

White Paper: Coronavirus Update

Update and Clinician Guide to Diagnosis, Management and Disposition

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Introduction – March 19, 2020

COVID-19 continues to spread at an increasing rate and increasing penetration both globally and across the United States. As of March 18, 2020, there have been 220,000 cases reported in 173 countries and all 50 states in the United States. On March 13, the President declared a National Emergency, empowering the Secretary of Health and Human Services to waive certain requirements for Medicare, Medicaid, SCHIP and HIPAA. While the impact of this is still unclear, we are starting to see temporary changes to telemedicine and guidance for the Emergency Medical Treatment and Active Labor Act (EMTALA)-related issues as it pertains to screening onsite and offsite. During the emergency declaration, the President also introduced a public-private collaboration with Roche, Quest, CVS, Walgreens, Walmart, Target and other stores with pharmacies to bring widespread testing to the United States in the form of drive through screening centers. We have yet to see this come to fruition. A travel ban was enacted on March 14 prohibiting travel to all nations of the European Union, later including Ireland and the United Kingdom. On March 16, 2020, the Centers for Disease Control and Prevention (CDC) recommended limiting group gatherings to less than 50 people. The next day, the President announced that recommendation was now groups of less than 10 people. Schools have been closed, and multiple counties in San Francisco have announced, “shelter in place” policies where residents are confined to their homes. These are truly unprecedented times.

With this perspective, we offer the following updates to our White Paper:

1. CDC Clinical Updates

- a. Patients Under Investigation – Changes in Criteria
- b. Criteria for Return to Work for Healthcare Personnel with Confirmed or Suspected COVID-19 (Interim Guidance)

2. Centers for Medicare and Medicaid Services (CMS) Updates

- a. CMS Guidance for the Cancellation of Elective Surgeries
- b. EMTALA

3. TeamHealth Guidance

- a. Guidance for Clinicians with Underlying Medical Conditions for COVID-19
- b. Guidance for onsite and offsite screening areas and tents
- c. Guidance for the use of Telemedicine for onsite patient care
- d. Potential impact on ICU and ventilator resources based on CDC’s estimates

CDC CLINICAL UPDATES

The CDC has essentially eliminated their Persons Under Investigation (PUI) Criteria to the following statement: Clinicians should use their judgment to determine if a patient has signs and symptoms compatible with COVID-19 and whether the patient should be tested. Most patients with confirmed COVID-19 have developed fever¹ and/or symptoms of acute respiratory illness (e.g., cough, difficulty breathing). Priorities for testing may include:

1. Hospitalized patients who have signs and symptoms compatible with COVID-19 in order to inform decisions related to infection control.
2. Other symptomatic individuals such as, older adults and individuals with chronic medical conditions and/or an immunocompromised state that may put them at higher risk for poor outcomes (e.g., diabetes, heart disease, receiving immunosuppressive medications, chronic lung disease, chronic kidney disease).
3. Any persons including healthcare personnel², who within 14 days of symptom onset had close contact³ with a suspect or laboratory-confirmed⁴ COVID-19 patient, or who have a history [of travel from affected geographic areas⁵](#) (see below) within 14 days of their symptom onset.

While the CDC's exposure categories have not changed, they have acknowledged the national shortage of PPE, specifically N-95 respirators.

- Updated PPE recommendations for the care of patients with known or suspected COVID-19:
 - Based on local and regional situational analysis of PPE supplies, facemasks are an acceptable alternative when the supply chain of respirators cannot meet the demand. During this time, available respirators should be prioritized for procedures that are likely to generate respiratory aerosols, which would pose the highest exposure risk to the healthcare provider (HCP).
 - Eye protection, gown and gloves continue to be recommended. If there are shortages of gowns, they should be prioritized for aerosol-generating procedures, care activities where splashes and sprays are anticipated and high-contact patient care activities that provide opportunities for transfer of pathogens to the hands and clothing of HCP.
- Included are considerations for designating entire units within the facility, with dedicated HCP, to care for known or suspected COVID-19 patients and options for extended use of respirators, facemasks and eye protection on such units. Updated recommendations are regarding the need for an airborne infection isolation room (AIIR).
 - Patients with known or suspected COVID-19 should be cared for in a single-person room with the door closed. AIIRs (See definition in appendix) should be reserved for patients undergoing aerosol-generating procedures (See Aerosol-Generating Procedures Section)
 - There is increased emphasis on early identification and implementation of source control (i.e., putting a face mask on patients presenting with symptoms of respiratory infection).

Clinician quarantine varies widely based on local health department and individual site decisions. As the pandemic progresses, we are seeing more return to work decisions for clinicians who have a medium-risk exposure (ie. unmasked patient, masked clinician without goggles). These clinicians are being advised to self-monitor by checking temperature and symptoms twice daily and staying home if febrile or respiratory symptoms develop. In some cases, our clinicians are required to wear a mask in order to return to work. We are also seeing high variability in the issuance of quarantines as it relates to international and now domestic travel. Most are allowing all travelers to return to work with or without a mask as our workforce availability continues to be taxed. We encourage our clinicians to **avoid any unnecessary travel** as it may result in a local decision to quarantine. Please report all quarantines through our [quarantine reporting system](#) so that we can determine appropriateness and provide guidance.

The CDC has added the following guidance for healthcare worker exposure situations that represent a threat to the essential provision of care:

Facilities could consider allowing asymptomatic HCP who have had an exposure to a COVID-19 patient to continue to work after options to improve staffing have been exhausted and in consultation with their occupational health program. These HCP should still report temperature and absence of symptoms each day prior to starting work. Facilities could have the exposed HCP wear a facemask while at work for the 14 days after the exposure event if there is a sufficient supply of facemasks. If HCP develops

even mild symptoms consistent with COVID-19, they must cease patient care activities, don a facemask (if not already wearing), and notify their supervisor or occupational health services prior to leaving work. This guidance can be found on [the CDC's website](#).

Criteria for Return to Work for Healthcare Personnel with Confirmed or Suspected COVID-19 (Interim Guidance)

Decisions about return to work for HCP with confirmed or suspected COVID-19 should be made in the context of local circumstances. CDC options include a test-based strategy or a non-test-based strategy (i.e., time-since-illness-onset and time-since-recovery strategy). We have merged these into a single strategy for return to work:

HCP may return to work in healthcare settings when:

- At least three days (72 hours) have passed *since recovery* defined as resolution of fever without the use of fever-reducing medications **and** improvement in respiratory symptoms (e.g., cough, shortness of breath); **and**,
- At least seven days have passed *since symptoms first appeared* **or** two negative COVID-19 tests 24 hours apart.

If HCP were never tested for COVID-19 but have an alternate diagnosis (e.g., tested positive for influenza), criteria for return to work should be based on that diagnosis.

After returning to work, HCP should:

- Wear a facemask at all times while in the healthcare facility until all symptoms are completely resolved or until 14 days after illness onset, whichever is longer.
- Be restricted from contact with severely immunocompromised patients (e.g., transplant, hematology-oncology) until 14 days after illness onset.

Healthcare systems, healthcare facilities and the appropriate state, local, territorial and/or tribal health authorities might determine that the recommended approaches cannot be followed due to the need to mitigate HCP staffing shortages. This should be decided at the local level with the input from occupational health and other local leaders.

CMS UPDATES

CMS Guidance for the Cancellation of Elective Surgeries

The White House Task Force Press Briefing, CMS announced that all elective surgeries, non-essential medical, surgical and dental procedures be delayed during the 2019 Novel Coronavirus (COVID-19) outbreak. As more healthcare providers are increasingly being asked to assist with the COVID-19 response, it is critical that they consider whether non-essential surgeries and procedures can be delayed so they can preserve personal protective equipment (PPE), beds and ventilators. (Source: [CMS.gov](#)).

EMTALA Updates

As previously mentioned, the declaration of a national emergency by the President empowered the Secretary of HHS to waive certain requirements for Medicare, including EMTALA.

The HHS Secretary is authorized to waive certain Medicare, Medicaid and Children's Health Insurance Program (CHIP) requirements and conditions of participation under Section 1135 of the Social Security Act once the President declares an emergency through the Staff Act or National Emergency Act, and the Secretary

declares a Public Health Emergency (PHE). CMS has activated blanket waivers and has developed a process for hospital/location specific waivers.

As an option for managing extraordinary ED surges under existing EMTALA requirements (no waiver required), CMS has stated that a hospital may set up alternative screening sites on its campus to perform medical screening exams (MSEs). The MSE does not have to take place in the ED.

An EMTALA waiver is required to allow hospitals to direct or relocate individuals who come to the emergency department (ED) to an alternative off-campus site, pursuant to a state emergency or pandemic preparedness plan, for the MSE. EMTALA waivers are not effective with respect to any action taken that discriminates among individuals on the basis of their source of payment or their ability to pay. (Source – [CMS.gov](https://www.cms.gov)).

TEAMHEALTH GUIDANCE

Guidance for Clinicians with Underlying Medical Conditions for COVID-19

As the COVID-19 pandemic progresses, we recognize that this is causing personal concern about your own risk and the risk your job may create for your family. TeamHealth clinicians with preexisting medical conditions such as CAD, uncontrolled DM, HTN, chronic respiratory disease, underlying malignancy, immunocompromised, or pregnancy, should continue to work in their normal capacity exercising the highest level hygiene and personal protection. These are the same measures that we have been recommending for all of our clinicians based on the most current CDC and WHO information. We understand the concerns some individuals may have about providing direct care to patients with known COVID-19. We suggest these individuals talk to their FMD or direct supervisor about these concerns. We recognize that these may be difficult conversations and are here to help provide support and guidance as needed. To view the full guidance, [please visit Zenith](#).

Guidance for onsite and offsite screening areas and tents

Based on increasing requests for onsite and offsite screening guidelines for COVID-19, please see the following recommendations.

Screening programs can be subdivided into two basic types – onsite and offsite – and EMTALA is treated differently in these situations.

1. Offsite screening programs are not required to follow EMTALA unless they are on the grounds of an emergency facility such as a free-standing ED. Offsite screening centers must follow specific criteria for sending a patient to the ED for admission and provide information for home quarantine and caring for family members at home.

Offsite screening programs can be staffed by nurses and other clinical team members. The screening should consist of screening for COVID-19 symptoms (fever, cough and absence of nasal symptoms, sore throat and chills) and influenza symptoms (cough, sore throat, congestion, fatigue and chills).

Ideally offsite screening programs will offer screening for influenza and COVID-19, if available. They will also provide appropriate guidance for home care, health department follow-up, if indicated, and clear indications to seek medical attention.

2. Onsite screening programs (including those in tents attached or adjacent to emergency departments) must follow EMTALA in terms of the requirement for a MSE. The update does stipulate, however, that a nurse can provide the MSE if it is within their state scope of practice. Another important consideration is the hospital's bylaws, which is considered the definitive source for defining a qualified medical provider (QMP) capable of conducting an MSE.

Because state emergency declarations vary widely on their content, it is unlikely nurses will be considered a qualified QMP to perform an MSE and may not be covered in most state emergency declarations. Therefore, facilities should consider temporarily modifying the medical staff bylaws during a disaster and should begin these conversations.

Ideally, onsite screening programs are run in the same manner as offsite screening programs. The need for a physician or advanced practice clinician (APC) will depend on federal, state and local regulations and bylaws.

Telemedicine may be applicable in the case of sites that are short-staffed due to quarantines and as an added layer of protection for providers that are onsite and to preserve personal protective equipment (PPE). From a billing point of view, this is not a separately billable service. If a patient leaves the ED after an in-person triage but before they are seen by a clinician in the main ED, the patient would be billed for an ED visit based on the documentation by the clinician in triage. However, when the triage is performed via telemedicine, they cannot be billed for an ED visit for the telemedicine triage visit. This rule may change with on-going national advocacy work, but currently Current Procedure Terminology (CPT) does not allow ED codes to be used for telemedicine, nor are there any other codes we could use for this service at this time.

In the event that a nurse can be used for the MSE, the framework and process would mirror that described in the offsite example provided above. One significant difference is the need for EMTALA training as EMTALA rules would still apply to the nurse to ensure they understand MSE and the meaning of stabilization and treating life-threatening illnesses. This nurse-centric program should be driven by COVID-19 protocols that clearly define when a patient needs to be seen by a physician or APC.

As in offsite screening programs, these nurses would be empowered to discharge patients home for outpatient follow-up. In cases where a nurse is not designated as a QMP, their main role is sorting patients into separate waiting areas based on presence or absence of respiratory symptoms.

To summarize, in order for a nurse to effectively lead an onsite screening program, they have to have:

1. Experience in triage
2. EMTALA training
3. Validation that state and federal regulations and medical staff bylaws allow them to perform this MSE function
4. Protocols approved by medical leadership

We are working on toolkits to help you implement onsite and offsite screening programs. Please reach out to Theresa Tavernero at Theresa_Tavernero@teamhealth.com if you have guidelines to contribute.

Guidance for the use of Telemedicine for onsite patient care

CMS released a statement on March 17 softening the regulations in telemedicine. In the FAQ, CMS acknowledged that while they can't waive the legislative provision that established the "established patient" provision, CMS committed not to audit for this so telehealth can be provided in the ED regardless of (1) whether the patient is present or at home (2) whether the ED is in an urban or rural environment and (3) and whether the patient is an established patient. Earlier pronouncements had waived state licensure requirements. This should open the door for practical and creative solutions to staffing. The response from commercial payers is unclear at this time as many provide their own telehealth services through their web portals.

To read the Frequently Asked Questions on this announcement [visit the CMS website](#).

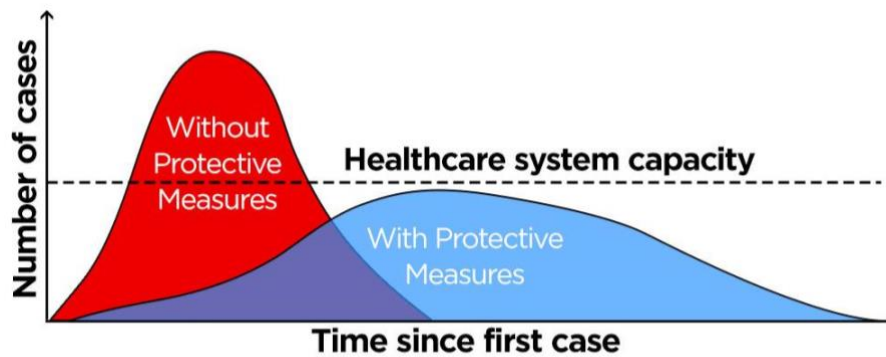
Potential impact on Emergency Department, Hospital, ICU and ventilator resources based on CDC's estimates

In late February, the CDC and global experts provided estimates on the impact of the disease on the United States. They assumed each person with the virus would infect 2-3 others, that 3% or 12% of the population would require hospitalization and either 0.25 or 1% of the population would die. The following are the key findings:

1. Between 160 million and 214 million people in the United States could be infected over a period of months to over a year.
2. Mortality could range from 200,000 to 1.7 million.
3. 2.4 million to 21 million could require hospitalization

This data was not published by the CDC, for obvious reasons, but was reported by all of the leading newspapers including the [New York Times](#).

According to the World Health Organization (WHO) report, 14% of patients will have severe disease and that 6% will require intensive care. While we don't know the actual mortality rates, most experts estimate it to be around 1% with a range of 0.5 to 2%. Working on the CDC estimate of 160 - 214 million people infected, these figures would estimate 22 - 30 million hospitalized, 9.6 -12.8 million requiring intensive care, many of these requiring ventilator support, and 800,00 - 4.2 million deaths. These actual numbers could vary widely based on many factors, including recent efforts to mitigate the disease through school closures and social distancing. These efforts attempt to flatten the curve, spreading the impact of the disease over time.



Adapted from CDC / The Economist

On March 13, the Society for Critical Care Medicine published an assessment of the current ICU resource availability based on the 2018 AHA dataset. The following bullet points summarize their findings:

1. There are 5,256 AHA-registered community hospitals in the United States. Only 2,704 deliver ICU services and have at least 10 acute care beds and one ICU bed. 74% of the hospitals with ICU capability are in metropolitan areas.
2. There are 534,964 acute care beds and 96,596 ICU beds – 68,588 adult (46,795 Med/Surg, 14,445 cardiac, 7,318 other), 5,137 pediatric and 22,901 neonatal. There are 25,157 step-down beds and 1,183 burn beds. 91% of the acute care beds and 94% of the ICU beds are in metropolitan areas.
3. Hospitals own approximately 62,000 ventilators, 98,738 older models and the strategic stockpile has an additional 8,900. When including anesthesia machines and all other available ventilators, the total approximates 200,000 ventilators in the country.
4. There are a total of 28,808 intensivists and 34,000 critical care advanced practice providers (APPs).

Table 1. Acute Care Hospitals (2018 AHA Data)

	Hospitals Combined (n = 2704)
Aggregate across all hospitals, n (%)	
Number of acute care hospital beds ^a	534,964
Number of ICU beds	96,596
Number of ICU units ^b	5039
Number of ICU beds by unit type ^a	
Medical-surgical	46,795
Cardiac	14,445
Other	7318
Pediatric	5137
Neonatal	22,901
Number of burn beds ^c	1183
Number of other special care (observation, step-down, or progressive) beds ^c	25,157

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Based on the information provided which is consistent with anecdotal accounts from Italy, it is abundantly clear that we need to begin planning for intensive care capacity. The best-case scenario is that these plans will not be necessary, but if they are needed, the demand will come quickly with insufficient time for planning. The following are strong recommendations for planning:

1. Identify all available alternative sites of intensive care – identify a minimum of three locations that could be converted into intensive care units or high-acuity COVID-19 units with reverse isolation. Document the steps that would be required to convert these areas with estimated time for conversion.
2. Identify all available ventilators. Condition them now to prepare for their eventual use. Determine any parts or supplies that would be necessary to order as you will not likely have them in stock.
3. Begin training additional staff to serve vital ICU functions. This includes nurses, technicians and other staff to support basic ventilator operations and physicians, CRNAs and other APCs to manage ventilated patients.

For more information on intensive care surge capacity, please refer to our resources on the COVID-19 channel and EMcrit.org.

March 11, 2020: White Paper

INTRODUCTION

COVID-19 continues to spread, impacting our hospitals and clinicians most significantly on the West Coast, but sporadically across the United States. We are hearing first-hand about the clinical and operational impacts from our physicians on the front lines in Washington state, where they have seen high volumes of COVID-19 patients. Due to the lack of availability of tests, the Centers for Disease Control and Prevention (CDC) has indicated the disease is likely severely underreported and that COVID-19 has been spreading throughout the community for several weeks. We have heard similar accounts from our clinicians across the United States of patients presenting with fever, respiratory complaints and even Acute Respiratory Distress Syndrome (ARDS). However, lack of testing capacity or approval for testing is likely impeding the accurate diagnosis of these patients. We will likely see significant increases in case numbers as the disease spreads and as more testing capacity comes online. The CDC reports that we will have the ability to test millions of patients within the coming weeks.

While we cannot control your personal choices, we strongly urge you to avoid any travel overseas, avoid cruise ships and limit or avoid travel and group gatherings in the United States as we begin to see widespread disease in parts of the country, and it is hard to predict the course of the pandemic.

With this perspective in mind, in this update, we provide:

1. CDC updates for healthcare provider exposure criteria

2. Strategies to transition to epidemic Sustained Community Transmission mitigation
3. Clinical guidance for identifying patients through history, physical exam and diagnostic testing
4. Guidance for hospital admission and discharge
5. Guidance for discharge from the emergency department, clinic or primary care office
6. Guidance for clinical management of COVID-19 patients

CDC UPDATES FOR HEALTHCARE PROVIDER EXPOSURE CRITERIA

On March 4, 2020, the CDC updated workplace exposure risk categories, emphasizing the importance of masking the patient and de-emphasizing the use of N95 respirators which are becoming scarce across the nation. This confirms the opinions of many experts that SARS-COV-2 spreads by droplet, not aerosol.

The risk categories were simplified and the importance of masking the patient. **Note that if patient is wearing a mask, all patient interactions (other than intubated and patients undergoing aerosolizing procedures) where the provider is wearing a mask (regular or N95), are considered low risk.** An important footnote covers brief interactions which is important when considering interactions at triage and other screening locations:

“HCP not using all recommended PPE who have only brief interactions with a patient regardless of whether patient was wearing a facemask are considered low-risk. Examples of brief interactions include: brief conversation at a triage desk; briefly entering a patient room but not having direct contact with the patient or the patient’s secretions/excretions; entering the patient room immediately after the patient was discharged.”

Epidemiologic risk factors	Exposure category	Recommended Monitoring for COVID-19 (until 14 days after last potential exposure)	Work Restrictions for Asymptomatic HCP
Prolonged close contact with a COVID-19 patient who was wearing a facemask (i.e., source control)			
HCP PPE: None	Medium	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing a facemask or respirator	Medium	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing eye protection	Low	Self with delegated supervision	None
HCP PPE: Not wearing gown or gloves ^a	Low	Self with delegated supervision	None
HCP PPE: Wearing all recommended PPE (except wearing a facemask instead of a respirator)	Low	Self with delegated supervision	None

Prolonged close contact with a COVID-19 patient who was not wearing a facemask (i.e., no source control)			
HCP PPE: None	High	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing a facemask or respirator	High	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing eye protection ^b	Medium	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing gown or gloves ^{a,b}	Low	Self with delegated supervision	None
HCP PPE: Wearing all recommended PPE (except wearing a facemask instead of a respirator) ^b	Low	Self with delegated supervision	None

(Source: [CDC website](#))

STRATEGIES TO TRANSITION TO EPIDEMIC MANAGEMENT

As we transition from outbreak to epidemic/pandemic, there are some important strategies you need to make sure are in the planning phases or in execution:

1. **COVID-19 Planning and Disaster Management Team** – The facility medical director (FMD) or other designated physician onsite should participate in the planning and disaster response teams. If these teams do not currently exist, **you** should lead the efforts to establish these teams. Our teams on the West Coast have emphasized that planning and communication are the most important elements of disaster preparedness. Relationships established during these planning phases will be critical to operational success.
2. **Primary Care and Urgent Care Center Coordination of Care** – It is important that you collaborate with primary care clinicians to create care pathways. Consider mapping health system acute care sites and have a process or protocol for patient movement between each of these sites (including virtual touch points such as call center, wellness line, virtual care offerings). It is vital that they mask the patient immediately upon arrival. Criteria for admission and discharge should be reviewed with them on a regular basis so they may proactively send patients home and avoid necessary exposure of the emergency department staff and resources. Phone consultation should be offered liberally, when possible, as a way to extend the influence of the emergency clinician expertise. In areas where primary care providers have closed their offices, proactive outreach should be made soliciting assistance in providing low acuity care at the hospital.
3. **Arrival, screening, triage and sorting process** – You should have a screening and sorting mechanism at the entrance to your emergency department. Patients should initially be sorted based on presence or absence of respiratory complaints. **Any patient with respiratory complaints should immediately be required to wear a regular mask (not N95).** The waiting room should be split into respiratory and non-respiratory sides. Triage into high, medium and low risk should proceed in each of these two groups of patients. High-risk respiratory patients should be brought back to an isolation room or if none are available, a room with a door. Medium-risk patients should be together, ideally in isolation room or closed room while the undergo evaluation and treatment. Low-risk respiratory patients should be placed in a defined area of the waiting room separate from patients with non-respiratory

complaints. Alternative care locations outside of the ED are recommended by ACEP to reduce the operational and potential infectious impact to caregivers and other patients. Offsite testing similar to those employed in Italy and Washington state are strongly recommended.

4. **PPE and protecting our clinicians** – Providers should wear proper PPE as defined by the CDC. In their most recent recommendations from March 4, 2020, when patients are masked, a mask without face shield, gloves and proper hand hygiene are sufficient to remain low risk. For an unmasked patient, the provider is required to wear a mask with eye protection and gloves to remain low risk. Most experts and the World Health Organization (WHO) agree that SARS-COV-2 is spread by droplet and thus an N-95 respirator is not required for close contact including clinical evaluation in patients who are masked. With intubated patients and patients undergoing aerosolizing procedures, full aerosol PPE (including N-95 respirator) is required.
5. **Admission vs. discharge** – All suspected COVID-19 patients do not need to be admitted. Admission should be considered for patients with elevated respiratory rate, low pulse oximetry (PO <93), associated comorbidities that place them at higher risk (CAD, pulmonary disease, DM, cirrhosis, cancer, immunocompromised), and patients who cannot quarantine at home or for whom follow-up cannot be guaranteed. The mean duration of illness for mild COVID-19 patients is two weeks and for severe illness is three to six weeks. Relative to the normal mean hospital length of stay (LOS) of four days, admissions will certainly place a burden on already stressed inpatient units. It is imperative we attempt to limit unnecessary admission to conserve available inpatient resources and to protect our inpatient caregivers.
6. **Intensive care resources** – In coordination with hospital administration, you should immediately begin planning for expansion of intensive care resources. At a minimum, a COVID-19 planning team should designate a primary and secondary overflow area that can be converted to an ICU-like care setting. Any necessary modifications should begin immediately. You should assess the availability of ventilators and personnel and explore backup resources. Plans to cancel elective surgeries should be made with triggers for implementation in the event of saturation if ICU space and/or equipment.
7. **Use of scarce resources** – Because this disease has a rapidly progressive course, particularly in the elderly, and due to the risk of saturation of critical care resources and equipment, clinicians should be proactive in soliciting their patient's desire for intubation and resuscitation as well as power of attorney. Collaboration with your legal department and your ethics committee may be required as the impact of the COVID-19 disease tests the limits of healthcare resources. Begin conversations now as the need will present itself when the organization's resources are stretched to their limits.

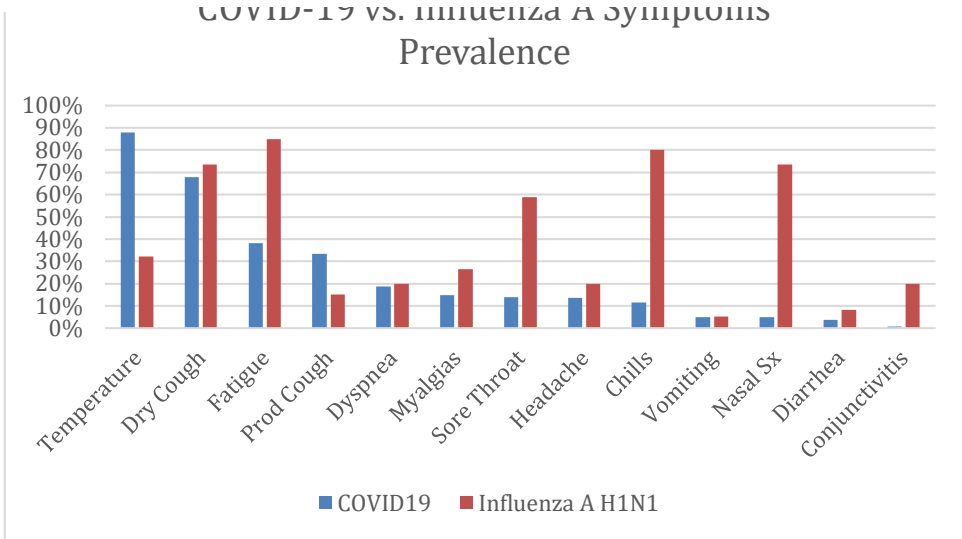
CLINICAL GUIDANCE FOR IDENTIFYING PATIENTS

History

Because COVID-19 has spread outside China and is now demonstrating sustained community transmission in multiple countries including the United States, we can no longer rely on travel history as the key epidemiologic screening determinant. Also, due to lack of testing capacity, we cannot test suspected patients in a timely manner and thus cannot rely on testing to drive our clinical decision-making. Clinical assessment therefore is the most reliable way to determine whether or not a patient is at risk for COVID-19. The following are key presenting complaints of COVID-19 patients. We present them side by side with influenza patients, as this is the most common alternative diagnosis.

COVID-19		Influenza A	
Fever	88%	Fatigue	85%
Dry Cough	68%	Chills	80%
Fatigue	38%	Nasal Symptoms	74%
Productive Cough	33%	Dry Cough	73%
Dyspnea	19%	Sore Throat	59%
Sore Throat	14%	Fever	32%
Chills	11%		
Nasal Symptoms	5%		

Thus, a reasonable approach for history, in addition to travel and known exposure, would be presence of fever and dry cough, and absence of nasal congestion, runny nose, sore throat and chills. Note that fever is present in 44% of patients on admission and documented in 88% during their hospital stay, thus repeated temperatures are recommended. Dyspnea is present in only 20% of cases but, in the context of the COVID-19 disease, would be a worrisome presenting symptom for advanced disease. The following is a graphical representation of all symptoms associated with COVID-19 and Influenza A (H1N1) compiled by Dr. David Hogan:



Based on data from the WHO China Study and relevant publications, age is an important risk factor for disease severity. The following table represents risk based on age cohorts.

Age	CFR
0-9	0*
10-39	0.2
40-49	0.4
50-59	1.3%
60-69	3.6%
70-79	8.0%
>79	14.8%

* none reported in China

Known Risk Factors – Patients with preexisting disease are more likely to have severe disease and have a higher mortality rate. The following table from the WHO represents the case fatality rate (CFR) based on comorbid disease.

Cormorbid Disease	Case Fatality Rate (CFR)
Cardiovascular disease	13%
Uncontrolled diabetes	9%
Hypertension	8%
Chronic respiratory disease	8%
Underlying malignancy	8%
Previously healthy	1%

Physical Exam and Ancillary Testing

Mild patients may appear well with cough and low-grade temperature. According to the WHO report, patients remain relatively asymptomatic for the first five to six days. The patients who progress to critical usually do so from days six to 10. The WHO defines severe cases as tachypnea (≥ 30 breaths/min), oxygen saturation $\leq 93\%$ at rest or $\text{PaO}_2/\text{FiO}_2 < 300$ mmHg. Critical cases are defined as respiratory failure requiring mechanical ventilation, shock or other organ failure requiring intensive care. About 25% of severe cases require mechanical ventilation.

Lab work usually reveals a normal white blood cell count (WBC), even in severe disease, however leukopenia ($\text{WBC} < 4,000/\text{mm}^3$) was present in 33.7% of cases. Lymphocytopenia (Lymphocytes $< 1,500/\text{mm}^3$) is the most common finding, present in 83.2% of cases. Thrombocytopenia ($\text{Plt} < 150,000/\text{mm}^3$) is present in 36.2% of cases. Hepatic function tests may be mildly elevated probably as a direct result of the viral infection. C-Reactive Protein (CRP) is elevated 60.7% of the time. The distribution of other findings is shown below.

Lab Finding	All	Mild	Severe
WBC $< 4,000/\text{mm}^3$	33.7%	28.1%	61.1%
WBC $> 10,000/\text{mm}^3$	5.9%	4.8%	11.4%
Lymphocyte $< 1500/\text{mm}^3$	83.2%	80.4%	96.1%
Platelet $< 150,000/\text{mm}^3$	36.2%	31.6%	57.7%
C-reactive protein ≥ 10 mg/L	60.7%	56.4%	81.5%
Procalcitonin ≥ 0.5 ng/ml	5.5%	3.7%	13.7%
LDH ≥ 250 U/L	41.0%	37.2%	58.1%
AST > 40 U/L	22.2%	18.2%	39.4%
ALT > 40 U/L	21.3%	19.8%	28.1%
Bilirubin > 17 $\mu\text{mol/L}$	10.5%	9.9%	13.3%
Creatinine kinase ≥ 200 U/L	13.7%	12.5%	19.0%
Creatinine ≥ 133 $\mu\text{mol/L}$	1.6%	1.0%	4.3%
D-dimer ≥ 0.5 U/L	46.4%	43.2%	59.6%

Chest X-ray (CXR) can be normal in the early stages of the disease, but most commonly (59.1%) reveals ground glass or patchy infiltrates. CT scan is not required to diagnose the disease but does show findings more commonly (86.2%) than plain radiographs (59.1%). Due to the potential cross-infection of other patients needing CT scans and the prolonged downtime for terminal cleaning, CT scanning is only recommended in cases with unexplained severe disease and a negative CXR.

Total Abnormal CXRs	59.1%	Total Abnormal Chest CTs	86.2%
Ground-glass opacity	20.1%	Ground-glass opacity	56.4%
Local patchy shadowing	28.1%	Local patchy shadowing	41.9%
Bilateral patchy shadowing	36.5%	Bilateral patchy shadowing	51.8%
Interstitial abnormalities	4.4%	Interstitial abnormalities	14.7%
No abnormality	41.9%	No abnormality	13.8%

Based on what we know about the COVID-19 disease, the data would support a COVID-19 panel consisting of CBC with manual Diff, CMP, CXR PA/LAT and rapid flu test. A CRP may be added for additional clinical information but is not routinely recommended. A CT Chest may be added for complex cases but is not routinely indicated, especially in cases with abnormal CXR or other results that point to COVID-19 as a likely diagnosis. Lactic acid and blood cultures should be added to patients with suspected sepsis. In cases without a clear diagnosis who require admission, a respiratory pathogen panel, urine testing for strep and legionella may be added, where available, while testing for SARS-COV-2 is pending.

GUIDANCE FOR HOSPITAL ADMISSION AND DISCHARGE

Admission and discharge practices will vary based on local practices and individual patient characteristics. These decisions should be made with the understanding that patients with mild disease will be sick for an average of two weeks and the duration of illness for severe cases will be between three to six weeks. Thus, preservation of inpatient resources is vital to the preservation of our healthcare delivery system. Clinicians should be proactive in soliciting the patient's desire for intubation and resuscitation as well as power of attorney.

The following are compiled guidelines for possible hospital admission for COVID-19 disease:

Guidance for Possible Admission		
WHO "Severe" Definition	WHO "Critical" Definition	Other
O2 Sat < 93%	Mechanical Ventillation	Bilateral or >50% of lung infiltrates
Tachypnea, RR >= 30	Shock	Lactate > 4 or Suspected Sepsis
PaO2/FiO2 <300 mmHg	Organ Failure requiring ICU	Encephalopathy
		AKI with Cr > 2
		Acute Liver Damage
		(Bili > 2, Plt < 100, INR > 1.5)

Other considerations for admission would be the severity of the patient's specific comorbid conditions and ability to care for self at home under isolation, if indicated. According to the WHO, patients admitted to the hospital are discharged after clinical recovery based on the following criteria:

Hospital Discharge Criteria
Afebrile x 3 days, and
Resolution of symptoms, and
Radiologic improvement, and
2 negative PCR tests 24 hours apart

GUIDANCE FOR DISCHARGE FROM THE EMERGENCY DEPARTMENT, CLINIC OR PRIMARY CARE OFFICE

Patients discharged from the emergency department or clinic should follow the CDC guidelines for isolation and social distancing based on exposure risk. Clinicians should provide contacts for the health department and instructions to call their primary care physician (PCP) and the health department (local or state depending on local protocols) the next business day. Patients should be advised that the normal course of the disease begins with an asymptomatic period of five to six days followed by symptoms lasting another week for mild cases. They should be instructed to call their PCP or return to the emergency department for rapid breathing, difficulty breathing or confusion, which may be an indication hypoxia. All clinicians should review the CDC's home isolation recommendations based on the risk level of the patient, discuss this with the patient and provide a copy of the CDC guidance.

[Interim US Guidance for Risk Assessment and Public Health Management of Persons with Potential Coronavirus Disease 2019 \(COVID-19\) Exposures: Geographic Risk and Contacts of Laboratory-confirmed Cases](#)

Specific instructions for home monitoring can be found on the CDC website and should be provided to the patient in the form of printed information or as a website reference on their discharge paperwork.

[Preventing the Spread of Coronavirus Disease 2019 in Homes and Residential Communities](#)

While the patient should follow-up with the local health department and their PCP, it may be helpful to provide CDC recommendations for when they may stop home isolation.

[Interim Guidance for Discontinuation of In-Home Isolation for Patients with COVID-19](#)

Because of the limited number of tests available, suspension of quarantine is currently difficult. As the disease becomes widespread and further outpaces our ability to provide testing, we believe more reasonable guidelines will be developed. An example would be 48 hours after resolution of fever without use of antipyretic medication and improvement in illness signs and symptoms to suspend quarantine and return to work.

CLINICAL MANAGEMENT OF COVID-19 PATIENTS

Introduction

Because SARS-CoV2 is a novel coronavirus, we have little clinical experience. Based on the available data from COVID-19 disease, SARS, MERS, influenza and other coronavirus, the following represent the best consensus recommendations from experts. ***The CDC recommends giving antibiotics for all severely ill patients within one hour of arrival, as it may be difficult or impossible to differentiate between COVID-19 and bacterial pneumonia and sepsis.***

Antiviral Therapy

There is a very weak suggestion for alpha-interferon atomization inhalation therapy b.i.d. The clinician might add lopinavir/ritonavir (KALETRA® - Abbvie Inc.) orally b.i.d. These recommendations are based on small numbers of SARS-CoV and MERS-CoV cases (1). There is marginal evidence to support these antivirals, and this support is only with early use (2). Remdesivir, (Gilead Sciences Inc) has shown activity in MERS-CoV infections. There is an initial trial starting for this agent (3). It is important to note that the use of combined antivirals currently has no scientifically valid support. Numerous studies are ongoing worldwide investigating antivirals at this time (4). Off label use is not currently indicated for these medications, but approved sites are anecdotally indicating success in patients with severe clinical disease.

Steroid Therapy

Only scant clinical information regarding steroids in coronavirus illness is available. Information from the initial SARS pandemic ranges from inconclusive to harmful. Complications of steroid therapy in coronavirus patients

includes diabetes mellitus, osteoporosis, steroid psychosis, delayed viral clearing, avascular necrosis and increased mortality (5-7). Steroid therapy is currently not recommended for the management of COVID-19 disease (8). Steroid therapy may be indicated and are being used in settings where patients have other comorbid conditions that require them.

Intensive Care Unit Management

Patients who require ICU management for COVID-19 disease should be managed in accordance with typical ICU, sepsis and ARDS protocols (1). These patients should be managed with strict droplet, airborne and aerosol precautions, including full eye protection (8, 9). Patients will also likely benefit from aggressive airway management with noninvasive ventilation or mechanical ventilation as clinically indicated (1). Earlier intubation is recommended after initial NIV failure to progress. This provides droplet control as well. Paralysis is also considered to reduce oxygen demand and to produce droplet control.

Extracorporeal life support may also be considered in some situations. Clinical experience thus far has indicated that poor outcomes and fatalities are often associated with the development of ARDS and pulmonary decompensation. As such, measures directed at the management of ARDS may be beneficial (8, 9).

Hospital Management

There is a likelihood for widespread community transmission of the SARS-CoV2 virus resulting in an influx of patients with COVID-19 disease into the United States healthcare system. The CDC and others working on the national healthcare response to COVID-19 disease consider the following as critical elements of hospital response:

- [Prevent the spread of COVID-19 within the facility](#)
- [Rapid identification and isolation of respiratory illness and possible COVID-19 cases](#)
- [Rapid communications with infection control professionals and public health authorities](#)
- [Provision of care for COVID-19 disease patients as a routine part of hospital operations](#)
- [Plan for possible escalation of patient numbers under surge capacity and disaster management](#)
- [Develop surveillance, monitoring and management processes for healthcare workers with possible COVID-19 exposure](#)

CONCLUSION

Thank you for reviewing the summary we have provided you today. Our sincere interest is to provide you with the latest information to keep you safe, keep your patients safe and help you feel confident in providing patient care in these unprecedented times. We are grateful for your steadfast effort to care for patients during these unprecedented times. Please stay safe.

Respectfully Submitted by TeamHealth Emerging Infectious Disease Taskforce and Clinical Leadership

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