COVID-19 Vaccine | Job aide

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Management and safe disposal of COVID-19 vaccination waste at health facility level

The large scale of COVID-19 vaccination activities generates vast quantities of waste consisting of vaccine vials, sharps waste and other ancillary waste. This poses a challenge for countries with limited resources and capacity to safely manage and process for final disposal in a manner safe for population and the environment. In general, disposal of COVID-19-related waste should follow the practice used for other health care and vaccination-related wastes, in accordance with national policies, guidance and standards[1].

The aim of this job aide is to provide an overview of safe and effective waste management and disposal practices following COVID-19 vaccination activities at the health facility level.

Key points:

- Effective COVID-19 vaccination waste management includes timely and proper packing, marking, storage, and treatment/disposal of COVID-19 vaccine vials, sharps, and non-sharps waste.
- Used and unused COVID-19 vaccine vials (expired or spoiled) are not infectious waste and do not require special treatment.
- Health workers are responsible for the proper collection and management of all COVID19 vaccination waste from the time of vaccination to the time of collection for treatment/disposal. Leaving vaccination waste unprotected, improperly packed or marked in the vaccination, storage or disposal areas of the health facility is a health hazard and is unacceptable.
- The management of COVID-19 vaccination waste should follow the same procedures as disposal of waste after use of other non-live vaccines in the national immunization programme, in accordance with national regulations and policies, and relevant WHO guidelines.

[1] In some very low-resource settings, the local/national guidance may be lacking or it may be difficult to meet national standards and/or international conventions. In such cases, every effort should be made to select the interim solutions which would, as much as possible, reduce risks to human and environmental health and incrementally improve them to meet the standards and policies/regulations.

Procedures in management of COVID-19 vaccination waste

At vaccination sites:

- Ensure adequate types and quantity of containers for waste segregation and collection:
  - dedicated safety boxes for sharps;
  - leakproof boxes or bags for vials;
  - leakproof (yellow) bags and containers for waste such as used swabs and PPE, if used in adherence to national guidance and protocols for IPC measures;
  - leakproof (black) bags and container for non-hazardous general waste such as packaging material, vial caps etc.
- Deposit all used syringes and needles (used for injection and if applicable, for dilution) in a dedicated safety box immediately after use to avoid needlestick injuries. Ensure the safety box is positioned within the reach of the vaccinator.
- Deposit unused vaccine (e.g. expired or spoiled) in unopened single-dose pre-filled syringes in a safety box. Count and record these unused pre-filled syringes prior to disposal to allow for calculation of closed vial wastage rate.[2]
- Collect and dispose of vaccine vials separately from sharps and other waste.
  - Separately count and record the (1) empty vaccine vials, (2) discarded vials with residual vaccine/unused doses, and (3) closed vaccine vials that are spoiled due to expiry or exposure to inappropriate temperatures, to allow for monitoring of utilization, open vial wastage and close vial wastage rates respectively.
  - Place the vials in a labeled, sealed, and leak-proof waste bag/container and store in locked/secured storage or transport them to a final disposal facility.[3]
- Dispose of packaging materials and other non-hazardous waste in a separate bin lined with a leakproof black bag. Use a separate bin for recyclables if a recycling system is available.
- Deposit used personal protective equipment (PPE), cotton swabs, or other waste, in a separate bin lined with leakproof yellow bag, not bigger than 15 litres (to fit in the main chamber of field incinerators).
- Do not overfill waste bags and containers, including safety boxes. All waste containers should be filled to ¾ (three quarters) of their capacity to avoid spillage. They should be labeled (e.g. “Do not use”, “for disposal”, etc.) and kept sealed or covered to prevent casual access by people or animals.
- Always carry containers (especially sharps containers) and bags by their handle and do not support them with the free hand underneath to prevent injury.
- Do not throw or drop waste bags and containers to avoid puncture, leakage or other damage.
- Collected waste bags/containers should be appropriately kept in a secured/ locked storage space while waiting for transport to intermediate storage or to a final disposal facility.
- Ensure all wastes are securely collected daily or on schedule following national standards and that there is no waste remaining at the vaccination site/health facility.[3]

[2] Make sure to understand and follow the local guidance and standard operating procedures (SOP) in place at the health facility level for recording and reporting of vaccine waste (e.g. recording wastage by reason), either as an open vial or closed vial, including pre-filled syringes.

[3] WHO recommends regular and daily removal of health-care waste from the point of generation to improve general standards of cleanliness and hygiene in health care/medical areas. However, if national policies or guidance exist, these standards should be followed.

- Remember to always wash your hands with soap and running water when handling waste.

At temporary waste storage:

- Store general non-hazardous waste separately from hazardous and sharps waste.
- Store segregated waste in designated and restricted utility area (i.e. secured/locked rooms) within or close to the health facility until it is collected for final disposal.[4] If a locked room is not available, large containers with lids may be used, which should be kept separated/fenced off from the public and off limits to any unauthorized personnel.
- Vials and packaging should be disposed of via secure routes, including recycling facility, to prevent them from being accessible to counterfeiters.
- Maintain the integrity of the waste bags/containers, especially those containing hazardous materials and sharps, and prevent human and environmental damage by ensuring the temporary storage facility is:
    - protected from exposure to sun and water, including rain and flood
    - protected from rodents, insects, birds, or other animals
    - located away from food and water sources
    - inaccessible to any unauthorized personnel.
- Keep the temporary storage area clean, with no waste spillage from the bins, boxes, containers, or bags.
- Ensure regular collection and transportation of the stored wastes to a final disposal facility; ideally weekly or more frequently depending on the volume of wastes, to prevent accumulation of waste.
- Ensure that staff involved in waste-handling operations are equipped with and wear appropriate protective equipment (e.g. gloves, coverall or apron, sturdy and closed shoes).

Transport of COVID-19 vaccination waste for final treatment and final disposal:

- On-site disposal of vaccination waste should be avoided; appropriate transport to the designated disposal facility should be ensured.
- If centralized treatment of waste is available, safe transport to the designated treatment / disposal facility should be ensured.
    - Ensure that the vehicle is of a suitable size and design to hold the load secured during transport.
    - Ensure vehicles have proper protection from bad weather conditions or access by unauthorized individuals.
- If the temporary waste storage is inside or close to the health care facility, ensure that the transport of collected waste takes place during less busy times whenever possible.
- Ensure that the staff involved in transport of waste wear appropriate protective equipment (e.g. gloves, coverall or apron, sturdy and closed shoes).
- Comply with national regulation and guidance for transport documentation and requirements for labelling the vehicle transporting waste, if any.

[4] WHO suggests timely removal of waste from temporary storage areas so they would not overfill or remain for excessive amount of time, recognizing that there may be constraints to organize quick collection of health-care waste (for reasons such as availability of transport or remote location of final waste-disposal units). If national policies and guidance exist, these standards should be followed.

Final disposal of COVID-19 vaccination waste:

The methods for final disposal of sharps, vials, and PPE should be safe, respect the environment and be in compliance with national laws, regulations and codes on health and safety, as well as with international conventions. Generally, selected methods should minimize the formation and release of chemicals or hazardous emissions.

- Sharps and hazardous waste should preferably be treated using the following options:
  - Non-incineration technology like autoclave or treated by dual chamber incineration with flue gas treatment.
  - Dual or single chamber incineration without flue gas treatment can be used as an interim solution.
  - Burning in a pit and burying can be used as a last resort option in low-resource settings.
- Non-infectious, or treated waste, including cut syringes, can be recycled if a safe and effective recycling system is in place and in accordance with national policies and guidance.
- The COVID-19 vaccine vials (with or without vaccine content) should be treated as non-hazardous pharmaceuticals, according to national regulations. Crushing, sterilization and/or disinfection of vials is not necessary before encapsulation (i.e. filling containers with waste, adding immobilizing material such as cement, sealing the containers, and placing into a landfill site) or disposing inside the dedicated pit, compliant with national standards. The disposal at a designated area on a secured landfill without prior encapsulation is an option, when it can be assured that vials cannot be taken by waste pickers and illicitly resold. Recycling of materials is acceptable, via a secure route that will prevent illicit reuse.
- Other general waste (such as PPE, packaging, etc.) can be disposed at the designated landfill site or incinerated with air pollution controls in compliance with national regulation.
- If in accordance with national regulations, contracting a specialized service provider to safely handle the final disposal of vaccination waste is an option.

Additional information:

1. WHO. Geneva. 2019. Overview of technologies for the treatment of infectious and sharp waste from health care facilities. (https://www.who.int/publications/i/item/9789241516228)
2. WHO. Geneva 1999. Management of wastes from immunisation campaign activities: Practical guidelines for planners and managers. (https://apps.who.int/iris/bitstream/handle/10665/204415/WHO_SDE_WSH_04.11_eng.pdf)
3. WHO. Geneva. 2014. Safe management of wastes from health-care activities, 2nd ed. (http://apps.who.int/iris/bitstream/handle/10665/85349/9789241548564_eng.pdf)
4. COVAX Facility. 2021. COVID-19 vaccination: supply and logistics guidance. (https://apps.who.int/iris/bitstream/handle/10665/339561/WHO-2019-nCoV-vaccine_deployment-logistics-2021.1-eng.pdf)
5. WHO. Geneva. 1999. Guidelines for safe disposal of unwanted pharmaceuticals in and after emergencies. Guidelines for safe disposal of unwanted pharmaceuticals in and after emergencies (who.int)
6. Eberle, Jim, Linda Allain, and Paula Nersesian. 2009. Logistics of Health Care Waste Management: Information and Approaches for Developing Country Settings. Arlington. VA: USAID/Deliver Project, Task Order 1. (https://publications.jsi.com/JSIInternet/Inc/Common/_download_pub.cfm?id=11116&lid=3)
7. Ruth Stringer. 2021. Health Care Waste Management Towards the Circular Economy. Nepal. IGES Centre Collaborating with UNEP on Environmental Technologies (CCET), Institute for Global Environmental Strategies. (Health Care Waste Management towards the Circular Economy (iges.or.jp))