose vials were used for the injection you observed. If you observe any multi-dose vials with needles in the caps around the working space, record this in the Comments at the end of this section.*

3.12 If a **glass ampoule** was used, did the providers use a **clean barrier** (e.g. sponge, cotton, gauze, or file) to protect their fingers when breaking the ampoule?

1. Yes
2. No
3. Not observed/Not applicable (no glass ampoule used)

*Instructions: If no glass ampoules were used, code as “not applicable”. If an unsafe procedure was used such as forceps, knife or scissors, code as “no.”*

3.13 **HEAT-SENSITIVE VACCINES:** Was the **vial kept between 2° C and 8 ° C** during the period of use?

1. Yes
2. No
3. Not observed/Not applicable (no heat-sensitive vaccines)

*Instructions: If no heat-sensitive vaccines and medication were used, code as “not applicable.”*

3.14 Was the **patient’s skin cleaned** with a clean swab or antiseptic (alcohol) before the injection was given?

1. Clean swab
2. Swab with antiseptic
3. Skin not cleaned
4. Dirty swab
5. Not observed

*Instructions: If the provider used any unclean material to swab the skin including any swab soaking in a liquid, circle “dirty swab.”*

3.15 After the completion of *each injection or blood draw* was the **used needle recapped**? If yes, how?

1. Recapped with one hand
2. Recapped with two hands
3. Not recapped
4. Not observed

3.16 Was there a needle remover or **sharps container within arm’s reach** and appropriately placed for immediate disposal?

1. Yes
2. No

3.17 After each injection observed did the provider **immediately dispose** of the used needles and syringes in an appropriate **sharps container** or use a needle remover?

1. Yes, sharps container
2. Yes, needle remover
3. No/not immediately disposed
4. Not observed

*Instructions: Include the needles and syringes used for reconstitution and for injection in answering this question. If the provider used an overflowing, pierced, or open box or tossed them on the floor or disposed of them in any other unsafe manner or set them down somewhere else before placing them in a sharps container, mark as "no." Even if the provider recapped the needle before putting it in the sharps container, code as "yes" as long as the syringe was put in the container immediately after the injection. If "no," specify the problem in your Comments.*

3.18 FOR BLOOD DRAW: Was the **blood transferred** from a disposable syringe **to a tube** (or other container)?

1. Yes
2. No ➔ *Go to Question 3.22*
3. Not observed ➔ *Go to Question 3.22*
4. Not applicable (not a blood draw or blood not drawn using a syringe) ➔ *Go to Question 3.22*

*Instructions: If disposable needles and syringes were used, answer the question above. If any other equipment was used, code as "not applicable." If the procedure was not a blood draw, code as "not applicable."*

3.19 FOR BLOOD DRAW: Was the needle removed prior to transferring the blood?

1. Yes
2. No ➔ *Go to Question 3.21*
3. Not observed ➔ *Go to Question 3.22*

3.20 FOR BLOOD DRAW: Did the providers use anything other than their hands to remove the needle?

1. Yes (specify) \_\_\_\_\_
2. No
3. Not observed

*Instructions: After answering Question 3.20, go to Question 3.22.*

3.21 FOR BLOOD DRAW: Did the provider transfer the blood to the tube using one hand or two hands?

1. One
2. Two
3. Not observed

3.22 Which of the following (if any) did the provider say to the patient?

- A. Follow-up instructions given
- B. Potential side effects mentioned
- C. Patient told how to treat side effects
- D. Patient told what to do if have adverse reaction
- E. Other topics related to injection safety  
(specify): \_\_\_\_\_

*Instructions: Multiple codes. Circle the answers that apply to the injection that you observed.*

3.23 Did provider use, explain, or refer to any **communication materials** while the patient was there? If so, which:

A. Promote Oral Medication Poster

B. Used Needles and Syringes are Dangerous, Do Not Use Them

C. Other (specify) \_\_\_\_\_

*Instructions: Multiple codes. Circle the answer that applies to each communication material listed above. If the provider did not use any communication materials, do not circle anything.*

3.24 Comments: \_\_\_\_\_

\_\_\_\_\_  
*Instructions: Please include comments on any recapping, BCC materials observed, and issues with diluent.*

## Section 4: INTERVIEW OF THE INJECTION PROVIDER IN \_\_\_\_\_

WARD/UNIT

(CODE \_\_\_\_\_)<sup>15</sup>

Health Facility: \_\_\_\_\_ Facility Code: \_\_\_\_\_  
Category of health worker interviewed: \_\_\_\_\_ Day\_\_\_\_ Month\_\_\_\_ Year \_\_\_\_

***Instructions for hospitals:** Insert the name of the ward in which data was collected in the title of this form. This ward must correspond to a ward where injections were observed in Section 3. The code for this ward will be added during data entry so that data can be tracked by ward. Use a separate form for each provider interviewed. **One provider per ward will be interviewed.** This section is based on the injection provider's answers only. If more than one provider is present in this ward on the day of the interview, interview the one who administers the most injections.*

***Instructions for lower level facilities:** Do not enter any information in the ward/unit code at the top of this page. **One provider per facility will be interviewed.***

4.0 INTERVIEWER: Is this provider someone you observed giving injections in Section 3?

1. Yes (specify provider code): \_\_\_\_\_
2. No

*Instructions: Circle only one answer for Questions 4.1 through 4.6:*

4.1 Do patients bring their own needles and syringes for **vaccination**?

1. Always
2. Sometimes
3. Never
4. Don't know
5. Not applicable (type of injection not given in this ward)

4.2 Do patients bring their own needles and syringes for **therapeutic (curative) injections**?

1. Always
2. Sometimes
3. Never
4. Don't know
5. Not applicable (type of injection not given in this ward)

4.3 Do patients bring their own needles and syringes for **contraceptive injections**?

1. Always
2. Sometimes
3. Never
4. Don't know
5. Not applicable (type of injection not given in this ward)

4.4 Do patients bring their own needles and syringes for **diagnostic injections/phlebotomy**?

1. Always
2. Sometimes
3. Never
4. Don't know
5. Not applicable (type of injection not given in this ward)

4.5 Is it possible to buy new, disposable needles and syringes in a sealed packet in this community (this area)?

1. Yes
2. No
3. Don't know

---

<sup>15</sup> Use the following codes: 1 = General Outpatient Department/Emergency; 2 = Medicine; 3 = Pediatrics; 4 = Ob/Gyn; 5 = Surgery; 6 = Lab; 7 = Immunization

4.6 Do you use a needle remover in this ward of the facility/**this facility**?

1. Yes
2. No
3. Don't know

4.7 Do you use any disposable safety syringes, that is, ones that have features that prevent reuse like auto disable syringes or ones that prevent needle stick injuries like retractables?

1. Yes
2. No → *Go to Question 4.11*

4.8 Which kinds do you use?

1. Reuse prevention/auto-disable only
2. Reuse and needle stick injury prevention/retractables only → *Go to Question 4.10*
3. Both

4.9 For what procedures do you use syringes with reuse prevention features (like auto disable syringes)?

- A. Vaccinations
- B. Curative injections
- C. Family planning injections
- D. Diagnostic injections
- E. Drawing blood
- F. Other (specify): \_\_\_\_\_

*Instructions: Multiple codes. If retractable syringes were mentioned in Question 4.8, continue with Question 4.10. If they were not mentioned in Question 4.8, go to Question 4.11.*

4.10 For what procedures do you use syringes with reuse and needle stick injury prevention features (such as retractables)?

- A. Vaccinations
- B. Curative injections
- C. Family planning injections
- D. Diagnostic injections
- E. Drawing blood
- F. Other (specify): \_\_\_\_\_

*Instructions: Multiple codes.*

4.11 During the last 6 months, how many times did you have accidental needle stick injuries?

Number: \_\_\_\_\_

00 – None → *Go to Question 4.18*

99 – Does not remember → *Go to Question 4.18*

4.12 What type of procedure was the needle/sharp object that injured you used for?

- A. Family planning
- B. Diagnostic tests
- C. Drawing blood (finger prick or other)
- D. Immunizations
- E. Curative injections
- F. IV infusion line
- G. Suturing
- H. I do not know/do not remember
- I. Other (specify) \_\_\_\_\_

*Instructions: Multiple codes. You may read aloud these responses as needed.*

4.13 Which type of needle or sharp item caused the injury?

- A. Needle on standard disposable syringe
- B. Needle on an auto-disable syringe
- C. Needle on retractable syringe
- D. Detached needle
- E. Suturing needle
- F. IV/cannula
- G. Lancet
- H. Do not know
- I. Other sharp item (specify): \_\_\_\_\_

*Instructions: You may read aloud these responses as needed. Multiple codes.*

4.14 Please describe what you were doing at the time of the injury and how the injury occurred:

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*Instructions: Include details on whether the device had been used on the patient at the time of the injury. If the provider reports being injured by a retractable syringe, probe to find out whether the needle was even partially retracted.*

4.15 Did you report the injury to a supervisor?

- 1. Yes → Go to Question 4.17
- 2. No → Answer Question 4.16
- 3. Do not remember → Go to Question 4.18

4.16 Why did you not report the injury?

- A. Did not know where to report it/procedures for reporting
- B. Did not know that I was supposed to report it/No policy for reporting needle-stick/sharp object injuries
- C. Afraid to test for HIV/Not ready to test for HIV
- D. Needle and syringe not used/contaminated
- E. I thought it was not serious
- F. No way to report injury during night duty
- G. The patient I was caring for was HIV negative
- H. Too busy/forgot to report
- I. Needle-stick/sharp object injuries happen too often
- J. Other (specify) \_\_\_\_\_

*Instructions: Do not read aloud. Multiple codes. Mark the options that the respondent mentions spontaneously. After completing this question, go to 4.18*

4.17 What did the supervisor tell you to do when you reported this injury?

- A. Advised to test for HIV
- B. Needle not used so the supervisor said there was nothing to worry about
- C. The supervisor did not take any action or tell me to do anything
- D. Do not know/do not remember
- E. Other (specify) \_\_\_\_\_

*Instructions: Do not read aloud. Multiple codes. Mark the options that the respondent mentions spontaneously.*



4.18 Is HIV post-exposure prophylaxis (PEP) available at this facility?

1. Yes
2. No
3. Don't know

4.19 What difficulties, if any, do you think health workers who give injections have in following safe injection and waste disposal practices for every injection?

- A. Shortage of needles/syringes
- B. Shortage of oral medications/alternatives to injectables
- C. No water/soap to wash hands
- D. Shortage of gloves
- E. Shortage of safety boxes/sharps containers
- F. Recapping (specify): \_\_\_\_\_
- G. Not enough time
- H. Other (specify): \_\_\_\_\_
- I. Don't know

*Instructions: Do not read the list aloud. Multiple codes. Circle only those that are mentioned spontaneously by the provider. Probe asking "Anything else?" If the provider mentions "recapping" as difficult, please ask for details and record them in the space provided.*

4.20 Have you ever had any safety boxes **at this facility** (in this ward of the facility)?

1. Yes
2. No ➔ Go to Question 4.22

4.21 In the last 6 months, have you been out of stock of safety boxes at any time? If yes, for how long in total?

1. No, not in the last 6 months
2. Less than 1 week
3. More than a week but less than 1 month (1-4 weeks)
4. Over 1 month
5. Over 3 months
6. Don't know/don't remember

*Instructions: If the provider says "no" mark the first option. If he/she says, "yes", ask the second part of the question. Read aloud the possible responses and circle the respondent's answer..*

4.22 In the last 6 months, have you been out of stock of any size or type of single-use, disposable syringes (including standard ones, auto-disable (AD) or retractable) at any time? If yes, for how long in total?

1. No, not in the last 6 months ➔ Go to Question 4.25
2. Less than 1 week
3. More than a week but less than 1 month (1-4 weeks)
4. Over 1 month
5. Over 3 months
6. Don't know/don't remember ➔ Go to Question 4.25

*Instructions: If the provider says "no" mark the first option. If he/she says, "yes", ask the second part of the question. Read aloud the possible responses and circle the respondent's answer. Include only the types of syringes mentioned in this question. Do not include sterilizable syringes.*

4.23 Please describe in detail what was out of stock: \_\_\_\_\_

4.24 What did you do during the stockout of syringes?

- A. Stopped giving injections
- B. Sterilized used devices to be able to reuse them
- C. Borrowed some from another nearby facility/another ward
- D. Used a different size/type that was still in stock as a substitute for the one that was stocked out
- E. Told patients to go buy one
- F. The stockout only lasted a short time so it did not interfere with my work
- G. Don't remember
- H. Other (specify): \_\_\_\_\_

*Instructions: **Do not read these options aloud.** Circle all that are mentioned by the injection provider and record any additional ones in the "other" line.*

4.25 During the last 6 months, are you aware of any cases of re-use of a disposable syringe or needle on the same patient or another patient in this department (facility)?

- 1. Yes
- 2. No
- 3. Don't know

4.26 Under what conditions would someone re-use injection equipment on the same patient or another patient?

- A. Never → Go to Question 4.29
- B. If there was a stockout
- C. If the patient could not afford to buy another needle and syringe
- D. If both patients were from the same family
- E. Other (specify): \_\_\_\_\_

*Instructions: Mark only those responses that are mentioned spontaneously by the provider.  
**Do not read the list aloud.***

4.27 Would they try to sterilize them first?

- 1. Yes
- 2. No → Go to Question 4.29
- 3. Don't know → Go to Question 4.29

4.28 How would they try to sterilize them?

- A. Boiling them
- B. Autoclave
- C. Other (specify): \_\_\_\_\_
- D. Don't know

*Instructions: Mark only those methods that are mentioned spontaneously by the provider.  
**Do not read the list aloud.***

4.29 Are you aware of any diseases that can be transmitted by re-use of a non-sterile needle or by a needle stick injury?

- 1. Yes
- 2. No → Go to Question 4.31
- 3. Don't know → Go to Question 4.31

4.30 What diseases are you aware of?

- A. HIV
- B. Hepatitis B
- C. Hepatitis C
- D. Other (specify) \_\_\_\_\_

*Instructions: Mark only those illnesses that are mentioned spontaneously by the provider.  
**Do not read the list aloud.***

4.31 Have you received the vaccine against the hepatitis B virus?

1. Yes
2. No → Go to Question 4.33
3. Don't know → Go to Question 4.33

4.32 How many doses have you received?

Number: \_\_\_\_\_  
99 = do not remember

4.33 Have you received training on injection safety?

1. Yes
2. No → Go to Question 4.35
3. Don't know → Go to Question 4.35

4.34 How long ago was the training?

Number: \_\_\_\_\_ months or \_\_\_\_\_ years  
99 = do not remember

4.35 How would you describe a safe injection?

- A. Injection which does not harm the recipient, the provider and the community
- B. New/sterile injection equipment
- C. Safe disposal of used injection devices
- D. Right Route
- E. Right anatomic/body site
- F. Right Dose
- G. Right Volume
- H. Right Medication
- I. Mixed correctly
- J. Wash hands
- K. Wear gloves
- L. Other (specify): \_\_\_\_\_
- M. Don't know

*Instructions: **Do not read the list aloud. Multiple codes.** Circle only those that are mentioned spontaneously by the provider. Probe asking "Anything else?"*

4.36 Where have you heard or seen anything about reducing the number of injections, safe injection practices and/or safe disposal practices?

- A. Pre-service training
- B. Training workshop
- C. Radio
- D. Television
- E. Newspaper/Magazine
- F. Booklet/brochure
- G. Poster
- H. Drama group/Road show
- I. Billboards/banners
- J. Supervisor
- K. Other health staff/personnel
- L. Others (specify): \_\_\_\_\_
- M. None/nowhere
- N. Don't know/don't remember

*Instructions: **Do not read the list aloud. Multiple codes.** Mark only those communication channels that are mentioned spontaneously by the provider. Probe asking "Anything else?" If the respondent mentions "training," clarify whether this was pre-service training or a training workshop before marking the response.*

4.37 Which of these materials do you have around here?

- A. Poster
- B. Brochure
- C. Pocket Guide
- D. Newsletter
- E. Video
- F. Calendar
- G. None → Go to instructions prior to Question 4.40
- H. Don't know → Go to instructions prior to Question 4.40

*Instructions: Show images of materials or actual materials. Multiple codes. Circle only those that are pointed to or otherwise indicated by the provider. Probe asking "Anything else?"*

4.38. Which of these do you find useful either for yourself or your patients?

- A. Poster
- B. Brochure
- C. Pocket Guide
- D. Newsletter
- E. Video
- F. Calendar
- G. None → Go to instructions prior to Question 4.40

*Instructions: Do not read the list aloud. Multiple codes. Circle only those that are mentioned spontaneously by the provider. Probe asking "Anything else?"*

4.39 Why do you find it (them) useful?

- A. It is a good reminder for me
- B. It is pictorial/visual
- C. It is easily understandable
- D. It is interesting and attracts attention
- E. Can be put anywhere
- F. It can teach community/patients
- G. Other (specify): \_\_\_\_\_
- H. Don't know

*Instructions: Do not read the list aloud. Multiple codes. Circle only those that are mentioned spontaneously by the provider. Probe asking "Anything else?"*

**Data collector: refer back to Question 3.15. If you observed this injection provider and if the needle was recapped, ask question 4.40. If no needles were recapped or if you did not observe this provider, go to question 4.41**

4.40 Could you tell me why you recapped the needle during the injection(s) you just gave?

- A. Usually do
- B. Forgot
- C. Plan to reuse
- D. Keep from getting needle sticks
- E. No safety box/safety box was already full/no needle remover
- F. Don't know
- G. Other (specify) \_\_\_\_\_

*Instructions: Do not read the list aloud. Multiple codes. Mark only the response that is mentioned spontaneously by the provider. There is no need to probe for multiple reasons, but if more than one reason is given, record them all.*

4.41 To what extent do you feel that you are at risk of contracting an infection from injection equipment or injection waste in the health facility?

1. Very much
2. Somewhat
3. A little
4. Not at all

*Instructions: Read aloud the possible responses.*

4.42 Why do you feel that way? \_\_\_\_\_

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*Instructions: Record the provider's answer in his or her own words. Summarize as needed.*

4.43 In your opinion, when treating a patient with a simple case of fever, is medicine taken by mouth MORE effective, JUST AS effective, or LESS effective than medicine taken by injection?

1. Oral MORE Effective
2. Oral JUST AS Effective
3. Oral LESS Effective
4. Depends on the probable cause of fever
5. Don't know/no opinion
6. Other (specify) \_\_\_\_\_

*Instructions: Do not read the list aloud.*

## Section 5: INTERVIEW OF THE SUPERVISOR OF THE INJECTION PROVIDER

(This section is based on supervisor's answers in \_\_\_\_\_ UNIT/WARD) (Code \_\_\_\_\_)<sup>16</sup>

Health Facility \_\_\_\_\_ Facility Code: \_\_\_\_\_ Day \_\_\_\_\_ Month \_\_\_\_\_ Year \_\_\_\_\_

Use a separate form for each supervisor that is interviewed. This section is based on the supervisor's answers only, not your observations.

**Instructions for hospitals:** If there are different supervisors for injection providers in different areas of the hospital, insert the name of the ward in which data was collected in the title of this form. This ward must correspond to a ward where injections were observed in Section 3. The code for this ward will be used to track data by ward. Start with Question 5.1

**Instructions for lower level facilities:** Start with Question 5.0 and then skip to Question 5.2.

**5.0 INTERVIEWER:** Does the injection provider who was interviewed have a supervisor at this lower-level facility? If yes, interview that supervisor. If no, ask the injection provider the following questions. Mark the option below that corresponds to the situation you find in this facility.

1. Yes, there is a separate supervisor at this facility.
2. No, the injection provider does not have one or that person was not available on the day of the survey so the provider was interviewed in this section as well.

**Instructions:** Go to Question 5.2.

**5.1 INTERVIEWER:** What wards does this supervisor supervise at this hospital?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

**5.2** In your ward(s) (or in general in this hospital)/facility do you have a copy of an **injection safety policy**?

1. Yes
2. No
3. Don't know

**5.3** In your ward(s) (or in general in this hospital)/facility, do you have a copy of **guidelines/recommendations on injection safety** issued by your health services?

1. Yes
2. No
3. Don't know

**5.4** In your ward(s) (or in general in this hospital)/facility, do you have a copy of **waste management guidelines** issued by your health services?

1. Yes
2. No
3. Don't know

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<sup>16</sup> Use the following codes: 1 = General Outpatient Department/Emergency; 2 = Medicine; 3 = Pediatrics; 4 = Ob/Gyn; 5 = Surgery; 6 = Lab; 7 = Immunization

5.5 INTERVIEWER, ask to see items 5.2 through 5.4 and circle all the ones that you were shown in the list that follows.

- A. Shown injection safety policy
- B. Shown guidelines or recommendations on injection safety
- C. Shown waste management guidelines
- D. Shown health care waste disposal policy
- E. Was not shown any of these documents
- F. Not applicable—none of these documents exist

5.6 In the last 6 months, have you been out of stock of any size or type of single-use, disposable syringes (including standard ones, auto-disable, or retractable) in any of the wards that you supervise? If yes, for how long in total?

- 1. No, not in the last 6 months → Go to Question 5.8
- 2. Less than 1 week
- 3. More than a week but less than 1 month (1 to 4 weeks)
- 4. Over 1 month
- 5. Over 3 months
- 6. Don't know/don't remember

*Instructions: If the supervisor says "no," mark the first option. If he/she says "yes," ask the second part of the question, and read aloud the possible responses, and circle the respondent's answer. Include only the types of syringes mentioned in this question. Do not include sterilizable syringes.*

5.7 Please describe in detail what was out of stock: \_\_\_\_\_  
\_\_\_\_\_

5.8 Have you ever had any safety boxes in the wards (departments) of this facility that you supervise /at this facility?

- 1. Yes
- 2. No → Go to Question 5.10

5.9 In the last 6 months, have you been out of stock of safety boxes in any of the wards that you supervise? If yes, for how long in total?

- 1. No, not in the last 6 months
- 2. Less than 1 week
- 3. More than 1 week but less than 1 month (1 to 4 weeks)
- 4. Over 1 month
- 5. Over 3 months
- 6. Don't know/don't remember

*Instructions: If the supervisor says "no," mark the first option. If the supervisor says "yes," ask the second part of the question, and read aloud the possible responses. Circle the respondent's answer.*

5.10 Are stocks of **vaccines** always delivered (available) with adequate (matching) quantities of syringes and needles?

- 1. Yes
- 2. No
- 3. Don't know
- 4. No vaccination in this facility
- 5. Not applicable to the wards this supervisor oversees

5.11 Are stocks of **vaccines** delivered (available) with adequate quantities of safety boxes?

- 1. Yes
- 2. No
- 3. Don't know
- 4. No vaccination in this facility
- 5. Not applicable to the wards this supervisor oversees

5.12 Are stocks of **other injectable drugs** always delivered (available) with adequate (matching) quantities of syringes and needles?

1. Yes
2. No
3. Don't know
4. Not applicable to the wards this supervisor oversees

5.13 Are stocks of **other injectable drugs** delivered (available) with adequate quantities of safety boxes?

1. Yes
2. No
3. Don't know
4. Not applicable to the wards this supervisor oversees

5.14 Have you been supplied with adequate quantities of syringes and needles for the services that you provide to your patients?

1. Yes
2. No
3. Don't know

5.15 Have you been supplied with adequate quantities of safety boxes for the services that you provide to your patients?

1. Yes
2. No
3. Don't know

5.16 Do you find that you have to remind injection providers about injection safety?

1. Yes
2. No
3. Don't know

5.17 What do you think are the most important things to remind injection providers to do?

- A. Use clean table/tray
- B. Wash hands
- C. Wear gloves
- D. Use new, sealed needle and syringe
- E. Remove needle from rubber cap of multidose vial after withdrawing each dose
- F. Use clean barrier if using ampoule
- G. Clean patient's skin
- H. Do not recap needle
- I. Be careful of needle sticks
- J. Immediately dispose of needles or use a needle remover
- K. Do not overfill safety boxes
- L. Check dosage of medications
- M. Other (specify): \_\_\_\_\_

*Instructions: **Do not read the list aloud. Multiple codes.** Mark only the responses that are mentioned spontaneously by the supervisor.*



## Section 6: INTERVIEW OF WASTE HANDLERS

*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. If the waste handler is the same person who was interviewed as the main injection provider, complete Questions 6.1 to 6.10 only.) Only one form will be filled out per facility.*

Health Facility: \_\_\_\_\_ Facility Code: \_\_\_\_\_ Day \_\_\_\_\_ Month \_\_\_\_\_ Year \_\_\_\_\_

6.1 What is/are the main health care waste disposal method(s) used in this facility to dispose of **sharps waste**?

- A. Open burning on the ground.
- B. Open burning in a hole or in an enclosure
- C. Medium or high-temperature incineration (De Montfort, >800 °C, 2 chamber, industrial)
- 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 off-site treatment
- J. Other (specify): \_\_\_\_\_

*Instructions: Multiple codes. Circle the answers that apply to this facility (for example, A + E for open burning in a hole followed by burial)*

6.2 What is/are the main health care waste disposal method used to dispose of **infectious waste**?

- A. Open burning on the ground.
- B. Open burning in a hole or in an enclosure
- C. Medium or high-temperature incineration (De Montfort, >800 °C, 2 chamber, industrial)
- 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 off-site treatment
- J. Other (specify): \_\_\_\_\_

*Instructions: Multiple codes. Circle the answers that apply to this facility (for example, A + E for open burning in a hole followed by burial)*

6.3 What is/are the main health care waste disposal method used to dispose of **noninfectious waste**?

- A. Open burning on the ground.
- B. Open burning in a hole or in an enclosure
- C. Medium or high-temperature incineration (De Montfort, >800, 2 chamber, industrial)
- 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 off-site treatment
- J. Other (specify): \_\_\_\_\_

*Instructions: Multiple codes. Circle the answers that apply to this facility (for example, A + E for open burning in a hole followed by burial)*

*If incineration is not mentioned in Questions 6.1 to 6.3, skip to Question 6.6.*

6.4 What is done with the ash that results from incineration?

- A. Open dump
- B. Sanitary landfill
- C. Buried in secured pit
- D. Buried in unsecured pit
- E. Dumped in latrine
- F. Left in pile near health center
- G. Other (specify): \_\_\_\_\_

*Instructions: Circle all that are mentioned. Do not read the list aloud.*

6.5 If you usually use an incinerator, what do you do when the incinerator is not working?

- A. Open burning on the ground.
- B. Open burning in a hole or in an enclosure
- C. Burial
- D. Dumping in a protected (secure) pit (including a needle pit)
- E. Dumping in an unprotected pit
- F. Dumping in an unsupervised area
- G. Transportation for off-site treatment
- H. It is always working.
- I. Other (specify): \_\_\_\_\_

*Instructions: Circle all that are mentioned. Do not read the list aloud.*

6.6 Overall, what problems (if any) do you encounter with the disposal of health care waste?

- A. No problems
- B. Lack of fuel
- C. Lack of incinerator
- D. Unfilled safety boxes
- E. Lack of land area for burial
- F. Falling boxes during transport
- G. Lack of safety boxes
- H. Other (specify): \_\_\_\_\_

*Instructions: Circle all that are mentioned. Do not read the list aloud.*

6.7 What protective equipment (if any) is available for waste handlers at this facility?

- A. None
- B. Boots/closed-toed shoes
- C. Lightweight (latex) gloves
- D. Heavy-duty gloves
- E. Goggles
- F. Aprons
- G. Masks
- H. Other (specify): \_\_\_\_\_
- I. Don't know

*Instructions: Circle all that are mentioned. Do not read the list aloud.*

6.8 Have you received any training on handling injection waste —such as safety boxes—safely?

- 1. Yes
- 2. No → Go to Question 6.10
- 3. Don't know → Go to Question 6.10

6.9 How long ago was this training?

Number: \_\_\_\_ months or \_\_\_\_ years  
99 = do not remember

6.10 Where all have you heard or seen anything about safe disposal practices?

- A. Preservice training
- B. Training workshop
- C. Radio
- D. Television
- E. Newspaper/magazine
- F. Booklet/brochure
- G. Poster
- H. Drama group/road show
- I. Billboards/banners
- J. Supervisor
- K. Other health staff/personnel
- L. Other (specify) \_\_\_\_\_
- M. None/nowhere
- N. Don't know/don't remember

*Instructions: Mark only those communication channels that are mentioned **spontaneously** by the waste handler. Probe asking "Anything else?" If the respondent mentions "training," clarify whether this was preservice training or a training workshop before marking the response.  
**Do not read the list aloud. Multiple codes.***

***Interviewer: If the waste handler was also interviewed as an injection provider, please check the box, and end the interview.*** ☐

***If the waste handler is a different person, continue with Question 6.11.***

6.11 During the last 6 months, how many times did you have accidental needle stick injuries?

Number: \_\_\_\_\_

00 = None

99 = Does not remember

6.12 Are you aware of any diseases that can be transmitted by a needlestick injury?

- 1. Yes
- 2. No → Go to Question 6.14
- 3. Don't know → Go to Question 6.14

6.13 What diseases are you aware of?

- A. HIV
- B. Hepatitis B
- C. Hepatitis C
- D. Other (specify) \_\_\_\_\_

*Instruction: **Do not read the list aloud. Multiple codes.** Mark only those illnesses that are mentioned **spontaneously** by the waste handler.*

6.14 Have you received the vaccine against the hepatitis B virus?

- 1. Yes
- 2. No → Go to Question 6.16
- 3. Don't know/don't remember → Go to Question 6.16

6.15 How many doses have you received?

Number: \_\_\_\_\_

99 = do not remember

6.16 To what extent do you feel that you or waste handlers that work under you are at risk of contracting an infection from injection waste?

1. Very much
2. Somewhat
3. A little
4. Not at all

*Instructions: Read aloud the possible responses.*

6.17 Why do you feel that way? \_\_\_\_\_

\_\_\_\_\_

*Instructions: Record the waste handles' answers in their own words. Summarize as needed.*

## Section 7: EXIT INTERVIEW WITH ADULT PATIENTS

**Instructions:** *This tool is to be applied only to adult patients who received an injection on the day of the data collection. Use a separate form for each patient that is interviewed.*

Health Facility: \_\_\_\_\_ Facility Code: \_\_\_\_\_ Patient #: \_\_\_\_\_<sup>17</sup>  
Day \_\_\_\_ Month \_\_\_\_ Year \_\_\_\_

**For hospitals only:** Ward where services were received: \_\_\_\_\_ (Code: \_\_\_\_\_)<sup>18</sup>

7.1 INTERVIEWER: *Is the respondent a man or a woman?*

1. Man
2. Woman

7.2 INTERVIEWER: *Is the adult who received the injection today between the ages of 18 and 49 years?*

1. Yes
2. No

*Instructions: Determine whether the age of the adult respondent is between the ages of 18 and 49 years of age. If necessary, ask the respondent his or her age relative to important local events, and estimate whether the person is between the ages of 18 and 49 or not.*

7.3 INTERVIEWER: *Is the adult who is about to be interviewed one of the patients who was observed receiving an injection today in Section 3?*

1. Yes
2. No
3. Do not know

7.4 In this community (this area) can you buy new needles and syringes in a sealed pack?

1. Yes
2. No
3. Don't know

7.5 Did you bring your own injection equipment for the injection that you just received?

1. Yes
2. No → Go to Question 7.7

7.6 If yes, was this equipment in a new, unopened package?

1. Yes
2. No

*Instructions: Go to Question 7.8*

7.7 Where did the syringe and needle come from?

1. They came from a sealed pack or were fitted with caps at both ends
2. They were already loose/the packet was open
3. From a sterilizer
4. From a pot of water
5. Don't know

*Instructions: Read aloud these options and mark the one mentioned.*

<sup>17</sup> Number patient interview as 1, 2, 3, or 4 according to the order in which the 4 patients in this department (or this facility) were interviewed. This numbering does not need to correspond to the order of observations of injections in Section 3.

<sup>18</sup> Use the following codes: 1 = General Outpatient Department/Emergency; 2 = Medicine; 3 = Pediatrics; 4 = Ob/Gyn; 5 = Surgery; 6 = Lab; 7 = Immunization.

7.8 Other than the injection received today, in the last six months, how many injections did you receive from this health facility?

Number: \_\_\_\_\_

00 = None

99 = Can't remember/don't know

*Instructions: If the answer is "none," go to Question 7.11.*

7.9 For those injections received in the last six months at this health facility, how often did you bring your own syringe and needle?

1. Never

2. Sometimes

3. Always → Go to Question 7.11

7.10 Where did the syringe and needle come from?

1. It came from a sealed pack or was fitted with caps at both ends

2. It was already loose or the packet was open

3. From a container

4. Other (specify) \_\_\_\_\_

*Instructions: Read aloud these options and mark the one mentioned.*

7.11 In the last six months did you receive injections somewhere else (other than in this hospital/facility)?

1. Yes

2. No → Go to Question 7.16

3. Don't remember → Go to Question 7.16

7.12 How many injections did you receive somewhere else?

Number: \_\_\_\_\_

99 = Can't remember/don't know

7.13 Where (from whom) did you receive these injections?

A. Community member/traditional healer

B. Private clinic

C. Government health unit

D. Other (specify) \_\_\_\_\_

*Instructions: Multiple codes. Circle all that are mentioned.*

*Make sure that the number of providers reported does not exceed the number of injections reported in Question 7.12.*

7.14 Did you bring your own syringe and needle to any of these providers?

A. Community member/traditional healer

B. Private clinic

C. Government health unit

D. Other (specify as in Question 7.13) \_\_\_\_\_

*Instructions: Mark only the providers who were consulted in the last six months, as reported in Question 7.13. Mark the answer for each of the providers consulted.*

7.15 Where did the syringe and needle come from for each of the following providers:

A. Community member/traditional healer

1. It came from a sealed pack or was fitted with caps at both ends
2. It was already loose or the packet was open/any other response
3. Did not see preparation/don't know

B. Private clinic

1. It came from a sealed pack or was fitted with caps at both ends
2. It was already loose or the packet was open/any other response
3. Did not see preparation/don't know

C. Government health unit

1. It came from a sealed pack or was fitted with caps at both ends
2. It was already loose or the packet was open/any other response
3. Did not see preparation/don't know

D. Other (*Specify the type of provider mentioned in Question 7.13*) \_\_\_\_\_

1. It came from a sealed pack or was fitted with caps at both ends
2. It was already loose or the packet was open/any other response
3. Did not see preparation/don't know

7.16 Do you recall the last time that you received a prescription?

1. Yes
2. No → *Go to Question 7.20*
3. Don't know/don't remember → *Go to Question 7.20*

*Instructions: Use the local term for a written prescription for this question.*

7.17 How long ago was this prescription?

1. Less than 1 month
2. 1 month to less than 3 months
3. 3 to 6 months
4. More than 6 months → *Go to Question 7.20*
5. Don't remember → *Go to Question 7.20*

7.18 In this prescription, were you prescribed any injectable medications?

1. Yes
2. No → *Go to Question 7.20*
3. Don't know/don't remember → *Go to Question 7.20*

7.19 How many injectable medications were prescribed?

Number : \_\_\_\_\_  
99 = Don't remember

7.20 When you or a family member are suffering from fever, do you prefer to receive an injectable medication or something else instead of injections such as pills (tablets), syrup, etc.?

1. I prefer injections
2. I prefer pills/tablets/something else instead of injections
3. I have no preference → *Go to Question 7.22*
4. I don't know → *Go to Question 7.22*

*Instructions: Read the answers aloud.*

7.21 What are the reasons for your preference?

- A. Faster
- B. Better/stronger
- C. Know/can feel it working
- D. Don't like needles/injections
- E. Shorter treatment
- F. Pills are hard to swallow
- G. Pills taste bad
- H. Other (specify): \_\_\_\_\_
- I. No reason
- J. Don't know

*Instructions: Do not read the list aloud. Multiple codes. Circle all that are mentioned. Probe asking "Anything else?"*

7.22 In the last 6 months, have you seen or heard any information about injections or needles or syringes?

1. Yes
2. No → *Go to Question 7.25*
3. Don't know → *Go to Question 7.25*

7.23 What information or ideas do you remember seeing or hearing about injections or needles or syringes?

- A. Safer injections
- B. (Unsafe) Injections can transmit HIV/AIDS/hepatitis B/hepatitis C
- C. Use/ask for a new needle/syringe every time you need an injection
- D. Orals/pills are as effective as injections
- E. Ask for orals/pills when you need medicine (Don't ask for/demand injections)
- F. Orals/pills are less expensive than injections
- G. Go only to a trained provider/doctor/nurse for injections
- H. Trust the doctor/do what the doctor says
- I. Injection waste is dangerous/stay away from injection waste/keep children away from medical waste
- J. Other (specify): \_\_\_\_\_
- K. Don't know/don't remember/nothing

*Instructions: Do not read the list aloud. Multiple codes. Circle all that are mentioned. Probe asking "Anything else?"*



7.24 From what sources did you see or hear this information or these ideas ?

- A. Health staff/personnel
- B. Pharmacy/market/drug store
- C. Friends/neighbors/relatives
- D. Traditional healer/herbalist
- E. Political leader/community leader
- F. School
- G. Church/mosque/religious leader
- H. Women's group
- I. Radio
- J. Television
- K. Drama group/road show
- L. Video/film
- M. Poster
- N. Newspaper/magazine
- O. Booklet/brochure
- P. Calendar
- Q. Billboards/banners
- R. Items: T-shirt, mug, cap, water bottle
- S. Other (specify): \_\_\_\_\_
- T. Don't know/don't remember/none

*Instructions: Do not read the list aloud. Multiple codes. Circle all that are mentioned. Probe asking "Anything else?"*

7.25 In your opinion, what is a "safe injection?"

- A. An injection which does not harm the patient, the provider, and the community
- B. No reaction/side effects
- C. Closed/new package of needle and syringe
- D. Injection site cleaned
- E. Injection given by a trained/professional provider
- F. Provider wears gloves
- G. If provider says it is safe
- H. Other (specify): \_\_\_\_\_
- I. Don't know

*Instructions: Do not read the list aloud. Multiple codes. Circle all that are mentioned. Probe asking "Anything else?"*

7.26 What can you do to help make sure that you and your family receive safe injections?

- A. Make sure needle and syringe come from a new, sealed package
- B. Go only to a trained/professional provider
- C. Bring own needle/syringe
- D. Nothing
- E. Don't know
- F. Other (specify): \_\_\_\_\_

*Instructions: Do not read the list aloud. Multiple codes. Circle all that are mentioned. Probe asking "Anything else?"*

7.27 What can you and your family do to avoid getting stuck by used needles/syringes?

- A. Don't touch/pick up any needles/syringes
- B. Tell children to stay away
- C. Wear shoes
- D. Dispose of them in pit/latrine/dispose of them safely
- E. Burn them
- F. Don't bring used needles home
- G. Don't use injections; use orals
- H. Other (specify): \_\_\_\_\_
- I. Nothing
- J. Don't know

*Instructions: Do not read aloud. Multiple codes. Circle all that are mentioned. Probe asking "Anything else?"*

***The End. Thank the patient for his or her participation.***



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For more information, please visit [www.mmis.jsi.com](http://www.mmis.jsi.com).

**Making Medical Injections Safer (MMIS)**

**John Snow, Inc.**

1616 North Ft. Myer Drive, 11th Floor

Arlington, VA 22209 USA

Phone: 703-528-7474

Fax: 703-528-7480

[www.mmis.jsi.com](http://www.mmis.jsi.com)