Model Standards for COVID-19 Surge »
Hospital Preparation, Response, and Safety

This document lays out the steps hospitals should take to prepare to protect patients, nurses, and other health care workers during COVID-19 surges. These measures are necessary to prevent transmission of COVID-19 within hospitals. These standards are based on and informed by models employed by hospitals internationally to effectively respond to COVID-19 patient surges, successfully prevent spread of COVID-19 within facilities, and to protect nurses and other health care workers.

» Limit possible introduction of virus into the health care facility:

- Postpone indefinitely all appointments for routine medical care that can be delayed without undue risk to the current or future health of a patient (e.g., annual physical, elective surgery).
- Eliminate/restrict visitor access. Consider allowing for end-of-life and other limited exceptions.

» Institute "universal precautions" for COVID-19 — given evidence indicating infectivity of asymptomatic infections and lack of widespread testing, assume that each patient has COVID-19 and implementing precautions accordingly.[1]

- This should include precautions for the whole facility:
  - Universal source control procedures to reduce potential for transmission within the facility — would include universal masking[2] (all patients and staff wear surgical masks at all times, except when higher level of PPE needed), thorough education and enforcement regarding hand hygiene and cough etiquette for patients and staff.
  - Consistent and regular environmental cleaning and disinfection, including disinfecting of floors, walls, furniture, surfaces, objects, etc. at least three times per day. Should be conducted with cleaning chemicals that contain a disinfectant known to be effective against SARS-CoV-2.

- Add air cleaning equipment to ventilation systems, such as UV cleaners, HEPA filter units, others.

• Outdoor triage[3] should be implemented to prevent transmission within crowded waiting rooms. Facilities should create designated "zones."

- Limit to one entrance to the hospital and set up outdoor triage area where patients are promptly triaged and sent to the appropriate "zone."

• Establish three zones within the facility, using the "three zones, two passages" model that has been successfully implemented in China, Taiwan, and other locations to prevent transmission of virus within health care facilities. See chart next page.

- Three zones: infectious zone, potentially infectious zone, and a clean zone — clearly demarcated. Two buffer zones between the contaminated zone and the potentially contaminated zone.
- Passageway is established for the one-way transport of contaminated items, only in direct from clean » potentially contaminated » contaminated zones. Items may not be removed from the contaminated zone unless disinfected.
- Strict procedures for donning and doffing PPE between zones, including hands on training, full-length mirrors, and observation by trained personnel. Use dedicated walkways to prevent transmission of virus between zones.
- Transport of patients and health care workers through the facility is tightly controlled to prevent transmission/contamination.

• All patients should be considered "suspected COVID-19 cases" until confidently ruled out or confirmed »

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All patients are considered suspected COVID-19 patients.

Confirmed patient » positive test for COVID-19.

- Ideally, point-of-care rapid testing would be employed for all patients entering facility.

Suspected patient » Patients who are neither confirmed or ruled out should continue to be considered suspected patients until confirmed, ruled out, or discharged.

- Should include patients who test negative but who have clinical manifestations and/or epidemiologic factors for COVID-19. These patients should continue to be tested daily.

Ruled out patient meets three criteria »

1. Two negative tests at least 24 hours apart.

2. NO clinical manifestations of COVID-19, which would include:

   - Fever and/or respiratory symptoms.

   - CT imaging features of COVID-19.

   - White blood cell count is normal or decreased.

3. No epidemiological factors:

   - International travel in 14 days before developing symptoms.

   - History of contact with confirmed COVID-19 case in 14 days before developing symptoms.

   - History of contact with person with fever and/or symptoms of respiratory illness within 14 days before developing symptoms.

Patients are then placed into the appropriate unit/floor — see next page.

Patients are then placed into the appropriate units/floor »

	Confirmed patients » "Infectious zone"	Suspected patients » "Potentially infectious zone"	Ruled out patients » "Clean zone"
Room type	Multiple patient rooms okay. Open wards okay.	Single rooms only.	Single rooms preferred.
Negative pressure	Yes, entire unit/floor should be under negative pressure.	Rooms should be under negative pressure. Consider converting entire unit/floor to negative pressure.	Use precautions typical for care required by patient.
Staffing	• Dedicated teams who work only in this zone of the hospital. • Shifts should be limited (China used max four hours). • Teams of health care workers should be rotated.	• 1:1 assignments plus additional staff for donning and doffing PPE safely and for breaks and relief. • Dedicated teams who work only in this zone of the hospital.	• Use precautions typical for care required by patient. • Dedicated teams who work only in this zone of the hospital.
Health care worker protections	• All health care workers and all workers (e.g., environmental services staff) entering this ward should don full PPE before entry, should wear full PPE while working in this ward, and should not change between patients. • Tightly monitor entry/exit of staff from isolation unit to ensure PPE doffing and disinfection is completed successfully.	• Universal source control, including all patients and staff wear surgical masks unless higher level of PPE required. • Change PPE between patients.	• Universal source control, including all patients and staff wear surgical masks unless higher level of PPE required. • Use additional precautions typical for care required by patient (e.g., maintain precautions for patient with TB).
PPE	• PPE of the highest level — coveralls, PAPRs, shoe covers, head covers, gloves. • Temporary scrubs.	• PPE of the highest level — coveralls, PAPRs, shoe covers, head covers, gloves. • N95 and fluid-resistant or impermeable gown as minimum. • Temporary scrubs.	• Use precautions typical for care required by patient.
Other considerations	• Strictly limit who enters the unit/floor. • Should include units for both ICU and med/surg level of care.	• Should include units for both ICU and med/surg level of care.	

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» Occupational exposure prevention, surveillance, and response to prevent transmission to and by health care workers.

- Opt-out process for RNs at higher risk of complications from COVID-19 such as older adults and people who have serious chronic medical conditions.

- Accommodations for frontline staff working in hospital, including provision of nutritious meals.

- Ongoing monitoring of health of frontline staff. If develop fever or other symptoms of COVID-19, they should be isolated immediately and tested at employer's expense. Any RN who has worked in the facility within 14 days of developing symptoms should have presumptive eligibility for workers compensation.

- Employer should provide temporary scrubs and facilities for staff to shower and change before going off duty.

- No mandatory overtime. Breaks and relief should be provided. Maximum number of hours working in PPE should be enforced (hospitals in China used four hours max).

» Employers should develop procedures to ensure safe handling of deceased patients with COVID-19.

Additional measures:

» Contact tracing — immediate and strict quarantine of contacts of all newly identified cases

- Could consider adopting some of the strategies from Ebola, where all contacts of a case were tracked and all contacts of the contacts were also tracked.

» Consider universal masking of population in addition to national stay-at-home order.

Endnotes

1   The evidence that asymptomatic infections are occurring and are infectious is accumulating rapidly. Asymptomatic and pre-symptomatic infections clearly appear to be important to how rapidly this virus is transmitted.

2   Several countries have included this element in their effective responses, including China, Taiwan, Hong Kong, among others.

3   The terminology used in China was "fever clinics".

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