



PEPFAR

U.S. President's Emergency Plan for AIDS Relief

CHAPTER NINE.

INJECTION SAFETY & HEALTH CARE WASTE
MANAGEMENT

PEPFAR'S BEST PRACTICES FOR VOLUNTARY MEDICAL MALE CIRCUMCISION SITE OPERATIONS

A Service Guide for Site Operations

Acknowledgments

This publication is made possible by the generous support of the American people through the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) with the U.S. Agency for International Development (USAID) under the Cooperative Agreement Strengthening High Impact Interventions for an AIDS-free Generation (AIDSFree) Project, number AID-OAA-A-14-00046. AIDSFree is implemented by JSI Research & Training Institute, Inc. with partners Abt Associates Inc., Elizabeth Glaser Pediatric AIDS Foundation, EnCompass LLC, IMA World Health, the International HIV/AIDS Alliance, Jhpiego Corporation, and PATH.

We are eternally grateful to Dr. Tigistu Adamu Ashengo of Jhpiego and Dr. Emmanuel Njeuhmeli of USAID, who developed the first edition of this manual.

The second edition was developed under the leadership of Dr. Valerian L. Kiggundu (USAID) and Mr. Jonathan Grund (CDC). Special thanks are given to the Male Circumcision Technical Working Group, who edited and contributed to the development of both the first and second editions.

Special appreciation is given to the AIDSFree staff members who coordinated with different authors, agencies and organizations to support the development of this document, including providing editing and graphic design support.

Finally, we are most grateful to the men who stepped forward to receive male circumcision for HIV prevention; the Ministries of Health from the 14 priority countries, and the implementing partners who generously shared the best practices that have been used throughout this document.

Contact Info

D. Heather Watts, MD
Director, HIV Prevention and Community, Program Quality Team
Office of the Global AIDS Coordinator and Health Diplomacy
1800 G Street NW, Room 10300
Washington, DC 20006
Office: 202-663-2547

Authors

- 1. United States Agency for International Development (USAID), Office of HIV/AIDS Bureau for Global Health, 1300 Pennsylvania Avenue NW, Washington, DC 20523**
Valerian Kiggundu, Kim S. Ahanda, Reden Sagana, Meghan Mattingly, Nithya M, Mani, Maria Carrasco, Gina Sarfaty, Nida Parks, Emmanuel Njeuhmeli
- 2. United States Centers for Disease Control and Prevention (CDC), 1600 Clifton Road, Atlanta, GA 30329**
Naomi Bock, Carlos Toledo, Stephanie Davis, Jonathan Grund, Paran Pordell, Dan Rutz, Marta Bornstein
- 3. United States Department of Defense HIV/AIDS Prevention Program, Naval Health Research Center, 140 Sylvester Rd., San Diego, CA 92106-3521**
Anne G. Thomas, Jonathan Davitte
- 4. Office of the Global AIDS Coordinator, 1800 G Street NW, Washington, DC 20006**
Renee Ridzon
- 5. The Health Communication Capacity Collaborative (HC3), Johns Hopkins Bloomberg School of Public Health, Center for Communication Programs, 111 Market Place, Suite 310, Baltimore, MD 21202**
Elizabeth Gold
- 6. University Research Co., LLC/USAID ASSIST Project, 5404 Wisconsin Avenue, Suite 800, Chevy Chase, Maryland 20815**
Donna Jacobs, Lani Marquez, Haley Brightman, John Byabagambi
- 7. GHSC-PSM Global Health Supply Chain Project, Chemonics, 1717 H Street NW, Washington, DC 20006**
Mary Lyn Field-Nguer, Scott Ackerson
- 8. Project SOAR/Population Council, 4301 Connecticut Avenue NW, Suite 280, Washington, DC 20008**
Liz Nerad, Andrea Vazzano
- 9. USAID's AIDSFree Project, JSI Research & Training Institute, Inc. 1616 Fort Myer Drive, 16th Floor, Arlington, VA 22209**
Erin Broekhuysen, Lauren Alexanderson, Zebedee Mwandu, Tracy McClair, Victoria Rossi, Jackie Sallet, Marya Plotkin, Tigistu Adamu Ashengo, Augustino Hellar, Alice Christensen, Kait Atkins

CHAPTER 9.

Injection Safety & Health Care Waste Management

CHAPTER GOALS

To ensure site-level staff are able to:

- Use safe injection practices to prevent the spread of pathogens (especially bloodborne pathogens) to clients or providers
- Properly manage waste generated by VMMC services to protect health care workers, the community, and the environment.

WHAT USERS NEED TO KNOW

INJECTION SAFETY

Appropriate single use and disposal of both needles and syringes is an important topic because it touches upon not only waste management but also client and provider safety. Bacteria from skin and other surfaces and bloodborne pathogens may contaminate both needle (on contact and during aspiration) and syringe (during aspiration).

Therefore, providers must never access an anesthetic vial with either a needle or a syringe that has been used on a client, including for the purpose of drawing up more anesthetic for the same client. Providers may be tempted to change the needle but reuse the same syringe; however, this does not remove the risk of transmission, as blood may have entered the syringe. Instead, if a client needs additional anesthetic during a procedure, **a new needle and a new syringe** should be used to draw the anesthetic and reinject.

Key safe injection practices to prevent transmission of infections to clients or providers include:

- **Never** access any medication vial with a previously used syringe or needle (“double dipping”). If a client needs additional anesthetic during a procedure, use **a new needle and syringe** to draw the anesthetic and reinject. This carries a very small increased cost, and the risks of reuse are much more significant.
- **The best practice is to ensure anesthetic vials are not reused** between clients (they should be disposed of during cleanup after the VMMC procedure.) If a provider draws anesthetic for a client from a used vial, it is impossible to know whether the vial was contaminated by a prior provider who incorrectly “double-dipped” into it.
- If it is not possible to prevent anesthetic vial reuse, the only line of defense against blood-borne pathogen transmission is to ensure no provider ever double dips into a vial. Even if this is done, bacterial infection transmission is still possible, because every time a vial is accessed even with an unused needle, there is a risk of bacterial contamination.

- **Never** administer medications from the same syringe to more than one patient, even if the needle is changed.
- **Never use two hands to** recap used needles or use fingers to pick up a suture needle exposed to blood.
- **Always** dispose of used sharp instruments in sharps containers immediately after use.
- **Always** use aseptic technique when preparing and administering injections. This includes cleaning the vial septum properly before entering the vial to reduce the risk of bacterial contamination.
- **Always** ensure the sharps container is within arm's reach and not filled beyond two-thirds full before starting the procedure.

An open-access, 60-minute VMMC provider training module on injection safety is available online at [Injection Safety Training Module for VMMC Providers](#).

HEALTH CARE WASTE MANAGEMENT

To avoid serious *public health and legal consequences, as well as substantial environmental impact*, it is essential to develop safe and reliable methods for handling and treating health care waste. Proper waste management spans a number of stages from generation through disposal, thus service providers must have clear standard operating procedures on the segregation, packaging, handling, storage, transport, treatment, and disposal of waste [See [SCMS VMMC Health Care Waste Management Toolkit](#)]. Each site should have a health care waste management (HCWM) plan based on local norms and standards. Resources are available to assist site managers in developing their plan. Specifically prepared for VMMC service locations, the [SCMS VMMC Health Care Waste Management Toolkit](#) describes the steps of HCWM from collection to proper disposal employing user-friendly, highly illustrated standard operating procedures. The toolkit guides users in developing their own country-specific guideline document, such as the [Health Care Waste Management for VMMC Services: A Quick Guide](#), and provides examples of the standard operating procedures and waste management plans described above. Additional links on HCWM include the World Health Organization's (WHO) [Safe Management of Wastes from Health-Care Activities](#) and the United States Agency for International Development's (USAID) [USAID Sector Environmental Guidelines Healthcare Waste](#).

FREQUENTLY REFERENCED INFORMATION

INJECTION SAFETY

While the majority of local anesthetic injections are performed safely with little or no risk of infection, some can transmit infection to the client or provider if not done safely. The two types of infections that can be transmitted, both resulting from contamination of an injection needle, are as follows:

- Bacterial infections: A needle used to inject local anesthetic can become contaminated through contact with bacteria from any surface, including the client's skin, the provider's skin, or both, which bacteria can then be pulled into the syringe during aspiration.
- Bloodborne (usually viral) pathogen infections: A needle used to inject local anesthetic for a client infected with HIV, hepatitis B or C, or another bloodborne pathogen can become contaminated with that pathogen, which can then be pulled into the syringe during aspiration.



In both cases, if the contaminated needle or syringe is then used again to access a vial, the vial can become contaminated. If the same vial is later used for another client, the infection can be transmitted to that next client. Both bacterial and bloodborne pathogens have been transmitted in this way, causing multiple outbreaks of disease. Providers may be tempted to change the needle but reuse the same syringe. However, this does not remove the risk of transmission.

In the case of bloodborne pathogens, a provider can also become infected if s/he is stuck by the hollow injection needle.

The major administrative considerations for ensuring injection safety are:

- Ensuring an adequate supply of extra “loose” needles and syringes for anesthetic injection (that can be accessed without contaminating other sterile supplies, e.g., opening a new male circumcision [MC] kit).
- Ensuring that sharps containers are available at every procedure station and are not overfilled.
- Ensuring that sharps containers are accessible for use without contamination of the provider and out of the way for all staff traffic in operating or other rooms.

For more detailed information on injection safety, please reference the U.S. Centers for Disease Control and Prevention's [Frequently Asked Questions \(FAQs\) Regarding Safe Practices for Medical Injections](#) and WHO's (World Health Organization) [Safe Injection Global Network \(SIGN\)](#).

HEALTH CARE WASTE MANAGEMENT

Health care waste management (HCWM) spans a number of different stages from generation, to treatment, to disposal of waste (“cradle-to-grave”). To regulate the many steps spanning waste management, service providers must have clear standard operating procedures on the segregation, packaging, handling, storage, transport, treatment, and disposal of waste. The easiest way to establish proper HCWM is to draft a waste management plan based on local norms, standards, and/or guidelines. When developing/adapting a plan, you can refer to the following guidance materials. [See [Management of Solid Health Care Waste at Primary Health Care Centers: A Decision-Making Guide](#); [Environmental Health Management Toolkit for VMMC Services](#); [Health Care Waste Management for VMMC Services, Quick Guide for Tanzania](#); [Safe Management of Wastes from Health-Care Activities](#); and [USAID Sector Environmental Guidelines Healthcare Waste](#).]

This plan must address the HCWM process by carefully defining the necessary measures to be taken and allocating resources through cost-effective solutions. To ensure proper management, a successful HCWM plan should:

- Clearly define all points of generation of waste within the service site(s) (e.g., blood-drawing area, operating theater, HTC [HIV testing and counseling] areas, and recovery area).
- Propose HCWM product requirements/specifications.
- Include procedures and job aids for the identification, segregation, packaging, storage, transport, treatment, and disposal of health care waste.
- Set standard requirements for clinical staff safety and training (e.g., training schedule, personal protective equipment, and personal hygiene).
- Develop an incident reporting system.

- Propose environmentally sound treatment and disposal methods for the different streams of waste (infectious, sharps, chemical, and decontaminated non-sharp single-use metal instruments).
- Define relevant responsibilities of all staff, regional, and local governments.

The key to minimizing risk and minimizing waste is to effectively manage health care waste by identifying and segregating items based on the following VMMC-specific health care waste categories: general, pharmaceutical, infectious, sharps, and special (single-use metal instruments) waste. Identification and segregation are the responsibility of the staff that produce the waste and should occur as close as possible to the point of generation.

Formal protocols are needed to appropriately identify and segregate each category of waste. If the country’s prevailing color-coding scheme is different from the one shown in Figure 9.1, the toolkit color-coding scheme and associated toolkit elements should be customized to comply accordingly. In the absence of colored bins, it’s advisable to improvise with bins/bin-liners that can segregate the waste, with bin labels in the appropriate colors.

When designing a waste management system, it is essential to assess local infrastructure in order to determine which accepted options are the most practical for the country. Choosing among the options for the disposal of decontaminated, non-sharp, single-use metal instruments is an important step in the design of a sound HCWM system. Options for this waste stream, for example, could include burial of instruments in a secure sharps pits/ concrete vault, transporting the instruments to a recycling/smelting facility, or specialized encapsulation.

Figure 9.1. Color coding relevant waste containers is a quick and easy way to identify segregated health care waste and visually indicate the contents of each container for waste handlers downstream. The color-coding scheme shown here is excerpted from the SCMS VMMC Health Care Waste Management Toolkit (2013).

Treatment of waste

	 Pathological	 Infectious	 Sharps	 Chemical (Including pharmaceutical)	 Non-hazardous (General)
Treatment technology					
High temperature incineration with APC	✓	✓	✓	✓	✓
Low temperature incineration	✓	✓	✓		✓
Chemical disinfection		✓	✓		
Steam sterilization	✓	✓	✓		
Microwave radiation	✓	✓	✓		
Pit or bury			✓		✓
Encapsulation/ inertization				✓	
Composting (aerobic, vermiculture)					✓*
Anaerobic digestion (fermentation)					✓*
Engineered landfill					✓

*Only to be used for the treatment of non-hazardous/general food waste.



CASE STUDIES

Case Study 9.1. Ensuring Safe Health Care Waste Management and Environmental Hygiene through Innovative Tools

TOOLS, INSTRUMENTS & GUIDANCE DOCUMENTS

The following documents, which are available online and in the accompanying external media (included with the hard copy version of this Guide), provide the background information or procedural guidance used for development of this chapter.

1. [Environmental Health Management Toolkit for VMMC Services](#)
2. [Safe Management of Wastes from Health-Care Activities](#)
3. [Health Care Waste Management for VMMC Services, A Quick Guide](#)
4. [USAID Sector Environmental Guidelines Healthcare Waste](#)
5. [CDC Frequently Asked Questions \(FAQs\) Regarding Safe Practices for Medical Injections](#)
6. [WHO Safe Injection Global Network \(SIGN\)](#)
7. [Management of Solid Health Care Waste at Primary Health Care Centers: A Decision-Making Guide](#)
8. [Injection Safety Training Module for VMMC Providers](#)

ABBREVIATIONS

HCW	health care waste
HCWM	health care waste management
HTC	HIV testing and counseling
IEC	information, education, and communication
IPC	infection prevention and control
SCMS	Supply Chain Management System
USAID	United States Agency for International Development
VMMC	voluntary male medical circumcision
WHO	World Health Organization



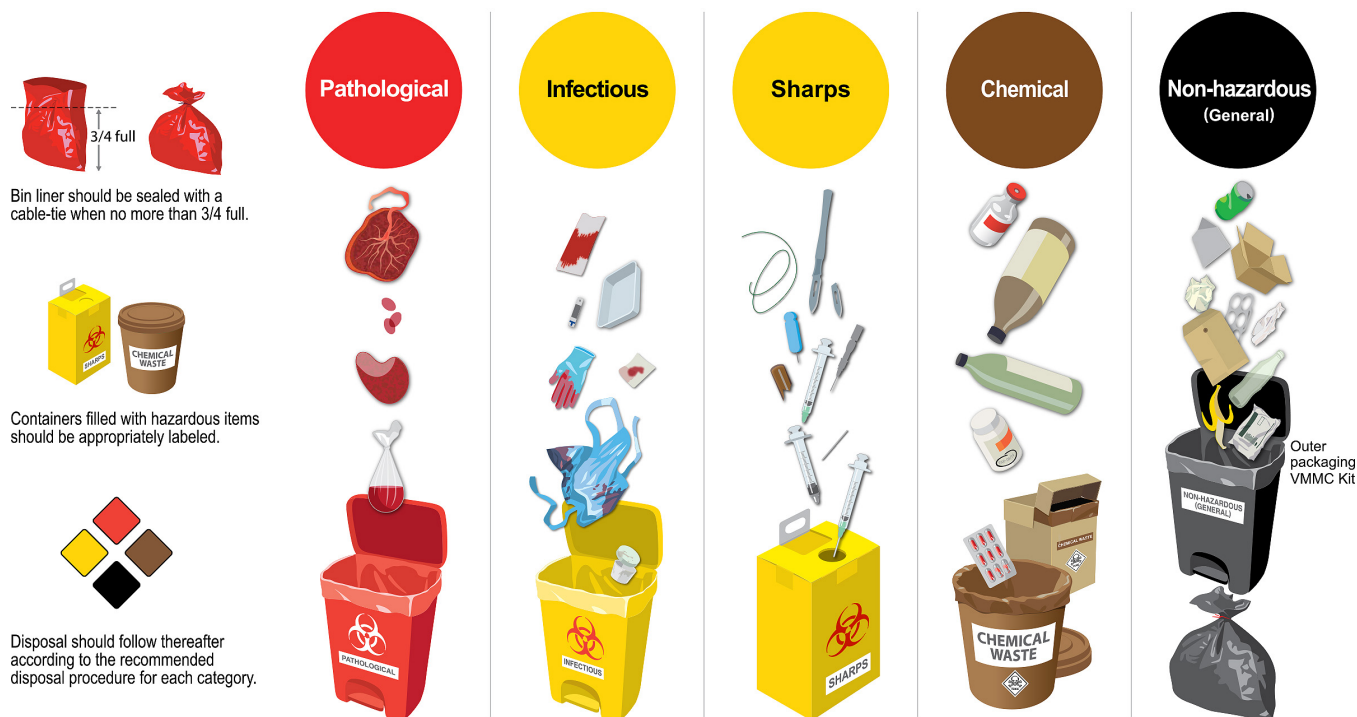
CASE STUDY 9.1.


Ensuring Safe Health Care Waste Management and Environmental Hygiene through Innovative Tools

The importance of correctly handling health care waste (HCW) is globally underemphasized in preservice and in-service health care training curricula and quality management processes. Improving compliance with best practices of health care waste management (HCWM) has many benefits, including creating a safer clinical environment, increasing trust in the health care system, and providing financial savings. Some guidance about HCWM has been published, but it is not widely used. New tools are needed to increase uptake of HCWM best practices.

With the implementation of the VMMC initiative in Tanzania, proactive solutions for handling and disposing of HCW, as well as infection prevention and control (IPC) measures, were implemented to ensure the safety of patients, the public, health care providers, and the environment. To regulate the steps of managing HCW, SCMS through funding by USAID collaborated with Tanzania's Ministry of Health and Social Welfare and implementing partners to develop a quick guide with easy-to-follow illustrations that clearly defines national guidelines and procedures on environmental hygiene and HCW management. This innovative, more visual approach (see Figure 9.2. below) created an easy reference guide while minimizing language and literacy barriers.

Figure 9.2. Waste Segregation



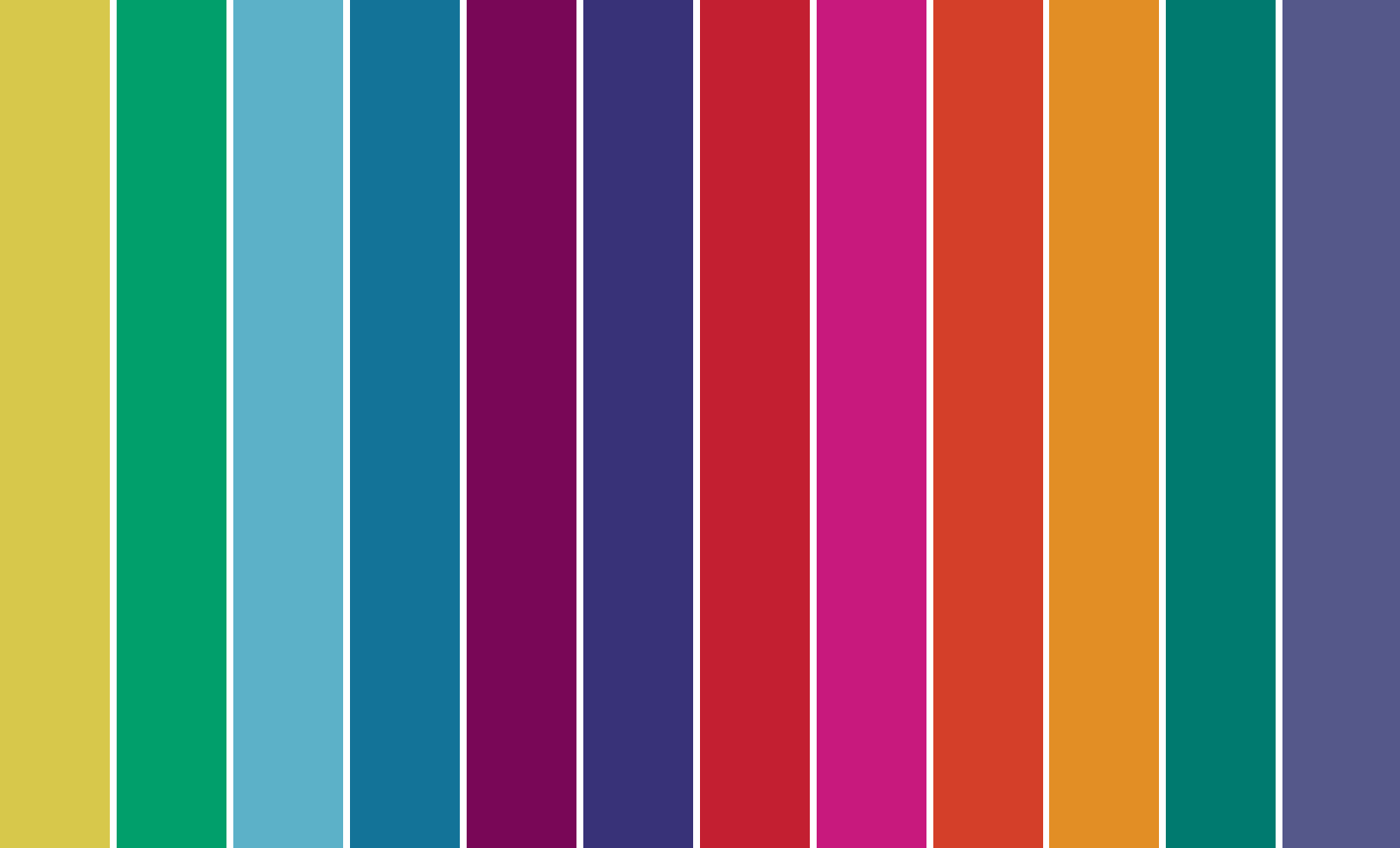


To ensure minimum standards and best practices are put into practice, SCMS and other partners developed a training program for in-service and clinical on-site training, as well as information, education, and communication (IEC) materials.

SCMS conducted a pilot rollout at five VMMC clinical sites located in Mbeya, Mbozi, Shinyanga, and Simiyu. The focus of the pilot rollout was to introduce and assess the utility and applicability of the guide at VMMC sites. A total of 37 health care and medical waste personnel received technical guidance during the trainings.

These tools, when used in unison with the national standards, help implement behavior change and establish ownership of guiding principles, critical elements to the sustainability of proper management of HCW and environmental best practices. Currently, SCMS is in the process of generalizing these materials as part of the [SCMS VMMC Health Care Waste Management Toolkit](#).





PEPFAR

U.S. President's Emergency Plan for AIDS Relief

Contact Info

D. Heather Watts, MD

Director, HIV Prevention and Community, Program Quality Team

Office of the Global AIDS Coordinator and Health Diplomacy

1800 G Street NW, Room 10300

Washington, DC 20006

Office: 202-663-2547

