

Enhanced Primary Care Pathway: Vertigo

1. Focused summary of Vertigo relevant to primary care

Dizziness is a non-specific term and the sensations described by a dizzy patient should be further defined. Vertigo is type of dizziness where one experiences an illusory sensation of motion of either the self or surroundings. The illusion of movement in patients with vertigo may be described as spinning, swaying or tilting. These symptoms help differentiate vertigo from other types of dizziness which may be described as lightheadedness, disorientations, fainting and disequilibrium.

Vertigo may be a symptom of a large range of diagnoses from benign (most common e.g. Benign Paroxysmal Positional Vertigo - BPPV) to immediately life threatening (e.g. brainstem/cerebellar stroke - see alarm features). In most cases, the clinical history and examination help distinguish those patients that require immediate neurological attention. BPPV and vestibular neuritis are two of the most common peripheral causes of vertigo that will be seen in a Primary Care setting.

BPPV is a common benign peripheral vestibulopathy characterized by mechanical stimulation of the vestibular receptors by detached otoconia (calcium crystals). The hallmark of BPPV include positionally induced vertigo and a nystagmus evoked by Dix-Hallpike test that is upbeat (fast phase towards forehead) and torsional with upper poles of eyes beating towards the dependent ear (or shoulder). The nystagmus begins several seconds after positioning the head and is accompanied by vertigo. It usually lasts for 15-30 seconds, after which time the vertigo also stops. The preferred treatment for BPPV is particle repositioning exercise called Epley maneuver. The Epley maneuver is highly successful and provides complete relief in nearly all patients. Brandt-Daroff exercise is an alternative option if the affected side is unclear.

Vestibular neuritis is a condition caused by acute unilateral loss of vestibular function. It is characterized by vertigo, nausea, vomiting, blurred vision and unsteadiness. The condition is thought to result from a selective inflammation of the vestibular nerve, presumably of viral origin and symptoms subside in a course of few weeks. Exam typically reveals a unidirectional horizontal/torsional nystagmus beating away from the affected side. Steroids can improve outcome of vestibular neuritis if given within 3 days from onset (see table). Betahistine (Serc) administered at a dose of 16 mg three times a day can be effective for symptomatic relief. Vestibular rehabilitation treatment should begin as early as possible, since there is robust evidence that early intervention with exercises reduces symptoms and improves gait stability. Vestibular rehabilitation includes exercises designed to improve ocular stability and balance.

Difference between BPPV and vestibular neuritis

Feature	BPPV	Vestibular Neuritis
Onset	Acute (usually upon awakening)	Acute to subacute
Duration of vertigo	Episodic	Constant
Provoking factors	Rolling in bed, bending, looking up etc. Patients are asymptomatic between episodes.	Any head motion will exacerbate underlying vertigo
Nausea/vomiting	Nausea	Severe vomiting
Nystagmus	Dix-Hallpike shows upbeat, torsional beating to the dependent ear or shoulder, transient, fatigues in seconds	Constant horizontal/torsional nystagmus beating away from affected side, seen in upright position without the need for special maneuvers
Hearing loss	Never	Can occur with labyrinthitis
Neurological red flags*	Never	Never
Romberg test	Negative	Positive
Prognosis	Resolves immediately with Epley exercise	Resolves completely in days to weeks
Treatment	Epley exercise	Steroids, betahistine and vestibular rehabilitation

* **Red flags** include neurological exam suggestive of central cause, isolated vertical nystagmus, facial sensory or motor symptoms, diplopia, dysphagia, ataxia, head trauma and loss of consciousness.

2. Checklist to guide your in-clinic review of this patient with symptoms of BPPV or Vestibular Neuritis

- Absence of red flag features (neurological exam suggestive of central cause, isolated vertical nystagmus, facial sensory or motor symptoms, diplopia, dysphagia, ataxia, head trauma and loss of consciousness)
- BPPV cardinal symptoms/signs – episodic positional vertigo, positive Dix-Hallpike test (upbeat torsional nystagmus beating towards dependent ear or shoulder, lasts 15 – 30 seconds).
- If Dix-Hallpike positive, then treat with Epley exercise (<https://www.youtube.com/watch?v=hq-IQWSrAtM>) or refer to vestibular physiotherapist for 2 – 3 sessions of Epley exercise or minimum treatment for a month.
- Provide patients with handouts of Brandt-Daroff exercise (if side unknown) or Epley exercise (if side known).
- Vestibular neuritis cardinal symptoms/signs – constant vertigo, nystagmus is unidirectional, horizontal/torsional beating away from the affected side, Romberg test is positive.
- Consider prednisone (see table) if vestibular neuritis symptoms within 3 days from onset.
- Betahistine (Serc) 16 mg three times a day for symptomatic relief in vestibular neuritis.
- Refer vestibular neuritis patients for vestibular rehabilitation for a minimum of 3 months.

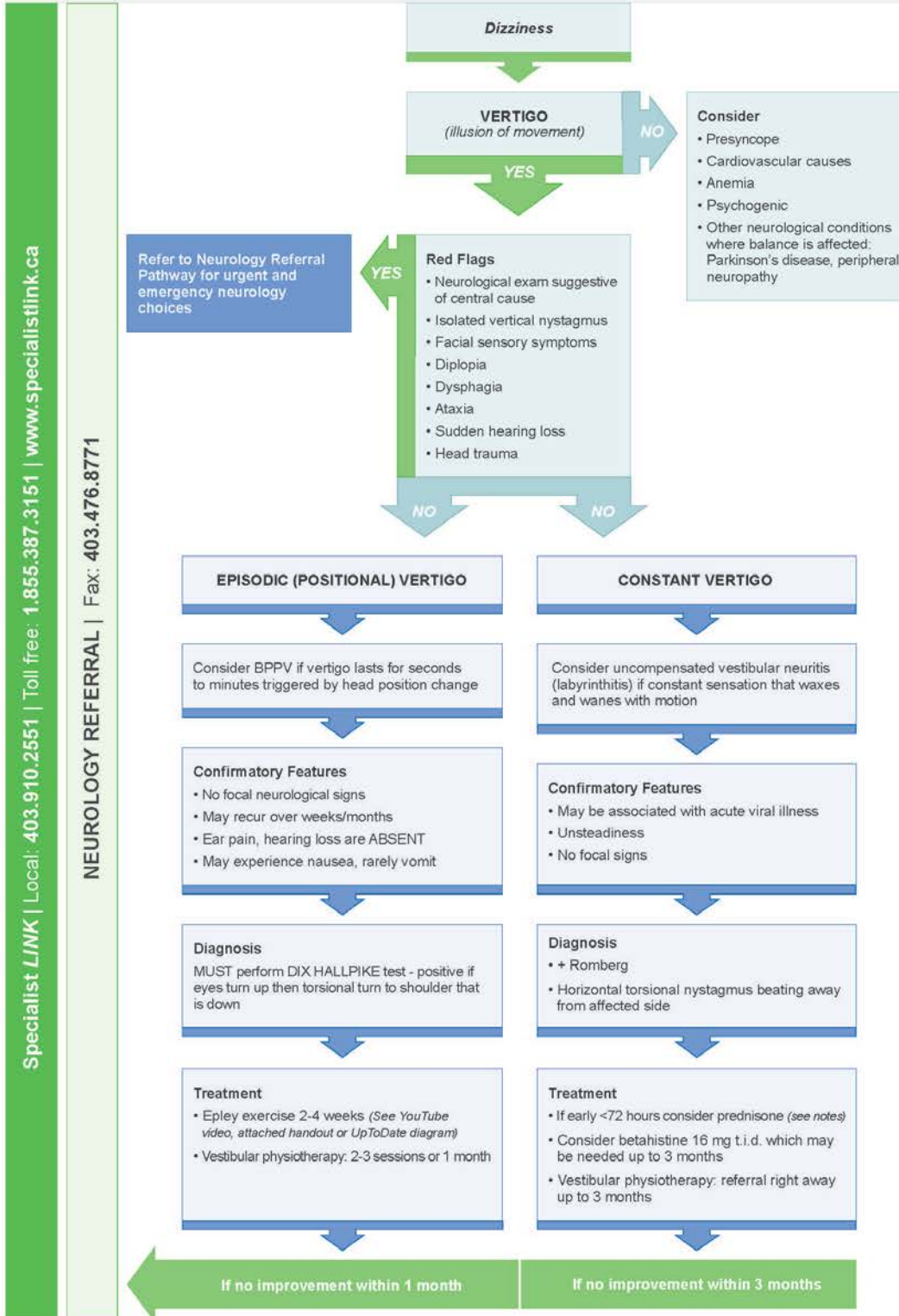
3. Links to additional resources

For physicians:	Video showing BPPV treatment https://www.youtube.com/watch?v=hq-IQWSrAtM
	American Academy of Neurology BPPV guidelines https://www.aan.com/Guidelines/Home/GetGuidelineContent/290
	American Academy of Neurology practice parameter for BPPV http://www.neurology.org/content/70/22/2067.short
For patients:	Information about BPPV https://www.aan.com/Guidelines/home/GetGuidelineContent/291
	Overview of Dizziness https://myhealth.alberta.ca/health/Pages/conditions.aspx?hwid=dizzi
	Understanding vestibular disorders http://vestibular.org/understanding-vestibular-disorder
	Finding vestibular physiotherapist in Calgary www.physiotherapyalberta.ca
	Patient information (the basics and beyond the basics) https://www.uptodate.com/contents/dizziness-and-vertigo-beyond-the-basics
	National Library of Medicine https://medlineplus.gov/dizzinessandvertigo.html

4. Clinical flow diagram with expanded detail

This AHS Calgary Zone pathway has been developed with consideration of these guidelines. **The following is best-practice clinical pathways for management of BPPV or Vestibular Neuritis in the primary care medical home, which includes a flow diagram and expanded detail:**

VERTIGO PATHWAY



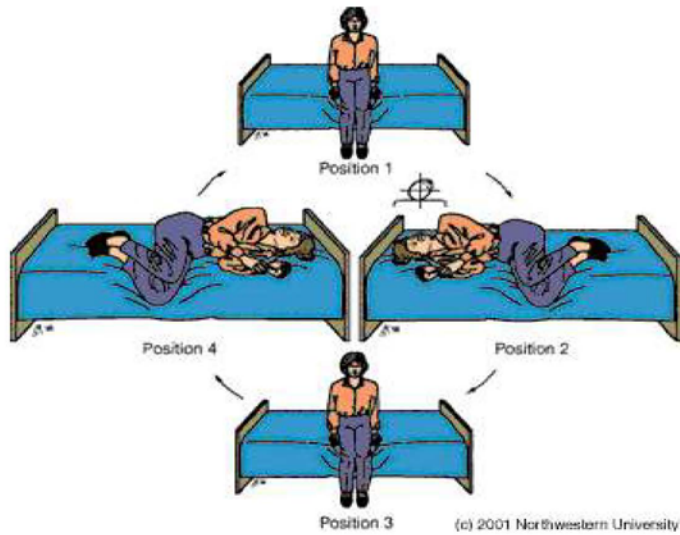
Steroid treatment protocol in vestibular neuritis (to be given within 3 days from onset)

Prednisone	Dose
Day 1-5	60 mg
Day 6	40 mg
Day 7	30 mg
Day 8	20 mg
Day 9	10 mg
Day 10	5 mg then stop

Betahistine use in peripheral vertigo

Clinical studies and meta-analyses have demonstrated that betahistine is effective and safe in the treatment of peripheral vertigo of unknown etiology. Betahistine is generally well tolerated with a low risk of adverse events. According to clinical studies, betahistine 48 mg daily for a minimum duration of 3 months, is an effective and safe option for the treatment of peripheral vertigo (Alcocer et al 2015, Murdin et al 2016).

Brandt & Daroff Exercises Patient handout



- Begin by sitting upright on bed (**position 1**)
- Lie down onto side. Take no more than 1-2 seconds to do this
- Keep head looking up at 45 degree angle. Imagine someone standing about six feet in front of you, and keep looking at the person's head at all times (**position 2**)
- Remain on this side for thirty seconds, or until dizziness subsides.
- Return to an upright position and wait for thirty seconds (**position 3**)
- Now lie down onto the other side. Again, it should take one or two seconds to get into position
- Keep the head at a 45 degree angle (**position 4**)
- Stay down for another thirty seconds, or until vertigo subsides
- Return to an upright position and wait for another thirty seconds.

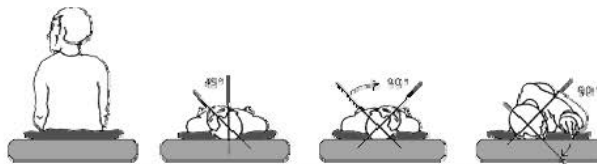
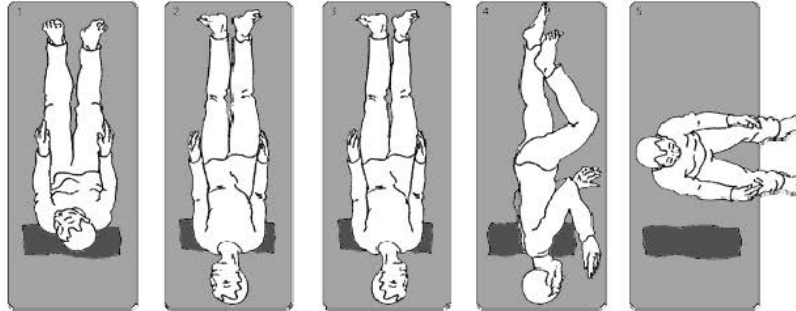
This is one cycle
Repeat cycle 5 times to make one set.
Repeat 3 sets per day for 14 days.

Benign positional paroxysmal vertigo (**BPPV**) is a mechanical problem in the inner ear. It occurs when some of the calcium carbonate crystals (otoconia) that are normally embedded in a gel in the inner-ear become dislodged and migrate into the fluid-filled canal, where they are not supposed to be. Home exercises are helpful in treating BPPV and can be safely performed at home. These exercises move the crystals into another ear chamber, where they will be absorbed by the body.

If BPPV side is **unknown** (i.e. right or left), then perform Brandt-Daroff exercises. Please refer to the bottom of the exercise page for instructions on how many times to perform the Brandt-Daroff exercise per day.

Epley Home Exercise for Left Sided BPPV

Self-treatment of benign positional vertigo (left)



<p>Start sitting on a bed and turn your head 45° to the left. Place a pillow behind you so that on lying back it will be under your shoulders.</p>	<p>Lie back quickly with shoulders on the pillow and head reclined onto the bed. Wait for 30 seconds.</p>	<p>Turn your head 90° to the right (without raising it) and wait again for 30 seconds.</p>	<p>Turn your body and head another 90° to the right and wait for another 30 seconds.</p>	<p>Sit up on the right side.</p>
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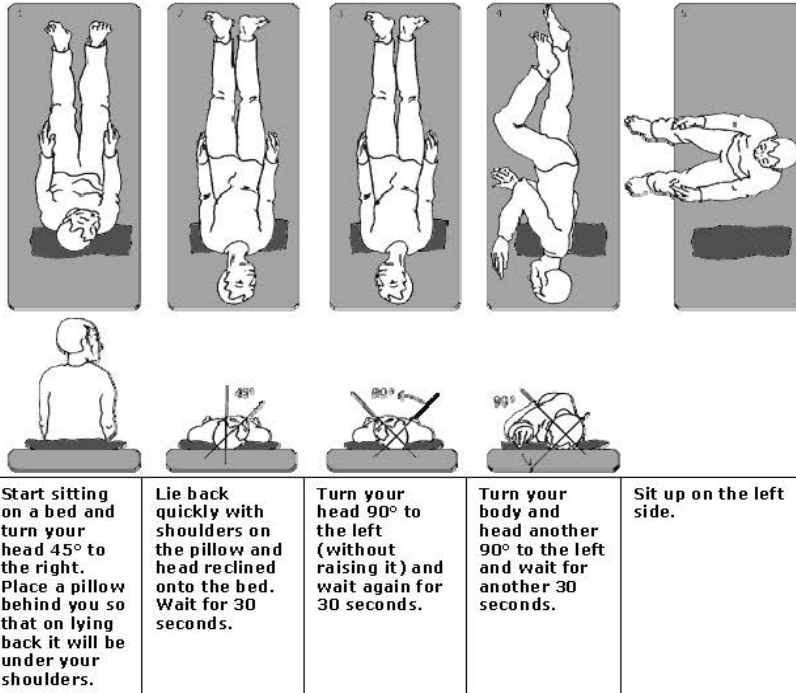
Perform this activity _____ per day and continue the activity until _____.

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1. If you are diagnosed with left sided BPPV, then perform the exercise shown in this handout. Perform Epley exercise **three** times a day.
2. Repeat this daily until free from positional vertigo for 24 hours. Best to do them at night rather than in the morning or mid-day. If patients become dizzy following the exercises, then it can resolve while sleeping.

Epley Home Exercise for Right Sided BPPV

Self-treatment of benign positional vertigo (right)



<p>Start sitting on a bed and turn your head 45° to the right. Place a pillow behind you so that on lying back it will be under your shoulders.</p>	<p>Lie back quickly with shoulders on the pillow and head reclined onto the bed. Wait for 30 seconds.</p>	<p>Turn your head 90° to the left (without raising it) and wait again for 30 seconds.</p>	<p>Turn your body and head another 90° to the left and wait for another 30 seconds.</p>	<p>Sit up on the left side.</p>
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Perform this activity _____ per day and continue the activity until _____.

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