

The Weber Test

SENSORY / NEUROLOGICAL · HEENT · HEARING ASSESSMENT

Diane's NGN NCLEX 2026 Visual Study Library



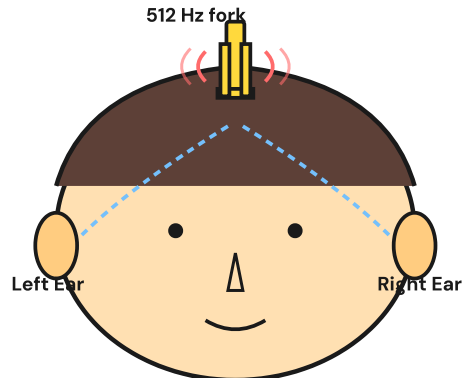
 **Source Note:** This topic was not in Diane's uploaded reference notes. Content is drawn from standard NGN NCLEX 2026 references: **Saunders Comprehensive Review (8th ed.)**, **ATI Fundamentals & Adult Health**, **Lippincott Manual of Nursing Practice**, and current AAO-HNS clinical guidelines on tuning fork examination.

1 Definition & Overview

- ▶ **The Weber test** is a bedside **tuning fork test** used to evaluate hearing and help differentiate **conductive** from **sensorineural** hearing loss.
- ▶ A vibrating **512 Hz tuning fork** is placed on the **midline of the skull** (top of head, forehead, or front teeth) and the client reports where the sound is heard loudest.
- ▶ Performed alongside the **Rinne test**; together they provide a quick, non-invasive screening of cranial nerve VIII (vestibulocochlear) function.
- ▶ **Why it matters:** Early identification of hearing loss type guides referral, prevents misdiagnosis of ototoxicity, and supports safety (fall risk, communication, medication monitoring).

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How the Test Works (Pathophysiology)



Place on MIDLINE — vertex, forehead, or front teeth
Bone conduction carries vibration through the skull to both cochleae simultaneously

Step-by-Step Mechanism

- 1 Tuning fork is struck → produces sound vibration (512 Hz)
- ↓
- 2 Fork placed on **midline of skull** → vibration travels via **bone conduction** equally to both cochleae
- ↓
- 3 Cochlea converts vibration → neural impulse via **Cranial Nerve VIII**
- ↓
- 4 Brain compares loudness in each ear → client reports **where** sound is heard
- ↓
- 5 **Lateralization pattern** reveals which ear (if any) is affected and what type of loss is present

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Interpretation: Normal vs Abnormal Findings

✓ NORMAL

Sound heard equally in **BOTH ears** (midline / center of head).

No lateralization. CN VIII intact bilaterally.

🔊 CONDUCTIVE LOSS

Sound **lateralizes to the AFFECTED (BAD) ear.**

Affected ear is shielded from room noise → bone-conducted sound seems louder there.

Causes: cerumen, otitis media, perforated TM, otosclerosis.

💡 SENSORINEURAL LOSS

Sound **lateralizes to the UNAFFECTED (GOOD) ear.**

Damaged cochlea/CN VIII cannot transmit → good ear hears it.

Causes: presbycusis, noise damage, ototoxic drugs, Ménière's.

RED FLAG 🚩 **Sudden unilateral sensorineural hearing loss** is a medical emergency — refer to ENT within 72 hours.

RED FLAG 🚩 Lateralization changing during ototoxic drug therapy → **hold drug and notify HCP.**

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Priority Nursing Interventions (ABC + Safety)

Before the Test

- ▶ **Verify** the client by ID band + name and birthdate (per Diane's Medication Administration notes).
- ▶ **Inspect** external ear canals for cerumen, drainage, foreign body — these alter results.
- ▶ **Explain** the procedure: "You'll feel a slight vibration. Tell me where you hear the sound — left, right, or in the middle."
- ▶ **Quiet** the room; remove distractions.

During the Test

- ▶ **Strike** a 512 Hz tuning fork gently against the palm or knee — do NOT clang it.
- ▶ **Place** the base firmly on the **midline** (vertex of skull, mid-forehead, or front teeth).
- ▶ **Ask** the open-ended question: "*Where do you hear the sound?*" — avoid leading.
- ▶ **Document** findings as: midline (normal), lateralizes right, or lateralizes left.

After the Test

- ▶ **Perform** the Rinne test next to confirm conductive vs sensorineural pattern.
- ▶ **Assess** safety: fall risk, balance, communication ability, social isolation.
- ▶ **Notify HCP** for abnormal findings, especially sudden loss or asymmetry.
- ▶ **Refer** to audiology for formal audiometry as ordered.
- ▶ **Review** medication list for ototoxic agents (see Pharmacology section).

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Pharmacology — Ototoxic Drugs to Watch

Many drugs cause **sensorineural** hearing loss. Always review the med list when Weber lateralizes to the **unaffected (good)** ear.

Drug / Class	Mechanism	Key Side Effects	Nursing Considerations
Aminoglycosides (<i>gentamicin, tobramycin, amikacin</i>)	Damage cochlear hair cells & vestibular system	Hearing loss, tinnitus, vertigo, nephrotoxicity	Monitor peak/trough levels; baseline & serial audiograms; watch BUN/creatinine
Loop Diuretics (<i>furosemide, bumetanide</i>)	Disrupt cochlear ion balance (usually reversible)	Transient hearing loss, tinnitus	Push IV slowly (no faster than 20 mg/min); avoid combining with aminoglycosides
Cisplatin (<i>chemo agent</i>)	Permanent damage to cochlear hair cells	Bilateral high-frequency hearing loss, tinnitus, ototoxicity	Baseline audiogram before each cycle; report tinnitus immediately (<i>per Diane's chemo toxicity notes</i>)
High-dose Salicylates (<i>aspirin</i>)	Reversible cochlear dysfunction	Tinnitus, hearing loss (early salicylism sign)	Tinnitus = first sign of toxicity → hold & check level
Vancomycin	Cochlear toxicity (esp. with peak >40 mcg/mL)	Hearing loss, tinnitus, nephrotoxicity	Monitor trough levels; infuse over ≥60 min to avoid red man syndrome
Quinine / Chloroquine	Cochlear hair cell toxicity	Tinnitus, sensorineural loss, dizziness	Report any new tinnitus or imbalance

PRIORITY Tinnitus is the **EARLIEST** sign of most ototoxicity — report immediately, before measurable hearing loss develops.

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NCLEX Test Traps ⚠️

❌ Trap #1 — Reversing Lateralization

Students assume sound goes to the good ear in *both* types of loss. **WRONG.**

✅ Truth #1

Conductive → sound goes to the **BAD** ear.
Sensorineural → sound goes to the **GOOD** ear.

❌ Trap #2 — Confusing Weber with Rinne

Saying "Weber compares air and bone conduction." **WRONG.**

✅ Truth #2

WEBER = midline placement, compares *between ears*.
RINNE = compares air vs bone conduction *in one ear*.

❌ Trap #3 — Wrong Frequency

Using a 256 Hz or 1024 Hz fork for hearing assessment.

✅ Truth #3

Always use **512 Hz** — the gold standard for hearing tuning fork tests. (256 Hz is for vibration sensation; 1024 Hz fades too quickly.)

❌ Trap #4 — Picking "Repeat the Test"

For sudden unilateral hearing loss with abnormal Weber, choosing to "recheck in 1 hour."

✅ Truth #4

Sudden sensorineural hearing loss is a **medical emergency** — notify HCP/ENT within 72 hours. Time-sensitive intervention.

❌ Trap #5 — Forgetting the Med List

Treating new sensorineural lateralization as "expected aging."

✅ Truth #5

ALWAYS review for **ototoxic drugs** first. New lateralization on aminoglycosides, cisplatin, or loop diuretics = **hold & report**.

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Patient & Family Education

- ▶ **The test is painless** — you'll only feel a light vibration on the skull. Takes less than a minute per ear.
- ▶ **Be honest** with what you hear — don't guess or try to "give the right answer." Where the sound seems loudest is the correct answer.
- ▶ **Report new symptoms:** ringing (tinnitus), muffled hearing, ear fullness, dizziness, sudden hearing loss in one ear.
- ▶ **Protect your hearing:** wear ear plugs at concerts, around lawn mowers, power tools (≥ 85 dB damages hearing).
- ▶ **Avoid cotton swabs** in the ear canal — they push wax deeper and can perforate the eardrum.
- ▶ **If on ototoxic medications:** report any new ringing in the ears or hearing changes *immediately* — do not wait for the next appointment.
- ▶ **Annual hearing screening** after age 50, or sooner with occupational noise exposure or family history.
- ▶ **Hearing aids work best** when started early — encourage older adults not to delay evaluation.
- ▶ **Communication tips for family:** face the person, speak clearly (not loudly), reduce background noise, repeat or rephrase as needed.

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Memory Mnemonics & Quick Recall

W•E•B•E•R

W Which ear?

E Equal = normal

B Bad ear = Conductive

E Excellent ear = Sensorineural

R Refer if abnormal

"C-BAD, S-GOOD"

Conductive → **B**ad ear hears it

Sensorineural → **S**good ear hears it

Picture it: in conductive loss, the bad ear "blocks the outside noise" so the bone-conducted vibration sounds louder there.

Weber on the Skull

Weber = midline (top of skull, forehead, teeth).

Rinne = next to the ear (air vs bone).

"Weber on the dome, Rinne by the home (ear)."

Ototoxic = "A VECT"

A Aminoglycosides

V Vancomycin

E Ethacrynic acid / loop diuretics

C Cisplatin

T High-dose salicylates (aspirin)

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NCJMM Clinical Judgment Scenario

Case: A 68-year-old male is admitted with sepsis and started on IV gentamicin and IV furosemide. On hospital day 4, he tells the nurse, "There's a ringing in my left ear and voices sound far away on that side." The nurse performs a Weber test using a 512 Hz tuning fork placed on the mid-forehead. The client states, "The sound is louder in my right ear." His current vital signs are stable. Recent peak gentamicin level returned at 11 mcg/mL (therapeutic 5–10 mcg/mL).

STEP 1

Recognize Cues

Tinnitus and muffled hearing in **left ear**. Weber test lateralizes to the **right (good)** ear → suggests **sensorineural loss on the LEFT**. Receiving **two ototoxic drugs** (gentamicin + furosemide). Peak gentamicin level is **above therapeutic range**.

STEP 2

Analyze Cues

The combination of supratherapeutic aminoglycoside levels plus a concurrent loop diuretic **synergistically increases ototoxicity risk**. Lateralization to the unaffected ear confirms a sensorineural pattern consistent with cochlear hair cell damage. Tinnitus is the **earliest warning sign** of ototoxicity. The client is at risk of permanent hearing loss if drug exposure continues.

STEP 3

Prioritize Hypotheses

#1 (highest priority): Drug-induced ototoxicity from gentamicin (supratherapeutic) ± loop diuretic synergy.
#2: Underlying age-related presbycusis unmasked by acute illness.
#3: Cerumen impaction or otitis (would have shown a conductive Weber pattern — lateralizing to the bad ear — so less likely).

STEP 4

Generate Solutions

Hold the next gentamicin dose. Notify the HCP and pharmacist about the supratherapeutic peak and new symptoms. Anticipate orders to discontinue or substitute the aminoglycoside, reduce dose, or switch furosemide to a non-ototoxic alternative. Anticipate audiology consult. Continue safety precautions (fall risk, communication adjustments).

STEP 5

Take Action

1 Hold next gentamicin dose immediately. **2** Notify HCP with SBAR including Weber findings, tinnitus, lab values. **3** Inspect ear canals to rule out cerumen. **4** Initiate fall precautions (vestibular involvement likely with

aminoglycoside). **5 Document** Weber findings, baseline hearing, and all interventions. **6 Educate** client to report any new dizziness, balance changes, or worsening tinnitus.

STEP 6

✓ Evaluate Outcomes

Expected: Drug held; gentamicin trough/peak rechecked and trending down; tinnitus stable or improving within 24–72 hrs; no new dizziness or falls; audiology evaluation scheduled; client verbalizes understanding of ototoxicity warning signs; alternate antibiotic initiated if needed. **Unmet outcome triggers reassessment:** worsening hearing or new vertigo → escalate to provider immediately.

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Weber Test · Sensory Assessment · Created May 2026

Sourced from Saunders, ATI, Lippincott & AAO-HNS Clinical Guidelines · For NCLEX study purposes