Project Development Plan

I. Title of Proposal: Vestibular Rehabilitation for Peripheral Vestibular Hypofunction or Loss: Clinical Practice Guidelines (CPG)

II. Neurology Section of the American Physical Therapy Association (APTA)

III. Justification for CPG

Dizziness is one of the most common reasons patients seek medical care from primary care providers, and the cause of dizziness is often related to the vestibular system (Kroenke & Mangelsdorrf, 1989). Uncompensated vestibular hypofunction results in postural instability, visual blurring, and subjective complaints of imbalance. Appropriate treatment is critical because dizziness is a major risk factor for falls (Agrawal et al., 2009; Lawson et al., 1999). This specific topic was chosen for CPG development as there currently exists adequate evidence in support of vestibular rehabilitation for the treatment of peripheral vestibular hypofunction; yet, there are no clinical practice guidelines or appraisals for the treatment of peripheral vestibular hypofunction. There is a Cochrane Database Systematic Review (originally published in 2007 by Hillier and Hollohan, and updated in 2011 by Hillier and McDonnell) that supports the use of vestibular rehabilitation in the treatment of unilateral peripheral vestibular dysfunction. Thus, the primary purpose of these clinical practice guidelines is to review the peer-reviewed literature and make recommendations based on the quality of the research for the treatment of peripheral vestibular hypofunction or loss, and appropriate outcome measures to identify impairments, activity limitations and participation restrictions based on the ICF Model. Secondary purposes of these CPGs are to reduce unwarranted variation in care and to facilitate timely referrals from physicians. Clinical practice guidelines to optimize care of people with dizziness will have a significant impact on safety, independence and quality of life for patients with vestibular disorders.

IV. Work group

a. Courtney Hall, PT, PhD (lead); Susan Herdman, PT, PhD, FAPTA; Susan Whitney, DPT, PhD, NCS, ATC, FAPTA
b. Disclosure of relevant financial activities:
    i. Dr. Hall is a Research Health Scientist, Auditory & Vestibular Dysfunction Research Enhancement Award, Mountain Home VAMC and Associate Professor, Department of Physical Therapy, East Tennessee State University. The APTA is providing grant funding for the development of the CPG (Hall, PI) including salary support for a research assistant and travel support for the workgroup (Hall, Herdman, Whitney), but not including salary support for the workgroup. Dr. Hall receives grant funding for "Vestibular Rehabilitation and Dizziness in Geriatric Patients" from

Veterans Affairs, Rehabilitation Research & Development. Dr. Hall is faculty for the Vestibular Rehabilitation: A Competency-based Course sponsored by APTA.

ii. Dr. Herdman is Professor Emeritus, Departments of Rehabilitation Medicine and Otolaryngology-Head Neck Surgery, Emory University School of Medicine. She receives travel support from APTA for the development of the CPG. Dr. Herdman is on the Medical and Scientific Board (WOC) of Vestibular Disorders Association (VEDA). Dr. Herdman lectures nationally and internationally on vestibular rehabilitation and is Co-director of the Vestibular Rehabilitation: A Competency-based Course sponsored by APTA. Dr. Herdman receives royalties from F.A. Davis as Editor of *Vestibular Rehabilitation*.

iii. Dr. Whitney is Professor, Physical Therapy and Otolaryngology, Department of Medicine, University of Pittsburgh. She receives travel support from APTA for the development of the CPG. Dr. Whitney is a Board member of the APTA. Dr. Whitney receives grant funding from NIH-NIDCD. Dr. Whitney lectures nationally and internationally on vestibular rehabilitation and is faculty for the Vestibular Rehabilitation: A Competency-based Course sponsored by APTA.

V. Advisory Board

a. An expert multidisciplinary Advisory Board has been formed and will meet periodically via conference call to provide input and feedback in the development of the Vestibular Rehabilitation CPG.
b. Board members include: Steve Cass, MD (otolaryngology); Richard Clendaniel, PT, PhD (physical therapy/researcher); John Engberg, PhD (patient); Joe Furman, MD (neurology); Terry Fife, MD (neurology); Tom Getchius, (Director of Clinical Practice, American Academy of Neurology); Joel Goebel, MD (otolaryngology); Neil Shepard, PhD (audiology); Sheelah Woodhouse, PT (VEDA Board).
c. Disclosure of relevant financial activities:
    i. Dr. Cass is Professor, Department of Otolaryngology, School of Medicine, University of Colorado. He does not have any relevant financial activities to disclose.
    ii. Dr. Clendaniel is Assistant Professor, Department of Community and Family Medicine, Doctor of Physical Therapy Division, Duke University. Dr. Clendaniel provides Continuing Education courses in the area of vestibular rehabilitation through Educational

Resources, Inc. Dr. Clendaniel lectures nationally and internationally on vestibular rehabilitation and is Co-director of the Vestibular Rehabilitation: A Competency-based Course sponsored by APTA.

iii. Dr. Engberg is a Senior Economist at RAND Corporation and has experienced severe dizziness due to a vestibular disorder. Dr. Engberg participated in vestibular rehabilitation with Dr. Whitney. He does not have any relevant financial activities to disclose.

iv. Dr. Furman is Professor, Department of Otolaryngology, University of Pittsburgh. Dr. Furman is Editor, Journal of Vestibular Research for IOSPress.

v. Dr. Fife is Professor and Interim Chairman, Department of Neurology, and Director, Balance Disorders and Neuro-Otology, Barrow Neurological Institute and Associate Professor of Neurology, University of Arizona College of Medicine. He does not have any relevant financial activities to disclose.

vi. Mr. Getchius is Associate Director, Clinical Practice, American Academy of Neurology. He does not have any relevant financial activities to disclose.

vii. Dr. Goebel is Professor, Otolaryngology - Head and Neck Surgery and Director, Dizziness and Balance Center, Washington University School of Medicine in St. Louis. Dr. Goebel is a Consultant to NeuroCom International, Inc. and Micromedical Technologies. He provides expert testimony for various entities. Dr. Goebel receives grant funding from DoD SBIR with Barron Associates for “Vestibular Rehabilitative Prosthesis Development”. He provides Balance Courses for Micromedical Technologies. He receives royalties from Lippincott Williams Wilkins for *Practical Management of the Dizzy Patient*.

viii. Dr. Shepard is Professor and Chair, Audiology and Director, Dizziness & Balance Disorders Program, Mayo School of Medicine.

ix. Ms. Woodhouse is National Manager of Vestibular Rehabilitation, LifeMark & Centric Health, Alberta, Canada. Ms. Woodhouse owns shares in Centric Health. She is on the Board of VEDA. Ms. Woodhouse provides continuing education lectures for Alberta Physiotherapy Association and College on vestibular rehabilitation and is faculty for the Vestibular Rehabilitation: A Competency-based Course sponsored by APTA.

VI. Clinical questions (PICO format)

1) In people with peripheral unilateral vestibular hypofunction is exercise effective at enhancing or accelerating recovery of function?
2) In people with peripheral bilateral vestibular hypofunction is exercise effective at enhancing or accelerating recovery of function?
3) In people with peripheral vestibular hypofunction (unilateral and bilateral) is exercise versus no exercise more effective?
    a. In people with peripheral vestibular hypofunction (unilateral and bilateral) is exercise versus sham more effective?
    b. In people with peripheral vestibular hypofunction (unilateral and bilateral) is one type of exercise versus a different type of exercise more effective?
    c. Studies use a mix of outcome measures (e.g., DHI, Berg, etc.) so we will need to define what is a clinically meaningful outcome for each outcome measure.
4) In people with peripheral vestibular hypofunction (unilateral and bilateral) is there evidence that supervision is necessary for optimal outcomes?
5) In people with peripheral vestibular hypofunction (unilateral and bilateral) is there evidence for optimal intensity/duration of treatment?
    a. We will need to define exercise. Overuse, underuse and misuse may need to be addressed. It might be a consensus approach that this is the feeling of the panel.
6) In people with peripheral vestibular hypofunction (unilateral and bilateral) what are the decision rules for stopping therapy?
7) In people with peripheral vestibular hypofunction (unilateral and bilateral) what factors modify outcomes? (e.g., age; time from onset; depression/anxiety; other comorbidities; degree of deficit-unilateral vs bilateral; surgical vs non-surgical; cognitive impairment; medications; exercise compliance)
8) In people with peripheral vestibular hypofunction (unilateral and bilateral) what is the harm/benefit ratio for vestibular rehabilitation in terms of quality of life/ psychological stress?
    a. We will not find studies to answer this but it must be in the conclusions at the end. It seems to be helpful with low risk so the benefit to harm ratio is low.

VII. Terms/databases used

PubMed, EMBASE, Web of Science, Cochrane Library, websites of agencies and organizations that produce guidelines (Health Evidence, Canada; National Institute for Clinical Excellence, UK; Agency for Healthcare Research and Quality, US; National Guidelines Clearinghouse, US; ClinicalTrials.gov, US)

VIII. Inclusion/exclusion criteria for article selection

Inclusion: Human; English; 1985 – current; (do not exclude pediatrics)

Exclusion: superior canal dehiscence; blindness; BPPV; primary diagnosis of migraine; central vestibular disorder; central pathology (PD, MS, stroke, cerebellar ataxia)

IX. Project timeline

1. Refinement of clinical questions	Fall 2013
2. Comprehensive literature search	Summer 2013
3. Identification of relevant studies	Fall 2013
4. Studies are critically appraised/ Study characteristics are extracted	Winter 2014
5. 1st draft of CPG document	Spring 2014
6. APTA/Advisory board reviews CPG	Spring 2014
7. Revised CPG (reviewer comments addressed) is reviewed by APTA/advisory board	Fall 2014
8. Manuscript is submitted to JNPT for peer review	Winter 2015
9. Accepted manuscript submitted to Neurology section for approval	Spring 2015
10. Dissemination	Spring/Summer 2015