

Emerging Infections Program
Healthcare-Associated Infections – Community Interface Activity Report:
Pulmonary Nontuberculous Mycobacteria (PNTM), 2022

Last Updated: March 25, 2026

Surveillance Catchment Areas:

Colorado (5 county Denver area); Minnesota (2 county Minneapolis – St. Paul area); New York (1 county Rochester area); Oregon (3 county Portland area).

Population:

The surveillance area represents 7,212,002 persons.

Source: U.S. Census Bureau, Population Division, Vintage 2022 Special Tabulation

Case Definition:

A PNTM case was defined as first identification during 2022 of an NTM species from a pulmonary (e.g., sputum, tracheal aspirate, bronchoalveolar lavage, or lung tissue specimen) site in a resident of the surveillance area. Mycobacterial species excluded from surveillance were: *Mycobacterium tuberculosis* complex (causes tuberculosis); *Mycobacterium leprae* and *Mycobacterium lepromatosis* (cause leprosy); *Mycobacterium ulcerans* (causes Buruli ulcer); and *Mycobacterium gordonae* and *Mycobacterium paragordonae* (most often non-pathogenic).

Cases were considered prevalent if:

- Medical records indicated PNTM disease was present in the 12 months prior to PNTM identification in 2022, or
- NTM was detected in at least one pulmonary specimen in 2021 within 12 months before the date of the initial PNTM specimen collection in 2022.

Cases were otherwise considered incident.

If medical records and specimen information from the 12 months before the date of the initial PNTM specimen collection were not available, the case was not classified as either incident or prevalent.

PNTM cases were given a microbiologic case classification based solely on the microbiologic component of U.S. and European clinical practice guideline criteria for PNTM disease diagnosis (1) and were considered:

- Confirmed if NTM was identified from
 - two separate sputum, tracheal, or endotracheal specimens within a 12-month period,
 - one bronchial wash or bronchoalveolar lavage or one lung tissue specimen, or
 - at least one pulmonary specimen and a lung biopsy specimen with histopathologic features consistent with mycobacterial infection (granulomatous inflammation or acid-fast bacilli).

- Possible if NTM were identified from a pulmonary site but none of the above criteria were met.

For cases with a single sputum, tracheal, or endotracheal specimen, if medical records and specimen information from the 12 months after the date of the initial PNTM specimen collection were not available, the case was not classified as confirmed or possible and the microbiologic case classification was considered unknown.

Methods:

Case finding was active, laboratory-based, and population-based. EIP site personnel routinely contacted microbiology laboratories serving residents of the surveillance area to identify cases.

A standardized case report form was completed for each case through review of medical records. Medical records were reviewed for information on demographic characteristics, clinical features, and potentially relevant exposures. Exposures were captured if they occurred in the year before the date of index specimen collection, and if they were determined not to have occurred as a result of efforts to diagnose or treat PNTM disease.

Rates of PNTM infection were calculated using special tabulation U.S. Census population estimates for 2022.

PNTM surveillance data undergo regular data cleaning to ensure accuracy and completeness. Cases from 2022 with complete report form data as of February 12, 2026, were included in this analysis. Because data can be updated as needed, analyses of datasets generated on a different date may yield different results.

Results:

Note: The numbers of cases and denominators used for incidence rate calculations and case descriptions vary from table to table.

Table 1 includes incident and prevalent cases that were classified as either confirmed or possible (N=773). Tables 2–5 and Figure 1 include only incident cases (both confirmed and possible) (N=586). Tables 6–7 include only incident confirmed cases (N=335).

Table 1. PNTM (N=773)^a Cases by Incident Status and Case Classification, Emerging Infections Program, 2022

Incident Status	Confirmed PNTM No.	Confirmed PNTM (Rate ^b)	Possible PNTM No.	Possible PNTM (Rate ^b)
Incident	335	4.6	251	3.5
Prevalent ^c	166	2.3	18	0.2
Unknown ^c	1	<0.1	0	0.0
TOTAL ^d	502	7.0	269	3.7

^a 2 cases with unknown microbiologic case definition were excluded.

^b Cases per 100,000 population for EIP areas.

^c Excluded from subsequent tables, which focus on incident cases.

^d Total rate represents overall prevalence.

Note: Definitions for confirmed and possible cases can be found on pages 1 and 2 of this report.

Table 2. Incident PNTM (N=586) Case Counts by Race/Ethnicity, Sex, and Age Group, Emerging Infections Program, 2022

Race/Ethnicity	Confirmed (N=335) No.	Confirmed %	Possible (N=251) No.	Possible %
Hispanic or Latino, any race	13	3.9	26	10.4
Not known to be Hispanic or Latino ^a - White ^b	252	75.2	150	59.8
Not known to be Hispanic or Latino ^a - Black or African American ^c	31	9.3	31	12.4
Not known to be Hispanic or Latino ^a - Asian ^d	26	7.8	30	12.0
Not known to be Hispanic or Latino ^a - Other or multiple races ^e	3	0.9	2	0.8
Not known to be Hispanic or Latino ^a - Unknown race ^f	10	3.0	12	4.8

Sex	Confirmed (N=335) No.	Confirmed %	Possible (N=251) No.	Possible %
Male	132	39.4	128	51.0
Female	203	60.6	123	49.0

Age Group (years)	Confirmed (N=335) No.	Confirmed %	Possible (N=251) No.	Possible %
0–17	0	0.0	3	1.2
18–34	12	3.6	25	10.0
35–49	25	7.5	28	11.2
50–64	75	22.4	58	23.1
65+	223	66.6	137	54.6

^a Records either indicated ethnicity was non-Hispanic or Latino, or ethnicity was not known.

^b 19 confirmed and 5 possible cases with unknown ethnicity.

^c 5 confirmed and 5 possible cases with unknown ethnicity.

^d 2 possible cases with unknown ethnicity.

^e American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, or ≥2 races reported; 1 confirmed case and 1 possible case with unknown ethnicity.

^f 8 confirmed and 8 possible cases with unknown ethnicity.

Note: Definitions for confirmed and possible cases can be found on pages 1 and 2 of this report.

Table 3. Incident PNTM (N=586) Case Rates by Race/Ethnicity and Sex, Emerging Infections Program, 2022

Race/Ethnicity ^a	Rate ^b - Confirmed cases	Rate ^b - Possible cases
Hispanic or Latino, any race	1.1	2.2
Non-Hispanic or Latino ^c - White	5.4	3.2
Non-Hispanic or Latino ^c - Black or African American	5.2	5.2
Non-Hispanic or Latino ^c - Asian	5.2	6.0
Non-Hispanic or Latino ^c - Other or multiple races	1.1	0.7

Sex	Rate ^b - Confirmed cases	Rate ^b - Possible cases
Male	3.7	3.6
Female	5.6	3.4

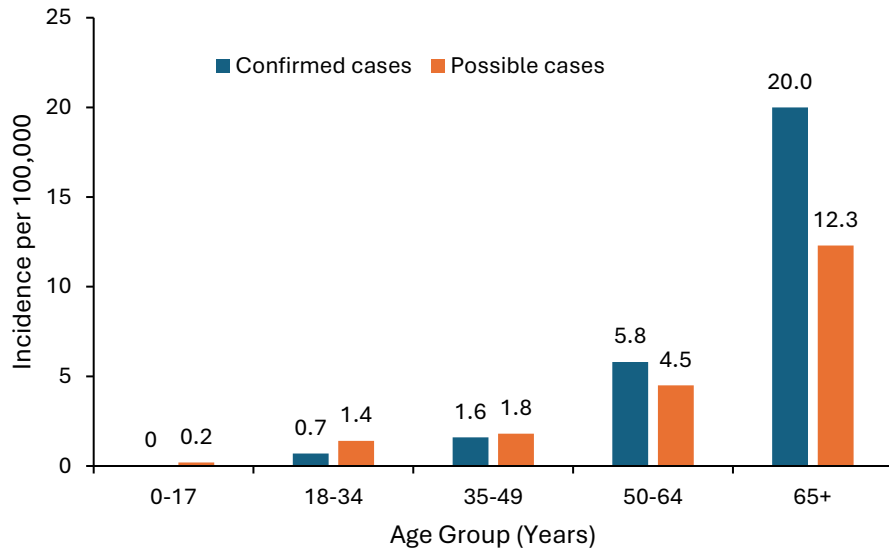
^a Cases with unknown race (10 confirmed and 12 possible cases) are excluded from rate calculations.

^b Cases per 100,000 population for EIP areas.

^c For calculating rates, the numerator includes both cases with non-Hispanic or Latino ethnicity and ethnicity not known.

Note: Definitions for confirmed and possible cases can be found on pages 1 and 2 of this report.

Figure 1. Rate^a of Incident PNTM (N=586) Cases by Age Group, Emerging Infections Program, 2022



^a Incidence (no. per 100,000 population per year) calculated using 2022 special tabulation U.S. Census Data.

Note: Definitions for confirmed and possible cases can be found on pages 1 and 2 of this report.

Table 4. Incident PNTM (N=586) Cases by Species Identified from Index Specimen^a at Clinical Laboratories, Emerging Infections Program, 2022

Slowly Growing NTM Species	Confirmed (N=335) No.	Confirmed %	Possible (N=251) No.	Possible %
<i>M. arupense</i>	0	0.0	3	1.2
<i>M. attenuatum</i>	0	0.0	1	0.4
<i>M. avium</i> complex - <i>M. avium</i>	59	17.6	31	12.4
<i>M. avium</i> complex - <i>M. colombiense</i>	0	0.0	1	0.4
<i>M. avium</i> complex - <i>M. intracellulare</i> subsp. <i>chimaera</i>	5	1.5	4	1.6
<i>M. avium</i> complex - <i>M. intracellulare</i> subsp. <i>intracellulare</i>	62	18.5	42	16.7
<i>M. avium</i> complex, not otherwise specified	135	40.3	87	34.7
<i>M. branderi</i>	0	0.0	1	0.4
<i>M. celatum</i>	1	0.3	0	0.0
<i>M. holsaticum</i>	0	0.0	1	0.4
<i>M. interjectum</i>	2	0.6	0	0.0
<i>M. kansasii</i>	7	2.1	2	0.8
<i>M. kumamotoense</i>	0	0.0	2	0.8
<i>M. lentiflavum</i>	0	0.0	6	2.4
<i>M. nebraskense</i>	0	0.0	1	0.4
<i>M. saskatchewanense</i>	1	0.3	0	0.0
<i>M. scrofulaceum</i> / <i>M. parascrofulaceum</i>	0	0.0	2	0.8
<i>M. shimoidei</i>	0	0.0	1	0.4
<i>M. simiae</i>	2	0.6	0	0.0
<i>M. triplex</i>	0	0.0	1	0.4
<i>M. xenopi</i>	3	0.9	0	0.0
Total	277	82.7	186	74.1

Rapidly Growing NTM Species	Confirmed (N=335) No.	Confirmed %	Possible (N=251) No.	Possible %
<i>M. abscessus</i> ^b	28	8.4	10	4.0
<i>M. anyangense</i>	0	0.0	1	0.4
<i>M. chelonae</i> complex ^c	7	2.1	22	8.8
<i>M. elephantis/pulveris</i>	0	0.0	1	0.4
<i>M. fortuitum</i> complex ^c	20	6.0	27	10.8
<i>M. goodii</i>	0	0.0	1	0.4
<i>M. iranicum</i>	0	0.0	1	0.4
<i>M. mageritense</i>	1	0.3	0	0.0
<i>M. mucogenicum</i>	5	1.5	5	2.0
<i>M. neoaurum</i>	1	0.3	0	0.0
<i>M. obuense</i>	0	0.0	1	0.4
<i>M. phocaicum</i>	2	0.6	1	0.4
Total	60	17.9	65	25.9

Undetermined Growth Rate NTM, Species Not Determined	Confirmed (N=335) No.	Confirmed %	Possible (N=251) No.	Possible %
Not TB ^d , not characterized further	0	0.0	6	2.4
Non- <i>M. avium</i> complex, not otherwise specified	2	0.6	0	0.0

^a 7 index specimens from confirmed cases had >1 species reported. 9 index specimens from possible cases had >1 species reported.

^b Subspecies identification not reported to CDC

^c Species identification not reported to CDC

^d TB=*Mycobacterium tuberculosis* complex

Definitions for confirmed and possible cases can be found on pages 1 and 2 of this report.

Table 5. Location of Incident PNTM (N=586) Cases at Time of Incident Specimen Collection, Emerging Infections Program, 2022

Location of Incident Specimen Collection	Confirmed (N=335) No.	Confirmed %	Possible (N=251) No.	Possible %
Outpatient setting or emergency department	235	70.1	146	58.2
Acute care hospital	97	29.0	103	41.0
Long-term care facility	0	0.0	0	0.0
Long-term acute care hospital	0	0.0	0	0.0
Other	0	0.0	0	0.0
Unknown	3	0.9	2	0.8

Note: Definitions for confirmed and possible cases can be found on pages 1 and 2 of this report.

Table 6. Selected Clinical Characteristics of Incident Confirmed PNTM (N=335) Cases, Emerging Infections Program, 2022

Charlson Comorbidity Index	No.	%
0	43	12.8
1	142	42.4
≥2	150	44.8

Underlying Conditions ^a	No.	%
Any transplant (stem cell, solid organ)	3	0.9
Chest wall deformity	1	0.3
Chronic lung disease ^b	261	77.9
Chronic lung disease: Bronchiectasis ^c	171	51.0
Chronic lung disease: Chronic obstructive pulmonary disease	90	26.9
Chronic lung disease: Cystic fibrosis	7	2.1
Chronic lung disease: Emphysema	49	14.6
Connective tissue disease	25	7.5
Connective tissue disease: Rheumatoid arthritis	12	3.6
Cough suppression disorder	0	0.0

Underlying Conditions ^a	No.	%
Any transplant (stem cell, solid organ)	3	0.9
Chest wall deformity	1	0.3
Diabetes mellitus	34	10.1
Gastroesophageal reflux disease	108	32.2
History of tuberculosis	15	4.5
Immunosuppressive medication ^{d,e}	160	47.8
Malignancy, solid organ	63	18.8
Hematologic malignancy	9	2.7
HIV	13	3.9
Mitral valve prolapse	3	0.9
Obesity (body mass index ≥ 30)	49	14.6
Scoliosis	1	0.3
Smoker (current or former) ^f	179	53.4
Smoker (current only)	63	18.8
Underweight (body mass index < 18.5)	50	14.9
None of the above	8	2.4

Clinical NTM infection type ^g	No.	%
Disseminated NTM infection	6	1.8
PNTM infection, Not Disseminated	161	48.1
None	157	46.9
Unknown	11	3.3

Chest imaging type in the 90 days before or after index specimen ^h	No.	%
Computed tomography	291	86.9
Radiograph	191	57.0
None of the above	24	7.2
Unknown	4	1.2
Chest imaging findings	No.	% ⁱ
Bronchiectasis	135	44.0
Cavity or cavitation	59	19.2
Nodules	219	71.3
Tree-in-bud	91	29.6
None of the above	40	13.0
Unknown	2	0.7

^a Underlying conditions are not mutually exclusive.

^b Includes bronchiectasis, chronic obstructive pulmonary disease, cystic fibrosis, emphysema. Some patients had more than one diagnosis.

^c Includes patients with a clinical diagnosis documented in a provider note as well as patients with bronchiectasis seen on chest imaging.

^d Includes abatacept, B cell depletion agents, IL-6 blockers, JAK inhibitors, steroids (intravenous, intramuscular, inhaled or oral), and TNF- α inhibitors.

^e For 111 cases, the only immunosuppressive medication was inhaled steroids.

^f Includes tobacco, e-cigarette, and marijuana.

^g NTM infection type as documented by a clinician in the medical record

^h 175 cases had both computed tomography and radiograph.

ⁱ Percentage is calculated out of those with chest imaging (N=307).

Summary

Surveillance data from 2022 represent the second full year of population-based surveillance for pulmonary nontuberculous mycobacteria infections (PNTM) through the Emerging Infections Program (a surveillance pilot was conducted for six months during 2019–2020)². The crude annual prevalence and incidence rates of confirmed PNTM in 2022 were 7.0 and 4.6 per 100,000 persons, respectively, an increase from 2021 (6.2 and 3.8 per 100,000 persons, respectively). Incidence rates of confirmed PNTM increased with age and were higher among females than males. Among race/ethnicity groups evaluated, rates of incident confirmed cases ranged from 1.1 among Hispanic or Latino persons and persons of other or multiple races to 5.4 per 100,000 in White non-Hispanic or Latino persons. For incident confirmed cases, *M. avium* complex was the most frequently isolated species group, followed by *M. abscessus*. Most confirmed cases had underlying chronic lung disease.

The characteristics of possible PNTM cases were generally similar to confirmed cases. For possible cases, *M. fortuitum* complex was the most frequently isolated species group after *M. avium* complex.

References

1. Daley, C. L., et al., Treatment of nontuberculous mycobacterial pulmonary disease: An official ATS/ERS/ESCMID/IDSA clinical practice guideline. *Clin Infect Dis*, 2020. **71**(4): e10–e36.
2. Grigg, C, Jackson KA, Barter D, et al. Epidemiology of Pulmonary and Extrapulmonary Nontuberculous Mycobacteria Infections at 4 US Emerging Infections Program Sites: A 6-Month Pilot. *Clin Infect Dis*. 2023 Aug 22; 77(4):629–639. doi: 10.1093/cid/ciad214.

Citation

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For more information, visit our web sites:

- [Nontuberculous Mycobacteria \(NTM\) Surveillance | HAIs | CDC](https://www.cdc.gov/healthcare-associated-infections/php/haic-eip/ntm.html?CDC_AAref_Val=https://www.cdc.gov/hai/eip/ntm.html) (https://www.cdc.gov/healthcare-associated-infections/php/haic-eip/ntm.html?CDC_AAref_Val=https://www.cdc.gov/hai/eip/ntm.html)
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