Residential and long-term care facility call

August 14, 2024

All LTCF facilities

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Agenda

- **Tuberculosis epidemiology update**
  Pete Dupree, MPH, Tuberculosis Program Manager

- **TB testing and return to work for staff**
  Jane Flournoy, PhD, LMFT, LPC, LAC, Assisted Living, Behavioral Health, and Community Services Section Manager

- **Basics of IPC: General Concepts of Ventilation**
  Lynnetta Bonsu, MPH, CHES, Infection Prevention Educator

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Background and updates

- In Colorado, 89 people were diagnosed with tuberculosis disease in 2023 (1.5 per 100,000 people), an increase of 56% from the 57 cases reported in 2022. The Colorado case rate increased to 1.5 per 100,000 people from 2022's rate of 1.0 per 100,000 people. The U.S. case rate also increased to 2.8 per 100,000 people, according to CDC, from the 2022 national rate of 2.5 per 100,000 people.

- In 2024, there have been a total of 48 confirmed cases: 41 Denver/seven outlying.

    - Colorado had 57 total the same time last year.

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LTCF TB guidance

Here's a link to our long-term care TB screening recommendations.
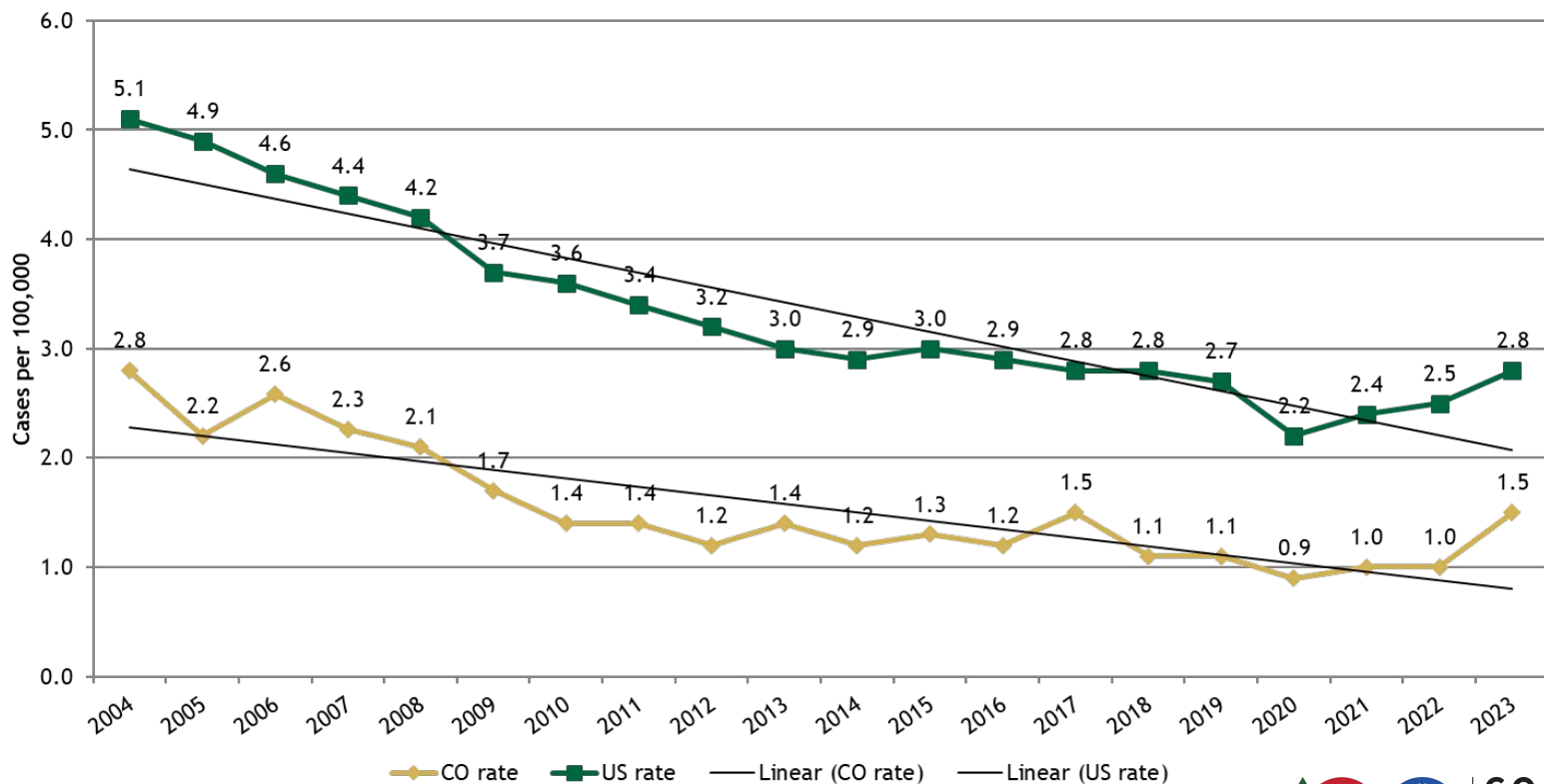https://drive.google.com/file/d/1tqjmRiVV9JAnGX9cnX9LrR_3n_X23IES/view

In a nutshell, we do NOT recommend annual employee testing. We recommend TB testing at time of employment as a baseline. Following that, we recommend use of annual risk assessments to assess any changes in health, travel to endemic areas, or new risk exposures that might trigger another TB test for comparison to the baseline.
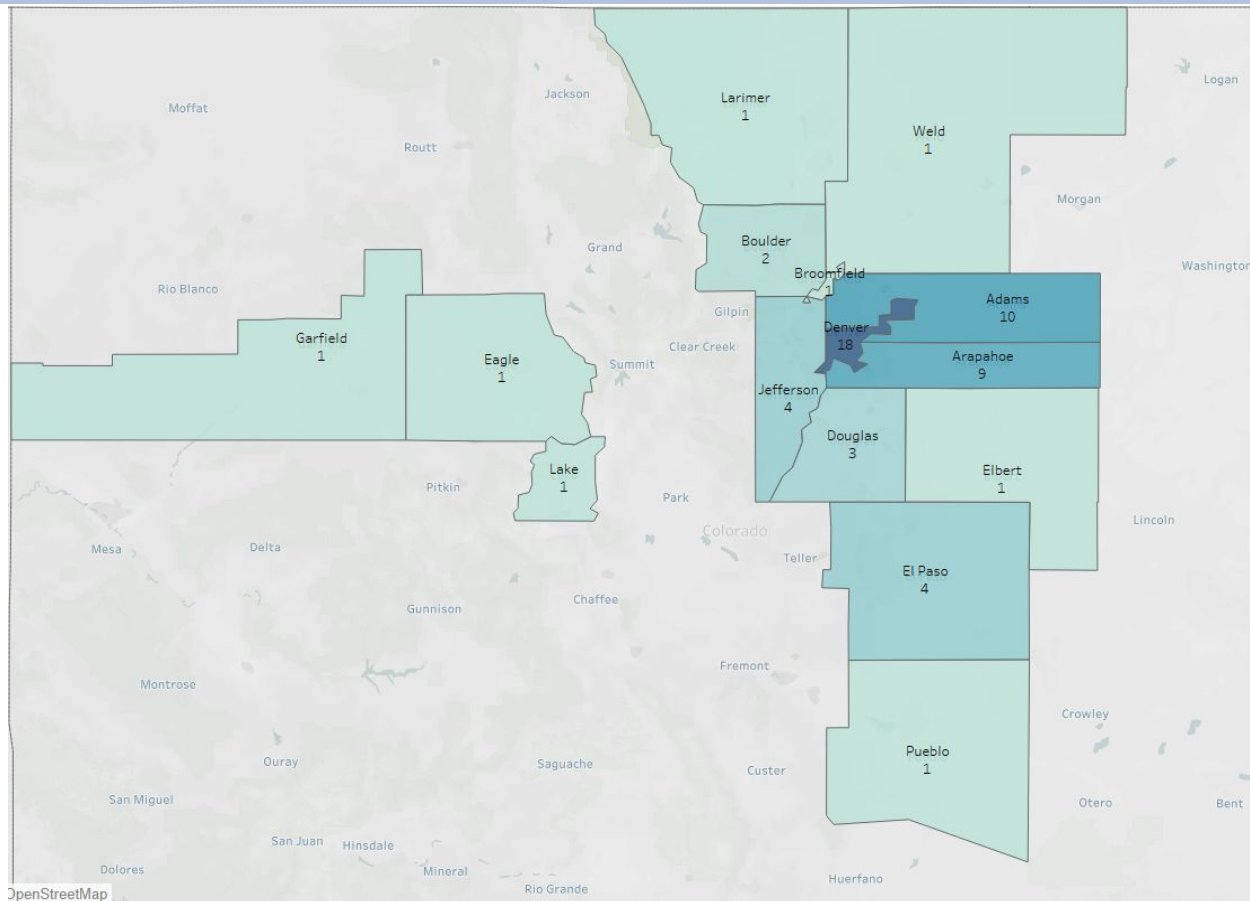
Number of TB patients and trend line: Colorado 2004-2023
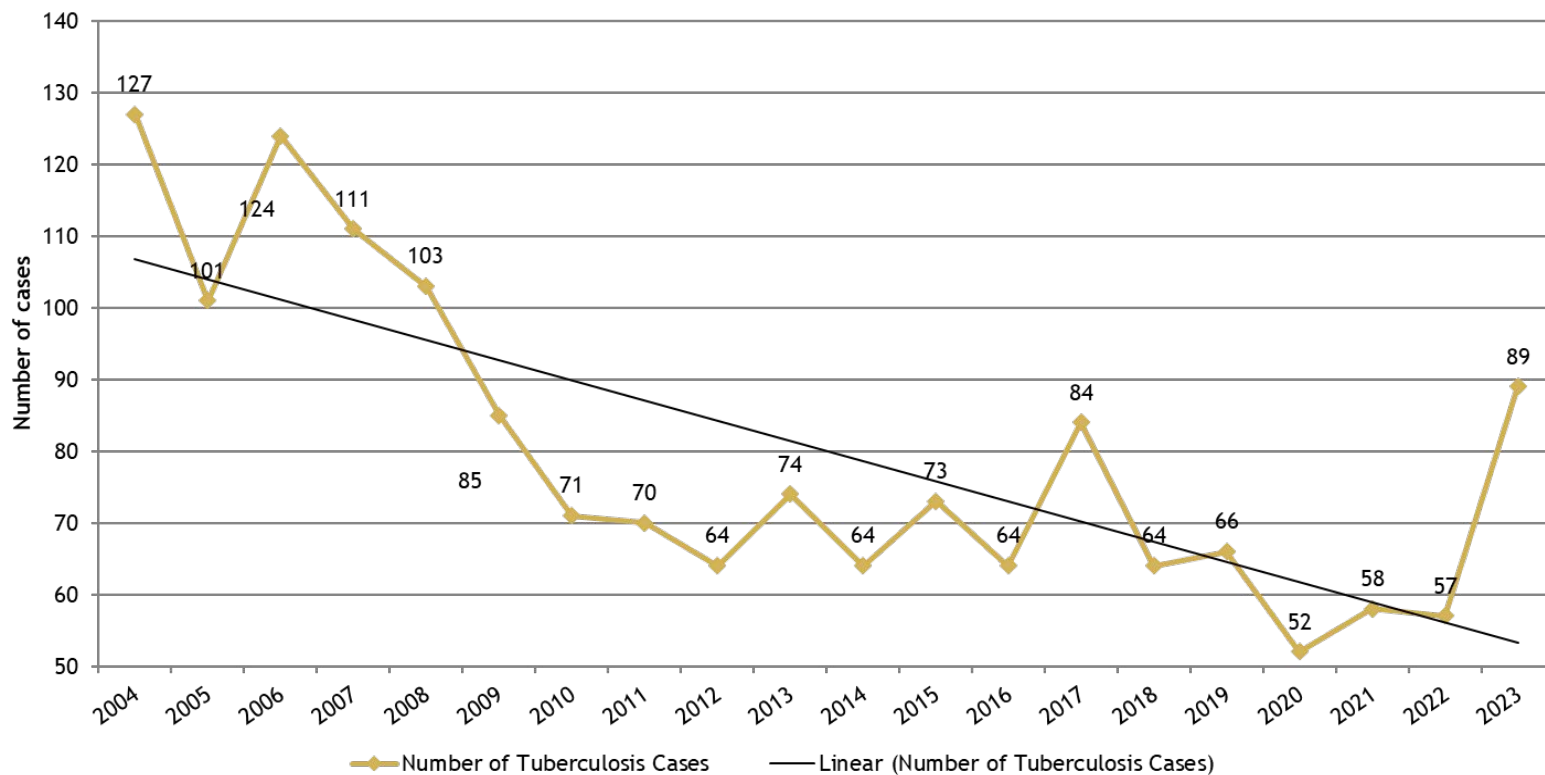
TB case rates per 100,000 people in the United States and Colorado 2004-2023

County[a]	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023[b]	5-Year Case Rate 2019-2023[c,d]
Adams	7	7	4	6	12	9	7	10	6	13	1.7
Arapahoe	14	14	18	19	10	18	9	9	9	14	1.8
Archuleta	0	0	0	0	0	0	0	0	2	0	2.9
Boulder	3	5	0	5	5	1	2	2	3	0	0.5
Broomfield	0	1	0	0	0	0	0	1	2	1	1.1
Denver	23	17	22	25	14	19	11	18	12	35	2.6
Douglas	1	8	1	0	3	2	0	3	3	3	0.6
Eagle	1	1	0	0	0	0	1	1	0	1	1.1
Elbert	0	0	0	0	0	1	0	1	0	0	1.5
El Paso	1	3	3	10	5	4	8	4	3	5	0.7
Fremont	0	0	0	1	1	0	0	0	0	1	0.4
Garfield	1	2	2	1	0	1	1	1	1	2	1.9
Jefferson	4	3	3	3	2	4	4	4	2	4	0.6
La Plata	0	0	0	0	1	0	0	0	1	0	0.4
Lake	0	0	0	0	0	0	0	1	0	0	2.6
Larimer	1	2	4	1	1	1	2	1	2	1	0.4
Las Animas	0	0	0	0	0	1	1	0	0	0	2.8
Logan	1	0	1	0	0	0	0	0	0	0	n/a
Mesa	0	1	1	0	4	0	1	0	1	1	0.4
Moffat	0	0	0	0	0	0	0	0	0	1	1.5
Montezuma	0	0	0	0	0	2	0	0	1	1	3.0
Montrose	0	1	0	0	0	0	0	0	0	0	n/a
Morgan	1	0	1	2	0	0	1	0	1	0	1.4
Park	0	0	0	1	0	0	0	0	0	0	n/a
Pitkin	1	1	0	1	0	0	0	0	0	0	n/a
Pueblo	2	3	2	3	2	1	1	1	1	1	0.6
Saguache	0	2	0	0	0	1	0	0	0	0	3.0
San Miguel	0	0	1	0	0	0	0	0	0	0	n/a
Summit	0	0	0	1	1	0	0	0	0	0	n/a
Teller	0	1	0	0	0	0	0	0	0	1	0.8
Weld	3	1	1	4	3	1	3	1	7	4	0.9
Yuma	0	0	0	1	0	0	0	0	0	0	n/a
TOTAL	64	73	64	84	64	66	52	58	57	89	1.1

[a] Only counties reporting an active case of TB (2014-2023) are included.
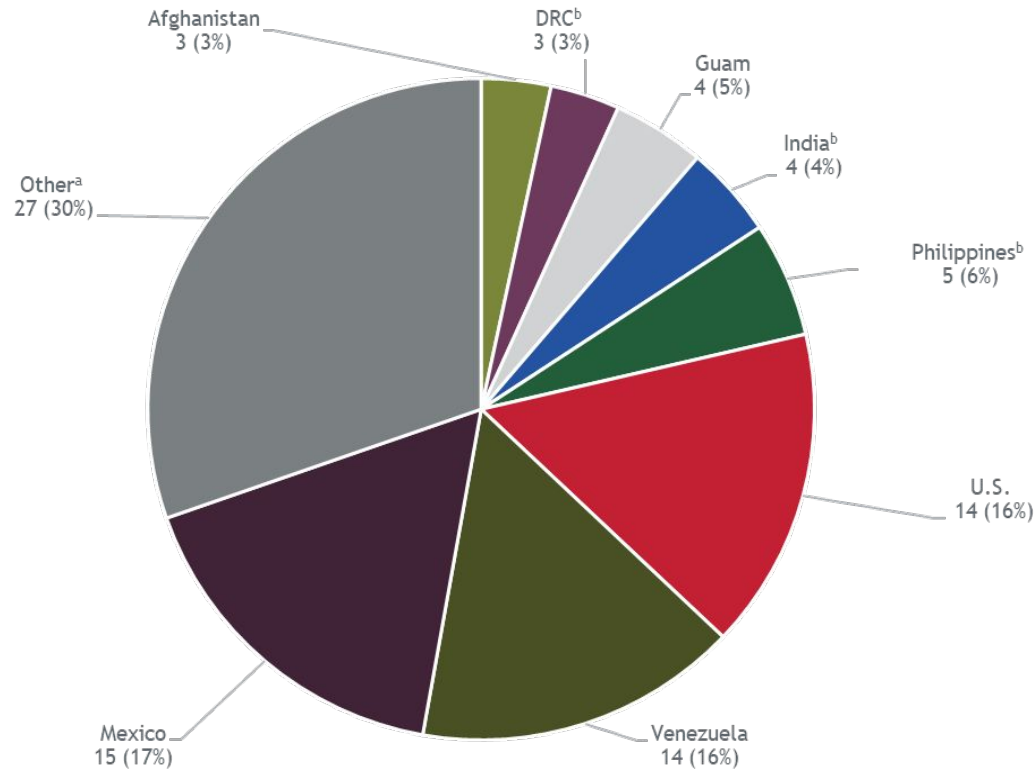[b] Highlighted counties reported at least one case of active TB in 2023.
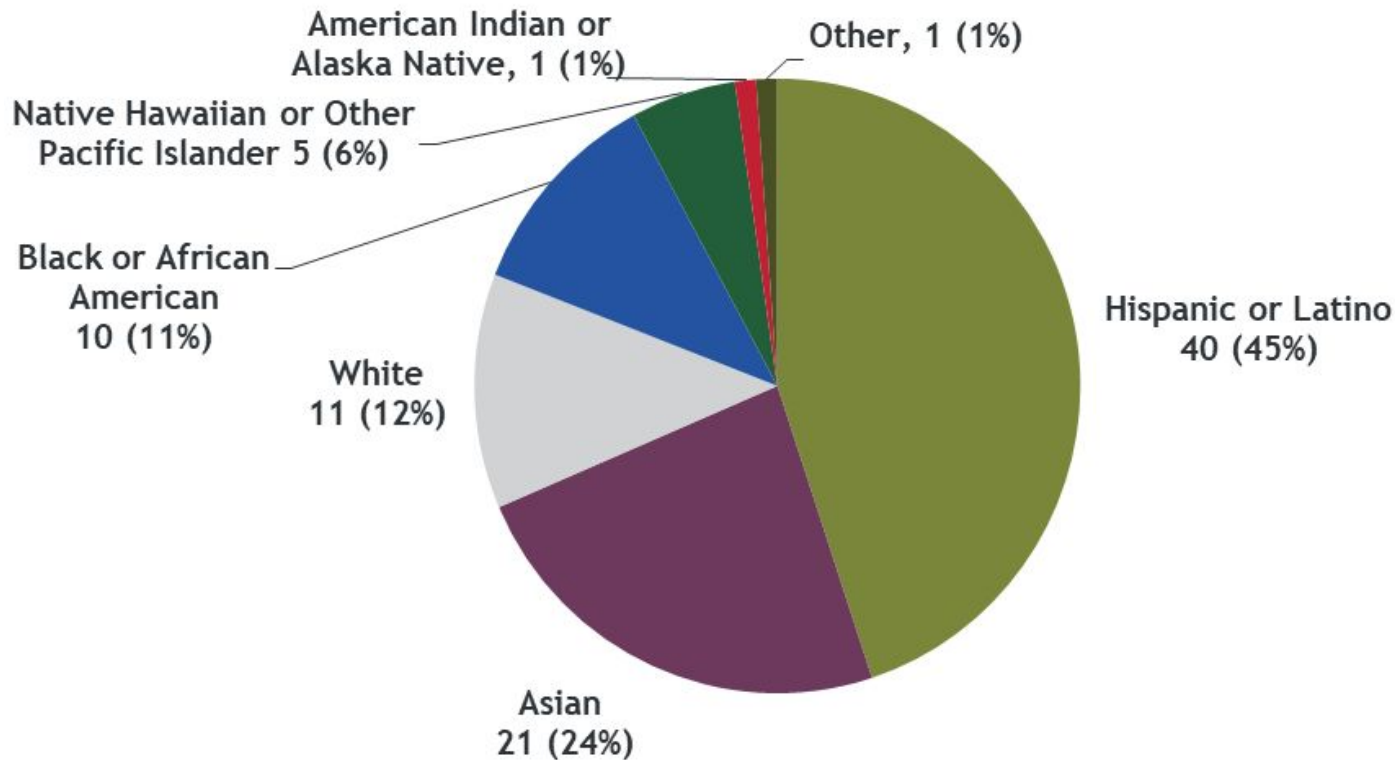[c] TB cases per 100,000 persons
[d] Population data for determining the case rates throughout this report are from the Colorado Division of Local Government, State Demography Office.
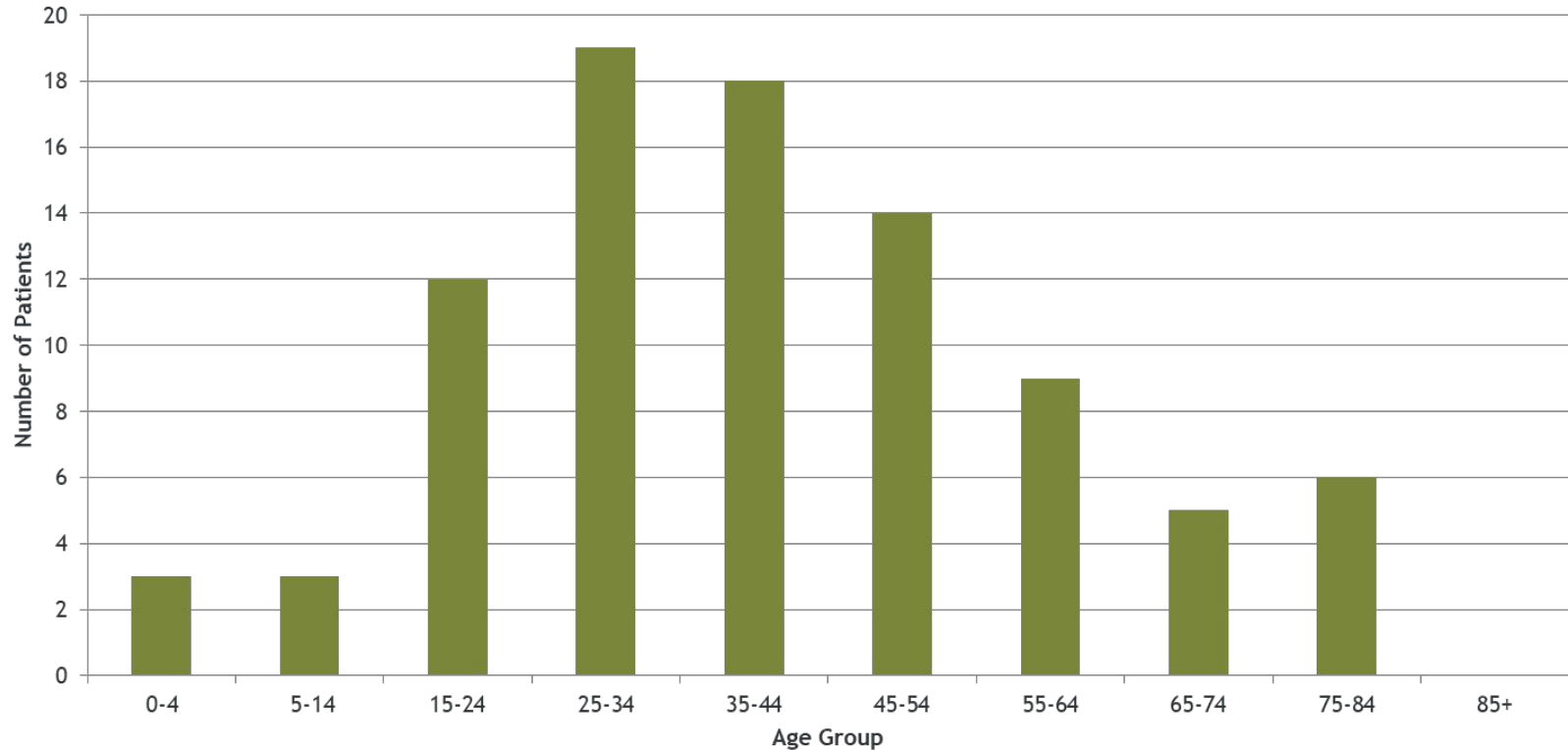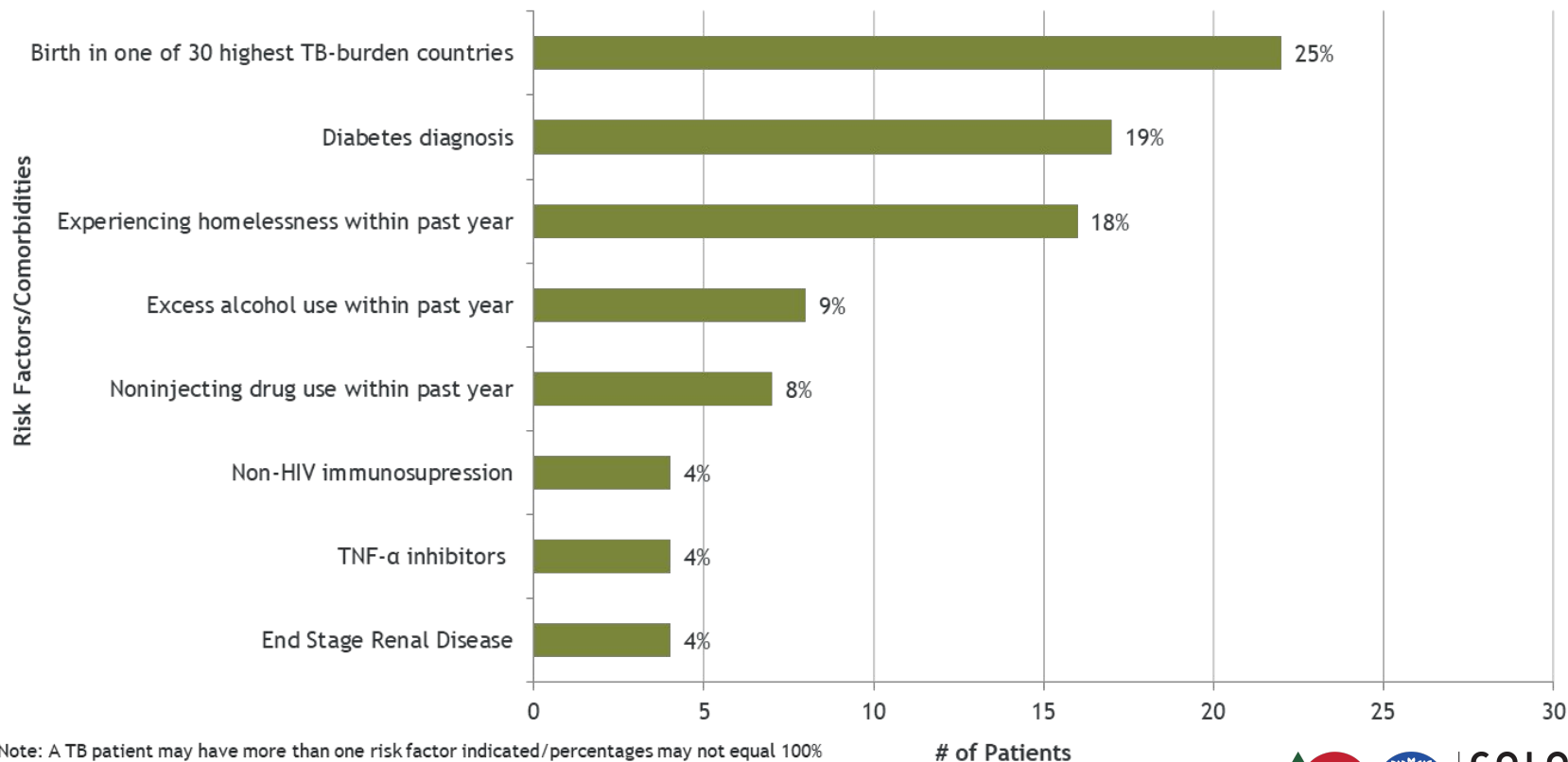
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TB patients by country of birth: Colorado 2023

Afghanistan 3 (3%)
DRC[b] 3 (3%)
Guam 4 (5%)
India[b] 4 (4%)
Philippines[b] 5 (6%)
U.S. 14 (16%)
Venezuela 14 (16%)
Mexico 15 (17%)
Other[a] 27 (30%)

TB patients by race/ethnicity: Colorado 2023

American Indian or Alaska Native, 1 (1%)

Other, 1 (1%)

Native Hawaiian or Other Pacific Islander 5 (6%)

Black or African American 10 (11%)

White 11 (12%)

Asian 21 (24%)

Hispanic or Latino 40 (45%)

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TB patients by age group: Colorado 2023

Medical and social risk factors for TB: Colorado 2023

Note: A TB patient may have more than one risk factor indicated/percentages may not equal 100%

TB Program contacts

Tuberculosis topics	CDPHE TB team contact	Phone/fax	Email
• Genotyping • RVCT issues • Data requests and questions • TB lab questions • TBdb	**Juli Bettridge,** TB Data Coordinator	(o) 303-692-2675 (f) 303-759-5538	juli.bettridge@state.co.us
• Grants • Contracts/POs • Scopes of Work • Program evaluation • Fiscal Questions	**Pete Dupree,** TB Program Manager/ Senior Public Health Epidemiologist	(o) 303-692-2677 (f) 303-759-5538	peter.dupree@state.co.us
• General TB questions • Requests for TB training or educational materials • Community engagement • TB materials development	**Vacant** TB Education and Training Coordinator/Nurse Educator	(o) 303-692-2638 (f) 303-759-5538	vacant
• TB medical questions • Treatment regimens • Contact Investigation • Patient Recs • eDOT questions • TB lab questions	**Ann Scarpita,** TB Nurse Consultant	(o) 303-692-2656 (c) 720-258-6562 (f) 303-759-5538	ann.scarpita@state.co.us
• Chest X-rays • TB18s • Drug orders/questions • Inter-jurisdictional Forms • Class B TB	**Grace Morgan** TB Admin Assistant	(o) 303-692-2750 (f) 303-759-5538	grace.morgan@state.co.us

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Thank you!

Other questions or topics for discussion?

ALR-specific TB testing requirements

Rule language:

7.7 The assisted living residence shall establish written policies concerning pre-employment physical evaluations and employee health. Those policies shall include, at a minimum:

(A) Tuberculin skin testing of each staff member and volunteer prior to direct contact with residents; and

(B) The imposition of work restrictions on direct care staff who are known to be affected with any illness in a communicable stage. At a minimum, such staff shall be barred from direct contact with residents or resident food.

Rule Language, continued:

7.13 Each personnel file shall include, but not be limited to, written documentation regarding the following items:

(F) Tuberculin test results, if applicable.

Upcoming Rule changes re: TB testing in the Chapter 7 re-write taking place as a result of SB 24-167.

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Survey expectations

CDPHE recommendations based on CDC guidance

Health personnel screening

TB: Training and references for providers

Agenda

- Diseases that spread through air

- What ventilation is and why it matters

- How ventilation supports infection control actions

- Key takeaways

How germs spread through the air

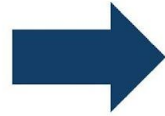# How Airborne Infectious Diseases Make You Sick

Airborne diseases originate from germs in people, environments, or surfaces.

- **Source:** Humans and surfaces are primary germs sources in healthcare.

- **Reservoir**: Environments where germs live and thrive, like air currents, infected persons, contaminated equipment and surfaces.

- **Pathway**: Germs spread to susceptible hosts through the air.

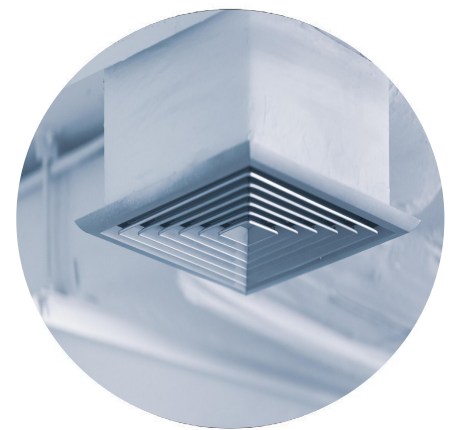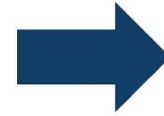- **Spread:** Germs disperse in the air, especially in poorly ventilated spaces.

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Knowing Where Germs Live and How They Spread Helps You Recognize Risk

Reservoir

Pathway

Recognize the risks and take infection control actions

How airborne particles spread

Direct spread

- Particles larger than 5 micrometers
- Occurs within 3 feet of an infected person through coughing or sneezing
- Colds, flu, and RSV

Indirect spread

- Smaller particles (1-5 micrometers)
- Stay airborne and travel long distances, remaining infectious
- Tuberculosis, Chickenpox, Measles

Airborne Fungal, Bacterial and Viral Diseases

Evidence of spread	Fungi	Bacteria	Viruses
Numerous reports in health-care facilities	• Aspergillus spp. • Mucorales (Rhizopus spp.)	• Mycobacterium tuberculosis	• Measles (rubeola) virus • Varicella-zoster virus
Occasional reports in health-care facilities (atypical)	• Acremonium spp. • Fusarium spp. • Pseudoallescheria boydii • Scedospori spp.	• Acinetobacter spp. • Bacillus spp. • Staphylococcus aureus • Group A Streptococcus	• Smallpox virus (variola) • Influenza viruses • Respiratory syncytial virus • Adenoviruses • Norwalk-like virus
No reports in health-care facilities; known to be airborne outside.	• Coccidioides immitis • Cryptococcus spp. • Histoplasma capsulatum • Pneumocystis carinii	• Coxiella burnetii (Q fever)	• Hantaviruses • Lassa virus • Marburg virus • Ebola virus • Crimean-Congo virus

Controlling Airborne Diseases in Healthcare Settings

- **Source Control**: Quick actions to stop the origin of infections.

- **Personal Protective Equipment (PPE)**: Barriers like masks and gowns to prevent contact with germs.

- **Isolation Measures:** Separating sick individuals to stop germ spread.

- **Environmental Cleaning:** Regular sanitation of surfaces to remove germs.

- **Ventilation Management:** Ensuring clean air flow to dilute airborne germs.
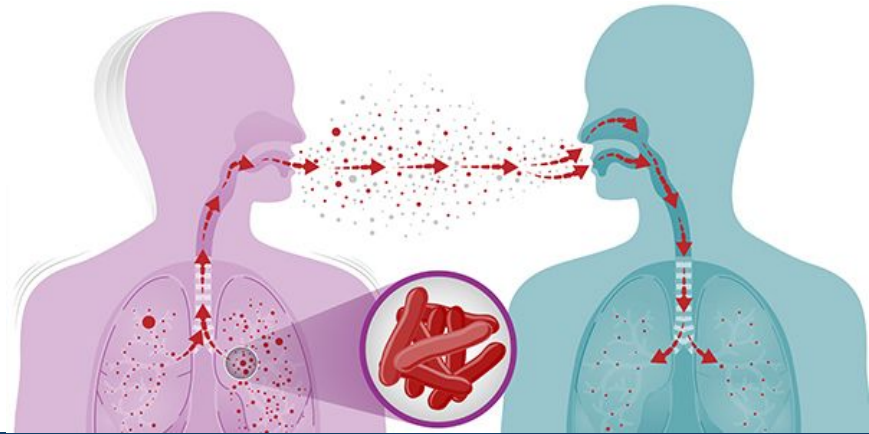
What ventilation is and why it matters

What is Ventilation

Definition

- Ventilation is the movement of air in and out of spaces; crucial for maintaining air quality.

Role in healthcare

- In medical environments, ventilation is critical. It removes harmful particles, like viruses (which are plentiful), ensuring the air is safe.

How it works

- Healthcare is expected to maintain a higher frequency of air changes through ventilation to replace contaminated indoor air to protect patients and staff.

Visualizing ventilation

Visualizing ventilation

How ventilation works in healthcare

- **Air changes:** Healthcare facilities use high air change rates to ensure fresh air circulation.

- **Filtration:** Uses advanced filters (e.g., HEPA) to capture tiny infectious particles.

- **Directional airflow:** Manages air direction to contain contaminants in specific areas.

- **Maintenance:** Regular checks ensure systems operate effectively, maintaining air quality.

Airborne contaminant removal

Air changes/hour (ACH) and time are calculated for various rooms and places within a healthcare setting to provide optimal ventilation for safe patient care.

ACH §	Time (mins.) required for removal 99% efficiency	Time (mins.) required for removal 99.9% efficiency
2	138	207
4	69	104
6+	46	69
8	35	52
10+	28	41
12+	23	35
15+	18	28
20	14	21
50	6	8

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Opportunities for action

- **Assess Room Ventilation:** Check for and report any blockages to vents by linen carts or furniture.

- **Personal Protective Measures:** Use and promote mask use among patients where applicable.

- **Physical Distancing:** Implement when possible to minimize direct spread.

- **Adhere to Special Ventilation Guidelines:** Follow specific instructions for rooms with special ventilation needs like negative pressure rooms.

Key Takeaways

- Ventilation is a key component of infection control protocols in healthcare facilities, directly impacting patient and staff safety.

- Recognizing how airborne pathogens travel and spread in different environments helps in designing effective ventilation strategies to control their transmission.

- Identifying and managing the sources of airborne infectious agents are critical steps in preventing the spread of diseases and maintaining safe indoor air quality.

- Implementing a combination of enhanced ventilation, regular HVAC maintenance, and personal protective measures effectively reduces the risk of airborne disease spread for creating safer indoor environments.

How to Get Involved and Feedback

Project Firstline on CDC: https://www.cdc.gov/infection control/projectfirstline/index.html

CDC's Project Firstline on Facebook: https://www.facebook.com/CDCProjectFirstline

CDC's Project Firstline on X: https://x.com/CDC_Firstline

Project Firstline *Inside Infection Control* on YouTube: https://www.youtube.com/playlist?list=PLvrp9iOILTQZQGtDnSDGViKDdRtIc13VX

To sign up for Project Firstline e-mails, click here: https://tools.cdc.gov/campaignproxyservice/subscriptions.aspx?topic_id=USCDC_2104

- Occupational Safety and Health Administration
- CDC Guidelines for Environmental Infection Control in Health-Care Facilities, Appendix B: Air
- ASHE Project Firstline Ventilation Resources
  - Videos on Ventilation
  - Ventilation Assessment Tool
  - Ventilation Quick Guides
  - Ventilation Improvement Scenarios

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