



# Case Study:

## Team Helps Head Injury Patient Address Hearing and Memory Issues

SIG 6: Hearing and Hearing Disorders: Research and Diagnostics

### Summary

An interprofessional practice (IPP) rehabilitation team developed a treatment plan for a 55-year-old man with memory and hearing loss, tinnitus, episodic vertigo, and headaches following a closed head injury. By working across specialties, the team created and executed a plan that helped resolve the man’s dizziness and address his hearing and memory problems.

### Patient Info



**ROB ROY**  
55-YEAR OLD

**Current Diagnosis:**  
Closed head injury

### Meet The Team



Audiologist



Neurologist



Occupational therapist (OT)



Physical therapist (PT)



Primary care physician (PCP)



Speech-language pathologist (SLP)



Patient

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## Background

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Mr. Roy, age 55, came to Edgewood Clinic after being diagnosed with a head injury. Mr. Roy fell out of a tree while boar hunting 2 months prior. He sustained a closed head injury and lost consciousness for 20 minutes. His symptoms, which he felt had worsened since his injury, included memory loss, word-finding problems, high-frequency tinnitus, difficulty understanding speech in noise, hearing loss, episodic vertigo, and headaches. He completed inpatient rehabilitation and was discharged to his home.

## How They Collaborated

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Each member of the IPP rehabilitation team evaluated Mr. Roy according to their specialty, with the PCP serving as the team facilitator. After they completed their assessments, the team members met to review the results together.

The audiologist found that Mr. Roy had hearing loss, moderate difficulty with speech in noise, and benign paroxysmal positional vertigo (BPPV). The SLP determined that Mr. Roy struggled with word finding and experienced memory deficits that were consistent with mild traumatic brain injury (mTBI). The neurologist reported that Mr. Roy's CT scan was normal and that his MRI was consistent with changes typical of aging. His EEG was abnormal. The PT found that Mr. Roy had normal functional balance and that he tested positive for right posterior canalithiasis. The PT recommended a referral to an OT for tree safety education.

After discussing their assessments, the team developed a plan to resolve Mr. Roy's dizziness, improve his hearing, address his memory and word-finding issues, and help him avoid future hunting accidents.

As part of the plan's execution, the audiologist enrolled Mr. Roy in integrated sound therapy for tinnitus management and fit him for hearing aids. Mr. Roy's hearing aids were also programmed with a secondary setting just for hunting. Mr. Roy also attended weekly 45-minute sessions with the SLP for 3 months and focused on word-finding and memory strategies. The neurologist followed up with Mr. Roy as needed, and the PT conducted repositioning therapy for right posterior canalithiasis. The OT worked with Mr. Roy on tree safety education and helped him obtain a harness to prevent future falls.

## Outcome

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The team followed up with Mr. Roy 3 months, after the first evaluation, to assess his progress. Mr. Roy reported satisfaction in using his hearing aids while hunting and playing poker and with his tinnitus treatment. He showed improved word-finding ability as well as improved quality of life using memory aides and other strategies.

## Ongoing Collaboration

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As the team facilitator, the primary care physician follows up as needed and communicates assessment results and plans with the other team members. The team meets weekly to discuss care coordination for several patients.

# Case Rubric:

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### Meet The Team



Audiologist



Neurologist



Occupational  
therapist (OT)



Physical  
therapist (PT)



Primary care  
physician  
(PCP)



Speech-  
language  
pathologist (SLP)



Patient

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## History and Concerns

(Share key information gathered from team)

**Mr. Roy** (DOB: 1/1/63) came to Edgewood Clinic with a diagnosis of closed head injury. **Mr. Roy** fell out of a tree 2 months ago while boar hunting and sustained a closed head injury with loss of consciousness for 20 minutes. Symptoms include memory loss, word-finding problems, high-frequency tinnitus, difficulty understanding speech in noise, hearing loss that he feels has become worse since the head injury, dizziness and episodic vertigo, and headaches. **Mr. Roy** is a right-handed firearms user. He completed inpatient rehabilitation and has been discharged to his home.

## Assessment Plan

(Determine roles/responsibilities for evaluation)

The rehabilitation team consists of Mr. Roy's primary care physician (PCP), who serves as the team facilitator; an audiologist; a speech-language pathologist (SLP); a neurologist; and a physical therapist (PT). Within their fields of expertise, the team members develop the following assessment plan:



**PCP** – Serves as team facilitator.



**Audiologist** – Conducts comprehensive hearing evaluation, tinnitus evaluation, and vestibular evaluation to include videonystagmography (VNG).



**SLP** – Conducts standardized speech-language evaluation and cognitive evaluations after the audiologist completes the hearing evaluation.

**Neurologist** – Conducts the CT scan, MRI, and EEG as well as cognitive and neurologic assessments.



**PT** – Conducts posturography and balance evaluations.

## Assessment Results

(Summarize key diagnostic results)

After they complete their individual assessments, the team members review the results. Assessment results were as follows:



**Audiologist** – Mr. Roy has high-frequency, mild-to-severe sensorineural hearing loss with poorer thresholds in the left ear from 3K Hz to 6K Hz. Speech recognition results agree with pure-tone thresholds. Patient has moderate difficulty with speech in noise, which was tested with QuickSIN. Mr. Roy has bilateral subjective tinnitus pitch matched at 6K Hz at threshold. He also has right-sided benign paroxysmal positional vertigo (BPPV) as demonstrated by VNG testing.



**SLP** – Mr. Roy demonstrates mild word-finding deficits, receptive language that is within normal limits, oral/motor exam that is within normal limits, and no speech deficits. He has memory deficits that are consistent with mild traumatic brain injury (mTBI) and that affect quality of life.



**Neurologist** – CT is normal. MRI is consistent with white-matter changes typical with aging. EEG is abnormal.



**PT** – Mr. Roy has normal functional balance and tests positive for right posterior canalithiasis. The PT recommends a referral to an

### IPP Treatment Plan

(Discuss, reflect, and modify recommendations to develop a coordinated plan)

Based on the reported findings, the IPP team develops and agrees on a treatment plan, which the team facilitator will communicate to the family. **The plan includes the following actions:**



**Audiologist** - Conduct hearing aid evaluation, fitting, verification, and validation. Program Mr. Roy's hearing aids with a secondary hunting program that offers reduced MPO. Enroll Mr. Roy in integrated sound therapy as part of the tinnitus management program.



**SLP** - Conduct weekly 45-minute sessions with Mr. Roy for 3 months, focusing on word-finding and memory strategies.



**Neurologist** - Follow up with Mr. Roy, as needed.



**PT** - Conduct repositioning therapy for right posterior canalithiasis.



**OT** - Work with Mr. Roy on tree safety education and have him obtain a harness in order to prevent and/or safeguard future falls.

### Treatment Outcomes

(Discuss results of treatment)

The team followed up with Mr. Roy three months after the initial evaluation to assess progress.



**Audiologist** - Mr. Roy is hearing better using sound enrichment successfully for tinnitus, and he reported satisfaction in using his hearing aids while hunting wild boars. He also reports hearing better while playing poker at the Elks Lodge.



**SLP** - Mr. Roy shows improved word-finding ability, shows no changes in memory scores, and reports improved quality of life using memory aides and strategies.



**PT** - Mr. Roy's dizziness is resolved.



**OT** - Mr. Roy's custom-made harness allows him to climb up and down trees safely while boar hunting.



### Team Follow-Up

(Determine meetings & communication plan)

The team followed up with Mr. Roy 3 months after the initial evaluation to assess his progress. Team members' individual conclusions are listed below:



**PCP** – As the team facilitator, the PCP follows up as needed and communicates assessment results and treatment plans/outcomes with team members.

The team communicates via weekly meetings that involve patient care coordination for several patients whom the team is following.

### Acknowledgement

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### Citations

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