Health care waste management: Coronavirus update

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As the coronavirus outbreak expands globally, there is increasing concern about how to deal with waste arising from potentially infectious patients, the staff caring for them and medical laboratories. In addition, organizations like supermarkets may have used protective equipment and people who remain at home with mild illness will be generating potentially infectious waste.

Infectious waste around the world

Almost every country has a slightly different way of coding, classifying, and even treating potentially infectious materials.
Some of the names include: bio-medical waste, regulated medical waste and clinical waste.
Color coding is usually but not always red or yellow. Some countries insist that particular types of waste are incinerated, others do not. Every country should follow their national guidelines; those that do not have them should follow World Health Organization guidelines[1].

WHO advises that any system exercising best practice for infectious waste will also be able to manage waste potentially infected with SARS-CoV-2 (the official name for this particular coronavirus which causes the disease known as COVID-19)[2]. Segregation systems should remain the same. There is no need to treat coronavirus waste with disinfectant. To be plain, waste associated with Covid-19 is managed no differently than other infectious waste.

- Segregate waste at source,
- Treat coronavirus waste as infectious waste would be according to your national system,
- Deposit in an infectious waste bin, with a suitably color coded liner,
- Collect the waste at least daily, and transport in leakproof, puncture proof containers, labeled with the biohazard symbol,
- Storage areas should be clean, secure, and protected from the elements, pests, and disease vectors,
- Best management approaches indicate that waste should be disinfected by non-incineration methods, especially steam based treatment such as autoclaving or microwaving. All technologies should be validated and regularly tested,
- After disinfection, waste can be sent for disposal or recycling. Any material that could potentially be reused should be mutilated.

Steam versus incineration and waste to energy

Both the World Health Organization and the United Nations Environment Program (UNEP) have endorsed steam-based or other non-incineration methods of disinfection over incineration because of the persistent organic pollutants (POPs) produced by incineration[3]. Incineration is also a great deal more expensive than steam-based[4] technologies and also has a higher carbon footprint. Trapping energy from waste burning is the most polluting and expensive form of energy generation[5].

Staff handling waste should be properly trained[6], and particularly careful to use personal protective equipment[7] and maintain good hygiene during this unprecedented outbreak. Healthcare facilities should make sure that their employees and those of their subcontractors are adequately trained, protected, and are provided with vaccination against tetanus, hepatitis and can access post exposure prophylaxis.

The virus is susceptible to most normal disinfectants[8]. WHO recommends 70% ethyl alcohol to disinfect reusable dedicated equipment (e.g., thermometers) between uses and sodium hypochlorite at 0.5% (equivalent to 5000 parts

per million) for disinfection of frequently touched surfaces in homes or healthcare facilities. Ensure the surface or equipment is compatible with the cleaning product[9].

Soap and water is also important; anything visibly dirty should be washed with soap and water. Dirt or organic materials can inactivate disinfectants by reacting with them, so the general rule is to first clean, then disinfect.

The use of PPE by workers and the public has increased dramatically and they may not have access to specialised waste management services. In this case the best course can be to take advantage of the fact that the virus is not very long lived outside the body. The precise time it lasts is not known yet[10], but the best evidence is that it can last up to 3 days on hard surfaces like plastic, but less so on porous surfaces[11].

Outside the hospital environment, masks, PPE, tissues, and other non-biodegradable corona-virus related waste is collected separately, double bagged and labelled with the date. There is no need to treat these materials with disinfectant first. If there is a possibility that masks or PPE are being targeted for illegal reuse[12], they can be cut or mutilated before disposal. Public Health England advises that it should then be left for 72 hours before sending for disposal as usual municipal waste. By this time, it poses minimal risk to waste handlers.

References

[1] WHO (2014) Safe management of wastes from health-care activities

[2] WHO (2020) Water, sanitation, hygiene and waste management for COVID-19

[3] UNEP (2003) Technical Guidelines on the Environmentally Sound Management of Biomedical and Healthcare Wastes (Y1; Y3). BIOMEDICAL TG

[4] UNEP (2012) Compendium of Technologies for Treatment/ Destruction of Healthcare Waste

[5] USEIA (2013) Updated Capital Cost Estimates for Utility Scale Electricity Generating Plants

[6] WHO Training modules in health-care waste management (accessed 24 March 2020)

[7] WHO (2020) Rational use of personal protective equipment for coronavirus disease 2019 (COVID-19)

[8] USEPA (19 March 2020) List N: Disinfectants for Use Against SARS-CoV-2 | US EPA

- WHO (2020) Water, sanitation, hygiene and waste management for COVID-19
- U.S CDC (2019) Best Practices for Environmental Cleaning in Healthcare Facilities in Resource-Limited Settings: Version 1

[9] Apple (2020) How to clean your Apple products

[10] WHO (2020) Water, sanitation, hygiene and waste management for COVID-19

[11] Doremalen, N. et al. (2020) Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1

[12] Thailand Medical News (2020) Breaking! Thailand Health Authorities Raid Factory Recycling Used Face Masks

Useful links on coronavirus

WHO main webpage

Coronavirus disease 2019

WHO guidance on water sanitation and healthcare waste management in relation to covid-19

Water, sanitation, hygiene and waste management for COVID-19

WHO guidance on use of personal protective equipment (PPE) and face masks

- Rational use of personal protective equipment for coronavirus disease 2019 (COVID-19)
- Advice on the use of masks in the community, during home care and in healthcare settings in the context of the novel coronavirus (2019-nCoV) outbreak

WHO advice on quarantine

Considerations for quarantine of individuals in the context of containment for coronavirus disease (COVID-19)

IPC in healthcare

Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected

Health Care Without Harm South East Asia

Op-ed (Philippines) | Managing COVID-19 - related Health care waste (with infographic)