AMEND
CHANGING CORRECTIONAL CULTURE

Clinical Guidelines for COVID-19 in Correctional Settings

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Please visit https://amend.us/covid for additional information and to ensure that you are referencing our most up-to-date recommendations.

Amend at UCSF is a health-focused correctional culture change program led by experts in medicine (geriatrics, infectious diseases, family medicine), public health, and correctional health and policy. The following clinical guidelines have been developed by the Amend at UCSF team for the evaluation and treatment of suspected and confirmed cases of COVID-19 in correctional facilities.

What is included in these guidelines?

1. What is the epidemiology of COVID-19?
2. How is COVID-19 spread?
3. What is the COVID-19 incubation period?
4. Who is at highest risk for acquiring COVID-19?
5. Which symptoms are common among patients with COVID-19?
6. Who should be considered a COVID-19 suspect? Who should be tested for COVID-19?
7. Which diagnostic tests should I order for a patient suspected of having COVID-19 and how do I interpret the results?
8. How do I collect specimens for COVID-19 testing?
9. How is COVID-19 treated?
10. How does severe COVID-19 present?
11. Which patients are at highest risk of severe COVID-19?
12. Are there preventive therapies for individuals exposed to COVID-19?

What not included in these guidelines?

Most notably, these guidelines do not include detailed recommendations on operational planning, medical ethics, and infection control strategies (including housing and depopulation approaches, isolation of cases and suspects, quarantining of exposed patients, cohorting, and the use and re-use of personal protective equipment). Visit https://amend.us/covid for additional guidance in these areas, including links to World Health Organization and The Centers for Disease Control and Prevention guidance specific to correctional and detention facilities that addresses many of these topics.

1. What is the epidemiology of COVID-19?

SARS-CoV-2, the coronavirus that causes the disease named COVID-19, is present in every state of the United States and nearly every country around the world.

- The Department of Public Health in your county is likely the best source of updated information on the number of cases in the community surrounding your facility.
- The *New York Times* maintains an updated list of cases per county in California: https://www.nytimes.com/interactive/2020/us/california-coronavirus-cases.html#county
- Worldwide case numbers and deaths from the global pandemic can be found here: https://coronavirus.jhu.edu/map.html

2. How is COVID-19 spread?

COVID-19 is transmitted from person-to-person when aerosolized respiratory droplets or fomites (inanimate objects covered in infectious material) come into contact with mucous membranes. This most commonly happens when secretions from the respiratory tract (e.g. droplets of saliva, mucous, or phlegm) come into contact indirectly (e.g. via touch, utensils, shared food, etc) or directly with the host's mouth or nares. SARS-CoV-2 has also been identified in stool but it is uncertain if this is a viable source of transmission.

- SARS-CoV-2 is found in large particle respiratory droplets meaning that an individual generally needs to be within 6ft of a source patient to be infected via direct contact.
- SARS-CoV-2 has been shown to be viable in fomites for different periods of time depending on the surface: plastic and stainless steel (72hrs), cardboard (24hrs), copper (4hrs)[2]
- Transmission can occur form a source patient who is entirely asymptomatic or pre-symptomatic (generally in the 48hrs prior to symptom onset when high quantities of the virus have been found in droplets). While it is accepted that symptomatic patients are more contagious than asymptomatic patients, it is still uncertain what proportion of transmissions occur from asymptomatic and pre-symptomatic patients. One modeling study of the early stages of the epidemic, estimated that more than half of all infections originated from patients who had mild enough illness that they were never sick enough to have been tested[3]
- Certain medical procedures can heighten the risk of transmission by aerosolizing smaller respiratory secretions that may remain aerosolized for up to an hour and have the potential to spread beyond 6ft. These conditions include, but are not limited to:
    - Mechanical ventilation and non-invasive ventilation (e.g. CPAP and BiPAP)
    - High-flow nasal cannula (but not use of routine nasal cannula, face mask, or non-rebreather)
    - Tracheostomy
    - Administration of nebulized medications (but not inhalers)
    - Open suction
    - Intubation

3. What is the COVID-19 incubation period?

The median incubation period from exposure to symptomatic COVID-19 is 5.1 days. Among those developing symptoms, 97.5% will do so by 11.5 days and >99% by 14 days.[4]

4. Who is at highest risk for acquiring COVID-19?

Given widespread community transmission of COVID-19, all correctional residents should be considered at risk for acquiring COVID-19 even if there have been no cases identified within a facility. Certain individuals, however, will be at higher risk for acquisition related to the proximity, duration, and nature of exposure to an infected individual or individuals. Extrapolating from community settings and data on other respiratory viruses, the following are exposures associated with higher risk of acquisition.

a. Cellmate of a patient with COVID-19
b. Worker / volunteer (incarcerated person or staff) caring for a patient with COVID-19 without personal protective equipment (PPE)
c. Other close contact (<6ft for prolonged period) of patient with COVID-19 (this is sometimes defined as <6ft for at least 10 minutes but there is no specific rationale for the 10 minute cutoff)
d. Resident transferring from a facility with sustained COVID-19 transmission in the last 14 days
e. Resident sharing common spaces (e.g. yard, shower, dining area) with a resident or staff person with COVID-19

5. Which symptoms are common among patients with COVID-19?

The following are symptoms described among patients in case series[5,6] of *hospitalized* patients in China.

- Fever: >80% (yet nearly 50% were afebrile at the time of admission)
- Cough: 45-80% (dry > productive)
- Shortness of breath: 20-50%
- Myalgias: 10-50%
- URI symptoms: <15% (sore throat, rhinorrhea, HA)
- GI symptoms: <10% (nausea/vomiting), <25% (diarrhea)

Given that some patients can be entirely asymptomatic despite infection, the range of symptoms in outpatients is exceedingly broad but often falls along the spectrum between mild URIs and the more severe symptoms seen in hospitalized patients. Cases without cough or dyspnea, however, have been described, including presentations where GI symptoms were the presenting complaint, fever was the only complaint, or a loss of the sense of smell (anosmia) or taste (dysgeusia) was the presenting feature.

6. Who should be considered a COVID-19 suspect and who should be tested for COVID-19?

COVID-19 should be suspected in the following scenarios:

- Patients with any of the following new and unexplained symptoms:
  - Fever (subjective or objective)
  - Cough

- Shortness of breath
- URI symptoms (rhinorrhea, sore throat, headache)
- GI symptoms (nausea, vomiting, diarrhea)
- Loss of the sense of smell (anosmia) or taste disturbance (dysgeusia)

Note: all COVID-19 suspects should be immediately isolated, appropriate PPE measures should be implemented per institutional policy, and direct contact with staff and residents should be limited to medical necessity

All COVID-19 suspects should be tested for infection. If testing is severely limited, testing should be prioritized for the following patients:

- Those at high-risk of severe COVID-19 (section 11)
- Those at high-risk of transmitting COVID-19 to others (e.g. patients who cannot be isolated from other residents or who require frequent close contact with staff)
- Patients with clinical presentations that are most consistent with COVID-19 (sections 5 & 7) who may need transfer to a higher level of care

7. Which diagnostic tests should I order for a patient suspected of having COVID-19 and how do I interpret the results?

Note: given limitations in testing capacity, testing asymptomatic patients has not been done in most health settings but would be a critical intervention in limiting transmission if testing bottlenecks can be alleviated

Recommended tests:

- COVID-19 PCR (aka RNA) by nasopharyngeal (NP) and oropharyngeal (OP) sampling with a single swab: While testing currently has multiple bottlenecks, this is the test of choice and can be performed at commercial laboratories (e.g. Quest, LabCorp, ARUP), local DPHs, and select medical centers. The specificity is >98% and the sensitivity, as extrapolated from PCR tests for other viral respiratory infections, is estimated to be 75-80%. Viral shedding is highest at the onset of symptoms and thus the sensitivity may be >80% if testing is done within the first 5 days of symptoms, particularly with proper sample collection which involves rotating the swab in the nasopharynx for 10 seconds. Addition of an oropharyngeal (OP) swab can marginally increase the sensitivity (+5-10%). To conserve testing supplies while achieving the highest sensitivity, it is recommended to use a single swab to obtain the OP and then NP sample.

Additional tests for patients at high-risk of complications or with signs and symptoms suggestive of lower respiratory tract disease:

- Chest x-ray: among hospitalized patients, the CXR was abnormal in 60%, classically with patchy bilateral findings (unilateral in only 14-25%) and no nodules or effusions.[7]
- Influenza testing (preferably PCR) or multiplex PCR panel of respiratory pathogens by NP swab: While COVID-19 has been described in the presence of other viral respiratory pathogens, the finding of another respiratory pathogen combined with a negative COVID-19 test would have a high negative predictive value for COVID-19. The utility of influenza testing, however, is now

limited as there has been a substantial decline in seasonal flu since the end of March. Of note, COVID-19 should not cross-react with other coronaviruses on most commercially available multiplex PCR panels.

Note: to conserve testing supplies, some laboratories may be able to run COVID-19, influenza, and respiratory viral panel tests from a single NP+OP swab

Note: consider blood cultures and sputum in higher acuity patients

Tests to consider to assess the likelihood of COVID-19 if you are unable to perform COVID-19 testing or if there are long delays in obtaining results:

- CBC: among hospitalized patients, leukopenia (17-45%) and lymphopenia (33-85%) suggested COVID-19
- CRP: elevated in 81-86% of hospitalized patients
- Procalcitonin: >0.5 in 5-10% of hospitalized patients (higher in more severe cases, possibly due to bacterial co-infection)

Tests *not* currently recommended for the diagnosis of COVID-19:

- COVID-19 serologies: these tests will be valuable in determining the epidemiologic characteristics of transmission, potentially improving the sensitivity of case detection if combined with PCR, and to inform when a person is no longer contagious; serologies do not presently have a role in clinical practice for the following reasons:
    - An IgM serologic response occurs ~11 days after exposure to COVID-19, limiting its utility in diagnosing infection as a single test
    - Some serologic tests for COVID-19 will cross-react with other coronaviruses
    - The FDA has allowed the expedited rollout of select serologic tests from commercial laboratories without FDA review and additional data is needed to validate results

8. How do I collect specimens for COVID-19 testing?

- PPE: Given the proximity to the patient and the potential for sample collection to provoke coughing or sneezing, specimens should be collected while wearing gloves, gown, eye protection (face shield or goggles), and an N95 respirator.
- Procedure for recommended NP + OP sampling: First, swab the posterior oropharynx near the tonsils. Then, insert the same swab into one nostril parallel to the palate. If the swab is narrow (i.e. the type normally used for NP samples), gently rotate the swab inward until resistance is met at the level of the turbinates; rotate against the nasopharyngeal wall (approximately 10 sec) to absorb secretions. If the swab is thick (i.e. the type normally used for OP collection), rotate for 10 sec while against the external opening of the nasal turbinates.

9. How is COVID-19 treated?

While certain medications show the potential to have modest benefit, at this point the treatment of COVID-19 is largely supportive. Key treatment considerations are below:

- Oxygen: use if needed to maintain O2 saturation at or above 92%

  Note: the use of routine nasal cannula, face tent, or non-rebreather is preferred to high-flow nasal cannula as the latter has the potential to aerosolize respiratory droplets

- Analgesia and antipyretics: consider acetaminophen and/or NSAIDs if needed

  Note: there have been theoretical concerns about the use of NSAIDs for fever or pain in COVID-19, however clinical data have not demonstrated an increased risk of adverse outcomes; the World Health Organization has clarified that it does not recommend against NSAID use in patients with COVID-19

- Bronchodilators: if bronchodilators are needed (i.e. reactive airway disease or wheezing and respiratory distress), nebulized medications should be avoided given the potential to aerosolize the virus; metered-dose inhalers (MDIs) are preferred and older clinical data suggest equivalence between MDIs and nebulized medications in patients who are able to use them

  Note: there are now national supply chain issues with MDIs; recommend limiting use to patients with moderate/severe reactive airways disease

- Incentive spirometer: maintain airway patency if patient able to participate
- IV fluids: IVFs are not needed for most patients but dehydration and sepsis can occur in patients with severe disease, co-morbidities, or inability to take oral hydration, or substantial GI losses
- Corticosteroids: many patients in China received steroids for severe COVID-19, however the clinic benefit of steroids is not clear and there is data for other respiratory pathogens suggesting prolonged viral shedding in patients receiving steroids; currently steroids are not recommended and most US providers are not using them unless clinically indicated for another reason
- Antivirals:
    - Hydroxychloroquine: favorable toxicity profile, demonstrates potent *in* vitro *activity* but currently has very limited clinical data (below); if no contraindications, providers could consider using hydroxychloroquine to treat COVID-19 in patients with lower respiratory tract infections requiring hospitalization or patients with a high risk for developing severe disease (as some other health systems are doing).
        - Dose: 400mg PO q12 x2 on day one, then 200mg PO q12 on days 2-5
        - Dosing in renal dysfunction: no adjustment
        - Pregnancy/lactation: no known risk in limited human data
        - Adverse effects: QTc prolongation, hemolytic anemia in those with G6PD deficiency, increased risk of hypoglycemia in patients with diabetes on glucose-lowering agents

      Note: Two small RCTs in China (with 30 and 62 patients who largely had mild disease) compared HCQ to no-HCQ and there were no significant differences in time of viral shedding or hard clinical outcomes (the latter study had four patients progress to severe

disease in the control arm and none in the HCQ arm, however the small number of patients in the trial makes this finding hard to interpret).[8,9] *There are also two French studies reporting clinical outcomes among patients receiving HCQ and azithromycin but both studies are single arm, limiting interpretation.*[10,11]

Note: chloroquine suspected to have similar activity but availability is limited

- Lopinivir/ritonavir (Kaletra): showed no improvement in clinical outcomes or the duration of viral shedding in a placebo controlled trial of patients with severe COVID-19[12]

  Note: the patients in the above trial where started on study drug after a median of 13 days of symptoms, so it is uncertain if there may be clinical benefit if started sooner after symptom onset
- Remdesivir: experimental IV therapy (not FDA approved) that showed no efficacy against Ebola but does have potent *in vitro* activity against SARS-CoV-2; is currently only available as part of a phase II clinical trial or through a compassionate use protocol for children and pregnant women

10. How does severe COVID-19 present?

Severe disease occurs in <10% of patients. Among patients hospitalized with COVID-19, serious illness developed after a number of days of progressive symptoms: dyspnea (median 7d after symptom onset), sepsis (9d), ARDS (12d), ICU admission (12d), and mechanical ventilation (15d).[13]

11. Which patients are at highest risk of severe COVID-19?

The CDC defines the following adults as high-risk for severe COVID-19: older adults (particularly >65), residents of a nursing home or long-term care facilities, pregnant women, and individuals with high-risk medical conditions (chronic lung disease including moderate to severe asthma, serious heart conditions, cancer undergoing treatment, morbid obesity, poorly controlled diabetes, renal failure, cirrhosis, cigarette use, HIV infection, organ transplantation, and prolonged use of corticosteroids and other immunosuppressants).[14] Severe COVID-19, however, has been described in adults of all ages, including those with no known risk factors.

One study of hospitalized patients with laboratory-confirmed COVID-19 in China looked at proportions who met and did not meet a primary composite outcome (defined as death, ICU admission, or needing mechanical ventilation) by risk group[6]. Among the 1099 patients as a whole, the primary composite outcome was met in 67/1099 patients (6.1%). The following subgroups were at increased risk for the composite outcome:Age >65: 20.9%

- Cerebrovascular disease 26.7%
- Coronary artery disease: 22.2%
- COPD: 58.3%
- Current or former smoker: 13.9%
- DM: 22.2%

12. Are there preventive therapies for individuals exposed to COVID-19?

There are currently no medications approved (or widely being used) for the prevention of COVID-19 but multiple clinical trials are now in the works for chemoprophylaxis. Two vaccines have entered phase I clinical trials.

*See pages 9 and 10 for **References** and an **Appendix** describing a recommended COVID-19 evaluation and treatment algorithm for use in correctional settings.*

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Amend at UCSF fundamentally transforms culture inside prisons and jails to reduce their debilitating health effects. We provide a multi-year immersive program drawing on public health-oriented correctional practices from Norway and elsewhere to inspire changes in correctional cultures and create environments that can improve the health of people living and working in American correctional facilities.

Amend is currently focused on providing resources, expertise, and support to correctional systems confronting the global COVID-19 pandemic.

For more information:

https://amend.us

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Appendix. Algorithm for the Evaluation and Treatment of Suspected and Confirmed Cases of COVID-19 in Correctional Settings *(a single-page version is available at https://amend.us/covid)*