Antibiotic Algorithm for Neutropenic Patients

Adult Hematology, Blood & Marrow Transplant, and Cellular Therapy and Antimicrobial Stewardship Programs
Approved by P+T 5.14.2019
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ANC < 500 or < 1000 and likely to fall to < 500 within 48hrs
+
Temp > 38 Celsius

Use Voalte to contact Transplant ID or ASP teams if needed

These are guidelines only and cannot be applied to every clinical situation. All patients should be examined carefully and treated for suspected focal infection if identified.

Initiate Workup: Draw two central line cultures and obtain Chest X-ray
Consider testing for respiratory viruses (COVID + RVP)
Only if urinary symptoms: urinalysis and urine culture

ICU-level care needed for suspected infection?[1]

No → 1) D/C levofloxacin
2) Start cefepime[2,3,4, 5]

Yes →
1) D/C levofloxacin or cefepime
2) Start meropenem and vancomycin[3,4]
3) If not on voriconazole ppx, and high risk for candidemia[7], consider micafungin
4) Consider addition of tobramycin if not responding

Still unstable?

Yes → 1) Fungal Work-UP/Tx[9]
2) ID consult

No → Positive cultures or work-up?

Yes → Change antibiotics to target clinical syndrome[8]

No →
1) D/C vancomycin
2) D/C tobramycin (if ordered)
3) D/C if micafungin (if ordered) once culture negative for 96hrs
4) Continue meropenem or change to piperacillin/ tazobactam or cefepime for 7 days from point of clinical stability
5) Restart bacterial prophylaxis, if indicated

Consideration of MRSA infection[6]?

Yes → Start vancomycin

No → Continue cefepime alone

Positive cultures or work-up?

No →
- D/C vancomycin at 48hrs if applicable[4]
- Continue cefepime

Resolution of fever and other signs of infection by day 4-5?

Yes → Regardless of ANC, stop IV antibiotics 72 hours after last fever; restart bacterial prophylaxis if indicated

No → 1) Fungal Work-Up/Tx[9]
2) ID consult

Positive fungal work-up?

Yes →
1) Cont antifungal
2) D/C other abx
3) Bacterial prophylaxis, if indicated

No → Clinical response after 3-5 days?

No →
1) D/C antifungal
2) Cont cefepime
3) Additional fever work-up
4) Transplant ID consult?

Yes →
1) D/C antifungal
2) Cont cefepime
3) Additional fever work-up
4) Transplant ID consult?

[1] If at any point in the algorithm patient becomes unstable and needs ICU-level care, return to this step.

[2] Considerations for anaerobic coverage and addition of metronidazole to cefepime
1) Intra-abdominal infection
2) Typhilitis

[3] If recent bloodstream infection with a retained central line, antibiotic coverage should include an agent active against the prior blood culture isolate. In patients with recent (< 90 days) clinical cultures with drug-resistant organisms, empirical therapy should typically include coverage for these organisms.

[4] Refer to the UCSF Adult Beta-lactam Allergy Guideline if listed allergy is present
For patients on Aztreonam, vancomycin should be included for empiric therapy given lack of gram positive/strep coverage for aztreonam

[5] Patients on renal replacement therapy are at risk for cefepime neurotoxicity. Pay attention to appropriate dosing. Piperacillin/ tazobactam is an alternative.

[6] Consideration of MRSA infection:
1) Bacterial pneumonia
2) Skin and soft tissue infection
3) Evidence of central line infection
4) Recent systemic MRSA infection

[7] Considerations for candidemia:
1) Intra-abdominal procedure
2) TPN
3) >7 days broad spectrum abx
4) Long-term central line
5) Candida colonization

[8] If cultures positive with a suspected pathogen, antibiotics to be targeted at that organism. If not needed for treatment of recovered pathogen, cefepime should be stopped and bacterial prophylaxis restarted.

If clinical syndrome consistent with Cdiff:
1) Treat per UCSF Cdiff guidelines
2) D/C all other empiric antibiotics as soon as possible

[9] For fungal work-up/Tx, please see full SOP