COVID-19 Adult Quick Clinical Guide: Initial Considerations and Workup

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Clinical Manifestations*

- Fever 44-94% (less common earlier in course)
- Cough 68-83%
- Myalgias 11-15%
- Shortness of breath 11-40%
- URI symptoms 5-25%

*Note: a wide spectrum of symptoms and presentations has been reported

High Risk Groups

- Demographics: Age > 65, male
- Comorbidities: cardiovascular disease (including HTN), pulmonary disease, diabetes, malignancy, immunosuppression

Spectrum of Disease for Admitted Patients

- ~20% Require critical care
- ~10-20% Develop bacterial superinfection
- >20% Have respiratory viral co-infection

When to Consider Testing *Per SHC guidelines updated 3/26/2020*

Symptomatic patients or healthcare workers with or without known COVID-19 exposure with:

- Influenza-like-illness (ILI)
- OR fever (subjective OR T ≥ 100F)
- OR sore throat
- OR cough
- OR shortness of breath
- AND physician judgment

Additional guidance for **hospitalized patients**

For patients hospitalized for *two weeks or less* with any of the following without alternative explanation:

- Fever
- OR lower respiratory symptoms
- OR infiltrates on imaging or respiratory failure

For uncertainty about testing, consider ID consult

Initial Work-Up for Suspected COVID-19

COVID-19 Testing

- Obtain nasopharyngeal swab for non-rapid COVID-19 (LABSARSCOV2) or rapid (LABSTATCOV2) or test*

OPTIONAL: Respiratory Pathogen PCR panel

Labs

- CBC with diff
- CMP
- Procalcitonin
- Ferritin
- D-dimer
- CRP
- LDH
- PTT
- INR

Additional labs

- TnI/pro-BNP IF ICU OR volume overload PLUS one of the following (a) anginal chest pain or (b) SOB
- Blood cultures x2 and sputum gram stain and culture IF concern for bacterial superinfection

Studies/Imaging

- Portable CXR (optional)
- EKG IF TnI/pro-BNP abnormal

Usually NOT Necessary for Diagnosis:

- CT Chest
- CXR PA/Lateral

*Indications for Rapid COVID-19 found here: SHC guidelines 4/2/20

+If no alternative diagnosis and high suspicion for COVID-19 despite negative test, continue isolation and repeat NP swab in 2-4 days

Lab and Imaging Results in COVID-19

Labs

- CBC with lymphopenia* (35-83%) and variable white blood cell count
- Elevated AST/ALT* (28-38%)
- Elevated CRP*
- Elevated d-dimer*
- Elevated troponin*
- Normal procalcitonin (though can be elevated in those requiring ICU care)

*Potential marker of disease severity

Studies

- CXR – variable, bilateral patchy opacities most common
- CT – ground glass opacification with or without consolidative abnormalities; more likely bilateral with peripheral distribution

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COVID-19 Adult Quick Clinical Guide: Inpatient Management

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Respiratory Management

- Non-invasive ventilation (BiPAP, CPAP), Humidified Venturi Masks, and nebulizers all increase aerosolization and should not be used in caring for PUI or COVID-19 patients.
- High Flow Nasal Canula (HFNC) can be considered in selected patients based on these SHC Guidelines
- If COVID+ or COVID-suspected patient requires oxygen beyond nasal cannula consider non-rebreather or intubation
- Consider trial of awake proning in patients with respiratory symptoms or requiring supplemental oxygen following these SHC Guidelines
- If a low-suspicion PUI has another reason for NIPPV (e.g. chronic nocturnal BiPAP), consult ICU to discuss (SHC Guidelines 3/28/20)

Monitoring Labs/Studies

- Daily or QOD (based on clinical judgment): CBC with differential and CMP

When to Call the ICU

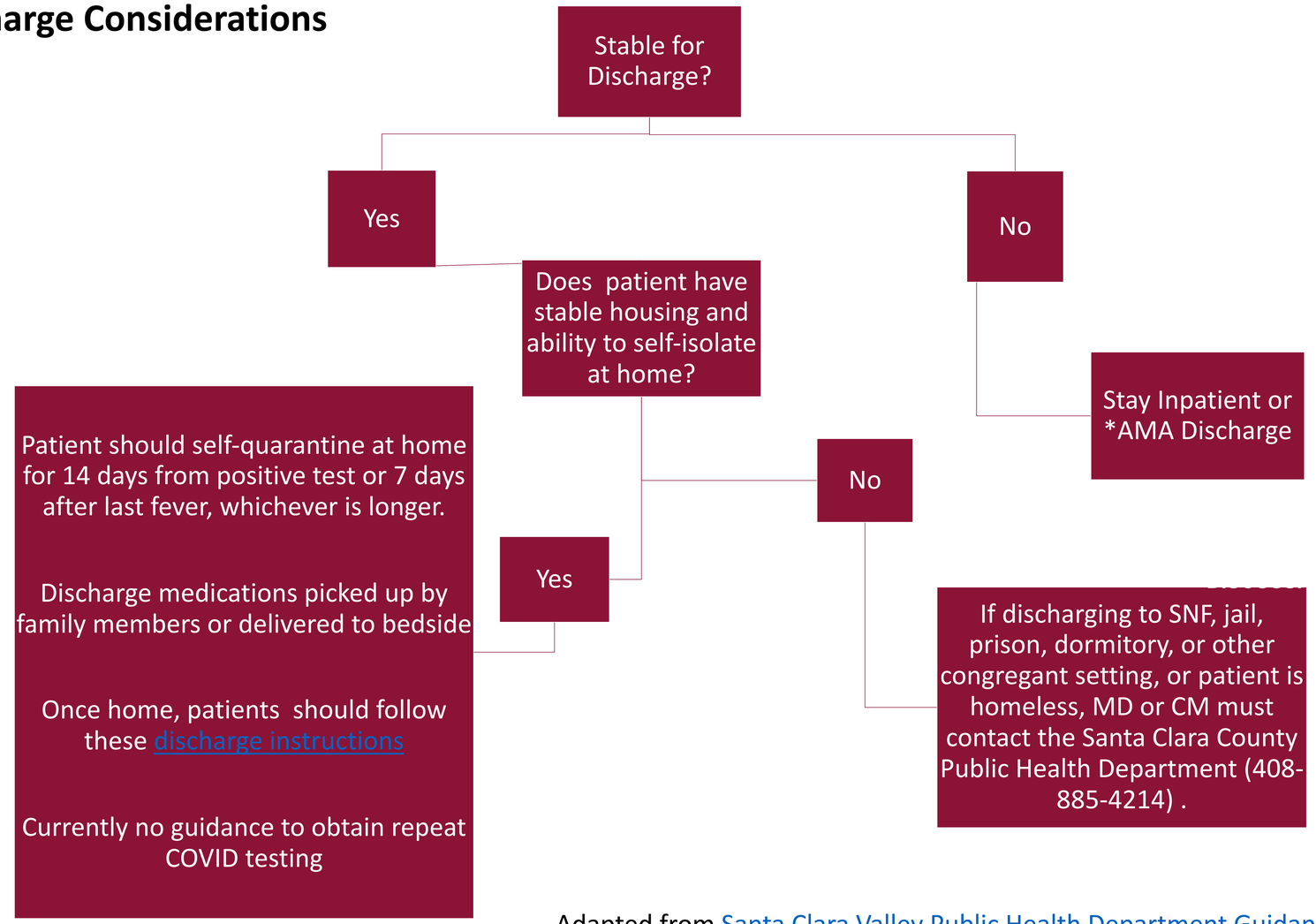
- Provider Concern
- Respiratory Distress (needing > 4L NC to maintain Spo2 >92% or PaO2 > 65, rapid escalation of O2 requirement, or significant work of breathing)
- Hemodynamic instability after initial conservative fluid resuscitation
- Severe comorbid illness or high concern for deterioration

COVID-19 and PUI Decedent Care (SHC Guidelines 4/12/20)

For all COVID/PUI deaths:

- Provider immediately contacts coroner: 408-793-1900, ext. 2
- If coroner releases the case, approach family for Consent for Autopsy at Stanford
- Infection Prevention and Control to notify Public Health Department of patient's county of residence
- For cause of death, list <cause A,B,C> due to COVID-19; if PUI do not mention COVID-19 (Decedent Care Chaplain will amend if positive)
- Questions? Contact decedent care chaplain via Voalte or pager 25683

Discharge Considerations



Adapted from Santa Clara Valley Public Health Department Guidance 4/14/20

***AMA Discharges** (SHC Guidelines 3/22/20)

Patients who have capacity and who want to refuse medical treatment or hospitalization have the legal right to do so.

- For concerns about capacity, page Ethics (#16230) or Voalte the on-call Ethics consultant
- Discuss with the patient the risks of leaving and document discussion in the chart including the reason the patient wants to leave.
- Notify the patient that we are required to contact the Public Health Department and document this
- Request that the patient sign the AMA form and scan form into EPIC. If the patient refuses to sign, document their refusal in the chart.
- Contact Santa Clara County Public Health Department. Phone: (408) 885-4214
  Email: disease@phd.sccgov.org

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COVID-19 Adult Quick Clinical Guide: Therapeutics

Per the CDC and WHO, the mainstay of treatment for COVID-19 is supportive therapy. There are no FDA approved or known effective therapies for COVID-19. Our recommendation, in line with that of the WHO, is that investigational anti-COVID-19 therapeutics should be used only in ongoing randomized, controlled trials. Currently at Stanford we are enrolling patients in clinical trials of remdesivir, a novel anti-viral agent.

For a literature review of experimental therapies, click here.

COVID-19 Supportive Treatment

IV fluids	Use *conservative* fluid management to mitigate risk of progression of respiratory failure
Antibiotics •Only use if concern for superinfection – can use procalcitonin for guidance •Check patients for flu co-infection	Refer to CAP guidelines If flu +, treat with oseltamivir 75 mg BID x 5 days
Anti-pyretics •ACE2 receptor which SARS-CoV-2 binds to is upregulated by NSAIDS	•WHO does NOT recommend against using NSAIDs •Can use acetaminophen as needed (check LFTs)
Bronchodilators •Increased risk of aerosolization with nebulizers compared to MDI	•Use MDI over nebulizers
Anticoagulation • Initiate prophylactic anticoagulation unless contraindication	•If CrCl > 30, use lovenox 40 mg SQ daily •If CrCl < 30, use heparin 5000 units SQ TID •If platelets < 30 or bleeding, use SCDs
Mucolytics •Infection can lead to thick secretions/mucous plugs but airway clearance treatment can increase aerosolization	•Do NOT use flutter valve and cough assist devices without Pulmonary consult
Steroids (more trials pending) •Current data shows mixed outcomes	•Routine use is NOT recommended at this time unless if treating for another indication (asthma/COPD, adrenal insufficiency, etc)

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COVID-19 Adult Quick Clinical Guide: Chronic Medications and Organ System Involvement

COVID-19 Chronic Medication Management

ACEi/ARB
- ACE2 receptor which SARS-CoV-2 binds to is upregulated by ACEi/ARB
- Per the ACC/AHA/HFSA → do NOT discontinue ACEi/ARB in patients who are already taking them

Statins
- Per the ACC, continue statin if already on one (unless acute rhabdomyolysis)
- Unclear data on initiating a statin as novel therapy, but currently no harm shown

COVID 19 Organ System Involvement

Pulmonary
- Dry cough (59%)
- Dyspnea (31%) → if not a presenting symptoms, develops at 5-8 days after admission
- Sputum production (27%)
- Pneumonia with bilateral patchy infiltrates
- ARDS (20%) → about 8-12 days after diagnosis
- Acute hypoxic respiratory failure → rapid progression to intubation (12-24 hours)

Cardiac
- Acute cardiac injury in 7-22% of hospitalized patients
  - ACS
  - Stress cardiomyopathy/heart failure
  - Demand ischemia
  - Viral myocarditis
- Arrhythmia (17%)
- Shock was rarely a presenting sign and usually presented after days of critical illness

Renal
- AKI in 2-29% of patients
  - Etiology primarily ATN due to direct cellular injury from virus or shock
- Proteinuria (44%)
- Hematuria (26.9%)
- Renal replacement therapy needed in 1-5% of hospitalized patients and resulted in worse outcomes

Hematologic
- Cytokine storm and secondary HLH
- Increased risk of VTE
- DIC (median 4 days from hospitalization)
- Microthrombi in pulmonary vasculature
- Lymphopenia, ↑ LDH, ↑ ferritin, ↑ D-Dimer

GI
- GI symptoms (nausea/diarrhea) manifested before respiratory symptoms about 10% of the time
- Diarrhea (2-10%) → COVID+ stool test
- Elevated ALT or AST (53%)

ENT
- Loss of smell or taste

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