

Montefiore Empiric Antimicrobial Treatment Guidelines for COVID-19 Patients for Suspected Co-infections

Version May 2021

These guidelines, created by the Antimicrobial Stewardship Program, Infectious Diseases, and Pharmacy are intended to help guide clinicians caring for **hospitalized COVID19 patients for suspected secondary bacterial and fungal infections.**

For Montefiore Department of Medicine inpatient/outpatient COVID-19 treatment protocols, visit: https://montefioreorg-my.sharepoint.com/personal/vpierino_montefiore_org/_layouts/15/onedrive.aspx?id=%2Fpersonal%2Fvpierino_montefiore_org%2FDocuments%2FCOVID19%20Treatment%20Plans

**** Visit <https://webedition.sanfordguide.com/en/montefiore> or the MMC Sanford Guide smartphone app for antibiograms, syndrome-specific treatment guidelines, campus specific restriction policies, and much more**

Notes:

****Published rates of bacterial/fungal co-infection either at presentation, or later in hospitalization are <15% and at Montefiore <5% during the 2020 pandemic surge; co-infections occur later in hospital stay due to prolonged intubation and invasive catheters. Outbreaks of extensively drug-resistant bacteria and fungi have occurred globally in COVID-19 patients.**

- Severe COVID-19 patients can present with high fevers and appear septic regardless of a secondary bacterial/fungal infection

- Hospitalized COVID-19 patients are at high risk of renal failure; caution with nephrotoxic regimens such as piperacillin-tazobactam/vancomycin without a clear indication
- Take an **antibiotic “time-out”** every 48-72 hours
 - Reassess patient’s condition
 - Switch to PO (if adequate clinical improvement, hemodynamically stable, and able to take PO) or STOP whenever possible
- **PCT should not be checked routinely on admission**
- **Procalcitonin (PCT)** has a high negative predictive value >90% in ruling out co-infections but a **poor positive predictive value** for diagnosing co-infections; *it can guide antibiotic de-escalation when negative*
 - Elevated PCT levels may be seen in COVID19 in the absence of bacterial co-infection and should only be used in conjunction with other clinical information for guiding initiation of antibiotics
- Consider MRSA nasal swab to help de-escalate vancomycin IV if negative (high NPV)
- “De-label” penicillin allergy when possible and update medical record if patient able to tolerate beta-lactams
- Refer to the Sanford Guide or MMC ASP website:
 - <http://www.einstein.yu.edu/departments/medicine/divisions/infectious-diseases/antimicrobial-stewardship/>

SCENARIO #1: Initial Patient Presentation (DAY 0-1)

Workup:

- Obtain the following:
 - SARS-CoV-2 on admission
 - Influenza testing (if in season and required by DOH)
 - Chest imaging

Treatment:

Risk Stratification	Antibiotic Management
<ul style="list-style-type: none"> • Lower O₂ supplementation requirements (e.g. nasal cannula, non-rebreather, high flow, etc.) • Not critically ill • Illness most likely from viral pneumonia • Treat for COVID-19 per MMC DOM guidelines 	<ul style="list-style-type: none"> • HOLD empiric antibiotics and continue workup
<ul style="list-style-type: none"> • intubation and/or shock 	<ul style="list-style-type: none"> • Consider empiric antibiotics ONLY if strong suspicion of concurrent bacterial PNA (lobar consolidation, septic shock, etc.) <ul style="list-style-type: none"> ○ Send appropriate work up for bacterial infection (blood cultures, urinary antigens, MRSA nasal PCR, PCT, etc.) ○ Treat for community acquired pneumonia (CAP) if from home (see below) ○ Treat for hospital acquired pneumonia (HAP) coverage if from LTC facility (see below)

CAP coverage:

- Ceftriaxone 1g IV daily
- **Severe allergy to penicillin:** Monotherapy with levofloxacin PO 250mg to 750mg; 750mg dose recommended if CrCl \geq 50 ml/min; elderly and patient with diminished renal function require lower dose (250-500mg), dosing frequency based on GFR

HAP coverage, risk factors for MRSA or Pseudomonas

- Cefepime 1-2g IV OR Piperacillin/tazobactam 2.25-4.5g IV
- **Coinfection with MRSA not commonly seen** at MMC even in NH patients, only add Vancomycin if with previous history of MRSA or if intubated or in shock. Use MRSA nasal PCR decide on the need to continue Vancomycin (dc if negative)
- Dosing frequency based on GFR; *contact ID/stewardship to assist with renal dose adjustment*
- Caution for renal failure with vancomycin/pip-tazo combination (dual nephrotoxicity)
- **Severe allergy to penicillin:** Levofloxacin 750mg PO/IV daily if CrCl \geq 50ml/min (or equivalent dose adjusted for renal function)

SCENARIO #1; 48-72H FOLLOW-UP:

- Is patient clinically improved or unchanged?
 - If no suspicion for concurrent bacterial infection and micro work up negative, **discontinue antibiotics**
 - If improving on antibiotics, **define a duration (e.g. 5 days for PNA)**
 - Unclear what is going on? Consult ID to help with work up and treatment
- Any positive microbiology results to guide treatment?
 - If yes, refer to pathogen-directed treatment guidance below

SCENARIO #2: Floor or ICU patient, ongoing or new fevers, respiratory decline, hypotension or shock, rise in WBC count not due to steroids

Work up:

- Obtain the following:
 - Repeat blood cultures x 2 sets
 - Chest imaging
 - Respiratory culture is strongly encouraged
 - PCT
 - Check stool *C.difficile* if patient having diarrhea, has been on antibiotics or steroids, not on laxatives or stool softeners
 - Strongyloides work up/empiric treatment if patient has worsening respiratory status, recent systemic steroids, eosinophilia, and comes from endemic area (must consult ID)
- Change old central lines and indwelling urinary catheters

Treatment:

- Cefepime 1-2g IV OR Piperacillin/tazobactam 2.25-4.5g IV +/- Vancomycin 15-20mg/kg IV
 - Dosing frequency based on GFR; *contact ID/stewardship to assist with renal dose adjustment*
 - Caution for renal failure with vancomycin/pip-tazo combination (dual nephrotoxicity)
- Use MRSA nasal PCR results to help de-escalate vancomycin IV if negative
- **Severe allergy to penicillin**: levofloxacin 750mg PO/IV daily if CrCl >50ml/min (or equivalent dose adjusted for renal function) + vancomycin 15-20mg/kg IV
- Consider micafungin 100mg IV if patient in septic shock, has received steroids, and has central lines

*****Consult ID for assistance, especially if patient has already been on antibiotics and is getting worse**

SCENARIO #2; 48-72H LATER:

- Is patient clinically improved or unchanged?
 - If improving, **define a duration**, i.e. 5-7 days
 - If unchanged or not improving, **consult ID for assistance**
- Any positive microbiology results to guide treatment?
 - If yes, refer to pathogen-directed treatment guidance below.
- Unclear what is going on?
 - Consult ID to help determine ongoing antimicrobial treatment and duration

Pathogen-directed treatment, susceptibilities known

- De-escalate antibiotics as indicated and define a duration
- If multi-drug resistant organism (MDRO), consult ID/ASP to escalate antibiotics as indicated and define duration
- Visit Sanford guide for pathogen-directed antibiotic recommendations:
<https://webedition.sanfordguide.com/en>