Helping PEPFAR Partners Manage Health Care Waste

Practical Approaches and Lessons Learned from Uganda and Nigeria

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Summary
The volume of infectious health care waste has dramatically increased in the past decade with the widespread introduction of non-reusable needles and syringes along with the rapid scale-up of HIV/AIDS prevention and treatment programs. However, many countries lack the necessary financial, human, and capital resources needed to manage their growing quantities of waste. This paper describes the process, tools, and strategies used in the Making Medical Injections Safer project (MMIS) to successfully engage the Presidents’ Emergency Plan for AIDS Relief (PEPFAR) implementing partners (partners) in Uganda and Nigeria to address this critical need.

Background
Proper management of the growing quantities of health care waste is critical because used needles and syringes can spread bloodborne infections through needle reuse and accidental needlestick injuries. Improper health care waste management is also environmentally hazardous. Harmful emissions are released when plastics and other health care waste materials are burned at low temperatures, and groundwater contamination can occur when waste is buried incorrectly. The negative health effects of improperly managed health care waste make it a priority issue.

However, many countries do not have the financial, human, and capital resources needed to train health workers, build infrastructures, or enact legislation regarding health care waste management. Without appropriate policies and adequate allocation of resources at the national level, health facilities cannot obtain supplies or conduct training. Without appropriate funding, facilities will continue to lack systems to segregate, store, treat, and dispose of their infectious waste.

In 2004, PEPFAR funded the John Snow, Inc. (JSI) and partners including PATH to carry out the MMIS project in ten sub-Saharan African countries and Haiti. The funds were administered through the United States Agency for International Development (USAID) and the US Centers for Disease Control and Prevention (CDC). The PEPFAR safe injection project (2004–2009) is the first large-scale effort to introduce injection safety equipment and to support health care waste management (HCWM) and supply management and planning in curative settings, where up to 90% of all injections take place.1 MMIS has supported ministries of health and environment in 11 countries with policy development, planning, training, and advocacy at the national level to develop the systems needed for effective health care waste management.

HCWM improvements in Uganda and Nigeria
As with the majority of less economically developed countries, HCWM in Uganda and Nigeria was at a crisis point in 2002, prior to MMIS. A national survey in Uganda revealed that 70% of facilities did not have a person responsible for coordinating infection control, including management of health care waste, and only 2% of health facilities had incinerators for treatment of waste.2 The situation in Nigeria was similar—only 55% of facilities met the basic criteria for safe health care waste management.

Midterm evaluation findings in MMIS districts indicated that project activities had improved occupational safety for injection providers and waste handlers. In Uganda, the prevalence of needlestick injuries dropped 34% among injection providers and more than 60% among waste handlers. In Nigeria, the use of safety boxes for sharps management increased from 34% in 2004 to 73% in 2006, while the prevalence of needlestick injuries among injection providers declined dramatically from 45% to 6%. This and other improvements were achieved through MMIS involvement with training health workers and waste handlers, provision of segregation bins and bin liners, and installation of final waste disposal units.

**Keys to success: MMIS approaches to strengthening HCWM**

MMIS approaches have systematically improved the management of health care waste. These approaches include the reduction of unnecessary injections, the development of sound policies and action plans for HCWM, improvement of the knowledge and skills of health workers, improvement of equipment and commodities procurement, strengthening of final disposal solutions for health facilities, and building capacity for HCWM planning at the national level. National-level efforts have involved ministries of health and environment, World Health Organization (WHO), United Nations Children’s Fund, the World Bank, and international donors as well as local nongovernmental organizations.

While the successful engagement of PEPFAR partners in each country has unique elements, five key approaches were consistently used by MMIS to successfully introduce improved HCWM practices at partner sites.

1. **Gain participant buy-in**

   Stakeholder meetings were held in each country to bring the partners together around the issue of HCWM. The meetings emphasized HCWM as a priority, enabled partners to express their own knowledge and needs related to HCWM, and helped lay the foundation for the collaborative effort by creating personal connections among the various partner representatives and MMIS team members.

2. **Raise awareness**

   Assessments of HCWM practices at facilities were conducted to better understand the quantity and types of waste produced and current practices for treatment and disposal. The outcomes of these assessments were shared with the partners in order to establish a shared understanding of current health care waste management practices at facilities.

3. **Improve knowledge and skills**

   Health workers and waste handlers were trained in the key components of safe HCWM:
   - Reducing quantities of waste by reducing the number of unnecessary injections given.
   - Segregating waste into sharps, infectious, and noninfectious boxes and bins.
   - Managing sharps waste appropriately by discouraging recapping of syringes and encouraging proper use of sharps containers.
   - Treating and disposing of waste in safe and environmentally friendly ways.
   - Designing monitoring and record-keeping systems to document waste management activities.
4. Ensure appropriate budget and supplies

Facility managers and program decision makers were encouraged to:

- Allocate budget line items specifically for HCWM.
- Bundle safety boxes with syringes for curative injections (a practice already carried out for immunization injections).
- Identify local sources of color-coded waste bins and bin liners to ensure a consistent and affordable supply for proper segregation of waste.
- Ensure that all health workers and waste handlers have personal protective equipment (PPE) appropriate for their individual responsibilities.

5. Strengthen the final disposal system

Technical assistance was provided to partner facilities to ensure that health care waste was disposed of in a safe, secure location that was not accessible by the community. This included ensuring that incinerators were being properly maintained in order to guarantee safe burning temperatures, that sufficient quantities of fuel were available to regularly operate the incinerators, and that dedicated staff were trained in safe maintenance and operation of incinerators. In facilities that lacked on-site disposal solutions, MMIS team members also provided guidance on how to strengthen the systems of collection and transport of medical waste to centrally located incinerators.

Engaging PEPFAR partners

MMIS efforts were directed at strengthening capacity and infrastructure in government facilities. However, there was a need to expand the MMIS approach to PEPFAR partners responsible for handling large quantities of infectious waste. In 2007, the Ugandan and Nigerian USAID Missions provided additional funds and lent their institutional support to the MMIS teams to provide technical assistance to PEPFAR partners to adopt the HCWM model implemented through MMIS (Appendix A). This work was intended to ensure that the awareness, training, supplies, and systems being put in place for curative services under MMIS were implemented at PEPFAR project sites. The goals of this collaboration were to:

- Build awareness among partners regarding the need for safe management of health care waste and the specific responsibilities for implementing good HCWM practices.
- Assist partners with developing and implementing HCWM plans for districts and facilities.
- Develop a coordinated HCWM approach among partners.

The following examples demonstrate how the key approaches were used to enact positive change among PEPFAR partners in the area of HCWM.

Working with PEPFAR partners in Uganda

Background

The USAID Mission in Uganda responded to the growing need to prioritize HCWM in HIV/AIDS treatment and prevention programs by supporting the MMIS project in Uganda with US$320,000 to engage PEPFAR partners to incorporate HCWM into their plans. PATH provided technical assistance to MMIS Uganda by detailing an approach for introducing the MMIS waste
management process to the partners. The technical assistance provided by MMIS to the partners in Uganda focused on the five key approaches.

Lessons learned from each of the approaches informed MMIS strategy and influenced decision making within partner organizations and at the national level. The strategies and tools used to implement each of the key approaches are detailed below.

1. **Gain participant buy-in**

At the outset of the collaborative process, USAID Uganda invited the PEPFAR Partner organizations to a stakeholder meeting to introduce the collaborative HCWM initiative. The goals of the meeting were to:

- Understand partner priorities, concerns, and challenges related to HCWM.
- Raise awareness of HCWM issues and best practices.
- Agree on how best to provide technical assistance to partners.
- Gather partner input on the development of a national plan for HCWM.

USAID mission representatives, WHO collaborators, MMIS country staff, and Ministry of Health engineers presented the HCWM risks, background, current practices, MMIS strategies for strengthening HCWM in the 20 districts, and WHO core principles in HCWM. The meeting was attended by 39 partners from 30 partner organizations. At the conclusion of the meeting, 12 partner organizations who expressed a commitment to HCWM were selected for the first phase of the project.

2. **Raise awareness**

Following the initial stakeholder meeting, MMIS held individual orientation meetings with each of the 12 partner organizations in Uganda who had expressed their commitment to improving HCWM. Subsequently, MMIS followed up with the 12 project directors to gather basic information on their current HCWM practices and level of engagement in HCWM, identify a HCWM focal person within each organization, and plan facility HCWM assessments. The follow-ups were used as an opportunity to identify partner priorities, select pilot implementation districts, and identify a district coordinator and staff for the district HCWM teams.

Facility HCWM assessments were conducted following the orientation meetings. The assessments identified: types and quantities of waste produced and how they were handled; commodities and supplies available for the handling, storage, containment, and transport of waste; staff knowledge and level of training in HCWM; and budget and responsibility allocation for HCWM. In addition, MMIS arranged demonstration tours of health units with exemplary HCWM performance and assisted partner organizations with developing work plans containing budgets for HCWM.

3. **Improve knowledge and skills**

HCWM knowledge and skills were promoted during stakeholder meetings, individual organizational meetings, and facility HCWM assessments. In addition, MMIS conducted workshops to train the HCWM focal person at partner organizations as HCWM trainers. The workshops used an adapted version of the MMIS training curriculum. Although some partners had not allocated a budget for HCWM, there was, in general, an appreciation for the problem
among workshop participants and an intention to plan for HCWM. The partner HCWM coordinators then provided training to health workers and waste handlers at the district level, initiating cascade training to the facility level.

4. Ensure appropriate budget and supplies
The MMIS team provided technical assistance with the finalization of district- and facility-level HCWM plans, including budget and supplies allocations. While not all partners allocated HCWM line items in their budgets, most organizations supported their sites with budgets for training costs and for HCWM supplies. The MMIS team shared specifications on basic HCWM supplies so that partners could procure key commodities such as safety boxes, color-coded waste bins and bin liners, and PPE. The partners paid for their staff to attend trainings and adapt training materials to be specific to their work; routine supervision procedures were also established.

5. Strengthen the final disposal system
Through the MMIS collaboration, connections were made between the partners and private or public sector facilities for final disposal, including other organizations with on-site final disposal solutions. Partners engaged in independent partnerships with other organizations for such things as commercial incinerator use and collection of disinfected plastic hospital waste by recycling companies.

Follow-up
The lessons learned from introducing HCWM practices to PEPFAR partners, including information gathered from a qualitative evaluation of achievements, fed into the Ugandan national planning process for HCWM. A scale-up phase was completed during which time ten additional partners were engaged in the collaboration. District planning meetings have been held to bring partners together with the Ministry of Health and other district-level stakeholders; facilities are developing plans which help them to identify their funding and supply needs and prepare budgets accordingly.

Working with PEPFAR partners in Nigeria

Background
In recognition of the importance of integrating HCWM activities into PEPFAR-funded projects, the USAID mission in Nigeria gave MMIS an additional US$218,000 in 2008 to collaborate with other PEPFAR partners in order to build their capacity in the area of injection safety and health care waste management. These additional funds covered costs related to trainings and materials development. The partners who participated in the collaboration funded the participation of their staff in trainings related to procurement of segregation supplies and capital purchases for final disposal solutions.

To initiate the collaborative effort, the USAID mission called a meeting with CDC, the Department of Defense, and the MMIS team in Nigeria to look into the current health care waste management practices at partner program sites. The outcomes of this initiative are organized around five key approaches, and are detailed below.
1. Gain participant buy-in
As an outcome of the initial funder meeting, the USAID Mission and MMIS developed a questionnaire designed to gather information from the partners on their waste management practices. This questionnaire was used to determine the level of engagement in HCWM of each partner and was the launching point for the collaborative HCWM initiative, in which the MMIS team worked with PEPFAR partner organizations to improve HCWM practices at their facilities.

2. Raise awareness
Following the initial meeting between the donor agencies and MMIS, a stakeholder meeting was held to engage the eight partner organizations selected for participating in the collaborative initiative. The representatives in attendance were the designated HCWM focal persons for their respective organizations. During the meeting, MMIS reviewed best practices for segregation, treatment, and disposal of health care waste. The HCWM section of the meeting focused on the importance of purchasing the correct commodities such as color-coded bins and bin liners, safety boxes, PPE, and incinerators. Repair and maintenance of incinerators was also discussed, as were the logistics of purchasing incinerators. A map plotting the location and status of incinerators throughout the country was displayed to provide practical information to the meeting participants on the nearest high-temperature incinerator available for transporting infectious wastes. Meeting participants gained a better understanding of the importance of injection safety and HCWM, discussed challenges related to implementation, and learned practical strategies for addressing these issues.

3. Improve knowledge and skills
HCWM knowledge and skills were promoted during the initial stakeholders meetings and reinforced at two workshops—one at the national and one at the state level, during which representatives from the collaborating partners participated in training of trainers (TOT). These partner HCWM coordinators then conducted cascade training to service delivery levels with technical support from MMIS. The TOT workshops were conducted based on the Do No Harm Training Module developed by WHO and approved by the Federal Ministry of Health and JSI. Cascade trainings were conducted using adapted training modules for health workers and waste handlers. In addition, partners were provided with information, education, and communication materials related to HCWM. In all, MMIS Nigeria conducted TOT for 299 health workers and waste handlers, who then conducted cascade trainings that have reached 4,700 health workers and 2,711 waste handlers in over 65 facilities.

4. Ensure appropriate budget and supplies
Following the TOT workshops and cascade trainings, partner organizations were provided with sample supplies of PPE, safety boxes, color-coded bins and bin liners, and safe injection commodities to guide commodities procurement. The MMIS team also provided technical assistance to the partners related to budgeting, procurement, and distribution of the appropriate quantities of injection safety equipment, supplies, and waste disposal materials. MMIS also provided technical guidance to the partners on final disposal options including providing contact details to partners for manufacturers of safe injection commodities and waste disposal units.
5. Strengthen the final disposal system

To ensure proper final disposal in facilities without final disposal solutions, MMIS Nigeria negotiated with two regional hospitals to provide high-temperature incineration for partner facilities in the surrounding areas. At the national hospital in Abuja, MMIS negotiated an agreement enabling the partners working in and around Abuja to transport their filled safety boxes and other infectious waste to the hospital’s high-temperature incinerator. The MMIS team also provided the national hospital with incinerator maintenance and repair assistance. At the general hospital, Calabar, in Cross Rivers state, the MMIS team procured burners to repair the hospital’s incinerator so that it could serve the partners in Calabar as well as other government health facilities. It was determined that the partners working in Calabar would share responsibility for the operation and maintenance of the incinerator.

Follow-Up

MMIS continues to provide technical guidance to partner organizations seeking to procure their own final disposal options, including assistance with the recent procurement of 12 incinerators. The MMIS team is also leveraging ongoing technical guidance to the Lagos State Waste Management Authority relating to the procurement of a hydroclave waste treatment system to assist partner facilities in Lagos with final waste disposal.

Challenges and lessons learned from the collaborative HCWM initiative

Challenges

Awareness: Not all PEPFAR partners recognized that the waste produced in their programs might be contributing to the HIV/AIDS disease burden.

Budgeting: Because the partners did not recognize the problem, there were no allocations within their program budgets for managing their health care waste.

Timelines: Not all partners engaged in the health care waste management initiative at the same time. This resulted in more costly individual trainings for each organization, rather than conducting one regional training for all organizations working in the area.

Premature action: Some partners immediately procured segregation supplies without waiting to receive training and the results of the facility assessments to determine the necessary types, colors, sizes, or quantities.

Capacity: Attrition of staff after the TOT contributed to incomplete dissemination of key concepts within some organizations.

Political will: Support for waste management varied across government departments and partners.
Lessons learned

**Start with a stakeholder meeting:** Conduct a stakeholder meeting to raise awareness of the problem and gain participant buy-in.

**Scale up:** Identify a subset of highly motivated stakeholders for initial collaboration. Once the collaboration has been successful, introduce additional partners.

**Ensure budget allocation:** Ensure that all organizations understand the real costs of managing infectious waste (including health worker protection), and include a budget line item for HCWM in future program budgets.

**Follow up individually:** Follow up with the head of each organization and ask that a HCWM coordinator be designated to oversee HCWM efforts.

**Demonstrate best practices:** Conduct facility assessments and present results of the assessment along with demonstration tours of model facilities to highlight comparisons. Provide model budgets and procurement strategies.

**Link organizations:** Ensure that organizations and facilities without adequate on-site disposal solutions establish relationships with partners who can provide options for transport and final disposal.

**Summary**

As antiretroviral treatment programs expand and access to essential care increases, health facilities will be burdened with increasing quantities of health care waste. International donors and programs that generate health care waste must recognize the impact of their activities on waste management systems that are already weak and allocate the necessary resources for including waste management in their program plans. The collaboration of MMIS and the PEPFAR partners in Uganda and Nigeria are practical examples of successful initiatives to engage programs producing infectious waste in dialogue and action for improved HCWM.
Appendix A

MMIS Technical Assistance Strategy to Improve Health Care Waste Management in PEPFAR Partner Facilities in Uganda

Introduction
This document was drafted as an example of the Making Medical Injections Safer (MMIS) rollout of health care waste management (HCWM) systems to President’s Emergency Plan for AIDS Relief (PEPFAR) partners in Uganda. This approach was successful in Uganda because a core capacity and technical understanding of HCWM already existed, and because the work was built upon the political and financial support from the USAID mission. The approach outlined below is just one of many possible solutions and is not necessarily appropriate for every country. It is intended to serve as a model that can be adapted for use in various countries depending on infrastructure and other available resources. In order for an approach like this to be successful, countries must have a group in support of the HCWM effort and have the technical capacity to train others on the process.

Objectives
With each PEPFAR implementing partner, MMIS will work with a selected focal person to:

- Document the current practices in partner service delivery areas, assess major risks, and come up with recommendations for priority areas that need to be addressed.
- Develop waste management plans for health units that can be funded by stakeholders. All developed plans will be consistent with the district and national plans.
- Improve the skills of service providers and waste handlers in HCWM. This will be achieved by providing training and supportive supervision to health workers related to the minimization of waste generation, proper segregation, proper handling, proper storage, and safe disposal of health care waste.
- Build capacity among the partners to supervise HCWM practices in their areas of operation.
- Develop and disseminate information, education, and communication (IEC) messages for proper segregation and final disposal of waste.
- Assist partners with allocating a sufficient amount of their commodities budget to fully cover the cost of safely handling and disposing of infectious waste.
- Develop and implement strategies for final disposal of waste.
- Provide in-service training of waste handlers and health workers in the area of HCWM.
- Support units to procure waste segregation bins by identifying reliable suppliers and providing information related to cost-effectiveness of proposed approaches.

Approach
This activity will take a three-phase approach: preparation, implementation, and scale-up. The activity will be initiated with up to eight partner organizations who have indicated interest and commitment to HCWM, with additional partner engagement during the scale-up phase.
Activities

Preparatory phase: 6 months

1. Conduct USAID partner orientation meeting.
   - To be held at a venue provided by the AIDS Control Program (ACP). In this meeting USAID will introduce the HCWM technical assistance project to all PEPFAR partners.
   - Bi-weekly planning meetings for the first three months; ongoing quarterly meeting of MMIS staff and district working groups.

2. Conduct MMIS follow-up meetings with partner chiefs of party.
   - Identify a headquarter-level focal person for HCWM from 20 partner organizations for initial HCWM planning.
   - Strengthen the national-level partners HCWM coordinating group.
   - Conduct a rapid assessment of PEPFAR project activities among the 20 partners.
     - Project a range of services provided including types of waste generated and how waste is being managed. MMIS headquarters partner feedback form will be used for this assessment.
     - Identify districts where the partners work. Identify the types of waste disposal options available, the district by-laws, and the cadre of staff available.
     - Draft district work plans. Review implementation status where plans already exist and review the creation of new plans where plans are nonexistent.
     - Identify the types and quantities of waste commonly produced.
     - Review the inventory findings with each partner.

3. Orient and train project headquarters focal persons on key issues related to HCWM.
   - Conduct HCWM training and orientation.
   - Visit one health facility with good HCWM practices and one with poor HCWM practices.
   - Review the pros and cons of sustainable and appropriate final treatment and disposal options including:
     - Incinerators
     - Health care waste pits
     - Placenta pits
     - Autoclaves/sterilizers/shredders
     - Recycling

4. Identify and train district-level HCWM focal persons.
   - Identify, orient, and train a district coordinator. The coordinator should be from the ministry of health, ministry of infrastructure, ministry of environment, or a health officer or health inspector.
• Partners should identify an appropriate HCWM working group representative for each district where they have operational activities.
• Orient and train district HCWM working group members on their role and responsibilities, including monitoring and supportive supervision.

5. Gather facility-level feedback on HCWM.
• Revise the Ministry of Health-MMIS GPS “Hoima” mapping tool (or a similar GPS mapping tool) and use it as a rapid approach for gathering feedback.
• Train partner focal persons in the use of this rapid approach.
• Partner focal person to gather feedback from all partner facilities.
• Assist partners with an analysis of findings.

6. Draft sample district and facility plans.
• Agree on phase-1 districts.
• National working group to draft sample district and facility plans.
  ▪ Include specific areas that each partner can support with their budgets; coordinate final disposal where possible; allocate budgets; agree on timelines.
  ▪ Consider procurement issues—joint procurement, minimization of waste, options that maximize environmental friendliness.
  ▪ Look at PATH planning document.¹
• Discuss options for partner contribution to support coordinated district-level plans wherever possible.

7. Gather information on the areas where health care waste handling guidelines may not be clear.

**Introductory phase: 6 months**

1. Complete district- and facility-level plans.
• Sketch out the location of facilities and discuss the potential for transport; identify the best location for a centralized final treatment and disposal system.
• Consider waste minimization, segregation, storage, transport, treatment, and final disposal.
• Identify staff responsibilities for management and implementation of each element of HCWM at the facility level.
• Document training needs and processes.
• Design behavior change communication tools (segregation charts, job aids, etc.).
• Procure necessary initial and recurrent supplies and equipment.
• Develop maintenance plans.
• Develop a budget.

• Develop a timeline.

Implementation phase: 9 months

1. Train health workers.
   • Adapt existing materials as needed to make them appropriate for the specific types of waste produced in PEPFAR partner facilities.
   • Provide in-service training.

2. Train waste handlers.
   • Use a low-literacy training guide (in Uganda, a training guide developed by the Academy for Educational Development in collaboration with JSI was used).
   • Review and adapt the training guide as needed.

3. Procurement of supplies.
   • Procure supplies based on headquarter- and district-level working group plans.
   • Consider pooled versus individual partner procurement.
   • Purchase supplies locally whenever possible.
   • Procure segregation supplies such as:
     ▪ Color-coded health care waste bins
     ▪ Color-coded bin liners
     ▪ Sufficient and appropriate safety boxes for the types and quantities of waste produced by partners
   • Procure personal protective equipment such as:
     ▪ Heavy duty gloves
     ▪ Heavy duty boots
     ▪ Gloves for injection providers
     ▪ Goggles
     ▪ Overalls and aprons
   • Procure fuel including kerosene for burning.

4. Provide routine supportive supervision and monitoring.
   • Adapt the MMIS supervisor checklist.

5. Collect data.

Scale-up phase: 21 months
Replicate the process outlined above with remaining partners.