Educational Improvement through Research-based Instruction
We need instruction that is e³:

❖ Efficient: provides knowledge and skills quickly
❖ Effective: enables learners to perform better
❖ Engaging: keeps learners involved in the process
Problems:

- Most instruction is “information-only” and uses few research-based principles of instruction (Merrill, 2006; Cropper, Bentley, & Schroder, 2009).
- Media and technology have obscured instructional strategy
Solution: First Principles of Instruction

1. Task-Centered
2. Activation
3. Demonstration
4. Application
5. Integration
Agenda

8:30   Introductions
9:00   Syllabus Analysis, Dave Merrill
10:30  5 Star Courses, Joanne Bentley
11:00  Course Design Demo, Max Cropper
11:30  Group Designs Sample Course
12:00  Lunch
Agenda

1:00  Identifying the Whole Task
1:30  Identifying Activation
2:00  Identifying Demonstration
2:30  Identifying Application
3:00  Identifying Integration
3:30  Plans for follow up
Levels of Instructional Design

- Level 0 – Presentation Only
- Level 1 – Demonstration
- Level 2 – Application
- Level 3 – Task Centered
- Activation and Integration
First Principles of Instruction

1. Task- Centered
2. Activation
3. Demonstration
4. Application
5. Integration
# First Principles of Instruction

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<th>Problem: Treat Patient with Tinnitus</th>
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<td>3. Demonstration: Walk through treatment</td>
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<td>4. Application: Participants prescribe treatment for patients</td>
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<td>5. Doctors provide treatment for patients</td>
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<td>2. Activation: Video of Sam meeting with Doctor</td>
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**Problem:**
Treat Patient with Tinnitus
Cropper Adaptation of Merrill's Progression of Problems

1. Show a new whole problem
2. Present component skills specific to the problem.
3. Demonstrate the component skills for the problem.
4. Have learners practice solving a new whole problem.
5. Show another whole problem.
6. Present additional elements of the component skills.
7. Demonstrate these additional elements
8. Have learners apply previously learned component skills to this problem.
9. Repeat apply, present, demonstrate cycle for subsequent problems.

Learners are able to complete a new problem without assistance.
Cropper Adaptation of Merrill’s Progression of Problems

1. Show a new whole problem
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Component Skill 1
Component Skill 2
Component Skill 3
Component Skill 4
Component Skill 5

Learners are able to complete a new problem without assistance.
## 5-Star VA Tinnitus Course

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<th>Levels of Progressive Tinnitus Management</th>
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<th>Deborah</th>
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<td>PTM Level 4, Evaluation</td>
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<td>Demonstration, Application</td>
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Causes of Tinnitus

Tinnitus (pronounced tin-NY-tus or TIN-u-tus) is not a disease. It is a symptom that something is wrong in the auditory system, which includes the ear, the auditory nerve that connects the inner ear to the brain, and the parts of the brain that process sound. Something as simple as a piece of earwax blocking the ear canal can cause tinnitus. But it can also be the result of a number of health conditions, such as:

- Noise-induced hearing loss
- Ear and sinus infections
- Diseases of the heart or blood vessels
- Ménière's disease
- Brain tumors
- Hormonal changes in women
- Thyroid abnormalities

Tinnitus is sometimes the first sign of hearing loss in older people. It also can be a side effect of medications. More than 200 drugs are known to cause tinnitus when you start or stop taking them.

People who work in noisy environments—such as factory or construction workers, road crews, or even musicians—can develop tinnitus over time when ongoing exposure to noise damages tiny sensory hair cells in the inner ear that help transmit sound to the brain. This is called noise-induced hearing loss.

Servicemembers exposed to bomb blasts can develop tinnitus if the shock wave of the explosion squeezes the skull and damages brain tissue in areas that help process sound. In fact, tinnitus is one of the most common service-related disabilities among veterans returning from Iraq and Afghanistan.

Pulsatile tinnitus is a rare type of tinnitus that sounds like a rhythmic pulsing in the ear, usually in time with your heartbeat. A doctor may be able to hear it by pressing a stethoscope against your neck or by placing a tiny microphone inside the ear canal. This kind of tinnitus is most often caused by problems with blood flow in the head or neck. Pulsatile tinnitus also may be caused by brain tumors or abnormalities in brain structure.

Even with all of these associated conditions and causes, some people develop tinnitus for no obvious reason. Most of the time, tinnitus isn’t a sign of a serious health problem, although it’s loud or doesn’t go away.
Sam’s Tinnitus and Hearing Survey Results

According to the Sam’s Tinnitus and Hearing Survey, Sam has _____. (Select all that apply.)

Answer Options:

- A. A tinnitus problem
- B. A hearing problem
- C. No hearing problems
- D. A sound tolerance problem

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**Tinnitus and Hearing Survey**

**A. Tinnitus**
- Over the last week, tinnitus kept me from sleeping.
- Over the last week, tinnitus kept me from concentrating on reading.
- Over the last week, tinnitus kept me from relating.
- Over the last week, I couldn’t get my mind off of my tinnitus.

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**B. Hearing**
- Over the last week, I couldn’t understand what others were saying in noisy or crowded places.
- Over the last week, I couldn’t understand what people were saying on TV or in movies.
- Over the last week, I couldn’t understand people with soft voices.
- Over the last week, I couldn’t understand what was being said in group conversations.

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**C. Sound Tolerance**
- Over the last week, everyday sounds were too loud for me.
- If you responded 1, 2, 3 or 4 to the statement above:
  - Bring in a meeting with 5 to 10 people would be too loud for me.

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Sam’s survey results
Tinnitus Knowledge Check

Select all statements that are true about tinnitus.

Answer Options:

- A. With objective tinnitus, the doctor can hear the sounds as well as the patient.
- B. Tinnitus is generally considered to be a permanent condition.
- C. Tinnitus is generally accompanied by hearing loss.
- D. Tinnitus is generally associated with inner ear damage.
- E. Tinnitus always involves a ringing noise.
- F. One generally effective treatment is sound therapy.
- G. Some tinnitus patients with hearing loss experience total or partial tinnitus relief while wearing hearing aids.
PCP Referral Short Answer Question

Who would you refer Sam to?
PTM Level 1 - Primary Care Refers Sam to Audiology
Application: Prescribing Appropriate Treatment

What treatment would you prescribe for Sam and why would you prescribe that treatment?

Prescribe combination instruments. Because of the severity of Sam’s tinnitus and hearing loss, combination instruments are most likely to solve the hearing loss and provide sound therapy for his tinnitus.

Combination instruments would likely be the best solution. The recent introduction of new combination instruments that do not sacrifice hearing aid features would allow Sam to be fitted with these devices as high quality hearing aids. It’s important to note however that if this is the decision reached, it should be accompanied by Level 3 Group Education, and Sam shouldn’t use the sound generator portion of the devices until his group education has helped him understand the different uses of therapeutic sound before actually using it.
Minor Tinnitus Scenario

Lori hears a minor ringing sound in her ears. She also believes she has some hearing loss. She comes to you, her primary care provider. Which of the above options should you choose?

- Refer her to an audiologist
- Prescribe antibiotic ear drops
- Prescribe a hearing aid
Refer her to an audiologist

This would be the best answer. An audiologist would be able to determine the amount of hearing loss, and the severity of the Tinnitus. The audiologist has Lori complete the Tinnitus and Hearing Survey and the Tinnitus Handicap Inventory. The audiologist also performs a hearing test, and discovers that Lori has a little high-frequency hearing loss, although it is not severe. Her tinnitus is not severe either, although it is persistent. She indicates that it is a small problem on the Tinnitus and Hearing Survey. Lori's Tinnitus Handicap Inventory indicates that she has a mild tinnitus handicap. What should the audiologist prescribe?

A hearing aid  Combination instruments  Level 3 classes
Return to Tinnitus Scenario
Deborah Initial Diagnosis

Deborah has come to you, her Primary Care Provider, with a complaint of ringing in her ears. You learn that she has been suffering with fairly severe consistent ringing for a couple of years. You learn that she is not aware of any hearing loss, but has had frequent ear infections. You examine her ears, but find no current ear infection. Write your recommendation for Deborah, then proceed to the next page.
Chaining Overview

You refer Deborah to an audiologist. The audiologist has Deborah complete the Tinnitus and Hearing Survey and the Tinnitus Handicap Inventory. The audiologist also performs a hearing test, and discovers that Deborah has a little hearing loss across all frequencies, although it is not severe. Her tinnitus is severe however, and persistent. She indicates that it is a severe problem on the Tinnitus and Hearing Survey. Deborah's Tinnitus Handicap Inventory indicates that she has a serious tinnitus handicap. What should the audiologist prescribe and why? Write down your recommendation, then proceed to the next step.