Pneumonia, TB and chest tubes

Pneumonia, TB skin tests, drugs and isolation, flu, pneumothorax, the drainage system, chest tube emergencies

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1 AT A GLANCE

Spot lung infections early and stop them from spreading. With a chest tube, know what each bubble means.

Pneumonia

- An acute infection that fills the air sacs with fluid or pus, from bacteria, viruses or fungi.
- Types: community, hospital, ventilator, aspiration. Aspiration risks: trouble swallowing, an impaired gag reflex, oversedation, heavy alcohol or drug use.
- ★ Cough, sometimes with purulent sputum; breathlessness; chest pain on breathing; fast breathing; fine crackles; falling saturation; fast pulse; fever with shaking chills; **new confusion**.
- Chest X-ray shows consolidation; white cells rise; a sputum culture names the organism.

Pneumonia care

- Treat the cause: antibiotics for bacteria, adjusted by the culture, or antivirals or antifungals.
- Oxygen to keep the saturation in range, usually above 92%; fever medicine as ordered.
- Coach coughing, deep breathing and the incentive spirometer; use infection control.
- Teach clients to **finish the antibiotic course**.
- ★ Adult pneumococcal vaccine: **routine from age 50**, risk-based if younger, timed by prior vaccines.

TB: latent or active

	Latent (inactive) TB	Active TB disease
Symptoms	No symptoms	Warning signs: a cough of 3 weeks or more, chest pain, bloody sputum, weight loss, fever, night sweats
★ Spread	**Isn't contagious**	**Airborne**, when someone with active TB of the lungs or throat coughs, speaks or sings; germs can stay in the air for hours
★ In hospital		**Airborne precautions**: a private negative-pressure room, door closed; staff wear a fit-tested N95 or higher-level respirator; the client wears a surgical mask to leave the room

Evaluate sooner: A cough of 3 weeks or more is a warning symptom, not a required duration: evaluate sooner when risk or symptoms warrant. Risks: close contact with TB, HIV or weak immunity, substance misuse, a high-TB region, homelessness, crowded settings like prisons.

Reading the TB skin test

Induration	Positive for
5 mm or more	HIV, recent contacts of TB, weakened immunity
10 mm or more	People from high-TB countries, group settings, labs
★ 15 mm or more	No known risk

Skin test: 0.1 mL of PPD given intradermally in the inner forearm. A trained reader reads it at 48 to 72 hours; a missed window means repeating it. **Measure the induration in mm, not the redness.**

After a positive test

- ★ Positive means TB germs are present, **not that the disease is active**: a chest X-ray and sputum tests decide that.
- After the BCG vaccine, a blood test is preferred; the vaccine can make the skin test positive.
- A sputum smear is fast; a sputum culture confirms active TB, but takes weeks. TB is reported to public health.
- Close contacts are tested; teach cough etiquette and tissue disposal.

TB drugs

	What to know
Regimen	Four drugs (isoniazid, rifampin, ethambutol, pyrazinamide) is **one regimen** for drug-susceptible active TB; selected clients can take a 4-month rifapentine-moxifloxacin regimen
★ The course	**Finish the course**, even when well: stopping early risks relapse and resistance. Directly observed therapy supports that
Isoniazid	Can damage the liver: report nausea, dark urine or yellow skin
Rifampin	Turns body fluids orange: an expected effect
Ethambutol	Can affect vision, so vision is checked

Influenza and other viruses

- Flu: fever, fatigue, body aches, cough, sore throat, headache. RSV: cough and wheezing, hardest on infants. Rhinovirus: the common cold.
- ★ Influenza needs **droplet precautions**: a mask on entering the room, and a private room when available.
- Antivirals like oseltamivir work best started within 1 to 2 days of symptoms, and are recommended promptly for hospitalized and high-risk clients, even after 2 days (pregnancy, asthma, chronic lung disease, diabetes, heart disease). They're not antibiotics.

Educational use only. Not a substitute for clinical judgment, your facility's policy or the provider's orders. Where practice varies, follow facility policy and state law. No patient information.

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1 AT A GLANCE, CONTINUED

Pneumothorax

- Air around the lung is a pneumothorax; blood is a hemothorax. Part or all of the lung collapses.
- Spontaneous: no known cause, or lung disease like COPD. Traumatic: a chest wound, rib fracture or procedure.
- ★ Sudden sharp chest or shoulder pain, worse with a breath or cough; short of breath; **decreased or absent breath sounds** on that side.
- ★ **Tension pneumothorax** is an emergency: blood can't return to the heart, and the pressure drops. The trachea may shift only late: escalate at once so decompression isn't delayed.

Routine chest tube care

- Shift start: check the orders and suction level; baseline vital signs, saturation, lung sounds, breathing effort, trachea position.
- Dressing dry and intact. Crepitus, a crackling under the skin, means air has leaked into the tissue.
- ★ Keep the tubing free of kinks and tape the connections; **never strip it**.
- ★ **Don't clamp routinely**: it can cause a tension pneumothorax. For transport, don't clamp; disconnect the suction.

The drainage system

Chamber	What it does	What you should see
Collection	Holds the drainage	Measure it; mark the level with the date and time
★ **Water seal**	Lets air out but not back in. Wet units commonly use sterile water to 2 cm; dry and digital ones differ	**Tidaling** (water rising and falling with breathing): the tube is open. **Continuous bubbling: an air leak.** No tidaling: a kink, a blockage, or the lung has re-expanded
Suction control	Runs only when ordered, at the ordered level, like -20 cm H2O	A wet system bubbles gently and continuously

Keep it: Upright and below the chest, on a stable surface or hung on the bed. A trained operator chooses a safe insertion site, usually the triangle of safety.

Problems and emergencies

- ★ Report drainage that is cloudy, stops in the first day, or **passes the ordered limit** (rule of thumb: over 200 mL an hour). In trauma, report an initial output over 1,500 mL.
- Emergency help for sudden worse breathlessness, a saturation under 90%, or a shifted trachea. A fast pulse with low pressure can mean a tension pneumothorax.
- ★ **Tube comes out**: stay, send for help, assess. Cover the site at once with a sterile occlusive dressing, follow the local pleural-drain protocol, and **never reinsert the old tube**.
- Disconnected tubing or a cracked unit: follow the current local and device procedure. Unit tipped over: set it upright, check the water seal.
- Removal: prescribed pain medicine about 30 minutes before; no clamping first; breathe in deeply and hold as it comes out.

2 PRIORITY AND SAFETY CALLS

★ Suspected active TB: **airborne isolation first**, a negative-pressure room and fit-tested N95 or higher-level respirators for staff.

★ The chest tube comes out as he turns in bed: **cover the site at once** with a sterile occlusive dressing, stay, get help, follow the protocol.

Stab wound, fast pulse, falling pressure, shifted trachea: tension pneumothorax.

Chest tube for a hemothorax draining 250 mL each hour: notify the provider. It is past the ordered limit (rule of thumb: over 200 mL an hour).

3 EXAM ANCHORS

1. TB: latent isn't contagious; active is airborne.
2. Skin test: read at 48 to 72 hours, measure induration, and use 5, 10 or 15 mm by risk.
3. Traps: measuring redness, calling a positive test active disease, stopping TB drugs early.
4. Tidaling is good; constant water-seal bubbling is a leak.
5. Traps: clamping for transport, stripping the tube, raising the unit above the chest, reinserting a dislodged tube.

4 SELF-QUIZ

1. Read a TB skin test at 48 to _____ hours.
2. With no known risk, the skin test is positive at _____ mm or more.
3. Rifampin turns body fluids _____.
4. Continuous bubbling in the water seal suggests an air _____.
5. Rule of thumb: report drainage over _____ mL an hour.

ANSWER KEY 1. 72 · 2. 15 · 3. orange · 4. leak · 5. 200

5 SOURCES

1. CDC, Clinical testing guidance: tuberculin skin test. cdc.gov/tb/hcp/testing-diagnosis/tuberculin…
2. CDC, Treatment of TB disease. cdc.gov/tb/hcp/treatment/tuberculosis-disea…
3. Open RN, Nursing Advanced Skills, 6.3 Chest tube drainage systems. wtcs.pressbooks.pub/nursingadvancedskills/chapter/6-3-n…
4. Open RN, Nursing Advanced Skills, 6.4 Troubleshooting problems and complications. wtcs.pressbooks.pub/nursingadvancedskills/chapter/6-4-t…

Built from RN PocketPal course lessons: Pneumonia, tuberculosis and respiratory infections (c09-l03); Chest trauma, pneumothorax and chest tubes (c09-l04). Every line on this sheet comes from those lesson scripts.

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