HEALTH CARE WASTE MANAGEMENT IN IMMUNISATION PROGRAMS: GUIDANCE FOR PROPOSAL PLANNING

SYNTHESIS DOCUMENT

May 2020

INTRODUCTION

As immunisation increasingly reaches more people, health care waste (HCW) also grows. Certain types of HCW—such as sharps, in immunisation—can pose certain risks. Thus, this waste must be safely managed to prevent adverse health effects, safeguard the environment, and ensure safe, high-quality health care. It is important to recognize that immunisation activities are part of the overall health system, and health care waste management (HCWM) must be coordinated across many entities, different departments, and, often, even the private sector.

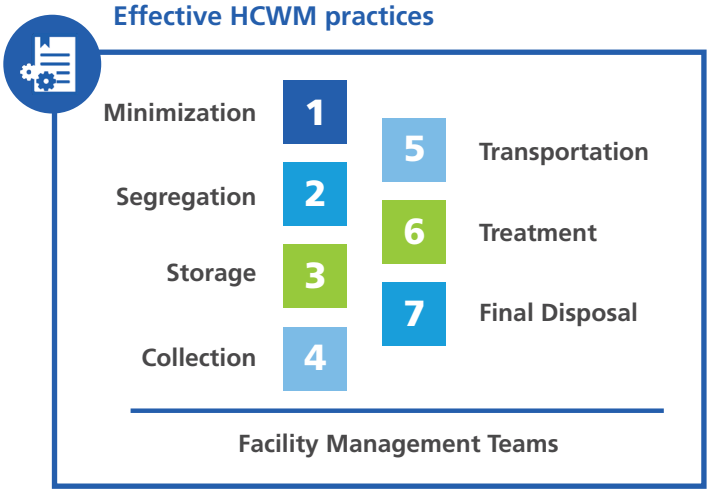
ABOUT THIS GUIDE

This synthesis document provides a high-level summary of the complete document, Health Care Waste Management in Immunisation Programs: Guidance for Proposal Planning, which was designed to help you to prepare and plan your HCWM system, and to clarify your country's HCWM status to help you develop proposals for funding and investment from an immunisation perspective. The purpose of this synthesis is to initiate the conversation and direct users who seek more details to the full document, which brings together existing guidance on assessing and planning for HCWM. Use this guide and the Assessment Tool (Annex 1) during strategic planning and review sessions, such as Joint Appraisals, annual workplan development, or when preparing for a proposal application. The goal is to ensure that waste management is considered within the overall health system by bringing together stakeholders from across all areas involved in waste management; this includes the Ministry of Health, Ministry of Environment, other government units, local authorities for waste management, partners, and the private sector.

The WHO Blue Book provides an extensive level of detail for HCWM. Also check out the HCWM Topic on TechNet-21.

HCWM POLICY & PRACTICE

Waste generated through immunisation includes non-hazardous waste (such as covers for syringes, boxes, papers, etc.) and hazardous ones (syringes including needles, vaccine vials, and cotton/wool for cleaning), which can affect the environment and pose risks to health care workers and the community. Thus, immunisation should be included within the development of HCWM policies. Clear national policies and strategies should support all effective practices of health care waste management at the operational level.



Waste generated by immunisation activities

SEGREGATION	Collected in own box	Remove the needle	*-or-*	Maintain the needle and plastic syringe and dispose of in safety boxes
STORAGE	Waste storage should be separate from general non-hazardous waste, clearly labeled in a room with sealed or tiled floors and walls to allow for easy cleaning.			
COLLECTION	Infectious and sharp waste should be collected within two to four days, depending on climate and storage conditions			
TRANSPORT	**On-site transportation:** Should be transported in a trolley which is easy to clean and has no sharp edges **Off-site transportation:** Clear documentation, vehicle used only for infectious waste, easy to clean, and fully enclosed			
TREATMENT	Autoclave *-or-* Chlorine *-or-* Boiling	**Separated** Needle: Autoclave Plastic Syringe: Microwave *-or-* Autoclave		
DISPOSAL	Recycle *-or-* Crushed & placed in a pit in a contained way	Needle: Recycle *-or-* Lined needle pit	Plastic Syringe: Recycle *-or-* Shred for landfill	**Maintained needle and syringe:** High temperature incinerator with pollution control Dispose: Ash pit *-or-* Landfill

CHALLENGES

Despite available guidance and policies, practice and adherence to the guidance can be inadequate, particularly at health facility level where the majority of waste is generated. Common barriers and challenges to practicing effective HCWM consistently come up across available literature and in practical experiences:

- Constrained financial resources
- Limited awareness or knowledge on best practices and HCW risk
- Sharps management during campaigns

- Complicated change management with new equipment, practices and technology
- Obsolete technologies, equipment or practices
- Supportive supervision lacking HCWM
- Missing links to a systemic approach across all sectors for HCWM

STRATEGIC ASSESSMENT OF YOUR HCWM SYSTEM

The HCWM system is made up of people, processes, and technologies that represent a holistic range of activities to develop best practices. Categorizing HCWM systems according to their level of maturity is important to identify successes, best practices, gaps, and opportunities across the multiple facets of HCWM. Use the maturity model in Annex 2 as a first step to engage stakeholders involved in HCWM from across the health system to identify the current effectiveness of the country's HCWM system. This preliminary examination can serve as a benchmark to gauge improvements over time and identify priority areas for investment.

The maturity model is structured as a series of levels of effectiveness across six key areas:

 **PEOPLE**	1. **Awareness, training and supportive supervision:** Looks at the availability of training for health care workers and waste handlers on HCWM, both pre-service and in-service and the level of integrated supervision that incorporates HCWM; and tracks comprehension of best practices in HCWM. 2. **Adherence and compliance:** Assesses the level of adherence to best HCWM practices across the entire process, from point of generation to point of disposal. Monitoring and evaluation frameworks, and key performance indicators in place and supported through supervision.
 **PROCESSES**	3. **National policy/strategic plans:** Includes national policies and strategic plans for HCWM (including any immunisation specific policies or guidance), laws and regulations related to HCWM and environmental impacts and policies on environmental sanitation and hygiene, as examples. 4. **Budget and planning:** Reflects the country having developed an appropriate budget that is fully funded and supports realistic needs. Budgets should be linked to resources and tools needed across all steps of HCWM, such as color-coded bags at the facility level, transport for waste, treatment and disposal sites, and maintenance for HCWM equipment. 5. **Practical guidance:** Looks at the hands-on tools such as standard operating procedures (SOPs), communication guidance, and job aids for health care workers and waste handlers directly involved in generating and managing waste.
 **TECHNOLOGY**	6. **Technology and equipment availability and use:** Beyond treatment and disposal equipment, this area includes all of the tools and supplies needed for HCWM, beginning with color-coded collection technology at point of generation of waste, resources for occupational health and safety, through the entire management process until disposal. This should also include maintenance for equipment to ensure functionality and overall sustainability.

To use the maturity model, engage key stakeholders in HCWM to identify the level (1–5) that best represents the country's current state of policy and practice for HCWM across those six areas, based on their own knowledge and expertise in the field and any recent assessments completed. This is not a definitive process, but an iterative one: only the beginning of the conversation and the prerequisite first steps to implementing sustainable HCWM. You will be using both tools provided here: the Assessment Tool and scoring sheet for the maturity model (Annex 1) and the HCWM maturity model (Annex 2).

GAPS AND OPPORTUNITIES

Now that you have identified where your HCWM system falls on the maturity model, use existing tools to identify the high-level gaps and opportunities in your system; and also review innovations that may spark potential use in your country. Tools are available for HCWM planning, budgeting, implementing assessments, and case studies from countries successfully using innovations for treatment, disposal and recycling of HCW, and innovative private-sector engagement approaches. Regardless of your country's level on the maturity model, changes and improvements to the HCWM system must be made within the financial and technical system of your country's context. Improvements can include small, incremental improvements, longer-term planning for more significant capital investments, or private-sector engagement in order to obtain optimal options. Some options may require certain conditions to be met over a longer period of time.

THESE TOOLS CAN HELP YOU IMPLEMENT AN OPERATIONAL LEVEL ASSESSMENT AND DEVELOP AN OPERATIONAL PLAN

WHO HCWM RAPID ASSESSMENT TOOL (RAT)

This rapid assessment tool is a part of an overall strategy developed by WHO and aimed at reducing the disease burden caused by poor healthcare waste management (HCWM) through the promotion of best practices and the development of safety standards. https://www.who.int/water_sanitation_health/facilities/waste/hcwmtool/en

UNDP INDIVIDUALIZED RAPID ASSESSMENT TOOL (I-RAT)

Adapted from WHO's RAT, which evaluates the HCWM situation on a national level, the UNDP GEF Project's I-RAT is intended for use at the individual healthcare facility level. http://www.undp.org.lb/announcement/Application_form.xls

GLOBAL FUND NATIONAL CAPACITY PLANNING TOOL

Use this tool to assist in creating awareness of best practices and identifying gaps for national waste management capacity. It is for completion by politicians, committees, and organizations for making decisions on how healthcare waste management can be developed and best practices implemented for their location. www.theglobalfund.org

UNICEF PLATFORM TO JOINTLY DESIGN AND IMPLEMENT A SOUND IMMUNIZATION WASTE MANAGEMENT SYSTEM

This tool assists decision makers to cluster facilities around treatment and disposal equipment and sites, estimate technology and budgetary needs based on waste generated, and identify sites for equipment location for HCWM of the immunization program. www.UNICEF.org

DESIGNING AND IMPLEMENTING THE HCWM SYSTEM

Use the Assessment Tool in Annex 1 to apply information from this guide in mapping out needs and priorities to ensure thorough planning for HCWM. See the full Guidance for Proposal Planning document for further details, examples of best and innovative practices, and promising technologies for improved HCWM. This guide further details key aspects of sustainable HCWM planning to help countries identify where to invest resources to improve the overall HCWM system when preparing for a proposal:

KEY ASPECTS IN PLANNING SUSTAINABLE HEALTH CARE WASTE MANAGEMENT INTERVENTIONS

- **Conduct a high level strategic assessment** using the HCWM maturity model to identify key gaps and challenges in the current HCWM system, considering the people, processes and technology involved in HCWM. Use the Assessment Tool in Annex 1 and the maturity model in Annex 2.
- **In any proposal for financial support**, plan for immediate actions to address many of the common barriers, for example: implement an operational level assessment (if not recently completed); reinforce health care worker knowledge and behavior through integrated training and supervision; conduct an inventory of existing treatment equipment and technologies and their utilization; upgrade and expand waste treatment technologies where necessary.
- **Identify and engage key stakeholders** from different ministries, government entities, and private sector for WM system planning.
- **Consider the preferred technology** and equipment for WM based on the key principles in sustainable WM to fill the gaps in the current system.
- **As a step in implementing WM activities**, identify opportunities for other forms of investment and collaboration across sectors.

CONCLUSION

HCWM is a system that must be planned and coordinated across multiple stakeholders and programs. Immunisation leaders must coordinate closely with the government entities responsible for waste management to best link resources and technologies and ensure implementation of best practices for managing health care waste. This synthesis was designed as the start of the process to help you prepare and plan your HCWM system. The full guide provides additional details, tools and innovative ideas. Your system should be based on real needs and a vision of the future for growth, innovations and opportunities for improvements across all areas of the system.

ANNEXES

1. ASSESSMENT TOOL FOR HCWM
2. MATURITY MODEL

ANNEX 1
ASSESSMENT TOOL FOR HCWM

Use this planning tool with key HCWM stakeholders to apply information from this guide to map out needs and priorities for your next proposal or application if requesting support for HCWM. Use a separate sheet if more space is needed.

1. What is your ranking on the maturity model?

	AREA	LEVEL RANKING (Level 1–5, lowest to highest)
PEOPLE	Awareness, training and supportive supervision	
	Adherence and compliance	
PROCESSES	National policy/ strategic plans	
	Budget and Planning	
	Practical guidance	
TECHNOLOGY	Technology and equipment availability and use	
	TOTAL	
	Divide by 6 (number of areas)	/6
	OVERALL SCORE	

2. When was the last HCWM operational assessment completed? _____ (year)
   Note: If more than 5 years ago, consider including this as an activity in your Gavi proposal.

3. How much waste by category of risk and type of material is generated in your country segregated by region? *Note: to the extent possible, this should reflect the entire HCWM system, not only immunisation. If this information is not currently available in reports or recent assessments, some estimate guidelines are included below. Consider including an operational assessment, waste auditing and/or composition study in your proposal.*

TYPE OF WASTE	QUANTITY/KG PER MONTH	GEOGRAPHIC REGION
Infectious waste		
Sharps		
Chemical radioactive (highly infectious)		
General waste (non-hazardous)		

High level calculation guidance for estimating waste quantity:

- Incinerator: capacity is typically 50–200 kg/cycle, assuming 6-8 cycles per day if functioning well.
- WHO health care waste estimates for African countries (assumption that volumes will be higher in more urban, more developed settings; assumption that 10% of this waste is infectious, 5% is highly infectious):
  - Primary health clinic: 0.1 kg/patient per day
  - Small district hospital: 1.0 kg/bed per day
  - General hospital: 2.0 kg/bed per day
  - Major hospital: 5 kg/bed per day
- Sharps for immunisation: a typical safety box used in health facilities is 5 litres which is estimated to hold 80–100 syringes, weighing 1.2–1.4 kg. Transport and disposal of safety boxes should be budgeted for within the overall WM system.

4. What is the current inventory of treatment and disposal equipment across the health care system and health programs, including for the immunisation program? *Note: add more lines as necessary.*

TYPE (AUTOCLAVE, INCINERATOR, SHREDDER, ETC.)	QUANTITY	GENERAL GEOGRAPHIC PLACEMENT

4.1. At a high level, where are the geographic gaps in accessibility to these technologies and equipment across the health sector? Where does the volume of waste (from question 3) not match the expected capacity of the treatment and disposal equipment?

5. What private sector companies are involved in waste management in your country? Are there opportunities to further develop this public-private partnership?

6. What is currently included in your annual domestic resources and budget for HCWM?

7. What other sources of financial support for HCWM are available in the country? *Note: in your proposal document additional resources, donors, projects, private sector engagement and the collaboration among all stakeholders to ensure complementary efforts and reduce duplication.*

8. Looking at your score from the maturity model and your answers to the previous questions, what are the immediate opportunities in each of the three system areas. *Note: Think broader than just buying equipment and explore innovations and promising practices that may be appropriate for your country. For example, if you scored low on the "Policy and Strategic Plans" area of the maturity model, consider revising policies as part of your proposal. Or if health care worker knowledge and adherence to best practices is low, consider integrating HCWM training into on-the-job training and supervision.*

PEOPLE	PROCESSES	TECHNOLOGY

These should be included in your Gavi application (if external funding is needed) or in your annual workplan (for example, for updating policies or clarifying guidance).

9. What are longer-term opportunities that may require more strategic planning, systems building, and/or private sector engagement?

PEOPLE	PROCESSES	TECHNOLOGY

ANNEX 2 MATURITY MODEL

	AREA	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
PEOPLE	**Awareness, training and supportive supervision**	Low level of awareness of risk associated with HCW (less than 40%)	Moderate awareness of risk associated with HCW; curriculum developed but not fully rolled out (implemented in 41%–50% of facilities)	A significant proportion of health workers and waste handlers (51%–75%) are trained on the risks associated with HCW and clear guidance on HCWM is available at most facilities	High level of awareness of HCW risk. 76%–85% health care workers and waste handlers have undergone training and have access to on-going training	More than 85% of health workers and waste handlers are trained and are aware of risks associated with HCW and demonstrate BEP. HCWM is included in supportive supervision activities
	Adherence and compliance	Little insight into adherence of best practices for HCWM	Have insight and best practice of HCWM available (SOPs and job aids) but not practiced (less than 50% of facilities adhere and comply)	Best practices of HCWM being adhered to in at least half of the facilities; minimal M&E in place	Significant compliance to the best HCWM practices. M&E framework in place with some tracking of adherence	Country fully adheres to the best practices; M&E framework tracks adherence to policies and guidance
PROCESSES	**National policy/ strategic plans**	Policy is needed or currently being developed. No recent HCWM assessment carried out (within the last 5 years)	Policy developed and/or reviewed within the last 5 years. HCWM assessment carried out within the last 5 years	Policies and guidelines are disseminated and partially adopted	Country can show that the policies and guidelines are fully implemented at all levels of the system	Policies widely adopted across the country. Evidence that WM performance gaps are addressed in strategic planning and financing mechanisms at national and sub-national levels.
	Budget and planning	HCWM is not planned and budgeted	Budgeted but not directly linked to realistic needs or assessment findings	At least half of facilities develop a HCWM budget and implement specific plans	Budgets are available, funded and tracked at 75% of system levels	HCWM is 100% budgeted at national and sub-national levels
	Practical guidance	Need, or currently being developed	Guidance developed but not fully in use (used in less than 50% of the facilities)	Guidance is developed and in use in 50%–65% of the facilities within the country	Guidance is available and being implemented at most (65%–85%) system levels	Guidance is available and in use at more than 85% of facilities within the country
TECHNOLOGY	**Technology and equipment availability and use**	Not aware of BAT and BEP. Out-of-date, inefficient, non-environmentally friendly options for treatment and disposal	Awareness of the recommended BAT and BEP options but still using out-of-date equipment and technology	Some BAT equipment available at 50% of facilities (or 50% accessing services) and/or at least 50% of the waste being generated is treated and disposed using globally accepted technologies	Globally accepted equipment is widely (more than 51%) available; most facilities are clustered and mapped to an acceptable treatment technology	Only efficient and BAT used to manage HCW. Environmental monitoring of waste treatment and disposal done in compliance with national and/or global standards

This guidance for preparing a HCWM proposal was developed through consultation with GAVI, UNICEF, WHO, Global Fund, JSI and UNDP