Fudan Zhongshan Guidance of COVID-19 Prevention and Control

ZHONGSHAN HOSPITAL
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I Principles of using personal protective equipment

1. Surgical masks: Surgical masks should be worn in the pre-screening triage area and all the diagnostic and treatment areas inside hospital, and they should be worn correctly. Replace them at any time when they are contaminated or wet.

2. Medical protective masks/ Respirators: In principle, medical protective masks/respirators should be worn in areas such as fever clinics, isolation and observation wards (rooms), isolation wards (rooms), and isolation intensive care units (rooms), as well as during aerosol-producing operations such as collecting airway specimens, tracheal intubation, tracheotomy, non-invasive ventilation, sputum suction, etc. It should be generally replaced within 4 hours, and be replaced at any time when it is contaminated or wet. It is not used in principle in other areas and for other diagnostic and treatment operations.

3. Latex examination gloves: Latex examination gloves should be worn in areas such as pre-screening triage, fever clinics, isolation and observation ward (room), isolation ward (room), and isolation intensive care unit (room), but they must be worn and removed properly. Change gloves after suspected exposure to infected patients and/or contaminated specimen. Never wear gloves when leaving the diagnostic and treatment area. Wearing gloves cannot replace hand hygiene.

4. Quick-drying hand disinfectant: All the medical staff should use quick-drying hand disinfectant when no obvious contamination is observed on the hands during the diagnostic and treatment operations. Pre-screening and triage, fever diagnosis, isolation and observation of ward (room), isolation of ward (Room) and isolated intensive care unit (room) must be equipped with quick-drying hand disinfectant for use.

5. Goggles: Goggles should be worn in areas including isolation and observation ward (room), isolation ward (room) and isolation intensive care unit (room), as well as during procedures at risk of blood, body fluids, or secretions spray such as collection of respiratory specimens, tracheal intubation, tracheotomy, non-invasive ventilation, and sputum suction. Goggles should be taken off before leaving the above areas. If the goggles are reusable, they should be disinfected and reused. It is not used in principle in other areas and for other diagnostic and treatment operations.

6. Mask / protective face shield: Mask / protective face shield are used when blood, body fluids and secretions may be sprayed during diagnosis and treatment procedure. If it is reusable, it should be disinfected before reuse; if it is disposable, it must not be reused. It is not necessary to use the goggles and the protective face shield/screen at the same time. It is forbidden to leave the diagnostic and treatment area while wearing the mask / protective faces shield/screen.

7. Isolation gowns: Ordinary isolation gowns are used for pre-screening triage and fever clinics. Impervious disposable gowns can be used in isolation and observation ward (room), isolation ward (room) and isolation intensive care unit (room). The use of isolation gowns depends on whether it is in contact with the infected patients in other departments or areas. Disposable gowns should not be reused. If a reusable gown is used, it can be reused after disinfection according to the instructions. It is forbidden to leave the above area wearing a gown.

8. Protective suit: Protective suit is worn in isolation ward (room), isolation ward (room), and isolation intensive care unit (room). Protective suit should not be reused. It is prohibited to leave the
above areas wearing medical protective masks and protective suit. It is not used in principle in other areas and for other diagnostic and treatment operations.

When non-healthcare personnel including cleaners and security personnel need to enter the relevant area, they should use protective equipment accordingly, and wear and remove them correctly.
II Class of Protection

1. Primary protection: Wear work clothes, work caps, gowns, gloves, and surgical masks.

2. Secondary protection: Wear medical protective masks, work caps, gowns or protective suit, gloves, shoe covers, and if necessary goggles or face shields.

3. Third level protection: Wear medical protective masks, work caps, protective suit, gloves, shoe covers, goggles or face shields, and if necessary, wear full-scale respiratory protective equipment.
III Personal protection requirements for medical staff in different regions

1. Hospital entrance
   a) Security personnel in charge of maintaining order and infrared temperature detection should wear disposable surgical masks.
   b) Medical staff who take a close temperature check and collect epidemiological history should wear goggles, caps, disposable surgical masks, gowns and gloves.

2. Outpatient
   a) Bronchoscope operators and ENT clinicians performing laryngoscopy should wear caps, goggles, medical protective masks, gowns, and gloves.
   b) Medical and nursing staff in respiratory clinics, infectious diseases clinics, dentistry clinics, and endoscopy centers should wear disposable surgical masks, and may wear goggles or face shields if necessary.
   c) Care workers who accompany patients to the fever clinic should wear medical protective masks, caps, gowns, and goggles.
   d) Other outpatient medical staff wear general medical masks.

3. Emergency
   a) Interviewers should wear caps, goggles, anti-particulate masks, gowns, and gloves.
   b) Medical staff in the emergency area should wear caps, goggles, medical protective masks, gowns, and gloves.
   c) The care workers who accompany the patient to the fever clinic should wear medical protective masks, caps, gowns, and goggles.

4. Staff at fever pre-screening and triages, toll office, pharmacies, etc. should wear isolation gowns, caps, gloves, medical protective masks, goggles or face shields.

5. Fever clinics and observation room
   a) Wear protective clothing, caps, gloves, medical protective masks, goggles or face shields, and shoe covers for daily diagnosis and treatment activities.
   b) Wear protective clothing, caps, gloves, and full-face respiratory masks during procedures at risk of producing aerosols or spray, such as collecting respiratory specimens, tracheal intubation, bronchoscopy, airway care, etc.

6. In the low-risk fever clinic (i.e. the consultation area for febrile patients without epidemiologic history relevant to COVID-19), medical staff should wear isolation gown or protective gown, caps, gloves, medical protective masks, gogles or face shields, and shoe covers.

7. Staff in the surgical operating room and interventional operating room should wear disposable surgical masks, as well as goggles or masks as appropriate.
8. Medical staff in the ward should wear disposable surgical masks, and goggles or face masks as appropriate.

9. Disposable surgical masks should be worn in the diagnostic laboratory, pathology department, radiology department, etc., and medical protective masks can be used in high-risk places; medical protective masks should be worn in tuberculosis culture. If necessary, wear goggles or masks.

10. For those who are not in close contact with patients such as administrative, general affairs, and logistics staff should wear general medical masks.

11. If other departments or wards admit patients suspected of COVID-19, please refer to Article 5.

12. When resources are insufficient, medical protective masks for medical personnel in non-fever clinics and observation areas can be replaced with anti-particulate masks (n95, kn95, ffp2, etc.).
IV Procedures for using personal protective equipment

A. Disposable surgical masks

1. Hand hygiene before wearing a mask.
2. The dark side of the mask is facing outwards, and the nose clip side is facing up.
3. Tie the two straps parallelly to the back of the head, one behind the neck and one above the ear.
4. Press the nose clip with both left and right hands to make the mask as tight as possible to the face.
5. Cover nose and mouth completely, pulling the folds of mask out as much as possible.
6. Close your eyes and hold your breath when removing the mask, and then throw the mask into the yellow trash can.
7. Masks should not be worn for more than 4 hours.

Surgical masks
Wearing and removing of disposable surgical masks

Hand hygiene before wearing a mask

The dark side of the mask should be facing outwards, and thenose clip side is facing up the nose clip side is facing up

Tie the two straps parallelly to the back of the head, one behind the neck and one above the ear

Press the nose clip with both left and right hands to make the mask as tight as possible to the face

Cover the nose and mouth completely, pulling the folds of mask out as much as possible

When removing, first untie the lower strap, then untie the upper strap, do not touch the front of the mask

Close your eyes and hold your breath when removing the mask, throw the mask into the yellow trash can

Masks should not be worn for more than 4 hours
B Wearing and removing medical protective masks

Hand hygiene before wearing a mask

Hold the mask with one hand and snap it in place on your face

Put the lower strap on the back of the neck, and then wear the upper strap above the ears. The two straps are parallel to the back of the head.

Press the nose clip with both left and right hands to make the mask as tight as possible to the face.

Press the front of the mask with both hands to perform a mask tightness test: Exhale with a large breath, and positive pressure indicates no air leakage; take a deep breath, if it does not leak, the mask will stick to the face; if it leaks, adjust the position of the mask or tighten the girdle.

When removing, pull the lower strap over the head with both hands and loosen, and then pull the strap above ear over the head, and take off the strap from the front, and do not touch the front of the mask.

Close your eyes and hold your breath when removing the mask, throw the mask into the yellow trash can.
**Removal of protective mask**

1. Hold the mask in cup shape, and wear it naturally.
2. Nose clip up, place mask on Chin.
3. Place the mask in place, with the upper headband fixed high behind the head around the top of the head.
4. Fix the mask properly, fix the lower headband around the top of the head to the neck, and place it under the ear. Adjust the headband to lower the mask and cover the nose.
5. Adjust the shape of nose clip with both hands and fingers.

**Tightness inspection:**
- a. Cover the mask with both hands completely, and pay attention not to change the position of the mask on the face.
- b. Exhale quickly. If there is leakage near the nose clip, adjust the nose clip according to step 5.
- c. If the leakage is around the mask, adjust the headband position. If proper fit is not obtained, repeat steps 1 to 5.
- d. Don't feel the leak before you continue to work.

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**Removal of medical surgical mask**

- Remove the mask with a tie.
- Hand hygiene

**Removal of medical protective mask**

- Remove the mask with a tie.
- Hand hygiene
C Isolation gowns

Removal of the gown

1. Perform hand hygiene
2. Unfastening the back strap of the gown
3. Take your hands out of your sleeves, be careful not to touch the outside of the gown
4. Hands out of your sleeves, be careful not to touch the outside of the gown
5. Remove the gown from the inside and throw it into the yellow trash can
6. Perform hand hygiene
D Protective suit

Removal of protective suits

1. Open the seal and zipper of protective suit
2. Perform hand hygiene
3. Remove the protective cap from the inside first, and then take off the sleeve, be careful not to touch the outside of the protective suit with your hands
4. Grasp the inner side with both hands, gently roll the inner side outwards to the ankle, and remove it with the shoe cover (if any)
5. Throw into yellow trash can
6. Perform hand hygiene
E Goggles or protective mask removal procedures

Goggles or protective mask removal procedures

1. Perform hand hygiene

2. Grasp the ear circumference of the goggles or the end of the head circumference of the protective mask and remove the protective goggles or protective mask. Be careful not to touch the front part with your hands (the front part is a polluted part do not touch to avoid secondary pollution)

3. Put reusable equipment in a lidded container for centralized cleaning and disinfection; throw non-reusable equipment directly into the yellow medical waste bin

4. Perform hand hygiene
F Putting-on and taking-off of protective equipment for general medical activities in fever clinic

1. Putting-on procedures

1. Hand hygiene
2. Medical protective mask
3. Cap
4. Goggle
5. Medical protective suit
6. Shoe cover
7. Gloves (optional double layer)
2. Take-off procedures

1. Enter the semi-contaminated area from the contaminated area and take off the outer layer of gloves when wearing double layer of gloves

2. Disinfect gloves

3. Unseal the protective suit and remove the shoe cover

4. Remove inner layer of gloves, hand hygiene

5. Take off protective suit, hand hygiene

6. Enter clean area from semi-polluted area, remove goggles, hand hygiene

7. Take off caps, hand hygiene

8. Take off medical protective masks, hand hygiene
G Putting-on and taking-off of protective equipment for high-risk operations in fever clinic

1. Putting-on order

- Hand hygiene
- Wear cap
- Wear full-face respiratory mask
- Wear medical protective suit
- Wear shoe covers
- Wear gloves
2. Taking-off procedures

- Enter from a polluted area to a semi-polluted area
- Disinfect gloves
- Unseal the protective suit and remove the shoe cover
- Take off gloves, hand hygiene
- Take off protective suit, hand hygiene
- Enter the clean area from the semi-polluted area and remove the full-face respiratory mask
- Hand hygiene
- Taking off caps, hand hygiene
V Prevention and protection procedures for transferring infected patients

1. Staff responsible for transferring confirmed patients perform hand hygiene, wear disposable caps, medical protective masks, goggles, medical protective suit, latex gloves, and shoe covers in order.

2. Arrange negative pressure vehicle to the medical facility to pick up the patient.

3. Instruct the patient to wear surgical surgical mask and provide.

4. Place the patient in transfer vehicle and transfer to receiving medical.

5. After the transfer, the staff will return to the designated location with the specified transfer vehicle.

6. Complete the cleaning and disinfection of the specified transfer vehicle, open the windows and ventilate, spray the disinfection solution such as 1% -3% hydrogen peroxide, 0.5% peroxyacetic acid or 1000mg / L available chlorine on the surface to moisten the surface of the interior and exterior of the vehicle and the surface of the objects in the vehicle for 30 minutes.

7. Transfer the next patient.

8. Before leaving work, remove protective equipment, take bathe and change clothes.
VI Air, environment and surface cleaning and disinfection:

A Air disinfection procedures

- Perform hand hygiene and wear personal protective equipment in accordance with regional management requirements
- Take air disinfection measures according to the regional settings (pre-screening triage, fever clinic, isolation ward (room), isolation intensive care unit (room), general clinic, general ward (room), etc.) and the actual situation of the hospital

Non-negative pressure ward

- Natural or mechanical ventilation
- 2-3 times daily, 30 minutes each

Negative pressure area, according to "Requirements for Environmental Control of Hospital Negative Pressure Isolation Ward" gb / t 35428-2017

- Air sterilizer
- UV
- 2-3 times daily, ≥3 0 minutes each

Ensure that the airflow flows from the clean area to the potentially polluted area to the polluted area

- Disinfect according to the operating instructions, precautions, etc. of the product manual

The pressure difference in the adjacent area is ≥5Pa; the degree of negative pressure is from high to low in order: isolation ward toilet (-15Pa) → isolation ward room (-10Pa) → buffer room (-5Pa) → potential pollution area corridor (-5Pa). The air pressure in the cleaning area should be positive relative to the outdoor air pressure, i.e. 0Pa

- The number of air changes in the contaminated and potentially polluted areas of the negative pressure isolation ward should be 10-15 times / hour

After discharge of patients with COVID-19, the air outlet filter of the negative pressure ward should be replaced in time, and the inner surface of the air outlet should be wiped with disinfectant

- Make air disinfection and monitoring records
B  Air conditioning management of medical facility

1. continue to use

Turn down or completely close the return air valve, fully open the fresh air valve, and open the exhaust system ↓

Clean and disinfect filters, air inlets and air outlets once a week ↓

Use 250mg/L ~ 500mg/L chlorine (bromine) or chlorine dioxide disinfectant, spray, soak or wipe for 10min ~ 30min ↓

In case of suspected and confirmed cases, follow the "Shanghai Novel Coronavirus Pneumonia Field Disinfection Technology Guide (Fourth Edition)"

2. suspension

After the epidemic is over, the centralized air-conditioning ventilation system should be cleaned and disinfected or its components are replaced by a professional organization with cleaning and disinfection qualification before reopening.
C Cleaning and disinfection of environment and object surface for suspected or confirmed cases

1. Ventilation at least 2-3 times a day and no less than 30 minutes for each time. If necessary, use machinery ventilation, or circulating air disinfection or hypochlorous acid dynamic spray disinfection;

2. Ultraviolet or hydrogen peroxide can be used to sterilize the air in the room and the surface of objects;

3. Use 1% -3% hydrogen peroxide solution, effective chlorine (1000mg / L chlorine-containing) disinfectant or high-level disinfection wipes to wipe and disinfect with sufficient time;

4. Reusable medical fabrics can be sterilized by boiling for 10 minutes or immersed in 1000mg / L chlorine-containing disinfectant for 30min for standard cleaning and disinfection;

5. Reusable tableware can be sterilized by boiling for 10 minutes or 1000mg / L chlorine-containing disinfectant for 30min for standard cleaning and disinfection;

6. The ground contaminated with blood or body fluids should be covered with a water-absorbent towel with disinfectant for at least 60 minutes before cleaning and disinfection;

7. All the waste should be put into double yellow garbage bags and sent to the solid waste center for incineration as the infectious waste.
VII Cleaning and disinfection procedures for reusable goggles or protective face shield

Cleaning and disinfection methods for goggles or protective face shield:

1. After each wear of the goggles, use a hydrogen peroxide disinfection wipe to thoroughly wipe and dry it for later use.

2. After each wearing of the protective face shield, remove the disposable plastic sheet and throw it into a yellow garbage bag, soak the remaining part with 2000mg/L chlorine-containing disinfectant for 30 minutes, rinse it and dry it for later use, or use a hydrogen peroxide disinfection wipe to thoroughly wipe and disinfect, and dry it for future use.

Disinfection of full-face respiratory mask:

1. If there is no obvious contamination of blood and body fluids after use, wipe the entire surface with a hydrogen peroxide disinfection wipe to thoroughly disinfect it and dry it for later use.

2. If the face screen is contaminated with blood or body fluids, it needs to be rinsed with running water and then wiped thoroughly with a hydrogen peroxide disinfection wipe.

3. If the filter box is obviously contaminated with blood and body fluids, remove the filter box and throw it into a yellow garbage bag. Rinse the remaining part with running water and then wipe it with a hydrogen peroxide disinfection wipe to thoroughly disinfect it and dry it for later use.
VIII Cleaning and disinfection procedures of thermometer

Thermometer for non-infected patients

- Use 75% alcohol swab to wipe the surface
- Soak the thermometer in 75% alcohol or disinfectant containing 500mg/L of effective chlorine for 30 minutes
- Remove residual disinfectant with running water
- Dry with gauze and set aside for future use

Thermometer in pre-checking triage, fever clinics, isolation wards, isolation intensive care units (rooms)

- Use 75% alcohol swab to wipe the surface
- Soak the thermometer in disinfectant containing 500mg/L of effective chlorine for 30 minutes
- Move residual disinfectant with running water
IX  Cleaning and disinfection procedures of soft endoscope

Pretreatment: Decontamination in time. It is recommended to wipe the outer surface dirt with enzyme solution (better with disinfection function) or 75% alcohol wet gauze, and soak with enzyme solution (better with disinfection)

Cleaning and rinsing: In strict accordance with the requirements of the "Soft Endoscope Cleaning and Disinfection Technical Specification WS 507-2016". During the process, try the best to keep the device under the water to prevent splashing.

Disinfection and sterilization: Automatic endoscope cleaning and disinfection machines are recommended for use. It is necessary to strengthen the disinfection and maintenance of the machines. The disinfection solution is selected according to the requirements of "soft endoscope cleaning and disinfection technical specifications WS 507-2016" and used in accordance with the product instructions.

Drying and storage: Use 75-95% ethanol to perfuse all pipes, and dry and store according to the requirements of "Soft Endoscope Cleaning and Disinfection Technical Specification WS 507-2016”

The cleaning tank and rinsing tank should be wiped and disinfected with 1000mg / L chlorine-containing disinfectant or 75% alcohol or a suitable disinfection wipes after each use. All tanks should be thoroughly brushed and disinfected after the daily medical service.
X Cleaning and disinfection procedures of ventilator and related accessories

Cleaning and disinfection procedures of ventilator and related accessories

- **External tubes**
  - Single-use ventilator threaded tube is recommended
  - Dispose as COVID-19 medical waste after use

- **Internal tubes**
  - Disinfection by ventilator maintenance technician with appropriate method

- **Surface**
  - Disinfect with 1000mg/L effective chlorine, hydrogen peroxide, alcohol or other disinfectants for 30 minutes

- **Other special parts**
  - Use 75% alcohol wipes to disinfect humidifier base, removable flow sensor. The air filter of the main unit and the air compressor, the filter on the suction or exhalation side need to be cleaned and replaced or immersed in 75% alcohol for 30 minutes

  - Dry and set aside for use
XI Cleaning and disinfection procedures of negative pressure suction bottle and accessories

Three-level protection after implementing hand hygiene: wear work suits, disposable caps, medical protective suit, medical goggles, full-face respiratory mask or protective face shield, latex gloves, and thick rubber gloves with long sleeves, shoe covers and protective boots.

Open the negative pressure suction bottle cap in the dirt-processing room, add chlorine-containing disinfectant to a concentration of 20000mg/L, stir and place for 2 hours, then dump the secretion into the hospital sewage pipe for harmless treatment.

For drainage bottle used by the suspected or confirmed patients with COVID-19, immerse the bottle completely in sterilizing solution containing 2000mg/L of effective chlorine for 30 minutes. Rinse the suction bottle, accessories, and connecting tube under running water to remove obvious pollutants.

Use a specified brush to scrub the suction bottle neck, bottle bottom, bottle body, inner wall of the bottle cavity, bottle stopper, and the surface and the connecting tube with running water. After removing obvious pollutants, immerse and sterilize the suction bottle and tubes in a covered container with 1000mg/L of effective chlorine disinfectant for 30 minutes.

After putting on long-sleeved thick rubber gloves, rinse the accessories of the negative pressure suction bottle under running water again to thoroughly remove the residual disinfectant, dry the surface of the negative pressure suction bottle, accessories and tubes; assemble the negative pressure suction bottle and all accessories and store in a clean plastic bag.
XII Cleaning and disinfection procedures of reusable sanitary ware

Cleaning and disinfection procedures of reusable sanitary ware in fever clinics and isolation wards

- Rags and mops for cleaning the environment should be used within the room. Medical staff should perform necessary protection in accordance with the requirements of the operation before medical activity.

- Use disposable alcohol or hydrogen peroxide wipes or disposable treatment towels with disinfectant for indoor surface cleaning.

- Collect the used waste wipes or disposable treatment towels as infectious medical waste.

- After cleaning the surface and floor of the ward, soak and disinfect the reusable rags and mops in a dedicated cleaning container with 2000mg/L chlorine (bromine) for 30 minutes.

- The soaked rags and mops are rinsed with running water and drained, and then loaded into the double-layer infectious fabric with labeling, and sent to the cleaning company for mechanical cleaning and thermal drying.
XIII Medical Fabric Disposal Procedures

Disposal of medical fabrics in fever clinics and isolation wards

Medical fabrics used in fever clinics and isolation wards include patients' clothes, sheets, quilts, pillowcases, bed curtains, curtains, and work clothes, hand-washing underwear and multiple-use isolation clothes used by medical staff, cleaning wipes, mops, etc.

After use, the infectious medical fabric should be collected at the patient's bedside. The collection bag for the infectious fabric is orange-red, with the "infectious fabric" logo; resourceful hospitals can use special water-soluble packaging bags, and the infectious fabric bag should be tied before spraying 1000mg / L effective chlorine solution for disinfection.

The load of orange-red infectious fabric bags and specified water-soluble fabric packaging bags containing infectious fabrics should not exceed two-thirds of the packaging bags, and should be kept sealed before washing and disinfection. Packaging boxes (barrels) for medical fabrics should also be sealed.

Handover with hospital laundry room or socialized laundry service limited company and make corresponding records and signatures.

Specified packing boxes (barrels) for medical fabrics after use should be cleaned and disinfected one by one before use, and the corresponding records and signatures should be made.
XIV Management of bed units after patients with COVID-19 are discharged

Management of bed units for discharged patients with COVID-19

- Adopt secondary personal protection: work round cap, medical protective mask
- Use 0.5% peroxycetic acid, 1%-3% hydrogen peroxide or 500mg/L chlorine dioxide disinfectant for aerosol spray for 1 hour at 20mL/m
- Open the window for ventilation or machinery ventilation for 30 minutes
- Contaminated bedding and other medical fabrics → Seal into soluble fabric bags; Or pack in orange-red infectious medical fabric plastic bags. After spraying the fabric with 1000mg/L of chlorine-containing disinfectant, the bags are sealed. Keep a handover record.
- The surface is wiped with 1000mg/L chlorine-containing disinfectant solution or a high-level disinfection (such as hydrogen peroxide) wet paper towel
- 1) Wipe pager and button → Folding wipes → Wipe device belt
   2) Replace wipes → Wipe the IV stand
   3) Replace wipes → Wipe the bedside table (drawers and mezzanines, tables, tabletops, handles and outer walls)
   4) Replace wipes → Wipe the bedside of the bed → Bed rails on both sides → Footboard → Plates, etc.
- Wipe with clean water after 30 minutes
- After use, soak the wipes in 2000mg/L chlorine-containing disinfectant for 30 minutes, wash and dry for later use; for sterilize wet paper towels, throw them into medical waste containers in time
- Enter the potentially contaminated area, remove personal protective equipment according to the requirements of the regulations, and discard it in medical waste

Note: Contaminants (blood, secretions, vomitus and feces) should be completely removed before disinfection:
1. A small amount of contaminants are to be carefully removed with disposable absorbent material.
2. For a large amount of pollutants, they should be completely covered with a disposable water-absorbing material, followed by spraying and wet with 5000mg/L ~ 10000mg/L chlorine-containing disinfectant solution. After 30 minutes, clean carefully.

Open the window for ventilation or machinery ventilation for 30 minutes
XV Terminal disinfection procedures in observation room

Terminal disinfection procedures in observation room

- The patient is discharged
  - COVID-19 excluded
  - COVID-19 confirmed

- Perform secondary personal protection: work round cap, medical protective mask, medical protective clothing, latex gloves

- Air ultraviolet radiation

- Open the window for ventilation or

- Routine management for reusable equipment, environmental items, etc.

- Use 0.5% peroxycetic acid, 1% -3% hydrogen peroxide or 500mg / L chlorine dioxide disinfectant to perform air disinfection: aerosol spraying at 20mL / m3 for 1 hour

- Open the room for ventilation or mechanical exhaust for 10 minutes

**Tableware**
- Disposable tableware is recommended.
- Non-disposable tableware is preferred for boiling and sterilization for 30 minutes, or it can be soaked with effective chlorine (bromine) 500mg / L solution for 30 minutes, and then washed with water

**Reusable medical**
- 1. The thermometer, stethoscope, infusion pump, and sphygmomanometer are soaked or wiped with 1000mg / L chlorine disinfectant.
- 2. Reusable medical supplies should be packaged in a double-layered yellow plastic bag and sealed after disinfection processes during with 1000mg / L chlorine-containing disinfectant, and then placed in a transfer box labeled "COVID-19" and sent to the supply

**Environment al surface**
- 0.2% -0.5% peroxycetic acid solution, 500mg / L -1000mg / L chlorine dioxide or available chloride (bromine) 1000mg / L disinfectant is used for soaking, spraying or wiping for not less than 30min.

**Medical fabric**
- Medical fabrics are collected in a water-soluble fabric bag and sealed separately.
- The outer packaging is marked with the "COVID-19" logo.
- Contact the fabric transfer staff by phone to make a transfer record

**Sanitary Ware**
- Disinfection with 2000mg / L chlorine disinfectant for 30min ex → clean→ disinfect → dry and set aside

**Medical waste**
- 
  1. Put in double-layered packaging bags, gooseneck knot-type sealing, layered sealing; sharps are placed in the sharpened box in a sealed package. The outer packaging is specially marked with the "COVID-19" logo.
  2. Contact the medical waste transfer personnel by telephone, place it in a closed, separate place, and send it to the designated temporary storage place for unified procedures, and make a transfer

**air conditioner**
- 1. Keep the air conditioner (except DC type) running during hydrogen air disinfection.
- 2. After air disinfection, open all the doors and windows and open the air-conditioning system to the maximum for air extraction and maintain for a period of time.
- 3. Replace the air conditioning filter in time.
- 4. Spray the removed air-conditioning filter with 2000mg / L of chlorine-containing disinfectant, and keep it moist for 30 minutes, and then put it into the medical waste container.
- 5. Air-conditioning condensate should be poured into the sewer after disinfection with 200mg of effective chlorine per L of
XVI Terminal disinfection procedures of negative pressure/infection operation room

End of surgery

Patient transferred out of negative pressure / infection operating room

Medical supplies

Reusable medical devices

Pre-treated with 1000mg / L chlorine, the devices are to be sealed into a double-layered yellow plastic bag, and put into a sealed container labeled "COVID-19 "

Collectively put the supplies in double-layer packaging bags, gooseneck knot sealing, layered sealing; sharps are placed in sharp boxes in sealed packages. The outer packaging is specially marked with the "COVID-19 " logo.

Contact by phone and transport to the supply room and make a transfer record.

Disposable medical supplies

Closed disinfection with peracetic acid/ hydrogen peroxide spray sterilizer or dual-mode hydrogen peroxide robotic disinfection machine for 1~2 hours

Turn off laminar flow and air supply

Notify staff to replace the high-efficiency filter in the OR timely

Closed disinfection with peracetic acid/ hydrogen peroxide spray sterilizer or dual-mode hydrogen peroxide robotic disinfection machine for 1~2 hours

Turn on negative pressure laminar flow and ventilation for 30 minutes

Contact a professional recycler by phone and make a transfer record.

Negative pressure OR

Ordinary OR

Cleaners

Air disinfection

Dedicated car with cleaning, disinfection and hand hygiene items

Pre-buffer chamber

Wear secondary

1. Wipe the floor and equipment tables, equipment, operating tables and other surface of the table with 1000mg / L chlorine-containing disinfectant, and keep it for 30 minutes and then wipe it with water;
2. For surface with patients blood stains, body fluids and other contaminated surfaces, first treat with 5000mg / L chlorine-containing disinfectant.
3. Treatment of the transfer bed: The mattress is dismantled and stacked erected, and placed in the operating room to be disinfected by the vaporized hydrogen peroxide disinfection machine.
4. Handle sanitary ware (rag, mop) with 2000mg / L chlorine-containing disinfectant in the following order: disinfection → washing → disinfection → drying for further use. Mechanical
XVII Cleaning and disinfection procedures of elevator

Cleaning and disinfection procedures for general elevator

Ordinary medical elevators should be clearly marked during epidemics

Perform hand hygiene, change work clothes, and wear medical surgical masks, disposable caps, and disposable gloves in order

Before the elevator is put into use: Use disinfectant containing 500mg / L of effective chlorine to clean and disinfect elevator walls, buttons, and ground for over 30 minutes, then wipe with clean water

normal operation

At the end of the operation, remove the gloves, throw them into the yellow medical waste bin, and perform hand hygiene

Take off cap and medical surgical mask and throw it into yellow medical waste bin

Perform hand hygiene and take off work clothes

Perform hand hygiene and leave work
Cleaning and disinfection procedures of specified elevator

- During the epidemic period, specify elevators for outpatients, wards for suspected and confirmed COVID-19 patients, and set warning signs.

- Protective masks, goggles, gowns, disposable gloves in order.

- Transfer patient to designated floor.

- After using the elevator: use 1000mg/L chlorine-containing disinfectant to clean and disinfect the elevator walls and buttons for over 30 minutes, wipe with clean water; or use terminal disinfection such as hydrogen peroxide.

- Take off gloves
  - Perform hand hygiene and remove medical protective suit
  - Perform hand hygiene, remove goggles and protective masks in order
  - Perform hand hygiene and remove disposable caps
  - Take away disposable items and throw them into the yellow medical waste bin.

- Perform hand hygiene and leave work.
XVIII Infection prevention and control procedures of outpatient pre-screening triage

Infection prevention and control procedures of outpatient triage

Wear working clothes--goggles--isolation clothes--round caps--medical protective masks--gloves

Outpatient pre-screening desk

Collect epidemiological history, measure temperature and make record

Suspect COVID-19

Rule out COVID-19

Escort patients to fever clinics via dedicated passage, maintaining a distance of more than 1.5m

Lead patients to the triage desk

Prescreening desk and surrounding environment: routine disinfection at the end of each shift

Arrange personnel to take over pre-screening positions

Notes:
1) Strictly perform hand hygiene;
2) Disinfect the pre-screening desk with 1000gm / L available chlorine;
3) After the work, the routine triage desk and the surrounding environment are cleaned and disinfected at the end;
4) Accompany personnel should pay attention to their own safety. If patients refuse to go to the fever clinic, accompany personnel should report in time;
5) Make a detailed record, including ID number, contact phone, etc.
Infection prevention and control procedures of fever clinics

According to the "Notice on Strengthening the Management of Fever Clinics and the Prevention and Control of Infection in Medical Institutions in Key Regions" (Guo Wei Ban Medical Letter [2020] No. 102), and "Notice on Strengthening Epidemic Prevention Work During Epidemic Period" Note (Hu Wei Ban 2020) No. 11), infection control of fever clinic should be strengthened.

The layout should be scientific and reasonable. The polluted are should be separated from clean area. The ventilation is enhanced, and the air conditioner is independently set. The entrance is equipped with a fast hand disinfectant.

Areas and clinics should be equipped with hand hygiene facilities and supplies that meet the requirements.

Sufficient observation room should be provided in the polluted area (single room with toilet, ≥10 rooms for city-level hospital, ≥5 rooms for district-level hospital). Suspected patients should be isolated and reported in time.

Special diagnosis and treatment room

For the management of patients with a clear cause of fever and a low probability of COVID-19

Take precautionary measures against droplets, contact, and air transmission on base of standard precautions; Daily disinfection of air, surface and floor; terminal disinfection after discharge (secondary protection)

Follow the "Notice of the General Office of the National Health and Health Commission on the Management of Medical Structure Medical Wastes During the Epidemic of Coronavirus Infection" (National Health Office Medical Letter [2020] No. 81)
**XX Infection prevention and control procedures in emergency room**

Infection prevention and control procedures in emergency room

In accordance with the requirements of the “Notice on Printing and Distributing New Guides for the Prevention and Control of Novel Coronavirus Infection in Medical Institutions (Fifth Edition)” (National Health Medical Office Medical Letter (2020) No. 65) and other requirements, the emergency department should reasonably set up isolated areas to admit suspected or confirmed patients and provide on-site isolation and treatment. Fixed nurses are designated in the emergency room. A 24-hour duty system is implemented.

Emergency room medical staff enters the staff locker room and performs hand hygiene

Wear working clothes- caps-medical protective masks-isolation gown- goggles or face shields-disposable inspection gloves and enter emergency rescue rooms

The patient should wear a surgical mask, and the medical staff asks for detailed epidemiological history, whether there is fever or respiratory symptoms, etc.

- **Yes**
  - Immediately transfer the patient to an isolated room or area

- **No**
  - Appropriate treatment according to the triage level of emergency patients

In case of emergency rescue of endangered patients, emergency medical examination and imaging examination should be immediately carried out. According to the patient’s condition, please call the appropriate specialist for emergency consultation.

**Identified as a suspected case**

- Dedicated route (open space) to fever observation ward

**Rule out COVID-19**

- Routine diagnosis and treatment procedures

After the patient is transferred out, make a terminal disinfection and record (secondary protection during disinfection)

Disposal of medical waste (including domestic waste of patients) according to the standard harmless management

Hand hygiene--Remove protective equipment according to specifications--Hand hygiene
XXI Infection prevention and control procedures in emergency trauma treatment room

Infection prevention and control procedures in emergency trauma treatment room

Medical staff enter staff locker room and perform hand hygiene

Wear working clothes-cats-medical protective masks- isolation gown

The patient should wear a medical surgical mask, and the medical staff asks in detail whether there is fever and / or respiratory symptoms, and an epidemic history

YES

Dedicated route (open space) to transfer to the fever observation ward to start the treatment of suspected cases

NO

Enter the debridement room and proceed as usual

Process disposable items as infectious medical waste at the end of the operation

Perform hand hygiene and remove protective equipment according to the "Procedure for putting on and taking off protective equipment for isolated ward staff"
XXII Infection prevention and control procedures of outpatient clinics

Infection prevention and control procedures of outpatient clinics

Outpatient pre-screening check → Suspected patient with epidemiological history, etc. → Send the suspected patient to the clinic by the guide

Patient volume control

Outpatient waiting room, the distance between the two is more than 1.5m

Staff should wear working clothes-round caps-medical surgical masks → Consultation room (One patient and one doctor in a single consultation room) → Other patients

Routine procedures

Consultation room (One patient and one doctor in a single consultation room) → Suspected patient → Send the suspected patient to the fever clinic by the guide

Initiation of Suspected Case Code → Terminal disinfection of the consulting room and surrounding environment

Remarks:
1) Strictly implement "One consultation room for one doctor and one person" rule;
2) strictly perform hand hygiene;
3) After using the stethoscope and other diagnostic equipment in the office, wipe them with 75% alcohol or 1000gm/L available chlorine;
4) After the work is completed, the routine consultation room and the surrounding environment should be cleaned and disinfected at the end.
XXIII Infection prevention and control procedures for medical staff in stomatology clinic

Infection prevention and control procedures for medical staff during dental clinic operation

- Non-emergency operations are to be postponed in principle
- One consultation room for one patient
- Hand hygiene should be performed before operation
- Wear working caps, medical protective masks, latex gloves, disposable impervious gown, and goggles or face shields
- After patient consultation
- Environmental disinfection in the clinic should be performed
- Medical staff wash hands after taking off gloves
- Replace or disinfect personal protective equipment in a timely manner
XXIV Infection Prevention and Control Procedures of Obstetric Clinics

Infection Prevention and Control Procedures of Obstetric Clinics

1) Strictly implement "One consultation room for one doctor and one person " rule;
2) strictly perform hand hygiene;
3) After using the stethoscope and other diagnostic equipment in the office, wipe them with 75% alcohol or 1000gm / L available chlorine;
4) After the work is completed, the routine consultation room and the surrounding environment should be cleaned and disinfected at the end.
XXV Infection Prevention and Control Procedures for pregnant patients with COVID-19 and delivery room

Infection Prevention and Control Procedures for pregnant patients and delivery room

1. Pregnant women with COVID-19 should wear medical surgical masks, and they are to be transferred to an isolated delivery room for delivery. The transfer personnel take secondary protection.

2. Medical staff enter the delivery room from the staff passage, wash their hands, and take secondary protection.

3. Wear a sterile surgical gown, a second layer of gloves, and enter the isolation room for delivery.

4. Newborn delivery, umbilical treatment, physical examination, etc.

5. After maternal delivery, the puerpera should be observed for 2 hours. If no abnormality is observed, she will be transferred to the isolation ward. The transfer personnel will take secondary protection, and transfer vehicle and elevator should be disinfected.

6. Process the placenta and medical waste, reusable instruments and appliances, and infectious fabrics.

7. Cleaners adopts secondary protection for terminal disinfection of isolated delivery rooms.

8. Medical staff take off outer gloves, perform hand hygiene, remove sterile surgical gowns, perform hand hygiene, take off protective equipment.
XXVI  Infection control procedures of endoscopic operation

Endoscopic (laryngoscope, digestive endoscopy, bronchoscopy) infection prevention and control procedures

1. Postpone the non-emergency operation in principle. For patient with suspected or confirmed COVID receiving.

2. Hand hygiene should be performed before operation.

3. Wear working caps, medical protective masks, latex gloves, disposable impervious gown or protective gown, and goggles or face shields.

4. After the operation, wipe the outer surface of endoscope with enzyme containing solution or 75% alcohol wet gauze, and soak the device into enzyme solution with disinfection function or 0.2-0.35% peracetic acid.

5. Clean and disinfect the endoscope according to the "Soft Endoscope Cleaning and Disinfection Technical Specifications".

6. Medical staff wash hands after removing gloves and other personal protective equipment. Replace or disinfect in time of contamination.

7. Environmental disinfection in the clinic.
XXVII Infection prevention and control procedures for hemodialysis patients

Temperature measurement and epidemiological inquiry of dialysis patients

- No fever or respiratory infection, no epidemiological history, and COVID-19 excluded
- Patient who enters the dialysis area should wear a mask and

Routine dialysis procedure

- Symptoms such as fever or indicating respiratory infections, positive epidemiological history
- The patient wears a mask and is accompanied to fever observation ward

With secondary protection, medical staff perform hemodialysis for the patient

Thoroughly disinfect the outer surface and internal tubes of the dialysis machine after the procedure
XXVIII Infection control and prevention procedures for patients with COVID-19 receiving surgical operation

**Before surgery starts**

- Prepare a negative pressure / infection operating room (turn off laminar flow in case of non-negative pressure room)
- The operating room nurses and anesthesiologists perform hand hygiene, prepare the necessary items and medicines according to the name of the operation, check the performance of the equipment, close the operating room door when device and medication are qualified

**Surgeons enter the pre-buffer room and perform hand hygiene**

- Wear medical protective masks-wear goggles-wear medical protective gown-wear latex gloves and, if necessary, wear a protective face shield or full-face respiratory hood
- Hand hygiene and disinfection

**Enter the pre-buffer room, wear goggles-wear medical protective gown-wear full protective shoes and shoe covers -perform hand hygiene, and wear protective face shield or respiratory hoods if necessary**

**Accept the patient into the OR**

**Start surgery**

- Enter the negative pressure / infection operating room-wear the first layer of medical sterile gloves-wear disposable sterile impervious surgical gowns-wear the second layer of medical sterile gloves-wrap the surgical gown cuffs
- After the operation, the surgical staff take off the outer layer of gloves --sterile surgical gowns--shoe covers--hand hygiene--protective face shield or respiratory hood--protective gown--hand hygiene in sequence in the operating room, and step out of the operating room (Hand hygiene should be performed once hands become contaminated)

**Remove goggles--medical protective Masks--hand hygiene**

**Return to non-restricted area-bath-change clothes-leave**
**XXIX Infection prevention and control procedures in general ward**

Before the medical staff starts the diagnosis and treatment activities:

- Measure vital signs (temperature, pulse, breathing, blood pressure, etc.) daily. For new hospital admissions, collect symptoms (fever, fatigue, dry cough, etc.) and the epidemiological history.

- No fever and / or respiratory symptoms, No epidemiological history
  - Implementing routine medical care
  - Strict restrictions on the number of escorts / visits and visiting time
  - For those who need family escort, issue a one-time certificate for entrance
  - Instruct escorts / visitors to wear masks
  - The escort / visitor must take temperature before entering the ward, and the medical staff asks in detail whether there is fever and / or respiratory symptoms, and epidemiological history

- Have
  - Arrange a person to follow the designated route to the pre-screening triage or to fever
  - Terminal cleaning and disinfection of bed unit, environment, object surface, floor and air

- No
  - Register personal information, inform hand hygiene and personal protection knowledge

- Have fever and / or respiratory symptoms, Have an epidemiological history
  - Instruct patients (including accompanying persons) to properly wear medical surgical masks, and immediately transfer patients to emergency isolation wards, and implement single room isolation
  - Medical staff perform hand hygiene-wear working round caps-medical protective masks-wear isolation gown-wear latex gloves (wear medical protective gowns and goggles as needed)
  - Report to the administrative staff
  - Laboratory testing
  - Imaging
  - Organize expert consultations as needed

- Rule out COVID-19
- Suspected case
  - Implementing routine medical care
  - Transfer to an isolated ward or designated hospital

For those who need family escort, issue a one-time certificate for entrance.

Instruct escorts / visitors to wear masks.

The escort / visitor must take temperature before entering the ward, and the medical staff asks in detail whether there is fever and / or respiratory symptoms, and epidemiological history.
**Infection prevention and control procedures of medical imaging (DR / CT)**

1. The imaging front desk receives notification that a suspected patient is to be investigated, register and notify the technician.
2. Technician wears secondary protective equipment and lays disposable sheets to cover the inspection table.
3. Patients are guided to designated rooms by designated staff.
4. Technician checks whether the patient's medical surgical mask is worn properly.
5. Instruct the patient to go to the designated equipment area for examination.
6. End of investigation.
7. Technician takes off latex gloves and discard them in a medical waste container.
8. Designated staff assist patients in removing radiation protection items and guide patients back.
9. Transfer images to the PACS network and notify the imaging doctor.
10. With secondary protection, the workers wipe and disinfect the surface of the inspection room. Disinfect the indoor air by air sterilizer or ultraviolet light for ≥30 minutes.
11. The imaging doctor calls the physician in charge when suspecting positive case by imaging Issue a diagnostic report within 30 minutes.
12. Take off protective equipment Discard them into medical waste package.
13. Implement hand hygiene and make record.
14. Perform hand hygiene and finish the work.
XXXI Infection Prevention and Control of disinfection and supply Center

A. Pre-process procedures for reusable diagnostic and treatment equipment and appliances that have been used by patients with COVID-19

1. Pre-process of instruments, appliances, etc. after use
2. It is recommended to remove significant pollutants with running water with appropriate protection
3. Soak with disinfective enzyme solution or disinfectant solution containing 1000mg/L of chlorine.
4. Rinse the disinfectant with running water and wipe to dry
5. Put in a specified closed container with "COVID-19" label
6. CSSD recycle separately in time
B. Cleaning and disinfection procedures of specified vehicles and containers

Recycling personnel wear disposable surgical masks, eye masks, gowns, etc.

Recycle vehicles / containers for cleaning and disinfection

When using an automatic washer-disinfector, set at $\geq 90 \degree C$, $\geq 5$ minutes, or set a $\Lambda 0$ value at $\geq 3000$, and confirm the disinfection effect

Remove visible pollutants, wipe with $2000mg/L$ chlorine-containing disinfectant or hydrogen peroxide disinfection wipes for 30 minutes

Dry and store

Perform terminal cleaning and disinfection of containers and vehicles. Take off medical protective equipment
XXXII Infection prevention and control for specimen collection and microbial laboratory

A. Infection prevention and control procedures for blood sample collection

Follow the "Guidelines for Laboratory Testing of Pneumonia Infected by New Coronavirus" (Third Edition) during collection of blood specimens.

Hospital-level expert group identifies suspected case and initiates diagnostic procedures.

Prepare items for blood specimens collection: Quick-drying hand disinfectant, venous blood sample needle, disinfection tourniquet, pad, cotton swab.

Perform secondary protection when sampling.

Put the collected blood samples into a disposable transparent sealed specimen bag (with a biosafety label), confirm that there are no leaks, and deliver them to the transporter. Both part should make a record.

Perform hand hygiene and send the samples to designated lab immediately.
B. Infection prevention and control procedures for upper respiratory tract specimen collection

Follow the "Guidelines for Laboratory Testing of Pneumonia Infected by New Coronaviruses" (Third Edition) during collection of upper respiratory specimens

Hospital-level expert group identifies suspected case and initiates diagnostic procedures

Prepare the items for upper respiratory tract sampling: Quick-drying hand disinfectant, 4 flocking swabs, virus puppet header, disposable collector, negative pressure pump, etc.

Perform level-3 protection when sampling

Put the samples into a disposable transparent sealed specimen bag (with a biosafety label), confirm that there are no leaks, and deliver them to the transporter. Both part should make a record.

Perform hand hygiene and send the samples to designated lab immediately
C. Infection prevention and control procedures for lower respiratory tract specimen collection

<table>
<thead>
<tr>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follow the &quot;Guidelines for Laboratory Testing of Pneumonia Infected by New Coronavirus&quot; (Third Edition) during collection of lower respiratory specimens</td>
</tr>
<tr>
<td>Hospital-level expert group identifies suspected case and initiates diagnostic procedures</td>
</tr>
<tr>
<td>Prepare lower respiratory tract specimens for collection: Quick-drying hand disinfectant, disinfected fiber bronchoscope, disposable collector, Negative pressure pump, Screw-top plastic tube, disposable sterile syringe (5ml, 50ml), physiological saline, etc.</td>
</tr>
<tr>
<td>Perform level-3 protection when sampling</td>
</tr>
<tr>
<td>Put the samples into a disposable transparent sealed specimen bag (with a biosafety label), confirm that there are no leaks, and deliver them to the transporter. Both part should make a record.</td>
</tr>
<tr>
<td>Perform hand hygiene and send the samples to designated lab immediately</td>
</tr>
</tbody>
</table>
D. Infection prevention and control procedures for conjunctival swab specimen collection

Perform eye and conjunctival swab specimen collection in accordance with the requirements of "Shanghai Novel Coronavirus Specimen Collection and Laboratory Detection Technology (Fourth Edition)"

Doctors issues the test order

Fill in the conjunctival swab specimen on the specimen collection sheet

Fill in the number of swabs and collection time after ticking on the specimen collection sheet

Prepare eye conjunctival swab specimen collection materials: quick-drying hand disinfectant, disposable sampling swab, virus collection tube, etc.

Level-3 biological safety protection are used during collection:
Perform hand hygiene → wear working round caps → wear medical protective masks → wear medical protective gown → wear goggles or protective shield → wear latex gloves → wear leak-proof wear-resistant boots covers → wear second-layer latex gloves

Check patient information before collection → Perform hand hygiene

Gently wipe the conjunctival surface of the patient’s eye with a swab → Insert the swab into the virus collection tube → Discard the tail part → Hang the tube cap tightly

Put the collected eye and conjunctival swab specimens into a disposable transparent sealed specimen bag (Appropriate size, with biosafety identification) → 1 specimen per bag → Confirm no leakage → Closed transfer for delivery to transport personnel → Records signed by both parts

Perform hand hygiene → immediately send the sample to designated lab
E. The infection prevention and control procedures of specimen transfer in the hospital

Specimen transfer staff should transfer specimens from patients with COVID-19 in accordance with the requirements of Shanghai Novel Coronavirus Specimen Collection and Laboratory Testing Technology (Fourth Edition)

Specimen transfer personnel wear isolation gown → wear working caps → wear medical surgical masks → wear latex gloves

Handover with specimen collection staff → check specimen number and information → both parts sign and keep records

The transporter wipes and disinfects the outer surface of the specimen bag with 75% alcohol

Pack the specimen bag into another new disposable transparent sealed specimen bag with appropriate size and biosafety label

Pack the double-layer specimen bag into the sealed "COVID-19" specified specimen transfer box with a biosafety label

Wipe and disinfect the surface of the transfer box with 75% alcohol

Specimens in the transfer box should be kept upright to avoid bumps during transfer

The transfer personnel conducts the specimen transfer with the receiving personnel at the laboratory receiving place. The receiving personnel should wear isolation gown, working round caps, medical surgical masks, and latex gloves.

Specimen receiving personnel and transfer personnel check specimen number and information → both parts sign and keep records
F. Infection prevention and control procedures for specimen testing in the lab

- Technician should follow the requirements of "Shanghai Novel Coronavirus Specimen Collection and Laboratory Testing Technology (Fourth Edition)" → clinical specimen testing is performed in a biosafety cabinet of a level-2 biosafety laboratory

- Resourceful facilities can set up separate laboratory or use specific equipment for testing

- The technician should adopt level-3 biological safety protection: perform hand hygiene → wear working round caps → wear medical protective masks → wear medical protective gown → wear goggles or protective shield → wear latex gloves → wear leak-proof boots covers → Wear second layer of latex gloves

- Received a specimen for Novel Coronavirus detection → Open the sealed specimen bag in the biological safety cabinet → Get out the specimen

- Centrifuge in a fume hood, do not leave the operator during the centrifugation → After the centrifuge is stopped, wait for more than 10 minutes → get out the specimen

- Tests that may generate aerosols are performed in a biosafety cabinet → the duration of opening the specimen is minimized during the testing operation according to the project requirements → the specimen after testing → a new cover is added in the biosafety cabinet → the original specimen cover is disinfected and then discarded into medical waste package

- Standardized management of medical waste

- Clean and disinfect laboratory environment and surface

- End of experiment → Perform hand hygiene → Take off protective equipment → Perform hand hygiene
XXXIII Medical waste, sewage and others

A. Procedures of medical waste management in medical facilities

Garbage in fever clinics, isolated observation rooms, etc. for patients with suspected or confirmed COVID-19 are managed as medical waste

Infectious and pathological medical wastes are discarded in double-layered medical waste packaging bags, and sharp medical wastes are placed in sharps boxes; Pack the waste in accordance with the "Special Packaging for Medical Wastes, Container Standards and Warning Labeling Regulations", and sealed effectively

Add a pressure-resistant hard carton to the outermost layer and seal it. It is absolutely forbidden to open the carton after sealing. The surface of the carton should be printed with a red "infectious waste" label. The specific size of the carton are not greater than 400mm in length, 300mm in width, 360mm in height

A yellow medical waste packaging bag is placed outside the carton and temporarily stored locally

A specified person is responsible for the handover, who notifies the Shanghai Solid R-cycling Center to collect it on-site, fills in the transfer form separately, establishes a ledger

Clean and disinfect the surface of the ground where the waste is stored. The concentration of disinfectant is 1000mg/L.

Note: Medical waste produced during diagnosis and treatment of patients with non-neither suspected nor confirmed COVID-19 should be strictly implemented in accordance with the Medical Waste Management System of local medical facility.
B. Procedures for emergency management medical sewage

For medical facilities, which perform the diagnosis and treatment of patients with suspected or confirmed new type of coronavirus pneumonia, the sewage generated during the epidemic is regulated the same as infectious diseases hospitals, and the sterilization and disinfection are strengthened to ensure that the indicators such as the number of fecal coliforms of the effluent sewage reach the requirements of "Standards of Pollutant in Discharged Water of Medical Facilities".

To strengthen the control and management of waste water from sewage treatment stations and sludge discharge to prevent the transmission of pathogens in different media → Sewage management projects located indoors must be provided with forced ventilation → Equip workers with emergency supplies such as work clothes, gloves, goggles → strengthen monitoring and evaluation of water quality at discharge outlets and sewage discharge outlets

<table>
<thead>
<tr>
<th>Sewage management facility available</th>
<th>No sewage management facilities</th>
</tr>
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<tbody>
<tr>
<td>Strengthen process control and operation management to ensure compliance with the standards</td>
<td>Refer to &quot;Guidelines for Hospital Sewage Treatment Technology&quot; and &quot;Technical Specifications for Hospital Sewage Treatment Engineering&quot;, etc., and set up temporary sewage management tanks (boxes) according to local conditions</td>
</tr>
</tbody>
</table>

Disinfection with liquid chlorine, chlorine dioxide, sodium chlorate or bleach

- Contact time $\geq 1.5$ h
- Available chlorine dosage is 50mg / L, free residual chlorine is greater than 6.5mg / L, fecal coliform count is less than 100 / L

The effective chlorine dosage is 80mg / L, the amount of free residual chlorine is greater than 1 0mg / L, and the number of fecal coliforms is $<100$ / L

- Chlorine dosage and residual chlorine need to be appropriately increased

Ozone disinfection

- Contact time $<1$ h
- The concentration of suspended solids in sewage should be less than 20mg / L, the contact time should be greater than 0.5 hours, the dosage should be greater than 50mg / L, the removal rate of E. Coli should not be less than 99.99%, and the number of fecal coliforms $<100$ / L

Hospital sludge should be disposed of in a centralized manner by units qualified for hazardous waste treatment and disposal in accordance with hazardous waste treatment and disposal requirements
C. Procedures of the management of corpse of patients with COVID-19

After the patient dies, the physician issues a medical certificate of death

The medical facility reports the healthcare authorities. The healthcare authorities notifies the civil affairs bureau, and the civil affairs bureau notifies the relevant funeral facility to make preparations for the transportation and cremation of the body.

Trained staff perform levels-3 protection, wear working clothes, disposable cap, full-scale respirator, medical protective gown, latex gloves, long-sleeved thick rubber gloves, and shoe covers.

Use 3000mg / L ~ 5000mg / L chlorine-containing disinfectant or 0.5% peracetic acid cotton ball or gauze to fill the patient's mouth, nose, ear, anus, tracheotomy and other open channels or wounds.

Wrap the corpse with a double-layer cloth impregnated with disinfectant, then put the body in an impervious double-layer corpse bag and seal.

Contact relatives to agree cremation. If a relative refuses to be present or refuses to transfer the body, the medical or funeral facility will persuade them to do. If the persuasion is invalid, the medical facility will sign and hand the body over to the funeral.

Contact the funeral facility as soon as possible to pick up the body, and indicate in the handover form that the sanitary and epidemic prevention has been carried out and the opinion of immediate cremation.

Medical facilities shall timely register and store records of the management of the remains of patients with COVID-19, and it should be reported to the disease prevention and control center and the civil affairs bureau in a timely manner.
Mindray in Action to Combat COVID-19

Headquartered in Shenzhen, Mindray is the largest and internationally leading medical device supplier in China.

Mindray has branches in more than 30 provinces, municipalities and autonomous regions in China, as well as 39 subsidiaries abroad, boasting an employee team of nearly 10,000 staff worldwide. Mindray’s 8 R&D centers form a huge network of research and development, marketing and service. The main business covers 3 major fields: namely, life information and support, in vitro diagnosis and medical imaging. By means of cutting-edge technological innovation, Mindray supplies more advanced product solutions, which assists world community improve medical conditions and uplifts diagnosis and treatment efficiency. At present, Mindray’s products and solutions are applied to more than 190 countries and regions in the world including nearly 110,000 medical institutions and over 99% of Grade A hospitals in China.

In 2020, over 1 million people have been infected since the wake of the outbreak of COVID-19 worldwide. This is a dire challenge faced by the medical systems of all countries. In speedy response to the pandemic, Mindray has actively participated in the construction of Huoshenshan Hospital and Leishenshan Hospital, makeshift hospitals in Wuhan. On March 12, the anti-epidemic expert task force arrived in Italy with Mindray’s equipment to support those hardest-hit epic centers outside China. By mid-March, more than 10,000 medical professionals had shared China’s experience through Mindray’s international anti-epidemic exchange platform.

Mindray has donated more than RMB 33 million to designated medical institutions in Hubei Province. In coping with the epidemic emergency, Mindray has also nationwide delivered more than 80,000 medical equipment which later served as the powerful scientific and technological “weapon” in battling the outbreak, including patient monitors, remote ultrasound consultation systems, high-end color Doppler ultrasound systems, in-vitro diagnostics and other equipment.
Tencent is an Internet-based platform company using technology to enrich the lives of Internet users and assist the digital upgrade of enterprises. Our mission is "Value for Users, Tech for Good".

"COVID-19 is drastically impacting people around the world. We are facing this challenge together and Tencent is committed to providing technical support in a prompt manner," said Martin Lau, President of Tencent, "This is a critical moment that calls for global collaboration."

We announced a US$100 million Global Anti-Pandemic Fund in March 2020 to support international efforts against COVID-19. The Fund will initially focus on the sourcing and donation of medical supplies, such as personal protective equipment (PPE) and other essential products, for hospitals and front-line healthcare workers.

Meanwhile, Tencent has also deepened cooperation with the World Health Organization ("WHO"). As part of the cooperation, Tencent Health is making a technological contribution to the global fight against COVID-19 by open-sourcing the international module in its COVID-19 Mini Program (TH\_COVID19\_International) and COVID-19 self-triage assistant, making an important information resource available for free to people around the world. The Tencent Health Mini Program has provided responses to six billion pandemic related queries for users in China over the past two months by virtue of its timely, accurate and visually compelling pandemic data and statistics. In order to help people assess their symptoms for COVID-19 risk and avoid cross-infection in hospitals, Tencent Health Mini Program has developed AI technology to translate professional clinical guidelines into easy-to-understand dialogues with the chat bot and navigate to the most appropriate care setting.

Moving forward, Tencent will open up more technological resources and work together with developers around the world to fight against COVID-19.
Huawei is a leading global provider of information and communications technology (ICT) infrastructure and smart devices. We are committed to bringing digital to every person, home and organization for a fully connected, intelligent world.

During the recent epidemic, many enterprises have made their own efforts to get through these tough times, ensure societal needs, support people’s livelihood, and promote production. Huawei seeks to support medical services in this special time, starting from urgent responses to the outbreak, guaranteeing the arrangement of epidemic prevention and control, and supporting epidemic control and management through technology. With Huawei’s support, Hubei carriers were able to complete the 5G network construction for Wuhan Huoshenshan Hospital within just three days. In addition, multiple medical research teams coordinated with HUAWEI CLOUD to screen anti-COVID-19 drugs using AI technologies. And to support the fight against the disease, Huawei also provided free WeLink video conferencing services with remote consultation, remote visit, and remote conferencing functions.

The epidemic brings new requirements and new applications, as well as showing the direction of public health transformation. In the future, Huawei will rely on its core technical advantages and capabilities in 5G, video conferencing, cloud, big data, and AI, as well as its comprehensive service architecture and ecosystems, to promote the in-depth integration of information technology and medical services. Huawei is determined to walk with medical workers hand in hand and fight the epidemic with technology.