

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, noninvasive 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, goggles 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

Surgical masks



1. Put on the mask. The metal strip should be upward.



2. The headband is tied to the back of the head and the back of the neck respectively.



3. Press the soft metal strip inward until the part is pressed into the shape of bridge of nose.



4. When finished, the mask must cover the nose to chin and be close to the face.



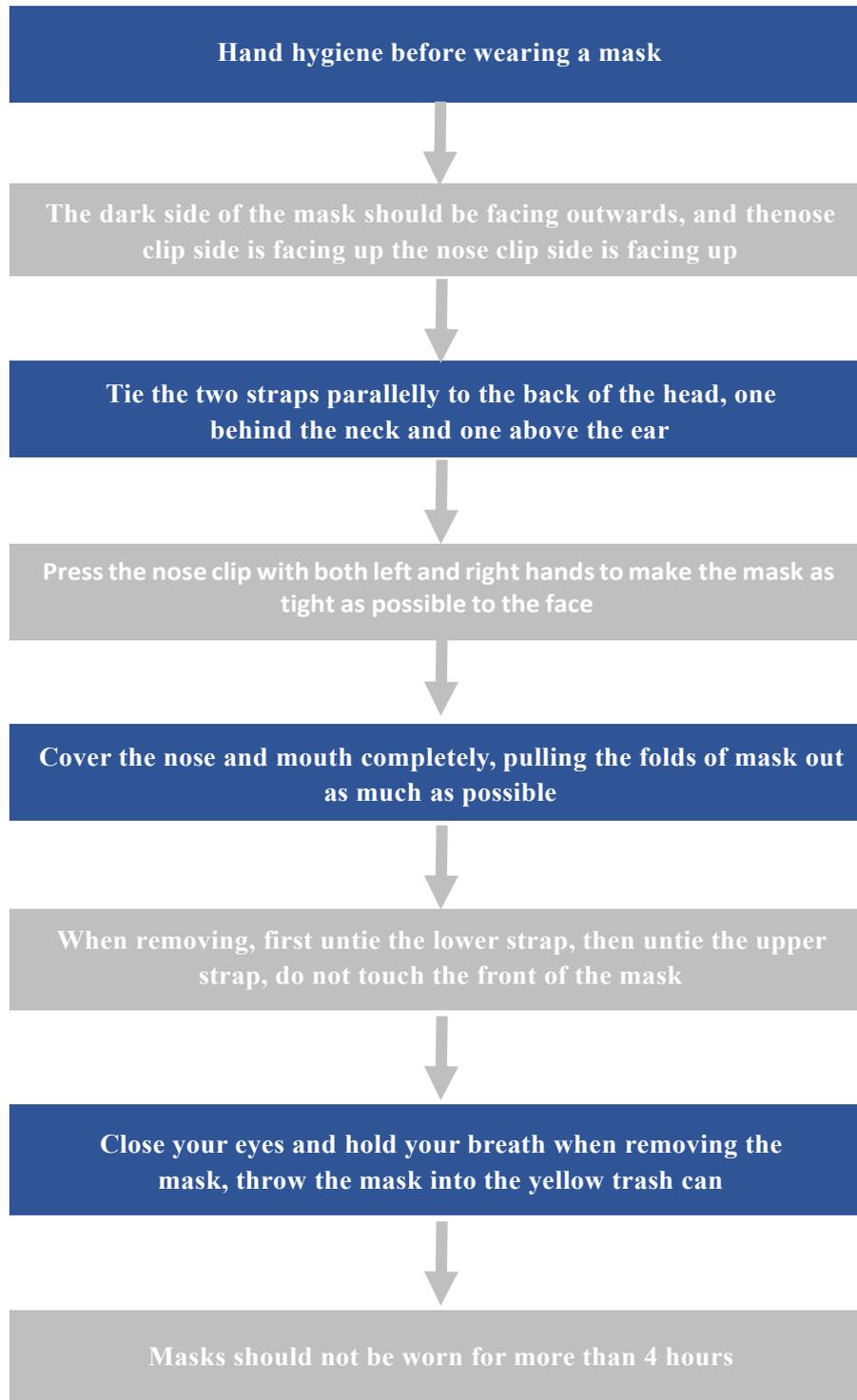
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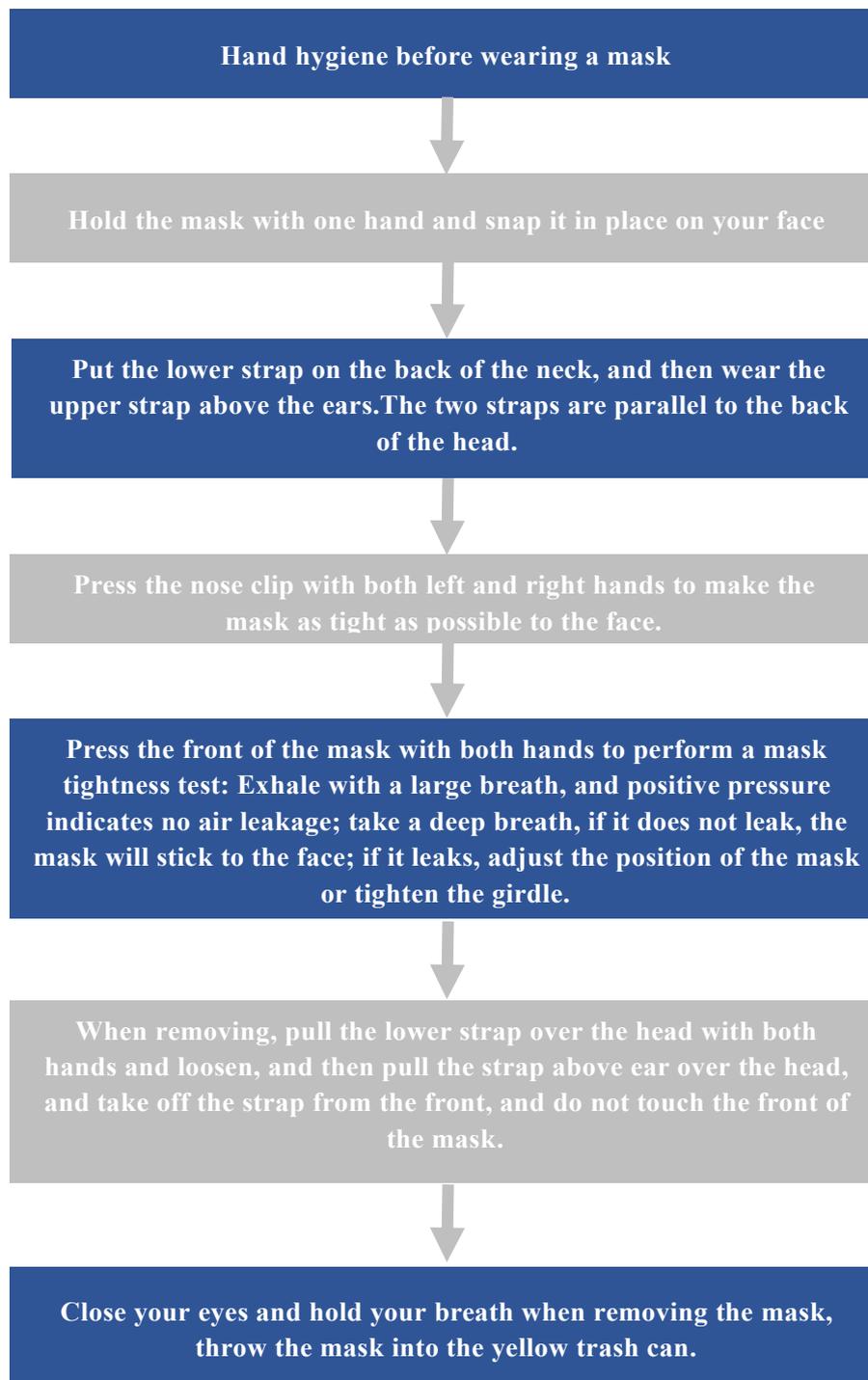
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Surgical masks cover the nose, mouth and chin

Wearing and removing of disposable surgical masks



B Wearing and removing medical protective masks



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

Note: single hand operation may cause poor airtightness and affect the use function of the mask



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. If the leakage is around the mask, adjust the headband position. If proper fit is not obtained, repeat steps 1 to 5
- c. Don't feel the leak before you continue to work.

Removal of medical surgical mask

Remove the mask with a tie



Hand hygiene

Removal of medical protective mask

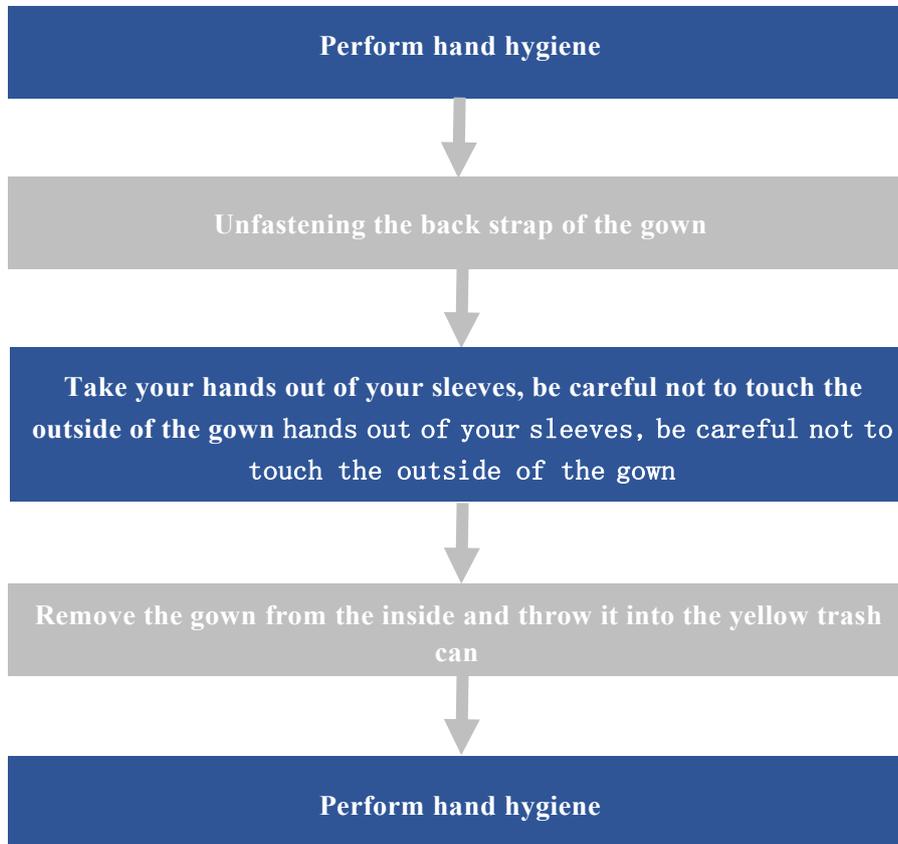
Remove the mask with a tie



Hand hygiene

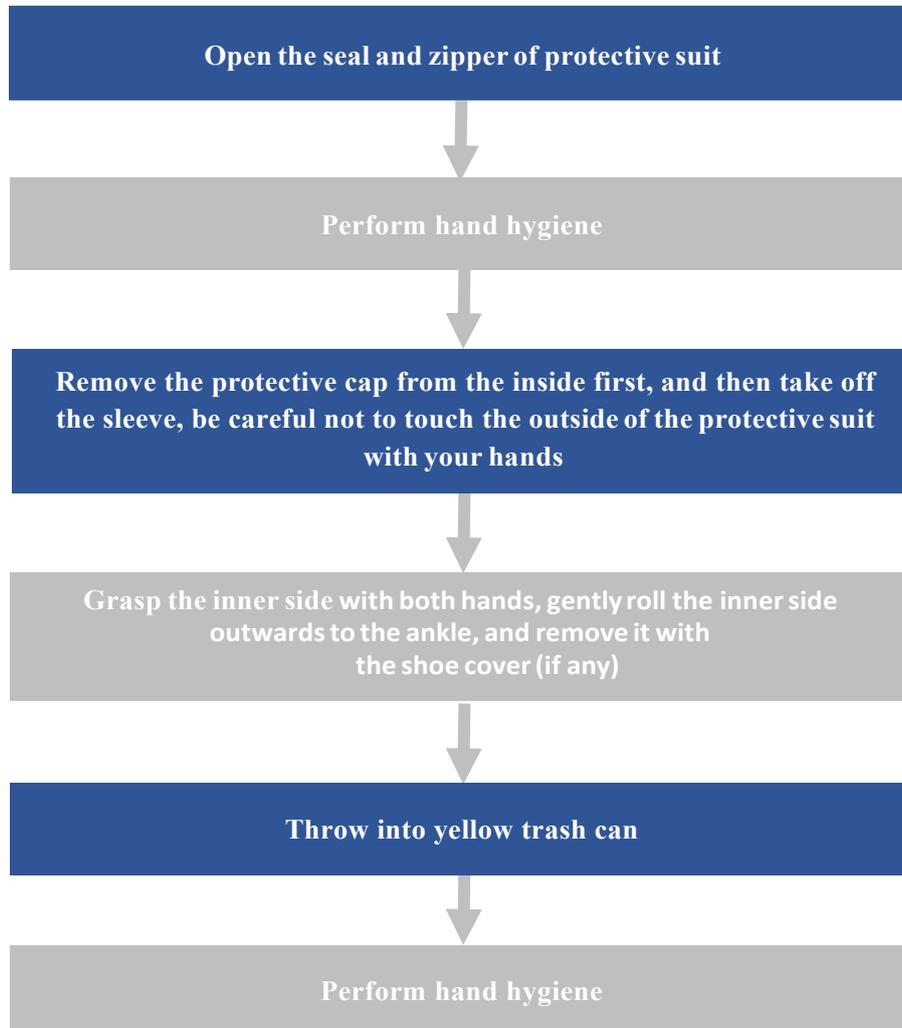
C Isolation gowns

Removal of the gown



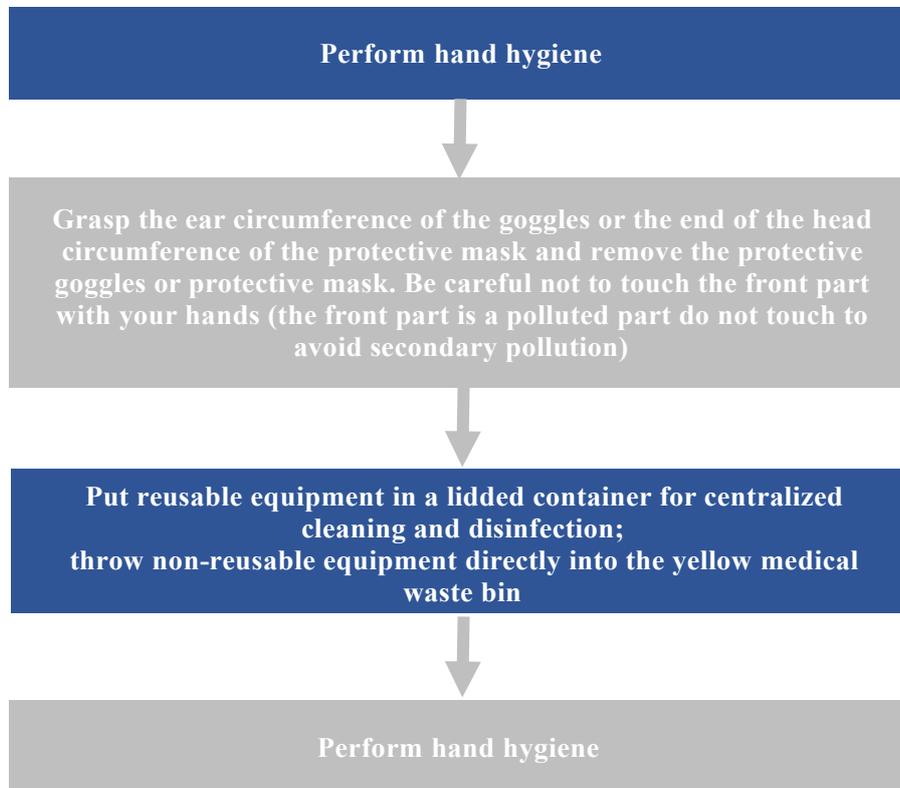
D Protective suit

Removal of protective suits



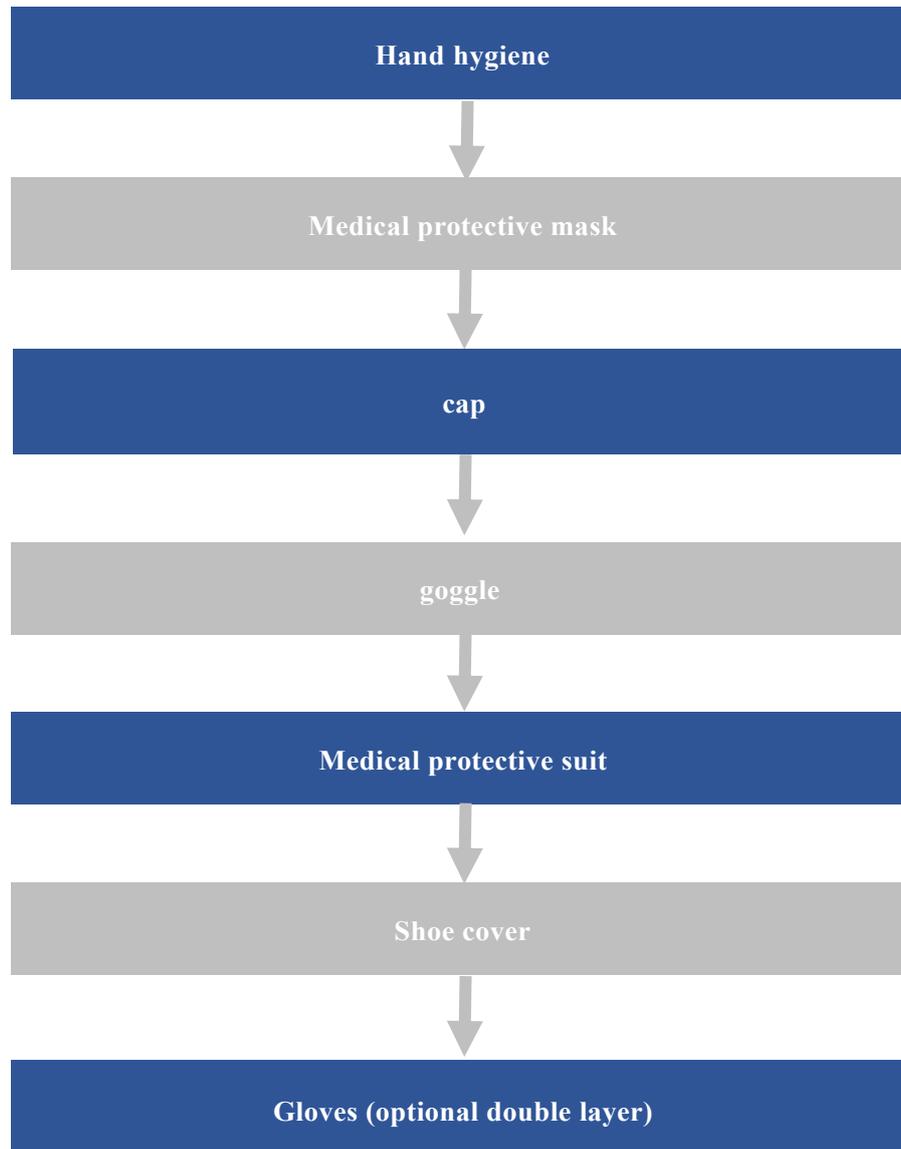
E Goggles or protective mask removal procedures

Goggles or protective mask removal procedures



F Putting-on and taking-off of protective equipment for general medical activities in fever clinic

1. Putting-on procedures

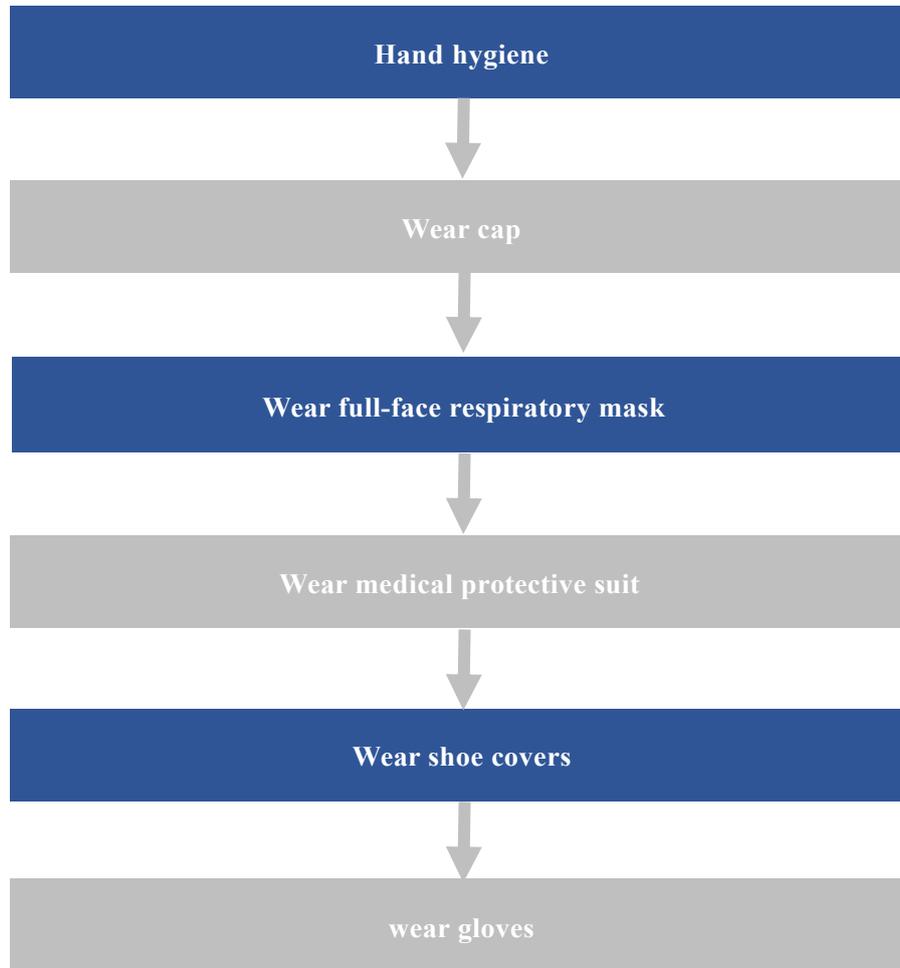


2. Take-off procedures

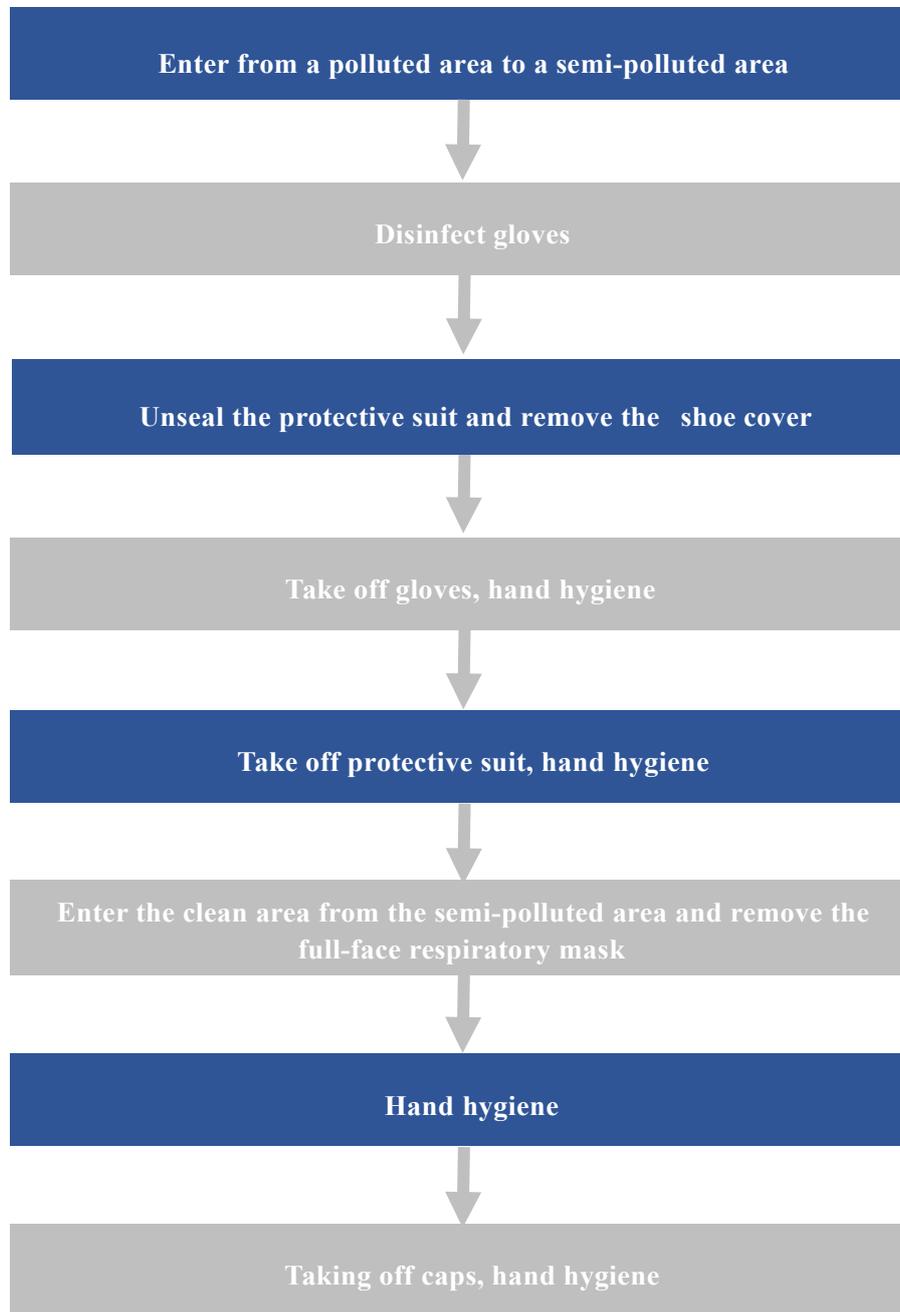


G Putting-on and taking-off of protective equipment for high-risk operations in fever clinic

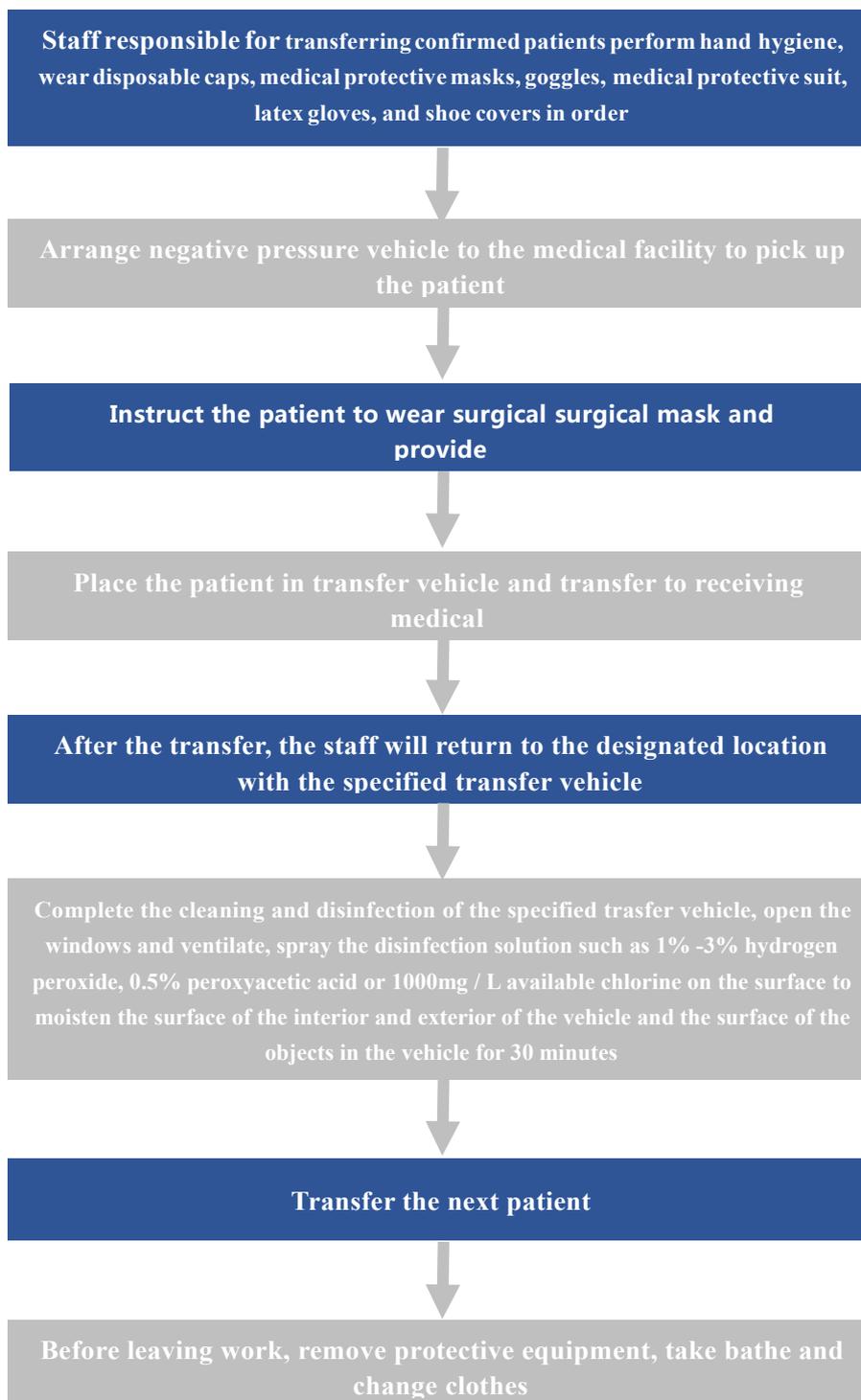
1.Putting-on order



2. Taking-off procedures

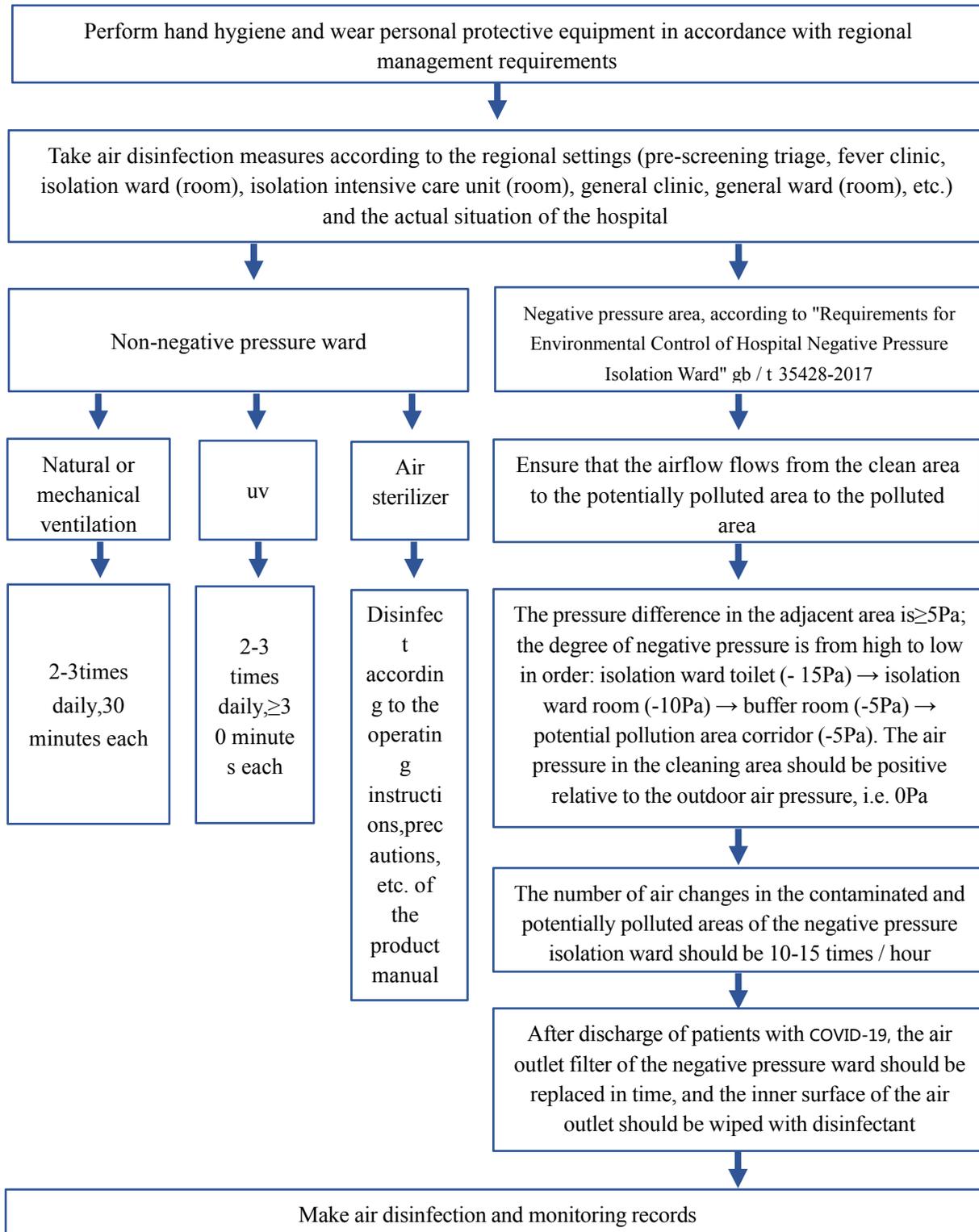


V Prevention and protection procedures for transferring infected patients



VI Air, environment and surface cleaning and disinfection:

A Air disinfection procedures



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

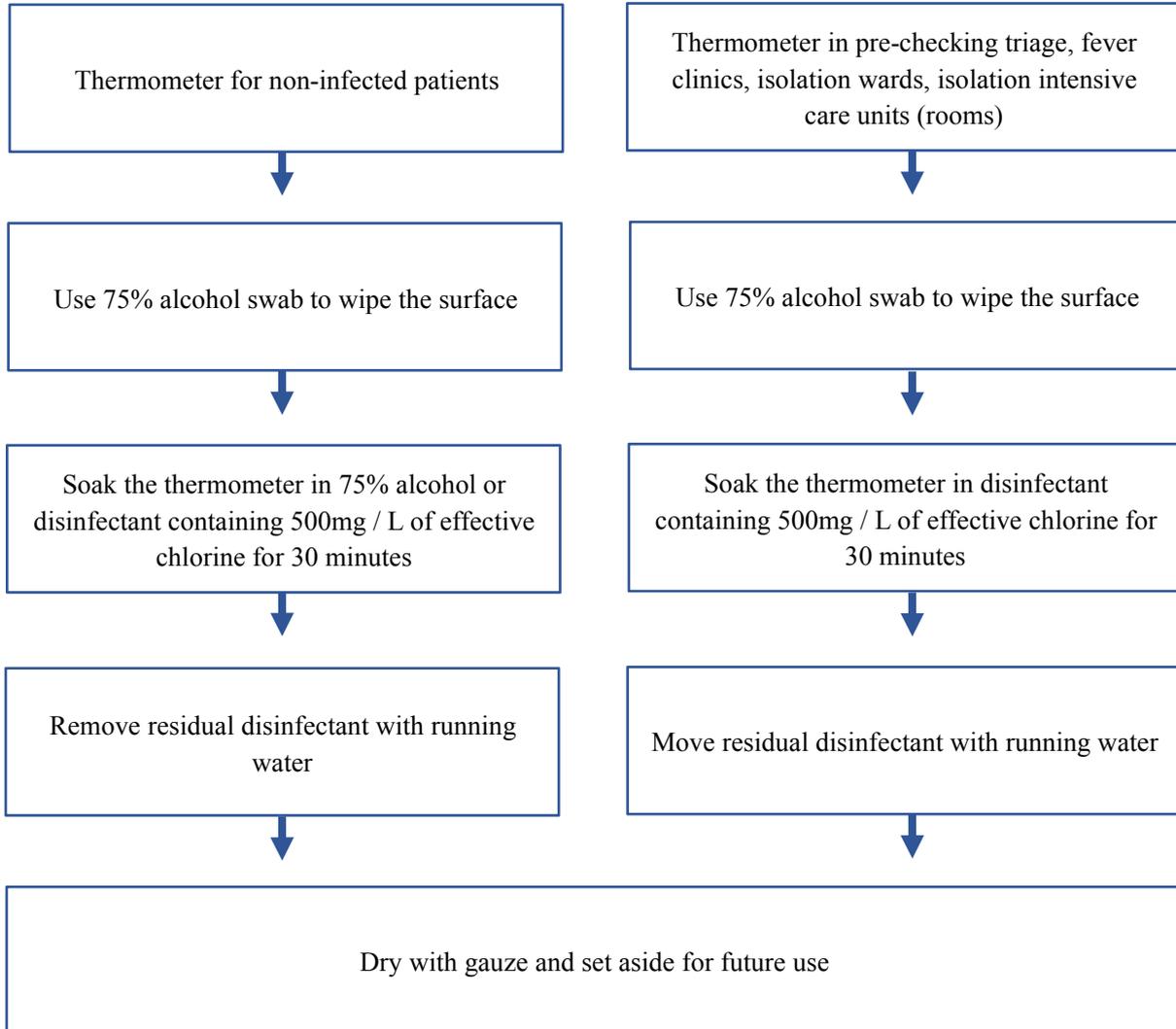
Cleaning and disinfection methods for goggles or protective face shield:

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.

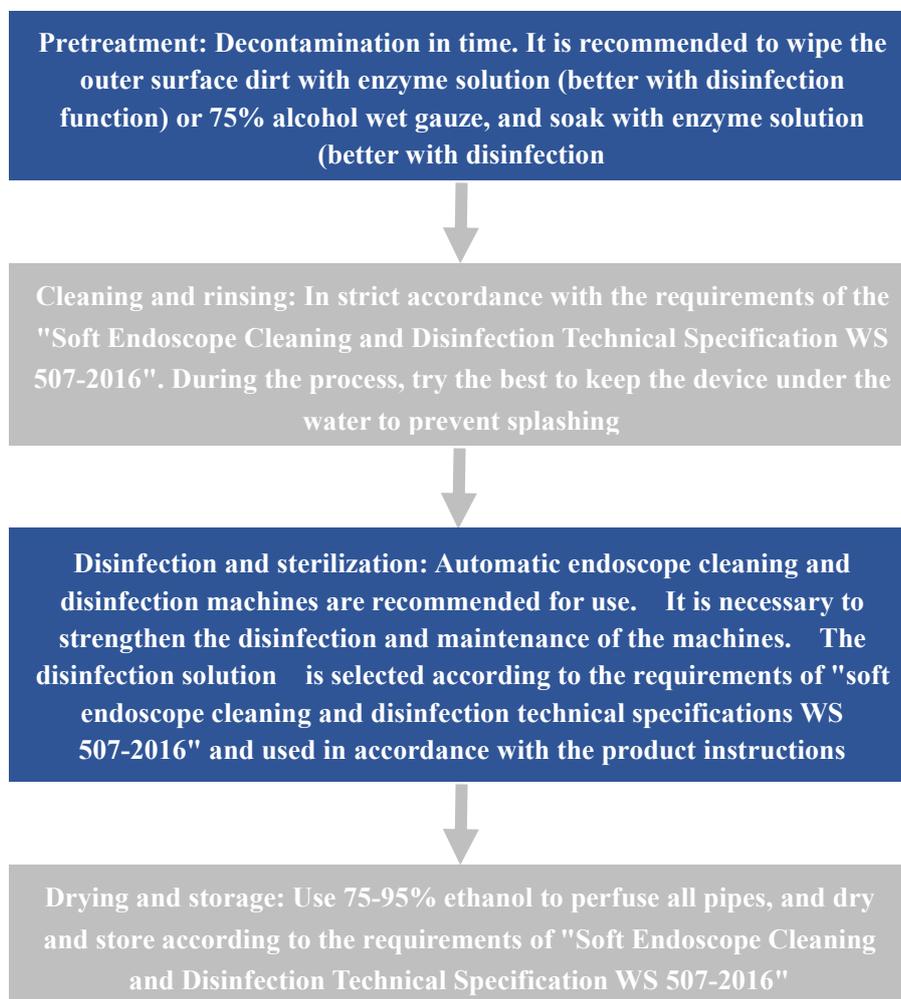
Disinfection of full-face respiratory mask:

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



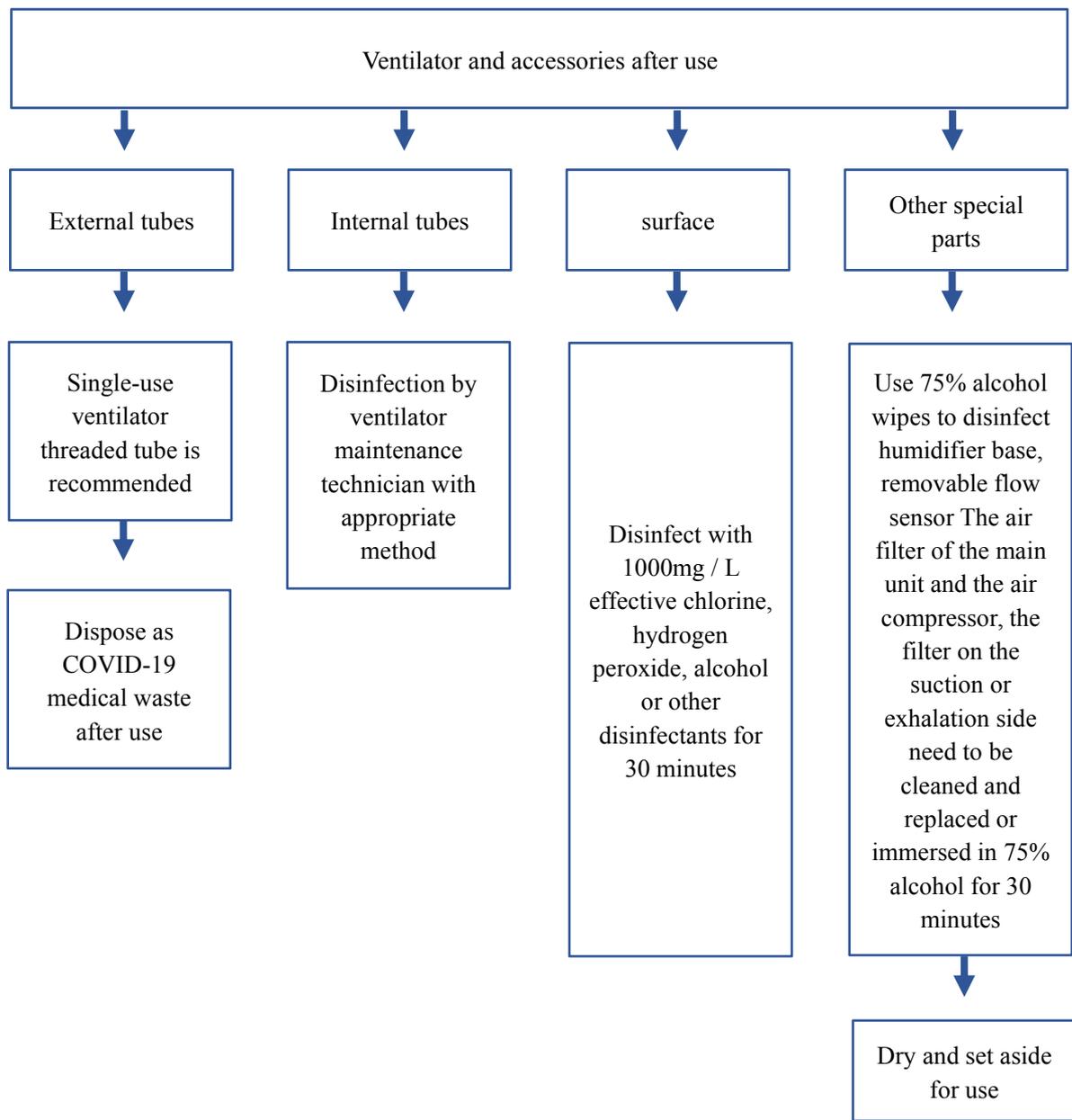
IX Cleaning and disinfection procedures of soft endoscope



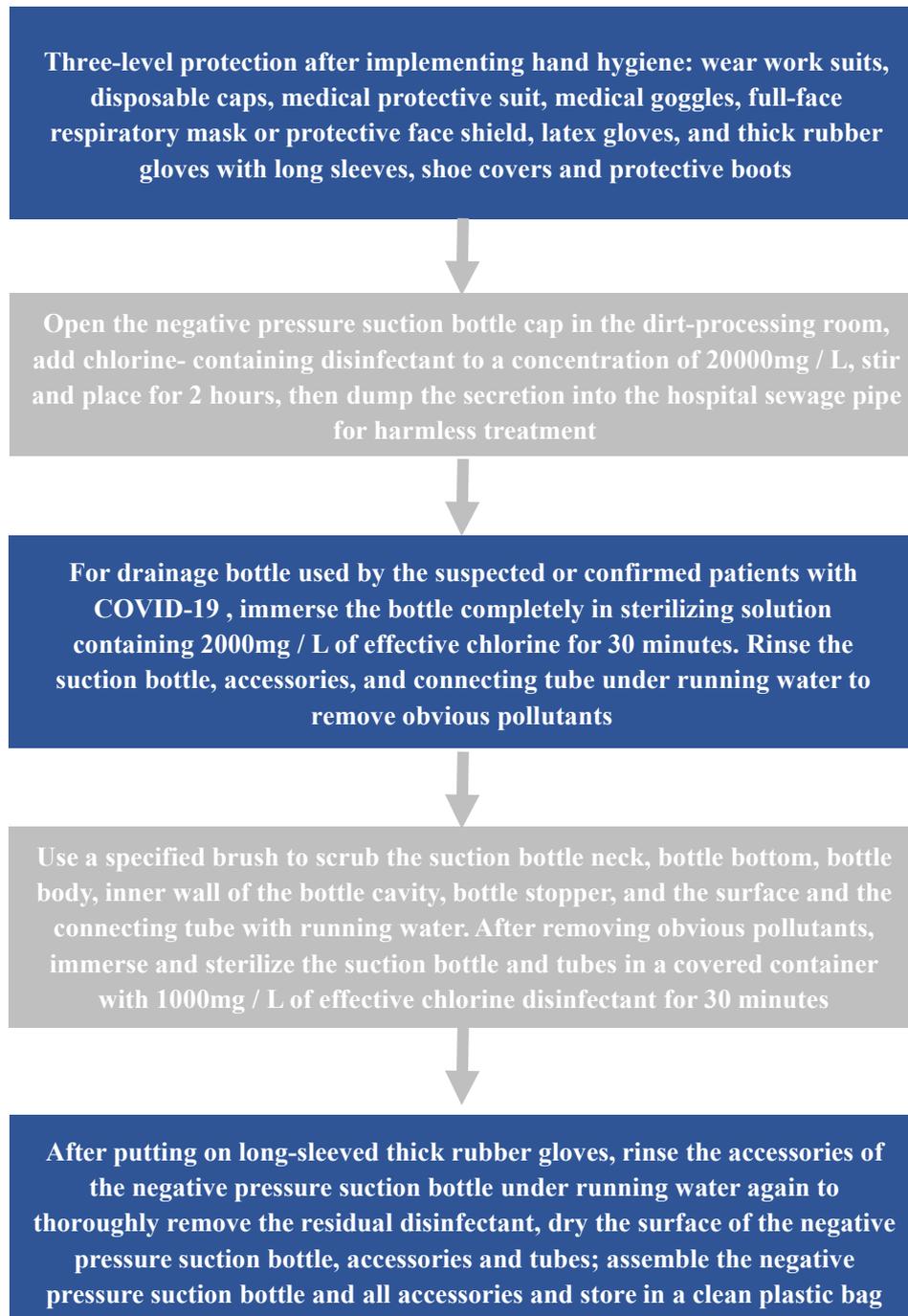
The cleaning tank and rinsing tank should be wiped and disinfected with 1000mg / L chlorine-containing disinfectant or 75% alcohol or a suitable disinfection wipes after each use. All tanks should be thoroughly brushed and disinfected after the daily medical service.

X Cleaning and disinfection procedures of ventilator and related accessories

Cleaning and disinfection procedures of ventilator and related accessories

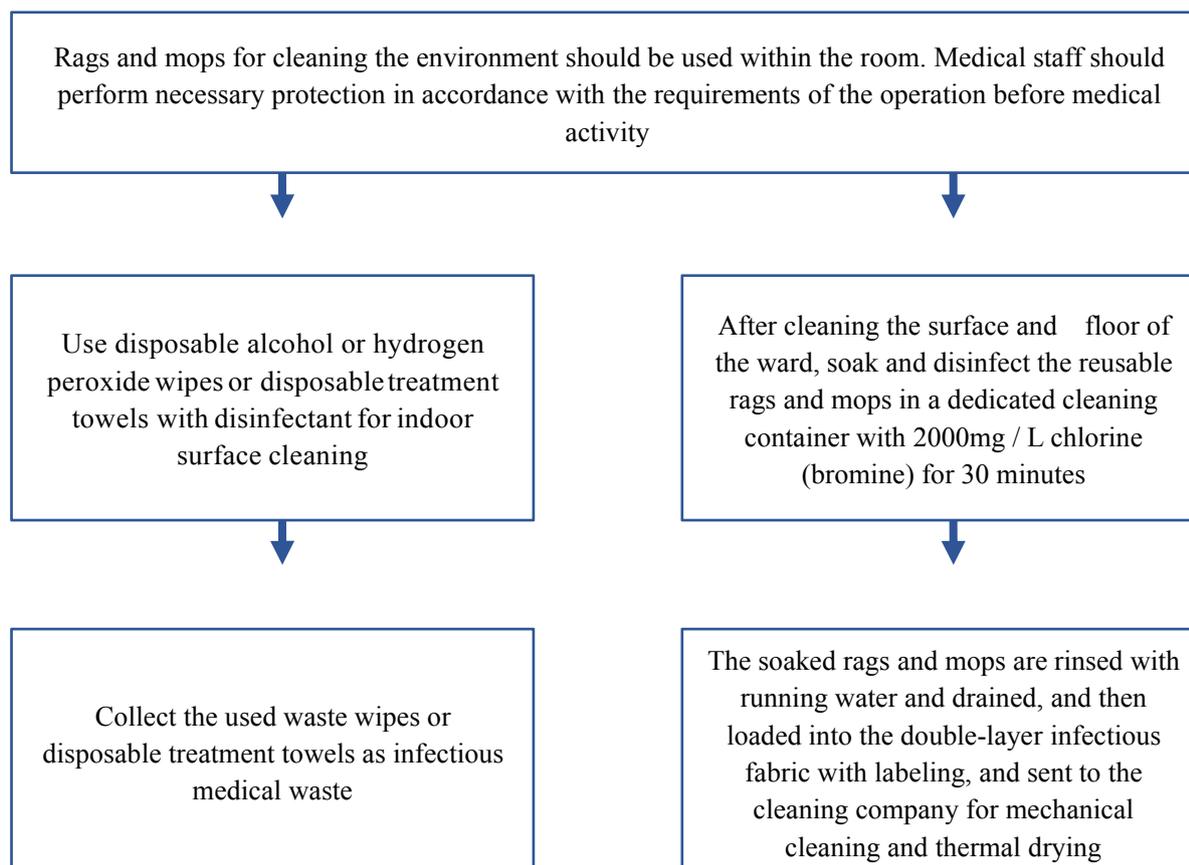


XI Cleaning and disinfection procedures of negative pressure suction bottle and accessories



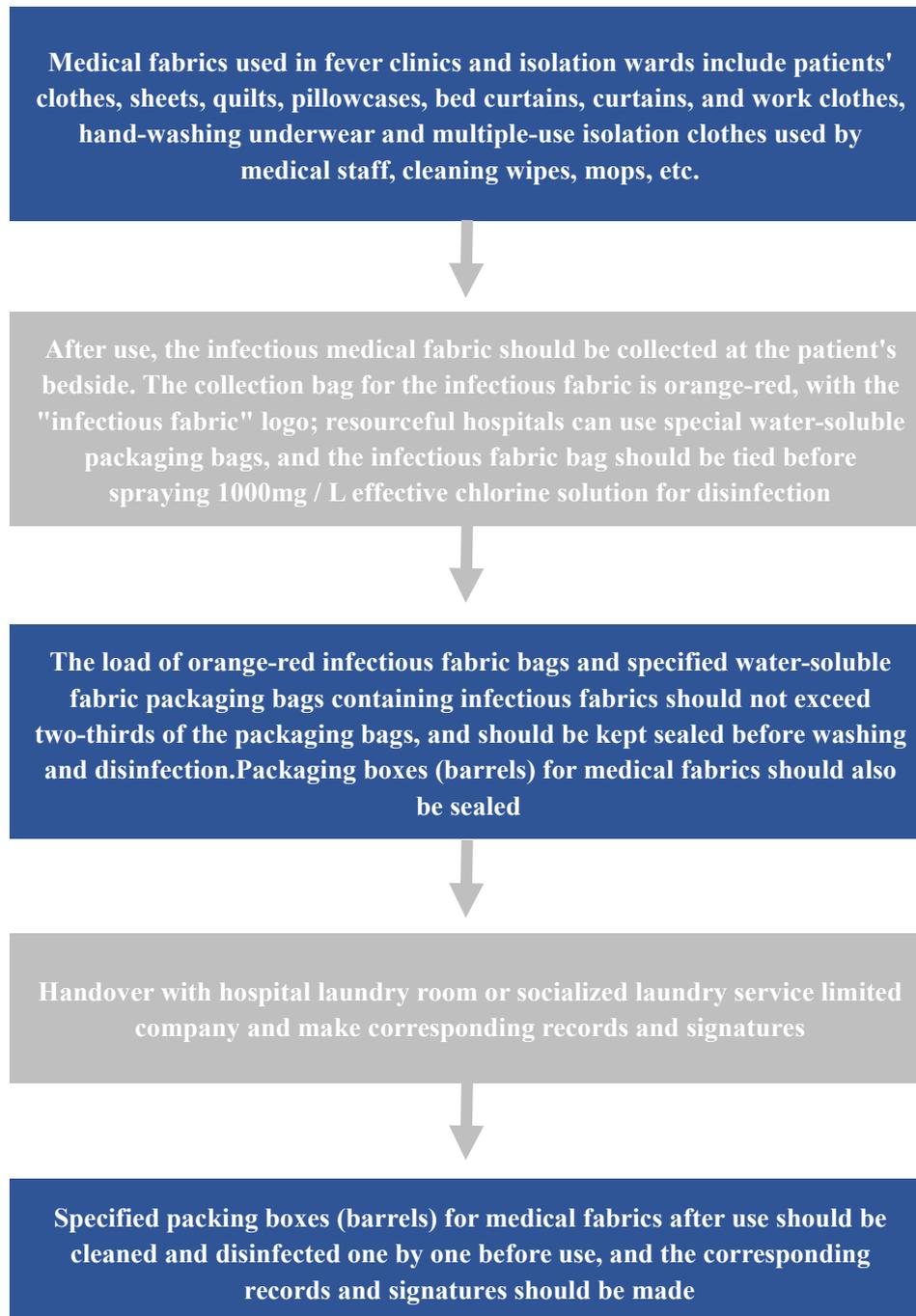
XII Cleaning and disinfection procedures of reusable sanitary ware

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



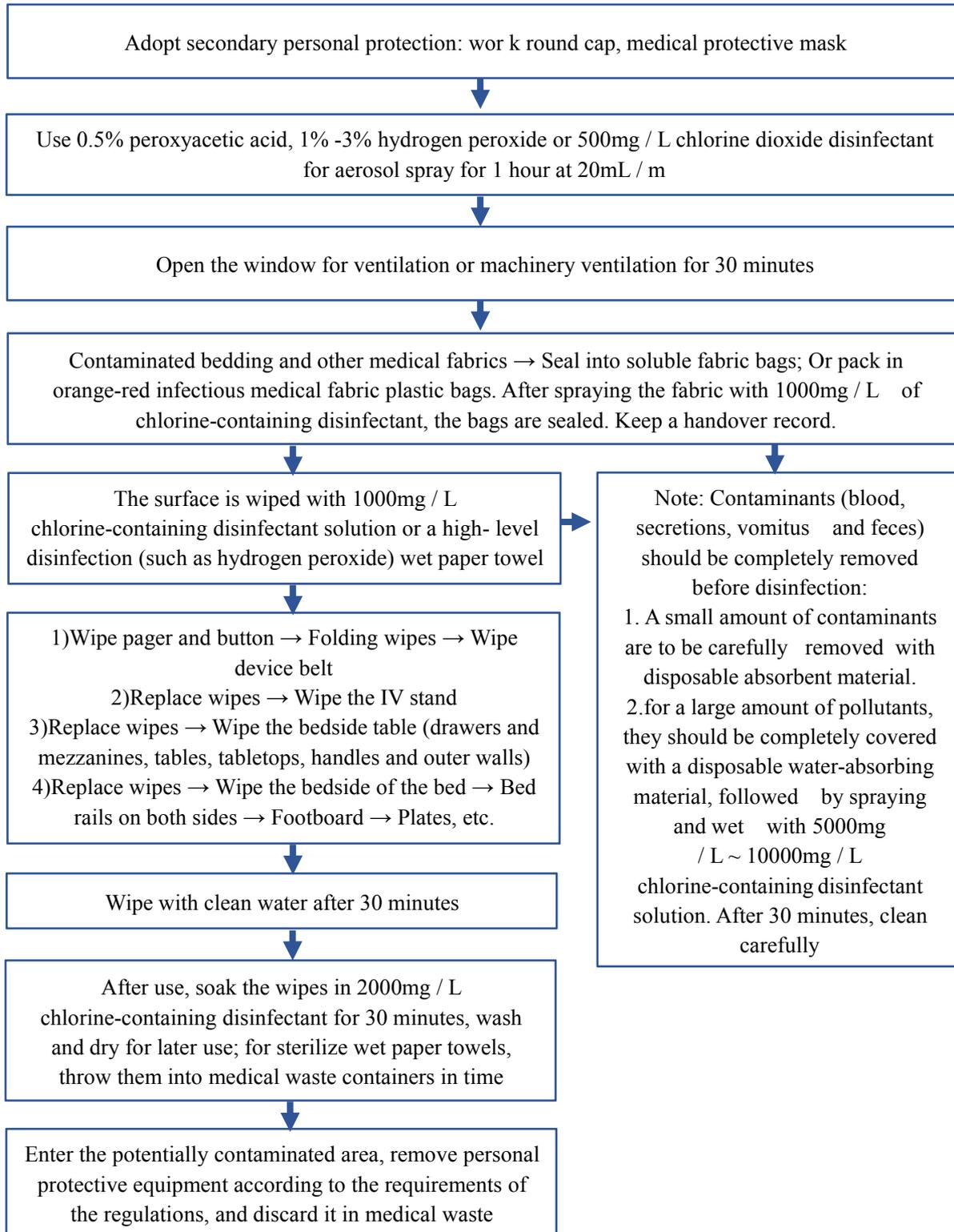
XIII Medical Fabric Disposal Procedures

Disposal of medical fabrics in fever clinics and isolation wards



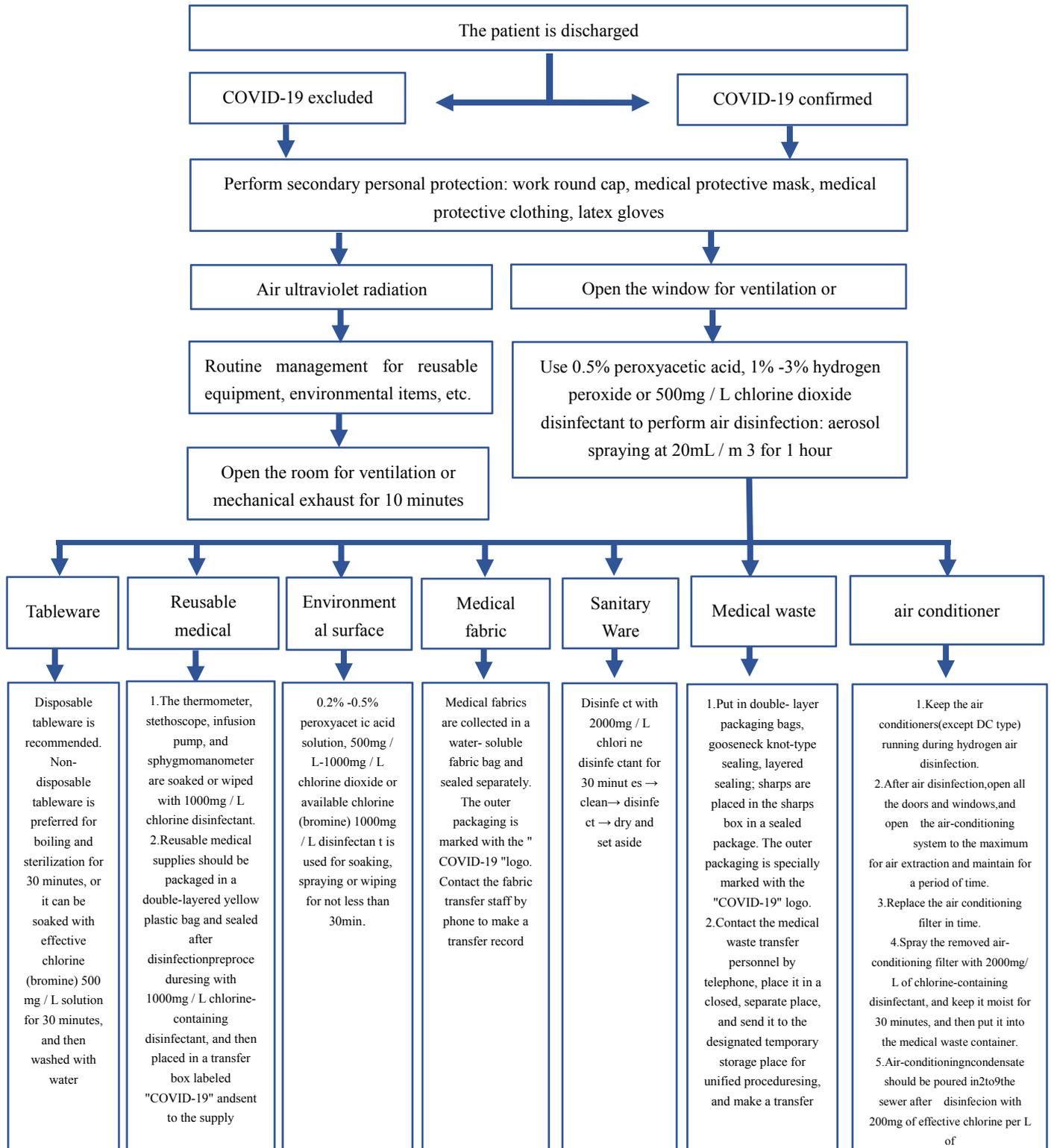
XIV Management of bed units after patients with COVID-19 are discharged

Management of bed units for discharged patients with COVID-19

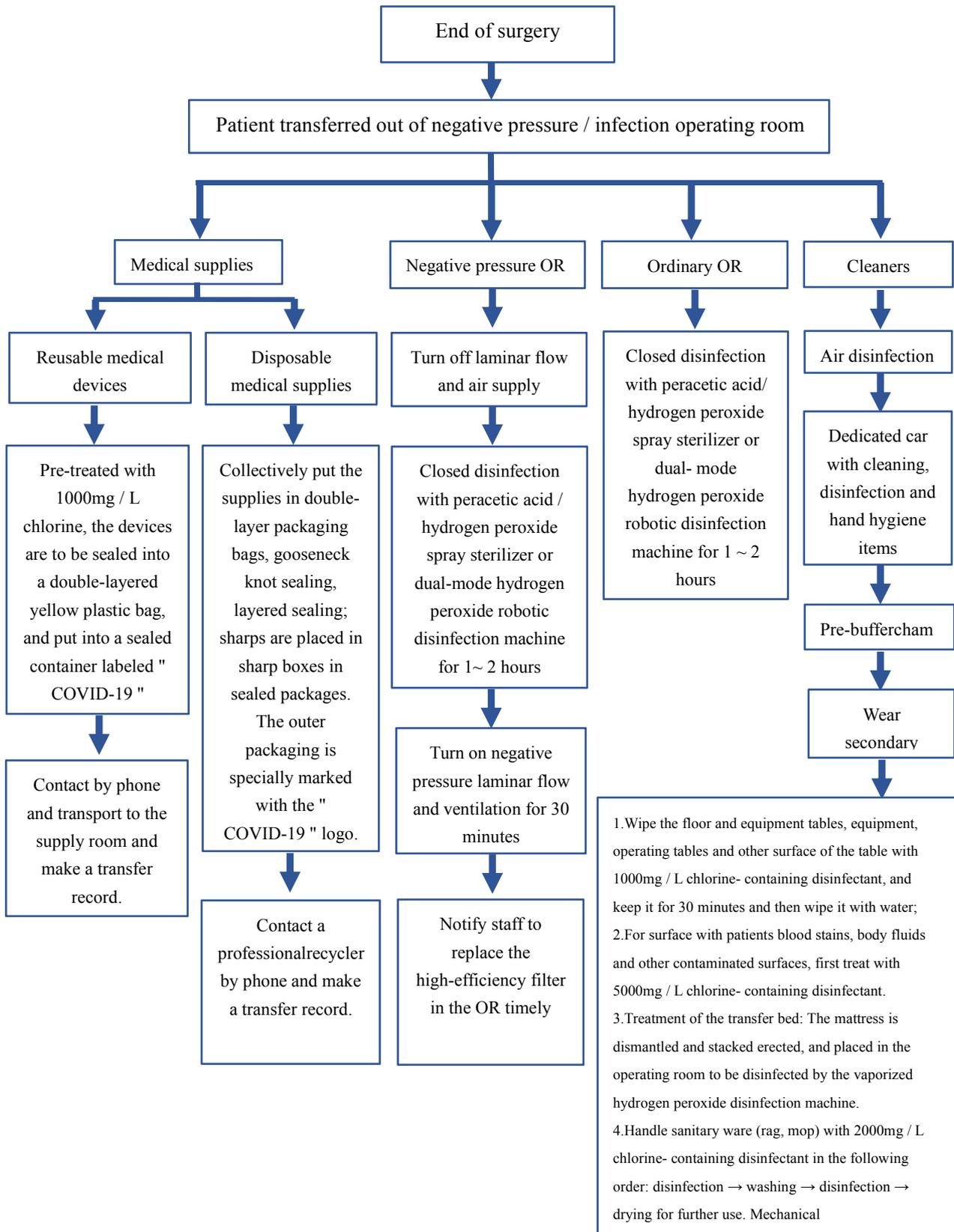


XV Terminal disinfection procedures in observation room

Terminal disinfection procedures in observation room

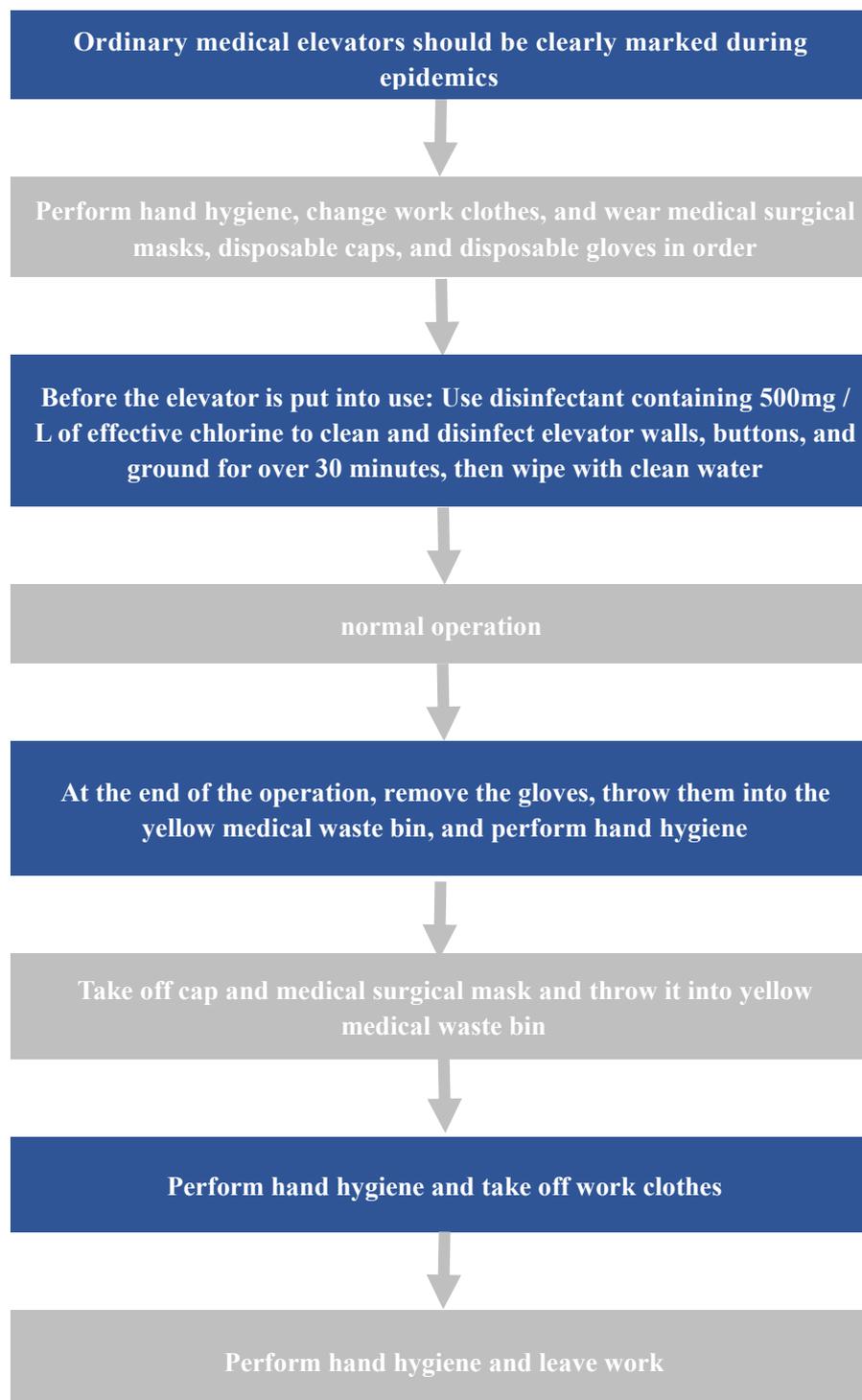


XVI Terminal disinfection procedures of negative pressure/infection operation room

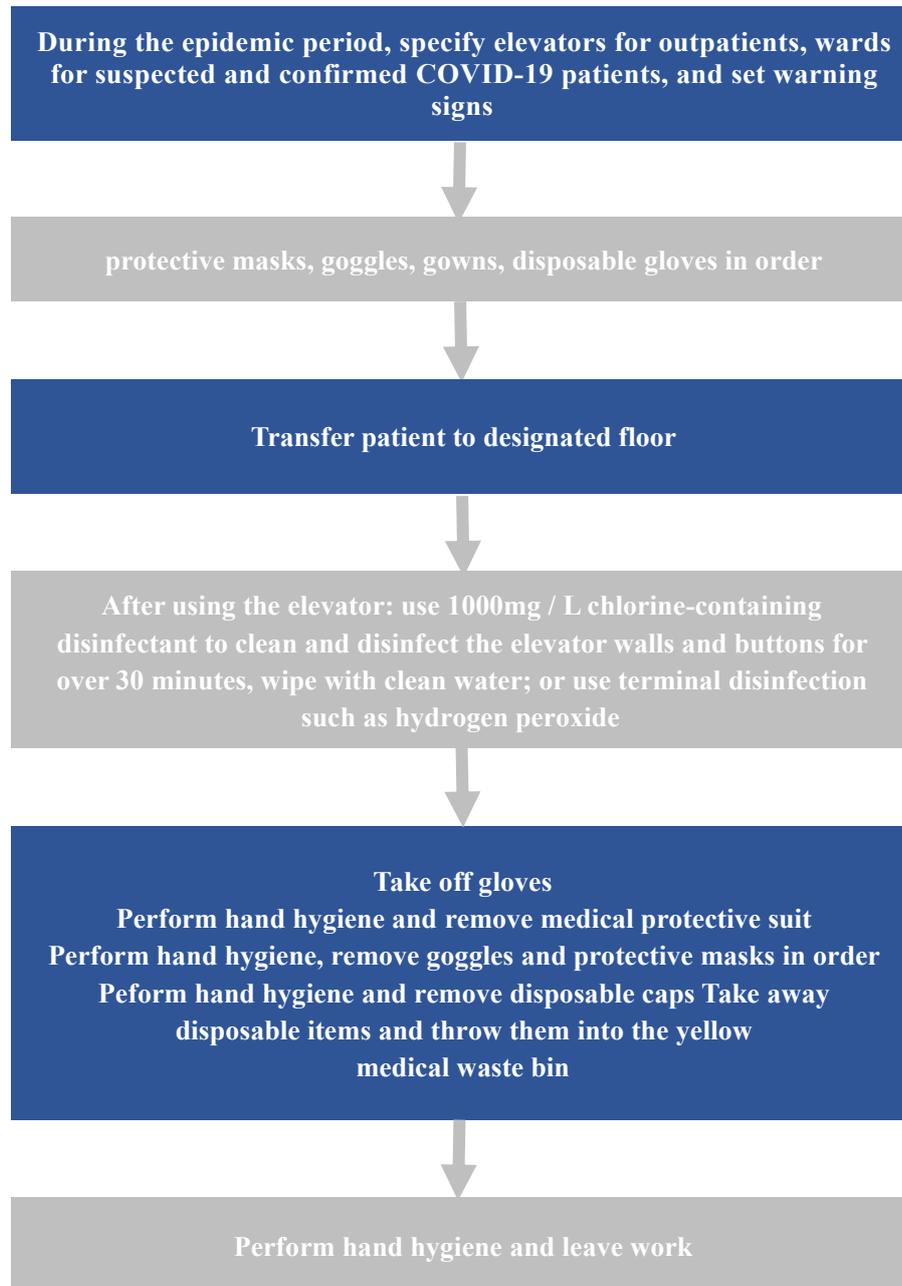


XVII Cleaning and disinfection procedures of elevator

Cleaning and disinfection procedures for general elevator

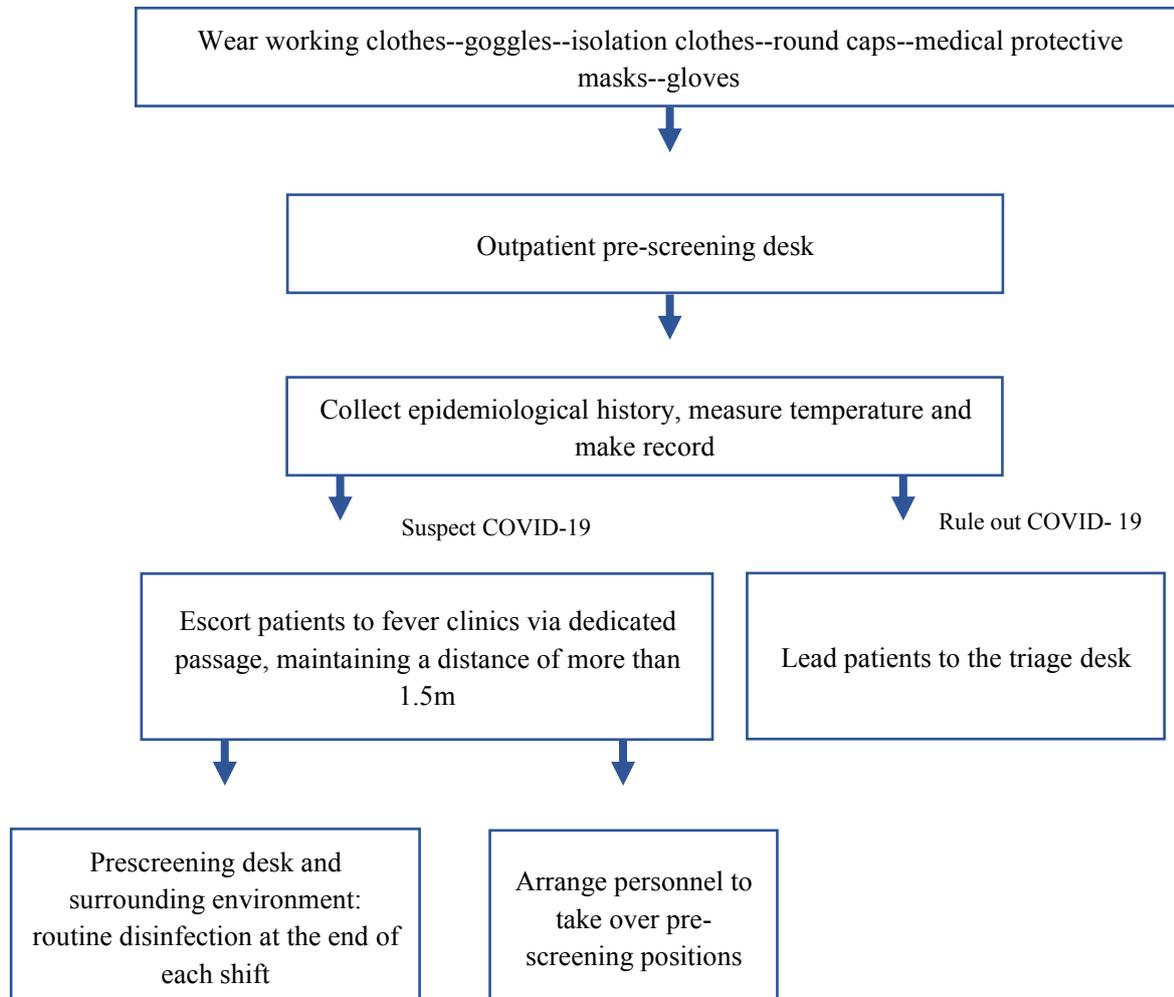


Cleaning and disinfection procedures of specified elevator



XVIII infection prevention and control procedures of outpatient pre-screening triage

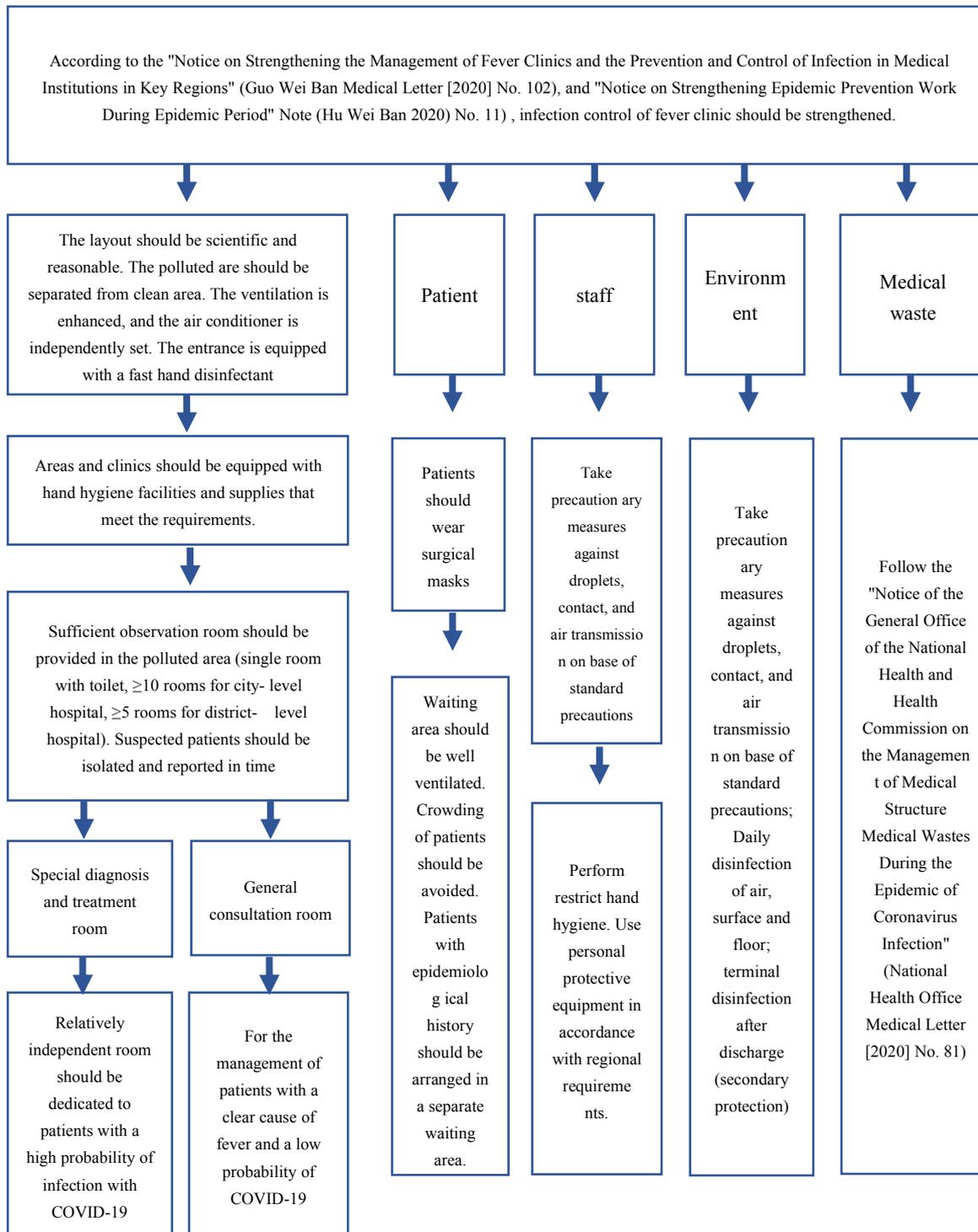
Infection prevention and control procedures of outpatient triage



- 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.

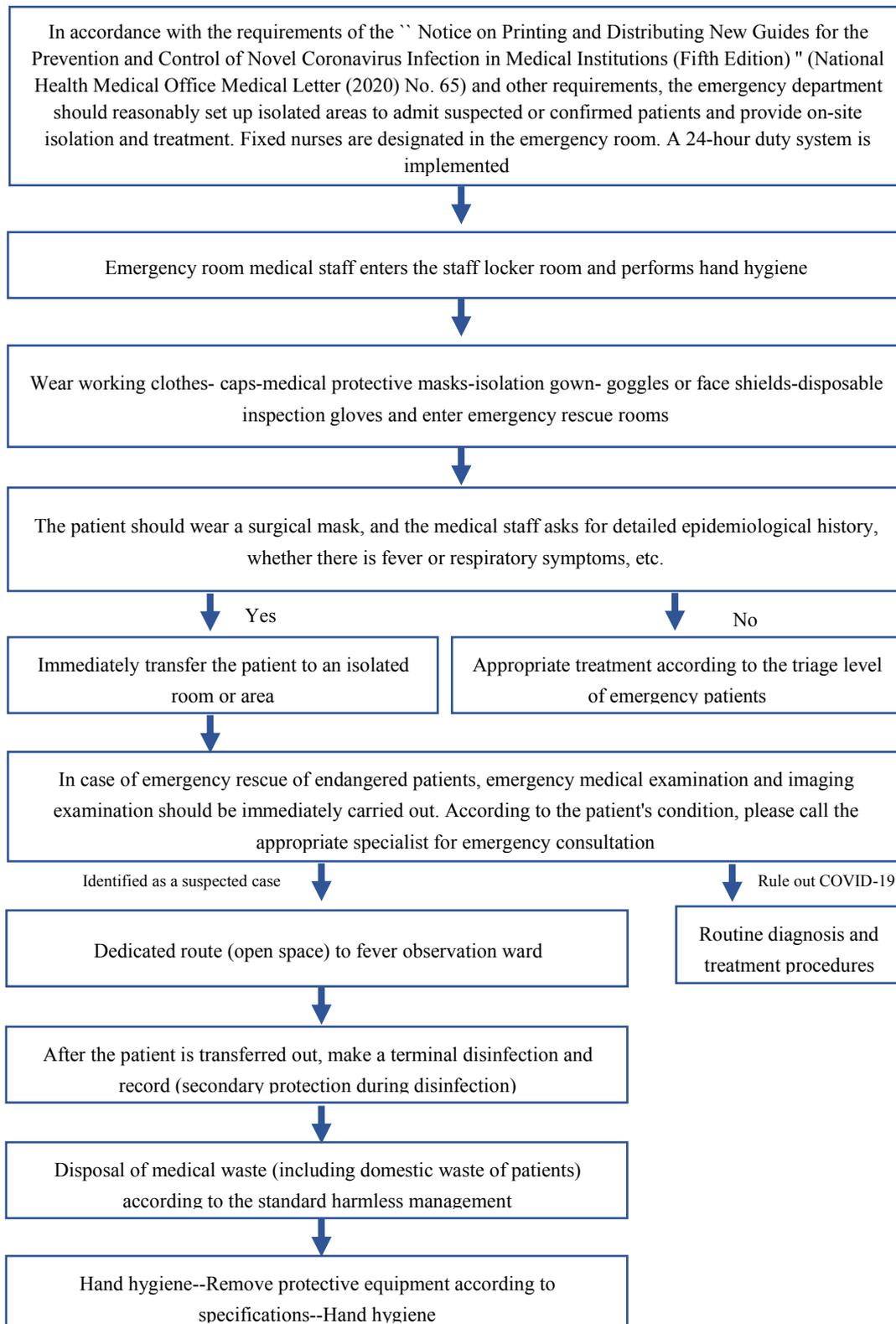
XIX Infection prevention and control procedures of fever clinics

Infection prevention and control procedures of fever clinics



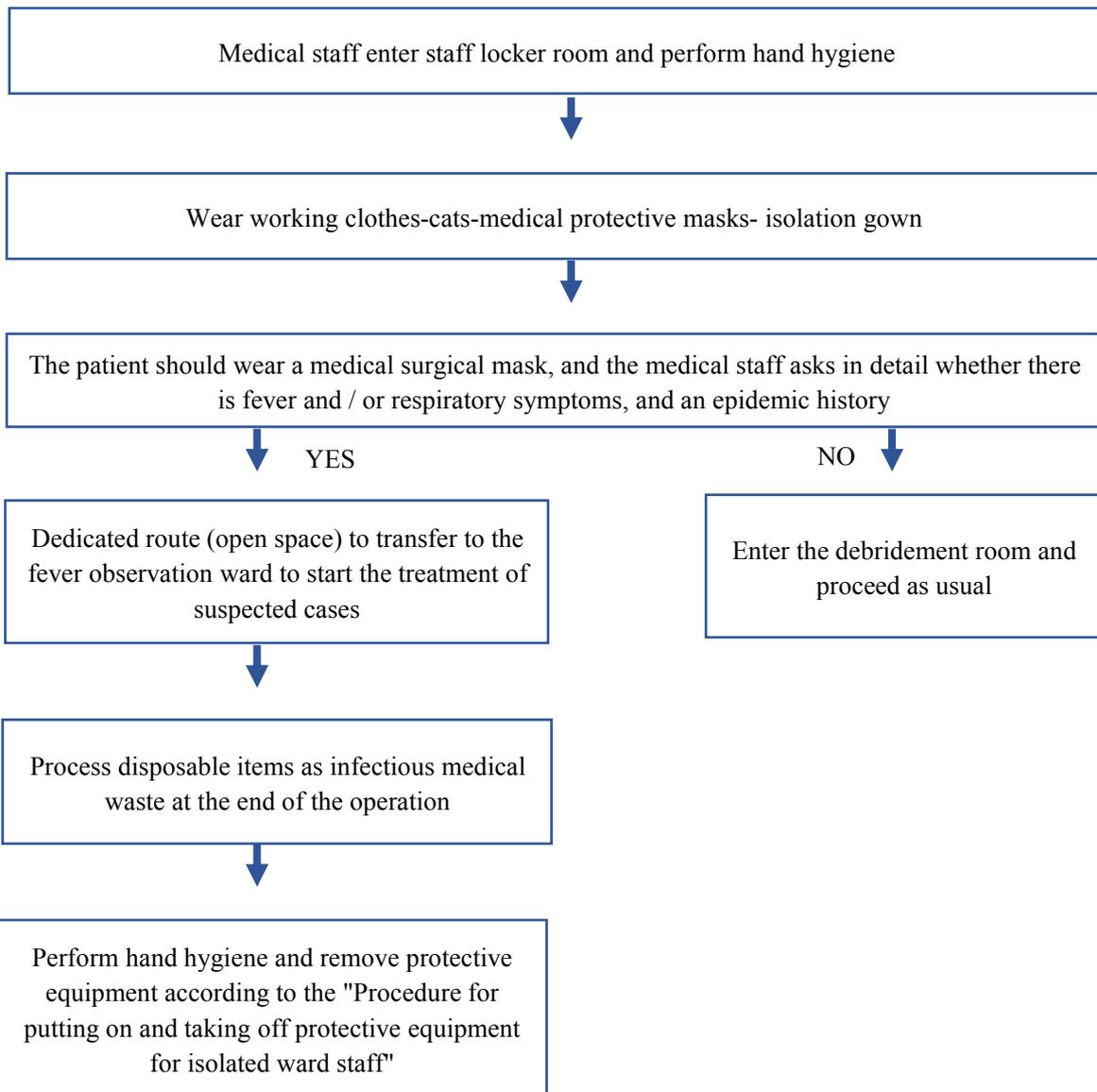
XX Infection prevention and control procedures in emergency room

Infection prevention and control procedures in emergency room



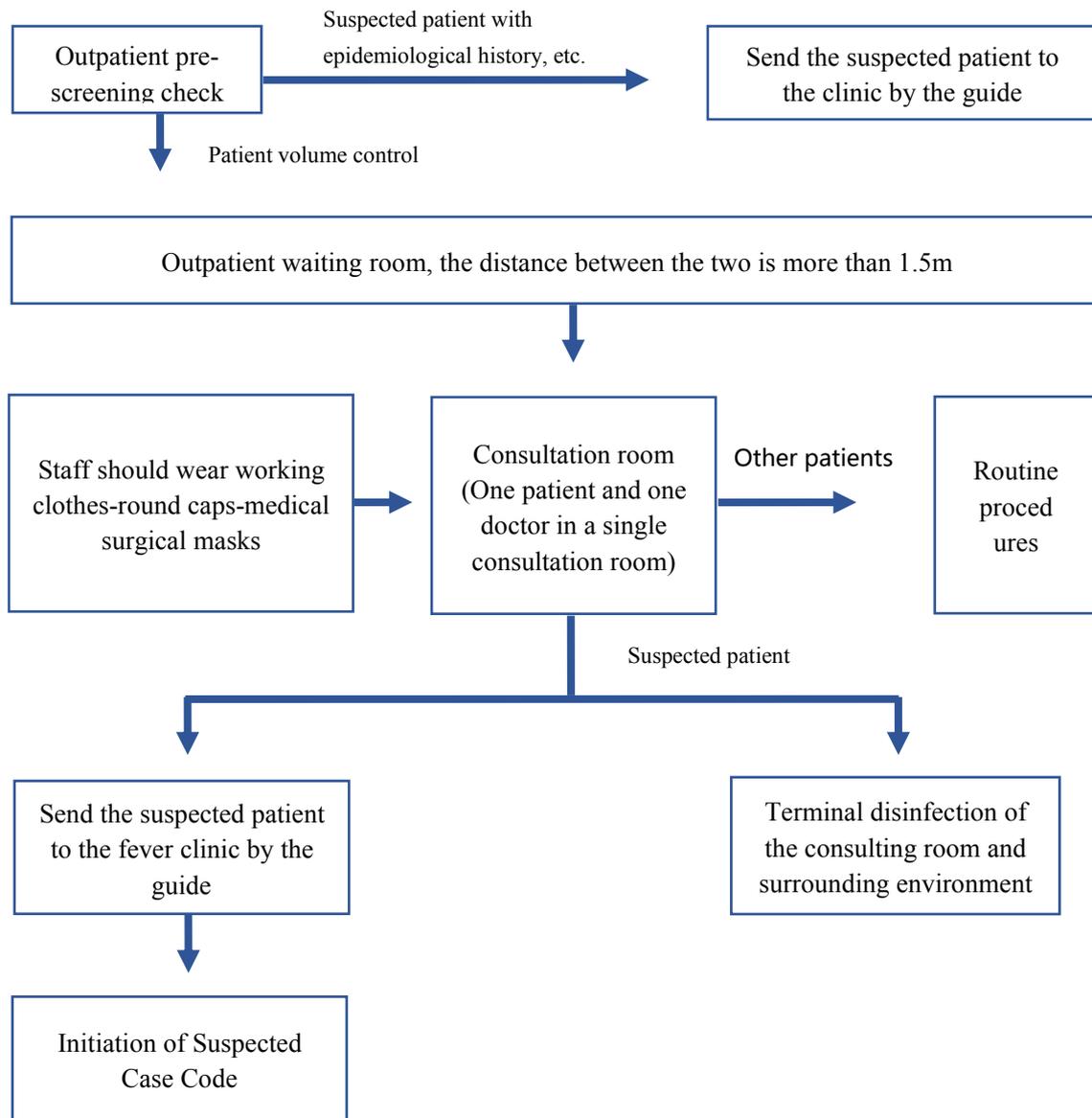
XXI Infection prevention and control procedures in emergency trauma treatment room

Infection prevention and control procedures in emergency trauma treatment room



XXII Infection prevention and control procedures of outpatient clinics

Infection prevention and control procedures of outpatient clinics



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



XXIV Infection Prevention and Control Procedures of Obstetric Clinics

Infection Prevention and Control Procedures of Obstetric Clinics

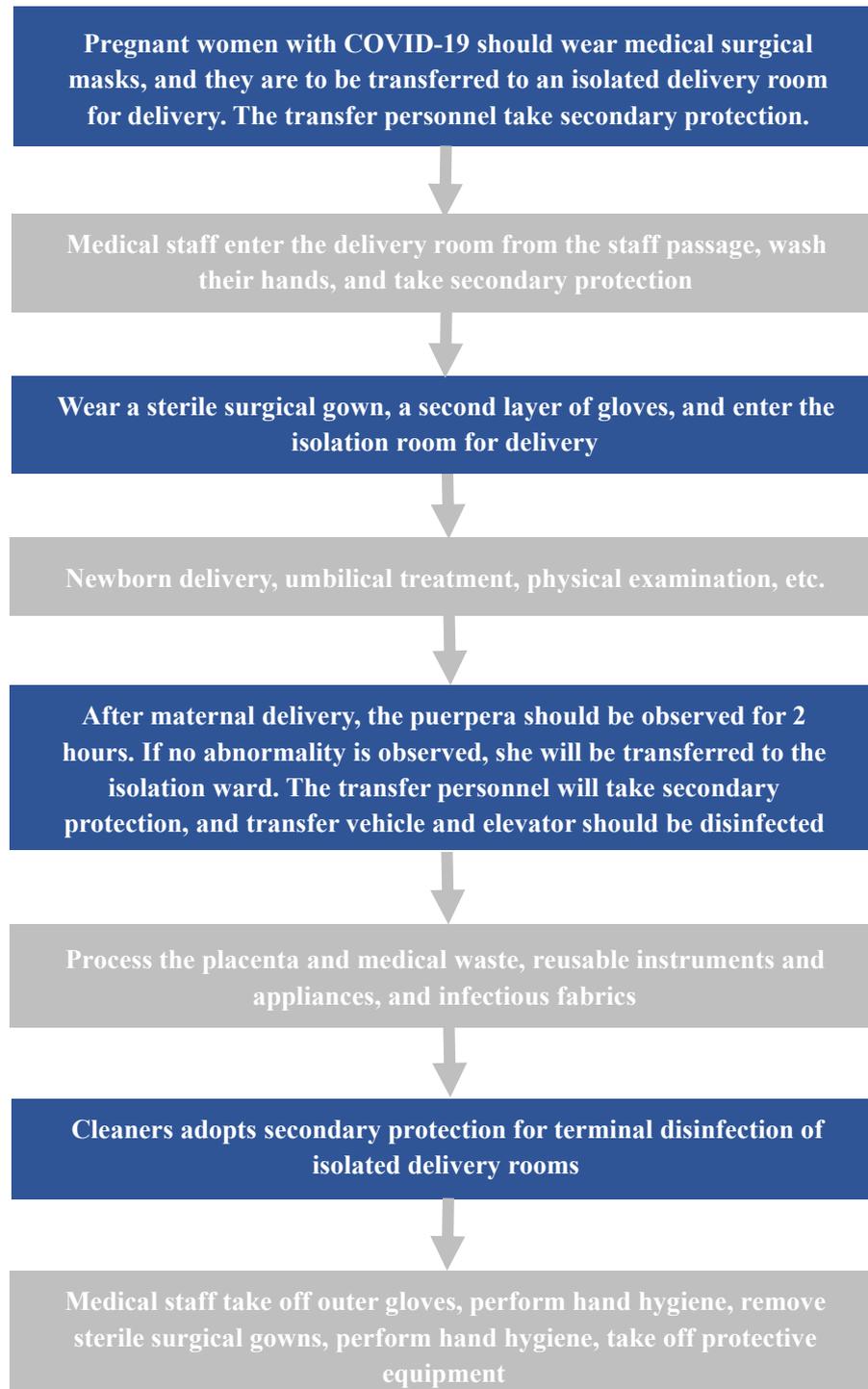


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- 1) Strictly implement "One consultation room for one doctor and one person " rule;
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- 4) After the work is completed, the routine consultation room and the surrounding environment should be cleaned and disinfected at the end.

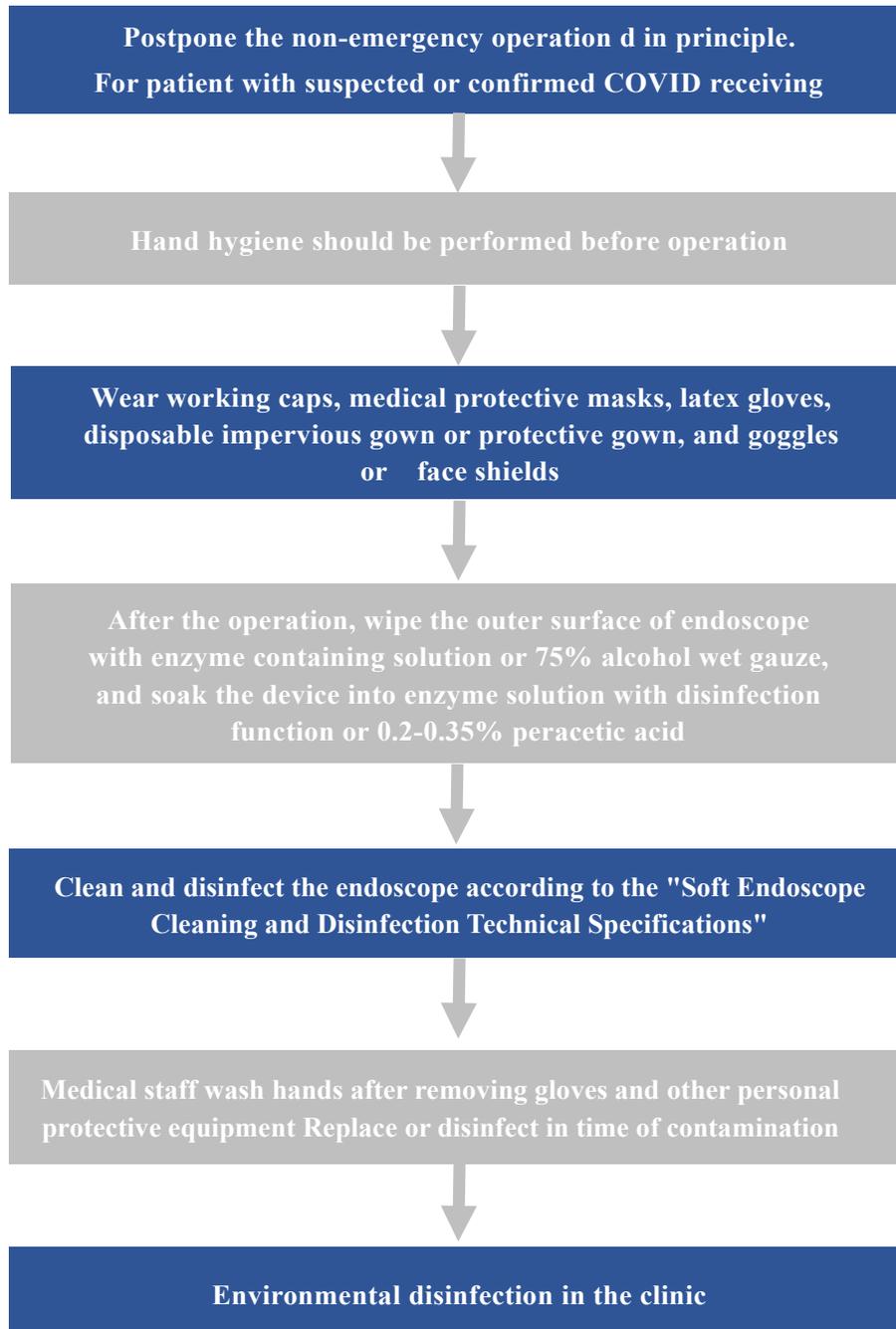
XXV Infection Prevention and Control Procedures for pregnant patients with COVID-19 and delivery room

Infection Prevention and Control Procedures for pregnant patients and delivery room

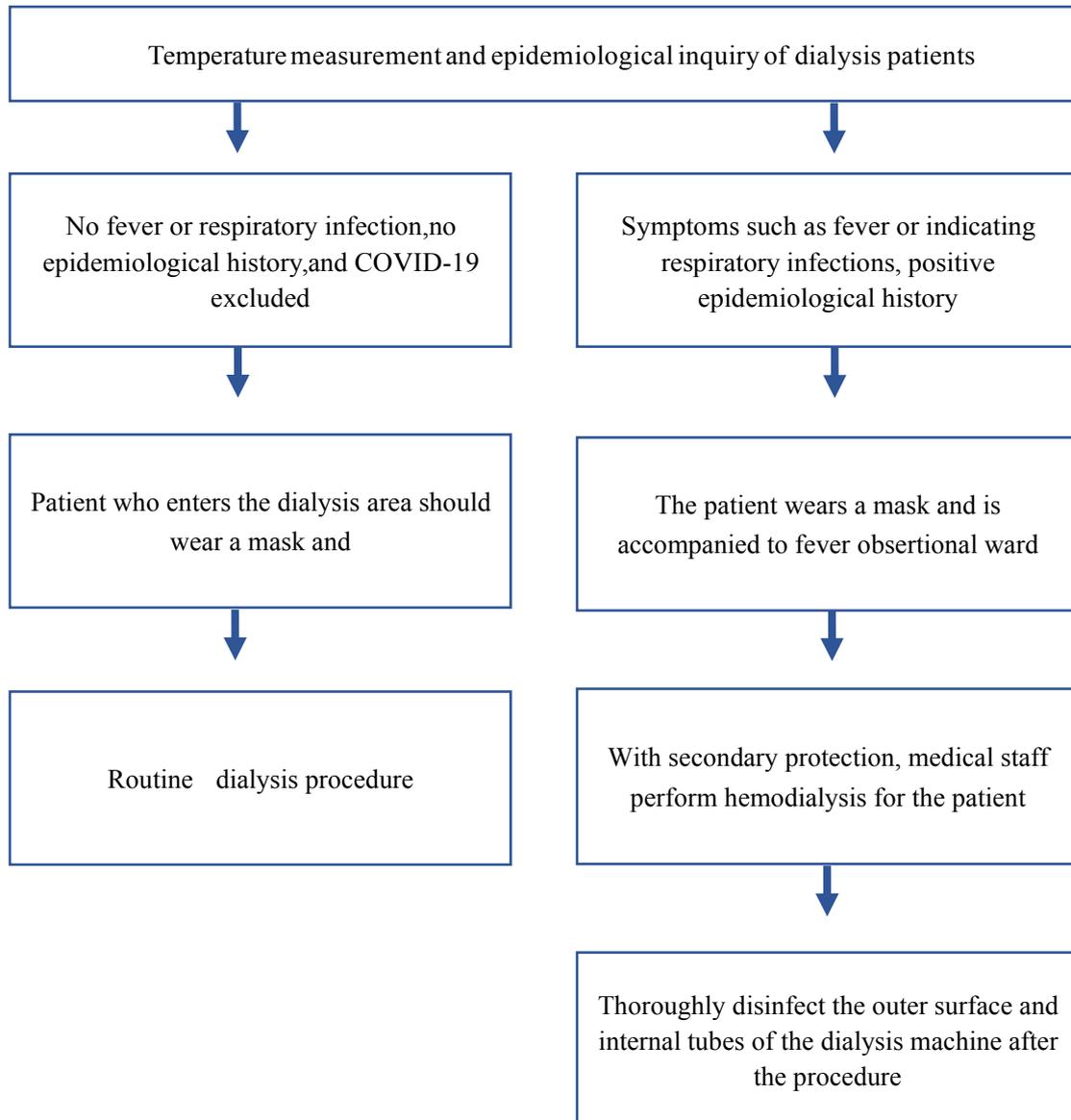


XXVI Infection control procedures of endoscopic operation

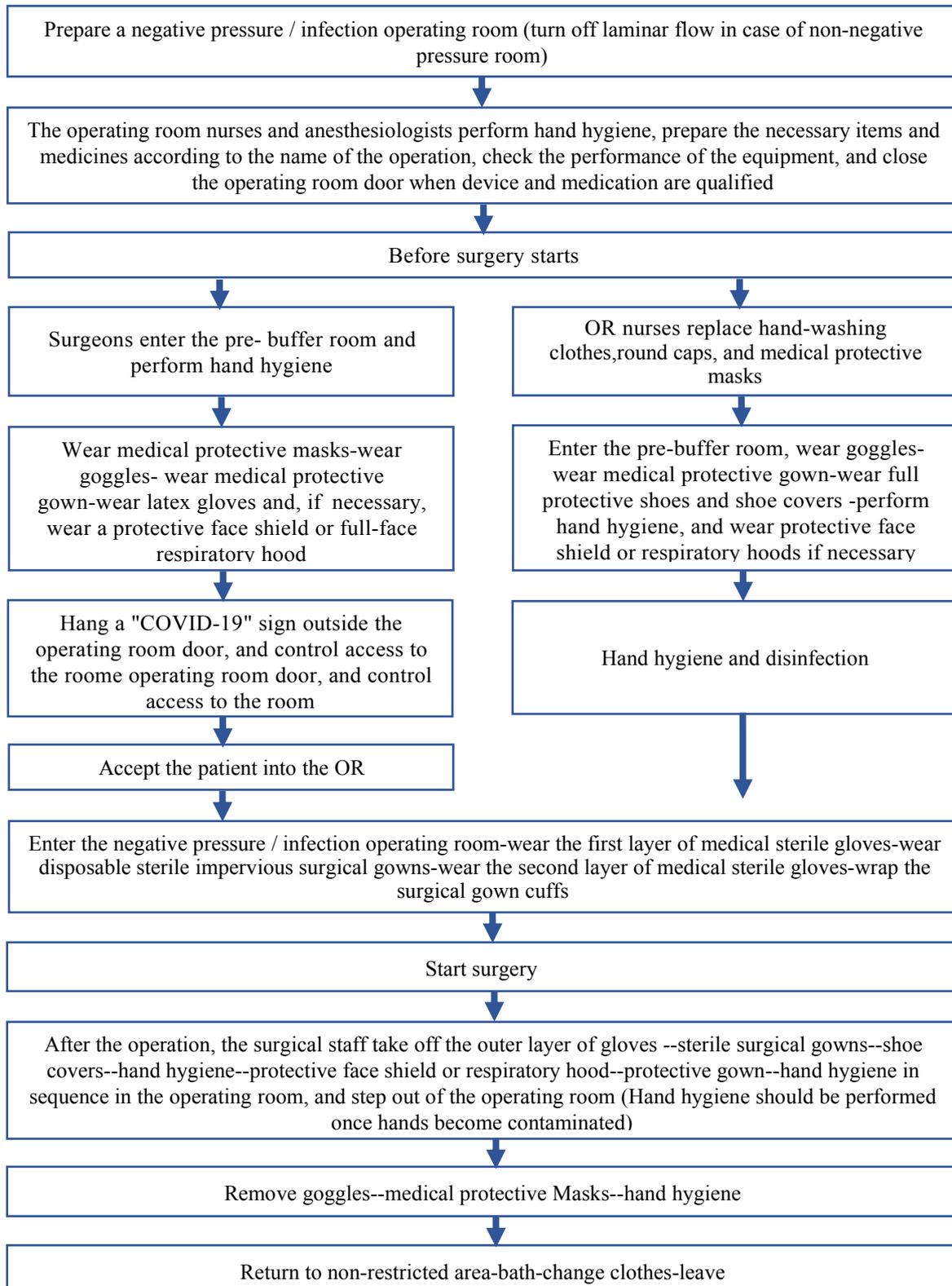
Endoscopic (laryngoscope, digestive endoscopy, bronchoscopy) infection prevention and control procedures



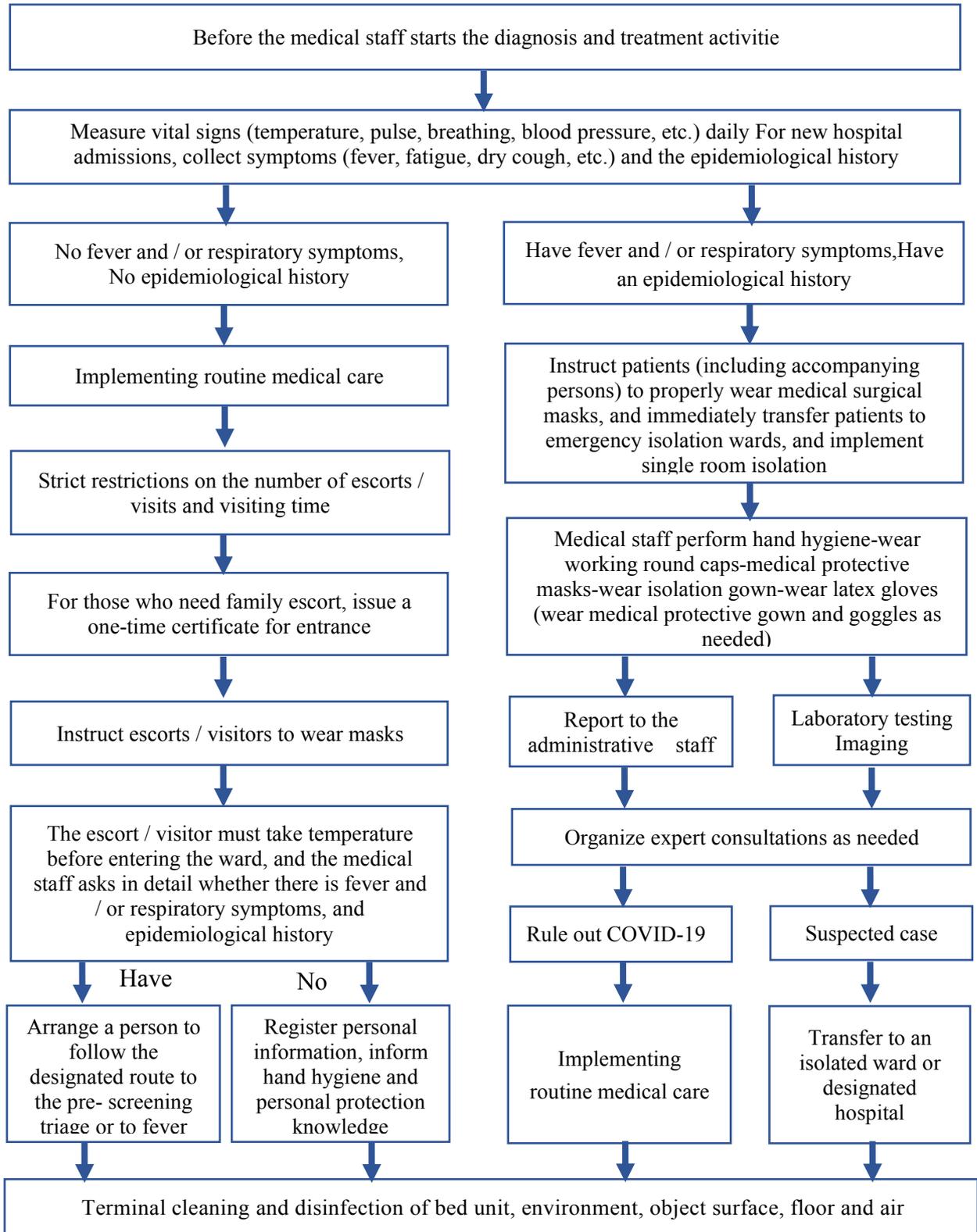
XXVII Infection prevention and control procedures for hemodialysis patients



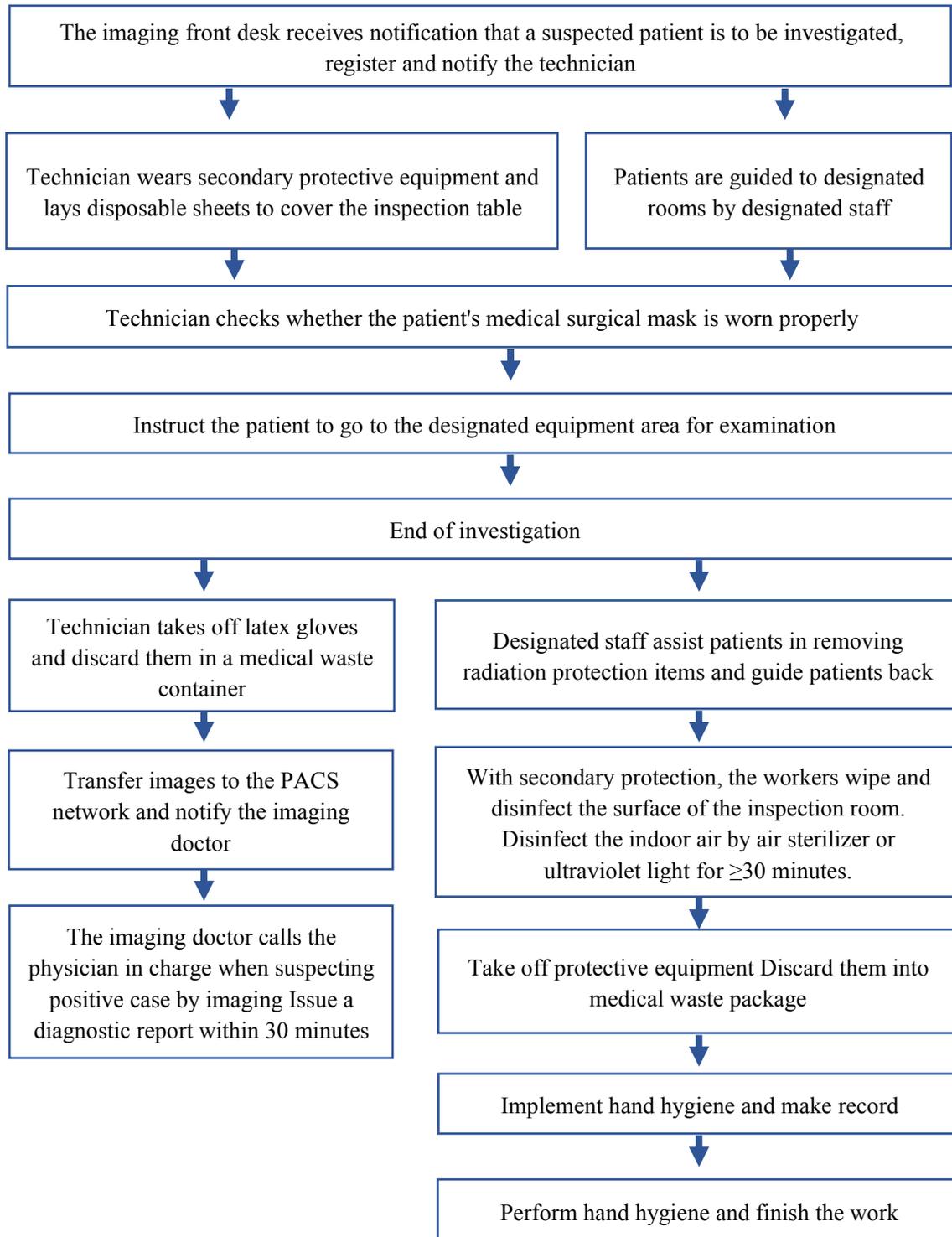
XXVIII Infection control and prevention procedures for patients with COVID-19 receiving surgical operation



XXIX Infection prevention and control procedures in general ward

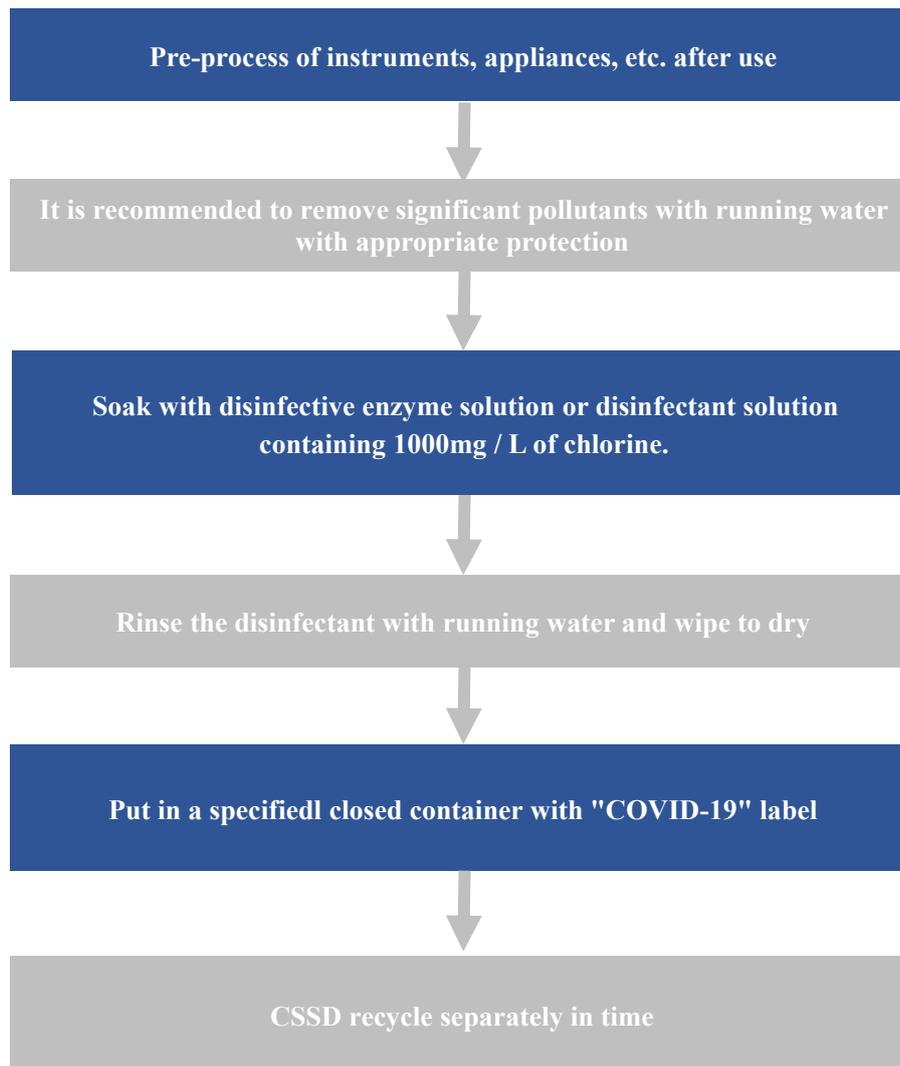


XXX Infection prevention and control procedures of medical imaging (DR / CT)

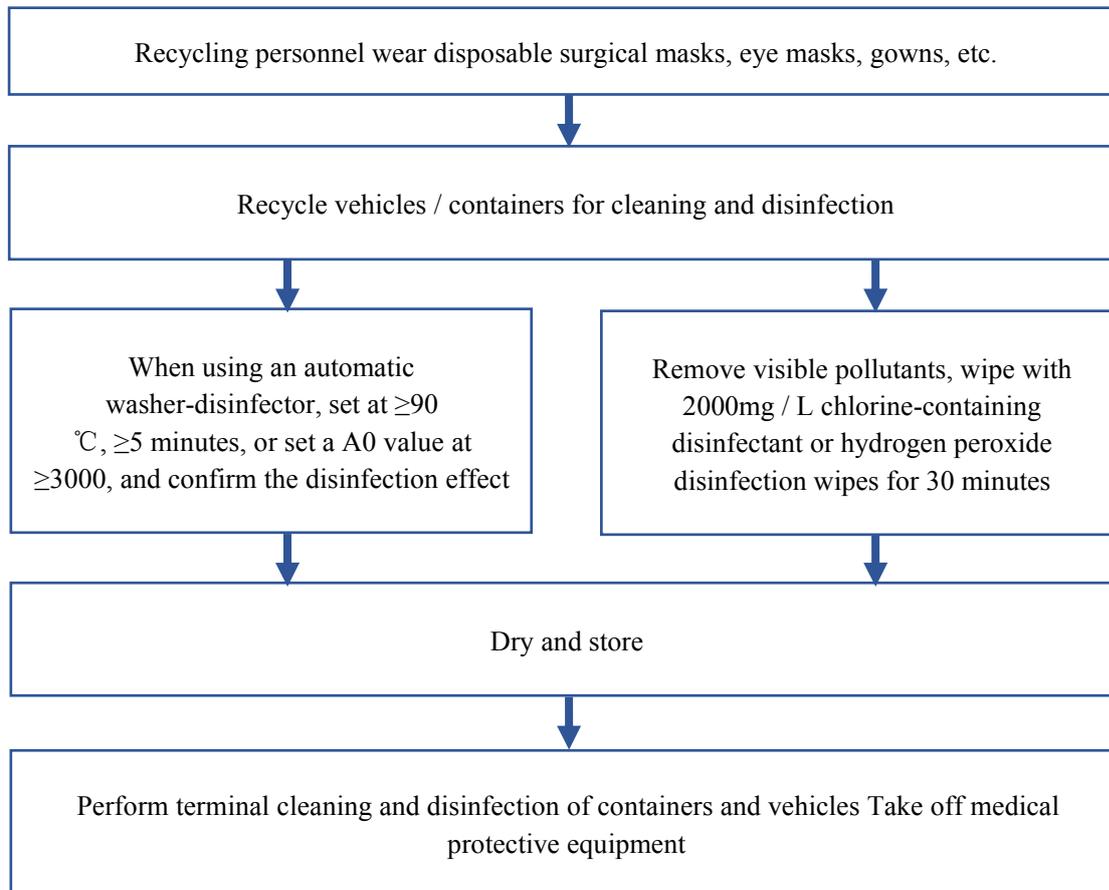


XXXI Infection Prevention and Control of disinfection and supply Center

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

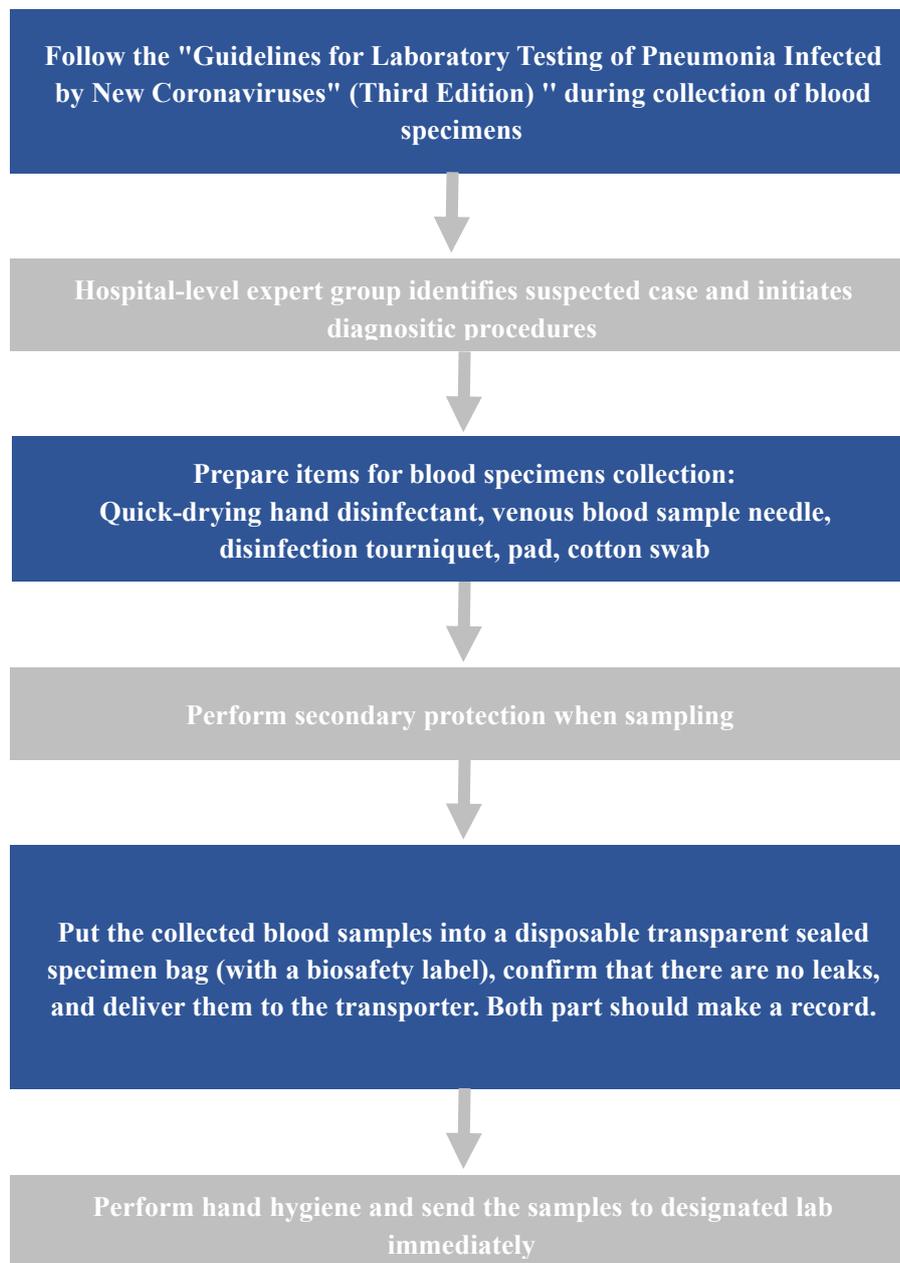


B. Cleaning and disinfection procedures of specified vehicles and containers

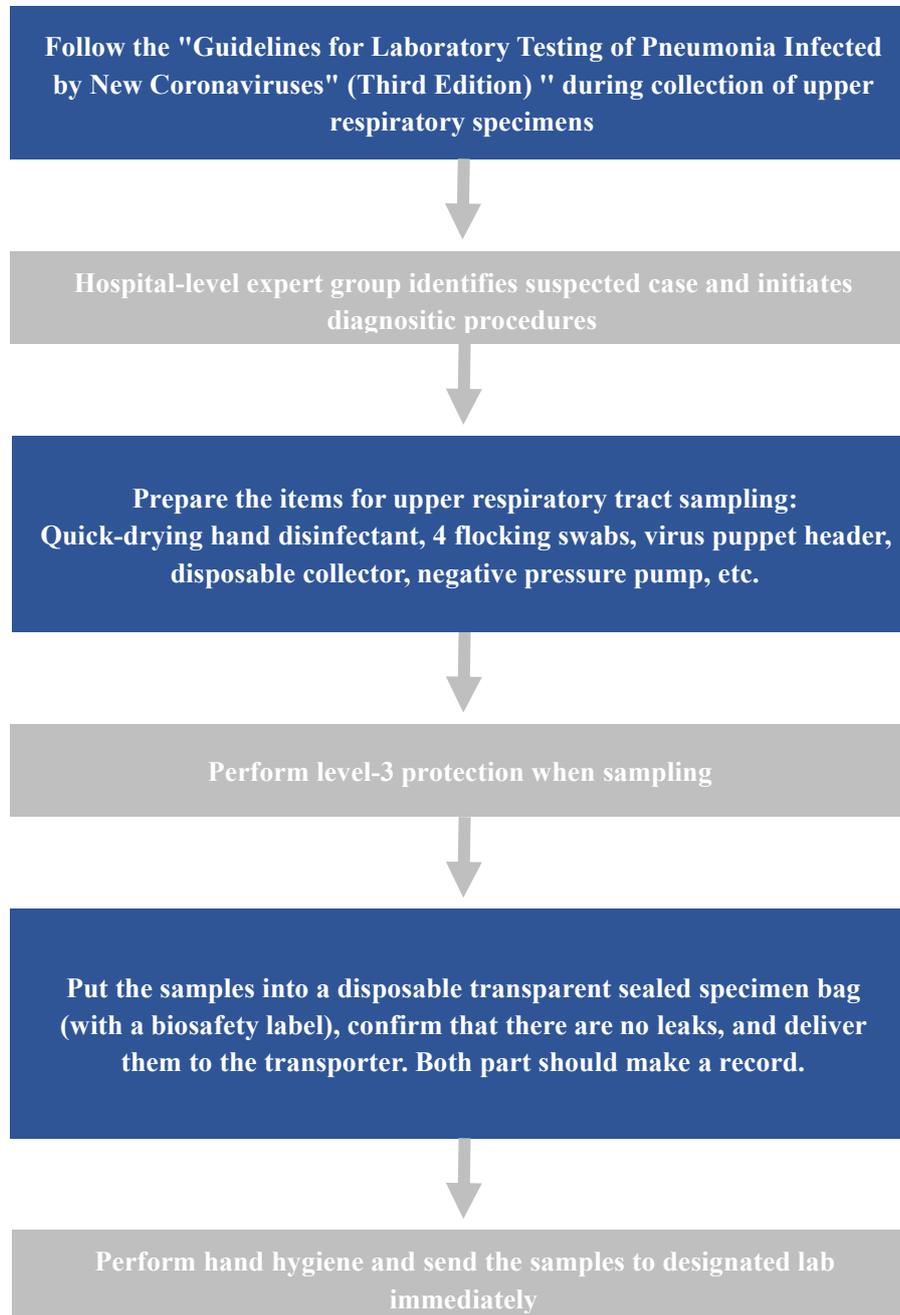


XXXII Infection prevention and control for specimen collection and microbial laboratory

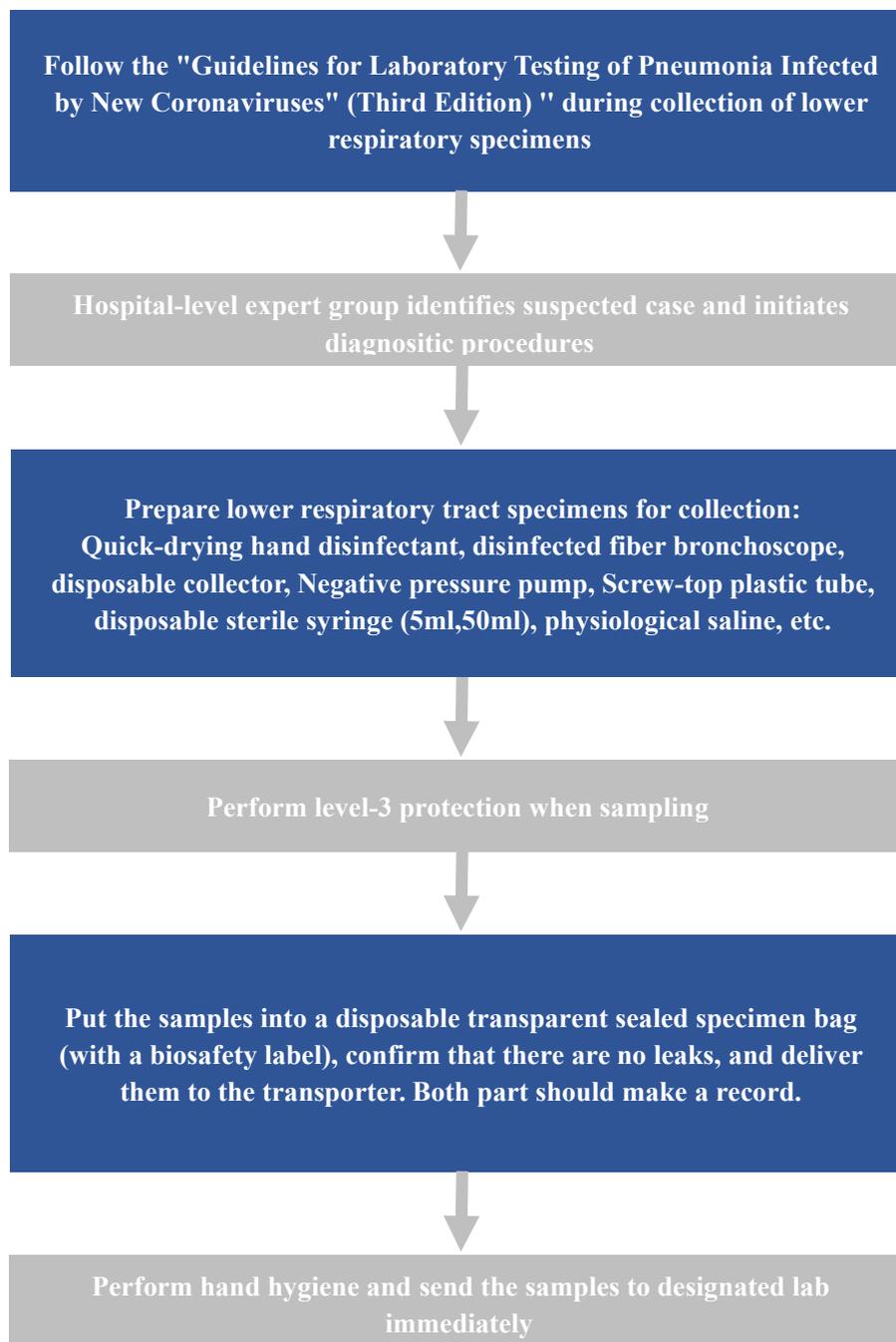
A. Infection prevention and control procedures for blood sample Collection



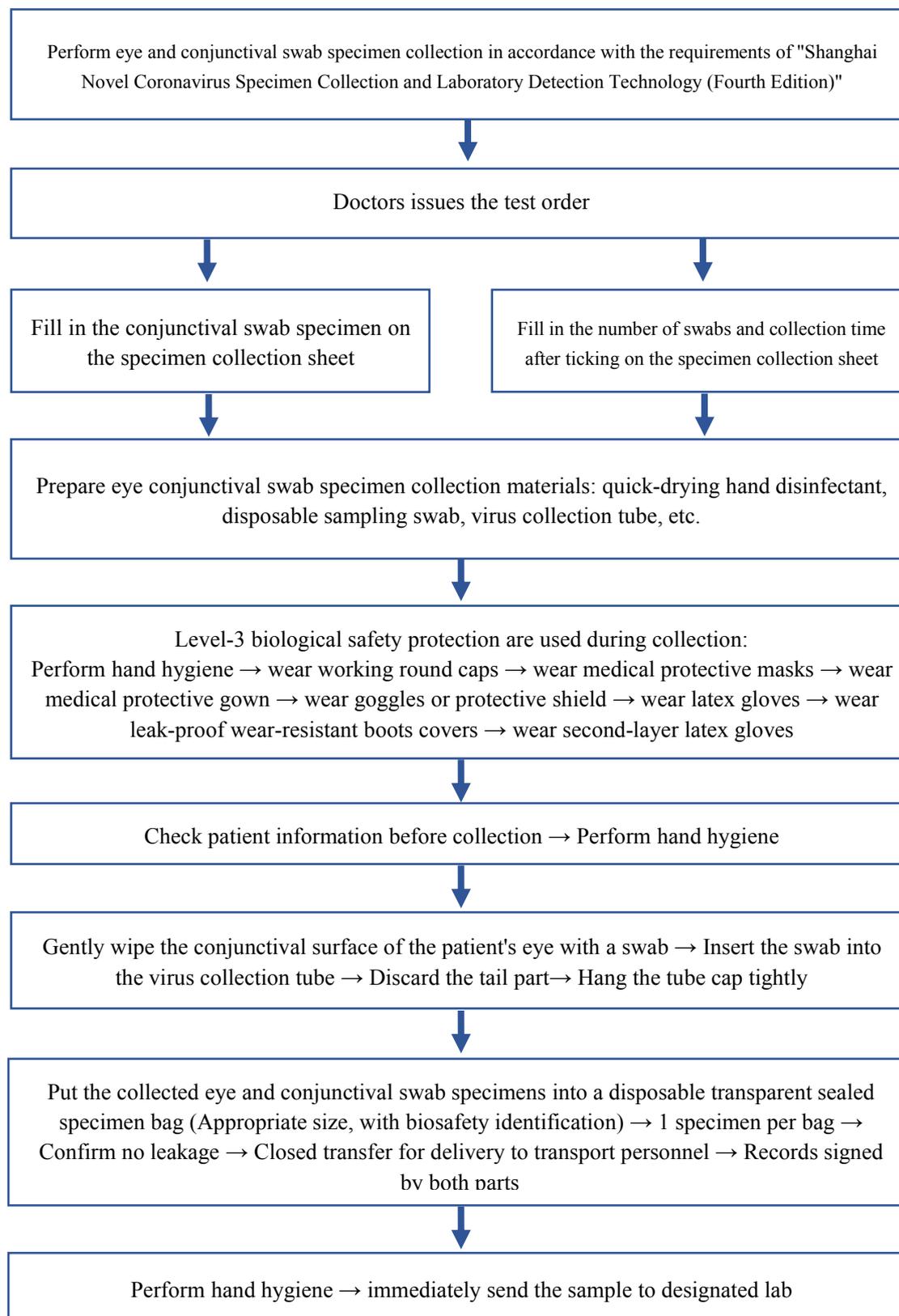
B.Infection prevention and control procedures for upper respiratory tract specimen collection



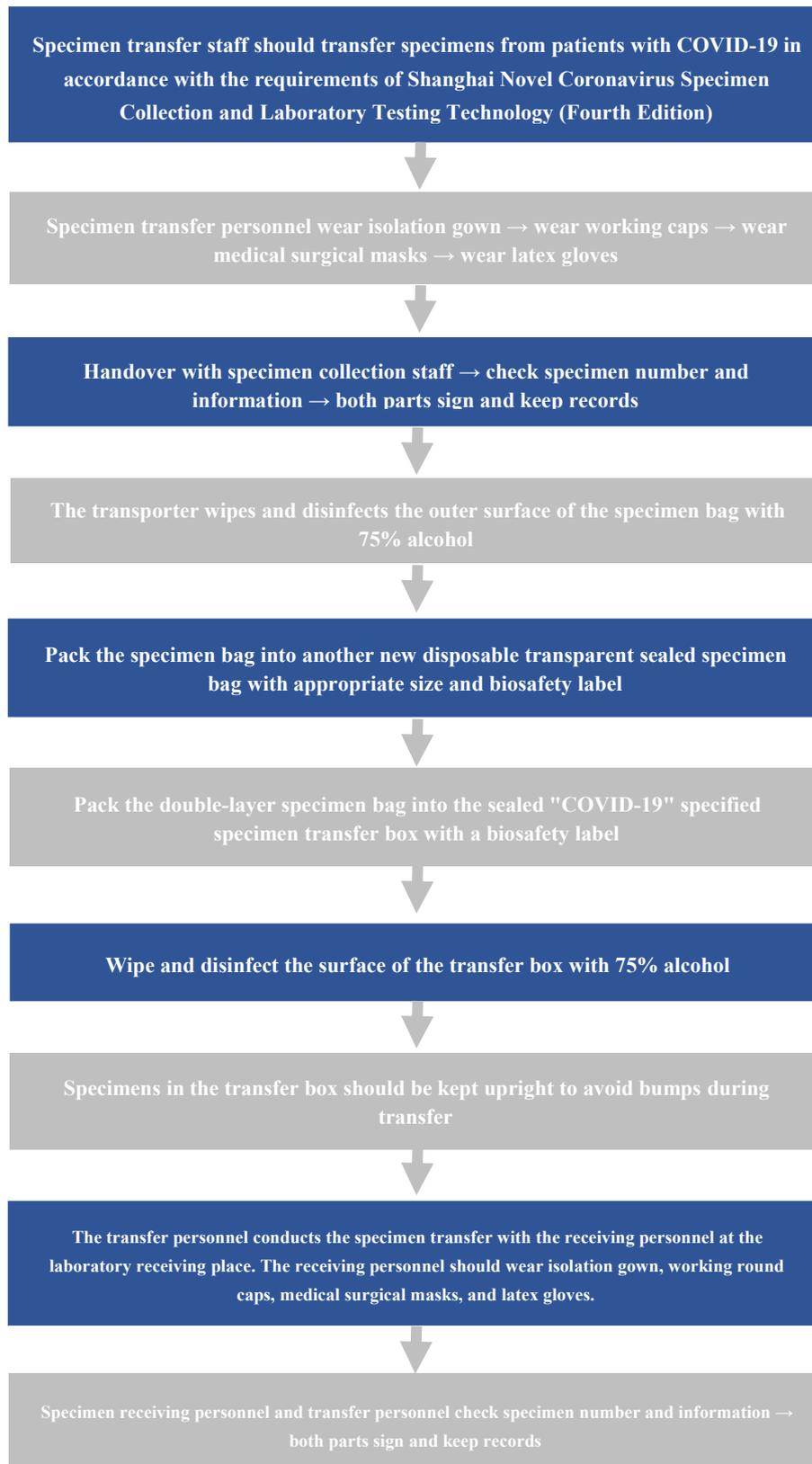
C. Infection prevention and control procedures for lower respiratory tract specimen collection



D. Infection prevention and control procedures for conjunctival swab specimen collection



E. The infection prevention and control procedures of specimen transfer in the hospital

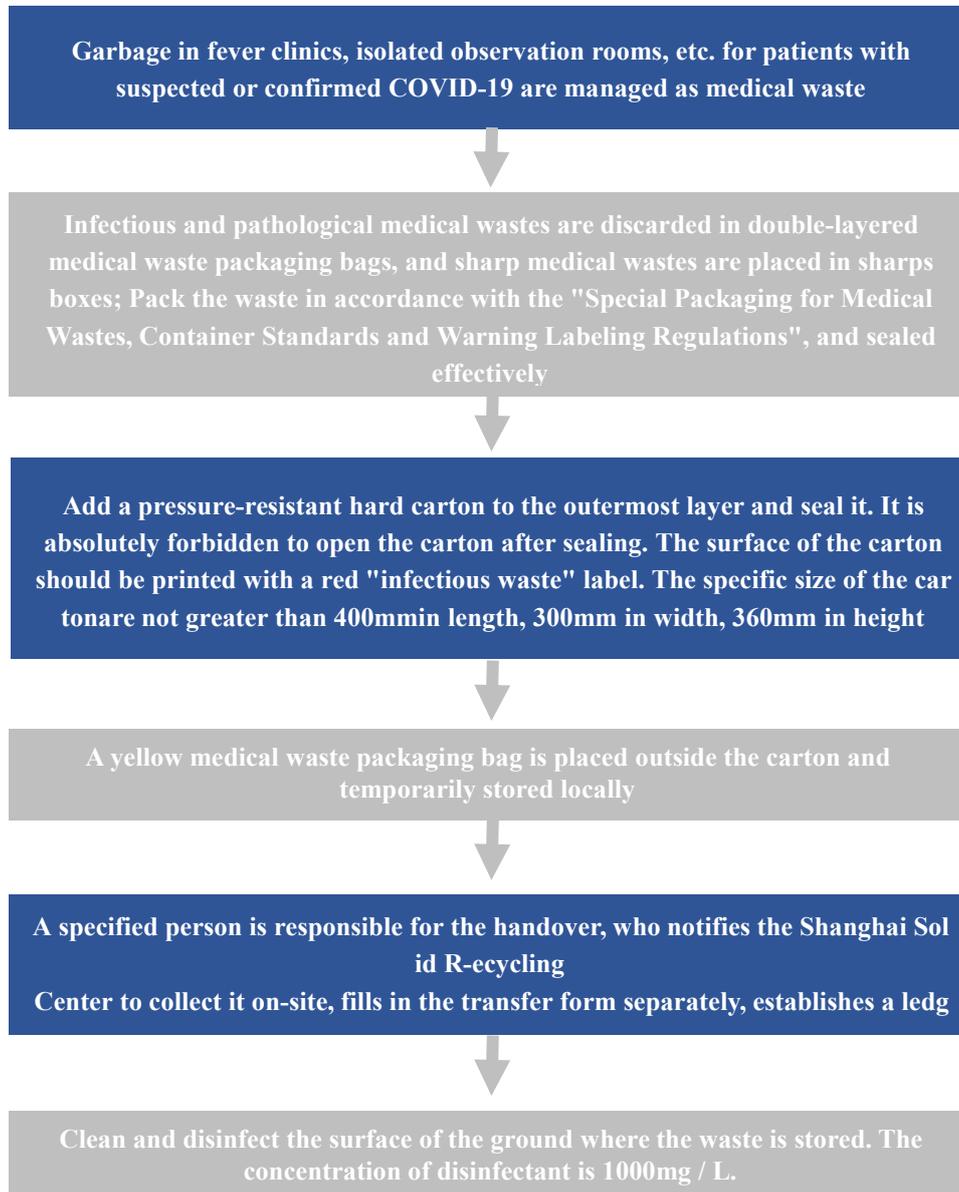


F. Infection prevention and control procedures for specimen testing in the lab



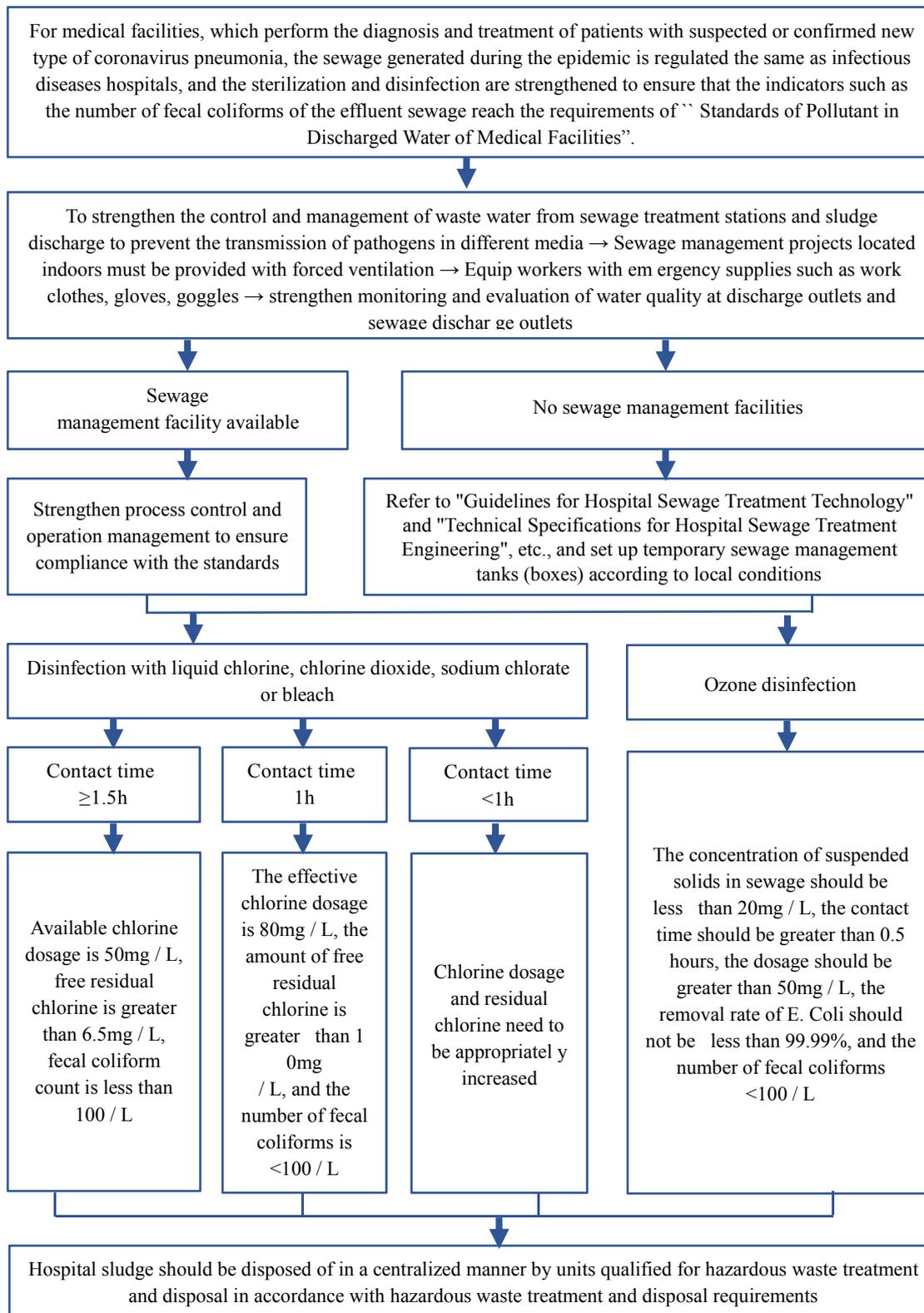
XXXIII Medical waste, sewage and others

A. Procedures of medical waste management in medical facilities

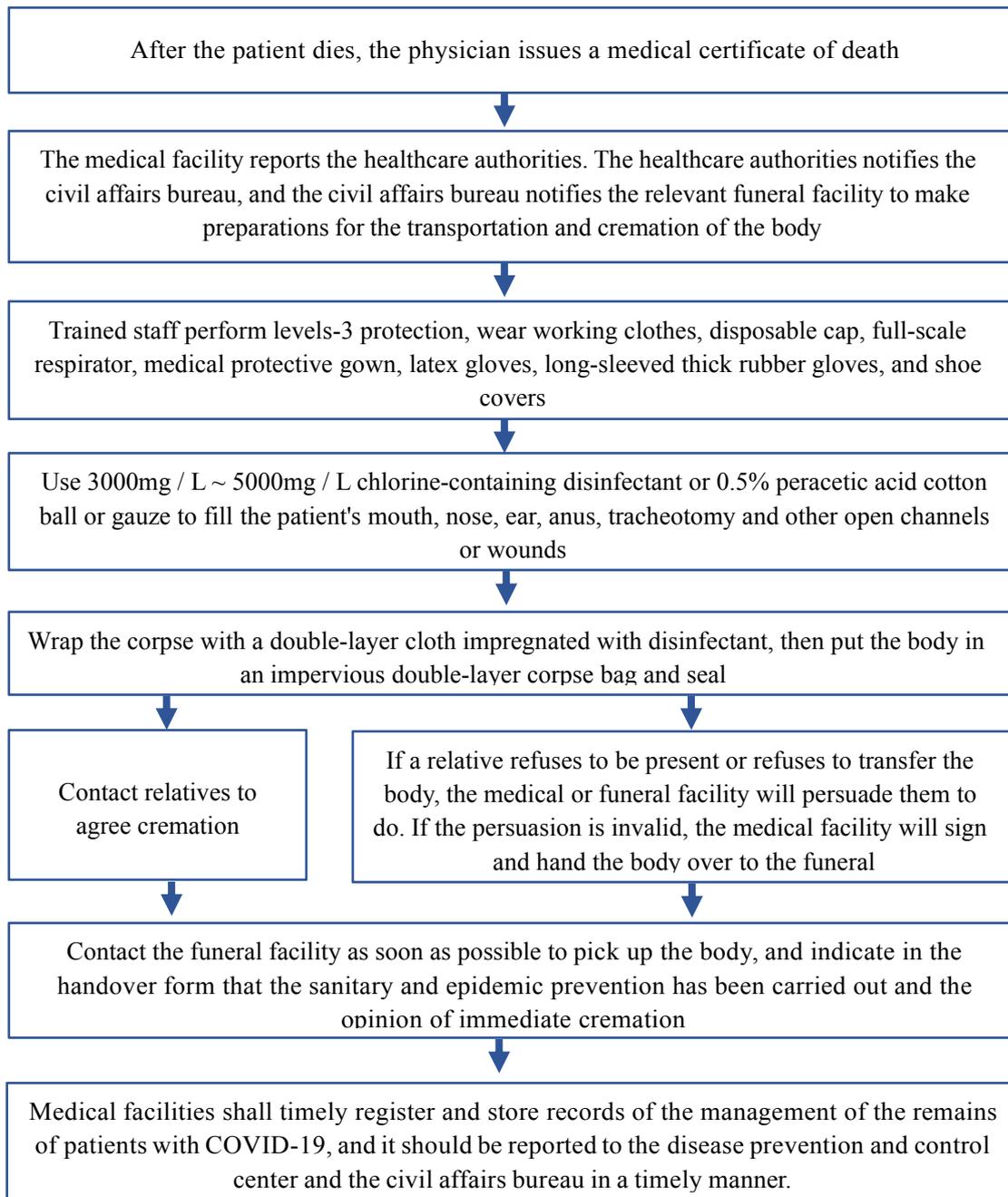


Note: Medical waste produced during diagnosis and treatment of patients with non-neither suspected nor confirmed COVID-19 should be strictly implemented in accordance with the Medical Waste Management System of local medical facility.

B. Procedures for emergency management medical sewage



C.Procedures of the management of corpse of patients with COVID-19





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.



Fight the COVID-19 Pandemic with Technology



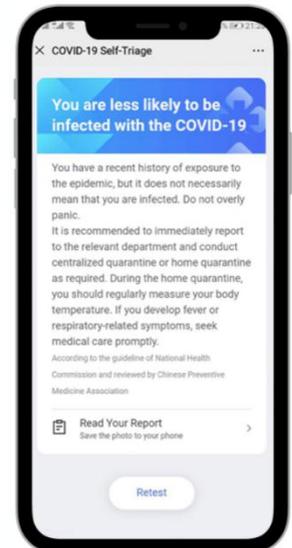
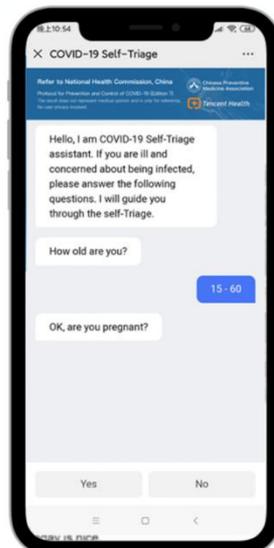
Tencent is an Internet-based platform company using technology to enrich the lives of Internet users and assist the digital upgrade of enterprises. Our mission is "Value for Users, Tech for Good".

"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.



TH_COVID19_International

COVID-19 self-triage assistant



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.





mindray 迈瑞

Tencent 腾讯

 **HUAWEI**