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 upbeating (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

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

*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](https://www.youtube.com/watch?v=hq-IQWSrAtM)
- American Academy of Neurology practice parameter for BPPV [http://www.neurology.org/content/70/22/2067.short](http://www.neurology.org/content/70/22/2067.short)

**For patients:**
- Overview of Dizziness [https://myhealth.alberta.ca/health/Pages/conditions.aspx?hwid=dizziness](https://myhealth.alberta.ca/health/Pages/conditions.aspx?hwid=dizziness)
- Understanding vestibular disorders [http://vestibular.org/understanding-vestibular-disorder](http://vestibular.org/understanding-vestibular-disorder)
- Finding vestibular physiotherapist in Calgary [www.physiotherapyalberta.ca](http://www.physiotherapyalberta.ca)
- Patient information (the basics and beyond the basics) [https://www.uptodate.com/contents/dizziness-and-vertigo-beyond-the-basics](https://www.uptodate.com/contents/dizziness-and-vertigo-beyond-the-basics)
- National Library of Medicine [https://medlineplus.gov/dizzinessandvertigo.html](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**

1. **Dizziness**
   - **YES**
     - **VERTIGO** (illusion of movement)
       - **YES**
         - **Consider**
           - Presyncope
           - Cardiovascular causes
           - Anemia
           - Psychogenic
           - Other neurological conditions where balance is affected; Parkinson’s disease, peripheral neuropathy
       - **NO**
         - **Red Flags**
           - Neurological exam suggestive of central cause
           - Isolated vertical nystagmus
           - Facial sensory symptoms
           - Diplopia
           - Dysphagia
           - Ataxia
           - Sudden hearing loss
           - Head trauma
     - **NO**

2. **EPISODIC (POSITIONAL) VERTIGO**
   - **Consider** SPPV if vertigo lasts for seconds to minutes triggered by head position change
   - **Confirmatory Features**
     - No focal neurological signs
     - May recur over weeks/months
     - Ear pain, hearing loss are ABSENT
     - May experience nausea, rarely vomit
   - **Diagnosis**
     - MUST perform Dix-Hallpike test - positive if eyes turn up then torsional turn to shoulder that is down
   - **Treatment**
     - Early exercise 2-4 weeks (See YouTube video, attached hamaitout or Up&Date diagram)
     - Vestibular physiotherapy: 2-3 sessions or 1 month
   - **If no improvement within 1 month**

3. **CONSTANT VERTIGO**
   - **Consider uncompensated vestibular neuritis (labyrinthitis) if constant sensation that waxes and wanes with motion**
   - **Confirmatory Features**
     - May be associated with acute viral illness
     - Unsteadiness
     - No focal signs
   - **Diagnosis**
     - Romberg
     - Horizontal torsional nystagmus beating away from affected side
   - **Treatment**
     - Early <72 hours consider prednisone (see notes)
     - Consider betahistine 16 mg t.i.d. which may be needed up to 3 months
     - Vestibular physiotherapy: referral right away up to 3 months
   - **If no improvement within 3 months**
Steroid treatment protocol in vestibular neuritis (to be given within 3 days from onset)

<table>
<thead>
<tr>
<th>Prednisone</th>
<th>Dose</th>
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<tbody>
<tr>
<td>Day 1-5</td>
<td>60 mg</td>
</tr>
<tr>
<td>Day 6</td>
<td>40 mg</td>
</tr>
<tr>
<td>Day 7</td>
<td>30 mg</td>
</tr>
<tr>
<td>Day 8</td>
<td>20 mg</td>
</tr>
<tr>
<td>Day 9</td>
<td>10 mg</td>
</tr>
<tr>
<td>Day 10</td>
<td>5 mg then stop</td>
</tr>
</tbody>
</table>

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).
How To Find A Vestibular Physiotherapist In Your Community

Search online at www.physiotherapyalberta.ca

On the home page click on Find a Physiotherapist

Under “Conditions treated”, select one of the following:

- Dizziness and balance problems
- Vertigo
- Vestibular Rehabilitation

You may further filter your search results by clinic or therapist name, gender, language spoken, and location.
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)

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.

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.
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1. If you are diagnosed with right 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.