PPS /PIDSP Interim Guidelines
on Resumption of Out-Patient Pediatric Clinics
Post – Enhanced Community Quarantine During COVID Pandemic
11 May 2020

Background

The World Health Organization (WHO) recommends the use of additional precautions (droplet and contact and, whenever applicable, airborne precautions) on top of standard precautions during COVID pandemic. ¹ Nevertheless, the majority of outpatient settings are not designed to implement all of the isolation practices and other Transmission-Based Precautions (e.g., Airborne Precautions for patients with suspected tuberculosis, measles or chicken pox) that are recommended for hospital settings. Thus, facilities should develop, customize, and implement systems for early detection and management of potentially infectious patients at initial points of entry to the facility, during patient visits, and after clinics are done.³

The basic principles of infection prevention and control (IPC) and standard precautions should be applied in all health care facilities, including outpatient care and primary care. For COVID-19, the following measures should be adopted: ¹

- Triage and early recognition;
- Emphasis on hand hygiene, respiratory hygiene, and appropriate masks to be used by patients, companions, and medical personnel;
- Proper use of contact and droplet precautions for all suspected cases;
- Prioritization of care of symptomatic patients;
- Provision of separate waiting area for symptomatic patients if they are required to wait;
- Education of patients and families about the early recognition of symptoms, basic precautions to be used, and to which health care facility they should go.

This guidance is intended for health care workers/personnel (HCWs/HCPs), health care managers, and Infection and Prevention Control (IPC) teams at the out-patient facility level. The HCP is advised to adapt according to his/her own specific set up and needs, adhering to the same infection control principles.
Recommendations

GENERAL SOPs:

1. **Standard Precautions** are the minimum infection prevention practices that apply to all patient care, regardless of suspected or confirmed infection status of the patient, in any setting where healthcare is delivered. These practices are designed to both protect HCPs and prevent them from spreading infections among patients, and include:\(^2\)
   - Hand hygiene
   - Use of personal protective equipment (e.g., gloves, gowns, masks)
   - Injection safety (e.g. proper vaccination practices, administration of intramuscular/parenteral medications)
   - Safe handling of potentially contaminated equipment or surfaces in the patient environment
   - Respiratory hygiene/cough etiquette.

2. **Training of the clinic staff**\(^5\)
   - Ensure that clinic personnel know the proper ways to put on, use, and take off Personal Protective Equipment (PPE) safely. The PPE required for staff is determined by the level of potential exposure to patients and contaminated surfaces.
   - Teach the staff about recognition of symptoms—fever, cough, shortness of breath, and others (see Appendix A: Screening and Assessment of COVID-19 in Pediatric Patients, from PPS/PIDSP Interim Guidelines on Screening, Assessment and Clinical Management of Pediatric Patients with Suspected or Confirmed COVID-19).
   - Make sure that staff members implement procedures to quickly triage and separate sick patients.
   - Emphasize hand hygiene and cough etiquette for everyone.
   - Ask staff to stay home if they are sick.
   - Send workers home if symptoms develop at work.

3. **Ensuring triage, early recognition, and source control**
   - Clinical triage includes a system for assessing all patients before or upon entry/admission, allowing for early recognition of possible COVID-19. (See Appendix A)
   - Source Control is the immediate isolation of patients with suspected disease in an area separate from other patients.
HOSPITAL /CLINIC SOPs:

1. ENTRY TO THE HEALTHCARE FACILITY

To facilitate the early identification of cases of suspected COVID-19, health care facilities should:

A. Whenever possible, screen and triage patients via digital/telehealth methods already prior to actual patient visits.
B. Institute the use of screening questionnaires according to the updated case definition (Appendix A).
C. Establish a well-equipped triage station at the entrance to the facility. If there is more than one entrance to the facility, all entrances should have proper triaging of all persons.
D. Place trained staff who are skilled with a high level of clinical suspicion and recognition.
E. Check temperature upon arrival and entrance to the building where clinics are located.
F. Patients who fail screening should never be allowed to enter the outpatient healthcare facility, but isolated and managed at home or sent to the ER. (See PPS/PIDSP Interim Guidelines on Screening, Assessment and Clinical Management of Pediatric Patients with Suspected or Confirmed COVID-19)
G. Require all personnel, patients, and visitors to wear masks that cover mouth and nose, except children <2 yrs. of age.
H. Limit non-patient visitors, companions, or caregivers.
I. Post visible signs in public areas to direct patient flow and remind symptomatic patients to alert HCWs.

2. RECEPTION AREAS/ WAITING AREAS

Well patients should always be separated from sick patients, physically and temporally whenever possible. Provide space and encourage persons with symptoms of respiratory infections to sit as far away from others as possible. Create separate spaces in waiting areas for sick and well patients.

A. Whenever possible, pre-screen patients before arrival at the clinic such that well child visits are scheduled separately from sick child visits.
B. If available, facilities may wish to place symptomatic patients in a separate area while waiting for care.
C. Separation of at least 1-2 meters (3-6 feet) should be maintained between all patients and caregivers. Both spatial separation and adequate ventilation can help reduce the spread of many pathogens in the health care setting.  


E. Remove toys, reading materials or other communal objects, otherwise ensure that these are regularly cleaned.

F. Provide resources and reminders for performing hand hygiene, respiratory hygiene and cough etiquette in or near waiting areas. (See Appendix B)

3. DOCTOR’S CLINIC- HCPS AND HCWS

Each outpatient facility should evaluate the services they provide to determine specific needs and to assure that sufficient and appropriate engineering controls and PPE are available for adherence to Standard Precautions, Droplet and Contact Precautions (and Airborne Precautions where applicable).

All HCPs and staff at the facility should be educated regarding proper selection and use of PPE. The rational, correct, and consistent use of PPE also helps reduce the spread of pathogens. PPE effectiveness depends strongly on adequate and regular supplies, adequate staff training, appropriate hand hygiene, and appropriate human behaviour.

A. Design and install engineering controls to reduce or eliminate exposures by shielding HCP, staff and other patients from infected individuals. Examples of engineering controls include:

- Physical barriers or partitions to guide patients through triage areas and ensure appropriate distancing.
  - Physical barriers (e.g., glass or plastic windows, acrylic shields) at reception areas may be considered to limit close contact between triage personnel (who may not be equipped with full PPE) and potentially infectious patients. However, these barriers may be of little use and are not encouraged inside doctors’ clinics, as doctors still need to go around these to perform physical examination of patients, while using proper PPE. Moreover, these barriers need to be disinfected after patient visit.
• Air-handling systems (with appropriate directionality, filtration, exchange rate, etc.) that are properly installed and maintained. Air should ideally flow AWAY from HCP and healthcare staff.

  o Airborne Infection Isolation Rooms (AIIRs)- AIIRs are single-patient rooms at negative pressure relative to the surrounding areas, and with a minimum of 6 air changes/hour (12 air changes/hour are recommended for new construction or renovation). Air from these rooms should be exhausted directly to the outside or be filtered through a high-efficiency particulate air (HEPA) filter directly before recirculation. Doors should be kept closed except when entering or leaving the room, and entry and exit should be minimized.

  o The role of an AIIR, or negative pressure room, as an intervention to increase safety for HCP caring for suspected or known COVID-19 patients is unclear, with the exception of those involved in aerosol-generating procedures (AGPs) (e.g. nebulization, suctioning). To date, there are no data to suggest that SARS-CoV-2 is routinely spread via long-distance airborne nuclei during routine care or following AGPs.

• Modified doorknobs and drawers to minimize handling of common surfaces (e.g. change doorknobs so elbows may instead be used, etc.).
• Covered waste bins/trashcans to protect against aerosolized particles
• Provision of proper waste disposal measures for PPEs and disinfection materials.
• Designated area for donning and doffing of PPEs.

B. Follow requirements for PPEs.

Adherence to CDC evidence-based guidelines for masks, hand hygiene, and environmental hygiene enhances the safety for health care workers. All patients > 2 yrs. of age and visitors should be required to wear masks for source control; for asymptomatic individuals, cloth masks may be sufficient; for symptomatic patients, surgical masks are preferred.

However, the Infectious Disease Society of America (IDSA) Guidelines recommend that health care personnel caring for patients with suspected or known COVID-19, use either a surgical mask or N95 (or N99 or PAPR) respirator as part of appropriate PPE which include gown, gloves and eye protection. (Strong recommendation, moderate certainty of evidence)
Key recommendations for use of PPE in outpatient settings:

1. Facilities should assure that sufficient and appropriate PPE is available and readily accessible to HCP and staff.
2. Basic PPE for the HCP in a typical pediatric outpatient clinic (assuming no aerosol-generating procedures will take place) would include: medical mask (surgical mask or N95), gown, eye protection (face shield or goggles), and gloves.
3. Educate all HCP on proper selection and use of PPE.
   a. PPE, other than respirators, should be removed and discarded prior to leaving the patient’s room or care area. If a respirator is used, it should be removed and discarded (or reprocessed if reusable) after leaving the patient room or care area and closing the door.
   b. Hand hygiene should be performed immediately after removal of PPE.
4. Wear gloves for potential contact with blood, body fluids, mucous membranes, non-intact skin or contaminated equipment.
   a. Do not wear the same pair of gloves for the care of more than one patient.
   b. Do not wash gloves for the purpose of reuse.
5. Wear a gown to protect skin and clothing during procedures or activities where contact with blood or body fluids is anticipated.
   a. Do not wear the same gown for the care of more than one patient.
   b. Non-disposable gowns may be removed (taking care to minimize the possibility of dispersing the virus through the air), sealed or soaked in detergent, and laundered for reuse.
6. Wear mouth, nose and eye protection during procedures that are likely to generate splashes or sprays of blood or other body fluids.
7. Avoid wearing jewelry and use of cellphones/gadgets.
8. Use closed shoes.

C. Implement measures to contain respiratory secretions in patients who have signs and symptoms of a respiratory infection.

D. HCWs should apply WHO’s My 5 Moments for Hand Hygiene approach 1

- Hand hygiene includes either cleansing hands with an alcohol-based hand rub or with soap and water.
- Alcohol-based hand rubs are preferred if hands are not visibly soiled.
- Wash hands with soap and water when they are visibly soiled.
Key recommendations for hand hygiene in outpatient settings:

Key situations where hand hygiene should be performed include:

1. Before contact with a patient.
2. Before performing an aseptic task (e.g., insertion of IV, preparing an injection).
3. After contact with the patient or objects in the immediate vicinity of the patient.
4. After contact with blood, body fluids or contaminated surfaces.
5. If hands will be moving from a contaminated-body site to a clean-body site during patient care.
6. After removal of personal protective equipment (PPE).

E. Use of disposable materials is preferred (e.g. paper tape measure, bed covers, replaceable ear tips for thermometers).
F. Provide at-home care instructions to patients with respiratory symptoms.
G. Consider telehealth options for pre-screening and/or follow up.
   • This will minimize direct contact with patients.
H. Notify your health department of patients with suspected COVID-19 infection.
   • Follow DOH guidelines for notification and management of suspected COVID-19 patients.
I. After patients leave, clean frequently touched surfaces (e.g. counters, doorknobs, beds, seating), medical devices (thermometers, stethoscopes) using detergent and water, and disinfectants.

4. CLEANING AND DISINFECTION OF THE DOCTOR’S CLINIC

Cleaning refers to the removal of visible soil and organic contamination from a device or environmental surface using the physical action of scrubbing with soap or detergent and water, or an energy-based process (e.g., ultrasonic cleaners) with appropriate chemical agents. This process removes large numbers of microorganisms from surfaces and must always precede disinfection.2

Disinfection is generally a less lethal process of microbial inactivation (compared to sterilization) that eliminates virtually all recognized pathogenic microorganisms but not necessarily all microbial forms (e.g., bacterial spores). 2
A. Ensure that cleaning and disinfection procedures are followed consistently and correctly. Cleaning environmental surfaces with water and detergent and applying commonly used hospital disinfectants (such as sodium hypochlorite) is effective and sufficient. 1 (See Appendix C)

B. If surfaces are dirty, clean using a **detergent or soap and water** prior to disinfection.

C. EPA-registered disinfectants or 1:100 dilution of household bleach and water should be used for disinfection of surface and on noncritical patient-care equipment. Follow manufacturer’s instructions for application, ensuring a **contact time of at least 1 minute, and allowing proper ventilation during and after application.**

D. **Never mix household bleach with ammonia or any other cleanser.**

E. Common low- and intermediate-level disinfectants that can be used for environmental surfaces in healthcare settings include:
   a. quaternary ammonium compounds
   b. alcohol (ethyl or isopropyl)
   c. chlorine releasing agents (e.g., bleach)
   d. improved hydrogen peroxide

F. Use appropriate PPE while carrying out cleaning and disinfection procedures.

G. Ideally, frequently touched surfaces should be cleaned and disinfected (with detergent and disinfectant) between each patient consultation/examination.

**Hard (Non-porous) Surfaces:**

1. Wear disposable gloves when cleaning and disinfecting surfaces.
2. Gloves should be discarded after each cleaning.
3. If reusable gloves, should be dedicated for cleaning and disinfection of surfaces for COVID-19 and should not be used for other purposes.
4. Consult the manufacturer’s instructions for cleaning and disinfection products used.
5. Clean hands immediately after gloves are removed.

**Soft (Porous) Surfaces:**

1. Remove visible contamination if present and clean with appropriate cleaners indicated for use on these surfaces- carpeted floor, rugs, and drapes (taking care to minimize the possibility of dispersing the virus through the air).
2. After cleaning: Launder items as appropriate in accordance with the manufacturer’s instructions. If possible, launder items using the warmest appropriate water setting for the items and dry items completely.

Electronics:

1. For electronics such as cell phones, tablets, touch screens, remote controls, and keyboards, remove visible contamination if present.
2. Follow the manufacturer’s instructions for all cleaning and disinfection products.
3. Consider use of wipeable covers for electronics (e.g. cover computer keyboard and screen with plastic, put cellphones in Ziploc® bags).
4. If no manufacturer guidance is available, consider the use of alcohol-based wipes or sprays containing at least 70% alcohol to disinfect touch screens.
5. Dry surfaces thoroughly to avoid pooling of liquids.

H. General outpatient or ambulatory care wards include waiting areas, consultation areas, and minor procedural areas.

The following are the recommended frequency and method of cleaning for specific areas of patient care.
### Recommendations for Outpatient Wards by Area, Frequency, Method, and Process.³

<table>
<thead>
<tr>
<th>Area</th>
<th>Frequency</th>
<th>Method</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waiting / Admission</td>
<td>At least once daily (e.g., per 24-hour period)</td>
<td>Clean</td>
<td>High-touch surfaces and floors</td>
</tr>
<tr>
<td>Consultation / Examination</td>
<td>At least twice daily</td>
<td>Clean</td>
<td>High-touch surfaces and floors</td>
</tr>
<tr>
<td>Procedural (minor operative procedures;</td>
<td>Before and after (i.e., between see Footnote) each procedure</td>
<td>Clean and disinfect</td>
<td>High-touch surfaces and floors, with an emphasis on the patient zone,</td>
</tr>
<tr>
<td>e.g., suturing wounds, draining abscesses</td>
<td></td>
<td></td>
<td>procedure table</td>
</tr>
<tr>
<td></td>
<td><strong>Footnote:</strong> If there is prolonged time between procedures or local</td>
<td></td>
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<tr>
<td></td>
<td>conditions that create risk for dust generation/dispersal, re-wipe</td>
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<tr>
<td></td>
<td>surfaces with disinfectant solution immediately before the subsequent</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>procedure.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedural (minor operative procedures;</td>
<td>End of the day (terminal clean)</td>
<td>Clean and disinfect</td>
<td>All surfaces and the entire floor</td>
</tr>
<tr>
<td>e.g., suturing wounds, draining abscesses</td>
<td></td>
<td></td>
<td>Handwashing sinks, thoroughly clean (scrub) and disinfect</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sluice areas/sinks or scrub areas</td>
</tr>
<tr>
<td>All</td>
<td>Scheduled basis (e.g., weekly, monthly) and when visibly soiled</td>
<td>Clean</td>
<td>Low-touch surfaces;</td>
</tr>
</tbody>
</table>

### Recommended Material Cleaning and Disinfectant Compatibility Considerations by Disinfectant, Material Compatibility Considerations, and Best Practices.³

<table>
<thead>
<tr>
<th>Disinfectant</th>
<th>Material compatibility considerations</th>
<th>Best practices for use on noncritical patient care equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorine/hypochlorite-based</td>
<td>Corrosive to metals</td>
<td>• Concentration should not exceed 1000 ppm or 0.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rinse equipment with clean water after disinfection</td>
</tr>
<tr>
<td>Alcohols (60-80%)</td>
<td>Could deteriorate glues and cause damage to plastic tubing, silicone, and rubber</td>
<td>• Good for disinfecting small equipment or devices that can be immersed (e.g., stethoscopes, thermometers)</td>
</tr>
</tbody>
</table>
5. COLLECTING AND HANDLING LABORATORY SPECIMENS FROM PATIENTS WITH SUSPECTED COVID 19

When collecting diagnostic respiratory specimens (e.g., nasopharyngeal swab) from a patient with possible COVID-19, the following should occur:¹

A. All specimens collected for laboratory investigations should be regarded as potentially infectious. HCWs who collect, handle, or transport clinical specimens should adhere rigorously to the following standard precaution measures and biosafety practices to minimize the possibility of exposure to pathogens.

B. Ensure that HCWs who collect specimens use appropriate PPE (i.e. eye protection, a medical mask, a long-sleeved gown, and gloves). If the specimen is collected during an aerosol-generating procedure, personnel should wear a particulate respirator at least as protective as a NIOSH-certified N95, an EU standard FFP2, or the equivalent.

C. Specimen collection should be performed in a normal examination room with the door closed.

D. The number of HCP present during the procedure should be limited to only those essential for patient care and procedure support. Visitors should not be present for specimen collection.

E. Clean and disinfect procedure room surfaces promptly.
Appendix A: Screening and Assessment of COVID 19 in Pediatric Patients
(from PPS/PIDSP Interim Guidelines on Screening, Assessment and Clinical Management of Pediatric Patients with Suspected or Confirmed COVID-19 v2)

SYMPTOMS AND/OR EXPOSURE HISTORY:

A. Investigate whether the child has had any acute respiratory infection symptoms within 14 days, for which no other plausible alternative etiology can be considered.
   1. Symptoms of acute respiratory infection in children include:
      a. Fever defined as an axillary temperature of 38°C and above
      b. Cough
      c. Sore throat
      d. Difficulty of breathing (fast breathing, chest indrawing, noisy breathing in a calm child)
   2. Other symptoms may also be present which warrant close observation of the child, such as:
      a. Rhinorrhea
      b. Diarrhea
      c. Vomiting
      d. Abdominal pain
      e. Fatigue
      f. Headache
      g. Rashes
      h. Myalgia

B. Assess the child’s travel history or history of close contact:
   1. Evaluate if the child has been in close contact with sick individuals, whether from home or during travel, who are proven COVID-19 patients or highly suspected of COVID-19. Close contact is defined by the WHO as a person who is involved in any of the following from 2 days before and up to 14 days after the onset of symptoms in the confirmed or probable case:
      a. Having face-to-face contact with a COVID-19 patient within 1 meter and for >15 mins;
      b. Providing direct care for patients with COVID-19 without using proper PPE;
      c. Staying in the same close environment as a COVID-19 patient (including sharing a workplace, classroom or household or being at the same gathering) for any amount of time;
      d. Travelling in close proximity with (that is, within 1 m separation from) a COVID-19 patient in any kind of conveyance; and
      e. Other situations, as indicated by local risk assessments
2. Take note of any history of recent travel within the last 14 days to areas with localized transmission or local communities under enhanced quarantine. Check DOH updates to confirm if the child’s community is classified as such. Note also if there is clustering of influenza-like illnesses in the home, neighborhood or area. Note: Exposure to a possible COVID-19 case is not considered close contact.

C. Assess the child’s clinical status, taking note of either rapid progression or worsening symptoms despite compliance with standard treatment and absence of defined etiology.

D. If laboratory tests such as a complete blood count and/or chest imaging are available, check if results are compatible with a consideration of COVID-19.

E. If either exposure evaluation, clinical features or laboratory tests is positive, the symptomatic child is considered a suspect COVID-19 case.

F. If none of the features described above is present, the child is considered to have Acute Respiratory Infection. Screen for pre-existing comorbidities contributory to and/or causative of the current complaint (e.g. asthma, risk factors for aspiration). Take note also of pre-existing immunocompromising conditions that may predispose to a more severe condition (malignancy, congenital immunodeficiencies, HIV/AIDS, severe acute malnutrition, congenital heart/lung/kidney disease, intake of immunosuppressant drugs, etc.). If these exist, assess the need for inpatient care and manage accordingly. (See PPS/PIDSP Interim Guidelines on Screening, Assessment and Clinical Management of Pediatric Patients with Suspected or Confirmed COVID-19 v2)
Appendix B: Sample of In-clinic Posters (US CDC materials)
Cover your Cough

- Cover your mouth and nose with a tissue when you cough or sneeze.
- Put your used tissue in the waste basket.

Clean your Hands

- Wash hands with soap and warm water.
- Or clean with alcohol-based hand cleaner.

COVID-19 Personal Protective Equipment (PPE) for Healthcare Personnel

**Preferred PPE – Use N95 or Higher Respirator**
- Face shield or goggles
- N95 or higher respirator
- One pair of clean, non-sterile gloves
- Isolation gown

**Acceptable Alternative PPE – Use Facemask**
- Face shield or goggles
- One pair of clean, non-sterile gloves
- Facemask
- N95 or higher respirators are preferred but facemasks are an acceptable alternative.

[cdc.gov/COVID19]
Appendix C: Advantages and Disadvantages of Common Healthcare Disinfectants

<table>
<thead>
<tr>
<th>Disinfectant</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-level disinfectant: Quaternary ammonium compounds e.g., alkyl dimethyl benzyl ammonium chloride, alkyl dimethyl ethylbenzyl ammonium chloride</td>
<td>Toxicity:</td>
<td>Toxicity:</td>
</tr>
<tr>
<td></td>
<td>• may be used on food contact surfaces.</td>
<td>• skin irritant, can also cause respiratory irritation</td>
</tr>
<tr>
<td></td>
<td>Wide material compatibility</td>
<td>Narrow microbiocidal spectrum</td>
</tr>
<tr>
<td></td>
<td>• noncorrosive</td>
<td>• not mycobactericidal or sporidical, only limited activity against non-enveloped viruses</td>
</tr>
<tr>
<td></td>
<td>Detergent properties, with good cleaning ability</td>
<td>• diluted solutions can support growth of microorganisms, particularly gram negative organisms</td>
</tr>
<tr>
<td></td>
<td>• low cost</td>
<td>Affected by environmental factors:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• activity reduced by various materials (e.g., cotton, water hardness, microfiber cloths, organic material)</td>
</tr>
<tr>
<td>Bactericidal</td>
<td></td>
<td>• could induce cross resistance with antibiotics</td>
</tr>
<tr>
<td>Virucidal (only enveloped viruses)</td>
<td></td>
<td>• persists in the environment and waterways</td>
</tr>
<tr>
<td>Fungicidal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate-level disinfectant: Alcohols (60-80%) e.g., isopropyl alcohol, ethyl alcohol, and methylated spirits</td>
<td>Broad spectrum (but not sporidical)</td>
<td>Slow acting against non-enveloped viruses</td>
</tr>
<tr>
<td></td>
<td>Rapid action</td>
<td>Does not remain wet</td>
</tr>
<tr>
<td></td>
<td>Nontoxic</td>
<td>• rapid evaporation makes contact time compliance difficult (on large environmental surfaces)</td>
</tr>
<tr>
<td></td>
<td>Non-staining, no residue</td>
<td>Affected by environmental factors:</td>
</tr>
<tr>
<td></td>
<td>Noncorrosive</td>
<td>• inactivated by organic material</td>
</tr>
<tr>
<td></td>
<td>Low cost</td>
<td>Material compatibility:</td>
</tr>
<tr>
<td></td>
<td>Good for disinfecting small equipment or devices that can be immersed</td>
<td>• can damage materials (plastic tubing, silicone, rubber, deteriorate glues)</td>
</tr>
<tr>
<td>Bactericidal</td>
<td></td>
<td>Flammable</td>
</tr>
<tr>
<td>Virucidal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fungicidal</td>
<td></td>
<td></td>
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<tr>
<td>Mycobactericidal</td>
<td></td>
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<tr>
<td>Disinfectant</td>
<td>Advantages</td>
<td>Disadvantages</td>
</tr>
<tr>
<td>-----------------------------------------</td>
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<td>---------------------------------------------------------</td>
</tr>
<tr>
<td>Intermediate-level disinfectant: Chlorine releasing agents</td>
<td>Hypochlorites are broad spectrum (sporidial)</td>
<td>Affected by environmental factors:</td>
</tr>
<tr>
<td>e.g., bleach/sodium or calcium hypochlorite, sodium dichloroisocyanurate (NaClO)</td>
<td>Rapid action</td>
<td>• inactivated by organic material</td>
</tr>
<tr>
<td>Spectrum of activity</td>
<td>Nonflammable</td>
<td>High toxicity:</td>
</tr>
<tr>
<td>Bactericidal</td>
<td>Low cost</td>
<td>• can release toxic chlorine if mixed with acids or ammonia</td>
</tr>
<tr>
<td>Virucidal</td>
<td>Widely available</td>
<td>• skin and mucous membrane irritant</td>
</tr>
<tr>
<td>Fungicidal</td>
<td>Can reduce biofilms</td>
<td>Material compatibility:</td>
</tr>
<tr>
<td>Mycobactericidal</td>
<td></td>
<td>• damages fabrics, carpets</td>
</tr>
<tr>
<td>Sporicidal (hypochlorites only at 5000ppm or 0.5%)</td>
<td></td>
<td>• corrosive</td>
</tr>
<tr>
<td>Intermediate-level disinfectant: Improved hydrogen peroxide</td>
<td>Rapid action</td>
<td>Leaves residue, requires rinsing or neutralization</td>
</tr>
<tr>
<td>e.g., 0.5% enhanced action formulation hydrogen peroxide, 3% hydrogen peroxide</td>
<td>Nontoxic</td>
<td>Offensive odors</td>
</tr>
<tr>
<td>Spectrum of activity</td>
<td>Detergent proportionics, with good cleaning ability</td>
<td>Poor stability:</td>
</tr>
<tr>
<td>Bactericidal</td>
<td>Not affected by environmental factors</td>
<td>• subject to deterioration if exposed to heat and UV</td>
</tr>
<tr>
<td>Virucidal</td>
<td>• active in the presence of organic material</td>
<td>Material compatibility:</td>
</tr>
<tr>
<td>Fungicidal</td>
<td>Safe for environment</td>
<td>• contraindicated for use on copper, brass, zinc, aluminum</td>
</tr>
<tr>
<td>Mycobactericidal</td>
<td></td>
<td>High cost</td>
</tr>
<tr>
<td>Sporicidal (only at 4-5%)</td>
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</table>
References:


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