

How to perform HINTS examination

(Head Impulse testing, testing for Nystagmus, Test of Skew)

Head Impulse testing.

This is a test of the vestibulo-ocular reflex (VOR) that can be performed at the bedside. The VOR allows a person to maintain corrective eye position during any change in head position and to allow for rapid compensatory eye movements to occur so that vision is maintained on a central target.

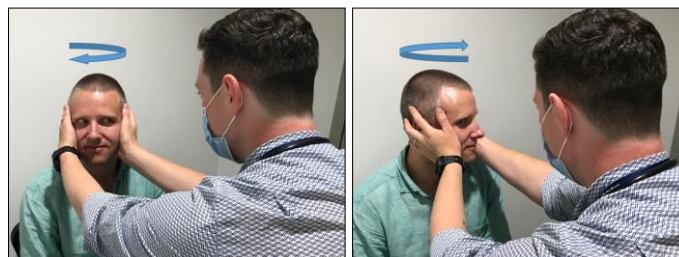
Step 1.

To begin the test the patient should be seated and asked to fixate on a target in front of the patient. In this example the patient is being asked to maintain their gaze on the examiners nose. Before proceeding with the remainder of the test the examiner should ensure that the subject does not have any cervical spine disorder that sudden neck manipulation might exacerbate.



Step 2.

The subject is instructed to keep their eyes focussed on the target during testing. The examiner then moves the head quickly and unpredictably to a 10 – 15 degrees of neck rotation. During this time the examiner observes whether eyes remain on target (normal) or drift off target in the direction of the neck movement (abnormal). If there is a drift of eye movements away from the target a corrective saccade will be observed.



Step 3.

Interpreting the results of Head Impulse test.

Movement to right	Movement to left	Interpretation
Normal	Normal	Negative test (does not exclude a central cause for vertigo)
Abnormal	Normal	Positive test (suggestive of peripheral cause of vertigo (right vestibular apparatus))
Abnormal	Abnormal	Positive test. Does not exclude peripheral or central cause for vertigo. Further investigation required.

Testing for nystagmus.

Nystagmus is defined by rhythmic abnormal eye movements. Whilst this is a complex topic, when testing for nystagmus careful observation of a number of characteristics can help in evaluation of the cause of nystagmus. These tips are intended as an introductory brief guide.

Observation	Options	Notes
Movement	Horizontal Vertical Torsional Combination	Peripheral causes of nystagmus are commonly mixed with a horizontal and torsional nystagmus evident. In contrast, purely vertical or torsional nystagmus raise strong possibility of a central cause.
Direction (defined as by the direction of the fast phase)	Right Left Up Down	Direction changing nystagmus (i.e right beating in one direction of gaze, and left beating in another) is suggestive of an underlying central cause.
Visual fixation	Effect on nystagmus when patient is asked to fixate on target (or when target of fixation is removed)	Visual fixation should not alter central causes of nystagmus but should dampen peripheral causes.

Test of skew

Step 1.

To perform a test of skew begin by asking the patient to fixate on a central target.

Step 2.

Once the patient is fixated cover one of the patients eyes with your hand.

Step 3.

Quickly move your hand to cover the opposite eye. Observe in the recently uncovered eye for any change in alignment in the eye. Repeat this procedure on the other eye.

Interpretation.

Any abnormal movement here is suggestive of a central cause for the patients' vertigo.

Case 1

A 58 year old male who is otherwise well presents to emergency department with recurrent episodes of vertigo. Symptoms were particularly bad this morning when he was turning over in bed. Symptoms have now settled. Full neurological examination is unremarkable.

Questions

What is the most likely diagnosis? What bedside tests could you do to help confirm the diagnosis?

Case 2

72 year old female woke up feeling well. Within half an hour she developed fairly abrupt onset of vertigo describing room spinning associate with nausea and vomiting. No headache no auditory symptoms. Choosing to lie still as any head movement makes her vertigo feel worse but she's adamant the vertigo is not triggered by head movements.

Examination demonstrates no focal neurological deficit. She has right beating nystagmus noted on lateral gaze and is increased when she looks towards the right. Her head impulse test is positive when turning her head to the left. There is no skew deviation.

Case 3

A 28 year old male presented with acute-onset vertigo associated with nausea, vomiting and gait instability. Medical history was notable history of congenital heart disease as a child requiring Fontane procedure – on aspirin.

On physical examination, he has truncal ataxia and unable to heel toe walk but no other focal neurology. No ophthalmoplegia, nystagmus, dysarthria, facial numbness, weakness or Horner’s syndrome. Head impulse test is negative. There is no nystagmus or skew deviation.

