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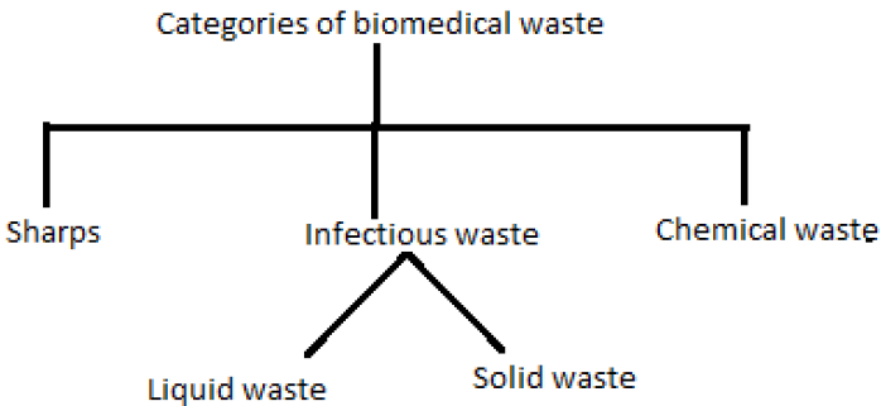
1. PURPOSE

To describe the procedure of decontamination and disposal of the clinical specimens and the other infectious consumables that are generated in the covid-19 lab.

2. INTRODUCTION

Biomedical waste (BMW) is represented by solids, liquids, sharps and laboratory waste, which are generated as the result of healthcare activities for human beings. Waste can be categorized into the following categories:



Infectious waste is material suspected to contain pathogens (bacteria, viruses, parasites or fungi) in sufficient concentration or quantity to cause disease in susceptible hosts. This category includes liquid waste, contaminated with blood or other body fluids, cultures and stocks of infectious agents from laboratory work, solid waste materials like plastic consumable including vials, tubes, pipette tips, PCR plates, processed specimen or other body fluids which is Infectious because it contains bacteria, viruses, parasites or fungi.

3. PERSONNEL QUALIFICATIONS

3.1 Medical fitness

All personnel involved in sample receiving should be tested for COVID-19 beforehand.

3.2 Education and training

Education and training must be given on the following topics:

- Potential risks to health (symptoms of COVID-19 disease and transmission)
- Hygiene requirements
- Donning and doffing of PPE
- Laboratory biosafety, specifically handling of potentially infectious materials
- Workflow in the laboratory
- Waste handling
- Importance of laboratory results for patient management

3.3 Responsibilities

It is the responsibility of the laboratory personnel to correctly understand and perform this procedure. All users of this procedure who do not understand it or are unable to carry it out as described are responsible for seeking advice from their supervisor.

4. EQUIPMENT & MATERIALS

PPE to be used
Separate colour coded bins/ bags/ container/ trolleys
Autoclave
Biological and Chemical Indicators
Stationaries
Logbooks
Disinfectants
Ethanol/Isopropyl alcohol
Sodium Hypochlorite stock solution

5. PROCEDURE

PPE to be used: Lab coat, N95 mask, gloves and goggles
Detailed Instructions:
Ensure the availability of the PPE in place and the required materials are all present
The Laboratory personnel has to be supervising the activity of the housekeeping staff during
` the complete protocol

5.1 Biomedical Waste Segregation

- Keep separate color-coded bins/bags/containers in wards and maintain proper segregation of waste as per BMWM (Biomedical Waste Management) Rules, 2016 as amended and CPCB (Central Pollution Control Board) guidelines for implementation of BMW Management Rules.
- Following color coded bags should be used for disposal of different categories of biomedical waste generated:

Table : BMC Containers and their Specifications

Liners	Type of liner/container	Type of waste	Treatment disposal options	Applicable/Not Applicable
YELLOW	Autoclave safe plastic bags/ containers	• Disposable gown, mask	Discard COVID samples in 5% hypochlorite solution and double cover, followed by autoclaving at site (ICMR guidelines).	Applicable
RED	Red coloured non chlorinated plastic bags or containers	Contaminated wastes: • VTM Swabs and media • body fluids, tissue samples, swabs, stool samples in screw cap containers • vacutainers • Tips • Tip box • Microfuge tubes • ELISA plates • Vials • Disposable forceps • Gloves • Shoe covers	Discard in 5% Hypochlorite and autoclave at site. Discard in double bag, Pre-treat by autoclaving at site. Given for autoclaving to registered or authorized recyclers	Applicable

		• 15ml/50 ml falcons		
WHITE	Puncture proof, tamper proof, leak proof containers.	Waste sharps including metals: • Syringes with needles • Scalpel • Blades • Any contaminated sharp objects.	Autoclaving/dry heat sterilization followed by shredding/mutilation/encapsulation. Given to registered or authorized recyclers	Not applicable
BLUE	Waterproof cardboard box with blue coloured marking	Glassware waste: Broken or discarded and contaminated glass including medicine vials and ampoules.	Given to registered or authorized recyclers	Applicable

- Report opening or operation of COVID-19 lab to SPCBs (State Pollution Control Board) and respective CBWTF (Common Bio Medical Waste Treatment Facility) located in the area.
- As precaution double layered bags (using 2 bags) should be used for collection of waste from COVID-19 isolation wards so as to ensure adequate strength and no-leaks.
- It is mandatory for bags/containers used for collecting biomedical waste from COVID-19 labs should be labelled as “COVID-19 Waste”.
- Use a dedicated collection bin and trolleys labelled as “COVID-19” to store COVID19 waste and keep separately in temporary storage room prior to handing over to authorized staff and followed by to the Biomedical waste handling agency.
- The (inner and outer) surface of containers/bins/trolleys used for storage of COVID19 waste should be disinfected with 1% sodium hypochlorite solution daily.
- Collect used PPEs such as goggles, face-shield, splash proof apron, Plastic Coverall, Hazmet suit, nitrile gloves into RED bag.
- Collect used masks (including triple layer mask, N95 mask, etc.), head cover/cap, shoe-cover, disposable linen Gown, non-plastic or semi-plastic coverall in YELLOW bags.
- Pre-treat viral transport media, plastic vials, vacutainers, eppendorf tubes, plastic cryovials, pipette tips with 1% hypo solution and drain away the liquid into the sink connected to the effluent system and then dispose in RED bags.
- PPEs used and other contaminated waste generated from lab waste handlers and they have to be stored separately in YELLOW bag shall be Pre-treated with Autoclaving / Microwaving before transfer to temporary storage area and then hand over to Common treatment Facility in YELLOW Colored bags with specific marking as “COVID-19 Waste”. (Biomedical Waste Agency signed in with the MOU)

5.2 Autoclaving Procedure

The autoclave should be dedicated for the purposes of disinfecting and treating bio-medical waste.

5.2.1 When operating gravity flow autoclave:

- Use a temperature of not less than 121° C and pressure of 15 pounds per square inch (psi) for an autoclave residence time of not less than 60 minutes
- Use a temperature of not less than 135° C and a pressure of 31 psi for an autoclave residence time of not less than 45 minutes
- Use a temperature of not less than 149° C and a pressure of 52 psi for an autoclave residence time of not less than 30 minutes

5.2.2 When operating a vacuum autoclave:

- Biohazard waste shall be subjected to a minimum of three pre-vacuum pulse to purge the autoclave of all air
- The air removed during the pre-vacuum, cycle should be decontaminated by means of HEPA and activated carbon filtration, steam treatment, or any other method to prevent release of pathogen

5.2.3 When operating a vacuum autoclave, the waste shall be subjected to the following:

- A temperature of not less than 121°C and pressure of 15 psi per an autoclave residence time of not less than 45 minutes
- A temperature of not less than 135°C and a pressure of 31 psi for an autoclave residence time of not less than 30 minutes

5.3 Quality control for autoclave

5.3.1 Routine Test:

- A chemical indicator strip or tape that changes color when a certain temperature is reached
- Use more than one strip over the waste package at different locations to ensure that the inner content of the package has been adequately autoclaved
- Records for this test needs to be maintained

5.3.2 Spore testing:

- Biological indicators in the form of vials or spore Strips; with at least 1X106 spores should be used at least once in every week to validate the autoclaving efficiency of decontamination process
- Records should be maintained

5.4 Validation test for Autoclave

Procedure

- Four biological indicator strips to be used, one shall be used as a control and left at room temperature, and 3 shalll be placed in the approximate center of 3 containers with the waste.
- At least 1 of the containers with a biological indicator should be placed in the most difficult location, generally the bottom centre of the waste pile.
- This test has to be performed 3 consecutive times to define minimum operating conditions. After determining the minimum temperature, pressure and residence time, the operator/occupier shall conduct this test once in 3 months and records in this regard shall be maintained

6. REFERENCES:

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SOP CHANGE HISTORY:

New Version # (Date)	New Version # (Date)	No of Changes	Description of Changes	Source of Change Request