

Laboratory biosafety guidance related to coronavirus disease COVID-19

(Interim guidance for NSACP - 10/04/2020)

The purpose of this document is to provide interim guidance on laboratory biosafety on testing of clinical specimens of patients at NSACP. It is intended to strengthen the existing safety practices during the period of coronavirus disease COVID-19 . NSACP will revise this guidance as necessary.

All procedures must be performed based on risk assessment and only by personnel with demonstrated capability and in strict adherence to relevant protocols at all times. Appropriate disinfectants with proven activity against enveloped viruses should be used (for example, hypochlorite [bleach], alcohol) for cleaning the laboratory. Laboratory waste should be made non infectious before given out and while processing the specimens the waste generated should be handled adhering to the waste management guide lines provided.

Key points

- Each procedure should be risk assessed to ensure it is competent to safely perform with the intended testing with appropriate risk control measures in place.
- Appropriate personal protective equipment (PPE), as determined by a detailed risk assessment, should be worn by all laboratory personnel handling specimens.

When handling and processing specimens, (eg: blood for serological testing, haematology etc) laboratory practices and procedures that are basic to good microbiological practices and procedures (GMPP) should be followed. All technical procedures should be performed in a way that minimizes the generation of aerosols and droplets.

Detailed descriptions are attached

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Detailed descriptions

The specimens reaching the laboratory may be of a COVID-19 patient or otherwise. The NSACP is not receiving respiratory specimens other than the sputum specimens collected to exclude TB in HIV patients. However considering the possibility of asymptomatic patients visiting the clinics or the referrals from hospital settings it is preferable to treat all specimens as for COVID -19 specimens. Therefore strengthening the existing laboratory practices and procedures is the need of the hour. The disease transmission through blood is negligible according the current information available .

These guide lines are to be followed with understanding , in order to maintain laboratory safety and to minimize occupational hazards.

Laboratory practices

- Ensure, prior to commence laboratory testing , that supplies of laboratory consumables, reagents, PPE and disinfectants, are sufficient and appropriate for the activities being performed. Avoid frequent movements in and out of the laboratory once the work is started.
- Always wear appropriate PPE (gowns - preferably hand cuffed, gloves, masks, goggles) before starting work.
- Appropriately cover or remove any jewellery that could tear glove material, easily become contaminated or act as a fomite for infection. If worn regularly, cleaning and decontamination of jewellery or spectacles should be considered
- Avoid touching the nose, eyes and mouth during work.
- Keep the work area tidy, clean, and free of clutter and materials that are not necessary for the work being done.
- Thoroughly wash hands with soap and water, after handling any biological material, any time contamination is known or suspected to be present on the hands and before leaving the laboratory
- Do not handle anything with gloved hands after handling the specimens. Remove the glove before you touch anything.(eg: telephone, cell phone etc)
- Ensure work is performed with care, in a timely manner and without rushing. Working when fatigued should be avoided
- Prohibit the use of earphones, which can distract personnel and prevent equipment or facility alarms from being heard
- Never operate open flames or heat sources just after applying alcohol hand rub.
- Never put materials, such as pens, pencils or gum in the mouth while inside the laboratory, regardless of having gloved hands or not.
- Protect written documents from contamination using barriers (such as plastic coverings), particularly those that may need to be removed from the laboratory

- Never store food or drink, or personal items such as bags in the laboratory. Eating, drinking, smoking, and applying cosmetics are only to be performed outside the laboratory.

1. Technical procedures

- To avoid inhalation of biological agents use good techniques to minimize the formation of aerosols and droplets when manipulating specimens.
- Avoid ingestion of biological agents and contact with the skin and eyes.
- Use a face shield during procedures where splashes may occur
- Handle all sharps, syringes, and needles, if necessary, with care so as to prevent injury and injection of biological agents.

Preventing dispersal of biological agents:

- consider opening tubes with disinfectant-soaked pad/gauze
- decontaminate work surfaces with a suitable disinfectant at the end of the work procedures and if any material is spilled or obviously contaminated. Ensure proper spill management.
- discard specimens and cultures for disposal in leak-proof containers with the tops appropriately secured before disposal in dedicated waste containers
- make all waste material non infectious before removal from the laboratory

Specific processes of concern .

Specimen receipt and storage

- specimens should preferably be received by a MLT.
- Consider unpacking the items carefully; the SOPs should be adhered to when handling broken or leaking containers; and handling spills and use disinfectants to manage any contamination
- Specimens must be stored in containers with the cap or stopper correctly applied and free of any biological material on the outside of the packaging.

Centrifugation

- centrifugation for serum or plasma separation should preferably be done with centrifuge buckets with lids / the tubes should be capped to limit dispersion of aerosols
- in the absence of buckets with lids ,to minimize exposure to aerosols ,the centrifuge should be opened only after 30 minutes of centrifugation.
- A breakage of tubes inside the centrifuge should be cleaned as per the SOPs for centrifuge cleaning.

Handling serum samples

- When the serum samples are transferred to tubes using pipettes aerosol generation should be minimized
- When the serum is heated for VDRL the virus is killed even if present .
- In procedures where the serum is mixed with reagents in microtitre plates careful pipetting should be done to avoid aerosol generation
- Mouth pipetting should be avoided.
- Serum samples should be stored capped

2. Facility design

- designated hand-washing basin must be provided, with appropriate restriction of access.
- Doors must be appropriately labelled indicating biohazard
- Laboratory ventilation, where provided (including heating/cooling systems and especially fans/local cooling split-system air-conditioning units) should ensure airflows do not compromise safe working. turbulent airflows should be avoided; this applies also to natural ventilation
- Appropriate methods for decontamination of waste, for example disinfectants and autoclaves, must be available close to the laboratory. The management of waste must be given priority.

3. Decontamination and waste management

- Any surface or material known to be, or potentially be, contaminated by biological agents during laboratory operations must be correctly disinfected to control infectious risks. (Bench cleaning - alcohol/ hypochlorite in correct concentrations)
- all laboratory waste should be made non infectious before disposal by autoclaving. Autoclave functioning should be ensured with regular checking biological testing.

4. Incident response plan

- Even when carrying out low-risk work and following all requirements for biosafety, incidents can still occur. To reduce the likelihood of exposure to/release of a biological agent, or to reduce the consequences of such incidents, a contingency plan must be developed that provides specific standard operating procedures (SOPs) to be followed in possible emergency scenarios that apply to the work and local environment.
- First-aid kits, including bottled eye washes and bandages, must be available and easily accessible to personnel. These must be checked routinely to make sure products are within their use-by dates and are in sufficient supply.
- All incidents must be reported to the appropriate personnel in a timely manner. A written record of accidents and incidents must be maintained. Any incident must be reported and investigated in a timely manner
- Spill kits, including disinfectant, must be easily accessible to personnel. Written procedures for cleaning and decontaminating spills must be strictly adhered to when it occurs.

References

WHO Interim guidance -Laboratory biosafety guidance related to coronavirus disease (COVID-19)