Should you treat for bacterial superinfections in patients with suspected or confirmed COVID-19?

1. Are bacterial superinfections a common finding in patients COVID-19?

There is no reliable evidence regarding the incidence or prevalence of bacterial superinfections in patients with COVID-19, however they do not appear to be a common finding. Data is limited.

2. Should you empirically treat for bacterial pneumonia (CAP) in patients with suspected or confirmed COVID-19?

In patients with suspected or confirmed COVID-19, empiric therapy for bacterial pneumonia is not routinely recommended in mild disease. Empiric treatment may be reasonable in moderate to severe disease with clinical suspicion for bacterial superinfection (i.e. in patients presenting with worsening dyspnea, new productive cough, pleuritic chest discomfort, or secondary fever with new consolidations on chest imaging).

Below are recommendations from the NIH COVID-19 Treatment Guidelines for empiric management of bacterial superinfections in patients with suspected or confirmed COVID-19 based on disease severity.

Asymptomatic/Presymptomatic disease: Positive COVID-19 test, but lacking symptoms; or positive COVID-19 test and not yet exhibiting any symptoms.

- Patients should be isolated.
- No additional lab testing or treatment is indicated.

Mild disease: Positive/suspected COVID-19 test, symptomatic with fever, cough, sore throat, malaise, headache, and/or muscle pain WITHOUT shortness of breath, dyspnea, or abnormal imaging studies. These patients are typically managed in an outpatient setting.

- Empiric antibiotics are not routinely recommended in mild disease.
- No additional laboratory testing is necessary in otherwise healthy patients with mild disease.

Moderate disease: Positive/suspected COVID-19 test with evidence of lower respiratory disease involvement on imaging/physical exam. Maintain an O2 saturation of >93% on room air. Moderate disease may progress rapidly to severe/critical illness.

- If secondary bacterial pneumonia or sepsis is suspected, empiric antibiotic treatment may be initiated based on Community Acquired Pneumonia Guidelines. These patients will likely be admitted for close observation.
- It is strongly recommended that imaging studies be performed and a sputum culture obtained at the initiation of antibiotic therapy. Evaluate daily to determine if bacterial
pneumonia may be excluded and de-escalate or stop antibiotics as clinical picture evolves.

**Severe disease:** Positive COVID-19 test with O2 saturation ≤ 93% on room air, a respiratory rate >30, or lung infiltrates >50%. These patients may rapidly deteriorate. Patients with severe disease will/should be hospitalized. Recommendations for empiric management for suspected secondary bacterial pneumonia or sepsis is similar to those with moderate disease. Depending on a patient’s specific clinical course, a decision to treat for ventilator associated (VAP) or hospital acquired pneumonia (HAP) may be more appropriate.


**The final recommendation by the NIH:**

- In patients with COVID-19 and severe or critical illness, there are insufficient data to recommend empiric broad-spectrum antimicrobial therapy in the absence of another indication.
- If antimicrobials are initiated, the Panel recommends that their use should be reassessed daily in order to minimize the adverse consequences of unnecessary antimicrobial therapy.

3. **How long should you treat for suspected CAP in patients with COVID-19 if you initiate empiric antibiotic therapy?**

If empiric antibiotic therapy is initiated, continued use should be re-assessed on a daily basis. In hospitalized patients with moderate to severe CAP, a confirmatory diagnosis should be pursued. This would include microbiologic testing such as (blood cultures, sputum gram stain/cultures, and urinary antigen testing).

Antibiotic therapy should be continued until the patient achieves clinical stability for no less than 5 days. Most studies support the use of 5 to 7 days of therapy, however the duration may vary by patient.

4. **What does viral pneumonia caused by COVID-19 look like on radiographic imaging? When should an alternative diagnosis be considered?**

Viral pneumonia is a common clinical syndrome of COVID-19 and often appears as ground glass opacities or patchy alveolar opacities. Imaging often indicates involvement bilaterally, peripherally, and in the lower lung. Other infectious or noninfectious processes should be considered in the absence of typical signs and symptoms of COVID-19. Also, consider non-COVID-19 etiologies if imaging shows the presence of isolated lobar/segmental consolidation without ground glass opacities, discrete small nodules, lung cavitation, or smooth interlobular septal thickening with pleural effusion on imaging. Note that radiographic appearance alone should not be used to definitively differentiate viral pneumonia caused by COVID-19 with alternative diagnoses.
References

