

A composite image of two women. On the left, a woman with long grey hair is shown in a distressed state, with her eyes closed and hands clasped over her chest. On the right, the same woman is shown smiling warmly, wearing a dark polka-dot top. The background is a mix of white and light blue with abstract brushstroke-like shapes.

Breath-Taking Stories: **A Discussion of** **Real-World Cases** **of Nontuberculous** **Mycobacterial** **Lung Disease**

Provided by RMEI Medical Education, LLC



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NTM-LD Background



What are nontuberculous mycobacteria (NTM)?

- A group of aerobic bacteria that cause human infection
- Ubiquitously found in soil and water
- Approximately 200 species

Which NTM species frequently cause lung disease in the United States?^{1,2}

Mycobacterium avium complex (MAC)

- *M. avium*
- *M. intracellulare*
- *M. intracellulare* subspecies *chimaera* (formerly, *M. chimaera*)

← Most common (80%)

M. kansasii

M. abscessus (subsp: *abscessus*, *massiliense*, *boletti*)

1. Prevots DR, et al. *Clin Chest Med*. 2015;36(1):13-34.

2. Tortoli E, et al. *Infect Genet Evol*. 2019;75:103983.

Risk Factors and Natural History of NTM-LD



Who Gets Sick?

Risk factors:^{1,2}



Pulmonary
Conditions



Exposure/
Transmission

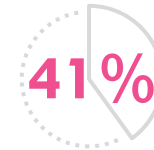


Weakened
Immunity



Other
Factors

Disease Progression



Percentage of patients with MAC-LD experiencing **radiographic decline** over a median follow-up of 5 years³

4.3-fold

Increased incidence of **respiratory failure**⁴



5-year all-cause **mortality** in patients with NTM isolates: 35%⁵

1. Stout JE, et al. *Int J Infect Dis.* 2016;45:123-134. 2. Szymanski EP, et al. *Am J Respir Crit Care Med.* 2015;192(5):618-628.

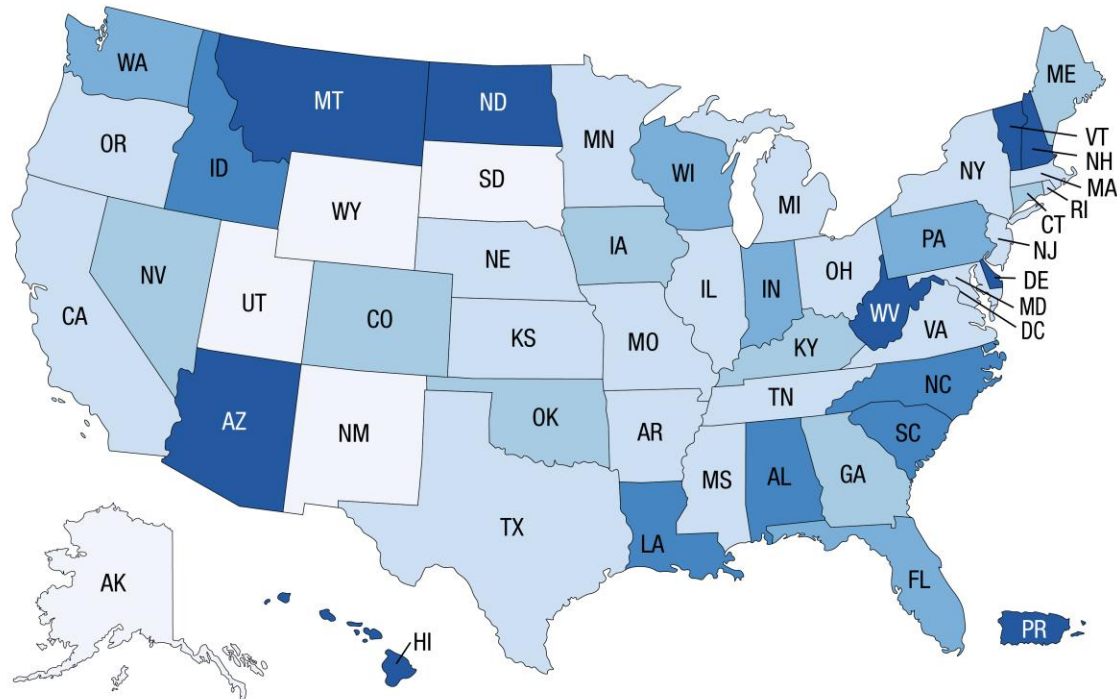
3. Gochi M, et al. *BMJ Open.* 2015; 5(8):e008058. 4. Yeh J, et al. *PLoS One.* 2014; 9(6):e99260.

5. Novosad SA, et al. *Ann Am Thorac Soc.* 2017;14(7):1112-1119.

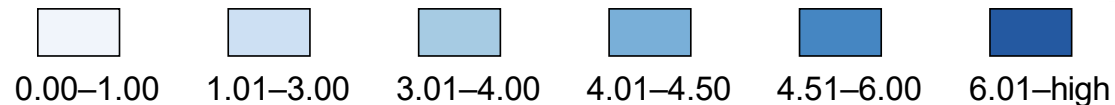
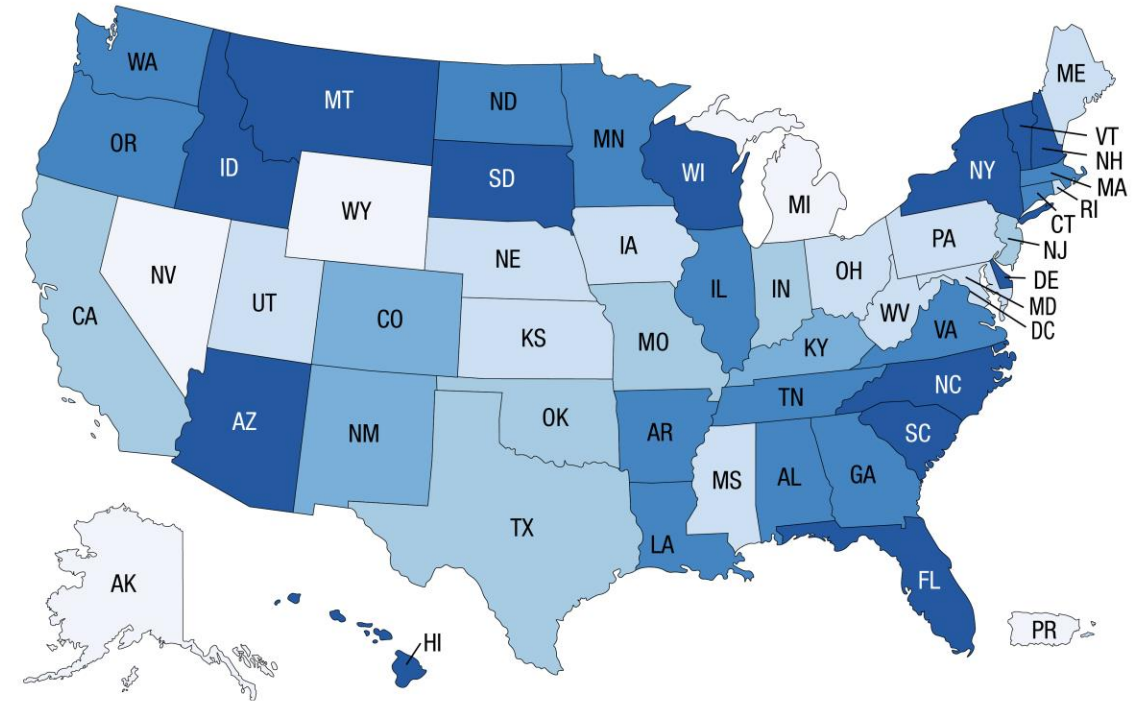
Increasing NTM Incidence



NTM Incidence, 2008*



NTM Incidence, 2015*



*Number of cases per 100,000 person-years

Case 1



“Anne”
65-Year-Old Female

PMH

- Previously treated for tuberculosis
- Ongoing esophageal dysmotility issues with frequent aspiration
- Known bronchiectasis and asthma

HPI

- Presents with several months of worsening cough
- Still using airway clearance devices
- Current CT did not significantly change from CT performed 12 months prior
- PFTs have worsened
- Did not respond to step up asthma therapy
- Medications: Albuterol, fluticasone/salmeterol

Case 2



“Matthew”
63-Year-Old Male

Name altered for presentation purposes

PMH

- COPD patient
- Waiting lung transplant

HPI

- Chronic cough, dyspnea, and occasional hemoptysis
- CT scan revealed cavitary opacities and 2 separate sputum cultures were positive for MAC
- Diagnosed with fibrocavitory MAC-LD and started on triple therapy (azithromycin, ethambutol, and rifampin)
- 3 months later, sputum is still positive for MAC

Case 3



“Joseph”
61-Year-Old Male

Name altered for presentation purposes

Medical History

Bronchiectasis

Cough present for years

Nodular-bronchiectatic disease

Cultures and Sensitivities

- **Positive for:** MAC
- **Sensitives:** Macrolide and amikacin susceptible

Treatment

Initially started on azithromycin/ethambutol/rifampin with 3 times weekly dosing. Sputum continued to be positive for macrolide-sensitive MAC at 6 months. Dosing was increased to daily (azithromycin/ethambutol/rifampin), but he continued to have positive sputum cultures over the next 3 months. **Labs:** AST: 23 units/L

Case 4



“Olga”

84-Year-Old Female

PMH

- COPD
- Autoimmune glomerulonephritis requiring mycophenolate mofetil

HPI

- Developed pneumonia then bronchiectasis followed by fibrocavitary MAC-LD
- Developed severe nausea while on a 3-drug regimen (azithromycin, ethambutol, and rifampin) losing 5 pounds over 3 months

Case 5



“Kiyara”
57-Year-Old Female

MH

- Pulmonary fibrosis
- Coughing for >5 years
- MAC was cultured; isolate was macrolide and amikacin susceptible
- Treated with triple therapy (clarithromycin, ethambutol, and rifampin) for years; once stopped, disease comes back
- Received amikacin liposome inhalation suspension

Thank you for participating in
this activity.

Please remember to complete the post-test and
evaluation to receive CME credit.