



Walter Reed  
National Military  
Medical Center



# Innovation Award

**Douglas Brungart**  
**Hearing Conservation Research at the**  
**National Military Audiology and Speech Pathology Center**

February 6, 2026





# Disclaimer



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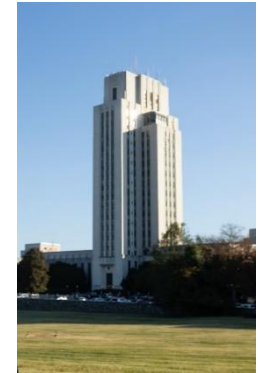
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# National Military Audiology and Speech Pathology Center



- Originated in 1940's as Army Audiology and Speech Center
- Influential in early development of Profession of Audiology
- Moved to Bethesda in 2011
- Partnered with Auditory Studies Investigation Group at Defense Centers for Public Health-Aberdeen
- Has Broad mission to improve operational hearing and hearing health in the military





# Team Members



Joshua  
Bernstein



Douglas  
Brungart



Stefanie  
Kuchinsky



Daniel  
Shub



Nancy  
Solomon



Alyssa  
Davidson



Gregory  
Ellis



Devon  
Kulinski



Ian  
Phillips



Katie  
Brow



Rebecca  
Bieber



Kelli Clark



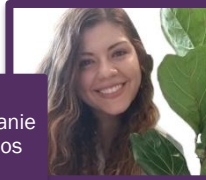
Tom Heil



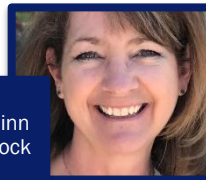
Julianna  
Voelker



Stephanie  
Turcios



LaGuinn  
Sherlock



Matthew  
Makashay



Benjamin  
Sheffield



Walter Reed  
National Military  
Medical Center

**DCPH-A**  
Defense Centers for Public Health - Aberdeen  
(formerly U.S. Army Public Health Center)



# Team Members



## Walter Reed (NMASC)

Douglas Brungart  
Devon Kulinski  
Joshua Bernstein  
Stefanie Kuchinsky  
Daniel Shub  
Rebecca Bieber  
Katie Brow  
Kelli Clark  
Alyssa Davidson  
Gregory Ellis  
Tom Heil  
Michael Johns  
Ian Phillips

Michele Spencer  
Stephanie Turcios  
Julianna Voelker  
Roberta Martorana

## DCPH-A

Benjamin Sheffield  
LaGuinn Sherlock  
Matthew Makashay  
Deborah Lake  
Kerri Klingseis  
Andy Merkley

## Other Collaborators

CREATE  
WAHTS Hearing  
DOW HCE  
Hector Galloza  
Christopher Smalt  
Brianna Biel  
Quintin Hecht  
Andrea Brzuska  
Jeffrey Russell  
Krystal Witherell  
Jaci Schurman  
Victoria Bugtong  
Laura Pomeroy

## Other Collaborators

Chris Caldwell  
Amy Blank  
Walter Carr  
Leilani Ramos  
April Kellum  
Jessica Lanning  
Tammie Taylor  
Kristy Dameron

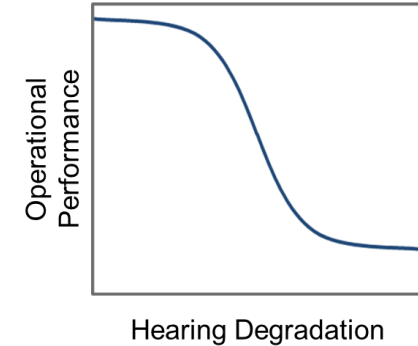


# Hearing Loss and Operational Performance

Hearing loss is of great interest to military:

- Military activity is very damaging to hearing, *and*
- Hearing acuity is critical to military operations

Many of our studies have focused on this relationship





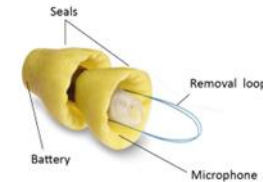
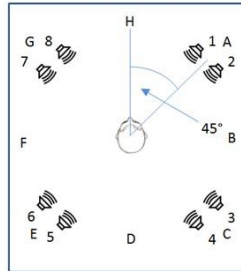
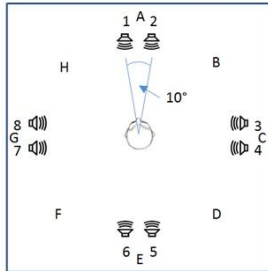
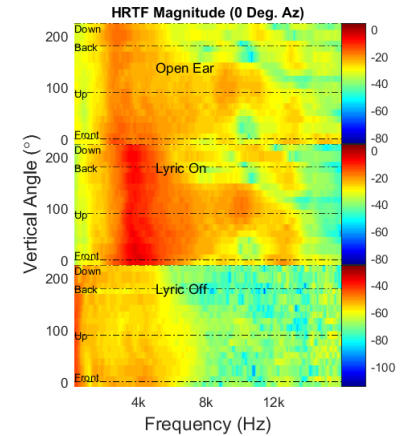


# Situational Awareness with Hearing Protection



The ability to localize with hearing protection is critical

- Developed Localization Test for ANSI S3.71-2019
- Evaluated Extended-Wear Hearing Aids as HPDs
- Conducted field studies with HPDs
- Identified localization defect in commercial HPD





# Methods for Large-Scale Hearing Studies

DOW has world's largest hearing conservation program

More than 1M research-grade audiograms collected per year

QR Code methods was used to add research data to Audiogram

More than 50,000 SMs have volunteered for hearing studies







# Fitness-for-Duty Evaluation



Fitness-for-Duty testing places great burden on occupational audiologist

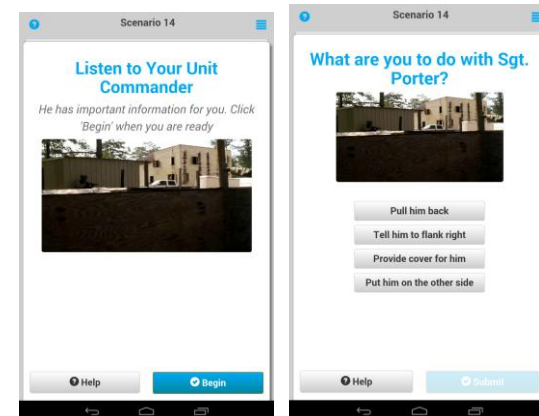
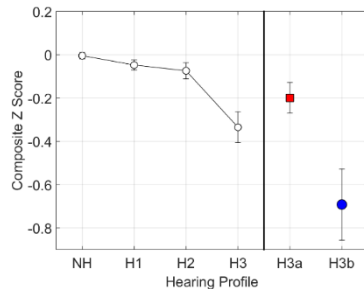
- Must determine if individual is safe to continue without guidelines

New Military Operational Hearing Test provides validated operational link

- Score on test is known to be correlated with relevant operational scenarios

Adopted as US Army Standard in December 2022

Net result has been a 50% reduction in H3 classifications

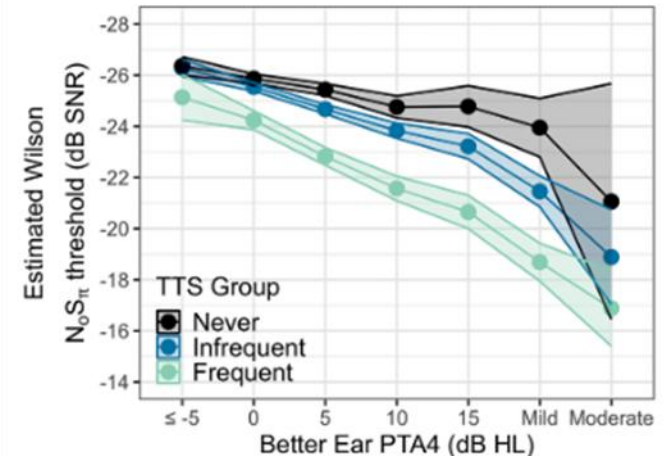
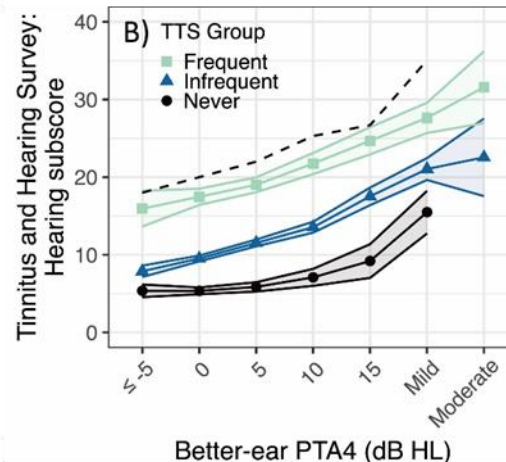
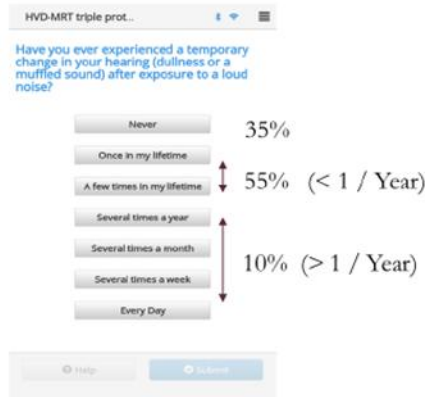




# Hearing Loss and Blast/Noise Exposure



Many noise exposed individuals have hearing complaints but normal thresholds  
 Studies show link between TTS symptoms and hearing problems for NH listeners  
 Studies also show that low-gain hearing aids can benefit these individuals  
 Results consistent with individual differences in susceptibility to cochlear synaptopathy





# The Innovation: *Applications of Boothless Audiometry*



A historical limitation of audiology is dependence on testing in quiet booth

In late 2010's, we began working with contractor (CREARE) on hearing studies

- They had developed a boothless audiometer as part of an NIH SBIR

Our contribution was to find ways to utilize boothless capability in military settings

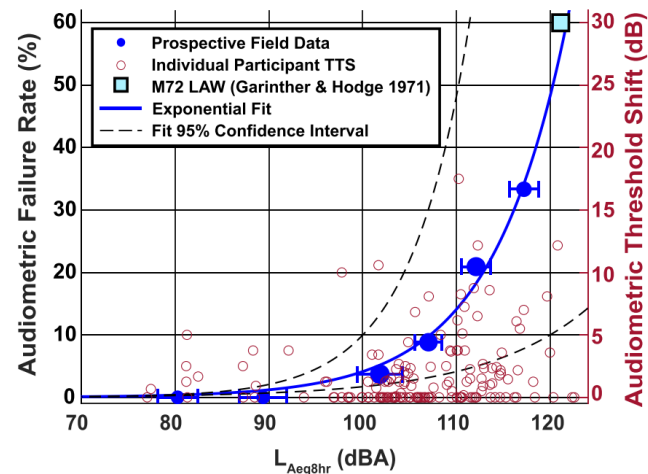
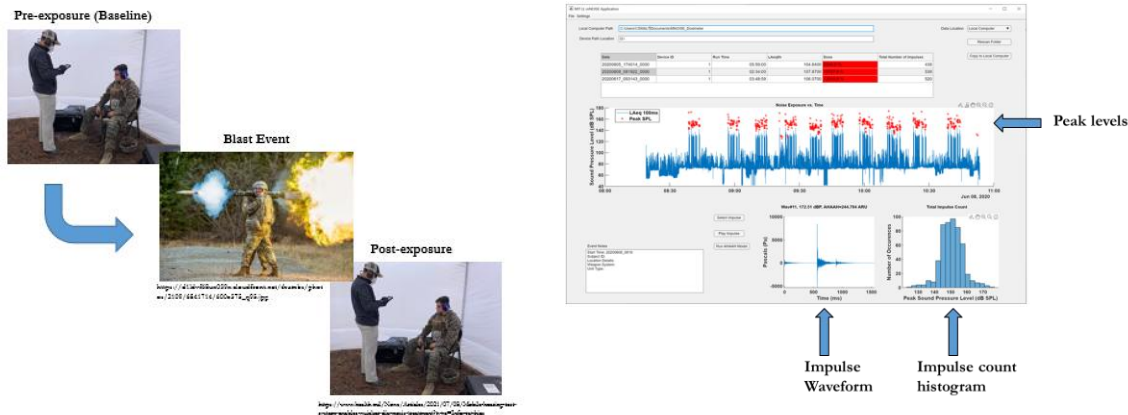


# Dose-Response Curve for Blast Exposure

## Effects of blast and impulse noise on hearing examined in field studies

## Developed new dosimetry methods and used boothless audiometry

## Identified probability of significant TTS as a function of LAEq8Hr





# Boothless Audiometry in Hearing Clinic



COVID-19 prevented use of multi-man booths for annual hearing tests

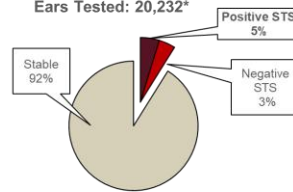
FDA-Registered Boothless Audiometer employed by necessity in DOW Clinics

Evaluation of positive and negative STS values used to validate boothless system

WAHTS



Ears Tested: 20,232\*

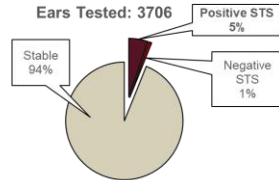


\* Second Batch of 13 WAHTS omitted from Jun-Oct due to calibration issue

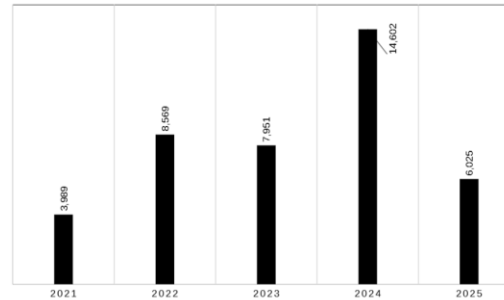
DOEHRS-HC



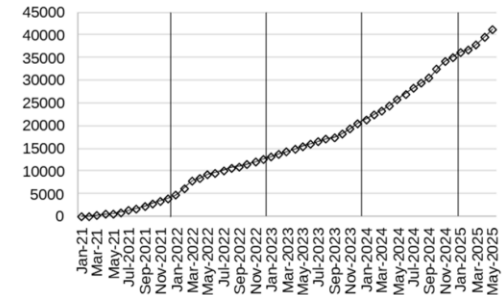
Ears Tested: 3706



Boothless DOEHS-HC Encounters by calendar Year



Boothless DOEHS-HC Encounters Across DOD

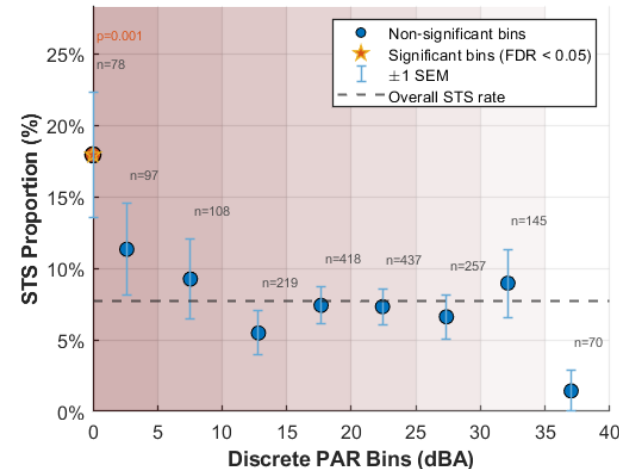
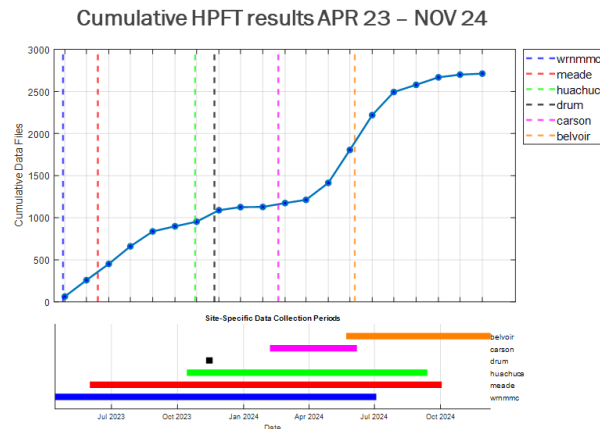




# Hearing Protection Fit Testing



Boothless audiometer evaluated as a tool for conducting fit testing  
 More than 2500 SMs analyzed to compare untrained par to STS rate  
 Results show significantly higher STS rate for individuals with 0 PAR







# The Future: Significance of the Award

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Boothless audiometry continues to gain momentum for annual testing in DOW

Findings from studies using boothless audiometry are influencing DOW policy

- Development of new version of MIL-STD-1474 (Risk Criteria for Impulse Noise)
- Possible inclusion of TTS questionnaire data in annual hearing test

Innovation award highlights importance of *continued investment in hearing research*

- Despite long history of military hearing conservation, there is room for improvement



# Questions



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