

Introductory Notes:

This pathway was produced at the request of NHS England as part of the documentation supporting the Commissioning Framework for Audiology, 2016. This first version of the document was completed by a volunteer group of Audiology professionals working on behalf of the Hearing Alliance, who advised NHS England during the consultation process. This document was completed in February and March 2016. A list of contributors can be found at the end of the document.

The group was asked to provide information to inform commissioners about balance assessment and rehabilitation within audiology services, to include: introductory information on vestibular (balance) disorders, a flow chart summarising referral routes to audiology services providing assessment and rehabilitation of vestibular disorders, and recommendations regarding outcome measures and Key Performance Indicators (KPIs) in line with those proposed for (or in use within) other areas of Audiology Service Provision. This information can be found below.

It is acknowledged that Balance Services are multidisciplinary and complex, and that there are many different models of service provision throughout the UK. The current document deals with provision of balance (or vestibular) services within Audiology departments, and should not be considered in isolation. Some areas of services provision continue to be debated within the wider balance community, and it is anticipated that this document will be updated as new research evidence become available and clinical consensus is reached. Commissioners should consult with their local service providers to establish existing referral routes, and be aware that some of the information contained within this document may not apply directly to their services.

Part 1: Information on Balance Disorders.

1.1 Balance Disorders, Dizziness and Vertigo:

Imbalance and dizziness are common with a one-year community prevalence of 5%¹ and of this, vestibular migraine² and benign positional paroxysmal vertigo (BPPV)¹, comprise approximately 50% of cases. Poor access to specialist services leads to the unacceptable situation of patients having to wait several years before a correct diagnosis is made³. This increases the risk of people developing other health problems such as anxiety, depression and panic attacks, with negative impacts on their ability to carry out daily activities, socialise and work^{4,5,6,7,8}. They will also be more likely to trip, slip or fall, and, if untreated, it will also increase the risk of falling as they age^{9,10}. This situation is particularly frustrating since there are many effective treatments for dizziness and imbalance, provided the correct diagnosis is made^{11,12}.

Many different health conditions can lead to sensations of dizziness, vertigo, disorientation, blurred vision, drunken feelings, imbalance, fear of falling – all of which can be described as a balance disorder. A systematic approach to diagnosis is essential if patients are to see the right healthcare

¹ Neuhauser HK, Radtke A, von Brevern M, et al. (2006). Migrainous vertigo: Prevalence and impact on quality of life. *Neurology*, 67(6):1028-1033.

² Lempert T, Neuhauser H (2009). Epidemiology of vertigo, migraine and vestibular vertigo. *J Neurol.*, 256: 333-338.

³ Department of Health (2009). Provision of Adult Balance Services. A Good Practice Guide. Department of Health, London.

⁴ Yardley L & Putnam J (1992). Quantitative analysis of factors contributing to handicap and distress in vertiginous patients. *Clinical Otolaryngology*, 17:231-236.

⁵ Clark MR, Sullivan MD, Fisch IM, Katon WJ, Russo JE, Dobie A, Vorhees R (1994). Symptoms as a clue to otologic and psychiatric diagnoses in patients presenting with dizziness. *Journal of Psychosomatic Research*, 38: 461-470.

⁶ Yardley L, Owen N, Nazareth I, Luxon L (1998). Prevalence and presentation of dizziness in a general practice community sample of working age people. *Br J Gen Pract.*, 48:1131Y5.

⁷ Nazareth I, Yardley L (2002). A clinical approach to dizziness. *Journal of Clinical Outcomes Medicine* 9:159-167.

⁸ Skoien AK, Wilhemsen K, Gjesdal S (2008). Occupational disability caused by dizziness and vertigo: a register-based prospective study. *Br J Gen Pract.*, 58:619Y23.

⁹ Gehlsen GM & Whaley MH (1990). Falls in the elderly: II, balance, strength and flexibility. *Archives of Physical Medicine and Rehabilitation*, 71:739-741.

¹⁰ Agrawal Y, Carey JP, Della Santina CC, Schubert MC, Minor LB (2009). Disorders of balance and vestibular function in US adults: data from the National Health and Nutrition Examination Survey, 2001-2004. *Arch Intern Med.*, 169 (10):938-944.

¹¹ Hilton MP, Pinder DK (2014). The Epley (canalith repositioning) manoeuvre for benign paroxysmal positional vertigo. *Cochrane Database of Systematic Reviews Issue 12. Art. No.: CD003162.*

¹² McDonnell MN, Hillier SL (2015). Vestibular rehabilitation for unilateral peripheral vestibular dysfunction. *Cochrane Database of Systematic Reviews 2015, Issue 1. Art. No.: CD005397.*

practitioner at the right time. In addition, a proportion of these conditions may include psychological elements which require additional referral to appropriate support and resources either directly, or via GP, to mental health services^{13,14,15}.

Assessing acute vertigo is challenging for non-experts^{16,17}. An important differential diagnosis in acute vertigo is stroke, which requires that all such patients should be seen by doctors who have competency that includes assessing both peripheral and central vestibular symptoms and signs¹⁸.

Some balance disorders can be caused by changes to the balance (vestibular) system in the ear. Audiology services provide diagnostic assessment of the vestibular system and rehabilitation of vestibular pathologies. These services may be incorporated into a multidisciplinary Balance Service with links to other departments such as ENT, neurology, cardiology, care of the elderly, physiotherapy, migraine clinics, and psychology³. Multidisciplinary services will work together to ensure people with balance disorders are assessed and treated within a co-ordinated pathway as many people – particularly older people or those with a range of health problems – may present with several underlying reasons for a balance problem.

Referral routes and provision of vestibular assessment and rehabilitation services varies significantly across the UK, reflecting local expertise, resources and pathways: commissioners of these services should take these factors into consideration.

1.2 Vestibular Assessment:

A variety of tests are used to assess the function of the vestibular system to help identify vestibular pathologies. Recent developments in vestibular testing have improved the ability to assess vestibular function. A psycho-social assessment should also be conducted to identify the impact of the balance disorder on daily function and mental health. A basic falls risk assessment is helpful in older patients.

1.3 Vestibular Rehabilitation:

This aims to educate patients about a balance disorder, improve balance when standing and walking, reduce anxiety and ensure patients receive additional support if required. It can include the provision of literature and other resources to educate the person about their balance disorder, tailored exercise therapy, guidance about general activity and exercise, repositioning manoeuvres, breathing exercises for hyperventilation, the use of cognitive behavioural therapy tools, and relaxation and stress management. It may also include opportunities for peer support if this is available.

¹³ Kroenke K, Hoffman RM, Einstadter D (2000). How common are various causes of dizziness? A critical review. *South Med J.*, 3:160Y167.

¹⁴ Eckhardt-Henn A, Dieterich M (2005). Psychiatric disorders in otoneurologic patients. *Neurol Clin.*, 23:731Y749.

¹⁵ Tschan T, Best C, Wiltink J, Beutel ME, Dieterich M, Eckhardt-Henn A (2013). Persistence of symptoms in primary somatoform vertigo and dizziness: a disorder “Lost” in health care? *The Journal of Nervous and Mental Disease*, 201 (4): 328-333.

¹⁶ Kerber KA, Newman-Toker ED (2015). Misdiagnosing Dizzy Patients: Common Pitfalls in Clinical Practice. *Neurol Clin.*, 33(3):565-75.

¹⁷ Cutfield NJ, Seemungal BM, Millington H, Bronstein AM (2011). Diagnosis of acute vertigo in the emergency department. *Emerg Med J.*, 28:6 538-539.

¹⁸ Seemungal BM, Bronstein AM (2008). A practical approach to acute vertigo. *Pract Neurol.*, Vol: 8, Pages: 211-221.

1.4 Prevalence of Vestibular Disorders:

Balance disorders are often chronic, and may fluctuate, with some people experiencing long asymptomatic periods between active spells of their condition. Prevalence figures for adults, therefore, provide a useful evaluation of these conditions. Few epidemiological studies of balance disorders have taken place in the UK and studies from other countries provide variable figures due to variations in the definition of balance disorders used, the populations being investigated, and the methodologies used.

- Symptoms of Dizziness: Lifetime prevalence varies from 17-30%¹⁹, with increased prevalence in the elderly²⁰.
- Symptoms of Vertigo: Lifetime prevalence 3-10%¹⁹.
- BPPV: Lifetime Prevalence 2.4%; 1 year prevalence 1.6%²¹. More prevalent in the elderly, and women, with a peak in the 6th decade of life^{21,1,22}. Mostly idiopathic but can also occur secondary to a range of other conditions including head trauma, other conditions affecting the inner ear (e.g. vestibular neuritis, labyrinthitis and Ménière's disease) and migraine. Recurrence rates vary from 15-37% after effective treatment, with most occurring within the first year following treatment²³.
- Vestibular neuritis: Little data is available in the literature. Usually a one-off occurrence, and so incidence figures are provided. Annual incidence figures range from 3.5 - 15.5 per 100,000 persons per year^{24,25}.
- Labyrinthitis: Actual incidence and prevalence unknown.
- Ménières disease: This is an uncommon, over-diagnosed condition which should be not be diagnosed by GPs. Point prevalence (UK studies): 0.2 - 0.27%^{26,19}.
- Migrainous vertigo: Concurrent Vertigo and Migraine: One year prevalence 0.98%¹.

¹⁹ Murdin, L, Schilder, A (2015). Epidemiology of balance symptoms and disorders in the community: a systematic review. *Otology & Neurotology: Official Publication Of The American Otological Society, American Neurotology Society [And] European Academy Of Otology And Neurotology*, 36, 3, 387-392.

²⁰ Chau AT, Menant JC, Hubner PP, Lord SR, Migliaccio AA (2015). Prevalence of vestibular disorders in older people who experience dizziness. *Front Neurol.*, 6:268.

²¹ von Brevern M, Radtke A, Lezius F, Feldmann M, Ziese T, Lempert T, et al. (2007). Epidemiology of benign paroxysmal positional vertigo: a population based study. *J Neurol Neurosurg Psychiatry*, 78:710-715.

²² Baloh RW, Honrubia V, Jacobson K. (1987). Benign positional vertigo: clinical and oculographic features in 240 cases. *Neurology*, 37:371-378.

²³ Lee S-H, Kim J. S (2010). Benign Paroxysmal Positional Vertigo. *J. Clin Neurol.*, 6 51-63.

²⁴ Adamec I, Skoric M, Handzic J, & Habek M (2015). Incidence, seasonality and comorbidity in vestibular neuritis. *Neurological Sciences*, 36, 1, pp. 91-95.

²⁵ Sekitani T, Imae Y, Noguchi T, Inokuma T (1993). Vestibular neuronitis: epidemiological survey by questionnaire in Japan. *Acta Otolaryngol Suppl.*, 503:9-12.

²⁶ Tyrrell JS, Whinney JD, Ukoumunne OC, Fleming LE, Osborne NJ. (2014). Prevalence, associated factors, and comorbid conditions for Ménière's disease. *Ear & Hearing*, 35 162-169.

Part 2: Patient pathways for vestibular function testing and rehabilitation: chronic & recurrent conditions

NOTE: This draft pathway was produced within a very short timespan by a multidisciplinary team of professionals experienced in the assessment and management of vestibular disorders. Debate continues over the feasibility of some elements of the pathway, and, particularly, the mechanisms needed to ensure safety when managing the presentation of acute vertigo at a primary care level. The pathway applies to chronic and recurrent dizziness, and is proposed as a starting point for discussion and review, rather than a final recommendation. Pathways for management of acute dizziness will be developed in due course.

Pathways will depend on numbers and demographics of patients, available service provision and clinician experience and expertise. This will vary across the country, and so a generic pathway is suggested which can then be adapted to meet the needs of individual services. These suggestions are an attempt to make pathways as clinically and cost effective as possible.

Management of routine, chronic dizziness (BPPV and chronic uncompensated vestibular neuritis) using vestibular rehabilitation may be carried out in primary care^{27,28,29} where possible. There is good evidence for these treatments^{30,31}. Diagnosis could be aided by NICE clinical knowledge summaries³, and in the future by the Embalance decision support system.³² Management could be administered by suitably trained GPs, practice nurses, audiologists, physiotherapists, specialist primary care practitioners (SPCP) with an audiology³³ or physiotherapy background. Treatment could be performed in individual GP surgeries or more centrally in local hubs of care for routine dizziness. Vestibular rehabilitation exercises could be delivered by Yardley's self administered booklet-based approach³⁴ or through a more tailored face-to-face approach. Such services can also be delivered in secondary care, (normally via audiologists, physiotherapists or hearing therapists) if primary care services are not available.

Testing and management of more complex patients (vestibular disorders other than Benign Paroxysmal Positional Vertigo and chronic uncompensated vestibular neuritis, or where the cause unclear) should be carried out in secondary care. The pathways for these services will depend on local service provision, but should ensure accurate and timely diagnosis and rehabilitation with whatever audiolo-vestibular testing is required to make this diagnosis.

Secondary care services should involve a network of multidisciplinary care for example: ENT, audiovestibular physician, audiology, physiotherapy, hearing therapy, clinical psychology, neurology, elderly care, and cardiology.

²⁷ DOH good practise guidelines 2008

²⁸ Generate Research priorities for ENT 2015 <https://entuk.org/generate>

²⁹ NICE knowledge for skills framework <http://cks.nice.org.uk/vertigo>

³⁰ Hillier et al Cochrane Database of Systematic Reviews 2011, Issue 2. Art. No.: CD005397.

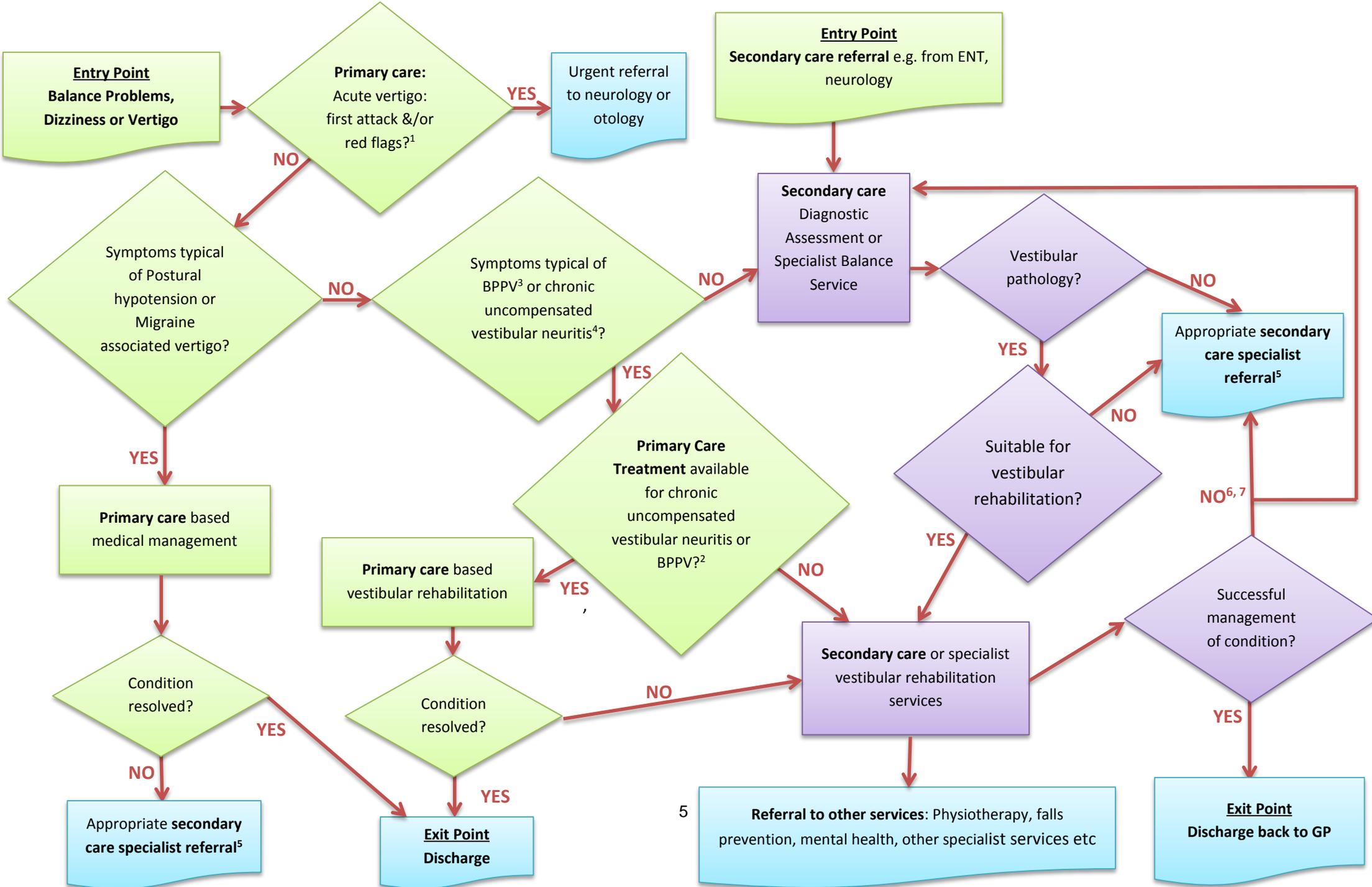
DOI:10.1002/14651858.CD005397.pub3. <http://summaries.cochrane.org/CD005397/vascularrehabilitation-for-unilateral-peripheral-vestibular-dysfunction-to-improve-dizziness-balanceand-mobility>

³¹ Hilton MP et al The Epley (canalith repositioning) manoeuvre for benign paroxysmal positional vertigo. [Cochrane Database Syst Rev](http://www.cochrane.org). 2014 Dec 8;12:CD003162. doi: 10.1002/14651858.CD003162.pub3.

³² Embalance <http://www.embalance.eu/>

³³ Jenny Rogers Personal communication February 2016

³⁴ Yardley et al 2012 Clinical and cost effectiveness of booklet based vestibular rehabilitation for chronic dizziness in primary care: single blind, parallel group, pragmatic, randomised controlled trial (<http://www.bmj.com/content/344/bmj.e2237>)



Pathway Notes:**1. Red Flags:**

- **Refer to ENT:** Recurrent outer or middle ear infections, tympanic membrane abnormality of unclear cause, active perforations or mastoid cavities, polyps or possible foreign bodies, persistent ear pain, sudden or unexplained sensorineural hearing loss, unilateral deterioration of hearing, pulsatile tinnitus. Acute vertigo with sudden hearing loss should be referred for an **emergency ENT appointment** to exclude labyrinthitis or autoimmune disease.
- **Refer to Neurology:** Any neurological sign not consistent with a peripheral vestibular insult. Sudden, severe, acute vertigo with indications of stroke **should be referred urgently**.
- Patients with neurological symptoms need to be referred to the appropriate speciality with **urgency of referral dependent on symptom presentation**.

2. Cautions:

- Refer for face-to-face vestibular rehabilitation**, rather than primary care management, if peripheral vestibular diagnosis and history of current or previous anxiety is present.
3. BPPV usually presents as episodic short lived (<1 minute) rotatory vertigo on lying flat or rolling in bed, in the absence of other otological symptoms or red flags.
 4. Vestibular Neuritis usually presents as a single episode of acute rotatory vertigo (duration up to 48 hours) +/- vomiting in absence of other otological symptoms or red flags followed by persistent, movement-evoked dizziness and no BPPV symptoms.
 5. Appropriate secondary specialist care referral is dependent on local service provision, but may include referral to ENT, audiovestibular physician, neurology, elderly care, cardiology.
 6. **Refer for specialist opinion** if suspected BPPV is not responding to treatment as this could indicate central positional vertigo. Refer to neurology, ENT or a specialist balance service according to local arrangements.
 7. **Refer for specialist opinion** if suspected vestibular neuritis not responding to treatment then a vestibular schwannoma and central causes (such as multiple sclerosis) need to be excluded. Refer to neurology, ENT or a specialist balance service according to local arrangements.

Part 3: Suggested Outcome Measures and KPIs for Adult Vestibular Services

Section 1: Outcomes – Diagnostic and Rehabilitation

Outcome	Quality Requirement	Threshold	Method of measurement	Comments
Diagnostic Assessment Report	Written reports to be produced for all patients receiving diagnostic vestibular assessment.	Reports produced for 100% of patients.	Audit of patient records.	Annual audit.
Personalised Care Planning	All patients receiving vestibular rehabilitation, particle repositioning or other treatment have a jointly agreed Individual Management Plan (IMP).	100% of patients have a plan.	Audit of patient records.	Annual audit.
Reduced difficulties with activities of daily life	For patients receiving treatment: improvement in patient reported disability, handicap, and/or difficulty.	90% of patients report a reduction in the impact of their balance problem in daily life.	Patient reported outcome measures, such as Dizziness Handicap Inventory, Vestibular Rehabilitation Benefit Questionnaire, Activities Specific Balance Confidence Scale, Vertigo Symptom Scale Short Form, or other validated tool to show improvement ¹ .	Annual audit.
Service user satisfaction - assessment and/or choice of intervention	Percentage of patients reporting being satisfied with their assessment and/or feel their choice of intervention is worthwhile.	90% of patients express satisfaction in their assessment and/or choice of intervention.	Patient satisfaction questionnaire.	Annual audit.
Service user satisfaction - quality of service delivery	Percentage of patients reporting being satisfied with the service.	90% of patients report satisfaction with the quality of service received.	Validated patient satisfaction questionnaire.	Annual audit.
Acceptable waiting times	Services are consistently delivered within waiting times set out in KPIs.	90% of patients are seen within waiting times listed in KPIs.	Waiting time data.	Annual audit.
Seamless service	Complete and robust pathways exist for onward referral or primary care liaison where required.	Clear patient pathways exist for onward referral and are used appropriately.	Audit of patient journeys / onward referrals.	Annual audit.

Notes:

1. The use of objective measures of treatment benefit is encouraged, but may have limited use for some patients with vestibular disorders: dizziness and vertigo, and their impact on daily life are subjective experiences so qualitative patient reported outcome measures are often more relevant for this group. The tool selected may depend on service provision and patient demographics, but may include, for example, posturography, video Head Impulse Testing, Dynamic Visual Acuity Testing, Timed Up and Go test, gait testing, etc.

Section 2: Suggested Key Performance Indicators (KPIs)

Technical Guidance Ref	Quality Requirement	Threshold	Method of measurement
Referral to assessment time	Vestibular assessments to be completed within 6 weeks following receipt of referral, unless patient requests otherwise.	90%	Annual report.
Vestibular assessment	Secondary care services should have facilities to perform a full range of evidence-based assessments as necessary, to include assessment of oculomotor and vestibular function, as well as functional balance.	95%	Annual review of facilities & equipment.
Assessment to treatment time	Where indicated, vestibular rehabilitation and/or particle repositioning treatment should be commenced within 4 weeks of assessment.	90%	Annual report.
First treatment follow up	Appointments are offered within 8 weeks from commencement of treatment, according to individual needs unless there are clear, documented, clinical reasons to do otherwise, or the patient chooses to wait beyond this period.	90%	Annual report.
Access to further follow-up	Where patients request a further follow-up, this is offered within 10 working days, unless there are clear, documented, clinical reasons to do otherwise, or the patient chooses to wait beyond this period.	90%	Annual report.
Information sharing & reporting	Patient records and associated letters/reports completed and sent to GP and/or referrer within 10 working days of vestibular assessment or treatment.	95%	Annual report.
Personalised Care Planning	All patients receiving treatment have an individual management plan.	100%	Annual report.
Outcomes of treatment	Patient-reported outcomes of treatment should be monitored and recorded systematically.	100%	Annual report.

Service user experience	Standardised patient questionnaire to be issued at discharge points. 95% of responses received from service users sampled should report overall satisfaction with service.	95%	Annual report to include an analysis of number of patients discharged and surveyed, number of responses received, % of those satisfied or very satisfied with service.
Peer satisfaction of service	A minimum of one clinician satisfaction survey will be designed and sent to all referring clinicians. 95% of referrers sampled should report overall satisfaction with diagnostic and/or rehab service.	95%	Annual report to include an analysis of completed user questionnaires, demonstrating % of those satisfied or very satisfied with service.
Service improvement	Service user questionnaires and peer satisfaction surveys are used to capture areas for improvements. 100% of recommendations made and agreed with Commissioners are addressed.	100%	Annual report to demonstrate recommendations and actions taken to address areas of service improvement.
Human resources	All staff performing vestibular assessments and rehabilitation should be appropriately trained and qualified & registered with a relevant statutory or voluntary body e.g. HCPC, AHCS, RCCP, etc.	100%	Annual review of staff training and qualifications.

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Thanks to the people listed below for contributing their time and expertise in the production of this document.

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