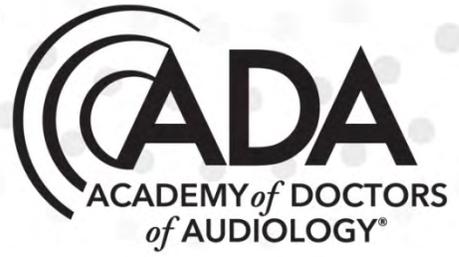




# AUDACITY

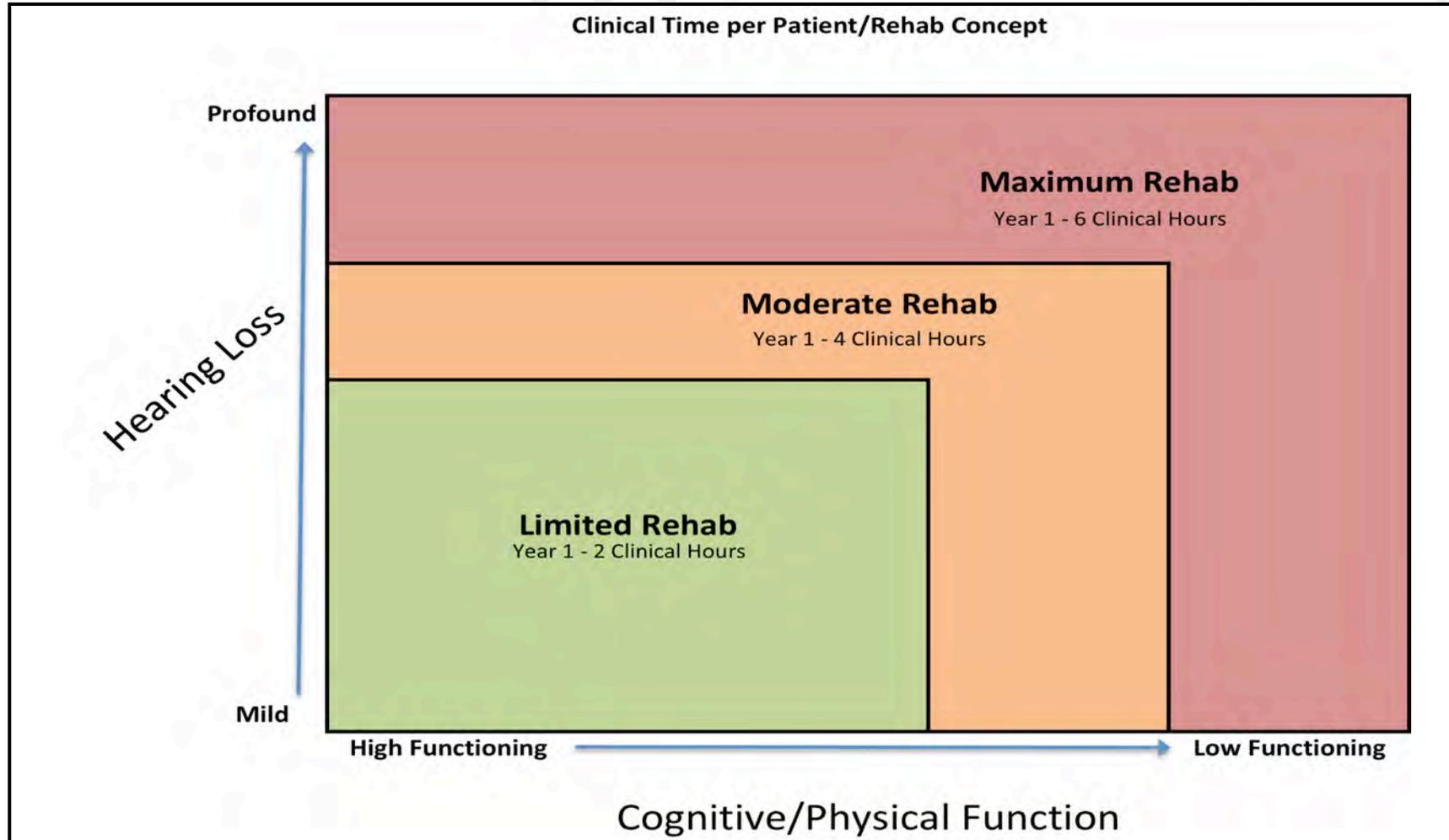
Bolder than Ever



# Telehealth: Shifting the Paradigm to Improve Access

*Dan Quall, MS, CCC-A*

# The Audiology Conundrum



# Kaiser CEO: Telehealth Outpaced In-Person Visits Last Year

52 percent of last year's patient transactions at Kaiser Permanente were conducted online, by virtual visits or through the health system's apps, CEO Bernard Tyson says.



# Disclosures

- Director of Managed Care – Fuel Medical Group
- No affiliation with any products presented today
- Developing a Tinnitus Management program using telehealth

# Today

- Telehealth / TeleAudiology
  - History
  - Uses
  - Outcomes
- TeleAudiology – What is happening in our profession
  - Strengths
  - Weaknesses
  - Opportunities
  - Threats

# Traditional Care Model

- Traditional delivery - communication and interaction in a real time, in-person encounter.
- Provider / Patient interaction
  - subjective information
  - objective data
  - diagnosis or assessment
  - plan of care is formed
- **Strength** – good treatment model
- **Weakness** – limited access



# Essential Elements of Telehealth / Telemedicine

- To improve health outcomes
- Provide clinical support
- Overcome geographical barriers by remotely connecting patients to healthcare providers and medical technology
- Utilize information and communication technology

**Telehealth** involves the distribution of [health-related services](#) and information via electronic information and [telecommunication technologies](#)

# Telehealth / Telemedicine

- Not a new concept – vast history especially in specialty care
- Technology has created exponential growth
- There has been a paradigm shift and telehealth is no longer considered a specialist service

**Not without some issues**



# Telehealth issues

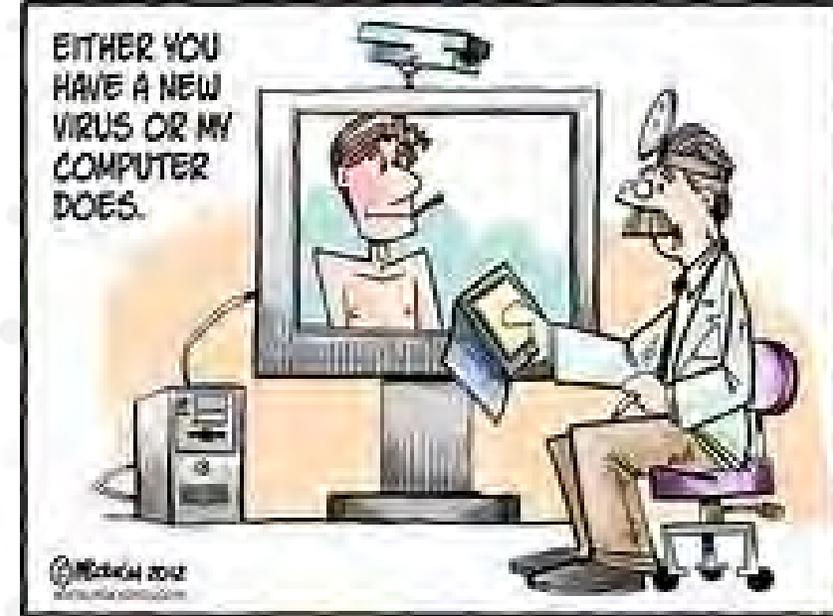
- Cannot yet fully replace a physical examination
  - Diagnostics
  - Rehabilitation
  - Mental Health
- Privacy
- Licensing



**Privacy, Security, & Confidentiality  
Issues with Telehealth**

# Telehealth issues (cont.)

- Reimbursement
- On-line prescribing (appropriate patient-provider relationship)
- Ethical
  - technical problems /transmission errors
  - security breaches or storage
  - legal malpractice cases may need to involve all of those involved as opposed to what would usually just be the practitioner

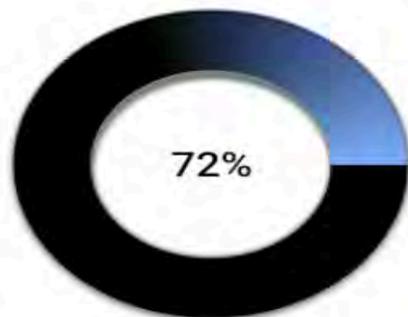


# Projected as a growth industry

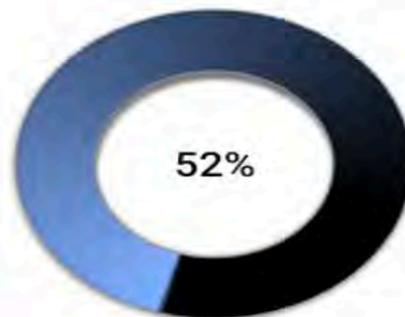
- According to a recent survey, nearly **three-quarters** of U.S. consumers say they would use telehealth - ["Survey: Consumers Keen on Telemedicine"](#) 04-26-2010
- Industry has the potential to realize a growth of 20.8% by 2020 with a market of \$86.6 billion – ["Telemedicine – The Future of Healthcare"](#), S. Ash, 06-22-2017

## The Message in the Metrics

Percentages of Medical Providers that Have Telemedicine Programs

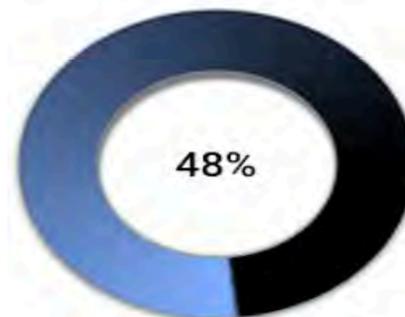


Hospitals

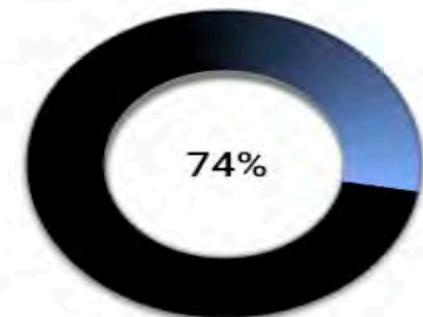


Physician Groups

Percentages of Employers Offering Telemedicine Benefits



2015



2016



# WIRELESS IMPLANTABLE MEDICAL DEVICES

Deep Brain  
Neurostimulators



Cochlear Implants



Gastric  
Stimulators



Cardiac Defibrillators/  
Pacemakers



Foot Drop  
Implants



Insulin Pumps



# Outcomes

## Telehealth: Mapping the Evidence for Patient Outcomes From Systematic Reviews [Internet]

### Editors

[Totten AM](#)<sup>1</sup>, [Womack DM](#)<sup>1</sup>, [Eden KB](#)<sup>1</sup>, [McDonagh MS](#)<sup>1</sup>, [Griffin JC](#)<sup>1</sup>, [Grusing S](#)<sup>1</sup>, [Hersh WR](#)<sup>1</sup>.

### Source

Rockville (MD): Agency for Healthcare Research and Quality (US); 2016 Jun.  
Report No.: 16-EHC034-EF.

[AHRQ Comparative Effectiveness Technical Briefs.](#)

# Telehealth: Mapping the Evidence for Patient Outcomes From Systematic Reviews [Internet]

- We identified 1,494 citations about telehealth, from which 58 systematic reviews met our inclusion criteria.
- A large volume of research reported that telehealth interventions produce positive outcomes when used for remote patient monitoring, broadly defined, for several chronic conditions and for psychotherapy as part of behavioral health. The most consistent benefit has been reported when telehealth is used for communication and counseling or remote monitoring in chronic conditions such as cardiovascular and respiratory disease, with improvements in outcomes such as mortality, quality of life, and reductions in hospital admissions.

# Outcomes

The Role of Telemedicine in Mental Health - June 19, 2017

- University of Zurich study (Journal of Affective Disorder, 2013) – 62 patients, 31 patients received online therapy, 31 received conventional in-person therapy
  - Online: 53% reported depression was eased
  - Conventional: 50% reported depression was easedThree months after completing the study:
  - Online: 57% showed no signs of depression
  - Conventional: 42% showed no signs of depression



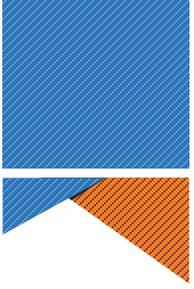
Universität  
Zürich<sup>UZH</sup>

# Outcomes

**Table 1**

Inpatient admissions and days of psychiatric hospitalization among U.S. Department of Veterans Affairs patients before and after enrollment in telemental health services

Fiscal year	N	N admissions			Days of hospitalization		
		Before enrollment	After enrollment	% decrease	Before enrollment	After enrollment	% decrease
2007	18,137	812	612	24.6	6,829	5,160	24.4
2008	20,738	885	741	16.3	7,772	6,487	16.5
2009	27,075	1,019	625	38.7	9,792	5,536	43.5
2010	32,659	1,232	1,016	17.5	11,139	8,897	20.1
Total	98,609	3,948	2,994	24.2	35,532	26,080	26.6



# Healthcare Technology

General Healthcare Products

- Hello! From beam
- Smart thermometer patch
- Personal low-frequency stimulator
- Virtual doctor visits
- Asthma and allergy prevention
- Smart pillow
- Robotic hands

CES is the world's gathering place for all those who thrive on the business of consumer technologies. It has served as the proving ground for innovators and breakthrough technologies for 50 years — the global stage where next-generation innovations are introduced to the marketplace.

(Source: <https://ces.tech/>)



- 180,000+ People
- 4,000+ Exhibitors
- 2.6 Million Sq. Ft. of Exhibit Space
- Views of CES Twitter videos: 4.3 million
- Views of CES Snapchat Live: 133.9 million

# Beam

From Here to  
Anywhere

How virtual communication is supposed to be! Beam® provides authentic eye-to-eye connection instantly across distance, allowing you to seamlessly move within the space and engage in real time.



[Product Information](#)









**DISCOVER THE FUTURE OF TELEMEDICINE!**



Stands Hall A-D, Booth #43852



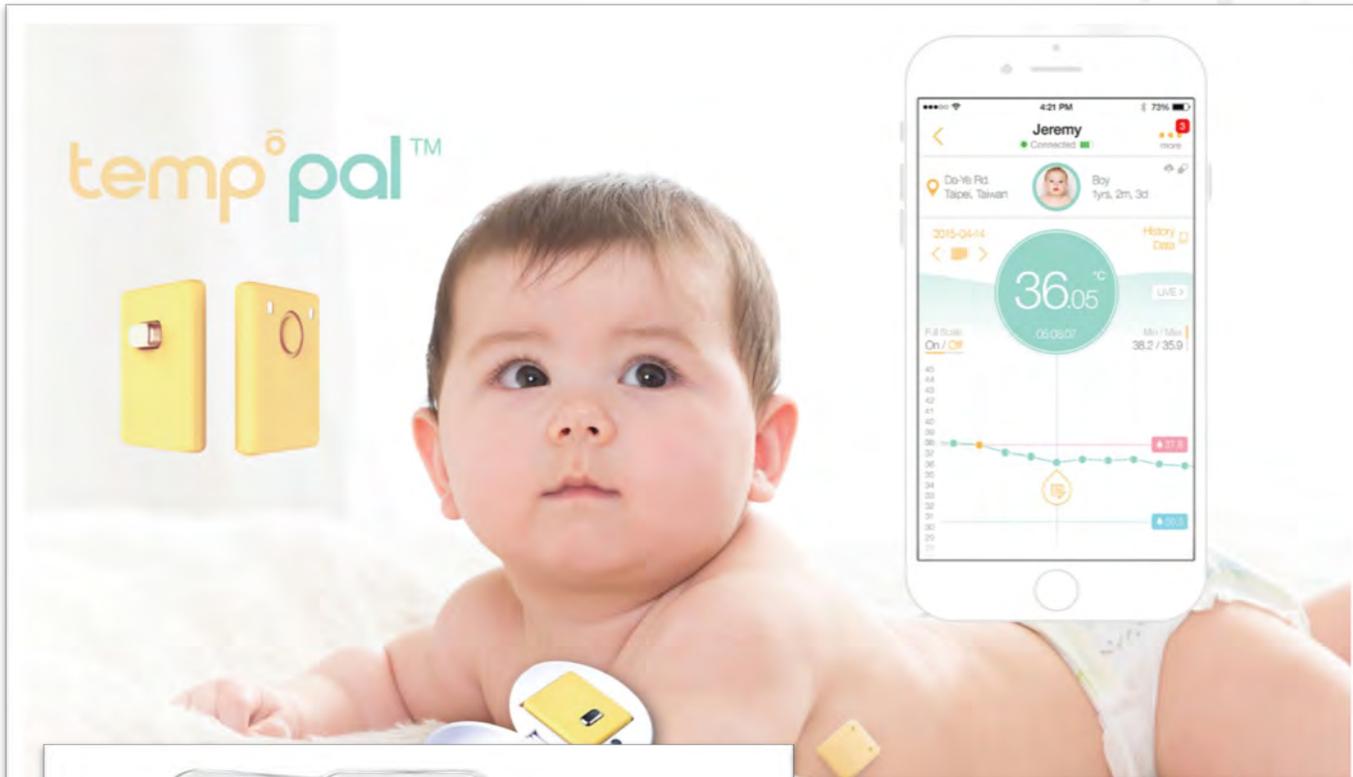
# Nomadeec

Better and faster medical decisions

Nomadeec presents its new generation of mobile telemedicine platform for healthcare professionals. A major breakthrough on the Telemedicine market for faster and better medical decisions.

# AiQ Biomonitoring Clothing





# Temp Pal

## Smart Thermometer Patch

Temp Pal™ is an innovated soft, wearable thermometer that continuously measure temperature and wirelessly sending temperature readings to a smartphone or tablet. Unlike traditional method it is tiny and flexible, child-friendly and does its job while the patient is sleeping.

# CAPTURE PROOF

"I LOVE WAITING ROOMS....." -No One

## VIRTUAL HEALTH RECORD

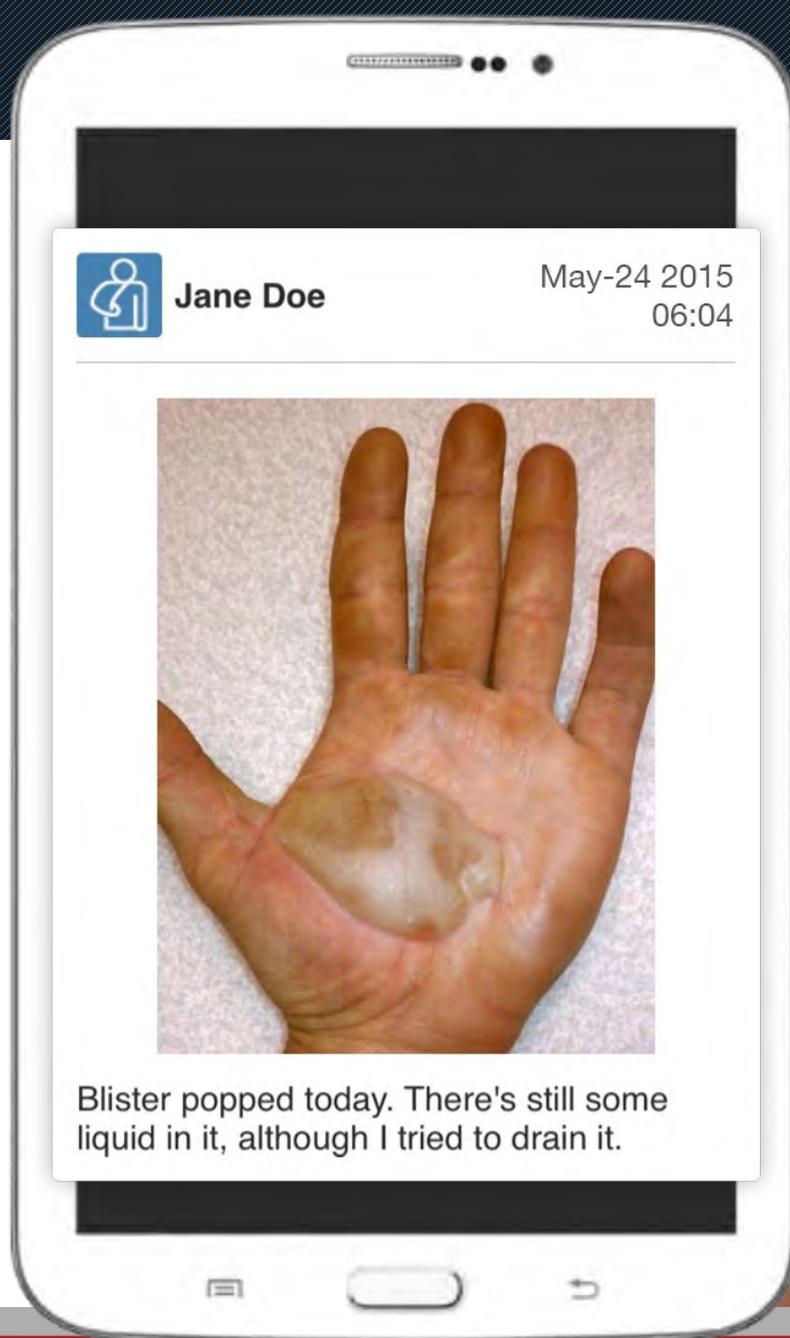
The visual health record that plugs into a whole health system.

- Simply snap.
- Securely share photos and videos for patient care.

[Product Information](#)

**CAPTUREPROOF IS PROVEN TO:**

- **REDUCE ER VISITS**
- **IDENTIFY URGENT PATIENTS WITH 78% MORE ACCURACY**
- **REDUCE NON-URGENT FOLLOW UP VISITS BY 75%**
- **SAVE 60% OF FOLLOW UP RESOURCES**
- **90% OF PATIENTS ON CAPTUREPROOF SAY IT HELPED THEM BETTER MANAGE THEIR HEALTH**

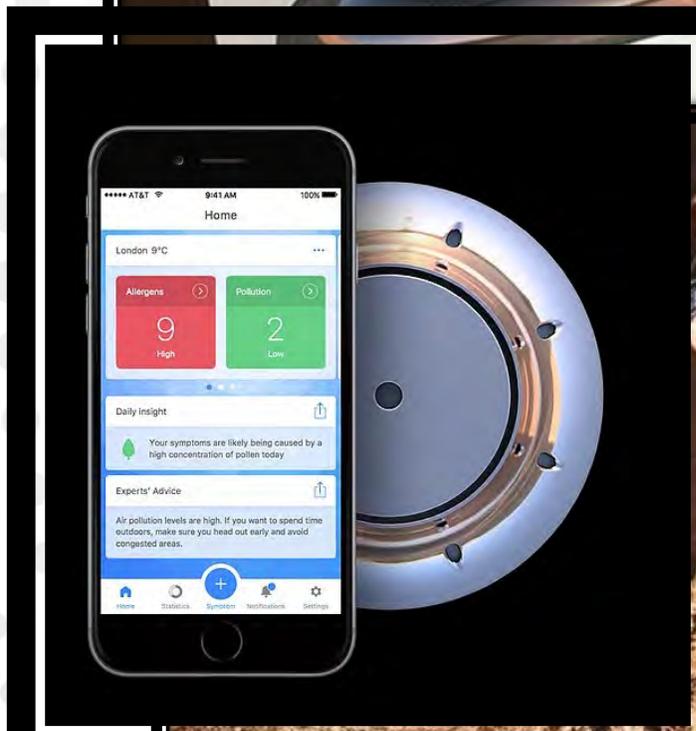




# Sensio Air

Asthma and allergy prevention

Introducing the only patented technology for allergen identification and symptom prevention.



Product Information

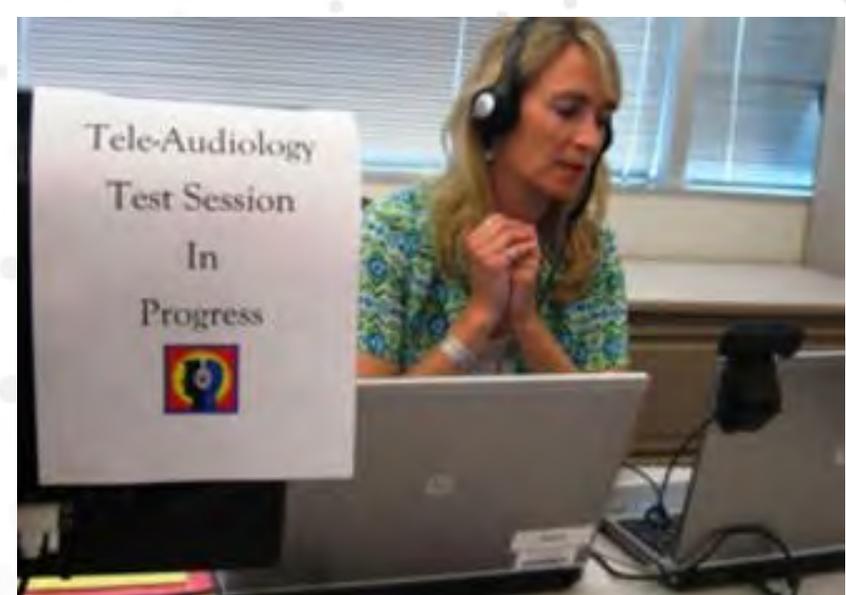
# TeleAudiology

- **Wikipedia - Tele-audiology** is the utilization of [telehealth](#) to provide [audiological](#) services and may include the full scope of audiological practice.



This term was first used by Dr. Gregg Givens in 1999 in reference to a system being developed at [East Carolina University](#) in North Carolina, USA. The first Internet audiological test was accomplished in 2000 by Givens, Balch and Keller.

# Two Types of TeleAudiology



- **Store-and-forward (Asynchronous) tests** Testing a patient and then transferring the results via emailing or the Internet to a professional that will look at the results.
- **Real-time (Synchronous) tests** Testing a patient in real-time as if the patient is sitting in front of you. Audiologists are used to test and provide services to patients remotely.



# Veterans Administration - TeleAudiology

- Intro Pilot in 2009 – 10 sites (rural locations)
- Collected 1170 outcomes. Proved test reliability with TeleAudiology
- Outcomes were as good or better than face-to-face
- San Fran VAMC – provided services to Eureka, Ukiah and Clearlake VA clinics
- Utilized Aud-tech as the Audiologists hands in a remote location with high resolution cameras
- Real time measures
- Saves travel time (especially the minor repairs – 15 minute appts)



# TeleMedicine and e-health, Sept. 2015

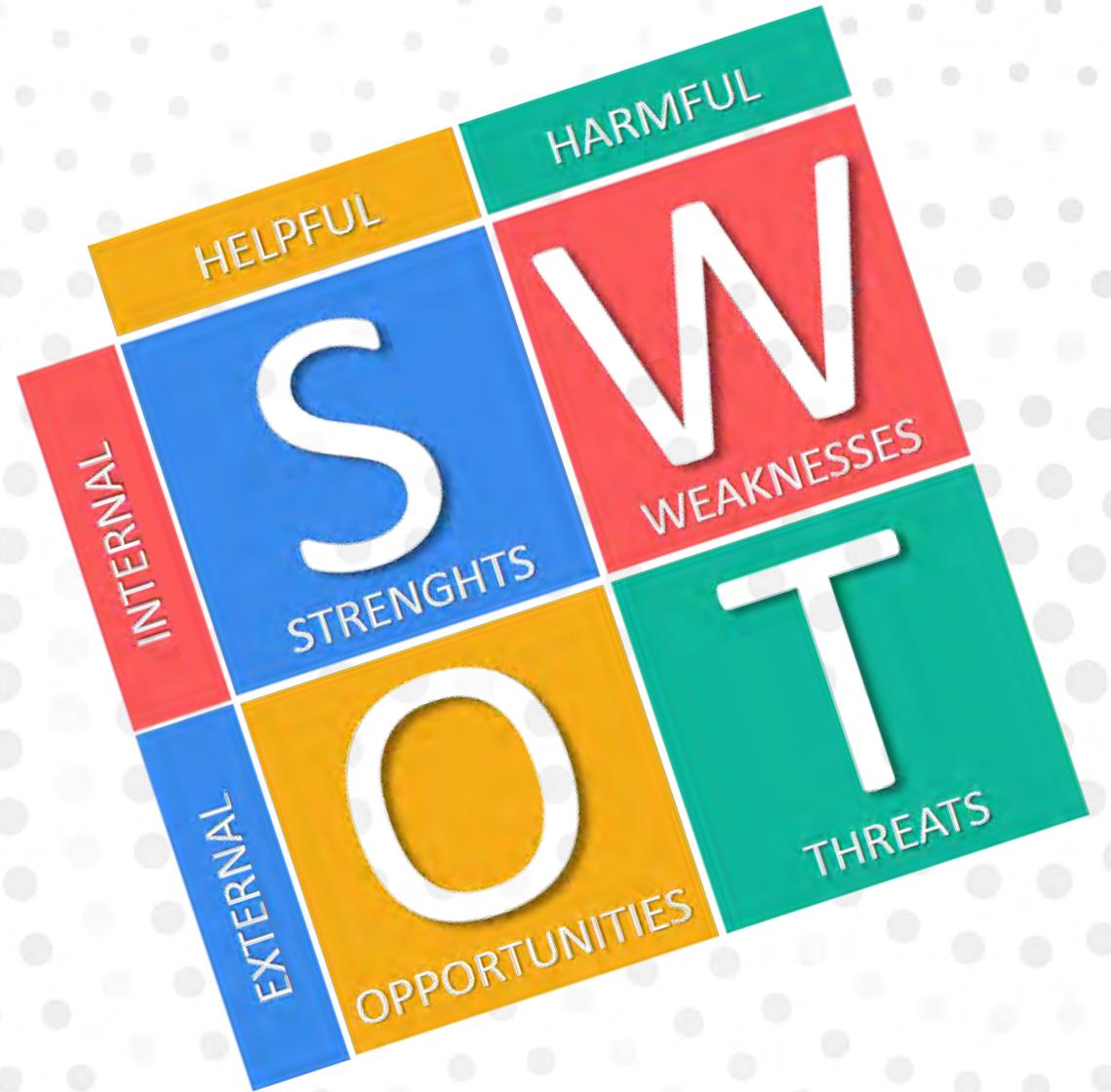
Original Research, a Browser-Server-Based TeleAudiology System. J. Yao PhD, D. Yao PhD, G. Givens PhD, - ECU

- Developed a browser – server - based delivery system to test Pure Tone and Speech
- 18 volunteers, ages 19 -62 yrs, two approaches – face to face and remote server based
- Pure tone and speech tests
- Results showed TeleAudiology generated test results comparable to face to face results
- Patient reports – no difference with the testing experience



# TeleAudiology - SWOT

- Strengths – How can this help our patients and profession?
- Weaknesses – Where are the issues affecting this treatment mode?
- Opportunities - How can we benefit and grow from this form of patient interface?
- Threats - How might we be negatively impacted through the use of this technology?



# Strengths of TeleAudiology

- Improve health outcomes
- Shortage of excellent hearing care professionals in the US and around world
- Remote access - Overcome geographical barriers by remotely connecting patients to healthcare providers and medical technology
- Access – speed and reach of treatment / clinical support and more timely feedback
- Information and communication technology
- Cost effectiveness

# Remote Diagnostic Testing

## Interacoustics - RAS Remote Audiology System

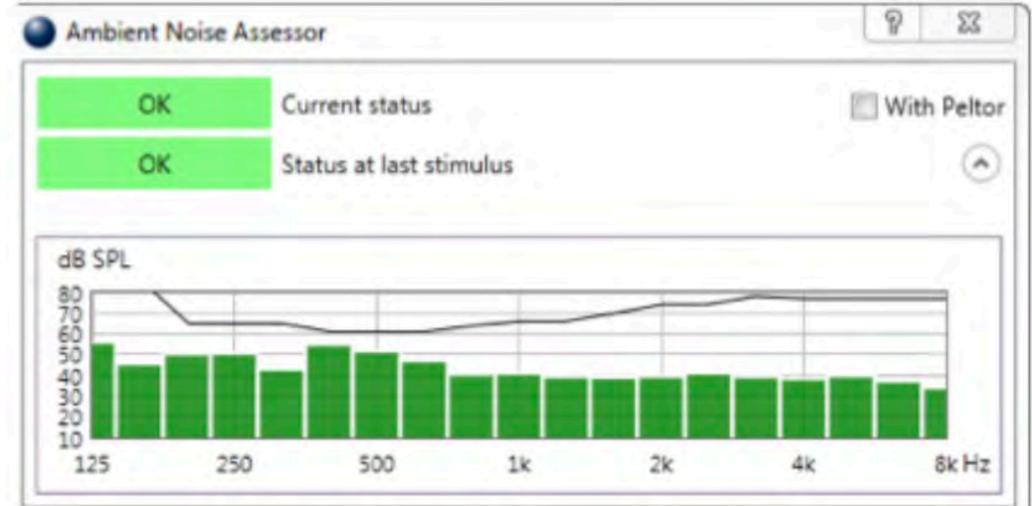
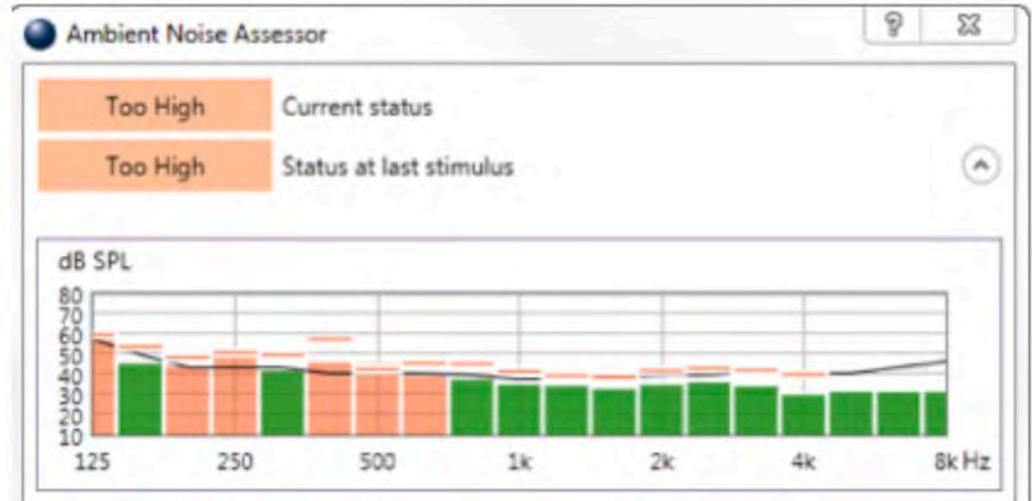
Extend your geographical reach and see more patients with less travel. The RAS provides a footprint that will comfortably fit into even the smallest test room while creating a professional appearance to make every patient at ease



# Remote Diagnostic Testing



GlobalMed



# ROI TeleAudiology

- Change in commute (1hr one way) for audiologist from 4 times a month to 1 time a month equals a savings of ~\$10,000 in salary and expense
- 2 hours times 36 weeks equals 72 hours of additional clinical time
- \$200 per clinical hour times 72 equals \$14,400 of additional revenue
- Conversion rate increase with remote counseling of 10% equals 20 additional patients saying yes ~ \$80,000
- More timely service for customers - \$\$??
- Expand service footprint - \$\$??



# Weaknesses of TeleAudiology

- Face to Face and the Patient Experience
- Technology
- Licensing requirements
- Reimbursement
  - Medicare
  - Private Insurance

## Technology, yes; telemedicine, not yet.

Q: "First place you turn for clinical information?"



**#1**

Medical apps



**#2**

People  
(peers,  
professors)

Q: "Prefer face-to-face or virtual patient visits?"



**98%**

Prefer initial patient visit in person



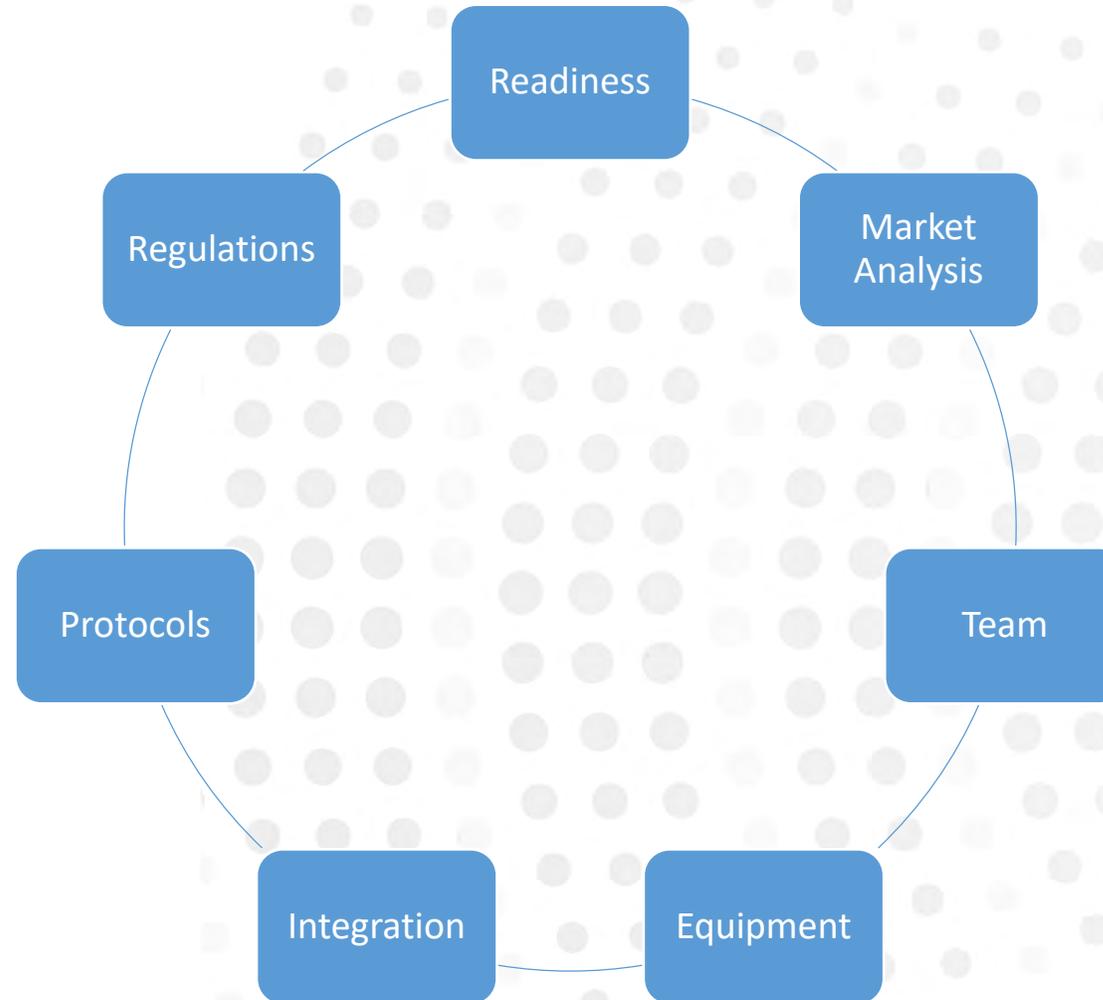
**89%**

Prefer follow-up visit in person

# Some other issues to consider

- Accurate data – false negatives could be a problem with lack of control of environments
- Health literacy: remote access can mean limited literacy skills or understanding
- Family engagement: Do family members participate at the same level with remote interactions?
- Costs and ROI for technology
- Malpractice risks

# Planning - It doesn't just happen



# TeleAudiology Legislation

## House Bill Would Eliminate Telehealth Originating Site Restrictions

Posted [SEP 26 2018](#) by [CTEL NEWS](#) in [CENTERS FOR MEDICARE & MEDICAID SERVICES](#), [CONGRESS](#), [MEDICARE](#), [REIMBURSEMENT](#), [TELE-MENTAL HEALTH](#), [TELEHEALTH](#), [TELEMEDICINE](#) with [1 COMMENT](#)

It's already been a busy 115th Congress for telemedicine-related legislation, as lawmakers in both the House and the Senate have introduced more than two dozen bills (some of which have even become law) that would eliminate restrictions on the use of telemedicine, increase Medicare reimbursement for care provided via telemedicine, or direct additional resources toward telemedicine pilot programs.

# TeleAudiology Legislation

## H.R.2550 - Medicare Telehealth Parity Act of 2017

115th Congress (2017-2018)

[Rep. Thompson, Mike \[D-CA-5\]](#) (Introduced 05/19/2017)

with respect to services furnished on or after the date that is 6 months after the date of the enactment of the Medicare Telehealth Parity Act of 2017, a certified diabetes educator or licensed—

“(I) respiratory therapist;

“(II) audiologist;

“(III) occupational therapist;

“(IV) physical therapist; or

“(V) speech language pathologist.”.



# TeleAudiology codes

- **Place of Service Codes** - Place of service codes are used on claims to indicate the specific type of location where services were provided. Clinicians should verify with individual payers regarding implementation and use of the POS code for telepractice, listed below. More information on [POS codes](#) is available on the CMS website.
- **02** The location where health services and health-related services are provided or received through a telecommunication system.

# TeleAudiology Codes (cont.)

- **Modifiers**

Modifiers related to telepractice—available through both the CPT coding system and the Health Care Common Procedure Coding System (HCPCS)—are appended to CPT codes to indicate mode of service delivery. Audiologists should check with each payer to verify appropriate use of modifiers to reflect telepractice services.

- **HCPCS**

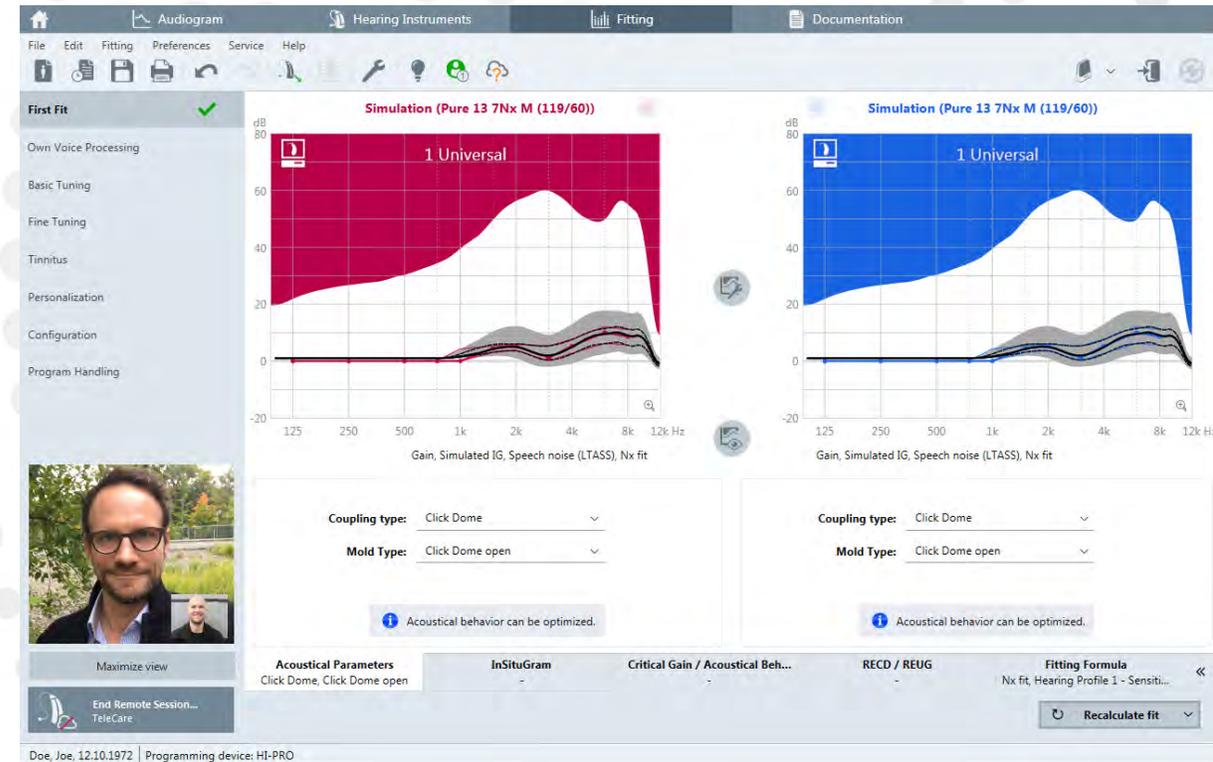
- **GQ** Telehealth service rendered via asynchronous telecommunications system
- **GT** Telehealth service rendered via interactive audio and video telecommunications system

- **CPT**

- **95** Synchronous telemedicine service rendered via a real-time interactive audio and video telecommunications system
- **Note:** Modifier 95 was created through the CPT system for 2017 and can be appended to CPT codes to reflect services that were provided via real-time telecommunication systems. This code does not replace the existing GQ and GT modifiers that were created through the HCPCS by the Centers for Medicare & Medicaid Services (CMS). Clinicians should check with individual payers regarding implementation and use of telepractice-related modifiers on the claim form for 2017.

# Opportunities in TeleAudiology

- Audiology staffing demands
- Patient outcomes and satisfaction
  - Efficiency
  - Timeliness
- Patient access
- Expanding your footprint
- Expanding your services



# TeleAudiology Today – Internet search

- TeleAudiology programs include Video otoscopy, hearing aid fittings, verification, troubleshooting, counseling and aural rehab
- Cochlear Implants – Wasowski et al., 2012. Study with 94 CI users proved to be a reliable alternative
- Pediatric evals – Children’s Hospital Colorado developed EHDI-Guam
- Tinnitus treatment – TTS

# Remote Professional Counseling

## TeleHear – All American Hearing Centers

The future of healthcare is available now in your local hearing clinic. Your local office is now offering TeleHear, the world's largest TeleAudiology program where you can consult with some of the leading experts in the field of hearing healthcare.

full live remote counseling

Dr. Kent Collins, Au.D.  
Doctor of Audiology  
Director of TeleHear



# Remote Hearing Aid Services



full live remote tuning

- ReSound Remote Assist
- Signia TeleCare
- Phonak – Audeo Marvel
- Starkey – Livio / Thrive



# Remote Hearing Aid Services

## Feed back from Providers and Manufacturers

### Pro

- Shorter trial period – Change on the fly, no appt.
- Convenience for distance patients and “migrating” population
- Contact for patient loyalty

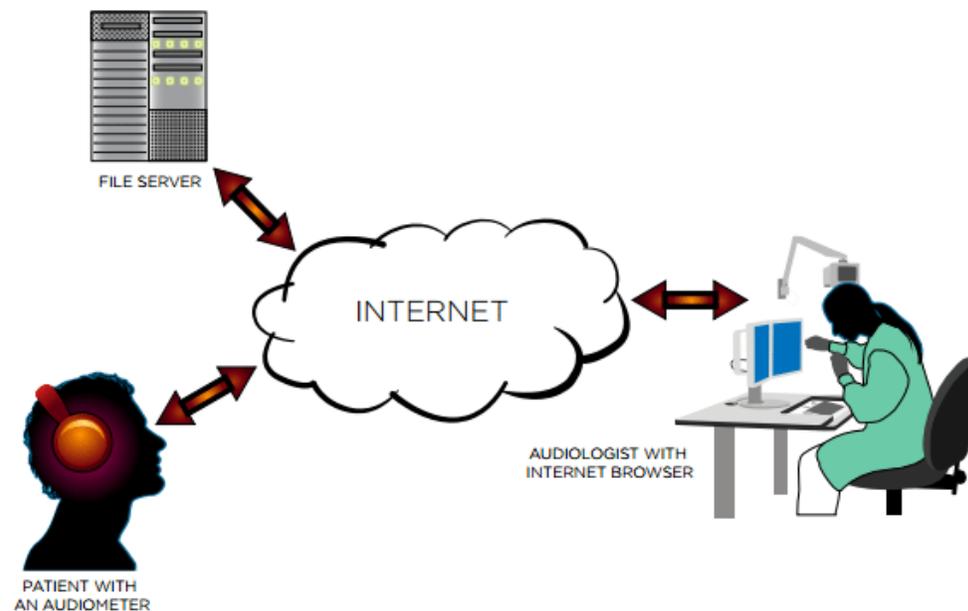
### Con

- Connectivity/technical issues (Wi-Fi vs data transfer)
- Over use
- Change in clinical protocols



# TeleAudiology Today

- Manufacturer remote assistance – Remote programming by manufacturer specialist
- Tinnitus Network – Fuel Medical
- Hear USA – Remote consulting
- Balance



# Example: Balance



**The simple, free & secure  
telemedicine solution<sup>®</sup>**

We've made telemedicine simple and easy for you. Create your personal room and start practicing telemedicine today.

# Example: Balance Testimonial

Yes, Dr. Sanders is still seeing patients by telemedicine. Tomorrow morning he will see 10 patients through Doxyme. He only sees the 10 minute follow up patients; it would not be possible for him to see a new patient by telemedicine

## Example: Balance (cont.)

Telemedicine has benefited the practice because the patients really appreciate it. It's so much easier for them to have a follow up appointment on their device instead of driving, some patients for several hours, for a 10 minute appointment.

## Example: Balance (cont.)

It's rare that they have trouble connecting for the telemedicine visit. Patients use their phones, computers, iPads...sometimes they just go out to their car while they are at work and get on their phone to make their appointment. So it's much more convenient for them, which breeds 'good will' and good feedback about BalanceMD to their referring physicians.

## Example: Balance (cont.)

Dr. Sanders likes it also because he can do them from his office at home, saving him a commute. So it's been good all around. There was a learning curve for patients and us about whether insurance policies would cover it, but if their insurance does not cover it, we ask them if they want to pay cash for a virtual visit instead of coming in for the appointment, and many choose to do that, especially if they live far from the office.

# Threats of TeleAudiology

- Price anchoring
- Compressing margins
- Market without borders

2017 - 325,000 health apps available  
(BioMed Eng. Online 2018. 17:10)

# EARGO

**EARGOMAX™** -New-



The image shows a black, spherical hearing aid device with a charging dock. The dock is a black, circular base with two white, wing-like protrusions on top. The device is connected to the dock by a thin white cord. The dock has two gold-colored USB ports, one labeled 'L' and one labeled 'R'. The device has the word 'EARGO' printed on its front and a small 'EARGO' logo at the bottom.

An Invisible hearing aid unlike anything you've seen before.

DESIGNED IN SILICON VALLEY | FDA CLEARED | BBB | ★★★★★ | Verified by Google

# Audicus

## Introducing The Most Precise At-Home Hearing Test.

Take the first step to improve your hearing, engineered by the world's leading hearing health pioneer – Audicus®.

[Start your hearing test now »](#)



The first online hearing test accurate enough to be used for tuning custom hearing aids.



Headphones and a quiet environment required.



Compatible with any computer, phone or tablet.



Engineered by Audicus, the world's leading hearing health pioneer.



Trusted by over 30,000 people around the world, and counting.

# Audicus

**A streamlined process, with you at the center.**



## Test Your Hearing

Test your hearing [here](#)! It only takes ten minutes. Or, find a doctor [near you](#).



## Choose a Product

Talk to a specialist to find out which product is right for you. Browse our selection [here](#).



## Get Your Device via Mail

Place an order! We'll customize your device and have it shipped to your doorstep in about a week.

A



The first online hearing test accurate enough to be used for tuning custom hearing aids.



Headphones and a quiet environment required.



Compatible with any computer, phone or tablet.



Engineered by Audicus, the world's leading hearing health pioneer.



Trusted by over 30,000 people around the world, and counting.

gists

ve as our  
nsure that we  
with the most  
o-date

# Finally – Critical Next Steps

- One voice for Audiology
- Efficiency in service delivery
- Legislative changes
  - State level
    - Reciprocity across state lines
    - Audiology Assistants / Technicians
    - Product definition – OTC vs. Provider required
  - National
    - Patient Choice
    - CMS – Billing of TeleAudiology codes
- Reimbursement changes
  - Director of care



# Questions

[dqual@fuelmedical.com](mailto:dqual@fuelmedical.com)

Special Thanks to Dr. Bopanna Ballachanda

[bbalachanda@gmail.com](mailto:bbalachanda@gmail.com)