Vestibular Localization Flowchart

Peripheral vs Central vs Paradoxical | Decision Algorithm for General Practice

RACE APPROVED
Provider 50–29055

STEP 1: Identify the 4 Hallmark Signs of Vestibular Dysfunction

Head Tilt
Eyes not parallel to floor

Vestibular Ataxia
Falling/leaning to one side

Nystagmus
Spontaneous or inducible

Positional Strabismus
Ventral eye drift on extension

Any combination of these signs = Vestibular dysfunction confirmed → Proceed to Step 2

STEP 2: Localize — Evaluate Postural Reactions (Hopping, Paw Placement)

Are postural reactions NORMAL or ABNORMAL?

✓ NORMAL

PERIPHERAL

Location: Inner ear (CN VIII)
Nystagmus: Horizontal/rotary only
May also see: CN VII, Horner's
Mentation: Normal

Lesion = Side of head tilt

ABNORMAL — SAME

CENTRAL

Location: Brainstem (medulla)
Nystagmus: Any incl. **vertical**
Additional: ↓ mentation, CN deficits

Lesion = Side of head tilt

ABNORMAL — OPPOSITE

PARADOXICAL

Location: Cerebellum
Also see: Hypermetria, tremor
Mentation: Normal (vs central)

Lesion = Side of deficits

Clinical Pearl: Peracute Vestibular = Good Prognosis

"Peracute vestibular signs most likely = idiopathic peripheral vestibular disease or stroke to rostral cerebellar artery—either way, good prognosis."
Most recover with supportive care. Don't give up!

Common Differentials by Localization

Peripheral	Central	Paradoxical
• **Idiopathic** (old dog, peracute) • **Otitis media/interna** (50%!) • Hypothyroidism • Polyp (cats) • Ototoxicity	• Stroke (rostral cerebellar a.) • Neoplasia • MUE • Metronidazole toxicity • Thiamine deficiency	• Stroke (cerebellar) • Neoplasia • MUE • Storage disease (young) • Cerebellar degeneration

⚠ Vertical Nystagmus = Central

Peripheral **never** causes vertical nystagmus. If you see it → brainstem lesion.

CN VII + VIII + Horner's = Ear

This trifecta = middle/inner ear, not brain. Rule out otitis media/interna first.

Source: Dr. Susan Arnold, DACVIM (Neurology) | "Neurology In A Nutshell" — Vet On It CE, Feb 2026