

PVM05CHEATSHEET
Vestibular Neuritis and Labyrinthitis in Children

Acute unilateral vestibular loss — HINTS assessment, management, and compensation

WHY IT MATTERS

Acute unilateral vestibular loss (AUVL) in children has the same pathophysiology as in adults — viral or post-inflammatory injury to the vestibular nerve (neuritis) or entire labyrinth (labyrinthitis) — but central mimics carry a different probability profile. Posterior inferior cerebellar artery territory strokes, demyelination, and posterior fossa tumours can all mimic AUVL. HINTS examination is valid in cooperative children from approximately age 5 and must be performed in all cases of acute sustained vertigo.

NEURITIS vs LABYRINTHITIS vs CENTRAL MIMIC

Feature	Vestibular neuritis	Labyrinthitis	Central (stroke/tumour)
Hearing loss	ABSENT — cochlea spared	PRESENT — cochlea involved	Variable; sudden SNHL = AICA stroke
Nystagmus direction	Horizontal-torsional; direction-fixed; beats AWAY from lesion	Same as neuritis	Direction-changing; vertical; gaze-evoked
Head impulse test (HIT)	ABNORMAL — corrective saccade visible	ABNORMAL	NORMAL — VOR intact = alarm
Skew deviation	ABSENT	ABSENT	PRESENT — cover-uncover vertical deviation
Fixation suppression	VOR suppressed normally	Normal	Failed fixation suppression = central
Preceding illness	URTI 1–2 weeks prior; varicella common	URTI or febrile illness; mumps pre-immunisation	None — or vascular/demyelinating history
Gait	Can walk; veers to lesion side	Can walk; severe nausea	Often unable to walk; truncal ataxia
Ataxia degree	Mild-moderate	Moderate	Severe truncal ataxia disproportionate to vertigo

HINTS EXAM IN CHILDREN — TECHNIQUE

Component	Peripheral (reassuring)	Central (alarm — MRI urgently)
H — Head Impulse Test	ABNORMAL: corrective saccade visible on rapid passive impulse	NORMAL: no corrective saccade — VOR intact
I — Nystagmus direction	Unidirectional horizontal-torsional; does not change with gaze	Direction-changing OR pure vertical OR gaze-evoked
T — Test of Skew	ABSENT: no vertical deviation on cover-uncover	PRESENT: vertical skew — brainstem/cerebellar
Overall interpretation	All three peripheral = neuritis until proven otherwise	ANY central sign = MRI-DWI urgently
Age for reliable HINTS	Cooperative from ~age 5; passive HIT from 18 months	Always attempt — even partial result is informative
HINTS mnemonic	H-INFARCT: Normal HIT + Skew = infarct	Normal HIT alone = most specific central sign

INVESTIGATIONS

Test	Purpose	When to order
HINTS exam (bedside)	Peripheral vs central differentiation	ALL cases acute sustained vertigo
Pure-tone audiogram	Neuritis vs labyrinthitis; detect SNHL	All cases within 24–48 hours
MRI brain + posterior fossa + DWI	Central pathology	Abnormal HINTS OR atypical features OR adolescent + vascular risk
FBC, CRP, viral serology (VZV, HSV, CMV)	Aetiology; guide antiviral treatment	Severe/bilateral; immunocompromised
vHIT + caloric (post-acute)	Quantify VOR deficit; guide VRT	Week 2–4 after acute phase; plan rehabilitation
Audiogram at 6 weeks	Detect permanent SNHL post-labyrinthitis	All labyrinthitis cases — SNHL in 30–50%

ACUTE MANAGEMENT (0–72 HOURS)

Intervention	Detail	Duration
Vestibular suppressants	Ondansetron 0.15 mg/kg (max 8 mg) for vomiting; prochlorperazine if severe	72 hours MAXIMUM then STOP
IV fluids	If unable to maintain oral intake	Until oral intake re-established
Bed rest	Initially; mobilise as soon as tolerable — day 2–3 ideal	As brief as possible
Corticosteroids	Limited paediatric evidence; consider severe cases: prednisolone 1 mg/kg/day	5 days; unlicensed — discuss with team
Antivirals (aciclovir)	If HSV labyrinthitis; immunocompromised; bilateral loss	Duration per indication
Stop suppressants at 72 hours	Ongoing suppressants impair central compensation — critical rule	Non-negotiable
Early mobilisation	Day 2–3 walking; vestibular exercises as tolerated	Promotes compensation; prevents PPPD

VESTIBULAR REHABILITATION — COMPENSATION PROGRAMME

Phase	Timing	Approach
Early mobilisation	Day 2–3	Supervised walking; head movement tolerance; prevent fear avoidance
Gaze stabilisation VOR x1	Week 1–2	Head movement while fixating stationary target; start slow
Balance retraining	Week 2–4	Tandem stance; foam surface; reduce visual reliance
Full VRT programme	Weeks 2–8	Vestibular physiotherapist; school-adapted exercises; graded complexity
Return to school	Most within 1–2 weeks	Reduced sessions initially; avoid PE until compensation progressing
BPPV check at 6 weeks	Dix-Hallpike	Post-neuritis BPPV in 10–15%; treat with Epley if positive

PROGNOSIS AND MONITORING

Aspect	Detail
Compensation timeline	Children: 3–6 weeks; adults: 3–6 months with equivalent therapy; neuroplasticity advantage is real
Hearing in labyrinthitis	Repeat audiogram at 6 weeks; 30–50% SNHL; severe loss → ENT for intratympanic steroids
Post-neuritis BPPV	10–15% develop BPPV weeks to months after acute episode; check Dix-Hallpike at follow-up
PPPD development	10–15% develop PPPD after AUVL; screen at 6 weeks and 3 months with DHI-PC + VSS-SF
vHIT normalisation	Partial or full VOR gain recovery over 3–6 months; residual asymmetry common; compensation decouples from gain
Long-term vestibular testing	vHIT + cVEMP at 6 weeks (formal baseline); repeat at 3 months to confirm compensation trajectory

WHEN TO REFER

- ▶ Normal head impulse test with acute sustained vertigo — central cause; MRI-DWI emergency; neurology
- ▶ Severe SNHL in labyrinthitis — ENT urgently; intratympanic steroids within 72 hours
- ▶ Failure to compensate at 4–6 weeks — vestibular physician; formal vHIT + caloric; VRT review
- ▶ Bilateral vestibular loss at presentation — urgent vestibular physician + autoimmune/haematological workup
- ▶ Post-neuritis PPPD developing — vestibular physician; combined VRT + psychoeducation programme

♦ *The most dangerous error in acute paediatric vertigo: treating a NORMAL head impulse test as benign. In acute sustained vertigo, a NORMAL HIT means the VOR is intact and the brainstem or cerebellum is the likely site — not the peripheral labyrinth. MRI-DWI is mandatory regardless of the patient's age. The HIT is the single most important bedside test in acute vertigo.*

♦ *Stop vestibular suppressants at 72 hours without exception. Ongoing prochlorperazine or promethazine impairs central compensation and dramatically increases the risk of PPPD as a secondary complication. Mobilisation and VRT — not chemical suppression — drive recovery after the acute phase. The vestibular system cannot compensate for a lesion it is being chemically silenced from experiencing.*