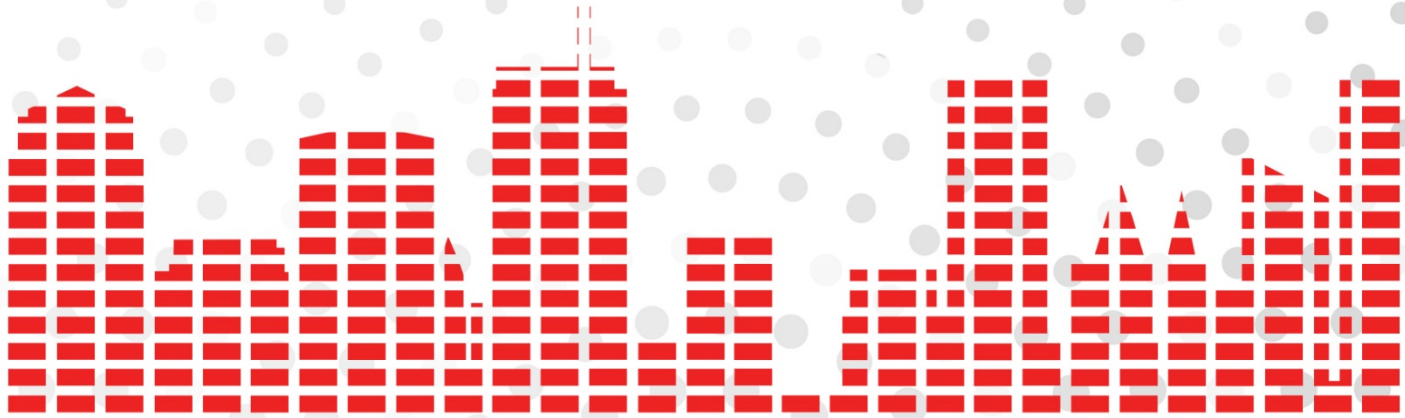


AuDACITY

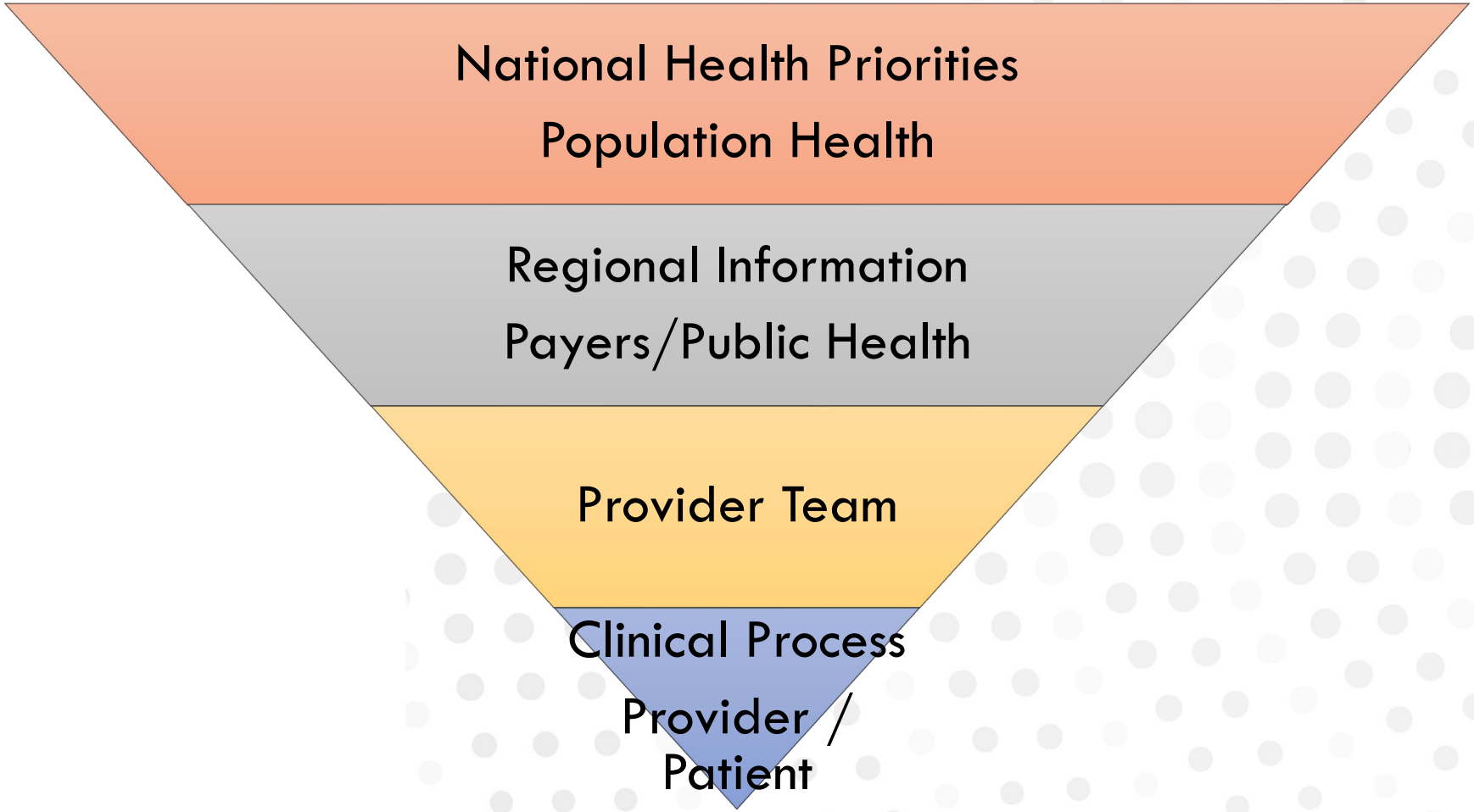
Bolder than Ever

ADA
ACADEMY of DOCTORS of AUDIOLOGY®

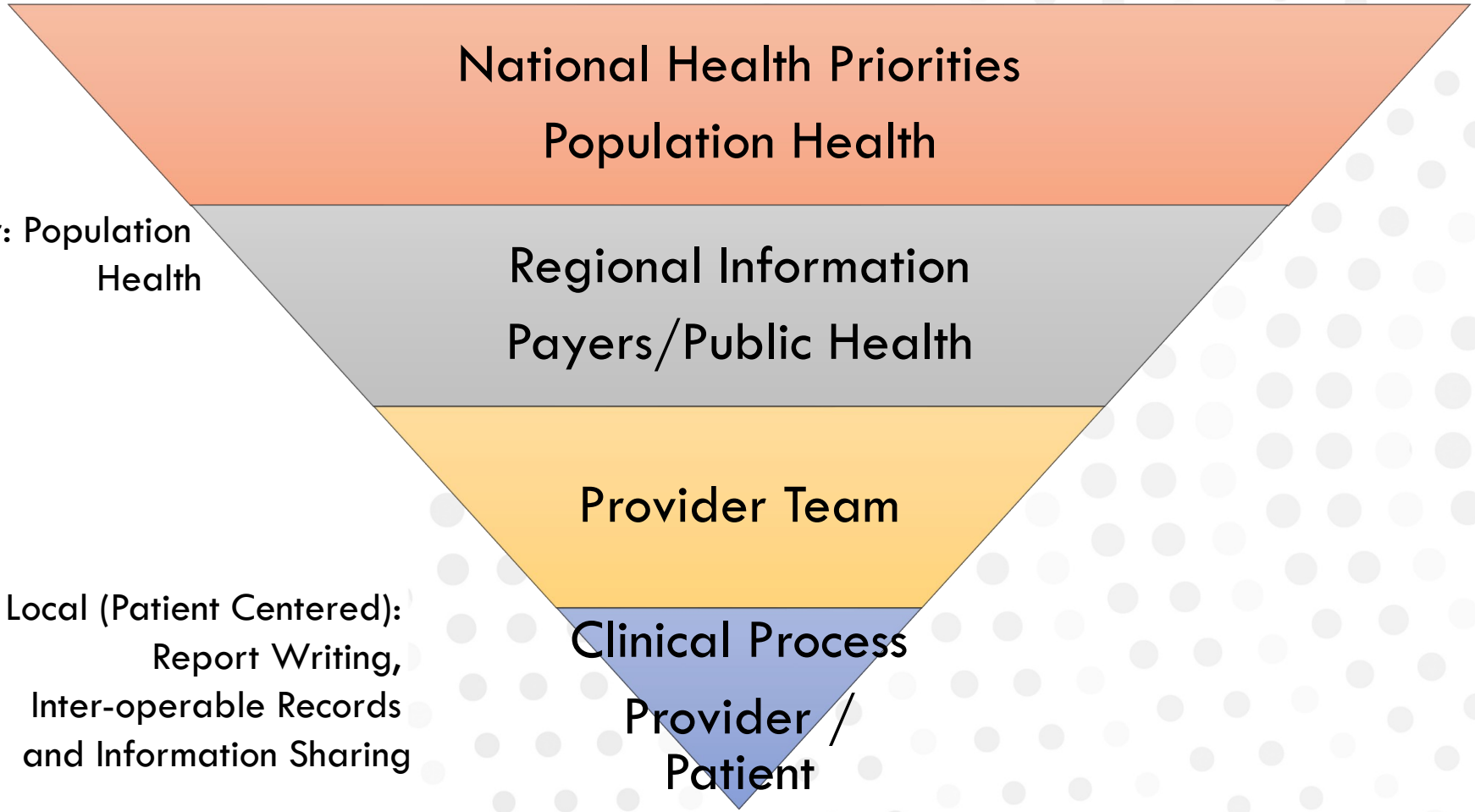
Documentation and Communications with Physicians

David A. Zapala

Information Density and Granularity



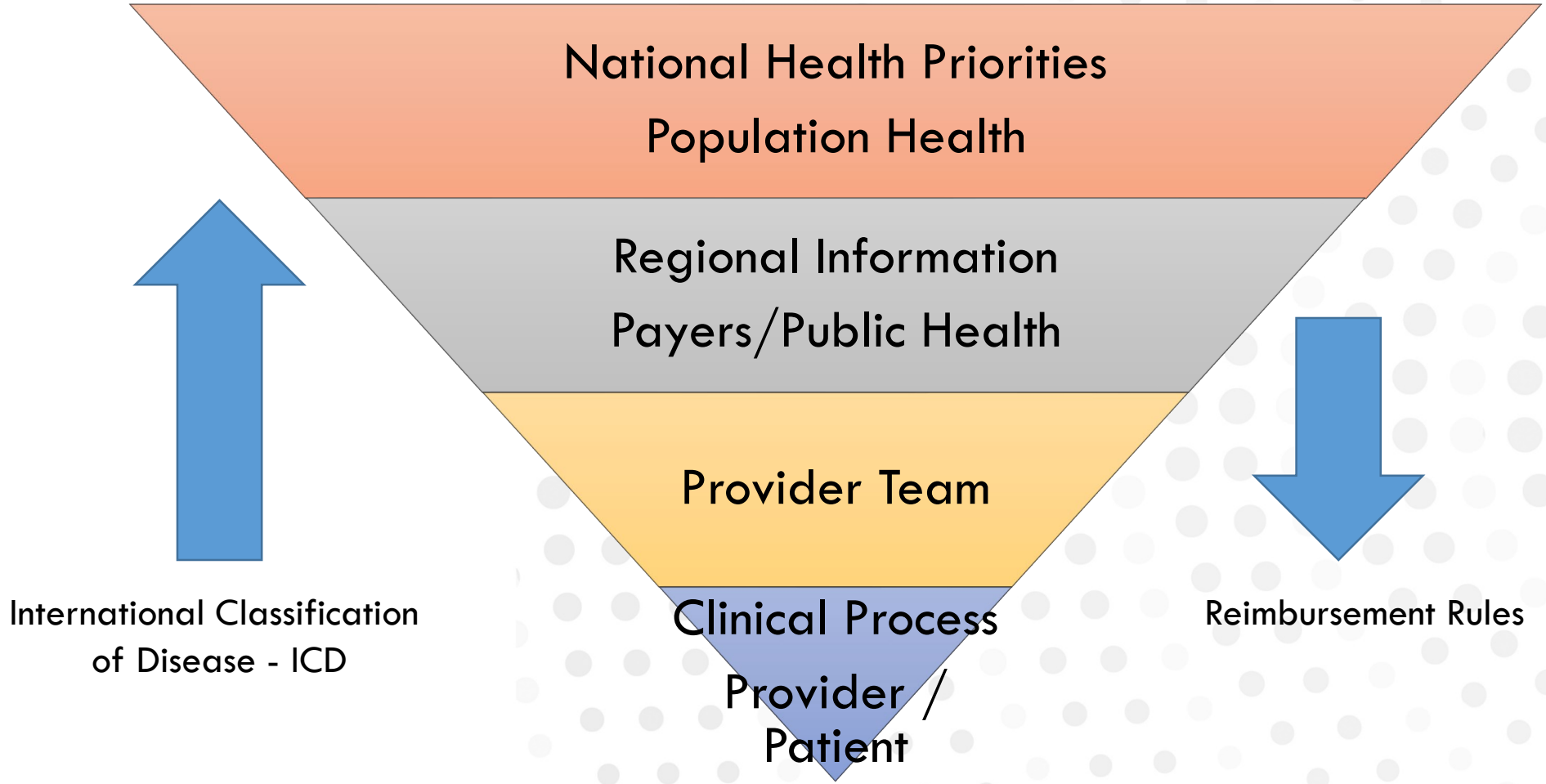
Information Density and Granularity



Bigger: Population Health

Local (Patient Centered): Report Writing, Inter-operable Records and Information Sharing

Information and Policy Constraints



The World Health Organization Developed the International Classification of Disease for the purpose of:

1. Defining diagnosed health conditions to facilitate payment for professional services
2. Facilitating epidemiological studies to describe common causes of death in a given population
3. Classifying diseases

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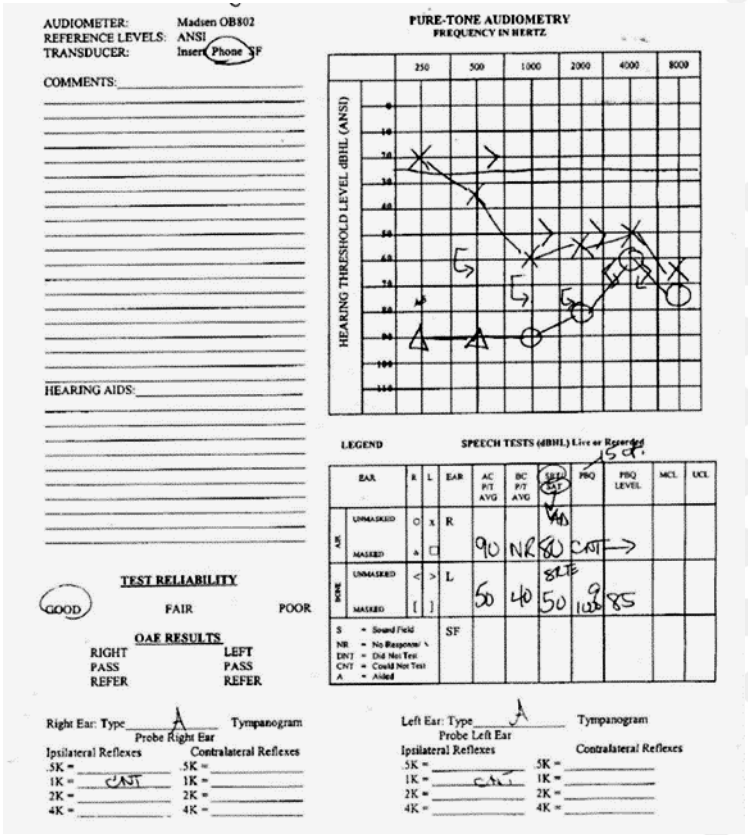
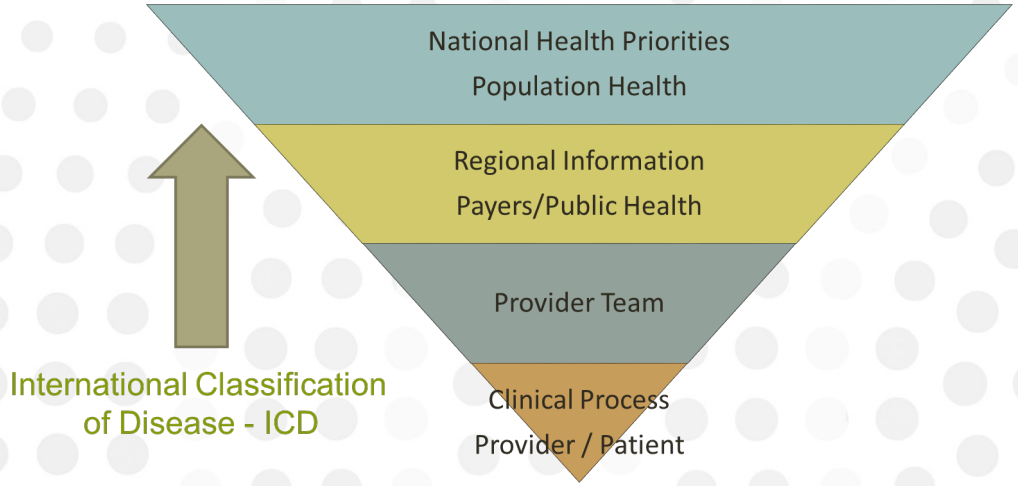
CPT 92550 & 92557 for ICD-10:H90.3

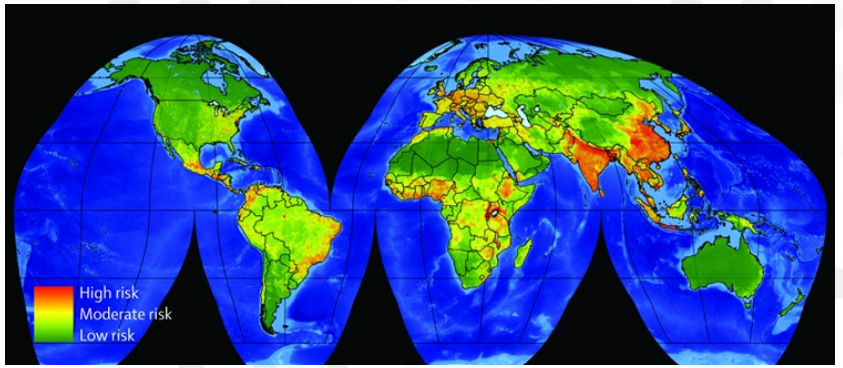




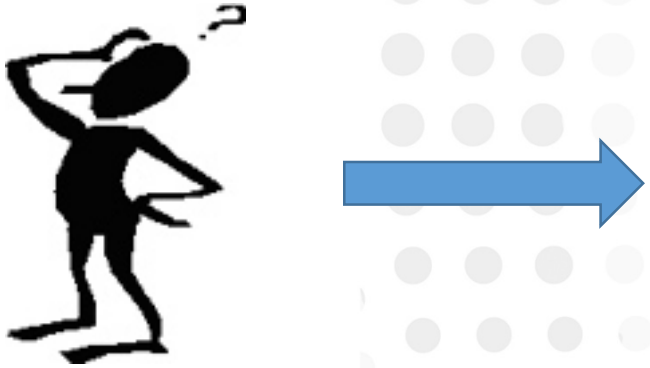
Sensorineural hearing loss, bilateral

Principle #1:
Measurement Precedes Change

- Corollary: 1a
  - Who defines the yard stick and measurements, defines change



Disruption in Service Delivery



Hearing aid delivery channel

- OTC / Internet Hearing Aid
- Hearables
- Hearing Aid Dispenser
- Audiologist
- PCP
- ENT
- Other?

The Challenge for Audiology

- Provide services that have value to our consumers
  - Patients / Clients / Consumers
    - Keep me safe
    - Keep me healthy
    - Improve my quality of life
  - Partners
    - Medical Providers & Industry Partners
      - Help us provide value

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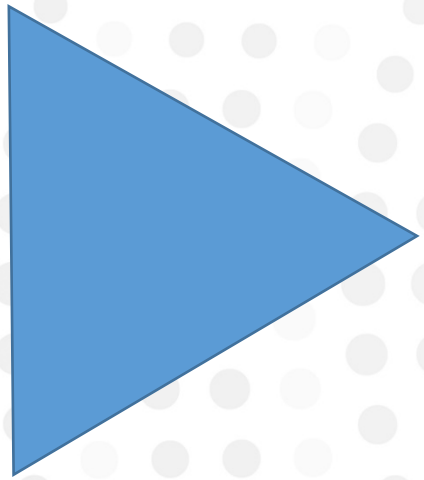
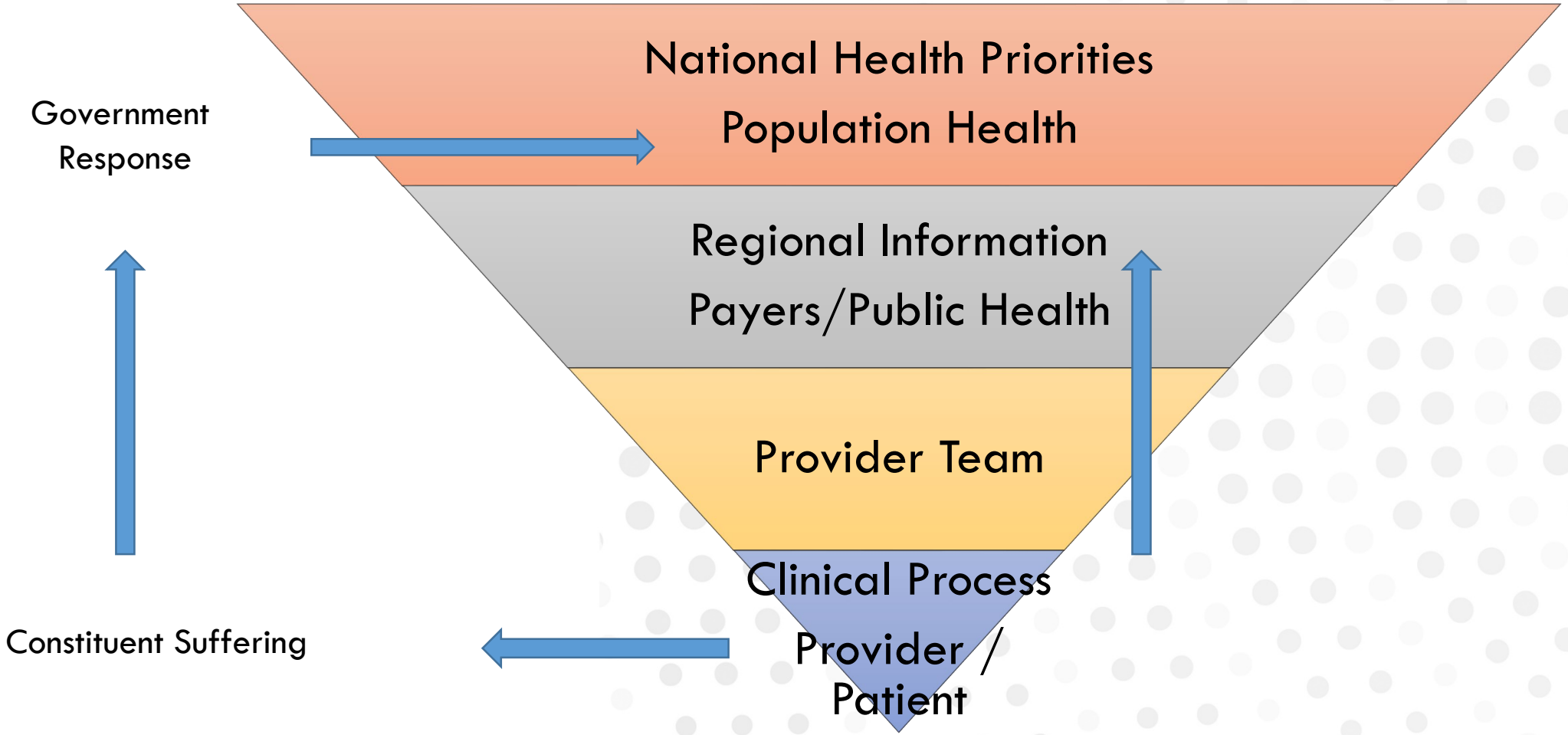


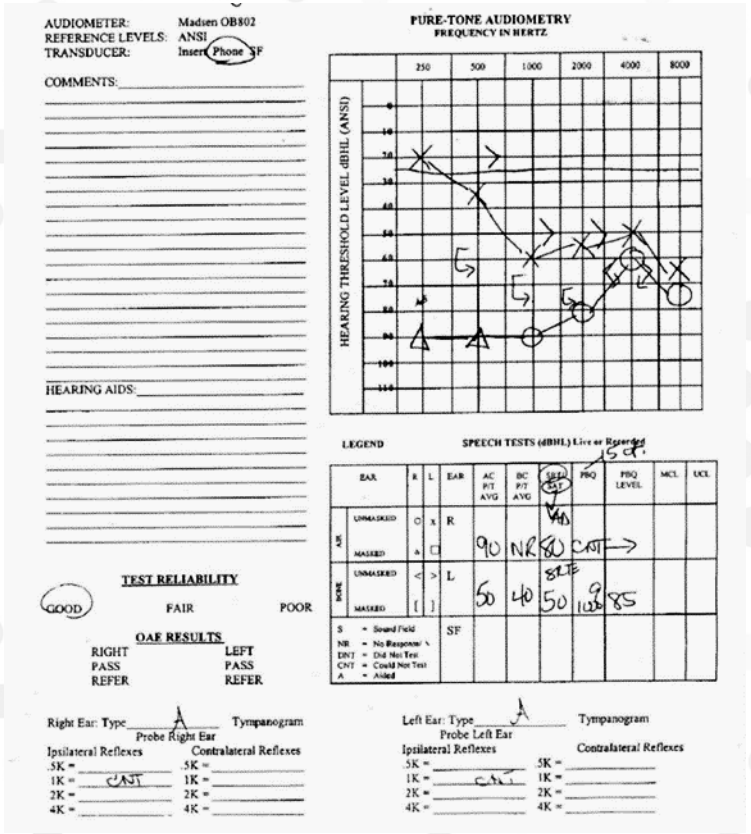
Relieve Suffering

Opinion: How Healthcare Changes



Principle #1:
Measurement Precedes Change

- Corollary: 1b
  - Doing the minimum is not enough.
  - Be a heretic!
    - Communicate Safety, Health, and Mitigation of Suffering



Cut to the Chase…

- <u>Support the Medical Home</u>
  - Put yourself in the position of a busy Primary Care Provider (PCP):
  - Efficiently communicate what is important to them
    - Written Reports use soAp structure
    - Verbal Communications use SBAR

It Works

- Support the Medical Home
  - Put yourself in the position of a busy Primary Care Provider (PCP): ***communicate what is important to them***
    - Written Reports use soAp structure
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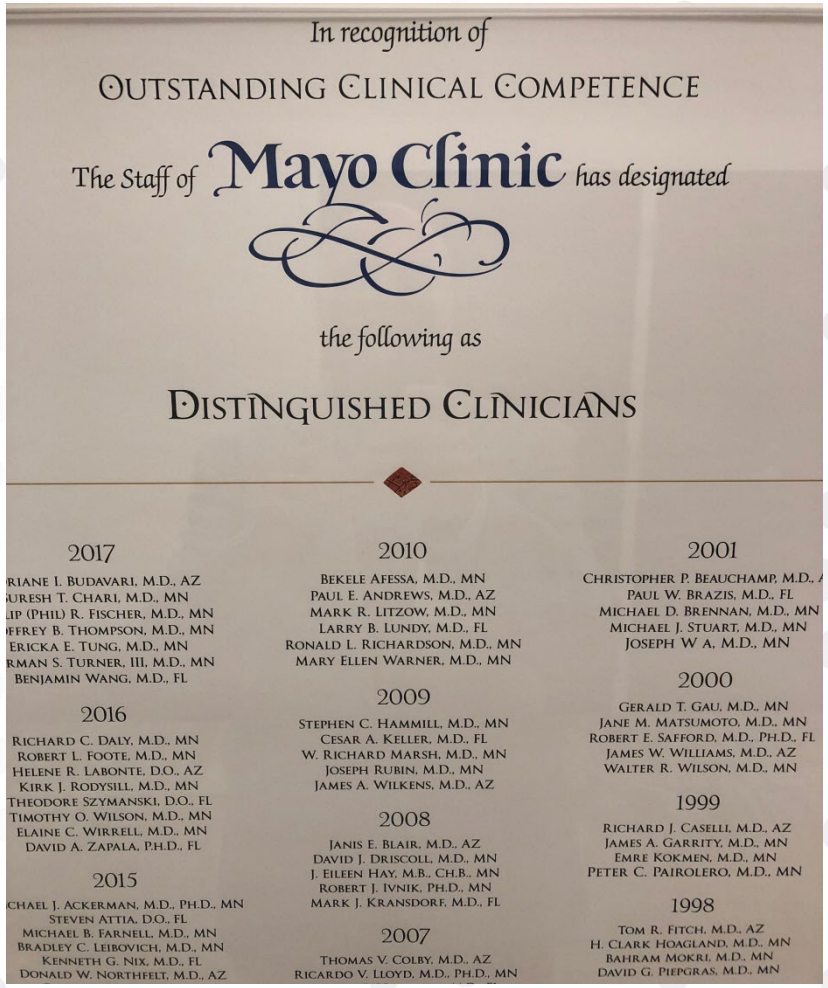


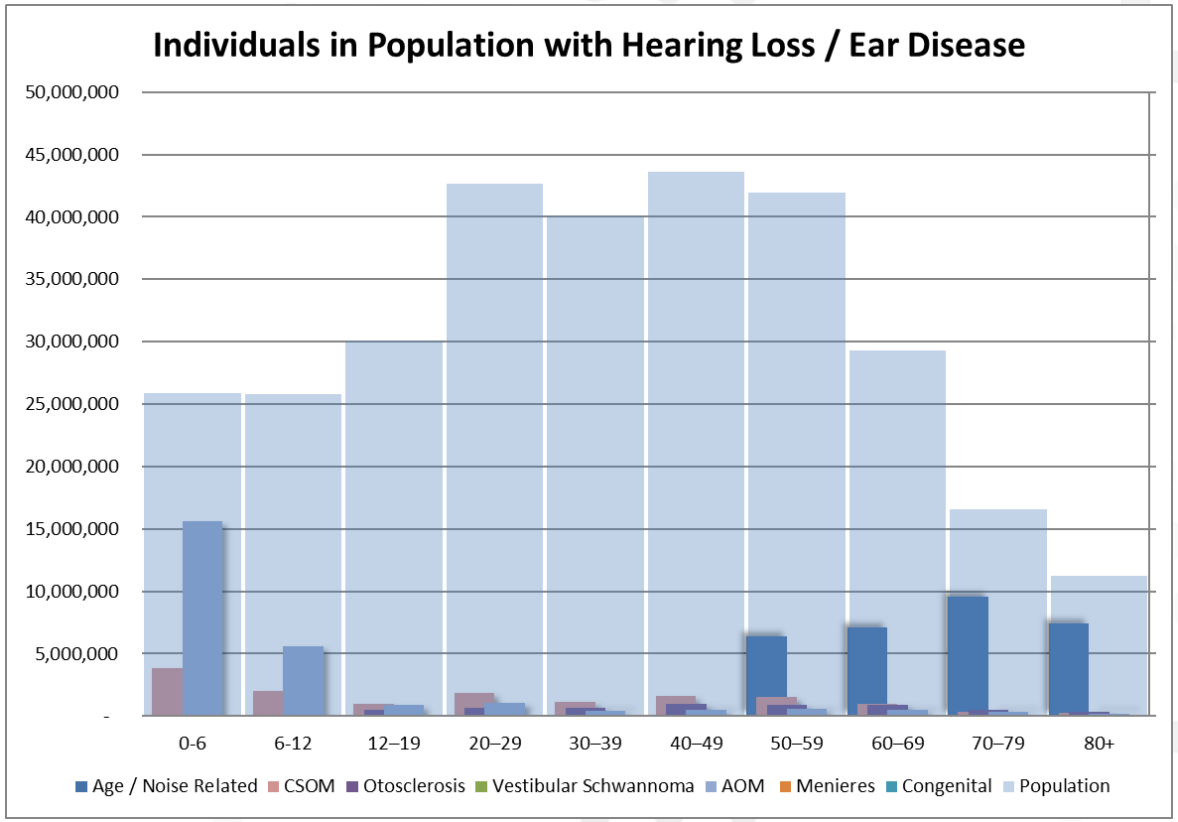
Who is Most Likely to Relive Suffering from Hearing Impairment?

Hearing aid delivery channel

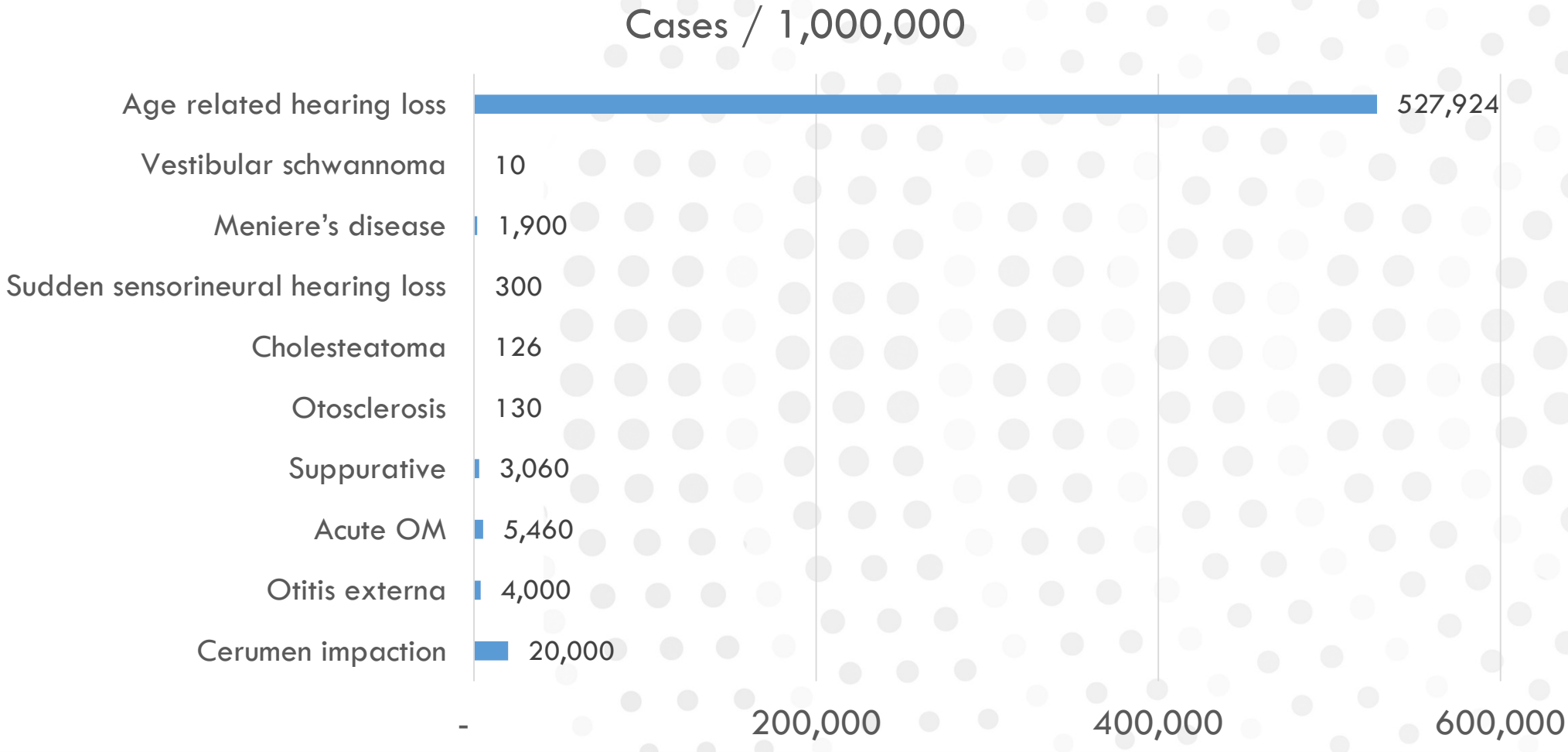
- OTC / Internet Hearing Aid
- Hearables
- Hearing Aid Dispenser
- Audiologist
- PCP
- ENT
- Other?

Keep Me Safe

Rough Estimates of Ear Disease by Age Group



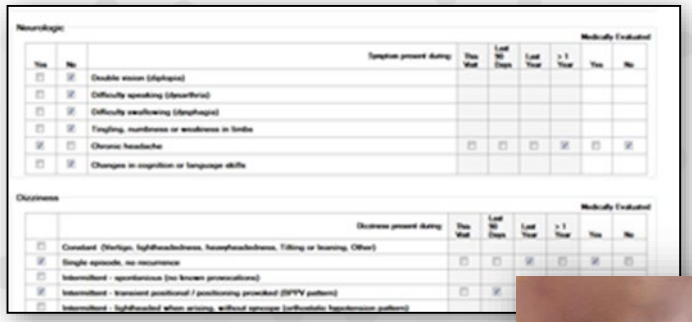
Ear Disease & Hearing Loss (age >= 50 yrs)

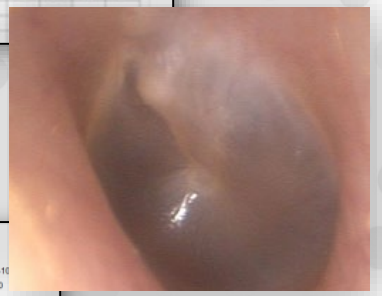


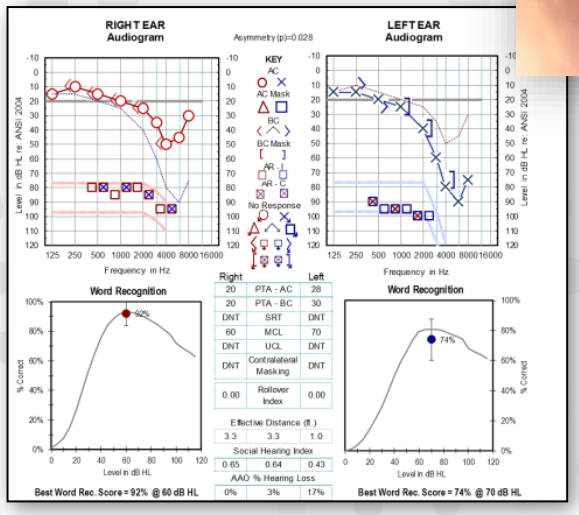
Standardizing Ear Disease Risk Assessment by Audiologists

Professional Ear Disease Risk Analytics (PEDRA)

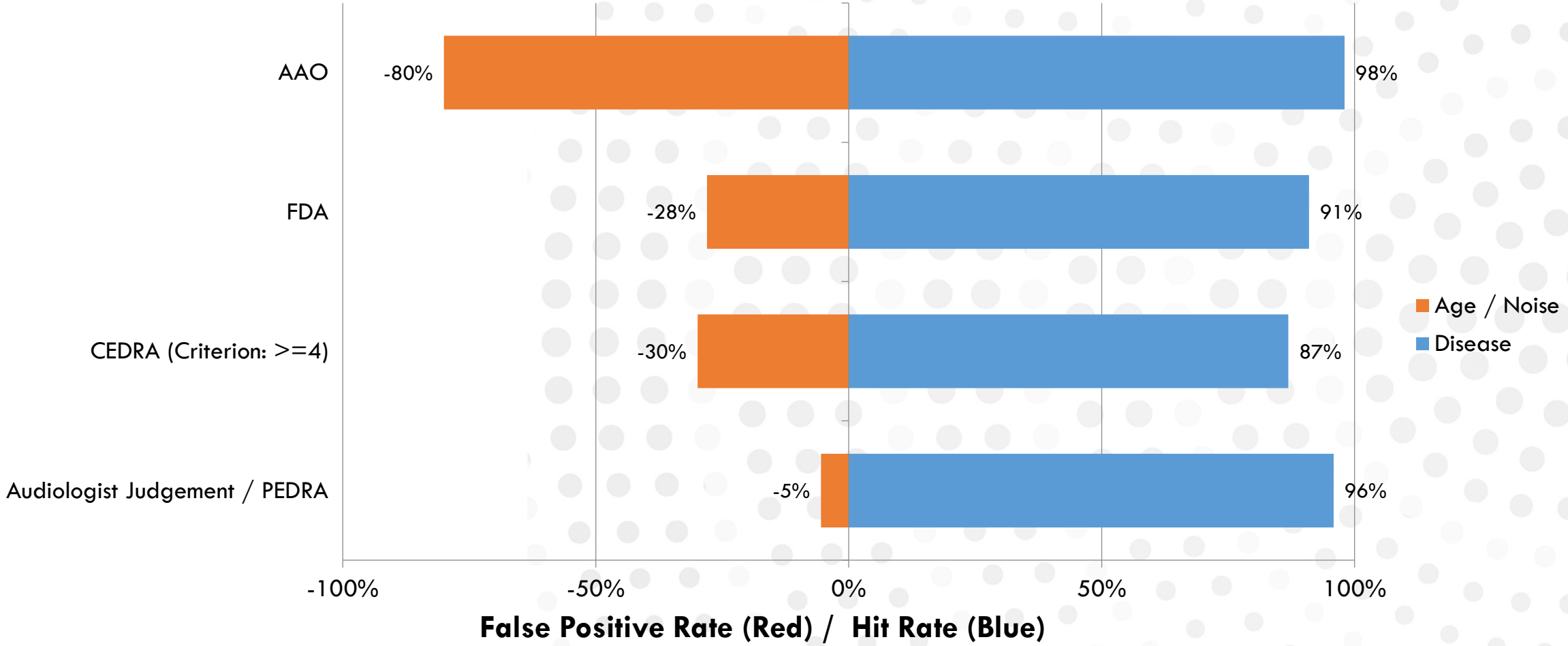
- Structured Interview
- Simple Standardized Physical Examination
- Algorithmic Disease Detection Analytics
- Real-Time Estimate of Ear Disease Risk



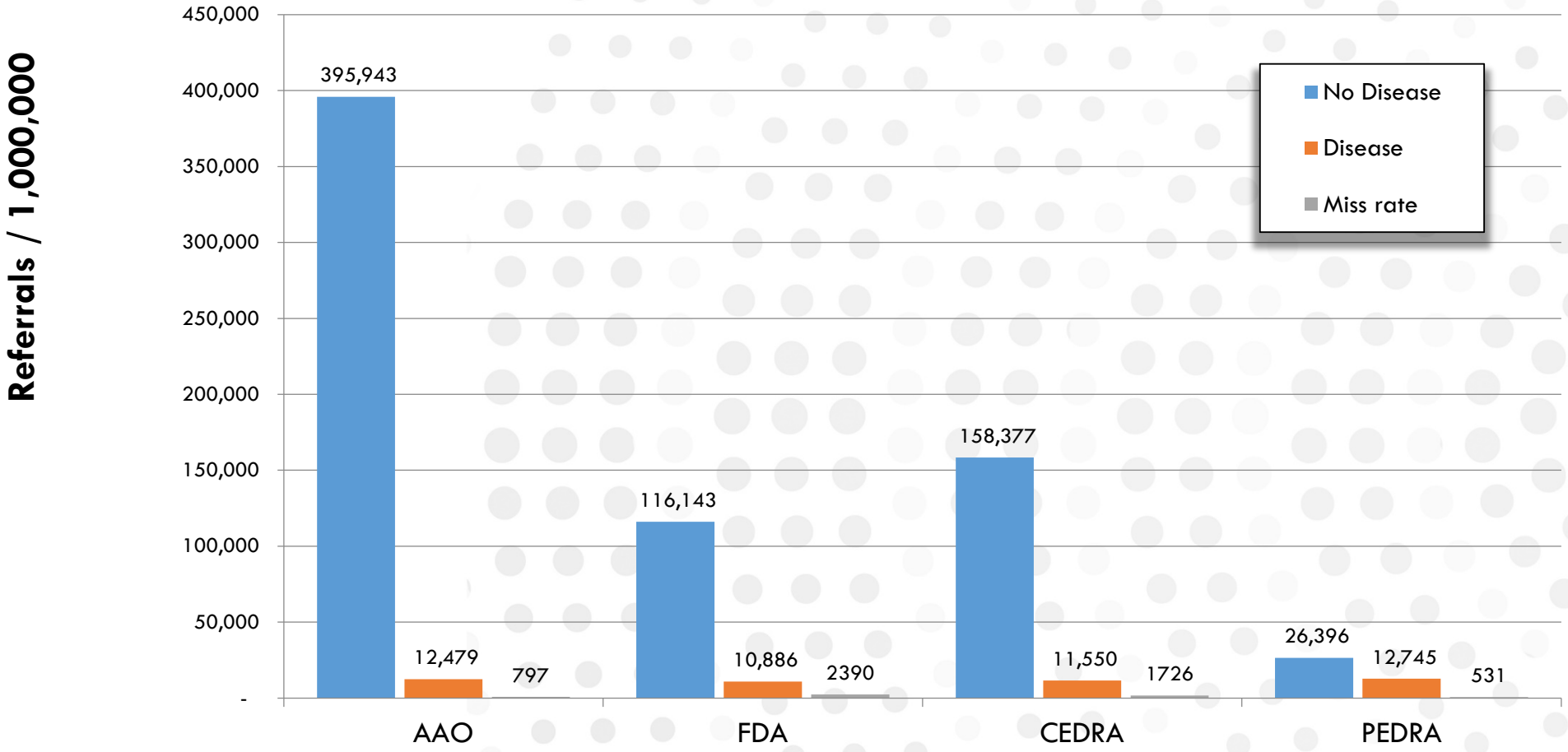




PEDRA - Preliminary



Performance in Adults >= 50 Years



cedra.northwestern.edu

CEDRA: Consumer Ear Disease Risk Assessment

Keep Me Healthy

Health and Disease: What Conditions Should be Identified Prior to Hearing Aid Procurement?

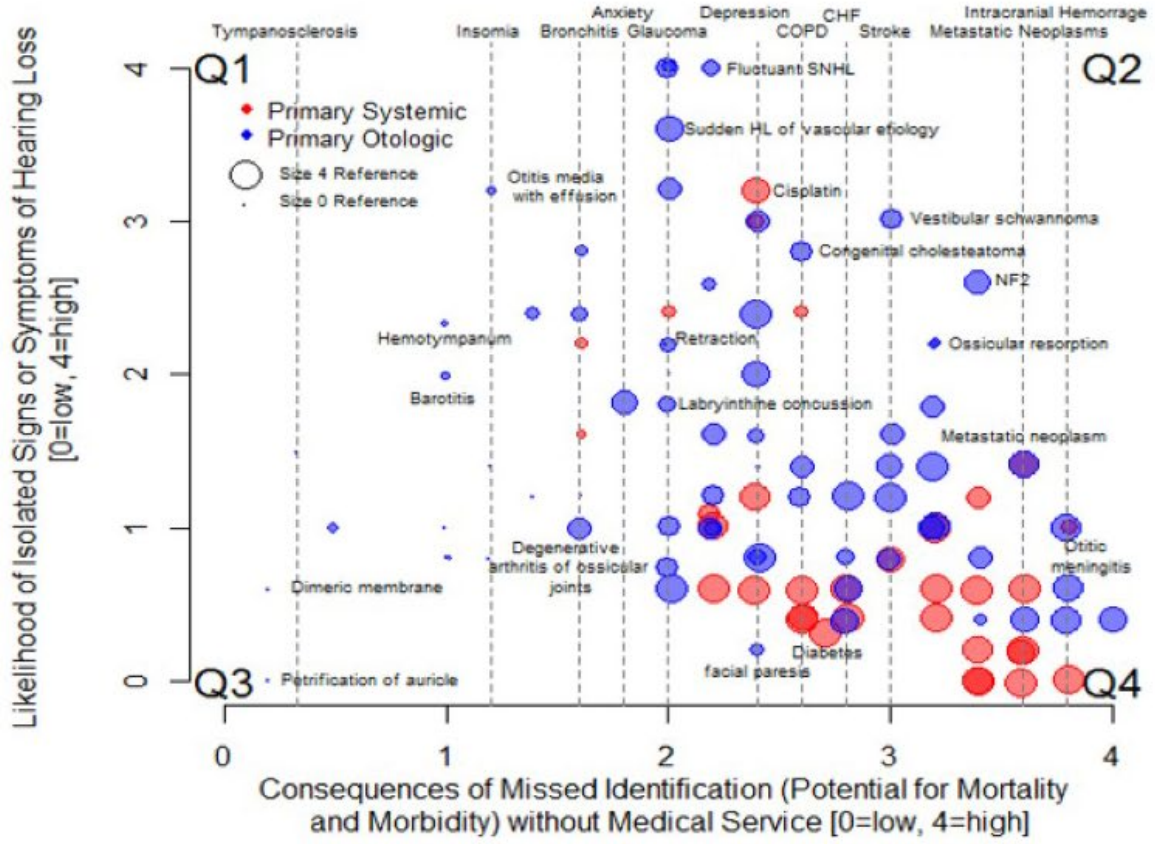


Figure 3. Scatterplot of ear diseases and conditions selected as adult targeted diseases ranked by consequences of missed identification (x-axis) and chance of isolated hearing loss (y-axis). Blue and red symbols are used to indicate primarily otologic (blue)versus systemic conditions (red), respectively. The size of the symbol is determined by the rating of diagnostic difficulty for the particular condition. Reference conditions are marked along the horizontal axis with vertical dashed lines and labeled along the top horizontal axis.

SNHL = sensorineural hearing loss; HL = hearing loss; NF 2= neurofibromatosis II; COPD = chronic obstructive pulmonary disease; CHF= congestive heart failure

Kleindienst et al, 2017

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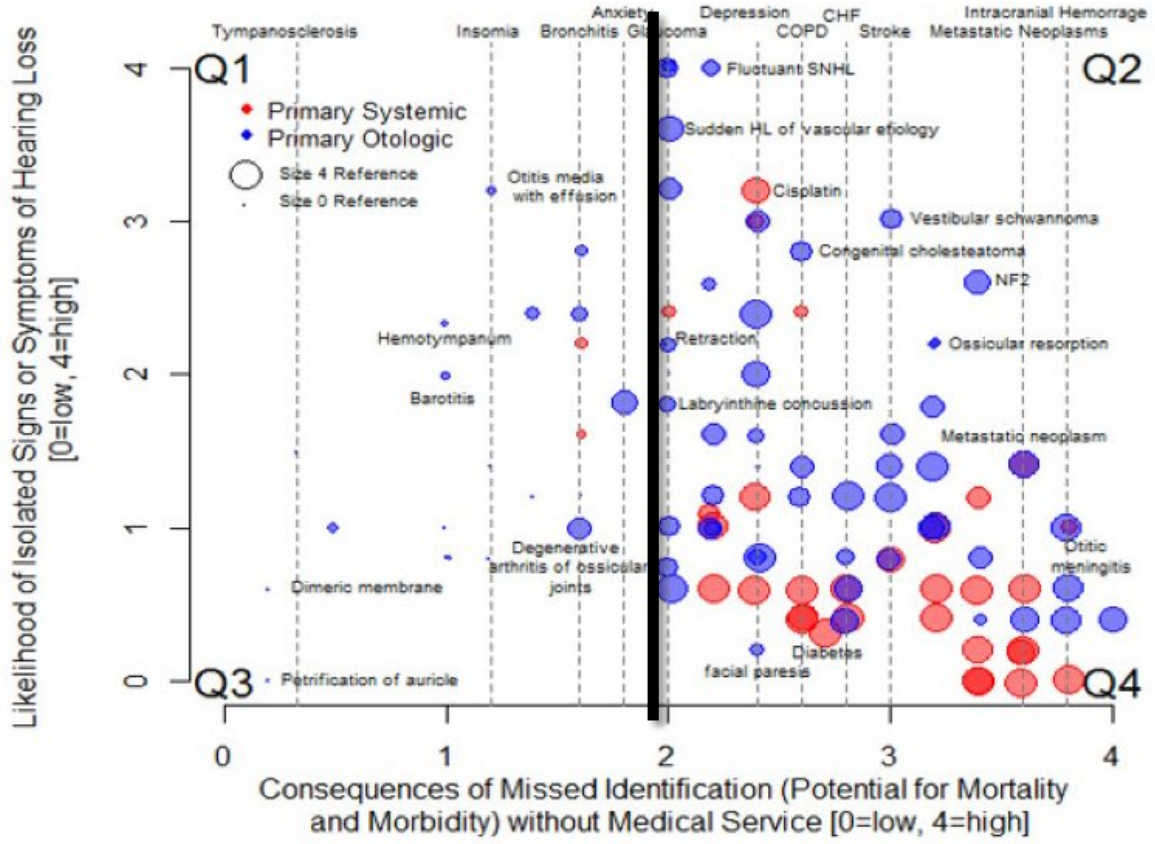

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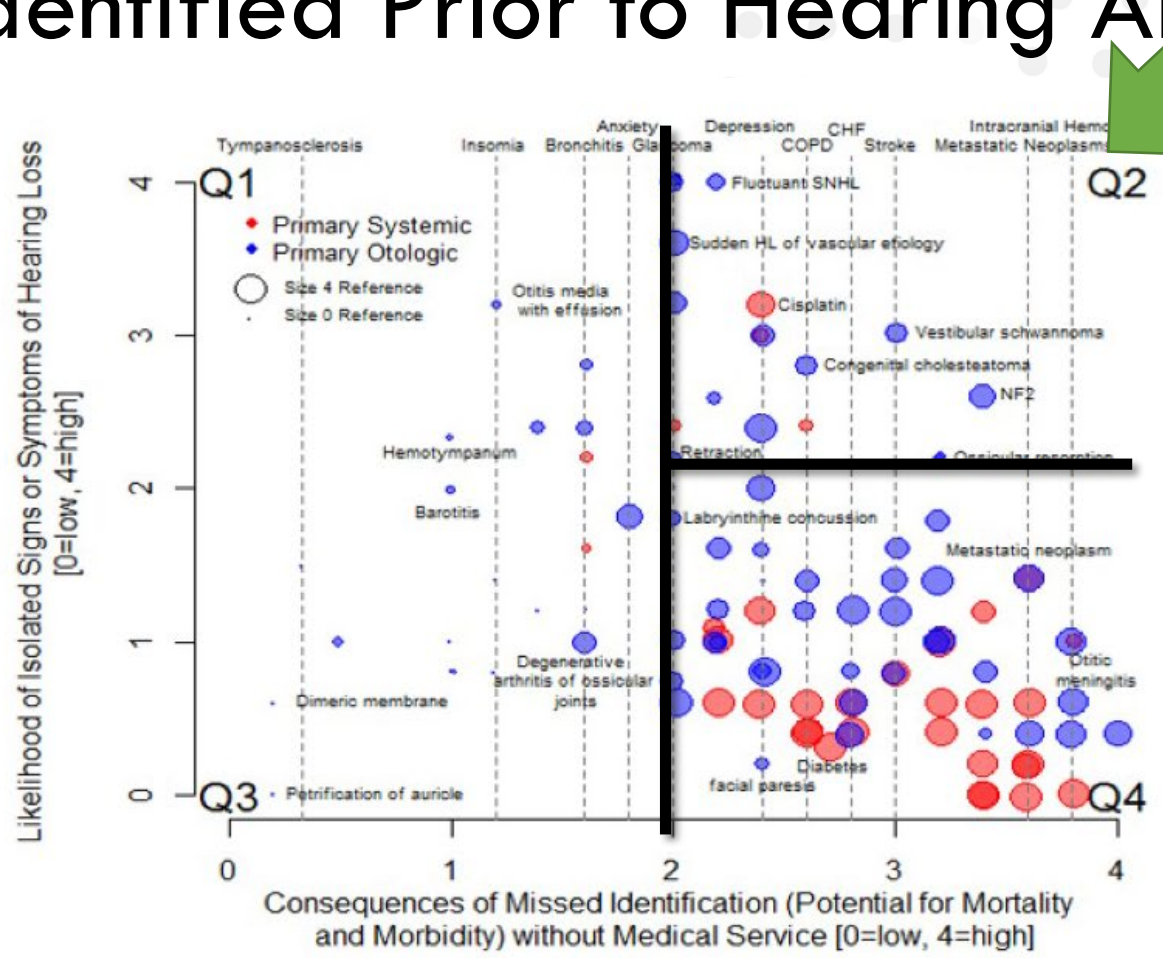

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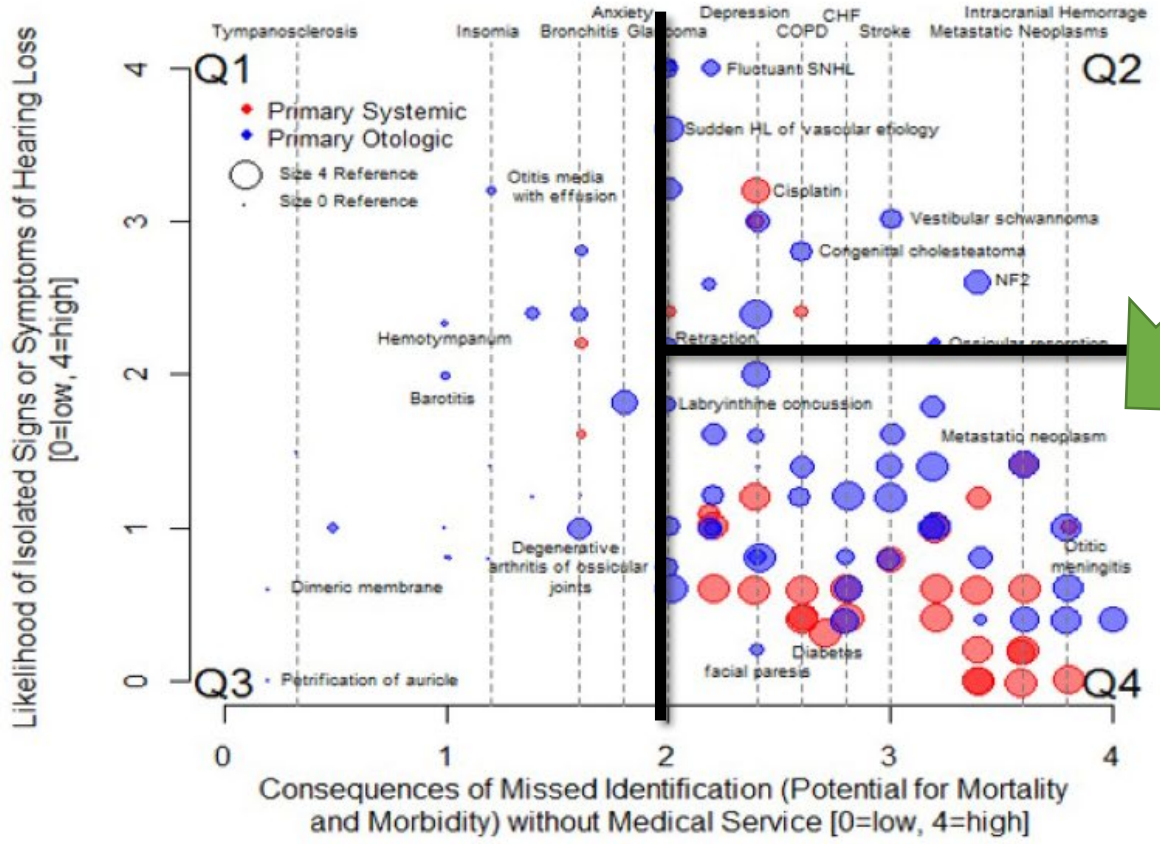

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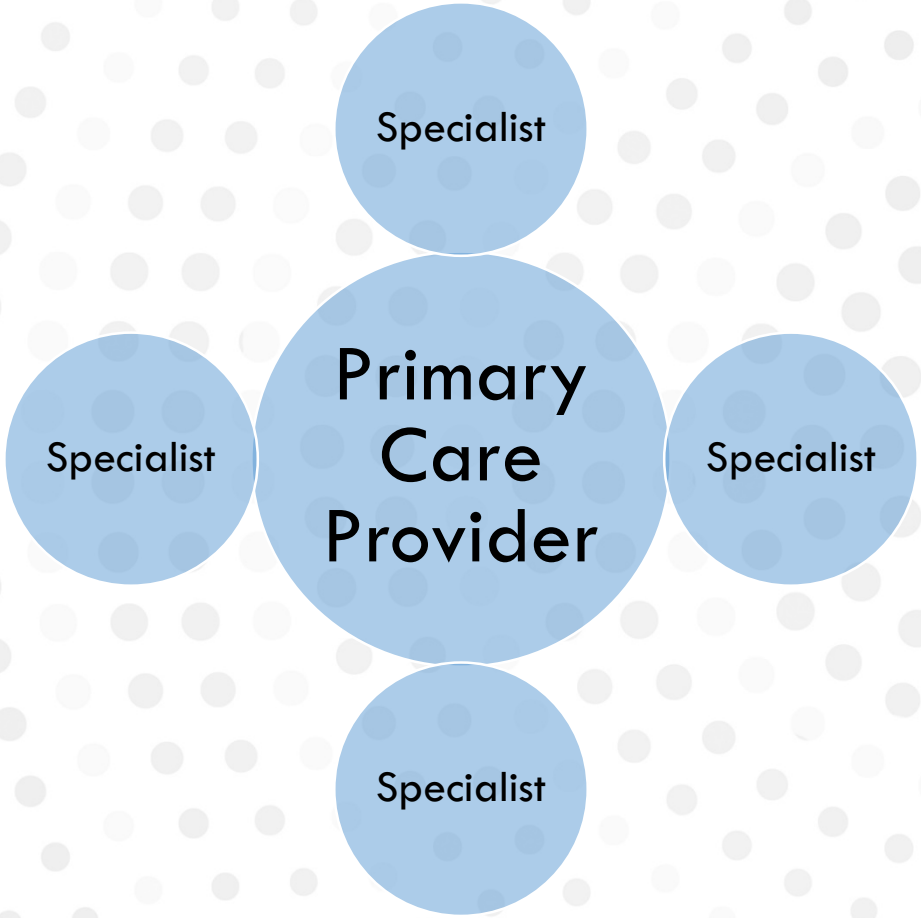
Audiology / PCP Co-management is key!

SNHL = sensorineural hearing loss; HL = hearing loss; NF 2= neurofibromatosis II; COPD = chronic obstructive pulmonary disease; CHF= congestive heart failure

Kleindienst et al, 2017

Integrating into the Healthcare Team

- **Medical home**, also known as the patient-centered medical home (PCMH), is a team-based health care delivery model led by a health care provider to provide comprehensive, continuous and coordinated healthcare to patients
- **Care coordination** requires additional resources such as health information technology and team-based care models.



With Each Provider, the Audiologist Needs To…

- Establish that when a person comes in for consultation, the audiologist can:
  - Recognize and can generate a plan to handle any disease associated with the patients hearing complaint
  - Improve functional hearing / quality of life through audiological care
  - Work to eradicate the development of future hearing difficulties

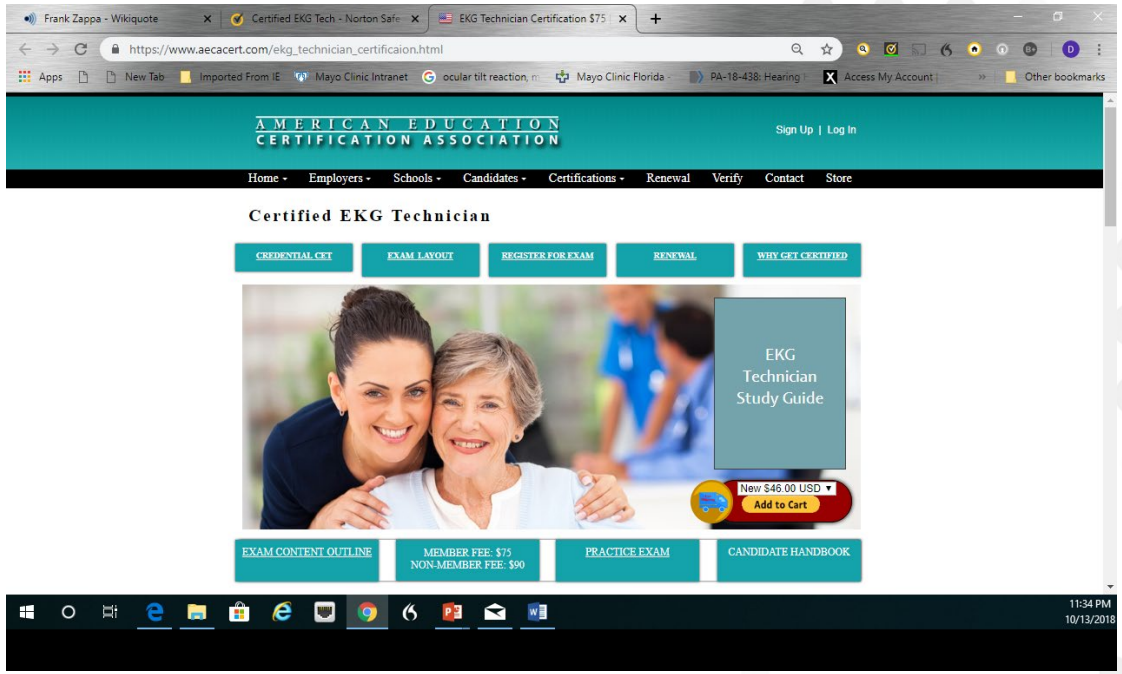
Inter-Operable Reports

- Structured to pass *Information* quickly and accurately.
- Standard for Electronic Health Records (EHRs)
- Follows "SOAP" Structure
  - *Subjective*: Demographics, history, outside records
  - *Objective*: Physical Examination, Tests
  - *Assessment*: Diagnostic Statements – Information
  - *Plan*: To manage *Assessment* findings.

Side Track

- Data
- Facts and Classifications
- Knowledge
- Information

EKG Example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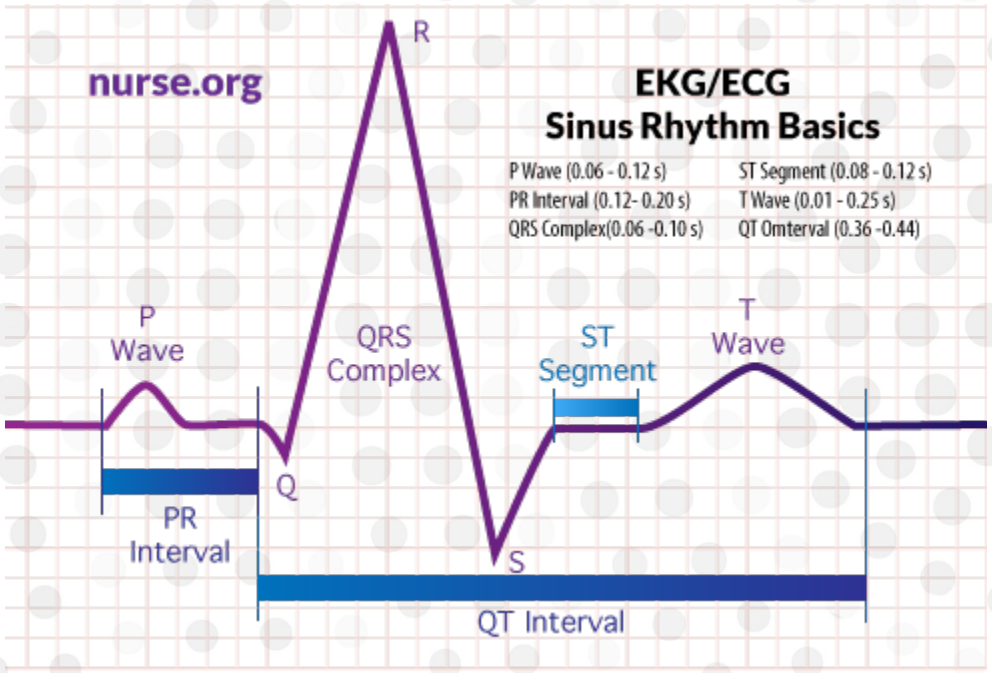
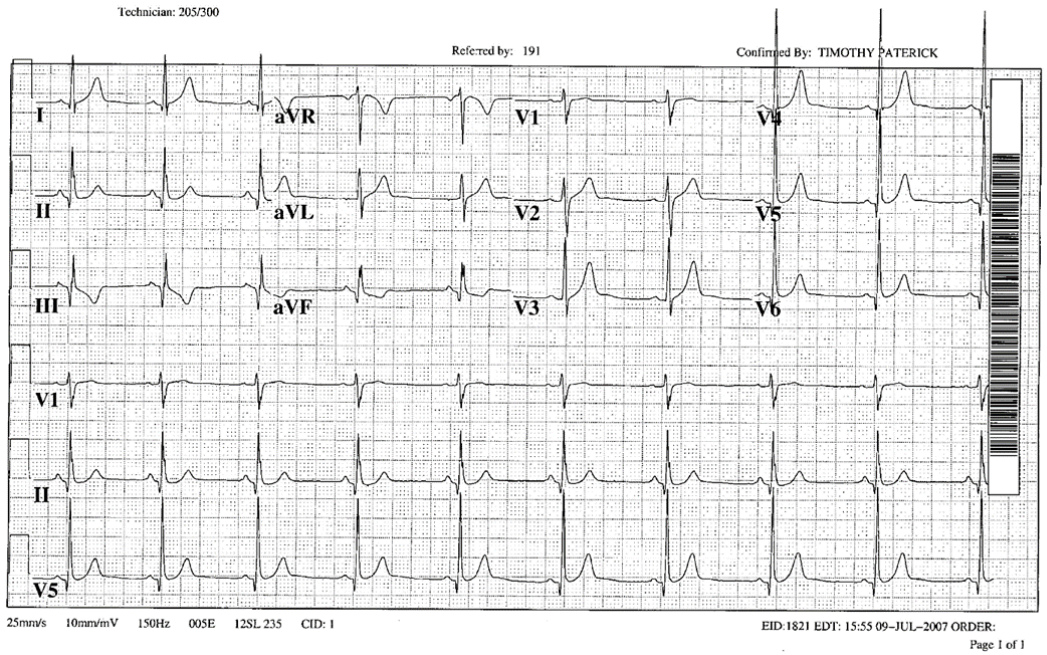
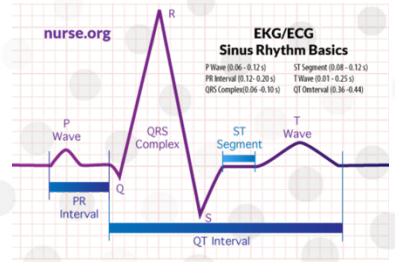

nurse.org
EKG/ECG
Sinus Rhythm Basics
P Wave (0.06 - 0.12 s)
PR Interval (0.12- 0.20 s)
QRS Complex(0.06 -0.10 s)
ST Segment (0.08 - 0.12 s)
T Wave (0.01 - 0.25 s)
QT Omterval (0.36 -0.44)
R
P Wave
QRS Complex
ST Segment
T Wave
Q
PR Interval
S
QT Interval

Zapala's EKG, 2007

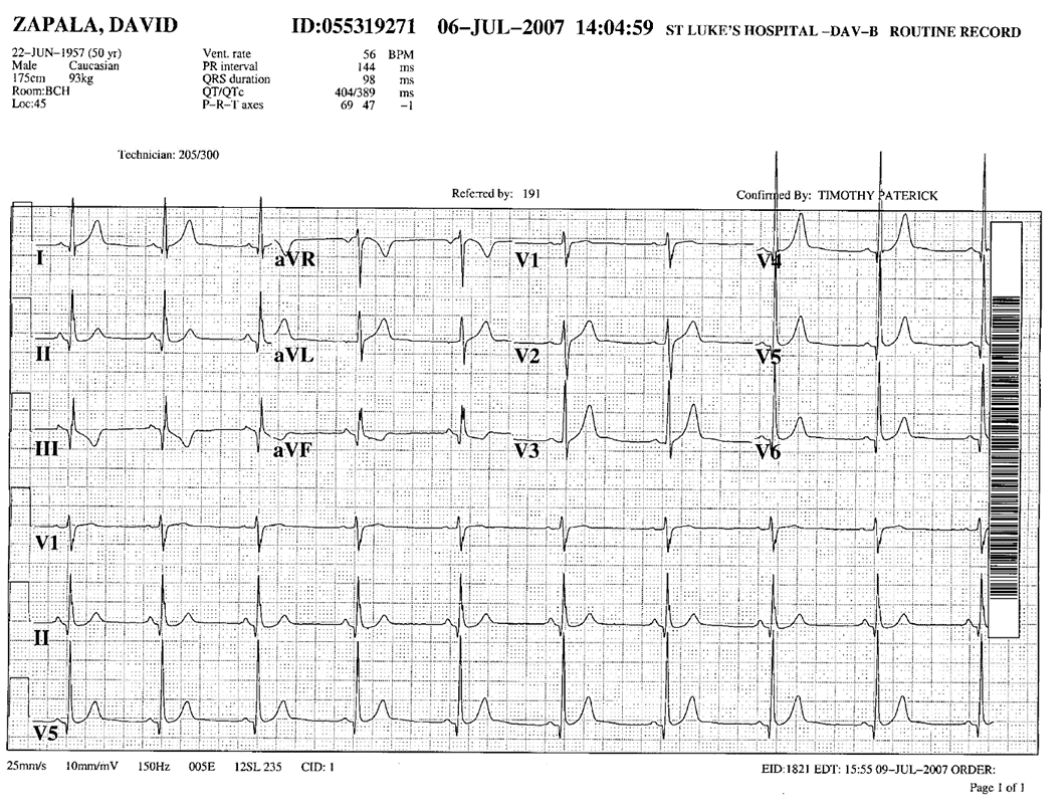




Data

Zapala's EKG, 2007

Facts



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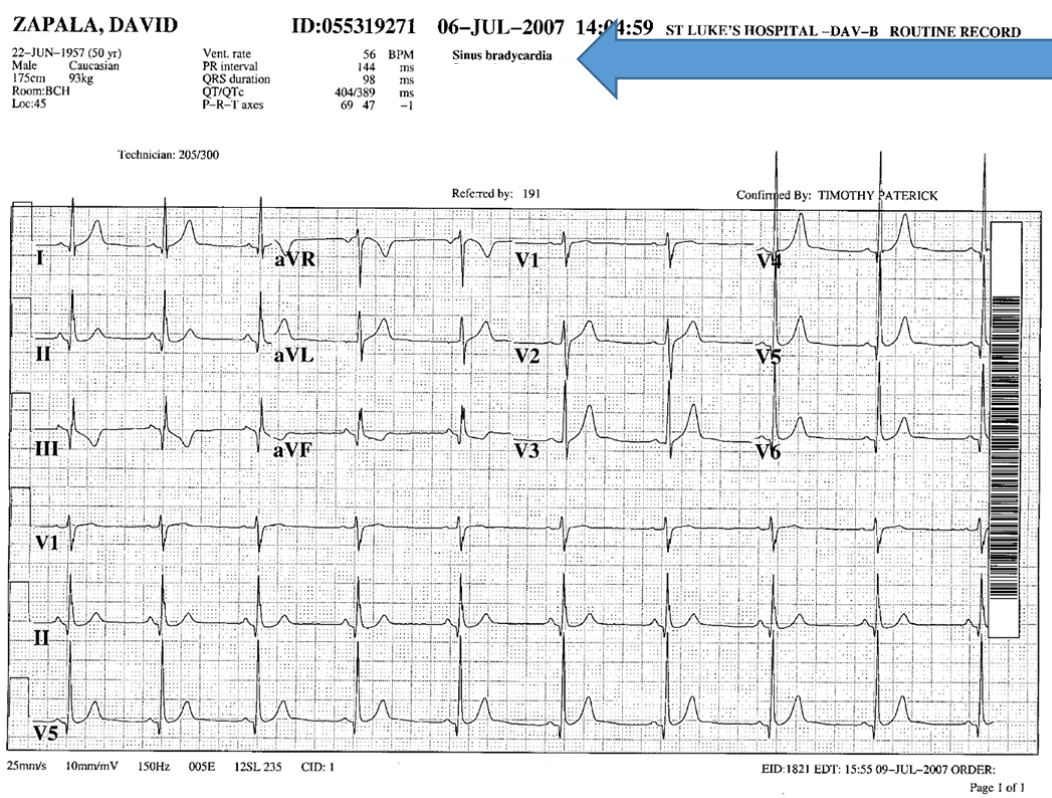


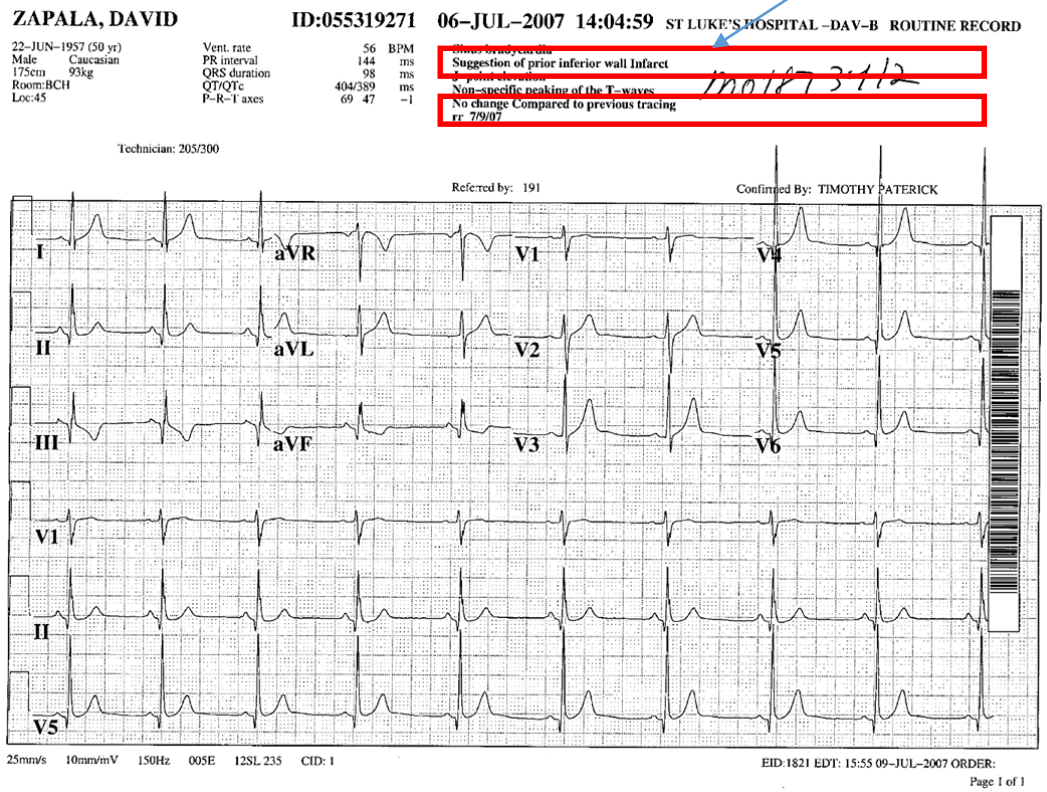
Classification

Data

Zapala's EKG, 2007

INFORMATION!

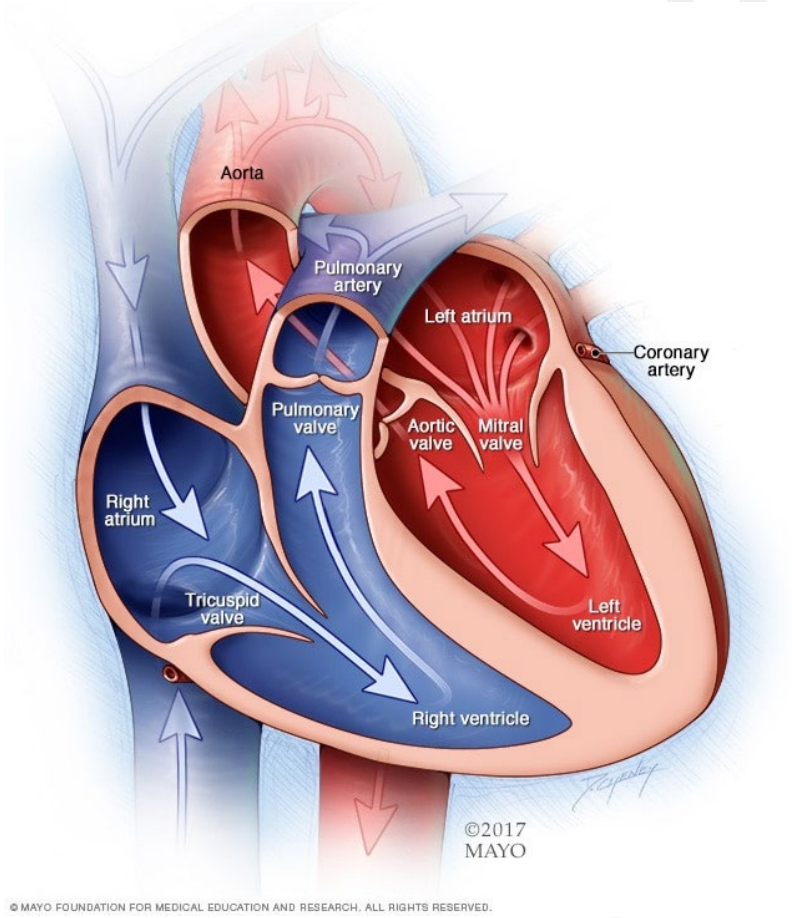
Facts

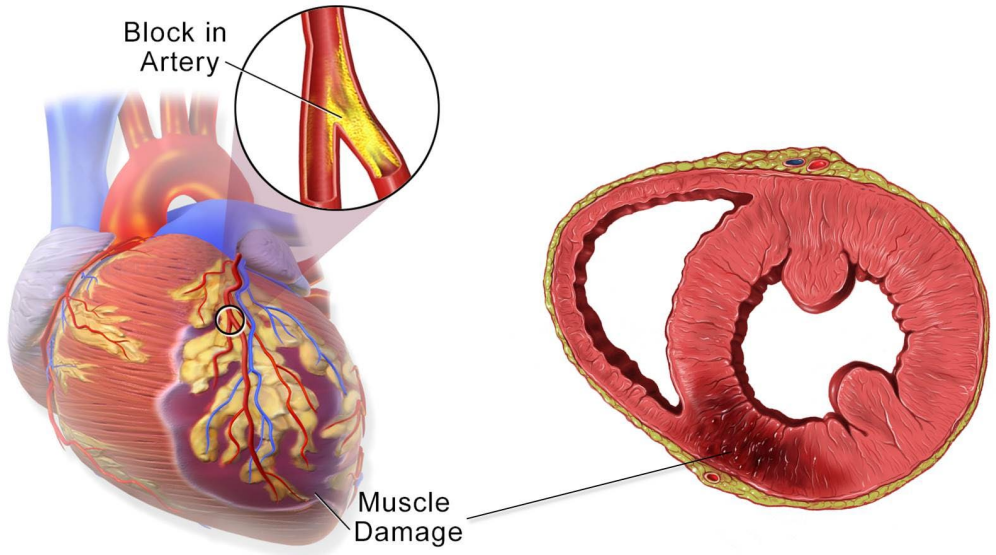


Classification

Data

“Suggestion of Posterior Wall Infarction”





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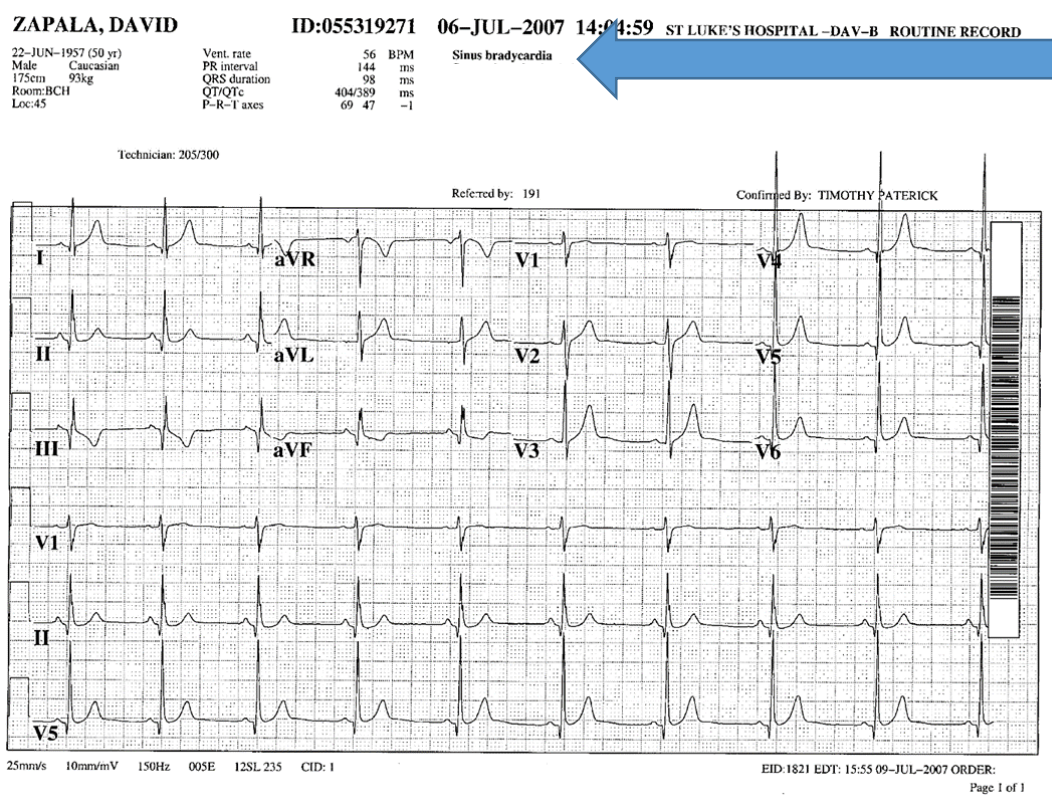
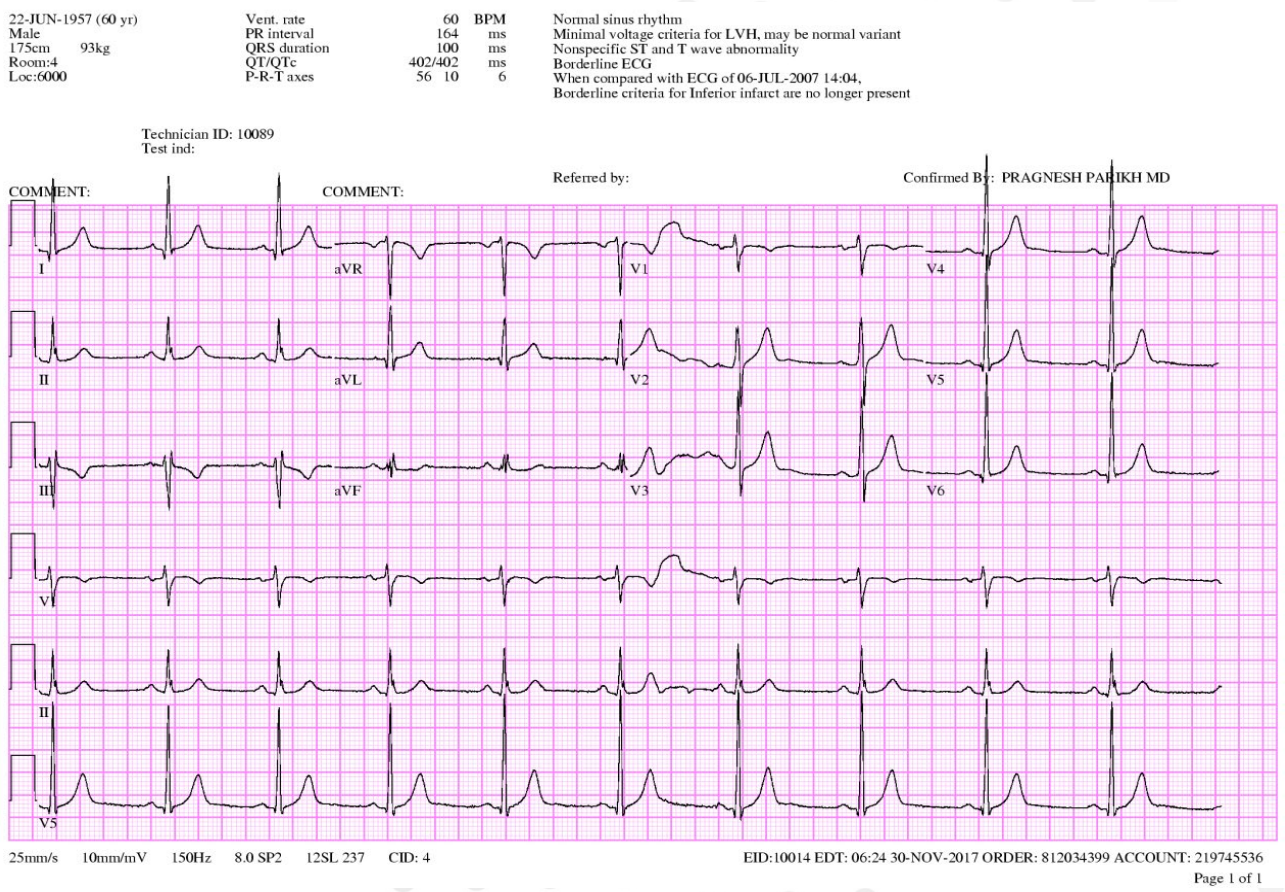


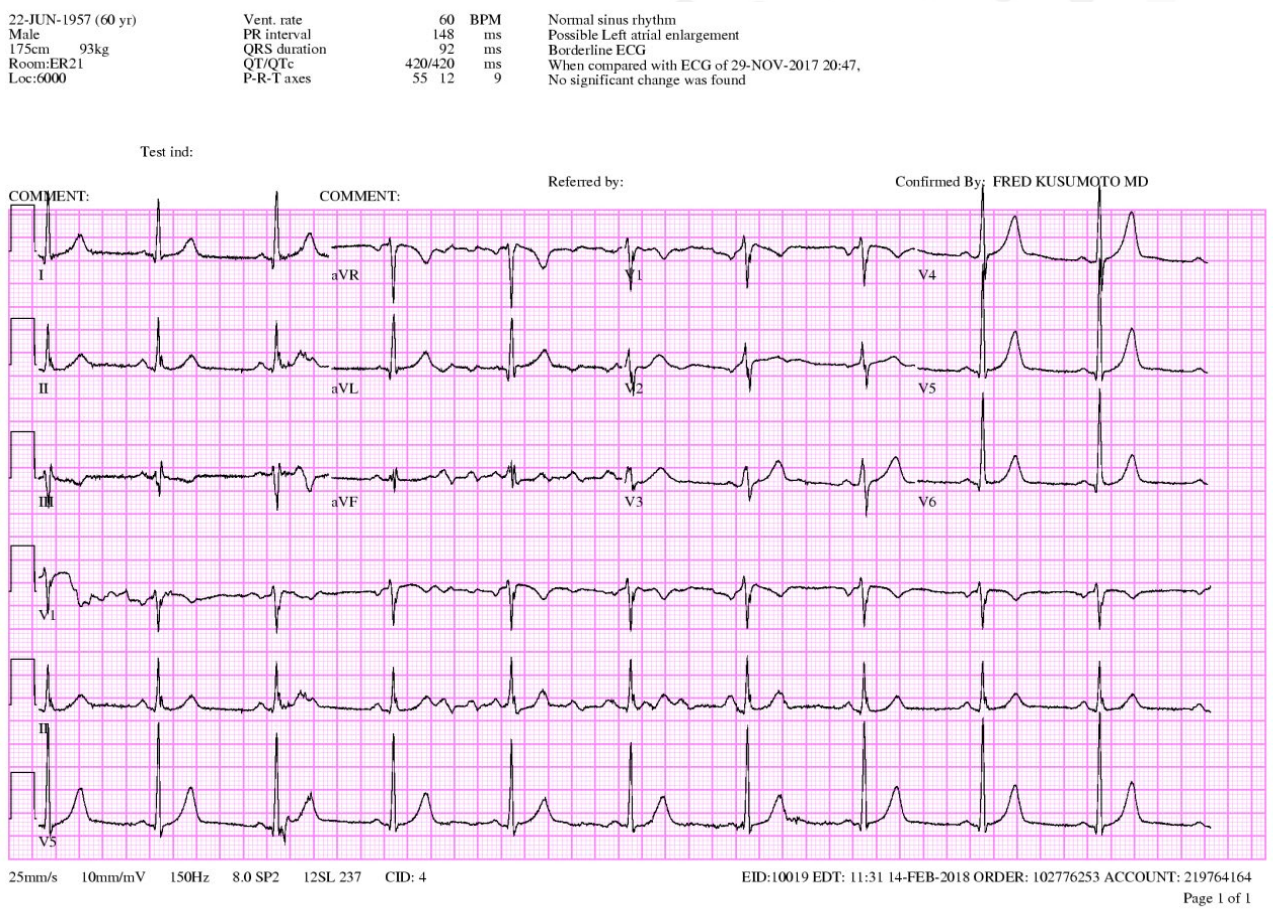
Classification

Data

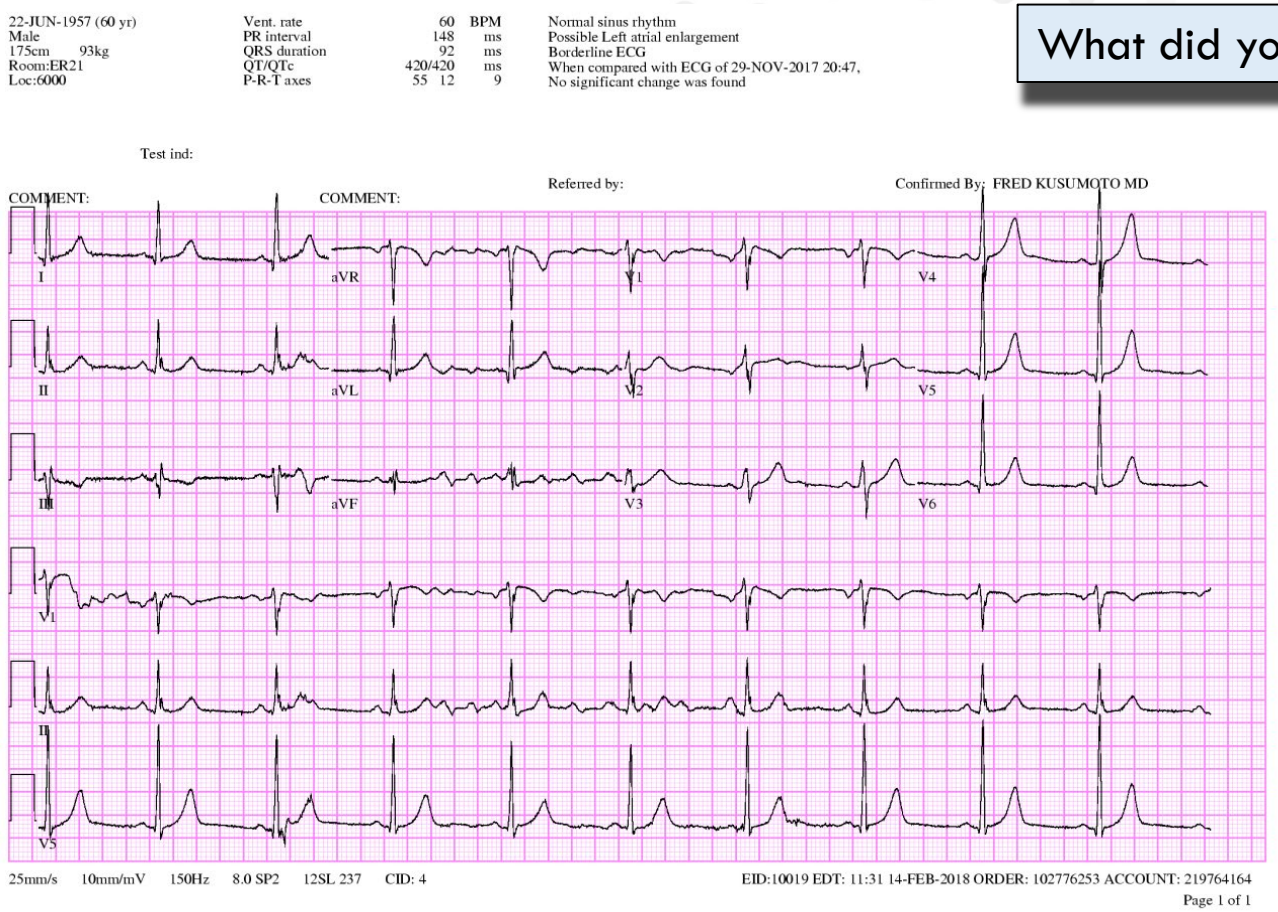
Zapala's EKG, 2017



Zapala's EKG, 2018



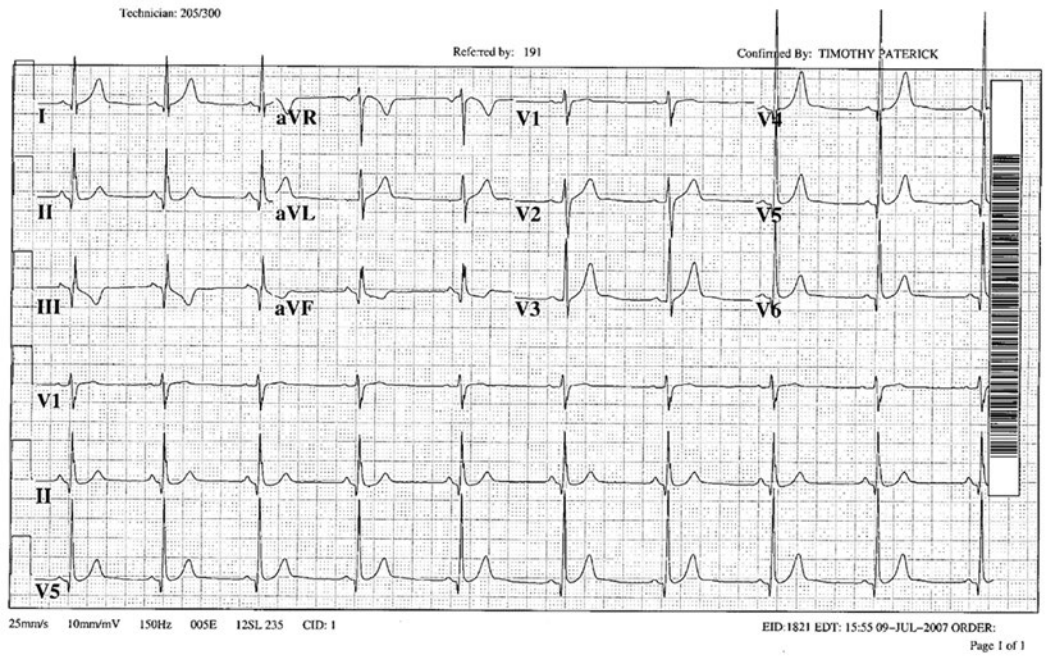
Zapala's EKG, 2018

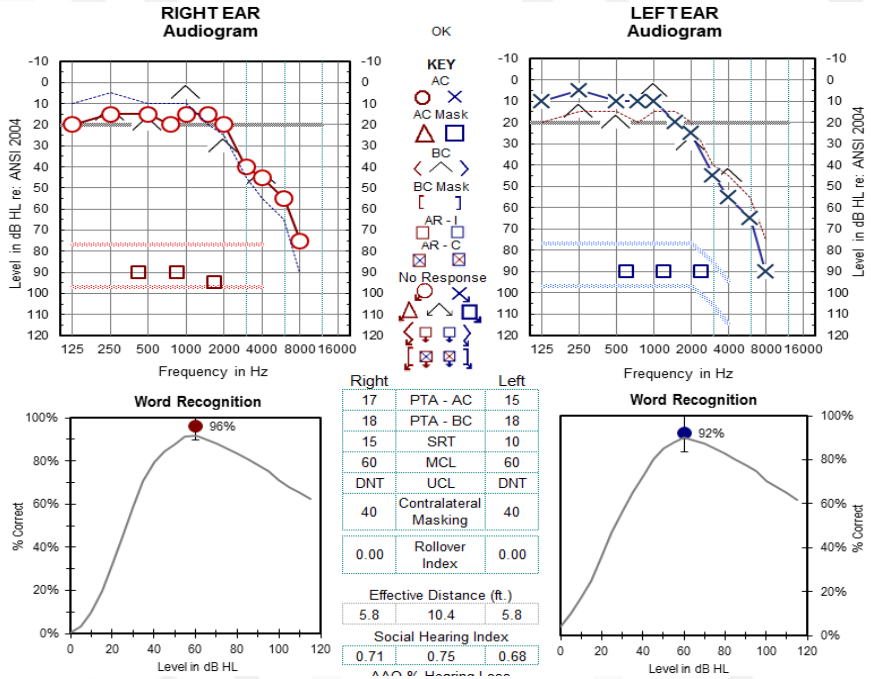


What did you look at first? … and why?

Side Track

- Data – Observations and Measurements

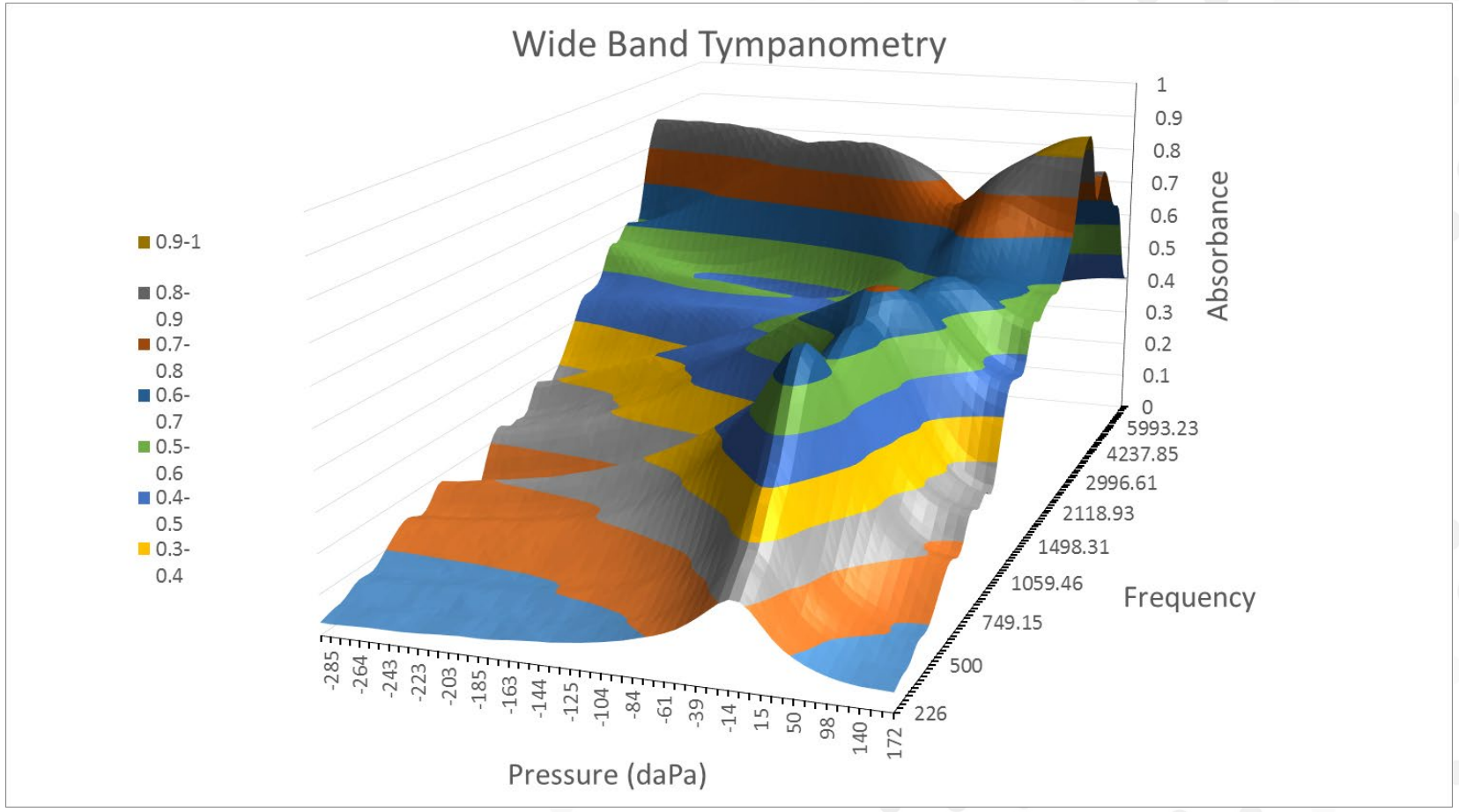




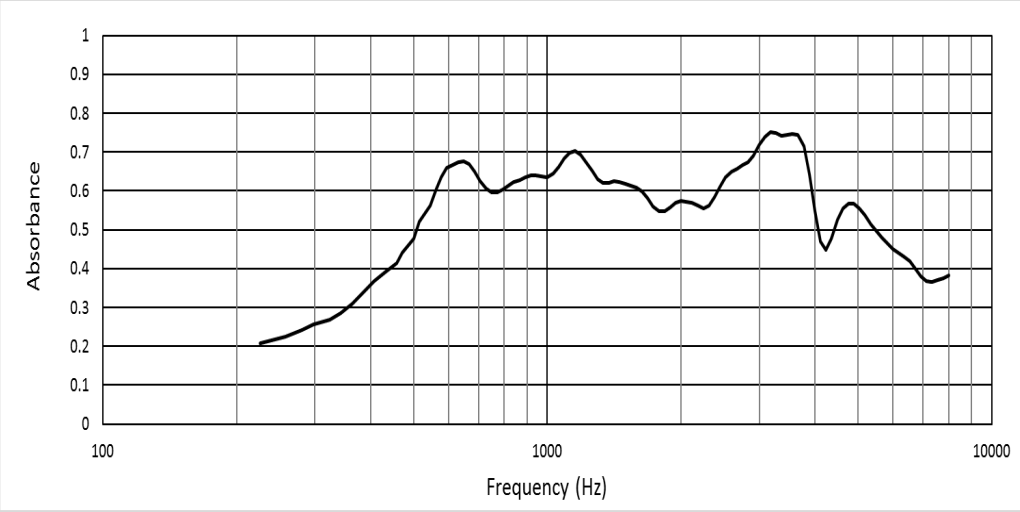
No Context

0.482	0.515	0.546	0.574	0.597	0.609	0.61	0.6	0.584	0.568	0.557	0.552	0.553	0.554	0.552	0.548	0.547	0.551	0.555	0.559	0.563	0.574	0.596	0.623	0.646
0.43	0.462	0.494	0.523	0.549	0.566	0.573	0.569	0.559	0.547	0.539	0.535	0.534	0.533	0.529	0.522	0.518	0.519	0.523	0.527	0.532	0.544	0.568	0.599	0.626
0.383	0.414	0.444	0.474	0.502	0.522	0.533	0.535	0.531	0.525	0.52	0.517	0.516	0.514	0.508	0.499	0.492	0.491	0.493	0.496	0.5	0.513	0.538	0.573	0.605
0.342	0.371	0.4	0.429	0.456	0.478	0.492	0.499	0.5	0.499	0.498	0.498	0.499	0.496	0.489	0.479	0.47	0.466	0.466	0.467	0.469	0.481	0.508	0.545	0.582
0.308	0.335	0.362	0.389	0.415	0.437	0.453	0.463	0.468	0.472	0.475	0.479	0.481	0.479	0.472	0.461	0.451	0.445	0.443	0.441	0.441	0.451	0.478	0.517	0.557
0.28	0.305	0.33	0.355	0.38	0.401	0.417	0.428	0.436	0.443	0.451	0.458	0.463	0.462	0.455	0.443	0.433	0.427	0.423	0.419	0.416	0.424	0.449	0.489	0.531
0.256	0.28	0.303	0.327	0.349	0.369	0.385	0.396	0.405	0.415	0.427	0.438	0.445	0.445	0.438	0.427	0.418	0.411	0.406	0.4	0.394	0.399	0.423	0.462	0.505
0.237	0.259	0.281	0.302	0.324	0.342	0.356	0.367	0.377	0.389	0.404	0.417	0.426	0.427	0.421	0.411	0.402	0.396	0.39	0.382	0.374	0.377	0.398	0.436	0.479
0.221	0.241	0.261	0.282	0.302	0.319	0.331	0.341	0.352	0.366	0.382	0.397	0.407	0.409	0.404	0.395	0.387	0.381	0.375	0.366	0.356	0.356	0.376	0.412	0.455
0.207	0.226	0.245	0.264	0.283	0.299	0.31	0.319	0.329	0.344	0.361	0.378	0.388	0.392	0.387	0.379	0.371	0.366	0.361	0.351	0.34	0.338	0.355	0.39	0.432
0.195	0.213	0.231	0.249	0.267	0.281	0.291	0.298	0.308	0.323	0.342	0.36	0.372	0.376	0.371	0.363	0.355	0.352	0.347	0.337	0.324	0.321	0.337	0.371	0.412
0.185	0.202	0.219	0.236	0.253	0.265	0.274	0.28	0.289	0.305	0.324	0.344	0.357	0.361	0.356	0.348	0.341	0.338	0.334	0.324	0.31	0.306	0.321	0.354	0.394
0.175	0.192	0.208	0.225	0.24	0.252	0.259	0.264	0.273	0.288	0.308	0.328	0.343	0.347	0.342	0.333	0.327	0.324	0.321	0.311	0.297	0.292	0.307	0.339	0.378
0.168	0.183	0.199	0.215	0.23	0.241	0.247	0.251	0.258	0.273	0.293	0.314	0.33	0.335	0.33	0.32	0.313	0.311	0.309	0.299	0.285	0.279	0.293	0.325	0.363
0.161	0.176	0.191	0.207	0.221	0.23	0.235	0.238	0.245	0.259	0.28	0.301	0.317	0.323	0.318	0.308	0.301	0.299	0.297	0.287	0.273	0.267	0.281	0.312	0.35
0.155	0.17	0.185	0.2	0.213	0.222	0.226	0.228	0.234	0.247	0.267	0.289	0.306	0.312	0.307	0.297	0.289	0.287	0.285	0.276	0.261	0.255	0.268	0.3	0.337
0.15	0.165	0.179	0.194	0.206	0.214	0.217	0.218	0.223	0.236	0.256	0.279	0.295	0.301	0.296	0.285	0.277	0.275	0.274	0.265	0.25	0.243	0.256	0.288	0.325
0.145	0.16	0.174	0.188	0.2	0.207	0.209	0.21	0.214	0.226	0.246	0.268	0.285	0.291	0.285	0.274	0.266	0.264	0.263	0.255	0.24	0.232	0.245	0.276	0.313
0.141	0.155	0.169	0.182	0.194	0.2	0.202	0.202	0.206	0.217	0.236	0.258	0.275	0.281	0.275	0.264	0.255	0.253	0.252	0.244	0.23	0.222	0.235	0.266	0.302
0.137	0.151	0.164	0.177	0.188	0.194	0.195	0.195	0.198	0.208	0.227	0.249	0.266	0.272	0.266	0.254	0.245	0.243	0.242	0.234	0.219	0.212	0.225	0.256	0.292
0.133	0.147	0.16	0.173	0.183	0.188	0.189	0.188	0.19	0.2	0.219	0.24	0.258	0.264	0.257	0.245	0.236	0.233	0.232	0.224	0.21	0.202	0.215	0.246	0.281
0.129	0.143	0.156	0.169	0.179	0.184	0.184	0.182	0.183	0.193	0.211	0.233	0.25	0.256	0.25	0.237	0.227	0.225	0.224	0.215	0.201	0.193	0.205	0.235	0.271
0.126	0.14	0.153	0.166	0.176	0.18	0.179	0.176	0.177	0.186	0.205	0.227	0.243	0.249	0.243	0.23	0.219	0.216	0.215	0.207	0.192	0.184	0.196	0.226	0.261
0.124	0.137	0.151	0.163	0.173	0.177	0.176	0.172	0.171	0.18	0.199	0.221	0.237	0.243	0.236	0.223	0.212	0.208	0.207	0.198	0.183	0.175	0.187	0.216	0.252
0.122	0.136	0.149	0.16	0.17	0.174	0.172	0.168	0.167	0.175	0.193	0.215	0.231	0.237	0.229	0.215	0.204	0.2	0.198	0.19	0.175	0.167	0.178	0.208	0.244
0.12	0.133	0.146	0.158	0.167	0.17	0.169	0.164	0.162	0.17	0.187	0.209	0.225	0.23	0.222	0.208	0.197	0.192	0.191	0.182	0.167	0.158	0.169	0.199	0.236
0.117	0.131	0.144	0.155	0.163	0.167	0.165	0.16	0.158	0.165	0.182	0.203	0.219	0.224	0.217	0.202	0.19	0.186	0.184	0.176	0.16	0.151	0.161	0.192	0.228
0.115	0.128	0.141	0.153	0.161	0.164	0.162	0.157	0.154	0.161	0.177	0.197	0.214	0.22	0.212	0.197	0.184	0.18	0.178	0.169	0.153	0.143	0.153	0.184	0.221
0.112	0.126	0.139	0.15	0.159	0.161	0.159	0.154	0.151	0.157	0.172	0.193	0.21	0.216	0.208	0.193	0.18	0.174	0.172	0.163	0.147	0.136	0.146	0.177	0.214
0.111	0.124	0.136	0.148	0.157	0.16	0.157	0.151	0.149	0.154	0.169	0.189	0.206	0.212	0.204	0.189	0.175	0.169	0.166	0.157	0.14	0.13	0.14	0.17	0.208
0.11	0.122	0.135	0.146	0.155	0.158	0.154	0.148	0.146	0.151	0.166	0.185	0.202	0.208	0.2	0.184	0.169	0.163	0.16	0.151	0.135	0.124	0.134	0.164	0.202
0.109	0.121	0.133	0.144	0.153	0.155	0.152	0.145	0.142	0.148	0.162	0.182	0.199	0.204	0.196	0.179	0.164	0.157	0.154	0.146	0.129	0.119	0.129	0.159	0.196
0.108	0.12	0.132	0.142	0.15	0.153	0.149	0.142	0.139	0.144	0.159	0.179	0.196	0.201	0.192	0.175	0.159	0.152	0.149	0.141	0.125	0.114	0.124	0.154	0.19
0.106	0.118	0.13	0.14	0.148	0.151	0.147	0.14	0.136	0.141	0.156	0.176	0.193	0.198	0.188	0.171	0.155	0.148	0.145	0.136	0.12	0.109	0.119	0.149	0.185
0.104	0.116	0.128	0.139	0.147	0.149	0.146	0.139	0.135	0.139	0.154	0.173	0.189	0.194	0.185	0.167	0.151	0.144	0.141	0.132	0.115	0.104	0.114	0.144	0.181
0.103	0.115	0.127	0.138	0.146	0.148	0.144	0.137	0.133	0.137	0.152	0.17	0.186	0.19	0.181	0.164	0.148	0.14	0.137	0.128	0.111	0.099	0.109	0.14	0.176
0.102	0.114	0.126	0.136	0.144	0.147	0.143	0.136	0.132	0.136	0.149	0.167	0.182	0.186	0.177	0.16	0.144	0.137	0.134	0.124	0.107	0.095	0.105	0.135	0.172
0.102	0.114	0.125	0.136	0.143	0.145	0.141	0.134	0.13	0.134	0.147	0.165	0.18	0.184	0.175	0.157	0.141	0.134	0.131	0.121	0.104	0.092	0.102	0.132	0.168
0.102	0.114	0.125	0.135	0.142	0.144	0.14	0.133	0.128	0.133	0.146	0.164	0.179	0.182	0.173	0.155	0.139	0.132	0.128	0.119	0.102	0.09	0.099	0.129	0.166

Multi-Frequency Tympanometry



Absorbance: Normal or Abnormal?



- …and who cares but you?

Side Track

- Data – Observations and Measurements
- Facts and Classifications – *Data Reduction* to "meaningful" categories

"58 BPM"

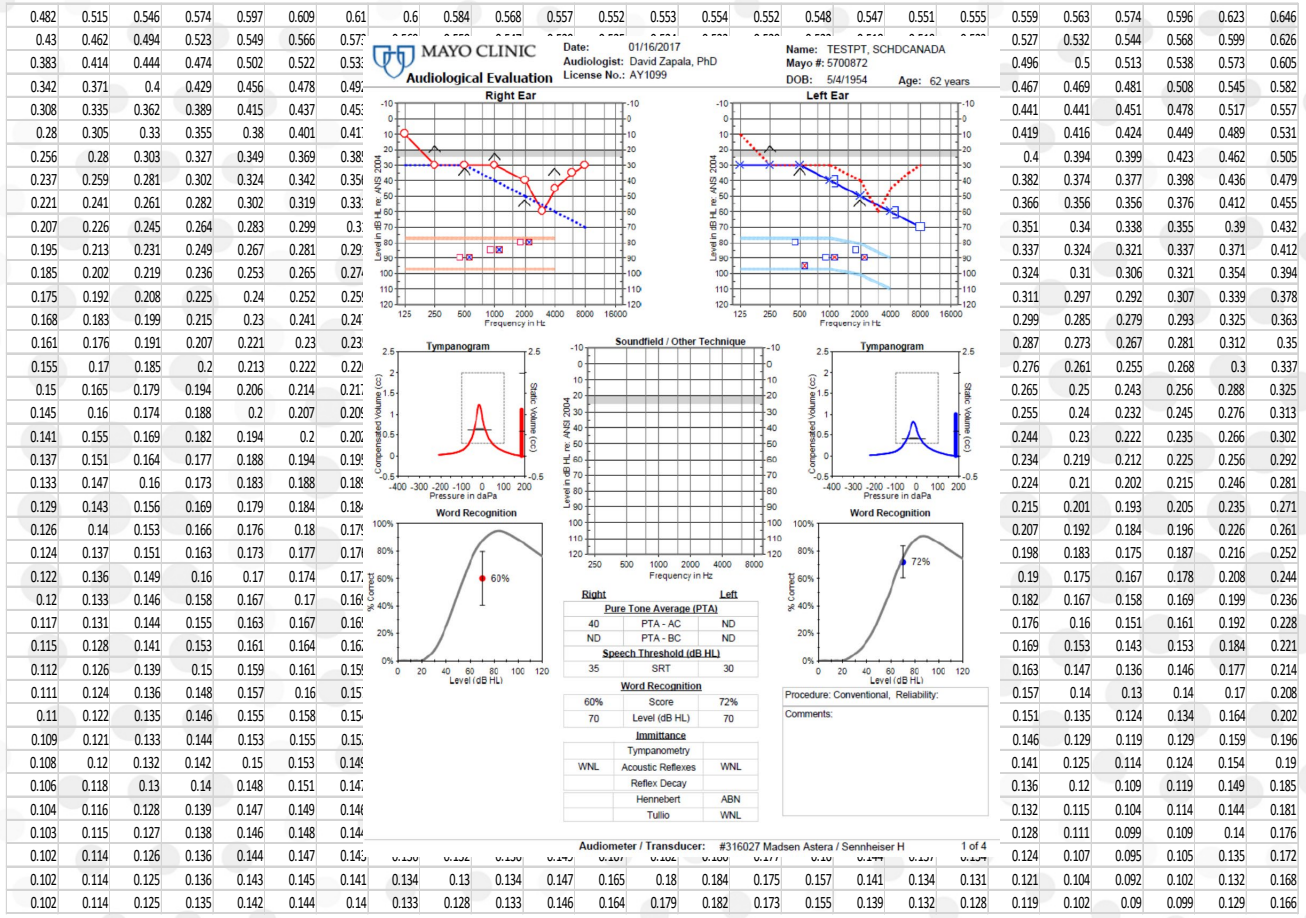
"Sinus Bradycardia"

"Type "A" Tympanogram

"Mild to Moderate Sloping SNHL"

“Meaningful” Categories

- Data, Facts and Categories make sense when you have the prior ***knowledge***



Side Track

- Data – Observations and Measurements
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- Knowledge – In this case, refers to the knowledge of the professional to recognize patterns of cause and effect in collected data and facts

“Meaningful” Categories

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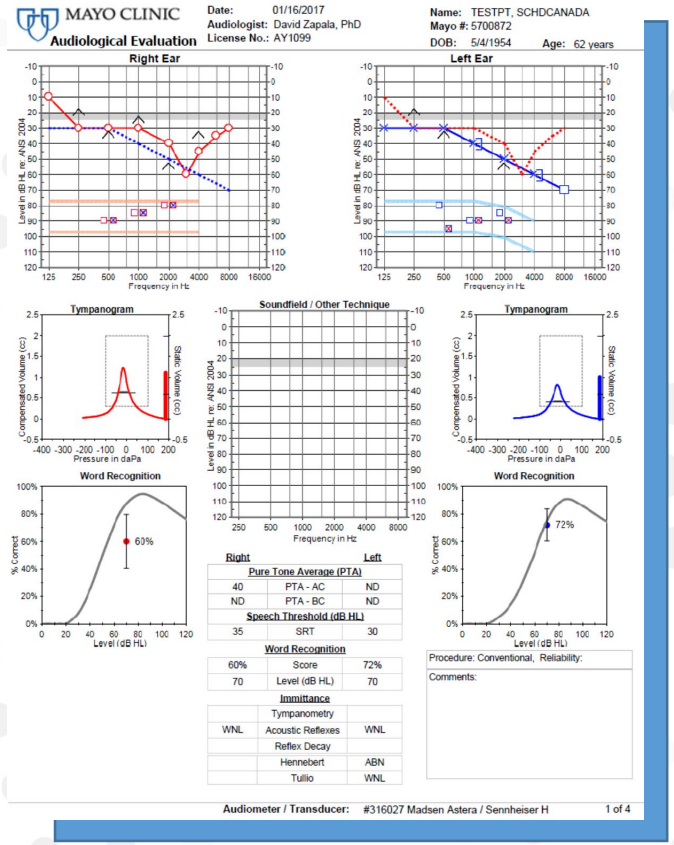


Information

- Consolidation of data, facts / classifications with prior knowledge to identify cause and effect relationships
- "Actionable"
  - You will do something based on information

Assessment Statements

- Data – Observations and Measurements
- Facts and Classifications – *Data Reduction* to meaningful categories
- Knowledge – In this case, refers to the knowledge of the professional to recognize patterns in collected data and facts
- Information – Specific theory about if an underlying condition exists to explain collection of data, facts/classifications using acquired knowledge.

"Suggestion of Posterior Wall Infarction" "Unilateral Mild to Moderate SNHL, Idiopathic"

Assessment / Diagnostic Statements

"Actionable": The lead to an intervention plan…

- "Suggestion of Posterior Wall Infarction"
- Cardiology Consult:
  - Echocardiogram,
  - Stress Test
- "Unilateral Mild to Moderate SNHL, Idiopathic"
- Otolaryngology Consult
  - Head Imaging
  - Labs.
  - Other…

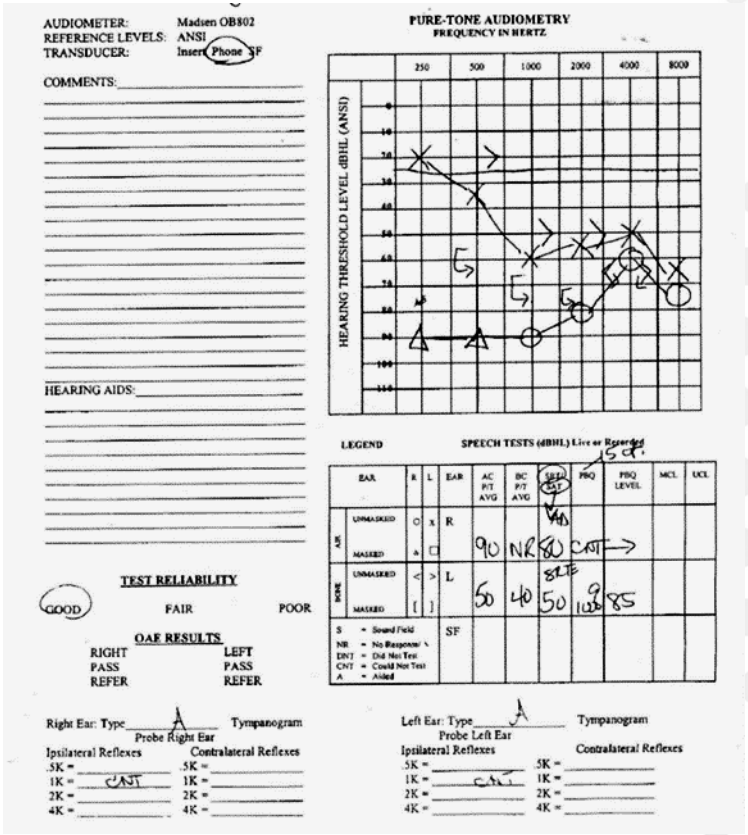
Information

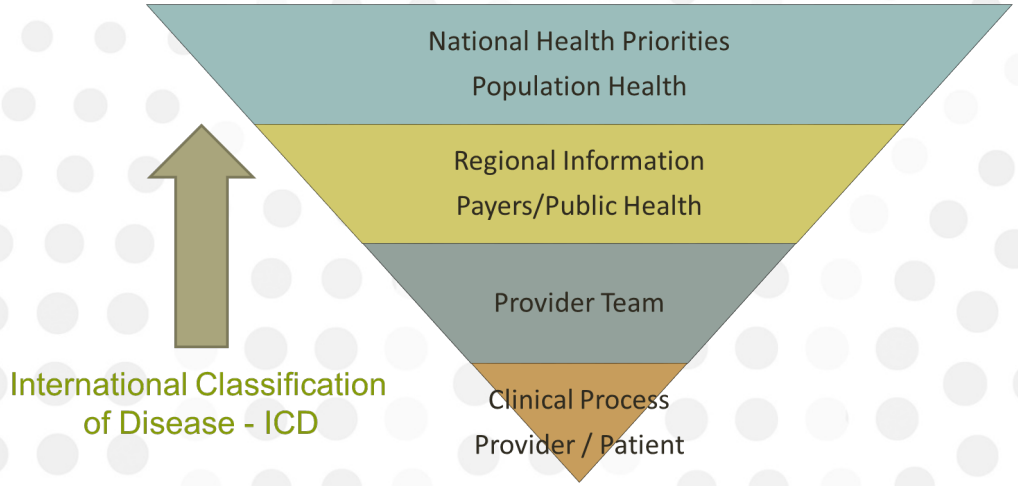
- Facts:
  - Recent URI symptoms
  - Retracted T.M.
  - Type “C” tympanogram
  - Low frequency A/B gap
- Information:
  - Eustachian Tube Dysfunction (ETD)

- Facts are Evidence

- For this argument

CPT 92550 & 92557 for ICD-10:H90.3





Sensorineural hearing loss, bilateral

Key Elements of an Interoperable and Inter-Professional Healthcare Document

- SOAP

Value of SOAP Structure

- Organizes Thinking
  - Helps you keep track of what you know and what you don't know
- Facilitates Inter-Professional Coordinated Care
  - Structure allows for rapid transfer of information to the reader or listener
- Expected Structure for "Inter-Operable Reports"
  - One EHR to another

SOAP Structure

- Subjective (Facts)
  - Things you learn through talking with the patient and others

- Objective (Data -> Facts)
  - Things you glean from observing, touching, testing etc…

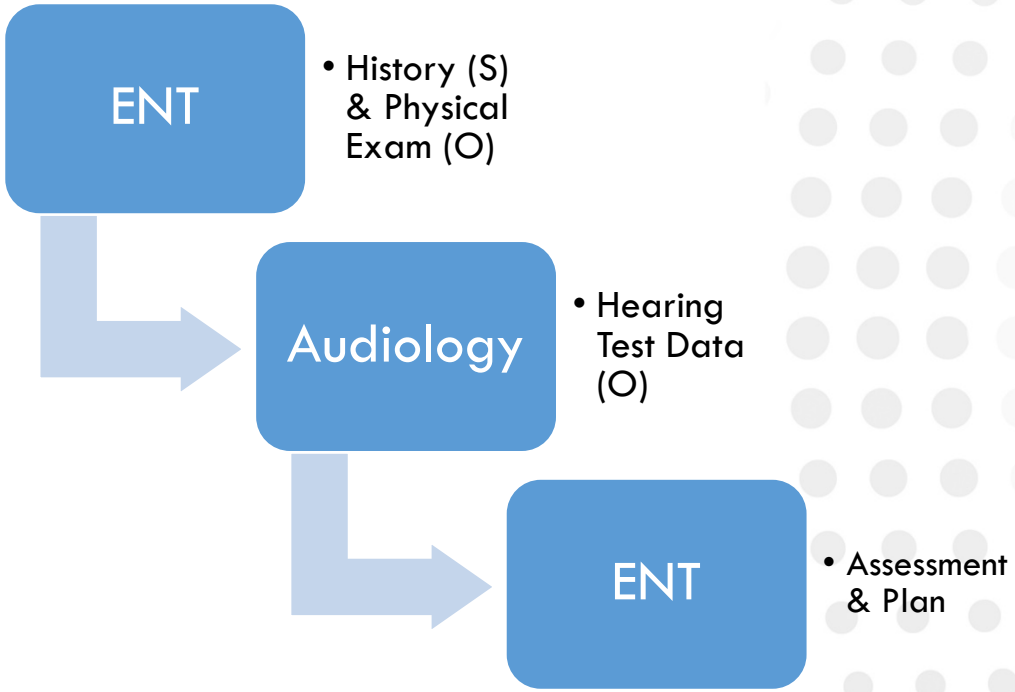
SOAP Structure

- Assessment / Diagnosis
  - Application of discipline knowledge to organize “SO” facts into information

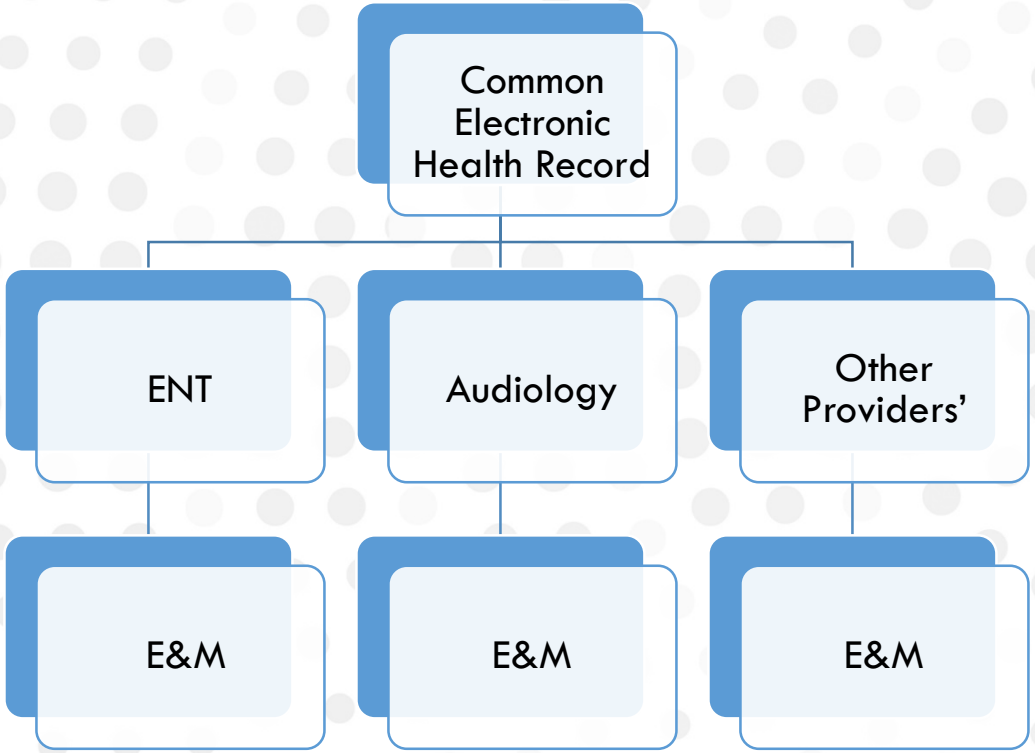
- Plan (Wisdom)
  - What you or the patient should do next

Form Follows Function

Audiology in ENT Practice



Inter-Professional Practice



Back to the Medical Home

PCP Questions:

- Is there a medical condition that I have to manage?
  - Type, severity, symmetry and likely cause of hearing loss.
- Does the hearing difficulty effect quality of life and can you help?
  - Presence and magnitude of audiological deficit

Back to the Medical Home

PCP Wants To Know:

Do you got this?

Can I check this problem of my list, or…

Do I have more work to do?

…and if so, what do I need to do?

Communication is a Two Way Street…

- Medical centers with a common EHR have the advantage making the most recent history and physical examination (H&P) available to all subsequent providers.
  - A yearly comprehensive H&P is desirable.

Communication is a Two Way Street…

- Medical centers with a common EHR have the advantage making the most recent history and physical examination (H&P) available to all subsequent providers.
  - A yearly comprehensive H&P is desirable.
- **Ask for the most recent history and physical examination (H&P) from the medical home prior to seeing your patient.**
  - Ask your patient to bring it.
  - Once you establish a relationship, let the referring provider know you like to have that along with the referral.

Does the Audiogram Matter?

SUBJECTIVE:

Reason for referral:

- Difficulties understanding speech in daily situations ; Gradually developing hearing loss suspected

Background and Related Information:

Mr. Smith is a 68-year-old retired lawyer who is seen for the above mentioned problems. He reports having moderate problems understanding speech on daily basis, particularly understanding speech in restaurants, group settings, and while watching movies at home. His wife is getting frustrated with is hearing difficulties and this is concerning to him.

His self-assessed hearing handicap (HHIE) score is 30% ('S' scale = 38%, 'E' scale = 23%), indicating significant hearing related difficulties. He is interested in trying hearing aids.

He denies aural pain, pressure, discharge or fullness, fluctuating hearing, tinnitus, dizziness, recent ear or head trauma. His audiological history is remarkable for military and recreational noise exposure (right handed fire arm use – skeet shooting, bird hunting).

He provides his H&P from Dr. PCP, which was reviewed. I note a history of high blood pressure and cardiovascular disease which is monitored by Dr. PCP and Dr. Cardiologist. He also was recently diagnosed with metabolic syndrome and is under a new diet and exercise regimen.

Does the Audiogram Matter?

OBJECTIVE: Evaluation results: (See attached)

ASSESSMENT:

- Bilateral mild to moderate high frequency sensorineural hearing loss likely consistent with presbyacusis and noise exposure.
    - Cardiovascular and metabolic risk factors for hearing loss are also noted.
- Significant auditory based communication deficits – patient is a good candidate for amplification and general aural rehabilitation

PLAN:

- Offered hearing aid evaluation which was scheduled.
- Reviewed simple communication strategies with Mr. and Mrs. Smith, provided in "Hints for Improved Communication" pamphlet (R187).
- Hearing conservation discussed, particularly when involve with firearm sports. Reinforced new diet and exercise program.
- Retest in one year, sooner if changes in hearing, tinnitus, dizziness or balance suspected.

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Example: Assessment Statement

- **Impressions (Assessment):**
  - Cannot exclude neurotologic disease process:
    - Unexplained unilateral sensorineural hearing loss
    - Persisting headache
- **Plan:**
  - Recommend otolaryngology evaluation and / or MRI of the head with focus on the internal auditory canals.
  - I discussed my thinking with Mr. Smith who agrees to follow-up with you before proceeding with his aural rehabilitative needs.

Which One of These is a Diagnosis?

1. Type “A” Tympanogram
2. Bilateral mild to moderate, high frequency sensorineural hearing loss
3. Excellent word recognition
4. Difficulty hearing in background noise
5. Difficulty hearing soft voices
6. Clear ear canals, normal looking ear drums
7. Elderly adult with no significant medical history
8. None of the above

Let's Rearrange the Evidence…

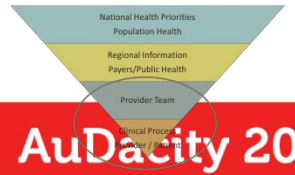
- S:
  - Elderly adult with no significant medical history
    - CC: Difficulty hearing in background noise
    - CC: Difficulty hearing soft voices
- O:
  - Clear ear canals, normal looking ear drums
  - Type "A" tympanograms
  - Bilateral mild to moderate, high frequency sensorineural hearing loss
  - Excellent word recognition

Evidence Leads to…

- Assessment:
  - Bilateral mild to moderate sensorineural hearing loss likely consistent with presbyacusis
  - Communicative deficits secondary to hearing loss

Principle #2: All change begins locally

Write Reports for the PCP



Risk

What if there is an Otologic or Neurologic Co-factor?

- Unilateral tinnitus
- Aural pain, pressure, fullness
- Fluctuating hearing
- Otorhea
- Vertigo
- Imbalance
- Ataxia
- Obvious facial asymmetry
- Dysarthria
- Dysphagia
- Diplopia
- Changes in sensory or motor function in the lower limbs
- Incontinence
- Changes in cognition, paraphasia etc…

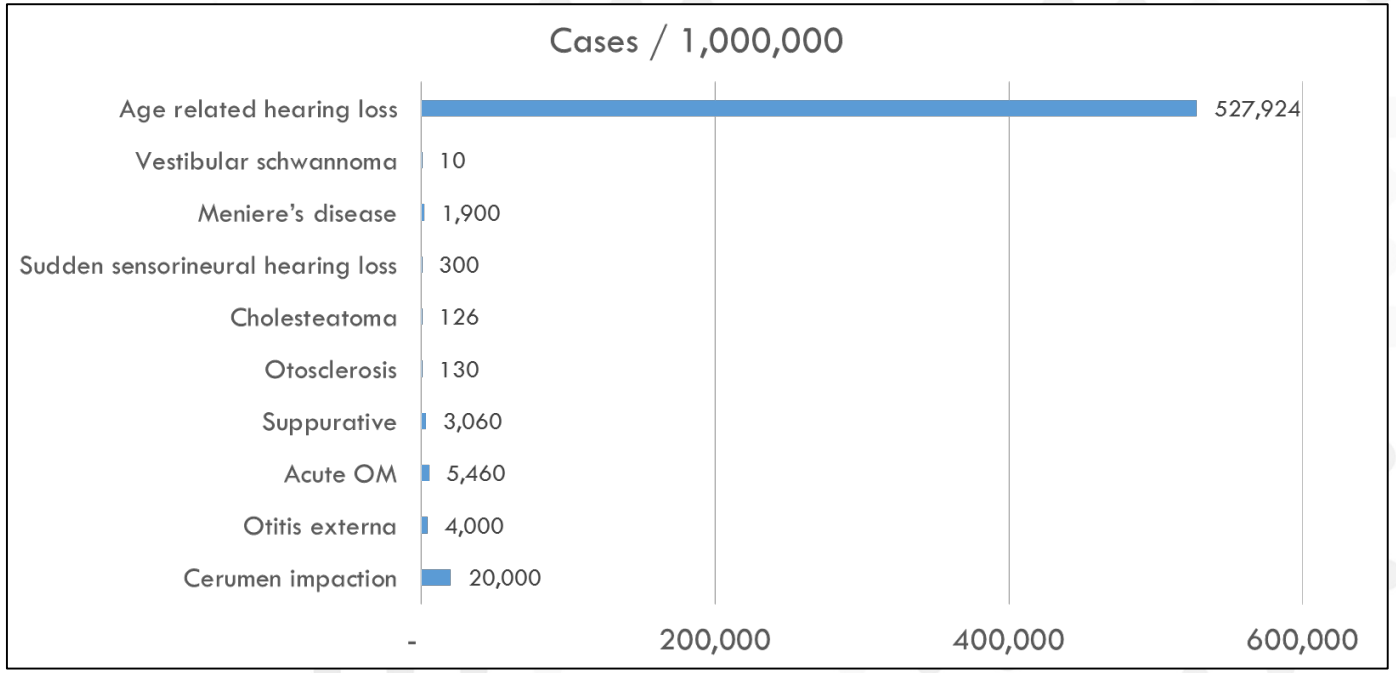
When in doubt, Yank them out…

- Explained co-factor?
  - Previously diagnosed problem
  - Obvious cause unrelated to hearing
- How do you know what is explainable without a current H&P from the medical home?

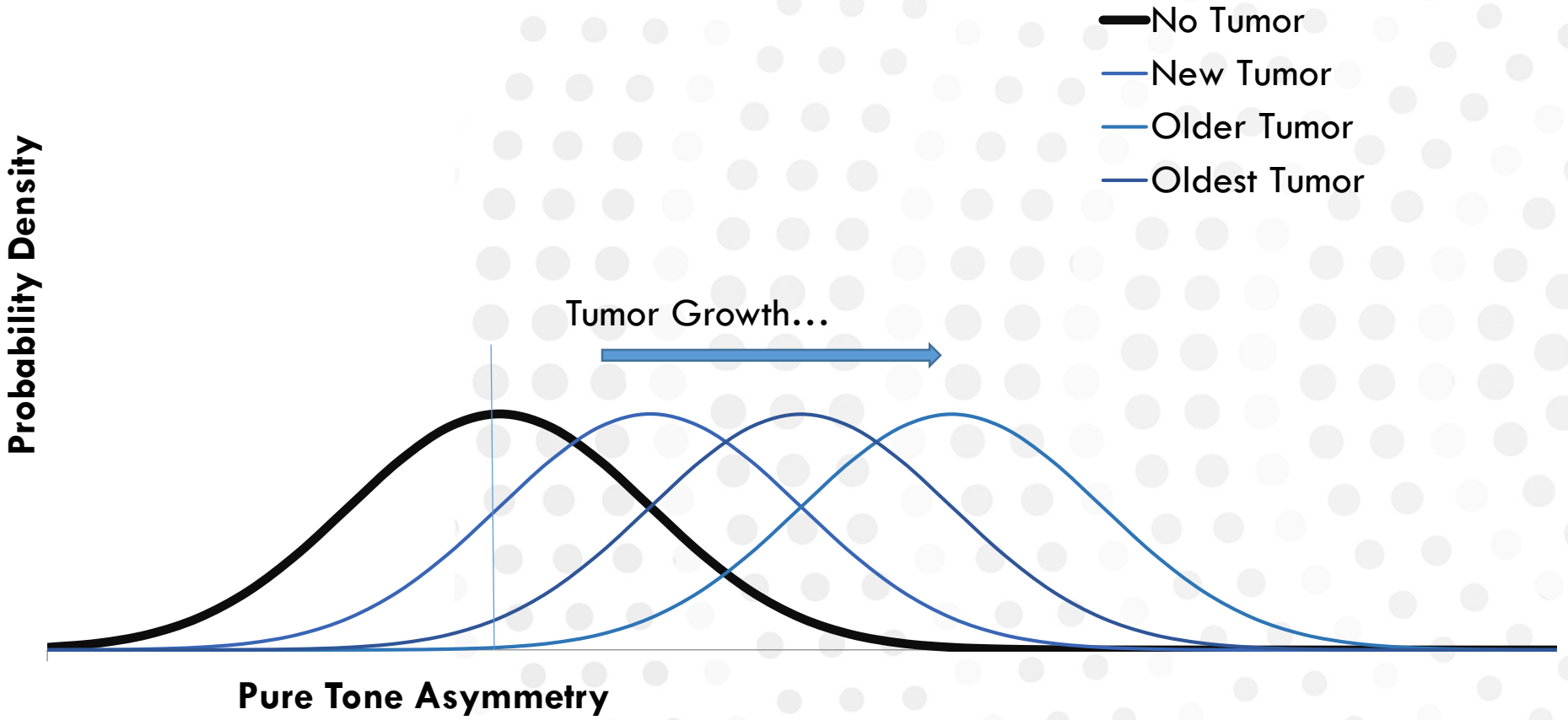
- Unexplained?
  - Unilateral middle ear effusion without subjective symptoms in a smoker?
    - nasopharyngeal carcinoma?
  - Unilateral progressive SNHL hearing loss in the setting of prior uterine cancer

Refer Whenever the Risk Exceeds Reason

- Do you really want to be that audiologist who misses cancer or ignores the signs of brain metastasis?

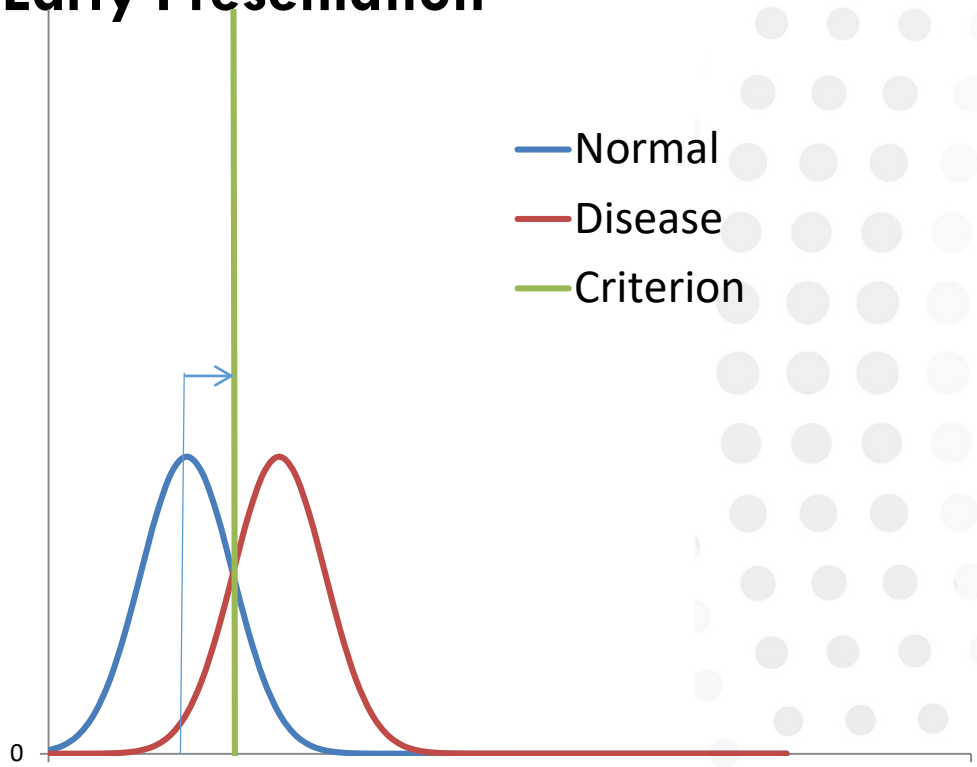


A Simple Model of Hearing Asymmetry with Tumor Growth Over Time

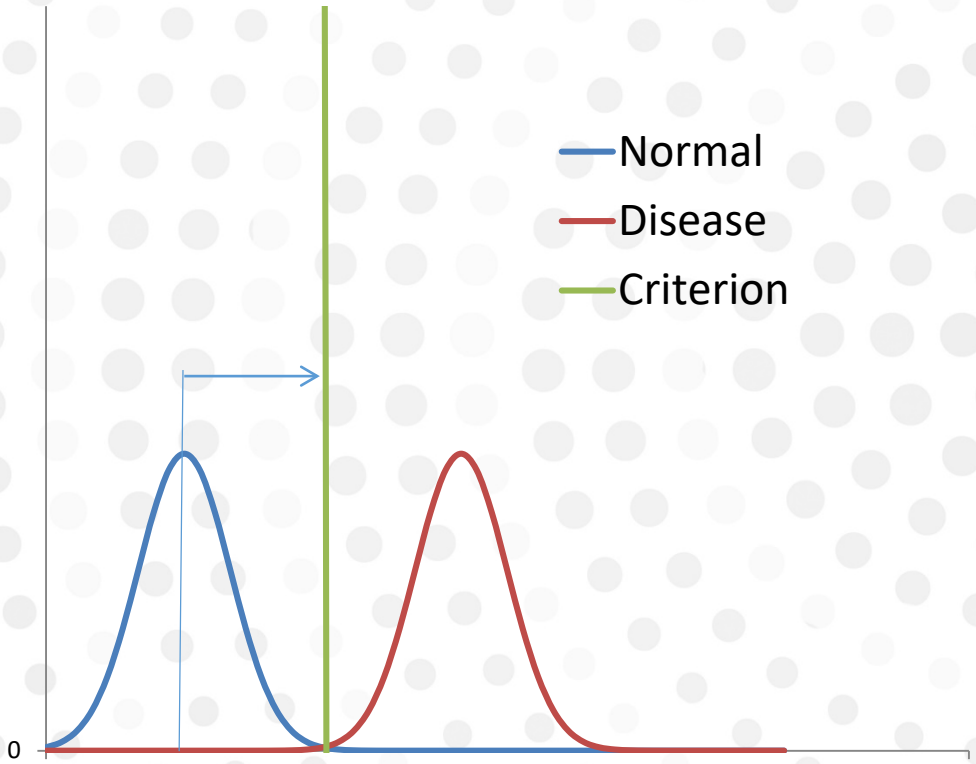


Catching Disease Early is Difficult

Early Presentation



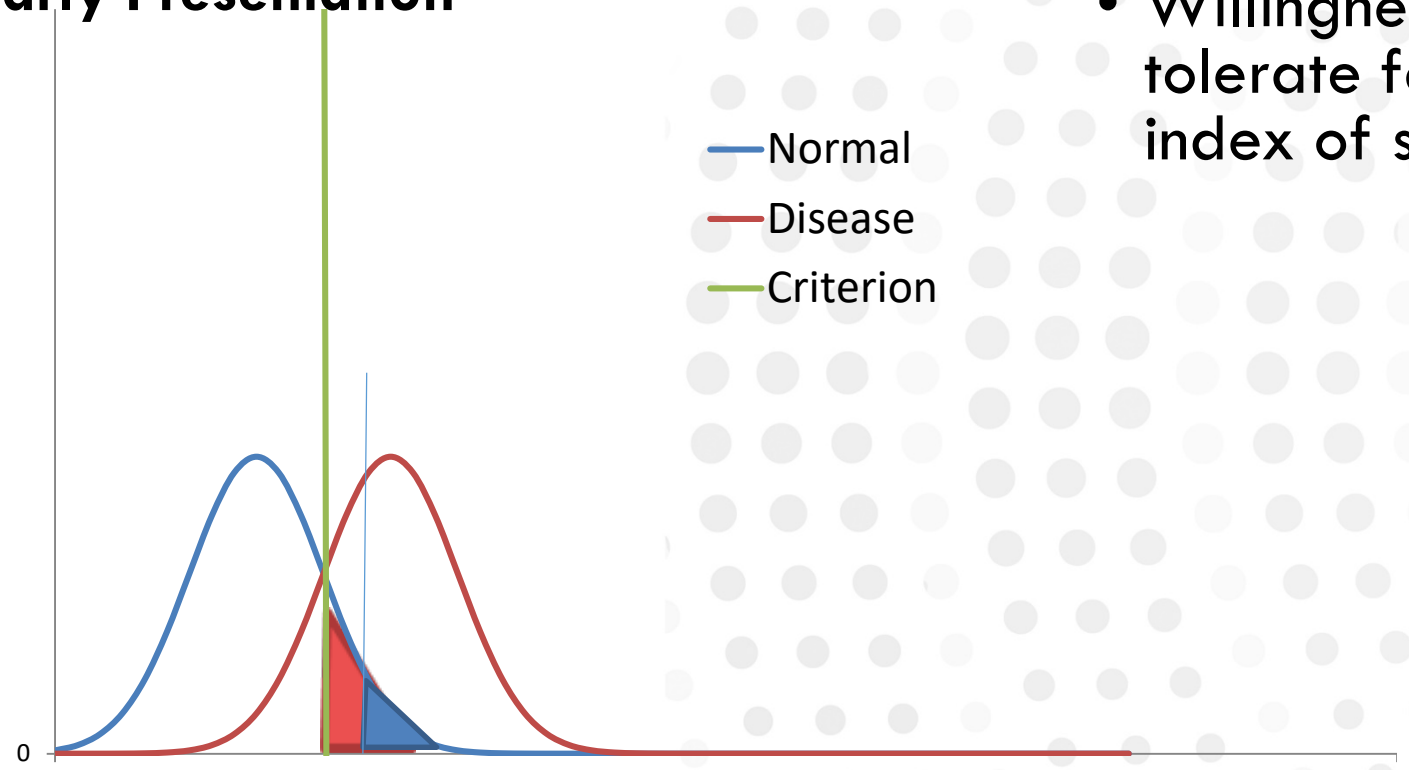
Late Presentation



 |

Presentation Bias

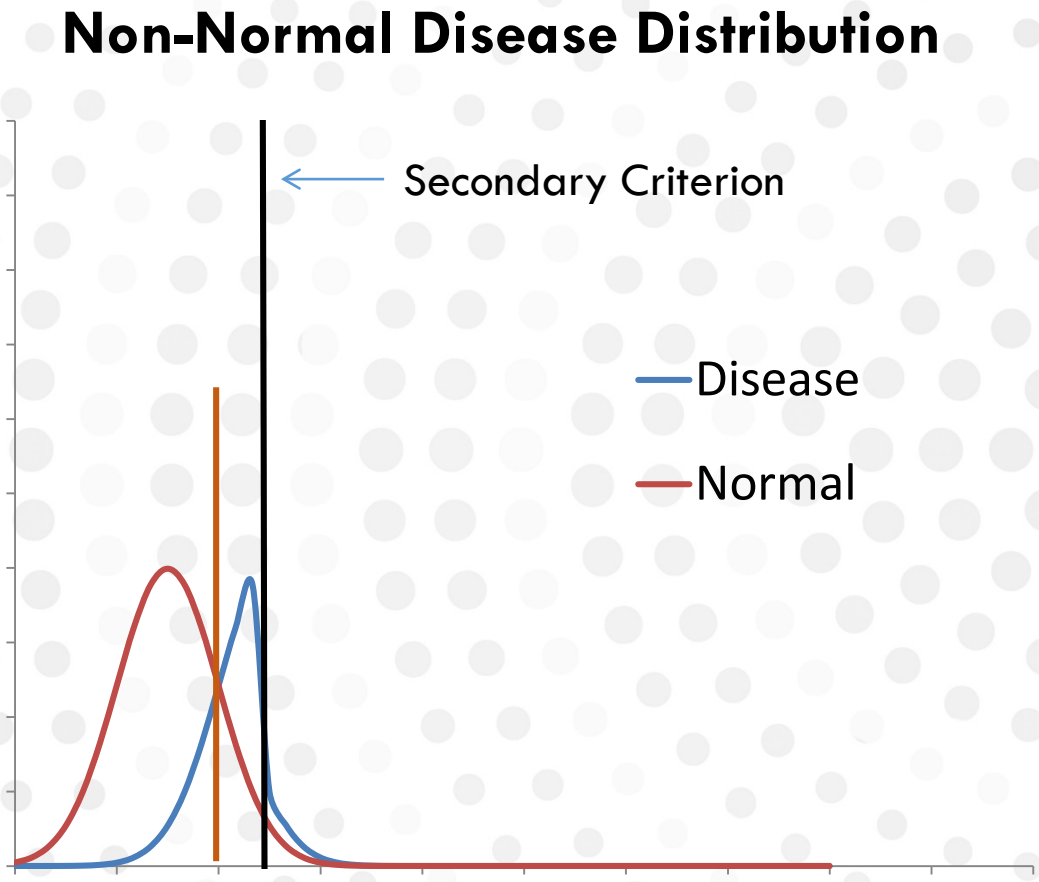
Early Presentation



- Willingness of healthcare system to tolerate false positives influences index of suspicion for disease

Co-Morbidities

- Secondary Criterion (co-factor for disease) Influences Detection performance
  - Related signs and symptoms



Your Track Record is Your Credibility

To graduate to a “Doctoring Profession” we have to get past the idea that there are rules that, if obeyed will keep us safe. Safety is an illusion. We must manage risk with the patient and collaborating healthcare professional (especially the medial home) with the best interests of the patient in mind.

Jennie McAlpine…

- Born 12 February 1984
- British television actress and comedienne.
  - She is best known for her role as Fiz Stape in the well-known British soap opera *Coronation Street*.

Jennie McAlpine…

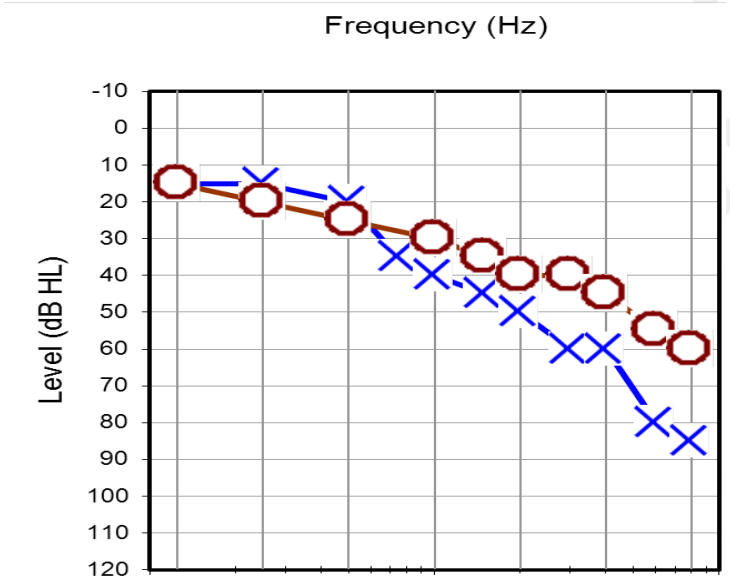
- Since the age of 17 McAlpine has devoted her spare time to helping deprived children in Egypt through the Thebes Project

Jennie McAlpine…

- C/O Tinnitus (long standing atrium A.U.)
- C/O Difficulty understanding speech
- (+) Family Hx Hearing Loss
  - Mother, onset in her 50s
  - Grand mother, unknown onset
- She read about vestibular schwannoma on the internet. She is afraid that she has one.
- She is anxious
- She wants your opinion about whether she should get an MRI

 |

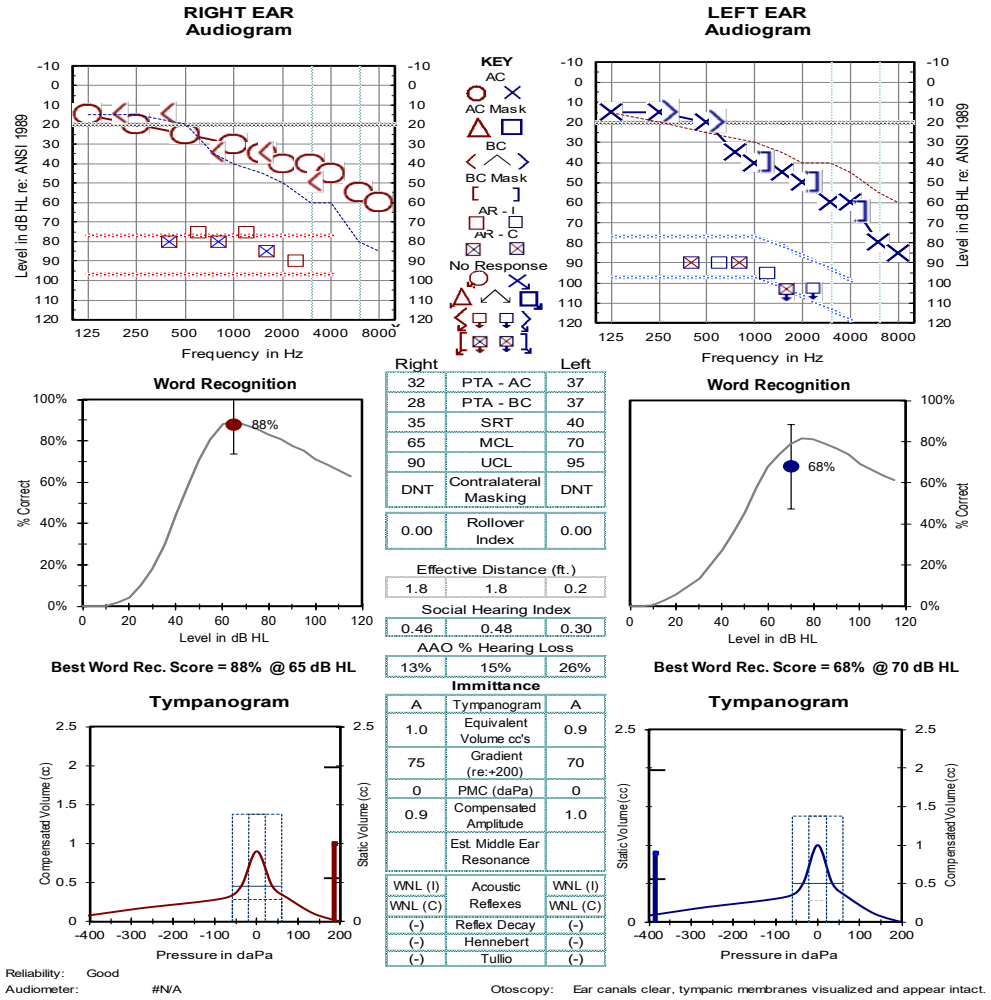
What would you suggest?



Speech Disc: 88% @ 65 dB HL A.D.
68% @ 70 dB HL A.S.

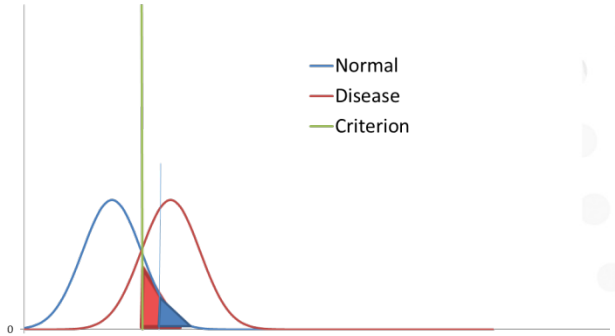
Tympanograms type “A”, ART WNL

What would you suggest?



What would you suggest?

- With this Asymmetry pattern, (p) false positive = 0.0834 or 8.34%
- If this asymmetry were set as the criterion for abnormal, you would identify ~ 51% of tumors
- At a base rate of 1:100, you would send 16 normals for every abnormal (VS) case



 | slide-89

What would you suggest?

- At a base rate of 1:1000, you would send 160 normals for every abnormal (VS) case
- At $7,500 / MRI, we would spend $1,200,000 / tumor just to diagnose
- Which error do you want to make? What is an acceptable risk?
  - Should you take this risk on your own?

Principle #3: Refer Liberally

When in doubt, yank them out!

How to Talk to a Busy Clinician

- Time and attention require effort.
  - Do not interrupt during patient interactions or during dictation.
    - "sterile cockpit"
  - Get to the point as quickly as possible
    - Wondering ideation destroys credibility
- SBAR
  - Situation
  - Background
  - Assessment
  - Recommendation/Request

Situation

- The problem or dilemma you are facing
  - I need your help…
  - I have a patient I think you might want to see…
  - I am seeing Mrs. Jones, a patient you referred to me for tinnitus management. I am concerned about her suicide risk…

Background

- As you know Mrs. Jones is a 64 year old woman with chronic pain and depression. Six months ago she lost her husband. Since then her tinnitus has been a problem for her, she is sleep deprived, and she is avoiding being around people. As we discussed this, she mentioned that she is considering suicide. I probed and she does have a plan, medication overdose, and she may have the means – her husbands pain medicine. I have tried to get her to promise that she will not kill herself but she is not committing to that. She also will not go to the ED. She does have a son that live a couple hours away – I do not have his phone number and Mrs. Jones tells me she does not have his number.

Assessment

- I think she is at high risk of hurting herself if I leave her on her own.

Recommendation / Request

- I think she meets the criteria for Baker Act hospitalization. Will you see her is I send her to you now? I believe my alternative would be to call 911.

Inter-Operative Monitoring Example

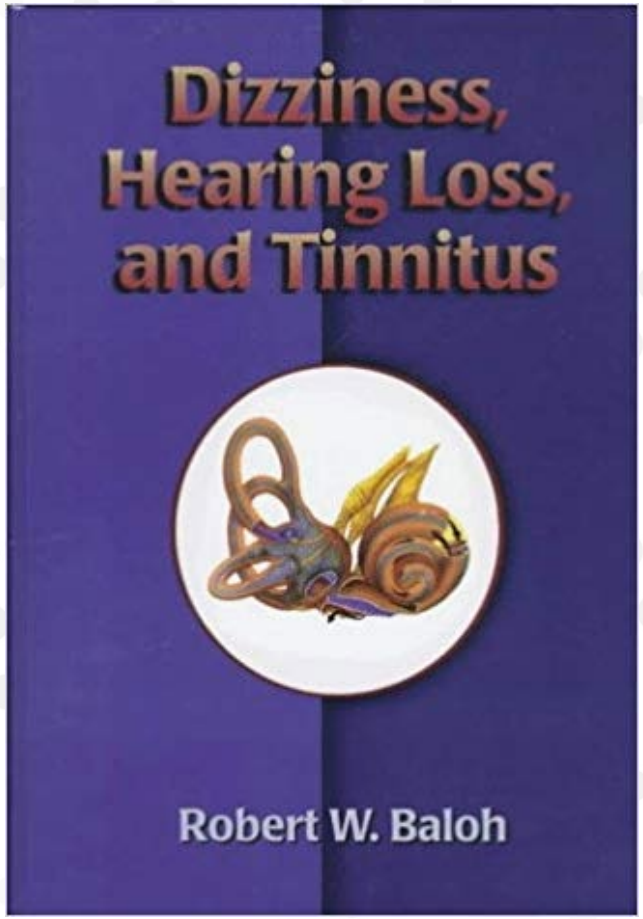
• Situation	• Dr. X, I just lost the signal for the CN X EMG
• Background	• We were fine until the drape was repositioned.
• Assessment	• The signal looks like we lost the reference electrode, or there is a strong electrical signal over one of the leads.
• Recommendation / Request	• Do you want me to try to physically track the lead under the drape or should we go without?

No One Knows Enough to Practice Medicine (Healthcare) Alone

- Don't act in an information bubble
- soAp reports
- Risk
- SBAR
- Get the H&P before you start your assessment
  - …Or document that it was not obtained.
- Logical & Concise
  - Who will manage: audiology or medicine
- You can fail – Your track record is you credibility – stay sharp keep learning
- Check your emotion, get to the point

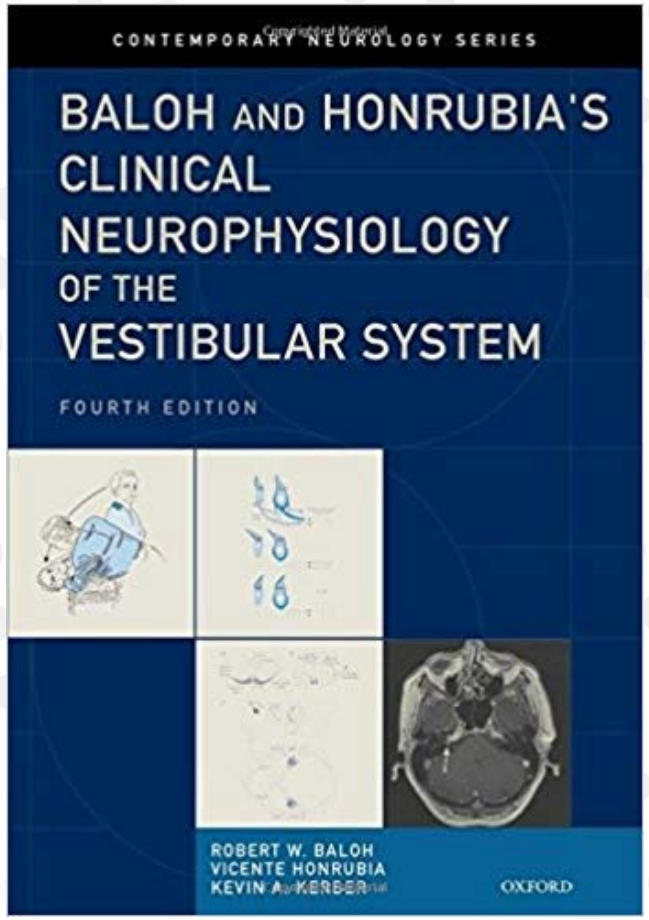
Recommended Text for the Busy Practitioner

- Dizziness, Hearing Loss, and Tinnitus: The Essentials of Neurotology
- **ISBN-13:** 978-0803605817
- **ISBN-10:** 0803605811



A little More Advanced

- Baloh and Honrubia's Clinical Neurophysiology of the Vestibular System, Fourth Edition (Contemporary Neurology Series) 4th Edition
  - by Robert W. Baloh MD FAAN (Author), Vicente Honrubia MD DMSc (Author), Kevin A. Kerber MD (Author)



A Story of BPPV

What is important

30-May-2014

CHIEF COMPLAINT / REASON FOR VISIT: Dizziness: Suspect Benign Positional Vertigo

BACKGROUND:

Mrs. XXX XXX is referred by Dr. XXX for evaluation and treatment of suspected benign paroxysmal positional vertigo. By way of background, her symptoms 1st started in adolescents following a flu (with high fever?) She has had transient positional vertigo symptoms on and off for the last several decades. She never has had any canalith repositioning maneuvers. With the onset of her latest symptoms, she tried self-repositioning. Unfortunately this made her symptoms worse every time she attempted it.

Provocations include: rolling in bed, rolling in bed to the right.

Associated symptoms include: nausea.

Otologic co-symptoms: No report of hearing loss, fluctuating hearing, aural pain, aural pressure, aural fullness, tinnitus, otorhea associated with dizziness symptoms.

Neurologic co-symptoms: No report of diplopia, dysarthria, dysphagia, lower extremity paresthesias or weaknesses, facial weakness, facial paresthesias associated with dizziness symptoms.

EVALUATION:

Ocular range of motion: Appeared normal.
Nystagmus with fixation in room light: None.
Nystagmus under Frenzel lenses: None.
Pursuits: Appeared normal.
Saccades: Appeared normal.

Neck Range of Motion: Appeared normal.
Neck Hyperextension: Did not provoke symptoms.
Horizontal Head Thrust: Appeared normal.
Romberg: Appeared normal,
Facial Animation: Appeared normal.
Facial Sensation: Grossly normal.
Dix-Hallpike right: clockwise.
Dix-Hallpike Left: counter-clockwise.

IMPRESSIONS:

Bilateral posterior canal benign paroxysmal positional vertigo.

TREATMENT:

She was taken to the Epley chair and secured in the usual manner. A witnessed timeout was completed to ensure all straps were securely fastened. Challenges to the posterior canals confirmed bilateral posterior canal canalithiasis. There was also a down being component on the left side, possibly implicating an anterior canal cofactor. She was treated with two posteriorly directed 360° full body rotations in the RALP and LARP planes.

Outcome: Improved - no nystagmus or vertigo; persisting disequilibrium.

FOLLOW-UP PLAN

Discussed the condition in detail. I suspect that her self-repositioning efforts for suspected right posterior canal BPPV caused a backup on the left side. I also explained that bilateral BPPV is often harder to clear, and may require several visits. Her canalithiasis did appear to clear with these maneuvers. So I remained hopeful that she will not require too many treatments. I also explained that recurrence is higher in bilateral BPPV, and that she should not be disappointed should she experience this. With repositioning I expect a favorable outcome.

Follow-up scheduled.

05-Jun-2014 14:08 EDT

CHIEF COMPLAINT / REASON FOR VISIT: Follow-up Evaluation of BPPV Treatment

BACKGROUND:

Mrs. XXX returns in follow-up of complex canalith repositioning for recurrent bilateral BPPV. She is doing remarkable well - no vertigo. She is still unsteady on her feet and has a low level of nausea. No new complaints. She does relate a long history of migraine headache and wonders if there may be a relationship between BPPV and migraine.

Associated symptoms include: nausea, lightheadedness, disequilibrium.

Otologic co-symptoms: No report of hearing loss, fluctuating hearing, aural pain, aural pressure, aural fullness, tinnitus, otorhea. associated with dizziness symptoms.

Neurologic co-symptoms: No report of diplopia, dysarthria, dysphagia, lower extremity paresthesias or weaknesses, facial weakness, facial paresthesias associated with dizziness symptoms.

There is a prior history of: BPPV, vertigo.

EVALUATION:

Secured in the Epley / Omniax Chair; Safety Checklist Completed; Safety Time Out Completed.
Ocular range of motion: Appeared normal.
Nystagmus with fixation in room light: None.
Spontaneous Nystagmus (W/O fixation): None.
Right Posterior Canal Challenge: Negative.
Left Posterior Canal Challenge: Negative.
Right Horizontal Canal Challenge: Negative.
Left Horizontal Canal Challenge: Negative.

IMPRESSIONS:

Resolving bilateral BPPV.

Dizziness and nausea, compatible with residual utricular involvement.

TREATMENT:

No repositioning offered.

FOLLOW-UP PLAN

She will avoid aggressive head movements such as her jazzercise class for the next four weeks. She will also sleep with her head propped up for the next few weeks as well.

I explained that she is resolving very quickly for the complexity of her condition and that she may have a recurrence. She should simply return should that occur. She typically spends the summers up north and so she will return in follow-up when she returns to Florida.

21 Sept 2014

CHIEF COMPLAINT / REASON FOR VISIT: Follow-up Evaluation of BPPV

BACKGROUND:

Mrs. XXX returns with the complaint of recurrence of transient positional vertigo. Her recurrence developed in late July when she was bending over to pick berries at her vacation home. She returned to the St. Augustine area 2 weeks ago and arranged for this follow-up appointment. She has a background history of recurrent bilateral BPPV over several decades. She has responded well to canalith repositioning using the Epley chair.

Otologic co-symptoms: No report of hearing loss, fluctuating hearing, aural pain, aural pressure, aural fullness, tinnitus, otorhea associated with dizziness symptoms.

Neurologic co-symptoms: No report of diplopia, dysarthria, dysphagia, lower extremity paresthesias or weaknesses, facial weakness, facial paresthesias associated with dizziness symptoms.

EVALUATION:
Secured in the Epley / Omniax Chair; Safety Checklist Completed; Safety Time Out Completed.
Ocular range of motion: Appeared normal.
Nystagmus with fixation in room light: None.
Spontaneous Nystagmus (W/O fixation): None.
Pursuits: Appeared normal.
Saccades: Appeared normal.
Neck Range of Motion: Appeared normal.
Neck Hyperextension: Did not provoke symptoms.
Horizontal Head Thrust: Appeared normal.
Facial Animation: Appeared normal.
Right Posterior Canal Challenge: clockwise, transient. +3
Left Posterior Canal Challenge: Negative

IMPRESSIONS:

Recurrent bilateral benign paroxysmal positional vertigo.

Active right posterior canal canalithiasis.

TREATMENT:

Epley maneuvers addressing the right posterior canal.

Outcome: Clear - no nystagmus or vertigo

FOLLOW-UP PLAN

Follow-up scheduled.

10-OCT-2014 17:43 EST

CHIEF COMPLAINT / REASON FOR VISIT: Follow-up Evaluation of BPPV

BACKGROUND:

Mrs. XXX returns in follow-up of canalith repositioning. She had some instability following her last treatment. However this resolved over the course of several days and she was felt well since then. She has a background history of recurrent bilateral BPPV over several decades. She has responded well to canalith repositioning using the Epley chair in the past.

Otologic co-symptoms: No report of hearing loss, fluctuating hearing, aural pain, aural pressure, aural fullness, tinnitus, otorhea associated with dizziness symptoms.

Neurologic co-symptoms: No report of diplopia, dysarthria, dysphagia, lower extremity paresthesias or weaknesses, facial weakness, facial paresthesias associated with dizziness symptoms.

EVALUATION:

Secured in the Epley / Omniax Chair; Safety Checklist Completed; Safety Time Out Completed.
Ocular range of motion: Appeared normal.
Nystagmus with fixation in room light: None.
Spontaneous Nystagmus (W/O fixation): None.
Pursuits: Appeared normal.
Saccades: Appeared normal.
Neck Range of Motion: Appeared normal.
Neck Hyperextension: Did not provoke symptoms.
Horizontal Head Thrust: Appeared normal.
Facial Animation: Appeared normal.
Right Posterior Canal Challenge: clockwise, transient. +1
Left Posterior Canal Challenge: clockwise, transient. +1
Right Anterior Canal Challenge: clockwise, transient. +1
Left Anterior Canal Challenge: clockwise, transient. +2
Right Horizontal Canal Challenge: Negative
Left Horizontal Canal Challenge: Negative

IMPRESSIONS:

Recurrent bilateral benign paroxysmal positional vertigo.

Active left vertical canal canalithiasis – very mild.

TREATMENT:

Epley maneuvers addressing the left anterior and posterior canals.

Outcome: Clear - no nystagmus or vertigo

FOLLOW-UP PLAN

Follow-up scheduled.

17-Oct-2016 15:49 EDT

CHIEF COMPLAINT / REASON FOR VISIT: Relapse of Dizziness, Suspect Return of BPPV

BACKGROUND:

Mrs. XXX XXX returns with a complaint of recurrent positional vertigo. Her symptoms have redeveloped gradually over the last several weeks. She experiences a vague unsteadiness and waves of nausea lasting approximately one minute, provoked by head movement. She does not report provoked vertigo when rolling in bed. Rather, she states she avoids moving in bed given her previous history of BPPV. Otherwise no new symptoms.

EVALUATION:

Secured in the Epley / Omniax Chair; Safety Checklist Completed; Safety Time Out Completed.
Ocular range of motion: Appeared normal.
Nystagmus with fixation in room light: None.
Spontaneous Nystagmus (W/O fixation): None.
Pursuits: Appeared normal.
Saccades: Appeared normal.
Neck Range of Motion: Appeared normal.
Neck Hyperextension: Did not provoke symptoms.
Horizontal Head Thrust: Corrective saccade to right? – not consistent.
Romberg: Appeared normal,
Facial Animation: Appeared normal.
Facial Sensation: Grossly normal.
Right Posterior Canal Challenge: clockwise. +1
Left Posterior Canal Challenge: counter-clockwise. +2
Right Horizontal Canal Challenge: Negative.
Left Horizontal Canal Challenge: Negative.

IMPRESSIONS:

Subtle bilateral posterior canal benign paroxysmal positional vertigo - canalithiasis. Symptoms are greater on the left side.

TREATMENT:

Epley maneuvers addressing the left posterior canal.

Outcome: Clear - no nystagmus or vertigo emanating from the left posterior canal. Right posterior canal is still active.

FOLLOW-UP PLAN

Written post repositioning instructions provided and reviewed.

Follow-up scheduled.

Disclaimer: This report was prepared using voice recognition software. The report was reviewed for general content. However, transcriptional errors may persist which may alter the intended meaning of the dictating clinician.

14-Nov-2016 15:04 EST

CHIEF COMPLAINT / REASON FOR VISIT: Follow-up BPPV Check

BACKGROUND:

Mrs. XXX XXX returns with a complaint of recurrent positional vertigo. She had some improvement in her symptoms following her last repositioning, punctuated a few fleeting non-vertiginous sensations. However, over the past few days she has noticed a "floaty feeling". Additionally, when she yawns and stretches in the morning (before getting out of the supine position), she is experiencing a little vertigo. She does not report provoked vertigo when rolling in bed. Otherwise no new symptoms.

EVALUATION:

Secured in the Epley / Omniax Chair; Safety Checklist Completed; Safety Time Out Completed.
Ocular range of motion: Appeared normal.
Nystagmus with fixation in room light: None.
Spontaneous Nystagmus (W/O fixation): None.
Pursuits: Appeared normal.
Saccades: Appeared normal.
Neck Range of Motion: Appeared normal.
Neck Hyperextension: Did not provoke symptoms.
Horizontal Head Thrust: Reduced on the right.
Romberg: Appeared normal,
Facial Animation: Appeared normal.
Facial Sensation: Grossly normal.
Right Posterior Canal Challenge: clockwise. +2 (barely perceivable)
Left Posterior Canal Challenge: counter-clockwise. +1 (barely perceivable)
Right Horizontal Canal Challenge: Negative.
Left Horizontal Canal Challenge: Negative.

IMPRESSIONS:

Subtle recurrent bilateral posterior canal benign paroxysmal positional vertigo.

TREATMENT:

360 degree backwards directed rolls in the planes of the affected canals.

Outcome: Clear - no nystagmus or vertigo emanating from the posterior canals. I thought I might have detected some anterior canal stimulation during one of the 360 degree rolls.

FOLLOW-UP PLAN

Written post repositioning instructions provided and reviewed. Overall, she is feeling much better relative to when she first started treatments. She mentions that she is considering flying in an F16 as a passenger. She will call if she experiences any further vertigo.

Follow-up prn.

Disclaimer: This report was prepared using voice recognition software. The report was reviewed for general content. However, transcriptional errors may persist which may alter the intended meaning of the dictating clinician.

15-Mar 2017

CHIEF COMPLAINT / REASON FOR VISIT: Relapse of Dizziness, Suspect Return of BPPV

BACKGROUND:

XXX XXX returns with a complaint of recurrence of BPPV symptoms beginning in mid-February. She started experiencing positional vertigo symptoms when getting out of bed in the morning. She believed her symptoms were emanating from the right ear and proceeded to perform a series of self-repositioning maneuvers for several days. Her vertigo improved, however she was left with vague dizziness and unsteadiness. In an effort to maximize improvement, she attempted a repositioning on the left side. When moving into position 3 of the Epley maneuver (nose pointed downward-45 degrees) she experienced severe vertigo and persisting nausea with emesis. She attempted to return to our clinic, but was told there was no availability. She proceeded to seek help at the XXXXX, where she was referred to Brooks Rehabilitation for bedside canalith repositioning treatments. This did improve her vertigo, but again she was left with this underlying unsteadiness and mild nausea.

She was also beginning to experience headaches. She describes the headaches as focused behind her right eye, over the right side of her face, and involving both the maxillary and mandibular aspects of the right jaw. She was evaluated by Dr. XXX and Dr. XXX in Neurology who thought this may be related to a recurrence of her BPPV. However, they were also concerned about the persisting dizziness and headache of uncertain origin. An MRI of the brain and CT scan of the temporal bones is in process to rule out other potential causes of her persisting dizziness and headaches.

In the meantime, she was seen at the XXX in XXX Florida for XXX treatment. This had negligible effect on her dizziness and headache symptoms. She is here today for re-evaluation of BPPV status in the setting of persisting head movement related dizziness and headache. She denies positional vertigo at present.

EVALUATION:

Secured in the Epley / Omniax Chair; Safety Checklist Completed; Safety Time Out Completed.
Ocular range of motion: Appeared normal.
Nystagmus with fixation in room light: None.
…

IMPRESSIONS:

New Onset Headache

Bilateral BPPV, resolving

Mildly active left vertical canal (multi canal) involvement.

Persisting dizziness, possibly in keeping with residual utricular dysfunction. Other causes cannot be excluded. Neurologic evaluation is in process.

TREATMENT:

Reversed Epley maneuvers addressing the left anterior canal x2 followed by a standard Epley addressing the left posterior canal.

Outcome: Undetermined - persisting +1 nystagmus noted.

FOLLOW-UP PLAN

She is encouraged that her symptoms were not as severe as they were a few weeks ago.

Discussed self-repositioning and possibility of loading the anterior canal when BPPV is bilateral. In the future, she will forego soft repositioning if she is unsure of the side of her BPPV or believes she may have bilateral involvement.

Follow-up evaluation scheduled for 2-3 weeks. She will return sooner should she experience her severe recurrence of her positional vertigo.

Neurologic evaluation in process.

Disclaimer: This report was prepared using voice recognition software. The report was reviewed for general content. However, transcriptional errors may persist which may alter the intended meaning of the dictating clinician.

2-Mar 2017

Neuro Consult

Patient: XXX, XXX M MRN: 1 FIN: 2
Age: 58 years Sex: Female DOB: 04-Aug-1959
Author: XXX (Resident MD), Christopher P

HPI
XXX M XXX is a 58 year-old R-handed woman referred by Dr. XXXfor further evaluation of headaches & vertigo.

recent vertigo episode
-due to normal chronic BPPV type symptoms in early 3/2018 she was performing R epley w improvement - for ~2 precedinig wks ~2x/wk
-on 3/5/18 she performed L epley and at end of maneuver experienced acutely worsening BPPV-type vertigo w N/V except more severe: much longer time to attentuation w immobility, and lingering mild vertiginous sensation ("whoozy") with slightest of head movements
-eval by OSH specialists w improvement w both meclizine (stopped after ~1 wk due to side effects) & epley - but not to baseline as is normally the case w her BPPV
-no clear acute hearing changes
-no prodrome/trigger aside from BPPV maneuver

recent headache
-constant unremitting headache noticed ~3d after recent vertigo onset (uncertain if present in 1st 3d due to severity of vertigo)
-this HA w significant overlap w typical migraines w few important differences:
  location: pain is R retro-orbital / R temporoparietal / & including R face/jaw - along with superimposed holocephalic pressure sensation
  unremitting: 2/10 to 5-6/10 severity fluctuation
-otherwise same as prior migraines which she has not had since menopause ~12/2010
-she has been taking ibuprofen 200mg ~4x/day since onset w some relief
-some worsening w cough/sneeze

aside from HA noticed after worsening vertigo, no other clear direct association with current or prior headaches w vertigo

vertigo / BPPV history
-onset ~17 yo, ~5d after viral illness, then w ~3d spinning vertigo w N/V
-thereafter worse attakes every ~3 yrs w ~1 wk to 3 months of intermittent similar symptoms
-with all of these symptom remission w immobility, triggering w slight head movement
-epley significantly helps

migraine history
-onset teenager, ~2-3 before menses lasting 2 (rarely 3) days, occurring every month until menopause ~12/2010
-prodrome ~30 min "vice-like/funny" pressure holocephalic feeling
-ictal: max 5/10 holocephalic pressure w sharp/throbbing components
-associated sensitivity to light, sound, movement; nausea. no dizziness/vertigo
-no association w time of day or position

ROS/other
-head trauma as teenager: cartwheel to pool table w LOC & trauma to R side of head
-last neuroimaging MR 2016
-bilat 4th toe distal mild numbness & pain
-no other acute complaints or acute-onset focal sensorimotor symptoms

PMHx
migraines
vertigo & bilat BPPV (Zapala eval 7/2017)
cervical degenerative disc disease
fibromyalgia / chronic fatigue
HTN
Lyme disease by report 2016 w tick exposure/bite & associated Bell's & meningitis - all OSH
hepatitis
latent TB
abdominal pain
GERD
liver cysts, benign
ovarian cysts s/p laparoscopy
fibroids
L renal stones
R trigger finger injection
cholecystectomy 2010
LASIK bilat

FHx
mom w HA similar HA - no other HA in family
Father: CAD - Coronary artery disease; Hypertension Fam Hx - Family History
Mother: Hypertension Fam Hx - Family History; MIGRAINES
Sister: Osteoarthritis

SHx
-EtOH: none since 3/5/18, before that ~1x/wk
-never smoker
-lives in St. Augustine
-work: part time making/selling handbags/pillows
-exercise: daily gardening w significant physical activity w shoveling/carting materials
-married. from PA originally
-sister is Dr. Nancy XXX w IMED

meds
cyanocobalamin: 1,000 mcg,1 Tab,SL,Daily
HRT started for hot flashes:
  originally combo estrogen/progesterone ~2016
  switched to estradiol patch + PO progesterone ~10/2017
magnesium oxide: 400 mg,1 Tab,PO,Daily - for renal function (not HA)
ibuprofen as above

allergies:
Milk of Magnesia (Rash)
Septra DS (Rash)
shellfish (rash,projectile vomiting)

Physical Exam
Vitals:
vitals not recorded

CV: RRR w/o murmur or cervical bruit
Resp: CTAB anteriorly w/o crackles/wheezing
head/neck: initially mild L GON tenderness not as appreciable on re-exam. no tenderness in posterior-cervical, supraorbital/trochlear, temporo/parietal regions

Neuro
MS/Language/Speech: alert, speech fluent w/o dysarthria, answers questions appropriately
CN: PERRL EOMI w/o nystagmus. visual fields full to finger counting. facial sensation nl to fine touch. eyebrow raise and eyeclose nl. smile symmetric. hearing nl to fingerrub. palate elevates symmetrically. shoulder shrug nl. tongue protrudes midline.
Motor: normal bulk and tone. normal pronator drift. no tremors, asterixis, or myoclonic movements. full strength prox/distal upper/lower ext on segmental testing.
Sensory: normal sensation to fine touch, pin, & cold in 4 ext
Reflexes: 2+ brisk in upper ext w hoffmann's absent. 2+ patellar & achilles. flexor plantar
Coord: no ataxia on finger to nose or heel to shin
Gait: initially mild instability w romberg but maintained station - threreafter w/o e/o imbalance. normal regular/toe/heel/tandem gait w normal turns

Labs/Studies
lyme (1/2018): IgM positive - bands c/w early infection w 2-3 wk retesting recommended - dx only in 1st 4 wks. IgG neg
CRP 3.0, nl sed (1/2018)
TSH 12/2017 normal
CSF 12/2017 normal

Assessment and Plan
58 year-old R-handed woman referred by Dr. XXXfor further evaluation of headaches & vertigo. Etiology of new type of dizziness/headache is uncertain. Temporal association w epley & significant similarity with prior BPPV episodes & migraines suggests BPPV-type vertigo might be inducing prior migraine-type headaches, though it is difficult to explain this mechanistically. Given acute onset in context of neck movement and different/new features including R-side HA lateralization and persistence of vertigo - considerations do include arterial neck non-occlusive dissection, or in context of hormone replacement a venous clot. While lack of clear other associated findings on history/exam make these less likely, headache/vertigo may sometimes be only manifestation of these. Elevated CSF pressure headaches are also a consideration with pressure quality and worsening w cough/sneeze. Canal dehiscence is another albeit less likely consideration.

Problems include:
-new headache type

Plan:
-MRI wow brain, MRA head wo + neck wow, MRV, CT temporal bones
-diamox 125 qhs for 4-5 days then if no improvement bid for 4-5d then call w update - discussed potential side effects and to discontinue med & seek medical attention if any evidence of rash / difficulty breathing / or other concerning symptoms

Assessment and Plan

58 year-old R-handed woman referred by Dr. XXX for further evaluation of headaches & vertigo. Etiology of new type of dizziness/headache is uncertain. Temporal association w epley & significant similarity with prior BPPV episodes & migraines suggests BPPV-type vertigo might be inducing prior migraine-type headaches, though it is difficult to explain this mechanistically. Given acute onset in context of neck movement and different/new features including R-side HA lateralization and persistence of vertigo - considerations do include arterial neck non-occlusive dissection, or in context of hormone replacement a venous clot. While lack of clear other associated findings on history/exam make these less likely, headache/vertigo may sometimes be only manifestation of these. Elevated CSF pressure headaches are also a consideration with pressure quality and worsening w cough/sneeze. Canal dehiscence is another albeit less likely consideration.

Questions

- What roll did data and facts play?
- What roll does assessment /information play?

Don’t Do This!

IMPRESSIONS

- Mild sloping to moderate SNHL at 3kHz in the left ear
- Flat moderate SNHL, steeply sloping to severe at 6kHz in the right ear
- Immitanace shows normal type “A” tympanograms and present acoustic reflexes except at 4kHz in the right ear

PLAN

- ABR
- Hearing Aids

Thank You!

Contact information:

Zapala.David@Mayo.edu

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