GUIDELINES FOR

CLEANING AND DISINFECTION PROCEDURES FOR HOTELS AND RESIDENTIAL INSITUTIONS

FOR INFECTIOUS DISEASE OF PUBLIC HEALTH CONCERN

Disease Control Division
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Contents

1. Facts About Common Respiratory illnesses

1.1 Influenza-like illness (ILI)

Influenza-Like illness (ILI) is a nonspecific respiratory illness. Respiratory pathogens that may present with an ILI include viruses such as influenza virus, respiratory syncytial virus (RSV), adenovirus, rhinovirus and parainfluenza virus, as well as bacterial pathogens such as Chlamydia pneumoniae, Legionella sp., Mycoplasma pneumoniae and Streptococcus pneumoniae. Influenza, RSV and certain bacterial infections are particularly important causes of ILI because can lead to serious complications.

Clinical features: Characterized by clinically unexplained fever ≥ 38°C and, respiratory symptoms of cough and / or sore throat, muscle pain and headache. The incubation period is 1 to 5 days. Route of transmission Droplets of respiratory secretions are believed to be the primary means of person-to-person influenza transmission. Spread can also occur through direct person-to-person contact or through fomites.

1.2 Avian Influenza

Avian influenza (H5N1) virus is one type of Influenza A virus. It is known previously to infect birds only however cross species infections have been documented in human cases. It then causes millions of poultry deaths.

Clinical features: similar clinical presentation as human influenza. However, it runs a more rapid downhill course resulting in high fever, chest infection, respiratory failure, multi-organs failure, and even death. Route of transmission Avian Flu is transmitted from infected live birds to man. Transmission between humans is very inefficient.

1.3 Severe Acute Respiratory Syndrome (SARS)

Severe acute respiratory syndrome (SARS) is a viral respiratory infection caused by a coronavirus (SARS-CoV). Clinical features The initial symptoms are influenza-like. Usually begin with fever, which is often high (38°C or above), and sometimes associated with chills, rigors, headache, malaise, muscle pain or even diarrhoea. At the onset of illness, some patients may only have mild respiratory symptoms. After a few days, symptoms of lower respiratory tract infection may follow, including cough without sputum and difficulty in breathing. In around 10% of patients, the illness may rapidly progress to respiratory failure requiring intensive medical care. Symptoms can be more variable among elderly patients. Symptoms usually appear within 2 to 7 days after contracting the disease, but the incubation period can be up to approximately 10 days. Mode of transmission Predominantly transmitted through close person-to-person contact, especially via respiratory droplets produced when an infected person coughs or sneezes. Droplet spread can take place when droplets from the cough or sneeze of an infected person are propelled a short distance and deposited on the mucous membranes of the mouth, nose, or eyes of persons who are nearby. The virus can also spread when a person touches a surface or object contaminated with infectious droplets and then touches his or her mouth, nose, or eyes

2. Preventive measures of respiratory disease

I. General Practices: Maintain good personal and environmental hygiene. Ensure good ventilation. Maintain proper function of toilets, drains and pipes. Cover nose and mouth with tissue paper while sneezing or coughing, and dispose nasal and mouth discharge properly. Keep hands clean and wash hands properly: before touching eyes, nose and mouth, if there is a need to do so; after handling objects soiled by faeces, respiratory or other body secretions; after touching public installations or equipment, such as escalator handrails, elevator control panels or door knobs. People with symptoms of respiratory

tract infection or fever should wear a mask and consult a doctor promptly. Let the doctors know the travel history People returning from endemic areas should consult doctors promptly if they have symptoms of respiratory diseases after the trip.

II. Specific Practices -Avian Influenza During the "flu" season, it is better to avoid crowded public places where the ventilation is not good. Influenza vaccine is prepared according to the prevalence of strains in the community each year, as recommended by the World Health Organisation. Droppings of infected live birds and poultry may carry the Avian Flu virus, therefore, one should avoid touching live birds and poultry and their droppings. If you have been in contact with live birds and poultry, wash hands thoroughly with liquid soap and water immediately.

III. For sick guests who present respiratory symptoms such as coughing, sneezing and fever, place a surgical mask on the sick guest if he/she could tolerate in order to minimize the dispersal of droplet or droplet nuclei. Advise the sick guests to seek medical attention and avoid any mass assembling activities. It is recommended to ask the guest with airborne infectious diseases (e.g., pulmonary tuberculosis and chicken pox) to put on a surgical mask, stay in a single room, stop participating any mass assembling, and immediately seek medical help. If it is practically possible, it is also recommended to minimize contacts between the sick guest and hotel staff. Hotel staff should wear a surgical mask for attending the sick guest, if necessary. Thorough decontamination (see part III under section 3.3) of the room housing the sick guest should be performed upon the guest check out. For personal protection of staff members in hotels, please refer to Part IV in the above.

During an Outbreak of respiratory tract infection:

- List names of people suspected to be infected.
- Adjust the Mechanical Ventilation and Air Conditioning System (MVAC) and open windows if possible, to improve indoor ventilation and allow more fresh air intakes.
- Be stringent with personal and hand hygiene and observe for respiratory hygiene/cough etiquette.
- Group / assembling activities should be suspended during the outbreak period.
- Sick staff should refrain from work until fully recovered.

3. Standard Precautions

3.1 Respiratory hygiene/ cough etiquette

Respiratory hygiene / cough etiquette is regarded as a kind of source control measures.

Hotel staff/ hotel guests should be educated to perform the followings when they cough or sneeze: Source control measures

- Cover mouth and nose when coughing or sneezing.
- Use tissue paper to contain respiratory secretions and dispose them promptly in lidded receptacles.
- Perform hand hygiene after hands have been in contact with respiratory secretions.
- Offer surgical masks to persons with respiratory symptoms when tolerated, especially during epidemic.
- Encourage persons with respiratory symptoms to sit away from others, ideally > 1 metre (or 3 feet).

3.2 Provision of resources

Hotel management should ensure that materials for adhering to respiratory hygiene/cough etiquette are available in hotel:

- Provide lidded receptacles for used tissue paper disposal.
- Provide surgical masks when in need.

Environmental hygiene and decontamination: Since infective agents can survive in the environment for a period of time, it is vital to observe environmental hygiene from time to time and environmental decontamination should be strengthened, in particular during outbreak situation.

Environmental hygiene includes the followings: General cleaning
Rooms should be maintained at a reasonable standard of cleanliness. Cleaning should start in the clean areas and progress to the dirty areas. All surfaces should be cleaned at least daily with detergent and water or disinfectants (e.g., 1 in 99 diluted household bleach (5.25%) solution), if necessary. Frequently touched area such as escalator handrails, elevator control panels or door knobs should be cleaned more often subject to the frequency of use. Hands should be washed after undertaking cleaning activities. Regular pest control should be carried out. Supervisors should undertake regular monitoring to ensure that existing hygienic standards are strictly observed.

3.3 Handling of spillage

Disposable gloves should be used if the cleaning involves contact with body fluids, such as respiratory secretions, urine, feces etc. Eye protection (i.e., goggles and faceshield) or body protection may be considered when substantial splash of blood or body fluids is anticipated. Use highly absorptive materials to preliminarily clean up the contaminated surfaces first. If the surface is contaminated with vomitus or other body fluids, disinfect with 1 in 49 diluted household bleach (5.25%) solution, leave for 15-30 minutes and then rinse with water; if the surfaces are contaminated with blood, use 1 in 4 diluted household bleach (5.25%) solution for disinfection of the contaminated surface and leave for 10 minutes before rinsing with water.

3.4 Floors and floor coverings

Carpets or rugs/mats may be vacuumed using a cleaner that does not throw dust into the air or steam cleaned if soiled with body fluids. Do not hang up and swat carpets or rugs/mats as this will create aerosols. Hard floor surfaces should be cleaned with wet vacuum systems. If wet vacuum systems are not available, hard floor surfaces should be damp mopped using detergent and water or disinfectant if necessary.

3.5 Furnishing

These include items such as curtains, drapes, screens, lampshades and furniture items which should be washed/ cleaned or steam cleaned regularly.

3.6 Lift cars and escalators

Wipe lift cars and escalators, particularly the call buttons and handrails with detergent and water, or disinfected with 1 in 99 diluted household bleach (5.25%) solution, if necessary. Clean lift ventilation vans regularly.

3.7 Hotel lobby

Regularly wash and wipe building entrances, door knobs/ handles with detergent and water, or 1 in 99 diluted household bleach (5.25%) solution, if necessary.

3.8 Toilets and toilets of the guest rooms

Clean public toilets with 1 in 99 diluted household bleach (5.25%) solution frequently. Every public washroom should be equipped with liquid soap, paper towels or hand dryer(s).

Clean toilets of the guest rooms at least once a day. Wipe the rim, seat and lid of the toilet bowl with 1 in 99 diluted household bleach (5.25%) solution, rinse with water and then wipe dry. Make sure that the drain pipes are built with U-shaped water traps ; do not alter the pipelines without authorization. Clean floor drain outlets at least once a week to prevent putrid air and insects in the soil pipes from entering the premises. Pour about half a litre of water into each drain outlet regularly (about once a week) so as to maintain the water column in the pipe as water lock.

Environment decontamination is crucial when: Under outbreak situation Disinfect the environment with 1 in 49 diluted household bleach (5.25%) solution, leave for 15-30 minutes before rinsing with water and mopping dry. [28] Special attention should be paid to the disinfection of toilets, kitchens and objects which are frequently touched such as light switches, door knobs and handrails.

4. Transmission-based Precautions

There are three categories of Transmission-based Precautions: Contact Precautions, Droplet Precautions, and Airborne Precautions. For some diseases that have multiple routes of transmission (e.g., SARS), more than one Transmission-based Precautions category may be used. When used either singly or in combination, they are always used in addition to Standard Precautions. Contact precautions are designed to reduce the risk of infectious diseases transmission by direct or indirect contact when handling of infective materials such as changed linen sheets. Appropriate PPE should be worn, in accordance with Part IV in the above, when contact with sick guests or contaminated environmental surface or items is anticipated. Droplet precautions are designed to reduce the risk of droplet transmission of infectious agents (e.g., influenza, rubella, SARS etc) while airborne precautions are designed to reduce the risk of infectious diseases, such as pulmonary tuberculosis and chicken pox, transmitted by small droplet particulates (i.e. droplet nuclei).

Ventilation

This refers to the process of supplying and removing air to and from a building, which could be achieved by natural and mechanical means. Natural ventilation is usually characterized by uncontrolled inward and outward air leakage through cracks, windows, doorways and vents. Premises relying entirely on natural ventilation should have openings of at least 5 to 10% of the floor area to obtain adequate ventilation. Mechanical ventilation is provided by air movers or fans in the wall, roof or air-conditioning system, which promotes supply and exhaust air flow in a controllable manner.

Purpose of ventilation

Provide fresh and clean air to maintain a thermally comfortable work environment, and to remove or dilute airborne contaminants. Maintain the temperature and humidity within acceptable range.

General ventilation design

Good air flow is very important. Adequate ventilation can maintain the freshness of air, prevent accumulation of heat and control the level of airborne contaminants. Carbon dioxide level of higher than 1,000 ppm may indicate the insufficiency of indoor ventilation. The location of fresh air intake points should be carefully designed to prevent intake of contaminated air. Optimum temperature of 20°C – 26°C. Optimum humidity of 40% - 70%. Avoid blocking of air flow from the supply registers. Too much air movement causes draughts which are annoying, if too little, people may complain of stuffiness. Adjust diffusers and return air grilles properly. Regular maintenance to keep the ventilation system clean and functioning properly.

Infection control measures and ventilation issues
Microorganism such as mould or fungi, bacteria, viruses, protozoa etc can be found indoors. Mould or fungal growth on structural materials is a sign that biological growth in the area is flourishing. High air humidity, stagnant water, filters packed with dusts and building structures that have been damaged by moisture all provided favorable conditions for biological growth. Use efficient filters in ventilation unit to remove airborne particulates and spores of microorganisms from the ventilation system. Remove potential water sources that may encourage fungal growth, especially stagnant water in ventilation systems. Repair and maintain all water pipes and draining systems. Repair areas that have been affected by flood or seepage. Remove and replace contaminated porous materials, such as heavily deposited ventilation unit filters, moldy ceiling tiles and mildewed carpets. Disinfect all smooth surfaces (such as wall tiles) that have been contaminated by fungi. Provide dehumidifier units for control of humidity within the optimum range.

Maintenance of Mechanical Ventilation Systems
Proper inspection, cleaning, testing and maintenance schedules should be drawn up and followed. Replace air filters regularly. Inspect all components of the ventilation system for cleanliness and microbial growth regularly, and clean them as required. Test the performance of the system against the design specification and make necessary adjustment or repair. If water cooling towers are used, they should be so maintained, e.g., use of biocides as appropriate, as to prevent the growth of micro-organisms.Ventilation system should function properly and be regularly maintained. Air-conditioning systems should be cleaned according to the manufacturer's instructions. Filters should be changed or cleaned according to the manufacturer's instructions. Staff should put on appropriate PPE (such as goggles and gloves etc) when changing the filter. Grilles and air ducts should be cleaned regularly.

5. Use of disinfectants: alcohol and bleach

Different countries have different disinfection protocols. Health-care facilities with limited resources may not have access to a variety of hospital disinfectants, however, alcohol and bleach are acceptable chemical disinfectants if used appropriately. As with any other disinfectants, soiled surfaces need to be cleaned with water and detergent first.

5.1 Alcohol

Alcohol is effective against influenza virus (252). Ethyl alcohol (70%) is a powerful broad-spectrum germicide and is considered generally superior to isopropyl alcohol. Alcohol is often used to disinfect small surfaces (e.g. rubber stoppers of multiple-dose medication vials, and thermometers) and occasionally external surfaces of equipment (e.g. stethoscopes and ventilators). Since alcohol is flammable, limit its use as a surface disinfectant to small surface-areas and use it in well-ventilated spaces only. Prolonged and repeated use of alcohol as a disinfectant can also cause discoloration, swelling, hardening and cracking of rubber and certain plastics.

5.2 Bleach

Bleach is a strong and effective disinfectant – its active ingredient sodium hypochlorite is effective in killing bacteria, fungi and viruses, including influenza virus – but it is easily inactivated by organic material. Diluted household bleach disinfects within 10–60 minutes contact time (see Table G.1 below for concentrations and contact times), is widely available at a low cost, and is recommended for surface disinfection in health-care facilities.

However, bleach irritates mucous membranes, the skin and the airways; decomposes under heat and light; and reacts easily with other chemicals. Therefore, bleach should be used with caution; ventilation should be adequate and consistent with relevant occupational health and safety guidance. Improper use of bleach, including deviation from recommended dilutions (either stronger or weaker), may reduce its effectiveness for disinfection and can injure health-care workers.

Procedures for preparing and using diluted bleach

To prepare and use diluted bleach:

- use a mask, rubber gloves and waterproof apron; goggles also are recommended to protect the eyes from splashes;
- mix and use bleach solutions in well-ventilated areas;
- mix bleach with cold water (hot water decomposes the sodium hypochlorite and renders it ineffective);
- if using bleach containing 5% sodium hypochlorite, dilute it to 0.05%, as shown in Table G.1 below.

5.2.1 Sodium hypochlorite: concentration and use

Starting solution Most household bleach solutions contain 5% sodium hypochlorite (50 000 ppm available chlorine).
Recommended dilution 1:100 dilution of 5% sodium hypochlorite is the usual recommendation. Use 1 part bleach to 99 parts cold tap water (1:100 dilution) for disinfection of surfaces. Adjust ratio of bleach to water as needed to achieve appropriate concentration of sodium hypochlorite. For example, for bleach preparations containing 2.5% sodium hypochlorite, use twice as much bleach (i.e. 2 parts bleach to 98 parts water).
Available chlorine after dilution For bleach preparations containing 5% sodium hypochlorite, a 1:100 dilution will yield 0.05% or 500 ppm available chlorine. Bleach solutions containing other concentrations of sodium hypochlorite will contain different amounts of available chlorine when diluted.
Contact times for different uses Disinfection by wiping of nonporous surfaces: a contact time of ≥ 10 minutes is recommended. Disinfection by immersion of items: a contact time of 30 minutes is recommended. N.B. Surfaces must be cleaned of organic materials, such as secretions, mucus, vomit, faeces, blood or other body fluids before disinfection or immersion.

Precautions for the use of bleach

Bleach can corrode metals and damage painted surfaces.

Avoid touching the eyes. If bleach gets into the eyes, immediately rinse with water for at least 15 minutes, and consult a physician.

Do not use bleach together with other household detergents, because this reduces its effectiveness and can cause dangerous chemical reactions. For example, a toxic gas is produced when bleach is mixed with acidic detergents, such as those used for toilet cleaning, and this gas can cause death or injury. If necessary, use detergents first, and rinse thoroughly with water before using bleach for disinfection.

Undiluted bleach emits a toxic gas when exposed to sunlight; thus, store bleach in a cool, shaded place, out of the reach of children.

Sodium hypochlorite decomposes with time. To ensure its effectiveness, purchase recently produced bleach, and avoid over-stocking.

If using diluted bleach, prepare the diluted solution fresh daily. Label and date it, and discard unused mixtures 24 hours after preparation.

Organic materials inactivate bleach; clean surfaces so that they are clear of organic materials before disinfection with bleach.

Keep diluted bleach covered and protected from sunlight, and if possible in a dark container, and out of the reach of children.

6. Health Advice on Prevention of Severe Respiratory Disease associated with a Novel Infectious Agent for Hotel Industry

6.1 Advice upon check-In

a. Staff should wear a surgical mask when AT RECEPTION required to work face to face with public or in crowded area.
b. Conduct a brief check on the guests' travel history in the past 14 days to ascertain travel history to the affected areas.
c. Guests are reminded to maintain good personal hygiene.
d. Provide 70-80% alcohol-based hand rub to guests in public areas and prepare adequate amount for surgical mask for use.

For guests with positive travel history:

e. Advise to observe good personal hygiene, especially on hand hygiene and proper cough manners (Please refer to Annex I & Annex II).
f. Guest(s) is/are advised to stay in the room if feeling unwell, wear a surgical mask and call the hotel operator at once for arrangement of 2 medical consultation.
g. Guest(s) is/are advised not to take public transport if developed of respiratory symptoms. (d) The hotel should make any arrangement deemed necessary to help prevent the spread of infection.

6.2 Handling of guest with respiratory symptom(s)

a. Advise the guest to seek medical care immediately.
b. Before the guest seeking medical care:
    i. advise the symptomatic guest to stay in his/her room and put on a surgical mask, while relocating any asymptomatic roommate(s) to another room.
    ii. advise other asymptomatic guests travelling along with the symptomatic guest to stay in their own rooms as far as possible.
    iii. open the windows of the rooms for better ventilation if possible.

iv. minimise contact among staff and the symptomatic guest, his / her roommates and other guests travelling along with the symptomatic guest as far as possible.

c. Staff should put on a surgical mask, disposable gown and gloves, and face shield if in contact with the symptomatic guest, his/her roommate(s), or other guests travelling along with the symptomatic guest is required. Minimise contact with symptomatic guests as far as practicable.
d. Hotel management should always keep a list of staff and residents who had stayed in the hotel, their period of stay (check-in and check-out dates), identification / passport number, age, sex, nationality, contact telephone number, for possible public health action in case the patient is confirmed 3 to be infected with Severe Respiratory Disease associated with a Novel Infectious Agent.
e. Environmental disinfection (mixing 1 part of 5.25% bleach with 49 parts of water) should be carried out immediately for any potentially contaminated installations, equipment or traffic pathways used by the symptomatic guest, such as elevator control panels and the lobby. Responsible staff should put on a surgical mask, disposable gown and gloves, and face shield.
f. N95 respirators are generally not recommended for use by the general public in community settings because special training is required for proper wearing and removal of the mask. Otherwise the infective risk due to inadequate protection and contamination may be ironically increased.
g. Depending on the situation, hotel management may need to suspend any mass gathering or social activities in the hotel.

7. Infection Control Measures in Special Facilities

Hotel guests who have a fever, cough, respiratory symptoms or any signs of infection should not use common showers, saunas, Jacuzzis or spas (such as those provided in hotel health clubs or gyms) as moist atmosphere will aggravate the spread of respiratory viruses.

7.1 Swimming Pools and Whirlpool Spas environmental cleansing

7.1.1 Daily cleansing routine

The water of the pool should be completely changed by circulation through a filtration system or by removal from source in the frequency of not less than once in every 4 hours for a covered swimming pool and not less than once in every 6 hours for an open air pool during which the swimming pool is in use by bathers. Remove grease on water surface, hair and visible dirt (with the help of vacuum where necessary). The whole area and all the facilities of the swimming pool and spa (including walls, floors, equipment, tables and chairs, stepways, handrails, diving boards, chutes, changing rooms, showers, foot baths, lockers and latrine fitment) should be kept clean. Regular cleansing and disinfection should be carried out at least once a day by using diluted household bleach (e.g. 1 in 99 diluted household bleach (5.25%) solution) and hence rinse with water and mop dry. Dry any collection of water poodles around the pool, especially at corners and sewage exhaust, to prevent the formation of breeding ground for mosquitoes and germs. Scales damaged grouting and stained tiles (results of poor pH control and impaired water balance) should be dealt with. The standard of water clarity should be maintained in such a way that the turbidity of water as expressed in Nephelometric Turbidity Units should not exceed 5; and the colour of water as expressed in Hazen Units or Pt-Co Colour Units should not exceed 5. Costume or towels supplied to all bathers should be disinfected, by immersion for not less than 30 seconds in boiling water or laundering using hot water (70-80°C) and detergent.

7.1.2 Weekly cleansing routine

Backwash of the filter on weekly basis or when it is triggered by a pressure drop. Clean pool wall, pool floor, handrails and stairs to remove bad marks. Clean the shower room with cleansing powder to remove accumulated dirt and soap. Check tiles for any defect

7.1.3 "When Necessary" cleansing routine

Super chlorination (addition of an extra dose of chlorine to pool and staying overnight to achieve the Free Available Chlorine level to 6.0ppm) is recommended every 2 to 4 weeks during regular usage if the pool would not be emptied for thorough cleansing routinely or when the amount of combined chlorine is deviated from standard value during routine daily test. After super chlorination, the pool can only be used until the chlorine residual drops below 3.0ppm.