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Synchronous Teleaudiology, presented in partnership with AVAA

Darrin Worthington, AuD

Chad Gladden, AuD, CCC-A

Rachel Tomasek, AuD, CCC-A

Disclosures

- **Presenter Disclosure**: Financial: Darrin Worthington is employed by the Department of Veterans Affairs. Non-financial: Darrin Worthington has no relevant non-financial relationships to disclose. Financial: Chad Gladden is employed by the Department of Veterans Affairs. Non-financial: Chad Gladden has no relevant non-financial relationships to disclose. Financial: Rachel Tomasek is employed by the Department of Veterans Affairs. Non-financial: Rachel Tomasek has no relevant non-financial relationships to disclose. In lieu of an honorarium, a donation has been made to AVAA in the form of AudiologyOnline CEU memberships.
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Learning Outcomes

After this course, participants will be able to:

- Describe the history of teleaudiology adoption and use within the VA.
- Identify potential barriers to future telehealth integration.
- Describe the basic steps of a teleaudiology patient encounter within the VA.

A History of Telehealth

Darrin Worthington, Au.D.

Poll Time!

So, What is Telehealth?

- Telehealth is a transfer of medical information via telecommunication technologies for consulting, remote procedures or exams
- Telehealth is NOT a separate subspecialty
  - Performing same procedures over distance and sometimes time, using technology

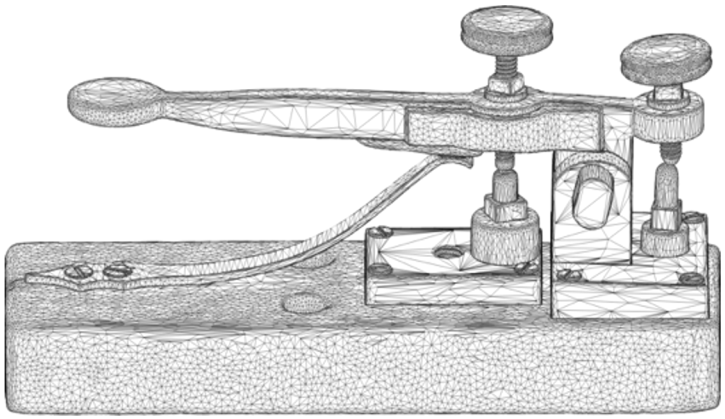
Credit: blog.dingtone.me

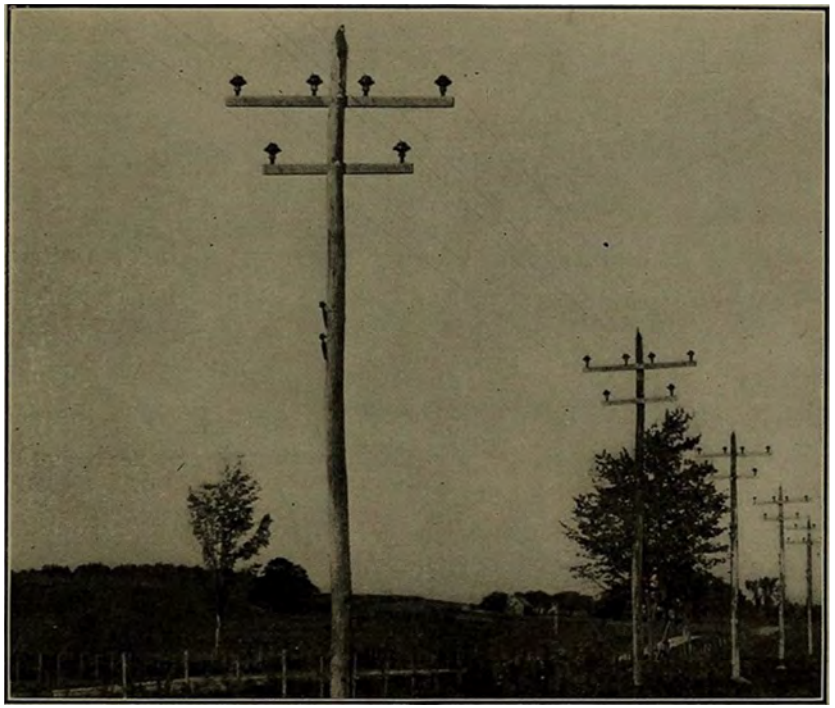
History of Telehealth

- Who was the first?
  - That's a matter of opinion
- Civil War Era – 1865
  - Telegraph wire between hot air balloons relayed information from the battle front to the surgeons in the rear

History of Telehealth

- 1906 – United States
  - First EEG information was transmitted via telegraph





Credit: Dr. Elizabeth Krupinski, University of Arizona

History of Telehealth

- 1924 Radio News Magazine
  - Radio Doctor Predicted

History of Telehealth

1959 University of Nebraska Medical Center:

- Two-Way Television
- Mostly Psychiatry Group Therapy
  - Omaha VA
  - Lincoln VA
  - Grand Island VA

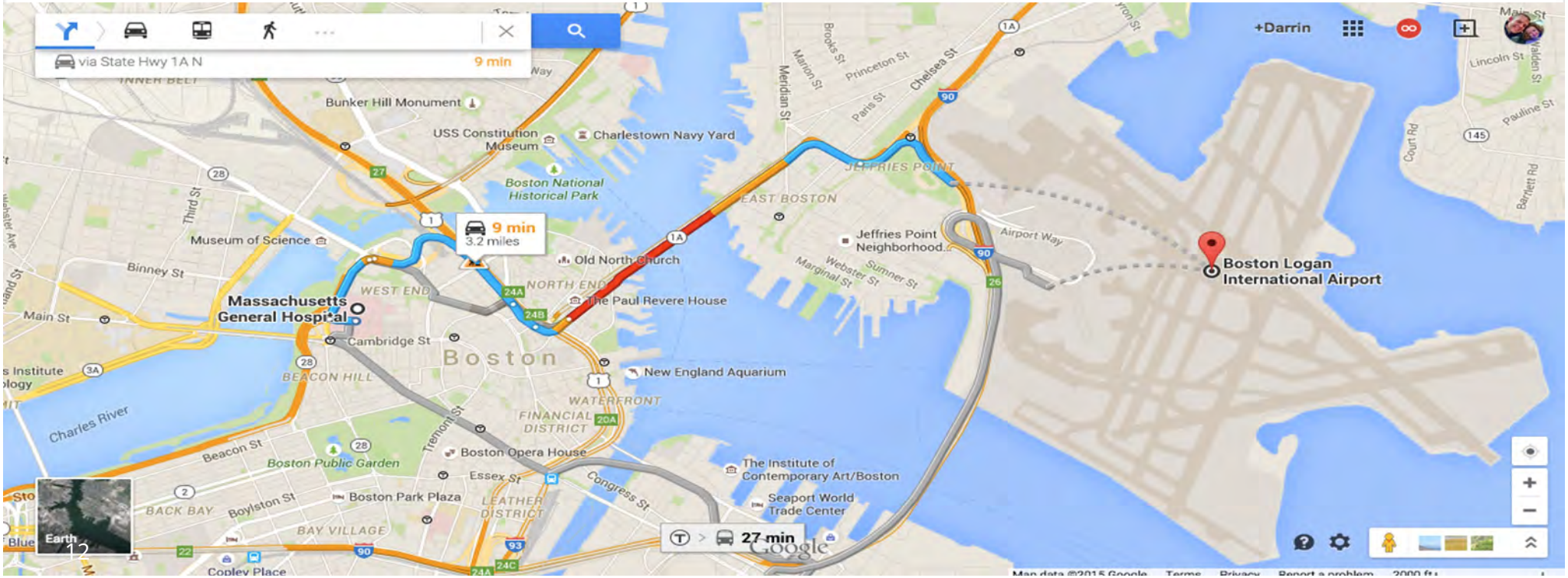
Image from Wittson, Cecil L.; Affleck, D. Craig; Johnson, Van Mental Hospitals, Vol 12(10), 1961, 22-23.

History of Telehealth

- Father of Modern Telehealth
  - Dr. Kenneth Bird

History of Telehealth

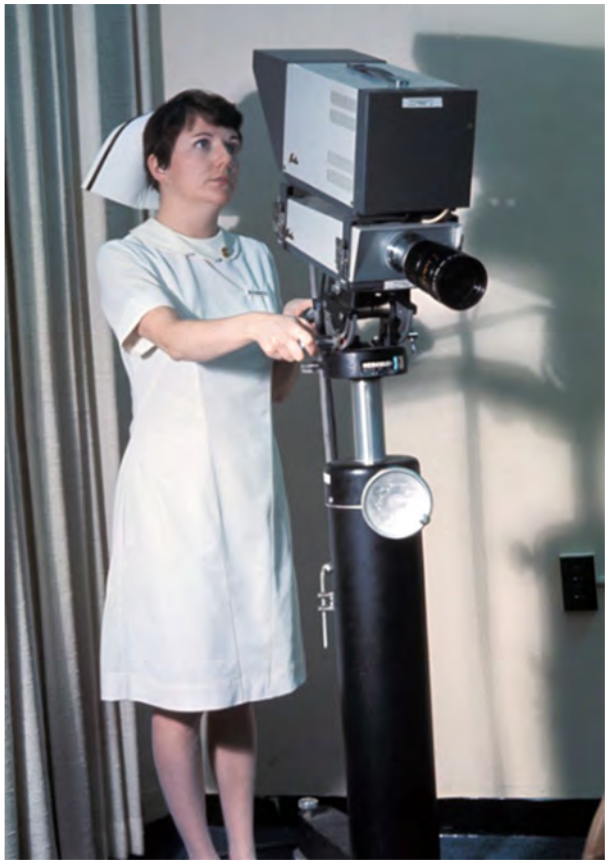
- Dr. Kenneth Bird – Boston, MA 1968
- Massachusetts General Hospital to Logan Airport



History of Telehealth

- 3 miles, Heavy Traffic/Congestion
- Provided Occupational and Emergency Consultations to medical staff at the airport
- Used TV studio Equipment for two-way communication
- Saw over 1,000 patients from 1968-1970

History of Telehealth



Credit: Dr. Elizabeth Krupinski, University of Arizona

Of Note:

- MGH established a telepsychiatry link to Bedford, MA VA Hospital in 1968 which was operational until mid-1980's

History of Telehealth

- Limitations of Dr. Bird's Program
  - Technology
    - Microwave/Satellite Transmissions
    - NO INTERNET!!!
  - Expensive
    - TV equipment was not cheap at that time

Credit: Dr. Elizabeth Krupinski, University of Arizona

History of Telehealth

- Why was Dr. Bird's Program Important?
  - Inspired Other Programs
    - NASA
      - Blueprint for providing health monitoring to astronauts in space
  - Showed that this type of healthcare modality was truly feasible
  - Not much was done with telehealth outside of NASA until the 1990s

Credit: Dr. Elizabeth Krupinski, University of Arizona

History of Telehealth

- 1990s
  - Groups of Politicians Exploring Barriers to Providing Healthcare to their Constituents
    - Western Governors Association – Western United States
      - Talked about barriers to providing healthcare to remote locations, specifically to Native Americans living in remote areas
    - Tribal Health
      - Vast distances for patients to even get to a local clinic let alone a hospital

Credit: Dr. Elizabeth Krupinski, University of Arizona

History of Telehealth

- 1990s
  - Corrections Systems/Jails Were Early Adopters of Telehealth Modality
    - Why?
      - Transporting Inmates from the prison to the clinic takes multiple people and resources
      - Potentially up to 10 people and 3 vehicles to transport 1 inmate for a follow-up type appointment

Credit: Dr. Elizabeth Krupinski, University of Arizona

History of Telehealth

- Arizona was one of the first to fund telehealth statewide
  - Earmarked $1.2 million in 1996 to initiate telehealth services
    - Community Health Centers
    - Prisons and their service providers
    - Jails
    - Rural Hospitals
    - Schools
    - Native American Healthcare
    - Distance Learning Affiliates
    - International sites
    - Urban Hospitals
  - Now have over 150 telehealth sites statewide

Credit: Dr. Elizabeth Krupinski, University of Arizona

“Why are you telling me this?”

So, you’re telling me there’s a chance…

That people have been integrating tech in healthcare for a long time?

Telehealth Modalities

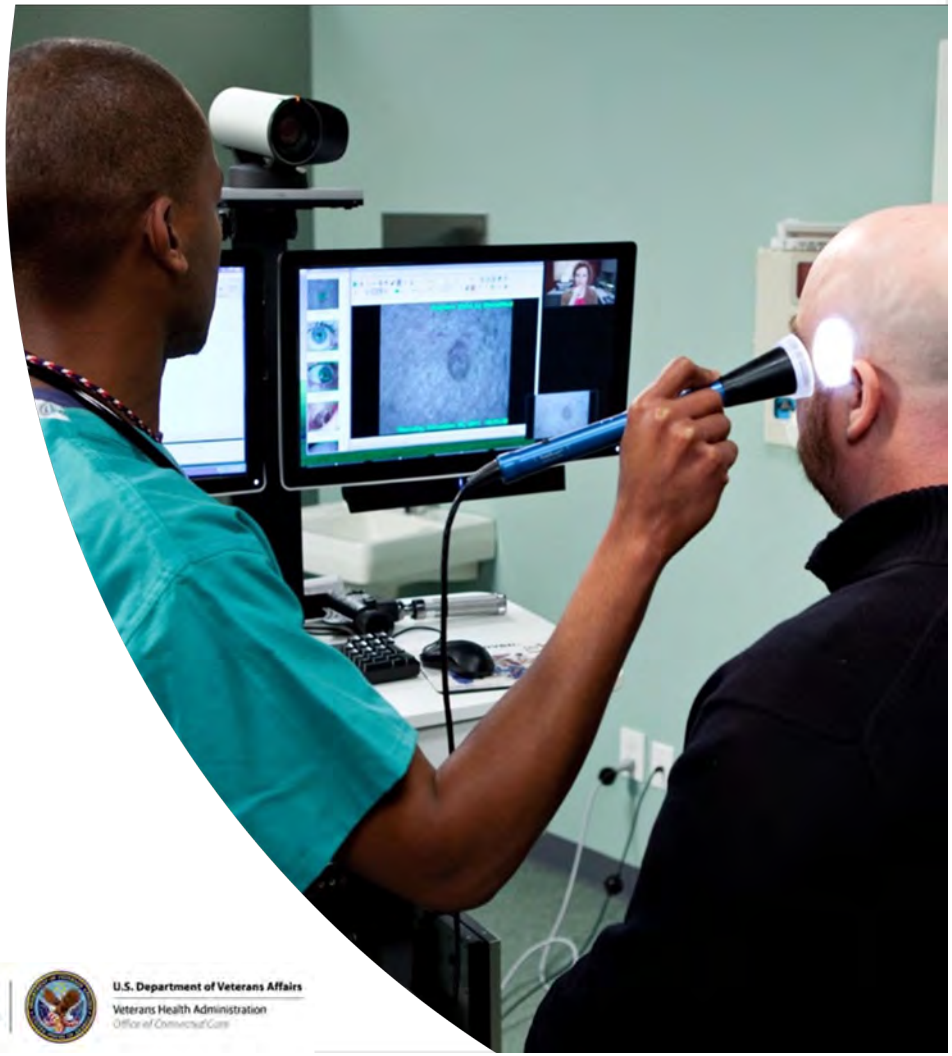
Clinical Video Telehealth

Store and Forward Telehealth

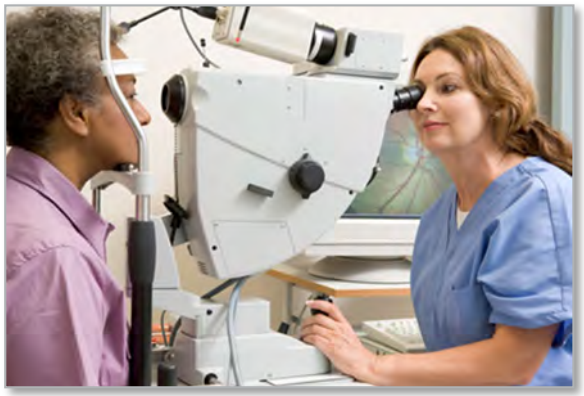
Remote Patient Monitoring Home Telehealth

Clinical Video Telehealth (CVT)

- Real-Time, Synchronous Video and Audio Transmission
  - Leverages telepresenters and exam peripherals
  - Multidisciplinary team model
  - In-person and video
  - Example: Teleprimary Care



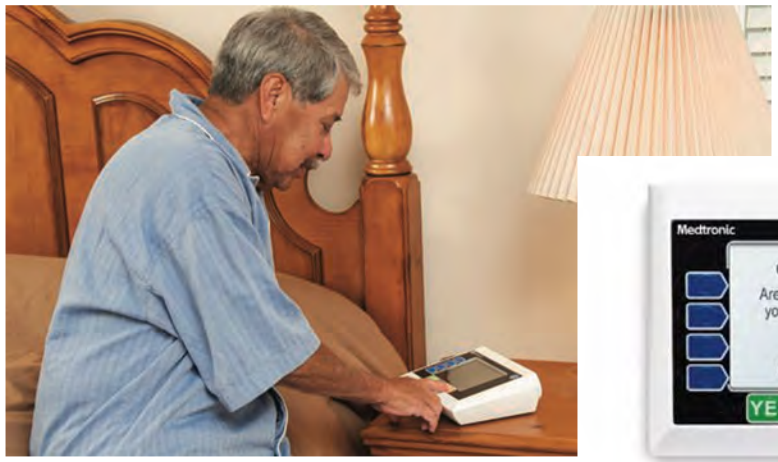
Store and Forward Telehealth (SFT)

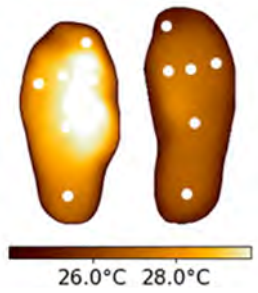


- Asynchronous Modality
- Storing clinical information (data, images, sound, video, etc.) and then forwarding to or retrieved by another clinical site for evaluation
  - TeleDermatology
  - TeleRetinal Imaging (TRI)
  - TeleRadiology
  - TeleSleep Medicine
  - TeleWound Care

Remote Patient Monitoring - Home Telehealth (RPM-HT)

- Using in-home devices and technologies to monitor symptoms/vitals
- Monitored by Care Coordinators
- Use of approved Disease Management Protocols (DMPs)
  - Helps with chronic conditions
  - Encourages patient independence





So Why Telehealth in VHA?

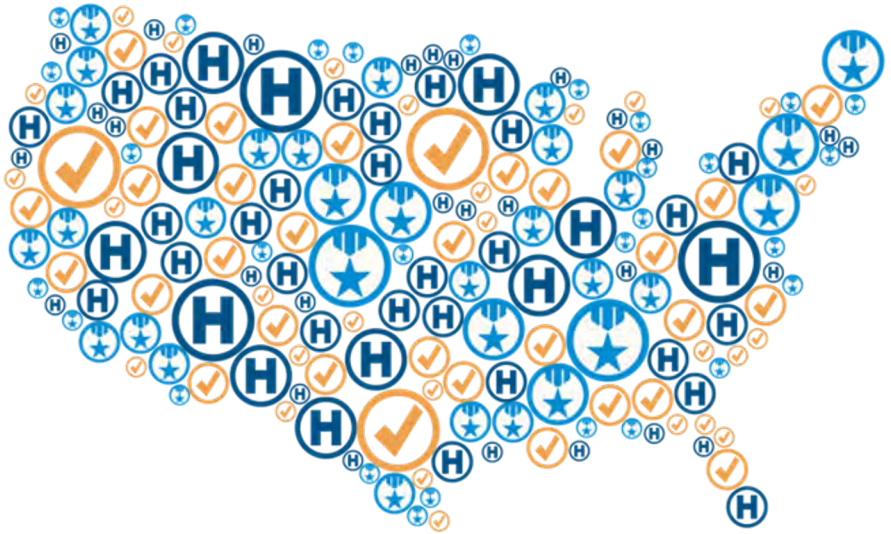
Telehealth Status in VHA

- Approximately 18.5 million Veterans in the US in FY23
- >9.6 million Veterans registered with VA FY23
- 33% of registered Veterans and 43% of ALL Veterans live in rural or highly rural areas (VSSC, FY22)
  - Limited Access to VA Care
  - Can live hours away from nearest facility
  - Outpatient clinics do not have all specialty care services

Source: VHA Veteran Support Center (VSSC)

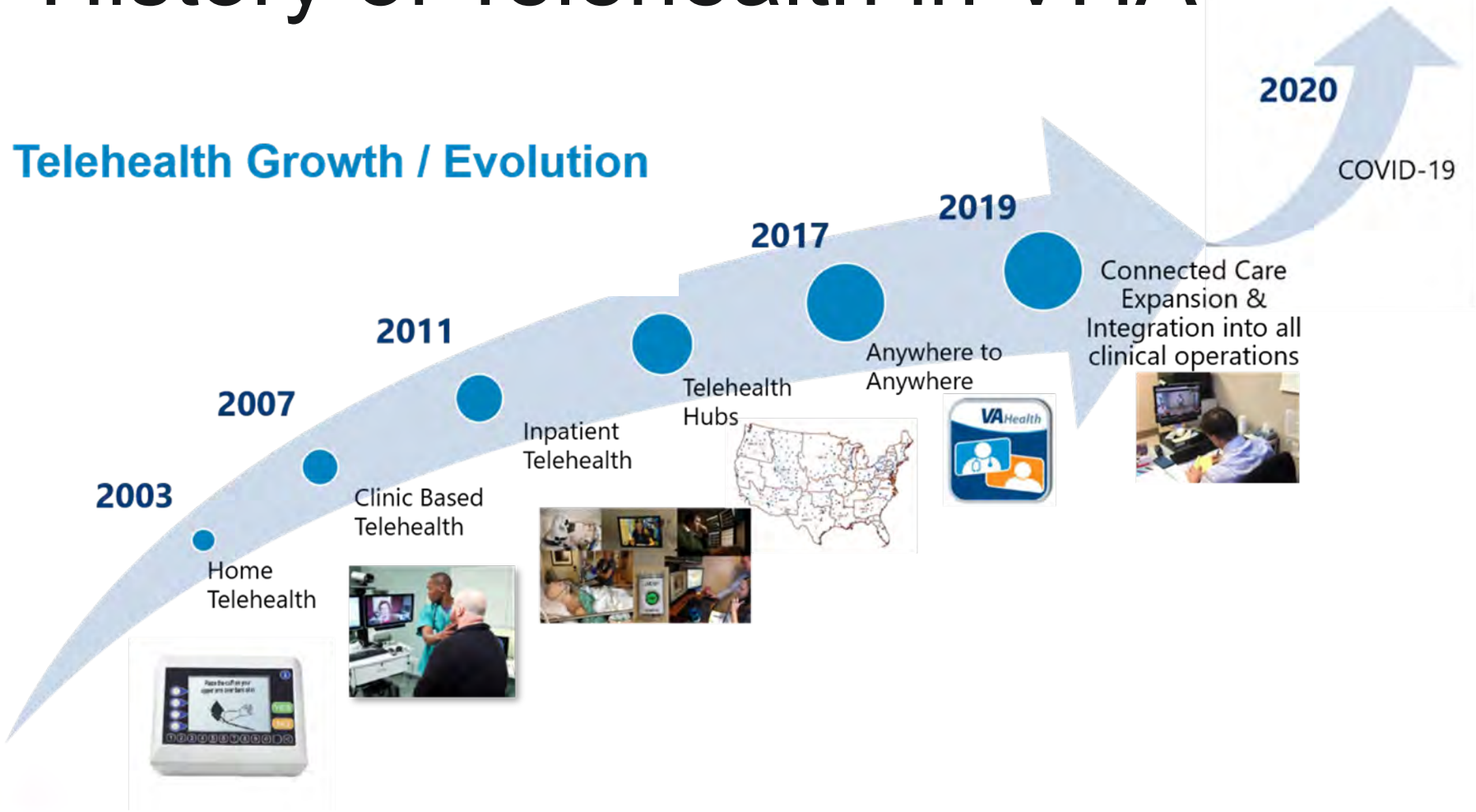
Overall FY23 VHA Telehealth Data

- VHA is the largest Telehealth provider in the US
- >11.7 million episodes of care
- >9.3 million video visits to home
- >2.32 million Veterans served via Telehealth
- >189,159 Veterans loaned cellular enabled iPads since 2017

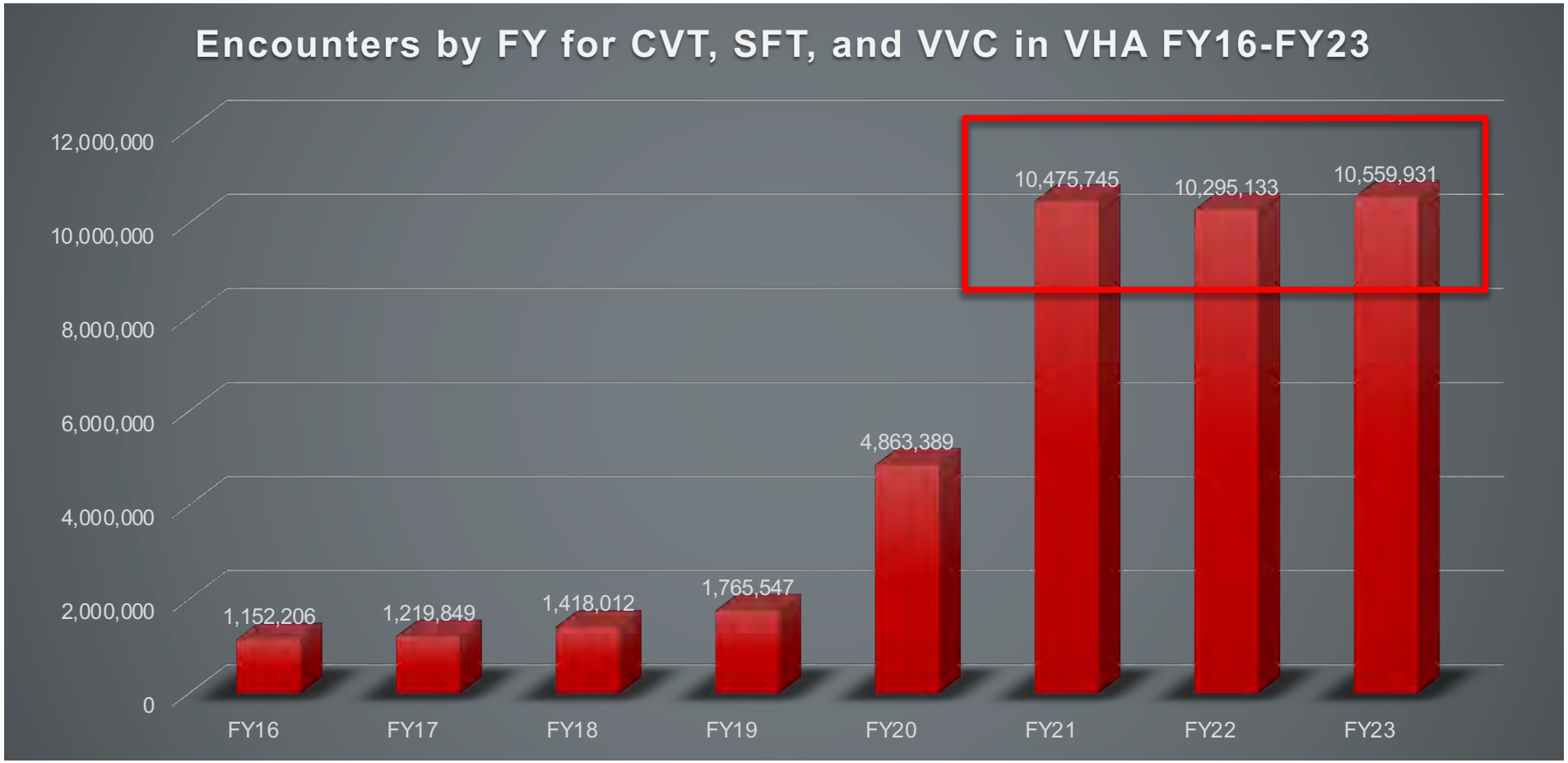


Source: VHA Veteran Support Center (VSSC)

History of Telehealth in VHA



Telehealth Growth and Sustainment in VHA



Source: VHA Veteran Support Center (VSSC)

History of Teleaudiology in the VA

Chad Gladden, Au.D.

Direction of the Health Industry

- "We are rethinking health care delivery for the 21st century, starting with technology. In 2017, more than half of our care visits were done virtually, & we plan to increase this option to provide our members with convenient, & most importantly, affordable access to quality care." -Bernard J. Tyson, CEO
- By 2022, 30% of primary care encounters in the U.S. will be delivered virtually.
- By 2025, 20% of all care in the U.S. will be delivered virtually.

STRATEGIC INNOVATION

2018–2024 VA STRATEGIC PLAN

The Veteran Health Administration Office of Policy and Planning (OPP) continues to be an active participant in the **VA Quadrennial Strategic Planning Process** to formulate the 2018-2024 VA Strategic Plan. The Strategic Plan guides the organization in fulfilling its mission of providing high quality, accessible health care to America's Veterans, and is rooted in VHA's Five Priorities for Strategic Action discussed throughout this report.

VHA Policy and Planning ensures Veteran health care policies, programs, and resource decisions are **aligned to VA's strategic direction** in providing high quality, accessible health care to our Veterans. Although additional accomplishments are expected in the coming years as we continue to transform the organization to improve the Veteran experience, the Department has made significant strides toward our goals.

Under Secretary for Health Dr. David Shulkin speaks at the 2016 Senior Leadership Business Meeting.

VHA NATIONAL LEADERSHIP COUNCIL

Scheduled for April 2017, the VHA National Leadership Council **Strategic Planning Summit** will provide a venue for senior leaders to agree upon a strategic management approach, organizational roles and responsibilities for transforming VHA. Following the Summit, planning guidance will be developed to **clarify the organization's operational plan** along with roles and responsibilities for aligning location activities to this transformation. This guidance will include milestones for implementing the strategic management approach, which includes goals, objectives, Priorities for Strategic Action and Commission on Care recommendations.

COMMISSION ON CARE

VHA played an integral role in interfacing with the congressionally mandated Commission on Care. This pivotal role allowed the Department the opportunity to outline key transformation efforts that **support 15 of the 18 Commission recommendations**. The VHA Office of Policy and Planning leads tracking VA's progress towards completing requirements in the President's response, including more than **60 commitments** VA has made in concurrence with the Commission on Care recommendations. We are also solidifying the relationship between the Commission on Care recommendations and how implementation will impact VA's removal from the Government Accountability Office's high-risk list.

PRESIDENTIAL TRANSITION

In preparation for changes in the executive branch, OPP participates on the **VA Presidential transition team** to ensure that issue briefs, ongoing initiatives, program and policy challenges are represented in the context of VA strategic imperatives, goals and priorities necessary to improve the health and well-being of Veterans. The **new VHA Planning Framework** has been produced to better enable alignment between the platform and principles of the incoming administration and VA strategic imperatives. This effort creates the foundation for a smooth transition for the health care line of business in the Department of Veterans Affairs in the coming year.

SERVICE IMPROVEMENT

96.32%
appointments **within 30 days** of clinically indicated or Veteran's perferred date

84.89%
appointments **within 7 days**

21.44%
same day appointments

WORKFORCE

Throughout our 1,234 health care facilities we employ over **25,000 physicians** and **93,600 nurses** to provide care to Veterans and their families.

We **increased staff by more than 21,750 employees** since the beginning of fiscal year 2015 through 2016. This includes adding more than:

- 7,110 nurses
- 1,943 physicians
- 136 psychiatrists
- 527 psychologists

Our **turnover rate is 9.3%**, which continues to compare favorably to private sector health care turnover rate estimates of 30% as most recently reported by the U.S. Bureau of Labor Statistics.

TELEHEALTH

Telehealth in VA helps ensure Veteran patients get **the right care in the right place at the right time** and aims to make the home the preferred place of care.

VA Telehealth Services use health informatics, disease management and telehealth technologies to target care and case management to improve access to care, improving the health of Veterans.

The value VA derives from telehealth is not in implementing telehealth technologies alone, but how VA uses health informatics, disease management and telehealth technologies to target care and case management, **facilitating access to care** and improving the health of Veterans.

Our Primary Telehealth Offerings:

- TeleMental Health
- TelePrimary Care
- TeleRehabilitation *(including speech and audiology)*
- TeleRetinal Imaging *(for diabetic retinopathy screening)*
- TeleICU
- Home Telehealth for chronic conditions *(diabetes, COPD, CHF, depression)*
- TeleSpecialty Care *(dermatology, cardiology, etc)*

970
VHA **sites provide telehealth**, including **140 VA Medical Centers**

12%
of Veterans receiving care in VHA — more than 702,000 Veterans — **received care via Telehealth**

2.17+
million **telehealth visits**

50+
clinical applications in VA

Anywhere To Anywhere Telehealth Initiative

2017 VA Anywhere to Anywhere Telehealth Initiative

2018 VA MISSION Act, Section 151

- 38 USC 1730C: Licensure of healthcare professional via telemedicine
- 2018 Federal Rule: Authority to Practice Telehealth

Authorizes VA employed health care professionals to provide Telehealth services to Veterans at any location and in any state, irrespective of location of the Veteran or VA health care professional. This includes when services are delivered over state lines and off federal property.

VA Healthcare Priorities

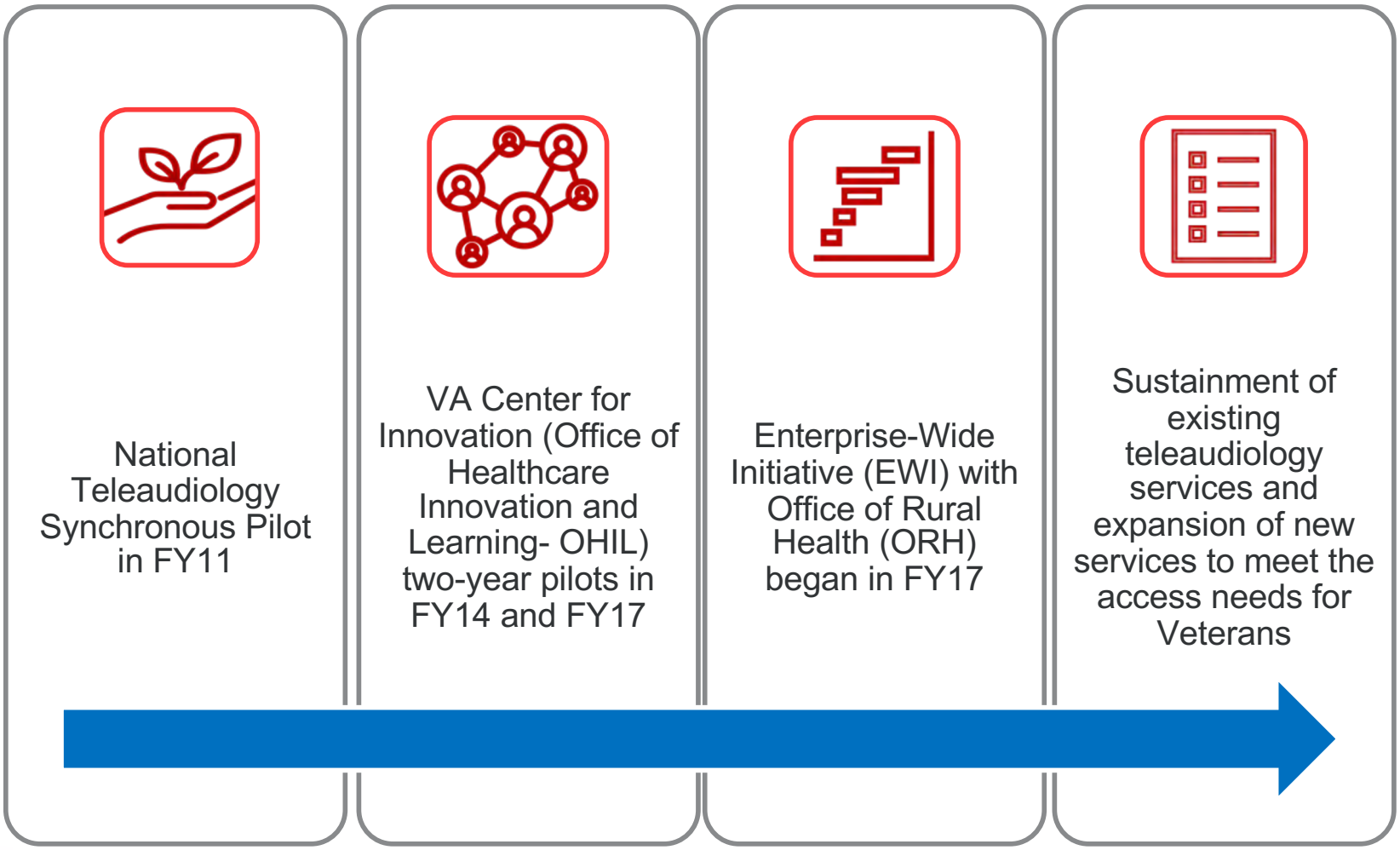
ACCESS

VIRTUAL CARE

TECHNOLOGY

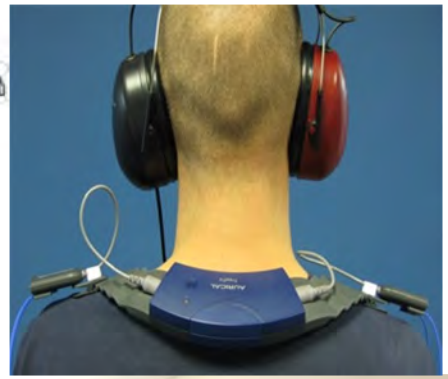
Goal 1: Connect Veterans to the soonest and best care
Goal 2: Support Veterans whole health, their caregivers, and survivors
Goal 3: Accelerate VA's journey to a High Reliability Organization
Goal 4: Hire faster and more competitively
Goal 5: Serve Veterans with military environmental exposures
Goal 6: Prevent Veteran Suicide

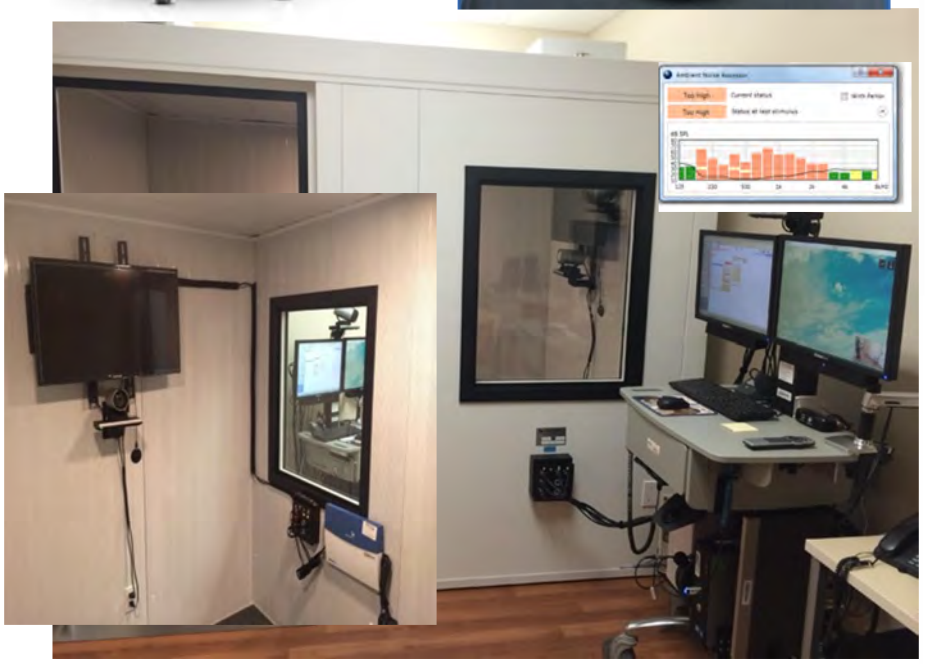
Teleaudiology: Pilot To Present



Teleaudiology Expansion Initiative

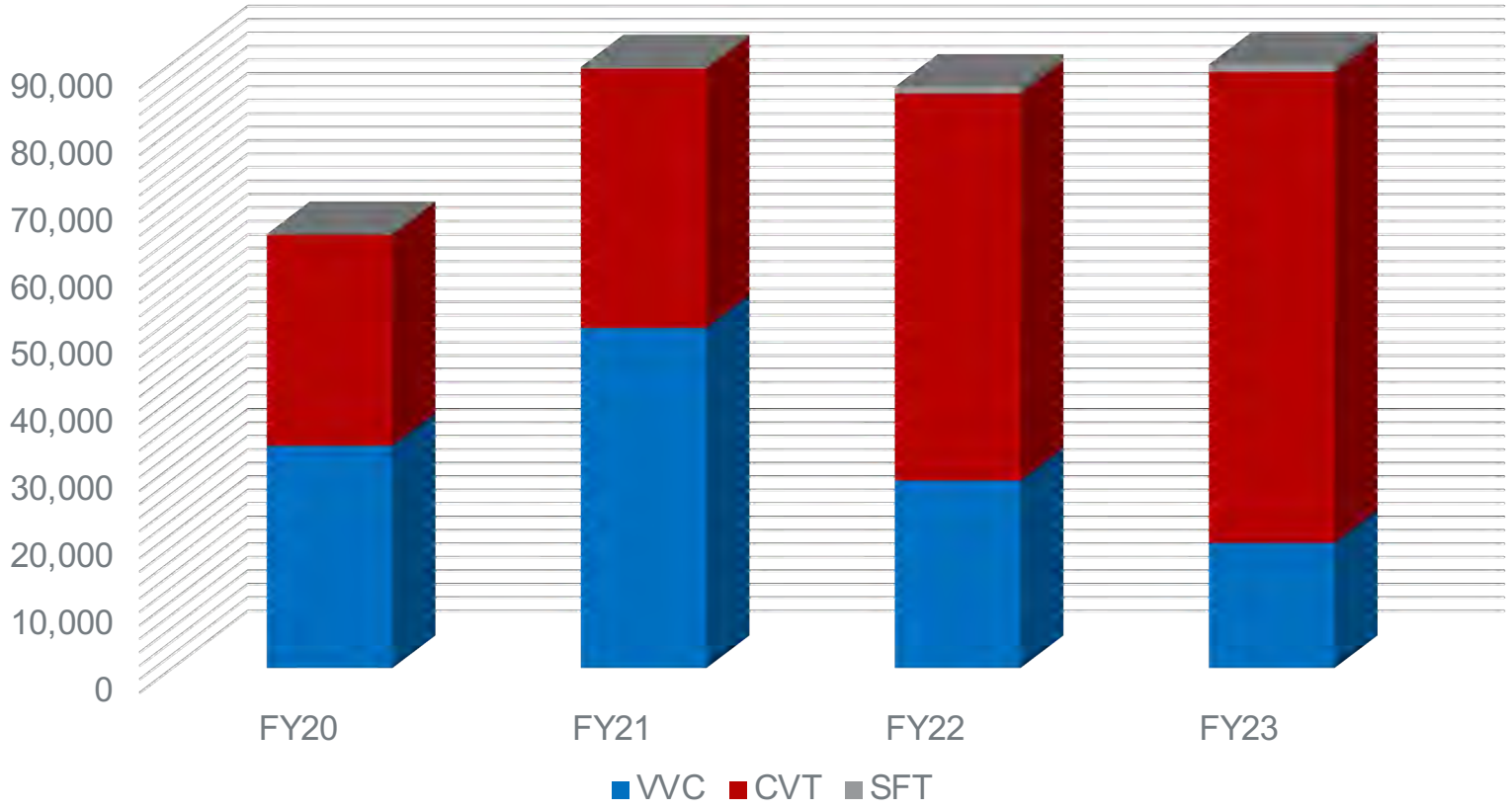
- Fiscal Year 2014-2015
- Expand from original 10 Pilot sites to 71 sites nationally
- Implement remote programming of hearing aids; remote audiometry utilizing integrated sound level meter capabilities; pilot locations provided with modular sound enclosure
- Collaboration among
- Rehabilitation and Prosthetic Services
- Audiology and Speech Pathology National Program Office
- Telehealth Services



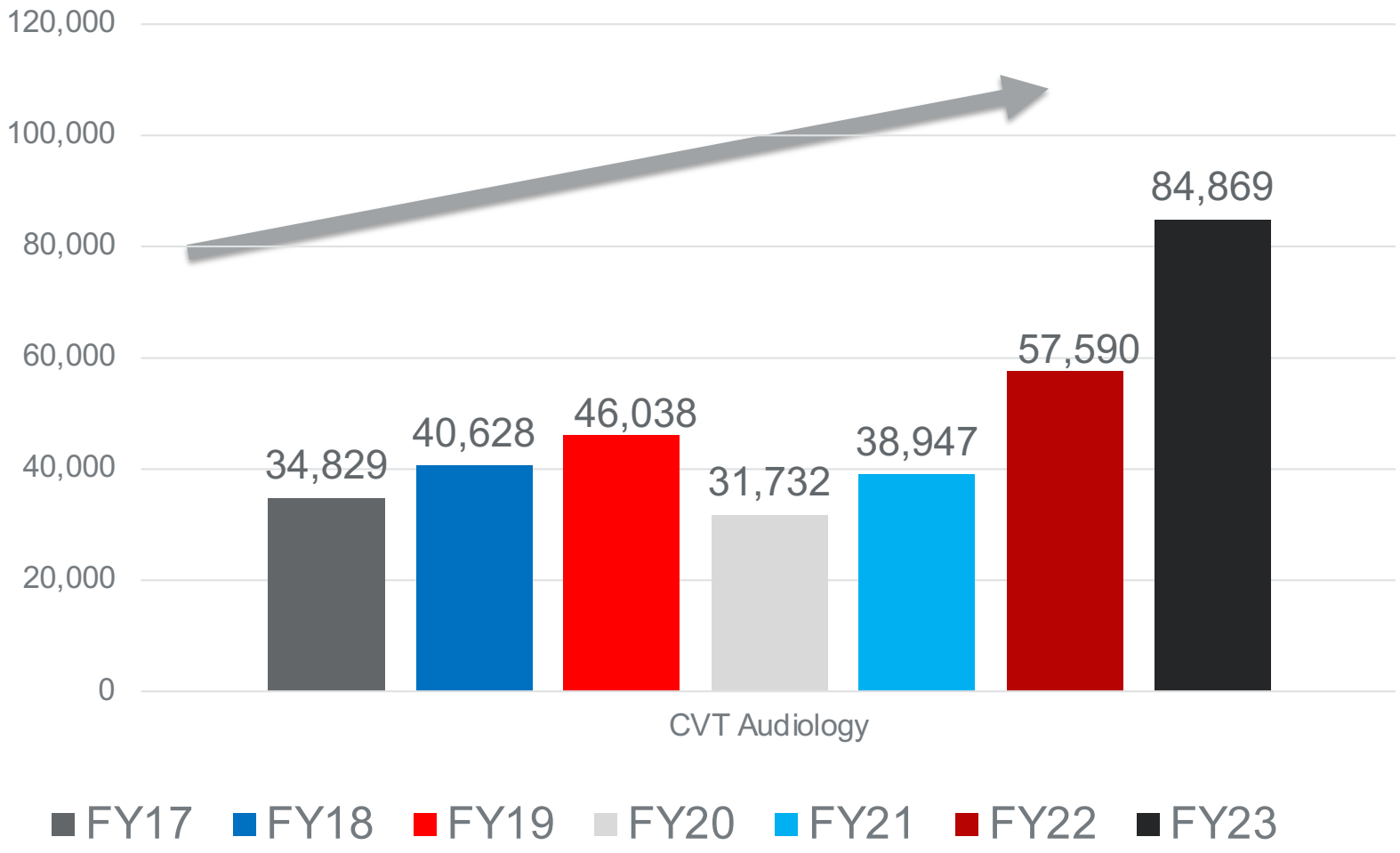


Teleaudiology Encounters

FY2023= 89,744 total teleaudiology encounters



Synchronous Clinic To Clinic



Teleaudiology Outcomes-IOI-HA

VA has collected over 30,000 Teleaudiology outcomes.

	Use		Ben		ActLim
	Sat	PartRest	ImpOth	QOL	
All Veterans	4.48	4.11		3.88	
	4.44	3.9		3.94	4.08
Telehealth	4.52	4.18		3.97	
	4.50	4.04		4.05	4.13

Scoring: 1=poorest outcome, 5=best outcome

Teleaudiology outcomes are as good as or better than traditional face-to-face encounters

Teleaudiology Equipment Options

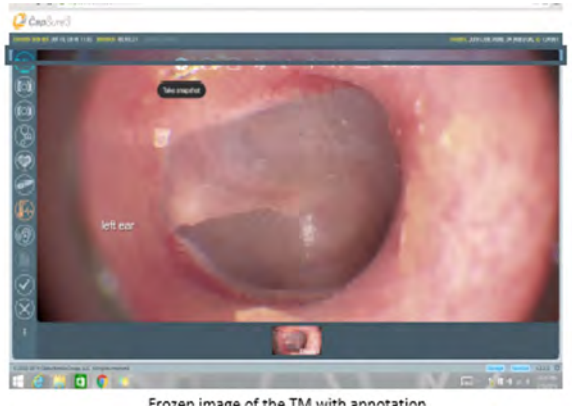
Clinical Video Telehealth

Store-and Forward Telehealth

Clinical Video Telehealth

VA Center for Innovation Pilot Project

- Automated Audiometry Clinical Extender (AACE)- Store and Forward Telehealth



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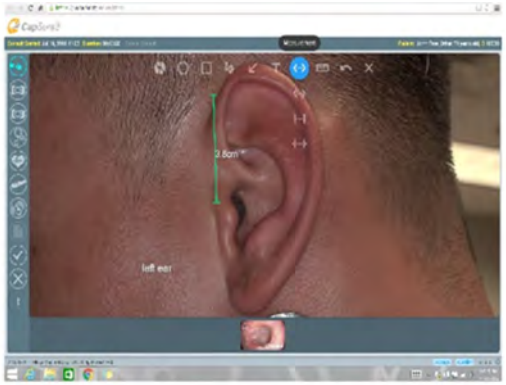
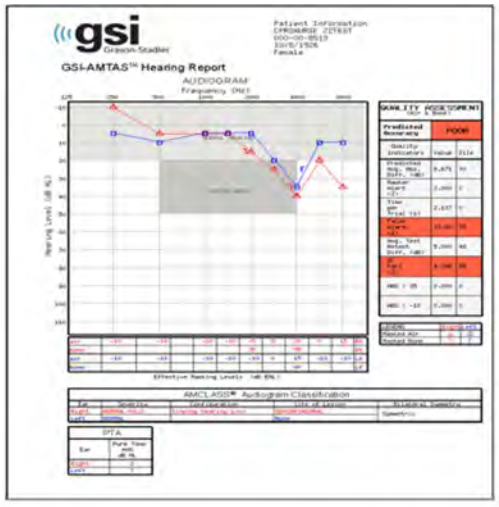
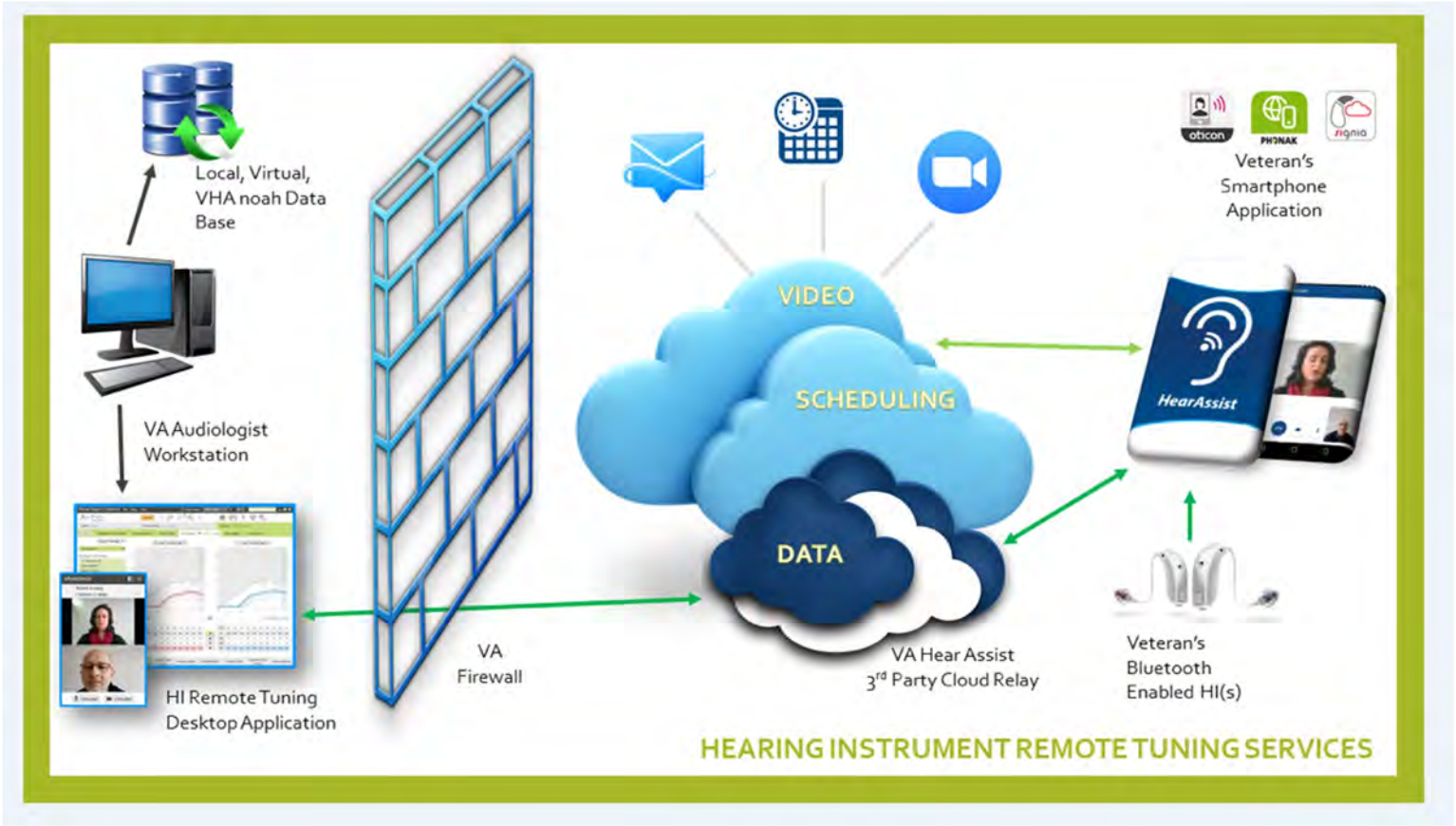


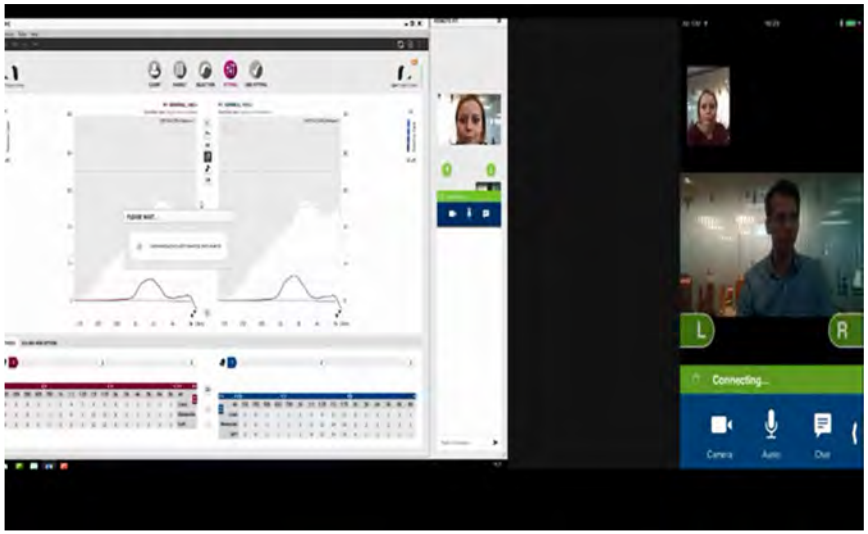


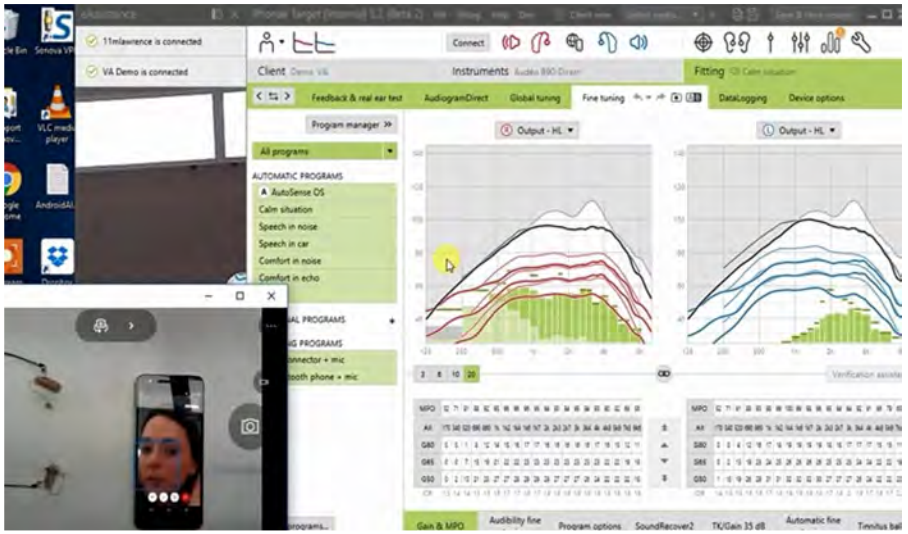
Enterprise Remote Tuning of Hearing Instruments (ERTHI)



VA Center for Innovation Pilot Project

- Remote Home Programming App (with video)- Clinical Video Telehealth into the Home





Boothless Audiometry Networking Group

Summary

	KUDUwave Prime	KUDUwave Pro	KUDUwave Tymp	AMTAS Pro	AMTAS Flex	Edare	SHOEBOX PRO	SHOEBOX STANDARD	SHOEBOX Quicktest
AC Diagnostic	✓	✓	✓	✓	✓	✓	✓	✓	
AC Screening	✓	✓	✓	✓	✓	✓	✓	✓	✓
BC Screening		✓	✓	✓			✓		
BC Diagnostic		✓	✓	✓			✓		
Speech SRT		✓	✓	✓			✓		
Speech WRS		✓	✓	✓			✓		
Masking	✓	✓	✓	✓	✓		✓	✓	
Automated	✓	✓	✓	✓	✓	✓	✓	✓	✓
Manual	✓	✓	✓	✓			✓		
HC technician/provider	✓	✓	✓		✓	✓		✓	
Audiologist	✓	✓	✓	✓		✓	✓		
Tympanometry			✓						

Table from Hearing Center of Excellence

Accessing Telehealth Through Local Area Stations (ATLAS)

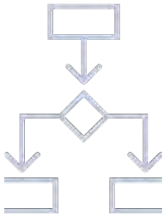
- **GOAL**: As a part of the VA's Anywhere to Anywhere Telehealth Initiative, ATLAS aims to enhance the accessibility of VA Health care and help to bridge the digital divide.
- **APPROACH**: VA has partnered with public and private organizations to establish locations for Veterans to connect with their VA care team using video Telehealth, particularly in communities where Veterans live far from a VA facility or have poor connectivity at home.

Existing Partners

Walmart
The Walmart-VA pilot will span across five Walmart sites over 12 months. Clinical services commenced on December 11, 2019 in Asheboro, NC.

Veterans Service Organizations (VSOs)
Philips is partnering with **Veterans of Foreign Wars (VFW)** and **The American Legion** to donate equipment so VA care can be offered at select locations nationwide.

Expand the Virtual Care Portfolio



Integrate Tablet Based Testing

- Tablet testing for threshold checks in Home Based Primary Care (HBPC) and Primary Care Clinic settings

Expand Asynchronous Telehealth automated audiometry

- Utilize automated audiometry in Primary Care
- Utilize automated audiometry in ATLAS sites

Increase Clinical Video Telehealth Services

- Focus for Rural and Highly Rural Veterans
- Clinical Resource Hubs (Staffing: Telehealth hub, facility partnerships)

Advance Training Resources for all Teleaudiology Roles

- Alignment with Office of Connected Care
- Superuser Telehealth Programs
- Mature TMS courses and Guidance Documents to support the field

Promote Virtual Hearing Aid Aftercare

- Video otoscopy Bluetooth personal, safe.
- Integration of VVC within Remote Programming apps

Support Boothless Audiometry

- Utilize Web Based Audiometric Testing Platforms
- Mail out “boothless” options for Veterans that are unable to travel

Synchronous Telehealth for VA Audiology

Rachel Tomasek, Au.D.

Synchronous Telehealth: Audiology

Clinic to Clinic Video Telehealth

- Hearing evaluation
- Hearing aid verification
- Cochlear implant programming
- Vestibular rehabilitation

Clinic to Home Telehealth

- Aural Rehabilitation
- Tinnitus Management
- Remote programming of hearing aids

Provider Side – Main Medical Center

- Audiologist

Patient Side – Community Based Outpatient clinic (CBOC)

- Telepresenter

Teleaudiology Virtual Care Team

Telepresenter Training

- Hands-on telehealth equipment training
- Basics of telehealth online courses
- Emergency management procedures
- Skill assessment with a preceptor

Telehealth 1

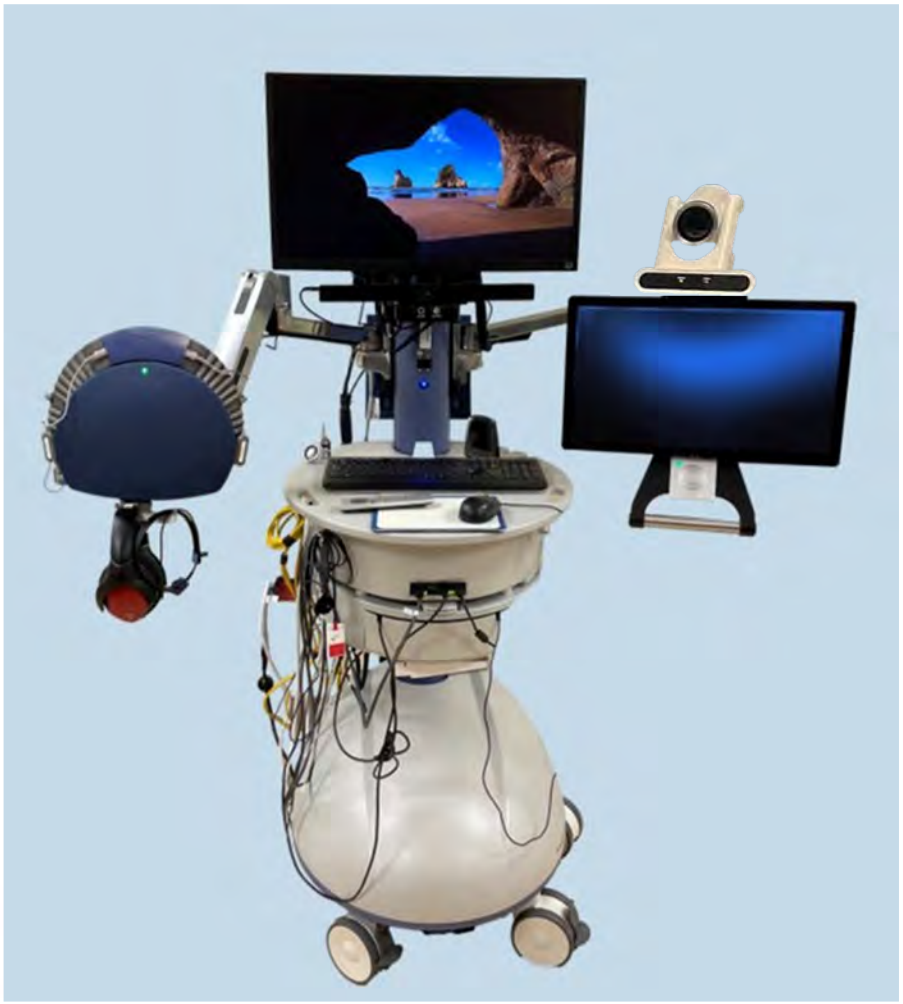
- Hands-on audiology training
- Overview of the patient encounter online course
- Basics of otoscopy and telepresenting of the ears
- Skill assessment with a Teleaudiology preceptor

Teleaudiology 2

Provider Side Equipment

- Provider side
  - Equipment
  - Space

Patient Side Equipment



- Telehealth audio and visual conferencing equipment
- Diagnostic Audiometer (minimum Class II)
- Hearing aid verification system for real-ear measurements

Patient Side Equipment

Immittance (Tympanometry and Acoustic Reflexes)

Otoacoustic Emissions for testing battery

Hearing Aid (HA) test box for RECD, electroacoustic analysis and other test box measures

Remote Diagnostics

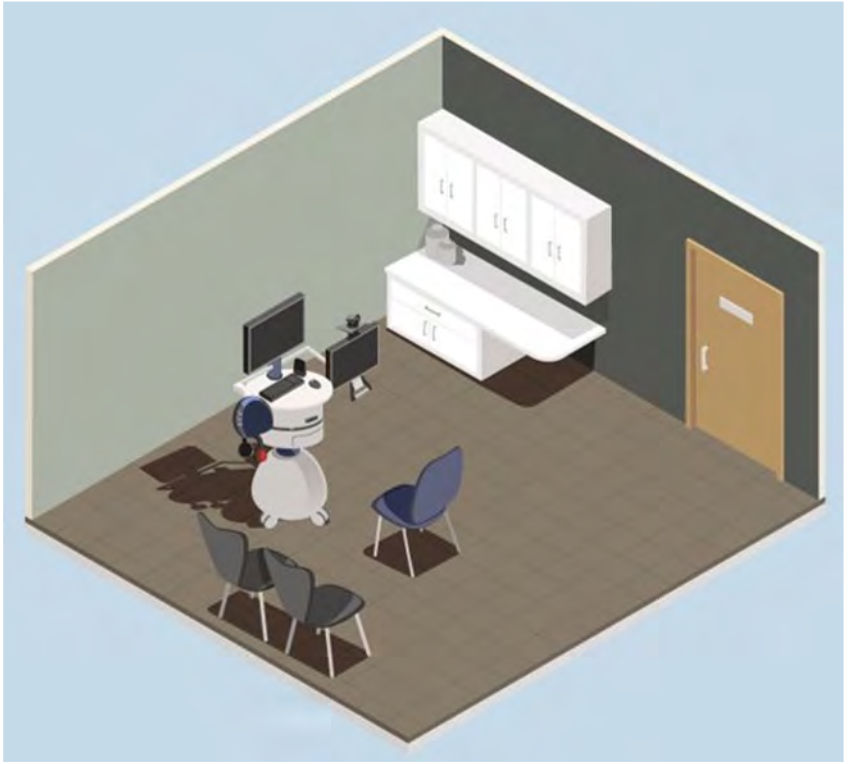
Teleaudiology Hearing Evaluation

Soundbooth

Boothless

Remote Diagnostics: Open Room

- Boothless Testing on the Patient side
  - Planning considerations for room configuration and acoustics



Noise Survey

- Maximum Permissible Ambient Noise Levels (MPANLs) will vary by Transducer and Frequency
- ANSI 3.1-1999
- Octave Band Intervals 500-8000 Hz
  - Supra-aural Earphone 21-37 dB
  - Insert Earphone 47-56 dB
  - Circumaural Earphone
- VA Industrial Hygienist or third-party professional to certify noise levels in test environment

Teleaudiology: Hearing Evaluation

- Pre-encounter
  - Listening Checks
  - Supply Inventory
  - Probe Check

Photo by Department of Veterans Affairs

Teleaudiology: Hearing Evaluation

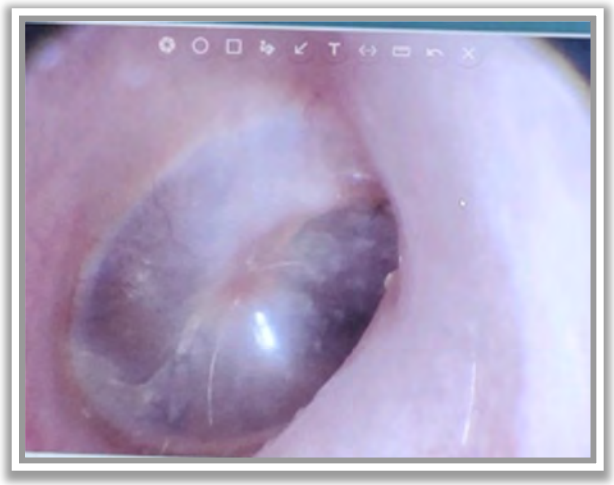
During the Encounter

- Establish video/audio connection with the remote site or Provider
  - Screen sharing capabilities to control the audiology software
- Patient side – technician to act as the “hands of the provider”

Photo by Department of Veterans Affairs

Teleaudiology: Hearing Evaluation

- Video Otoscopy



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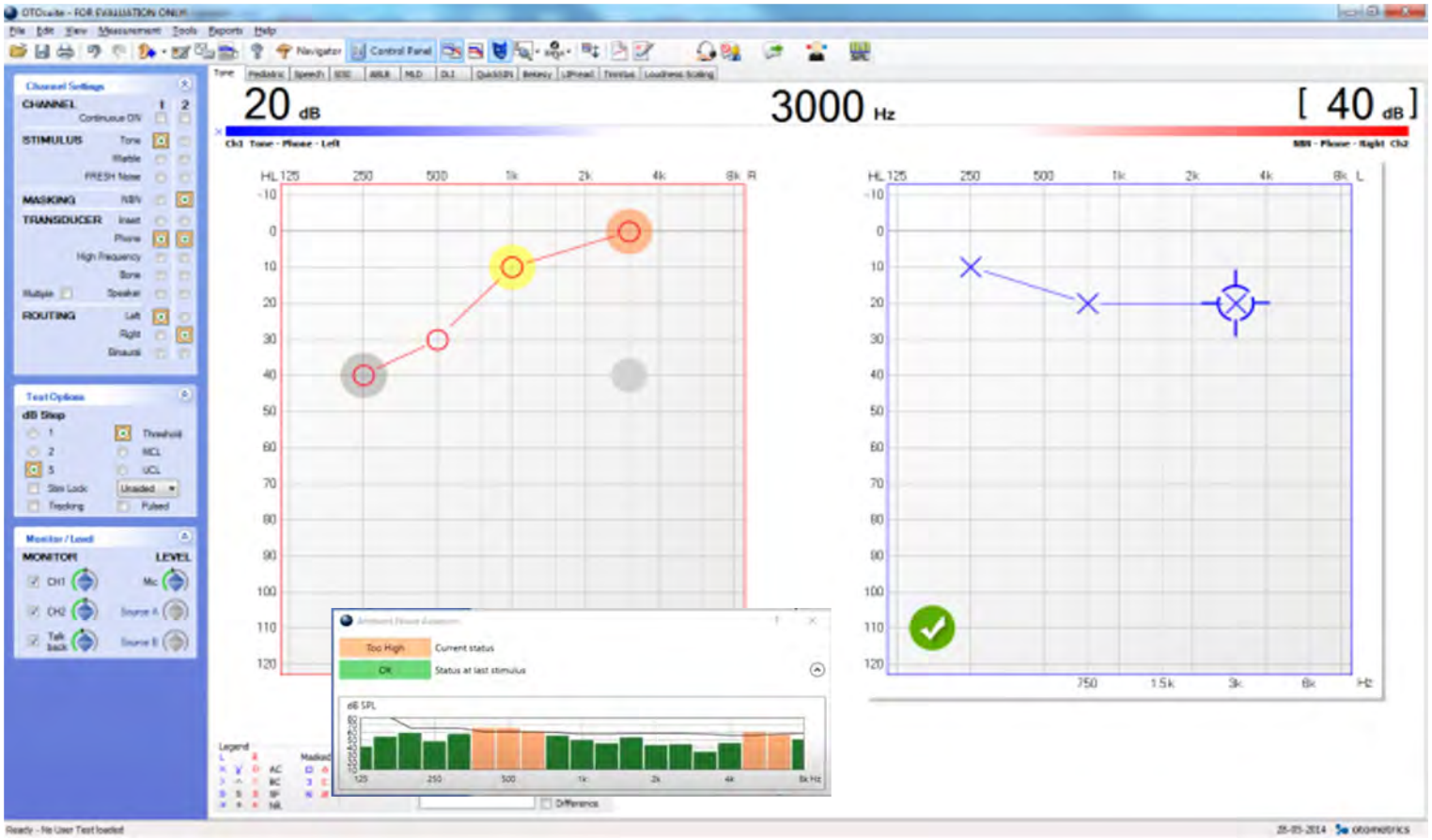
Noise Assessment during the Patient Visit

- Microphone for monitoring the noise in the environment

Photo by Department of Veterans Affairs

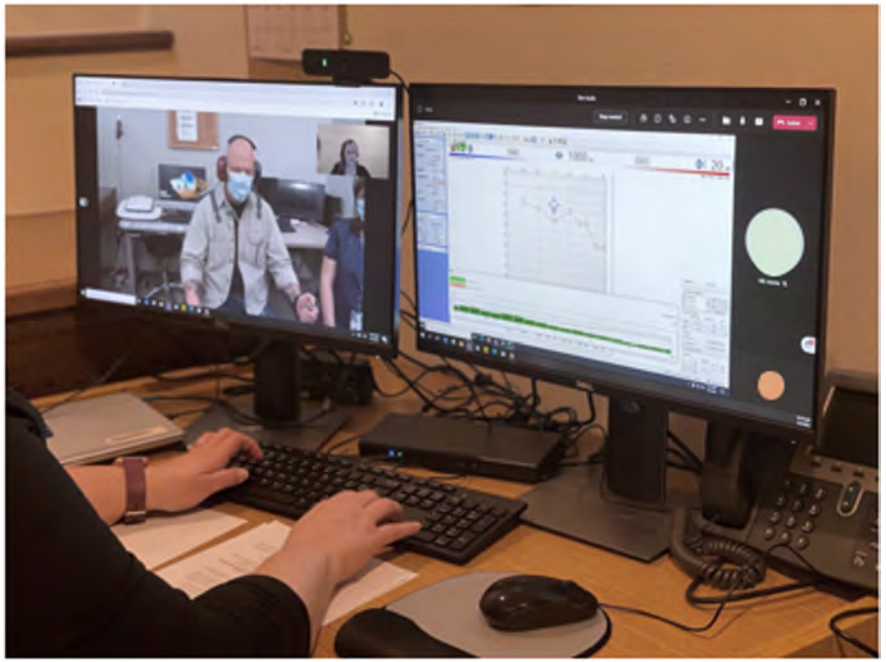
Teleaudiology: Hearing Evaluation



Teleaudiology: Hearing Evaluation

Clinical Best Practice Recommendations

- Environmental noise monitoring
- Pure tone air and bone conduction
- Speech in noise testing



Teleaudiology: Hearing Evaluation

- Hearing aid selection
- Counseling

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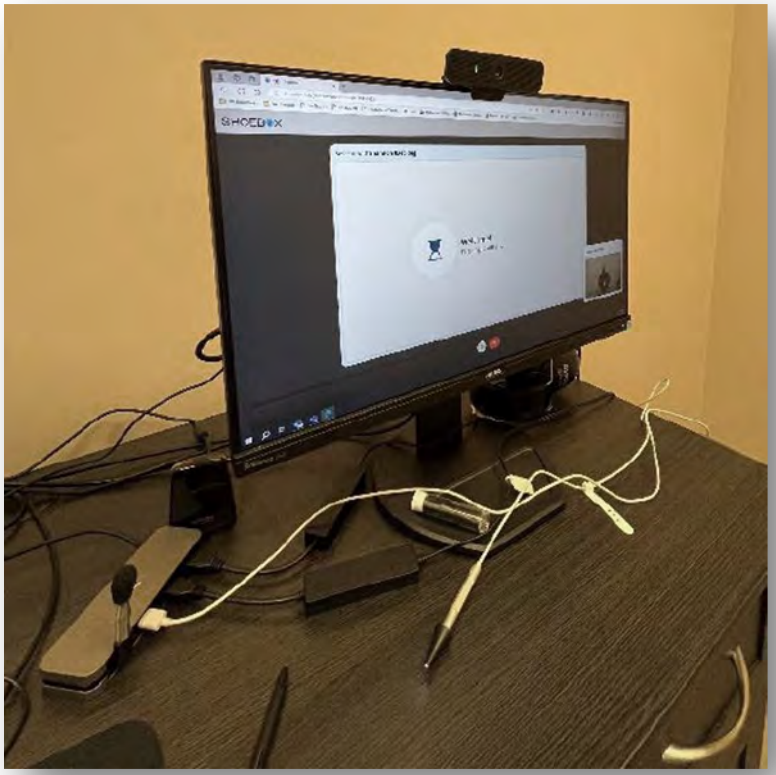
Teleaudiology: Hearing Evaluation



- Web-based Audiology Software
  - Synchronous
  - Noise monitoring feature
  - Video Otoscope
  - Calibrated transducers
  - Pilot sites

Hearing Aid Fitting

Teleaudiology Hearing Aid Programming and Verification Measures

Teleaudiology: Hearing Aid Fitting

- Pre-encounter
  - Speaker calibration
  - Supply Inventory
  - Hearing aid programming connections

Photo by Department of Veterans Affairs

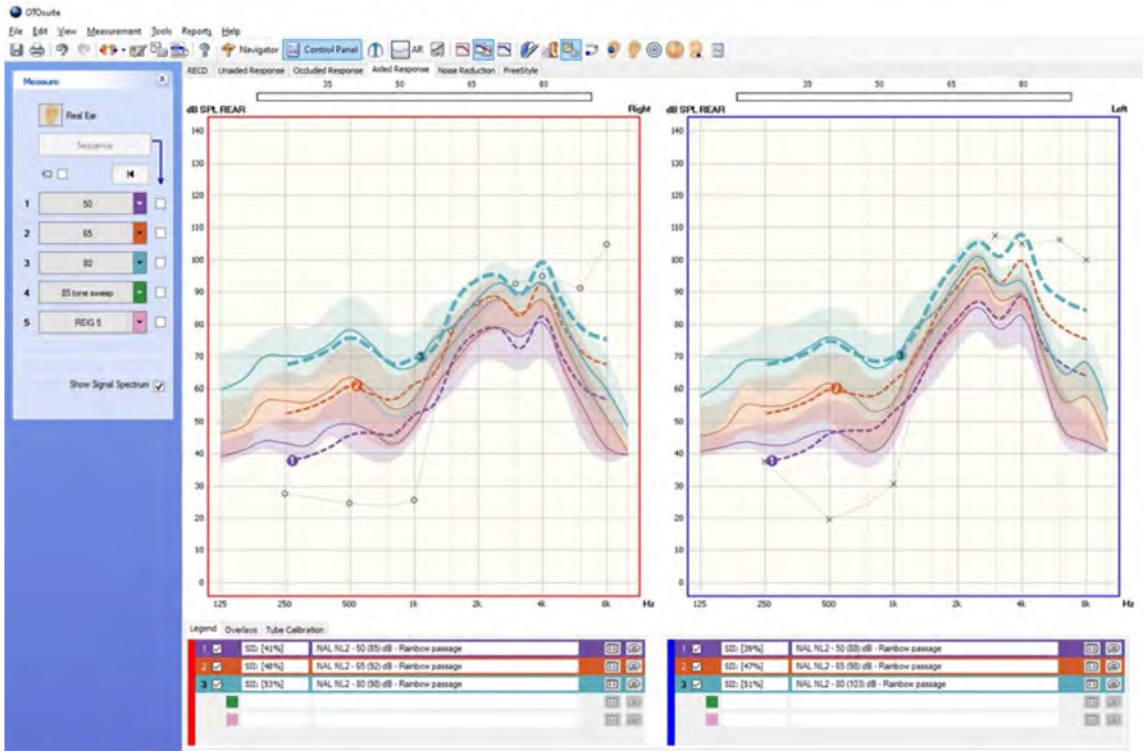
Teleaudiology: Hearing Aid Fitting

- Probe tube placement
- General exam camera

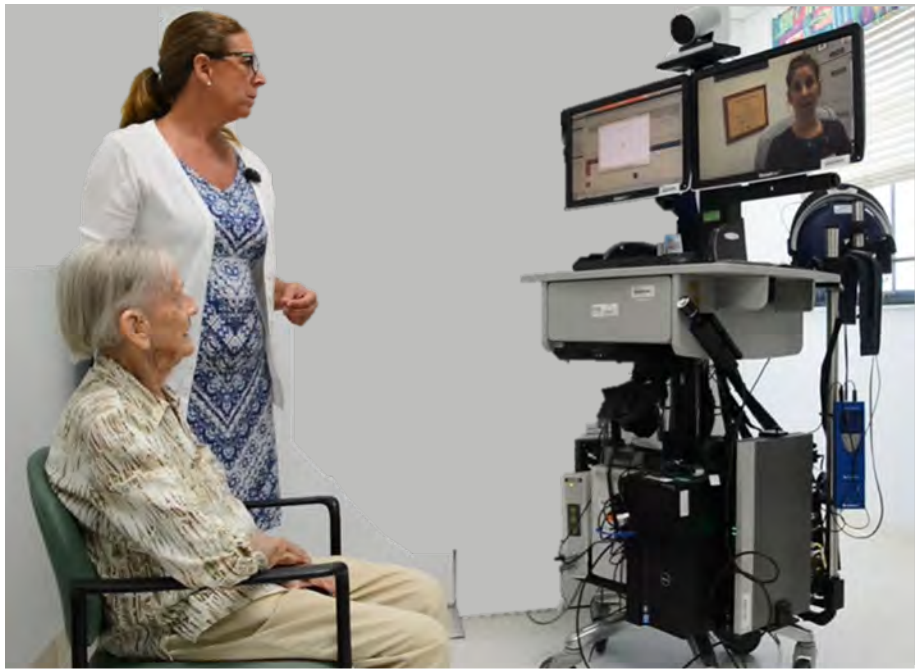
Photo by Department of Veterans Affairs

Teleaudiology: Hearing Aid Fitting

- Clinical Practice Recommendations
  - Real ear measures
  - RECD



Teleaudiology: Hearing Aid Fitting



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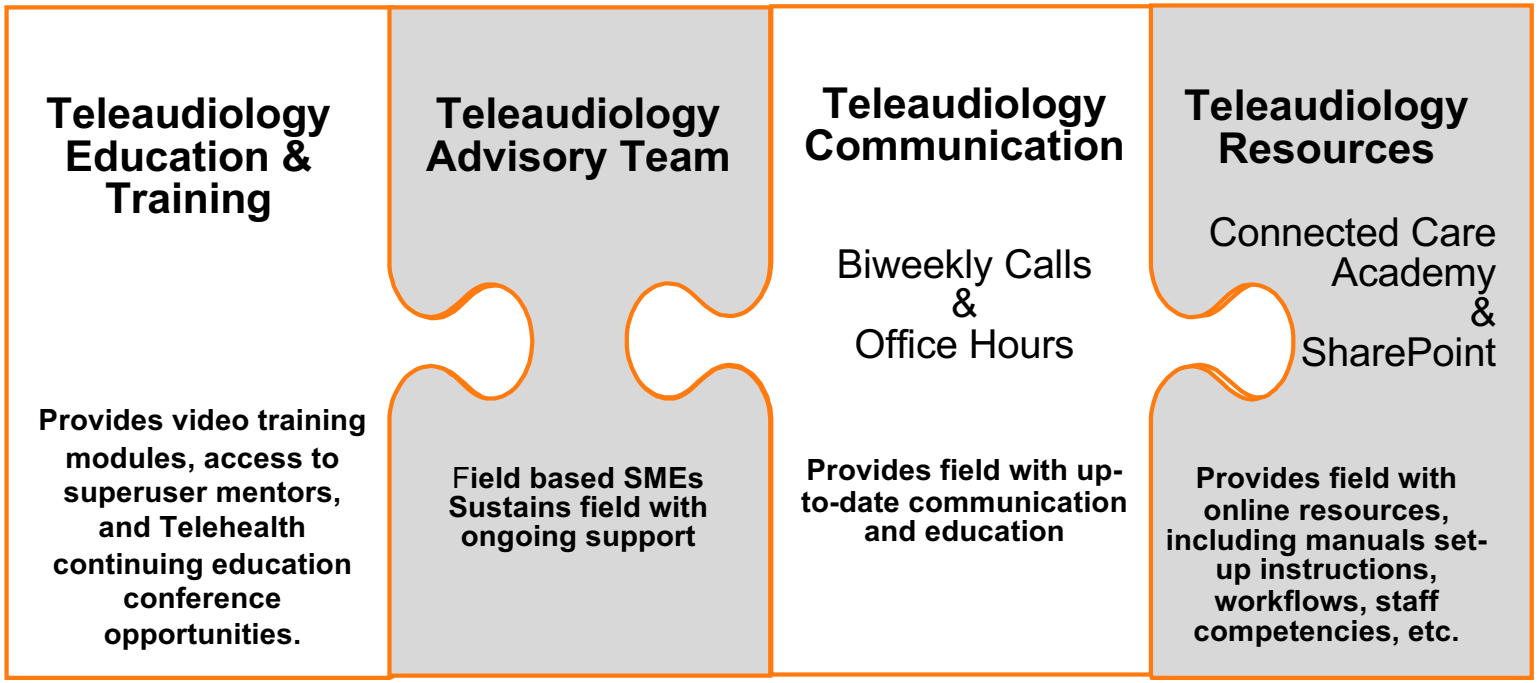
- Support for the Provider and Patient during the encounter:
- Technology and connectivity troubleshooting
- Adaptability

Teleaudiology: After the Encounter

- Orientation
- Counseling
- Follow-up

Improving access via Teleaudiology by building opportunities for VA Telehealth Readiness

Ongoing opportunities for education, training and support allowed Teleaudiology encounters to increase, allowing for improved access to care for Veterans



Summary


VA Telehealth
Teleaudiology
Clinical Pathway

Thank You!

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To fulfill President Lincoln's promise to care for those who have served in our nation's military, and for their families, caregivers, and survivors.

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