Health-Care Waste Management in COVID-19 context: Best and Sustainable Practices

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SW Rules 2016 & BMWM Rules 2016, 2018, 2019
Guidelines for management of waste generated during diagnostics and treatment of COVID-19 suspected/confirmed patients, are required to be followed by stakeholders in addition to existing practices under BMW Management Rules, 2016.
Labelling and double bag

- Collect and store BMW: Foot operated bin with lid labelled as “COVID-19” : CWS: CBWTFs to expedite disposal upon receipt
- Separate colour coded bins/bags/container/trolleys maintain proper segregation of waste as per Rules
- Inner and outer surface of containers/bins/trolleys – disinfect 1% sodium hypochlorite
- General waste not having contamination: solid waste as per SWM Rules, 2016
Isolation ward – nursing station, patient area
Pretreatment HCF – lab waste, samples, blood bags – sterilization log6

- Waste autoclave HEPA vs Vertical vs Microwave Std
- **Specifications** graphic or computer recording devices:
- **Safety standards** of ISI/BIS/ISO/EN installation of in NABL/NABH
- **Validation test** – records
  - Chemical control
    - Browne's tubes
    - Bowie Dick test: each batch, >1sr
  - Microbiological control – spore test
    - *B. stearothermophilus* 1w (autoclave 1x10⁶)
    - *B. atropheus* 1x10⁴ (Microwave)
  - Physical control – temp & pressure record
- **Pre-treat viral transport media, plastic vials, vacutainers, Eppendorf tubes, plastic cryovials, pipette tips, as per BMWM Rules, 2016: red bags**
- **Pretreat Catridges of genexpert, chips&microtubes of Truenat then Red**
Vertical position favors the output of air and the pathway of water-vapor

Horizontal position makes it difficult for the air to move out and the water-vapor to go through
Management of wastewater from HCFs

- CDC – risk of transmission COVID-19 thru sewage is low; operators treatment of STPs: no evidence: WHO WASH 2020
- Agencies: HCFs/isolation wards/operators of terminal STP (PHED/Jal Board/etc.)
- Agencies to ensure disinfection of treated wastewater as per prevailing practices to inactivate coronaviruses
- Operators of ETPs/STPs – standard operational practices, practice basic hygiene precautions, and wear PPEs (goggles, face mask, liquid repellent coveralls, waterproof gloves and rubber boots)
BMWM in COVID-19 context: Challenges

- Training – Social distancing, MS Team, small batches, All
- Social distancing
- Collection of waste
- Barcoding
- Hand hygiene, Resp. etiquette
- ALL: GENERAL Population USING PPE: PPE in SW
- Health checkup/screening
- Immunization
- ETP/STP Plants
- CPCB Mobile App for COVID waste
HCWM: International GUIDANCE: WHO WASH, UNDP

Cleaning and disinfection of environmental surfaces in the context of COVID-19
Interim guidance
15 May 2020

World Health Organization

Background
Coronavirus disease 2019 (COVID-19) is a respiratory infection caused by SARS-CoV-2 (COVID-19 virus). The COVID-19 virus is transmitted mainly through physical contact and respiratory droplets, while aerosol transmission is possible during aerosol generating medical procedures. At time of publication, transmission of the COVID-19 virus had been reported in buildings, health-care facilities, community centers, market transportation, and business settings. Although the precise role of limited transmission and capacity for disinfectant practice outside of health-care environments is currently unknown, infection prevention and control principles continue to mitigate the spread of pathogens in health-care facilities.

MODULE 17:
Management of Specific Infectious Wastes
Waste Management in COVID 19 Context

• Follow the national regulations / WHO WASH guidance on infectious waste treatment
  • Treat coronavirus waste as any infectious waste
  • Segregate waste at source
  • Dispose in an infectious waste in foot operated bin, with a suitably color coded liner
  • Proper handling collection, transport and storage
  • Use PPE (mask, face shield, heavy duty gloves, long sleeve gown, boots) hand hygiene
  • Use safe and environmentally sound treatment methods
  • Centralized treatment facility using autoclave, microwaves
  • Hybrid stream systems, microwaves, ecofriendly treatment methods
  • On-site Chemicals disinfection low resource settings bleach, pressure cooker a highest setting (30 m), encapsulation and sanitary burial
• Cut masks and other PPE: reports that they are being illicitly resold
• Follow routine disinfection and cleaning protocols for waste bins.
Disposal of waste in community environment

- International guidance: waste generated in community: general waste
- CDC: virus can last up to 3 d on hard surfaces- plastic, less on porous
- There is no need to treat these materials with disinfectant first.
- People: wear cloth masks in public, but gloves are not necessary
- PHE: untreated waste be left for 72 h: MSW
Treatment options

• Susceptible to soap and most normal disinfectants. WHO recommends: Log3 reduction
  • 70-90%ethylalcohol: disinfect reusable dedicated equipmt:thermometer:WHO WASH
  • Sodium hypochlorite at 0.1% for disinfection of general env disinfectn touch surfaces
  • Hydrogen Peroxide >=0.5%

• Steam based treatment: autoclaving or microwaving preferred for treatment of waste
• Sustainable changes with long term changes in system strengthening: Norms
• Strengthen tracking, avoid more incineration
• After disinfection, waste can be sent for disposal
• Recycling should continue as normal
As 1% Bleach or 70°C inactivates COVID-19 (SARS CoV-2) in 5 minutes: OPTIONS

- Treatment technologies
  - Autoclaves that typically operate between 121°C to 135°C for 30 min.
  - Microwave units that’s typically operate between 97°C to 100°C for 30 min
  - Alkaline hydrolysis operating with hydroxide at around 150°C
  - Dry Heat Treatment system that reach 177°C
  - Hydroclaves and hybrid stream system operating between 121°C to 132°C

- STAATT criteria 4 Log kill of Geobacillus stearo thermophilus
Key Messages

- HCWM: duty of all stakeholders
- HCWM with social distancing, hand hygiene, PPE, respiratory etiquette
- Follow National Rules and International Guidance CDC/WHO
- General Population using PPE: MSW bins
- Decreasing Incineration Category waste
- Follow BAT, BAP, Sustainable, Ecofriendly Technology
- PPE: ALL sanitation workers in COVID ward, Labs, ICU
- HCWM essential health service
- Public health concern