MAC Lung Disease

Caring for Your Patient

Diagnose MAC Lung Disease

***Mycobacterium avium* complex (MAC) Lung Disease is increasingly prevalent and should be considered in patients with unexplained or worsening pulmonary symptoms and/or underlying lung conditions.[1]**

Diagnose MAC Lung Disease according to current guidelines[2]

- Chest imaging
- Respiratory specimen (sputum) acid-fast bacteria (AFB) cultures
- Symptom assessment

Collect respiratory specimens for diagnosis[2]

- Spontaneous sputum production
- Sputum induction
- Bronchoscopy or biopsy, if necessary

There are two types of MAC lung disease[1]:

- Nodular/Bronchiectatic (NB)
- Fibro-Cavitary (FC)

Manage MAC Lung Disease

MAC Lung Disease is a treatable disease, but longitudinal care is essential. One of the goals of therapy is 12 months of sputum culture negativity while on therapy.[2]

Use guideline-based therapy

Begin with an oral three-drug macrolide-containing regimen: macrolide + ethambutol + rifampin

Establish drug susceptibility for macrolides and amikacin

Perform baseline tests to monitor potential side effects

- Visual acuity, color vision
- Audiometry
- Liver enzymes, bilirubin
- CBC
- Creatinine

Obtain specimens for AFB culture to measure treatment progress[2]

- Every 1–2 months until sputum converts to AFB culture and remains negative
- Then every 1–3 months until therapy completed

Manage underlying lung disease

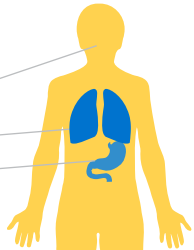
Optimize airway clearance strategies:

- Regular aerobic activity, if appropriate[1]
- PEP valve and postural drainage (Aerobika, Acapella, flute)[3,4]
- Hypertonic saline nebulized[5]
- High-frequency chest wall oscillation (vest)[6]

Address comorbidities

Manage underlying conditions, including:

- *Sinus disease*[7]
- *Bronchiectasis*[8]
- *GERD*[9]



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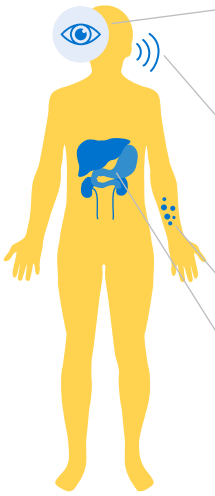
Manage Complications and Side Effects

MAC Lung Disease and its treatment are complicated. What can the patient expect?

Look for medication side effects[2]



Ethambutol
- Optic neuritis: Visual acuity/color vision monitoring at baseline and every 1–3 months or if symptoms develop or increase
- Neuropathy

Macrolide/amikacin
- Hearing loss: Repeat audiometry with change in symptoms
- Renal toxicity: Test serum creatinine?

Macrolide/ethambutol/rifampin
- Rash

Macrolide/rifampin
- GI symptoms (nausea, vomiting, diarrhea)
- Hepatotoxicity: Test liver enzymes/ bilirubin 1–3 months

Monitor for drug intolerance or toxicity

Monitor as recommended in guidelines[2]

Watch for exacerbation of underlying lung disease

Lung disease flare-ups are common, especially bronchiectasis[2]

- Obtain sputum bacterial cultures
- Treat bacterial or other pathogens as needed

Manage patient expectations and nonadherence to medication regimen

- Emphasize importance of guideline-based therapy for treatment success[10]
- Consider support from medication therapy management pharmacy team[11–16]

Reassess Treatment Response at 6 Months

MAC Lung Disease is considered refractory after failure to convert sputum to AFB culture negative after 6 months of guideline-based therapy without macrolide resistance.[2]

If your patient has not responded to guideline-based therapy after 6 months:

- Assess for emergence of macrolide resistance[2]
- Check in vitro macrolide susceptibility if sputum has not converted to AFB culture negative[1,2]
- Consider an alternative management approach[2]

If MAC Lung Disease is macrolide resistant, consider:

- Referral to specialized center with expertise in NTM lung disease[1]
- Surgical resection of affected lung tissue, especially large cavities[2]

1. Griffith DE, et al. Am J Respir Crit Care Med. 2007;175(4):367-416. 2. Daley CL, et al. Clin Infect Dis. 2020;71:e1-e36. 3. National Jewish Health-ACT. Accessed October 20, 2020. https://www.nationaljewish.org/conditions/medications/airway-clearance-techniques-devices. 4. Lee et al. Cochrane Database of Systematic Reviews. 2017; (9):1-74. doi: 10.1002/14651858.CD011699.pub2. 5. McIlwaine M, et al. Eur Respir Rev. 2017;26(143):160086. 6. McShane PJ, et al. Am J Respir Crit Care Med. 2013;188(6):647-656. 7. Weiss CH et all. Expert Rev. Respir. Med. 2012; 6(6):597-613. doi: 10.1586/ers.12.58 . 8. Andréjak C, et al. Thorax. 2013;68(3):256-262. 9. Prevots DR, Marras TK. Clin Chest Med. 2015;36(1):13-34. 10. Adjemian J, et al. 2014;11(1)9-16. 11. Ryu YJ, et al. Tuberc Respir Dis (Seoul). 2016;79(2):74-84. 12. van Ingen J. Semin Respir Crit Care Med. 2013;34(1):103-109. 13. Yu JA, et al. Thorac Surg Clin. 2012;22(3):277-285. 14. Polverino E, et al. Eur Respir J. 2017;50(3):1700629. 15. Shulha JA, et al. Mayo Clin Proc. 2019;94(8):1567-1581. 16. Henkle E, et al. Ann Am Thorac Soc. 2016;13(9):S379-S384.

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