Appendix

A. Visuo-Vestibular Examination

1) Smooth Pursuits
   • Stand directly across from the patient. Hold up your index finger approximately half an arm’s length from the patient’s nose.
   • Ask the patient to follow your fingertip only with his/her eyes.
   • Move finger horizontally and progressively more rapidly. Stop centrally.
   • Look for evidence of nystagmus.
   • Abnormal: >1 beat of nystagmus at the midline, symptom provocation
     o Record beats of nystagmus
     o Record if symptoms get worse or arise

2) Horizontal Saccades
   • Face the patient. Hold up your index fingers shoulder-width apart and approximately half an arm’s length away from the patient’s nose.
   • Ask patient to move his/her eyes as quickly as possible between your two fingers without moving his/her head.
   • One repetition = eyes returning to starting point
   • Up to 30 repetitions performed if patient does not stop sooner because of symptoms.
   • Abnormal: Symptom provocation
     o Record number of repetitions patient completes
     o Record if symptoms get worse or arise

3) Vertical Saccades
   • Face the patient. Hold up your index fingers sideways forehead-chin distance apart and approximately half an arm’s length away from the patient’s nose.
   • Ask patient to move his/her eyes as quickly as possible between your two fingers without moving his/her head.
   • One repetition = eyes returning to starting point
   • Up to 30 repetitions performed if patient does not stop sooner because of symptoms.
   • Abnormal: Symptom provocation
     o Record number of repetitions patient completes
     o Record if symptoms get worse or arise

4) Gaze Stability – Horizontal
   • Face the patient. Hold up thumb approximately half an arm’s length from the patient’s nose.
- Ask patient to keep his/her eyes on your thumb while shaking his/her head no.
  - **Abnormal: Symptom provocation**
    - Record if symptoms get worse or arise

5) **Gaze Stability – Vertical**
- Face the patient. Hold thumb sideways approximately half an arm’s length from the patient’s nose.
- Ask patient to keep his/her eyes on your thumb while nodding his/her head yes.
  - **Abnormal: Symptom provocation**
    - Record if symptoms get worse or arise

6) **Near Point Convergence (NPC)**
- Place stimulus card at 20 cm. Place Near Point Rule at center of patient’s forehead just above level of brow (at glabella). If letters are blurry for patient, move card back to where it’s clear.
- **Blur:** Ask patient to tell you when letters start to get blurry before moving the card toward the patient. Slowly (1-2cm/sec) move target toward patient. Stop when blurriness is reported and record distance to nearest half centimeter.
- **Break:** Ask patient to tell you when the line of letters splits in two like a zipper and continue to move card toward patient at same speed. Stop when break is reported and record distance to nearest half centimeter.
  - If the patient continues to converge until the target is against the nose/brow, record as no break.
- **Recovery:** Ask patient to tell you when the letters become a single line again and pull the card away from the patient slowly (1-2cm/sec). Stop when patient indicates letters are in a single line and record the distance to the nearest half centimeter.
- **Clear:** Ask patient to tell you when the letters become clear again and continue to pull card away from patient at same speed. Stop when patient indicates letters are clear and record the distance to the nearest half centimeter.
  - **Abnormal: Letters become double (break) at >6 cm**
    - Record distances of blurry, break, recovery, clear

7) **Monocular Accommodation**
- Place Near Point Rule above the patient’s pupil just above level of brow. Have patient cover other eye with occluder.
- Place stimulus card at 20 cm. If letters are blurry for patient, move card back to where it’s clear.
- Ask patient to tell you when letters start to get blurry before moving the card toward the patient. Slowly (1-2cm/sec) move target toward patient.
Stop when blurriness is reported and record the distance to the nearest half centimeter.
- Repeat testing process with patient covering other eye.
- **Abnormal: Compare distance where card becomes blurry to age-adjusted norms**
  - Record blur distance for each eye

8) **Tandem Walk**
- Have patient start with feet next to each other and walk heel-to-toe forwards and backwards with arms at side. Have patient walk forward with eyes open and then prompt them to continue forward with eyes closed. Have patient then walk backward with eyes open and prompt them to continue backward with eyes closed.
- Stand next to and walk with the patient to make sure that he/she does not fall over.
- **Abnormal: Raises arms for stability or widens gait, has extreme truncal swaying without normal righting, or makes errors by stepping off line**
  - Separate recordings for each of the four stages – forward eyes open, forward eyes closed, backward eyes open, backward eyes closed
    - Record if abnormal sway
    - Record number of errors (steps off line)

B. **Home Exercise Program for Vestibular Rehabilitation**
You should complete exercises 1-2 times daily. You should complete each exercise for one minute. If you need to take a break due to symptoms during the exercise, you should pause the timer, rest briefly, and then restart to complete the minute. Once you can complete the exercise for one minute with no symptoms, you can stop doing the exercise.

1) **Saccades**
   a. Horizontal: Put two post-it notes on the wall shoulder-width apart. Look back and forth (right-to-left) at the two post-it notes.
   b. Vertical: Place the two post-it notes vertical on the wall about 12 inches apart. Look up and down at the two post-it notes.

2) **Gaze Stability:** put a single post-it note on the wall in the middle of the four post-it notes placed above
   a. Horizontal: Shake head left and right while focusing on the middle post-it note.
   b. Vertical: Keep eyes focused on the middle post-it note and nod up and down.
3) **Convergence**
   a. **Beads on a String/Brock String:** Put 3 beads on a string – one on the end, one in the middle and one as close to you as possible but still in focus (clear). Start by looking at the farthest bead and then focus in on each bead, getting progressively closer to your nose. Each bead should be in focus (clear, not blurry). As your eyes get better with this exercise, you should be able to move the closest bead closer to your nose. The goal is to get the closest bead 4 cm away from your nose and still be clear.
   b. **Pencil pushups:** Use a pen with letters. Hold the pen an arm's length away and try to keep the letters on the pen in focus as you bring the pen toward your nose. Once the letters on the pen get blurry, continue slowly until the letters become double. Try to keep the letters single as long as you can. When the letters become double, slowly go in reverse and bring the pen back out to arm's length.

4) **Balance**
   a. **Walk in a straight line that is approximately 10-feet long.** Walk a few steps forward with your eyes open and then continue walking forward a few more steps with your eyes closed. Walk a few steps backward with your eyes open and then continue walking backward a few more steps with your eyes closed.
   b. **Stand on one leg while brushing your teeth.** Try to hold for 30 seconds.
   c.