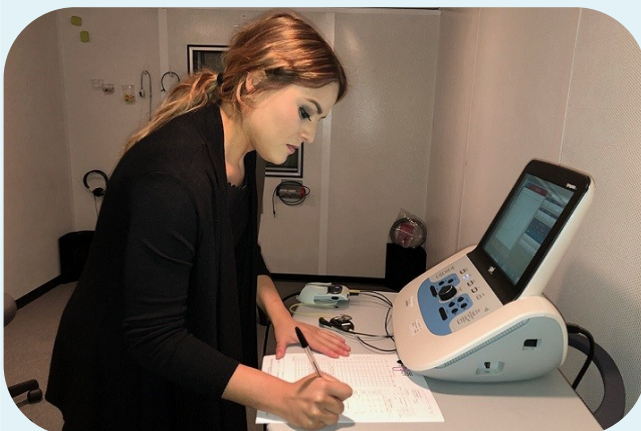


NOISE STUDY NEWSLETTER

WINTER 2018

Welcome to the inaugural edition of the Noise Outcomes in Servicemembers Epidemiology (NOISE) Study Newsletter. This newsletter has been created to keep the community updated on all of the exciting developments and discoveries from this research.

Study Examines Impacts of Noise and Chemical Exposure on Hearing Health



Research audiologist Dr. Rozela Melgoza, DoD Hearing Center of Excellence, completes a study participant's acoustic immittance test to evaluate their middle ear function. Immittance audiometry is one of several tests completed by participants during the Noise Outcomes in Servicemembers Epidemiology (NOISE) study's comprehensive audiologic evaluation. (DoD HCE photo)

Scientists are studying the possible long-term effects of exposure to high levels of noise and certain chemicals on the auditory functioning among active-duty Service members and Veterans.

Called the Noise Outcomes in Servicemembers Epidemiology, or NOISE study, one objective of the project is to clarify the correlation between hearing injury and exposure to non-pharmaceutical chemical agents used in military operations. These can include solvents like toluene, xylene, styrene, and hydrocarbon blends found in jet fuel, as well as metals and asphyxiants in welding fumes and vehicle exhaust.

According to the Occupational Safety and Health Administration, exposure to certain chemicals, called ototoxicants, can cause hearing loss or balance problems. The risk of hearing loss may be magnified when workers are exposed to these chemicals while working around elevated noise levels.

A first-of-its-kind in the Department of Defense, the NOISE study is a collaboration between the Department of Veterans Affairs (VA), National Center for Rehabilitative Auditory Research (NCRAR) in Portland, Oregon, and the

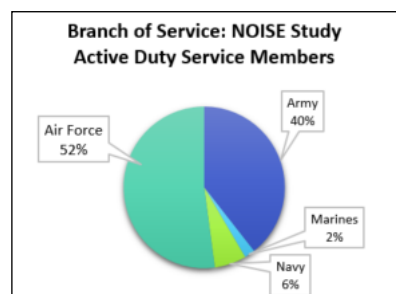
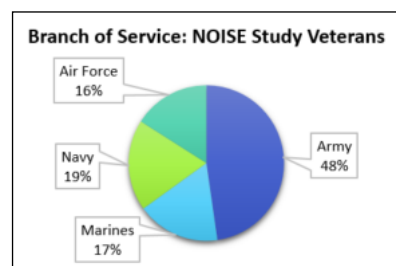
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THANK YOU!

Thanks to our research participants, the NOISE Study has enrolled over **600 participants** between our two sites.

Participant contributions, year after year, are what makes this longitudinal study successful. We truly appreciate everyone who continues to be a part of the NOISE Study.

See below for a breakdown of our study cohort as of October 12, 2018:



NOISE Study Participants: Has your contact information changed?

The follow-up questionnaire packets that you receive on a yearly basis are a key part of this research. Please let us know if your mailing address or phone number has changed since we last contacted you.

If you enrolled in the study at the **Portland, OR** site, please contact Bevin Madden at (503) 220-8262 ext. 58269 to update this information.

If you enrolled in the study at the **San Antonio, TX** site, please contact Jordan Cline at (253) 381-0944 to update this information.

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DoD Hearing Center of Excellence (HCE) at Joint Base San Antonio, Texas. Researchers are collecting data on service members during their active duty time and into their post-military lives.

“The long-term intent is to collect data from subjects for 20-plus years to observe changes in their hearing and tinnitus and associate those changes with numerous different variables,” said Dr. James Henry, NOISE study principal investigator with the VA’s NCRAR.

In addition to undergoing comprehensive audiologic assessments for the study, participants fill out extensive questionnaires about their medical history and military exposures. Participants are also completing an analysis called the Lifetime Exposure to Noise and Solvents Questionnaire (LENS-Q), which documents their military occupational, non-military occupational, and recreational exposures to both noise and chemicals.

When analyzing the data, researchers will evaluate the prevalence of chemical exposures across demographic categories and examine the relationship, if any, between those exposures and injury risk. They will also identify factors related to any identified effects of chemical exposures on auditory injuries, including any possible significant differences between individuals with higher versus lower noise exposures, as determined by objective and subjective hearing and tinnitus problems.

Henry said researchers are in the early stages of looking at the data, and to date have enrolled more than 600 participants, including Veterans through NCRAR in Portland and active-duty service members in the San Antonio area. He added that the team will soon provide a full analysis of the data collected so far from the participants.

Additional research into the long-term effects of noise and chemical exposure is anticipated, with the plan to conduct hearing tests to measure future audiometric outcomes in the NOISE study participants. “A study of this magnitude will give us more definitive information about the hearing health of our service members, which can then be used to develop future hearing loss prevention programs, hearing protection devices and other protective equipment to safeguard service members,” said Dr. Carlos Esquivel, NOISE study principal investigator for the HCE.

This article was originally published on the Military Health website on September 13, 2018.

“Study Examines Impacts of Noise and Chemical Exposure on Hearing Health.” *Military Health*, 13 Sept. 2018, health.mil/News/Articles/2018/09/13/Study-examines-impacts-of-noise-and-chemical-exposure-on-hearing-health.

Findings from the NOISE Study have been shared at 23 conferences and have been published in 8 papers/journals!

Some recent NOISE Study Presentations:

- Office of Naval Research (ONR) meeting, 2018, Portland, Oregon
- Military Health System Research Symposium (MHSRS), 2018, Orlando, Florida
- Military Operational Medicine Research Program (MOMRP), 2018, Ft. Detrick, Maryland
- Collaborative Auditory Vestibular Research Network (CAVRN), 2018, Dayton, Ohio
- Joint Defense Veterans Audiology Conference (JDVAC), 2018, Atlanta, Georgia
- Annual National Hearing Conservation Association (NHCA) Conference, 2017, San Antonio, Texas

Some recent NOISE Study publications:

- **American Journal of Audiology**
June 01, 2016—Volume 25—p 153-160
Tinnitus Screener: Results from the First 100 Participants in an Epidemiology Study
Henry JA, Griest S, Helt W, Gordon J, Thielman E, Theodoroff SM, Lewis MS, Blankenship C, Zaugg TL, Carlson K.
- **Hearing Research**
June 2017—Volume 349—p21-30
Audiologic characteristics in a sample of recently-separated military veterans: The Noise Outcomes in Servicemembers Epidemiology Study (NOISE Study)
Gordon JS, Griest SE, Thielman EJ, Carlson KC, Helt WJ, Blankenship C, Lewis MS, Austin D, Theodoroff SM, Henry JA.
- **Hearing Research**
June 2017—Volume 349—p 90-97
Development and Validation of the Speech Reception in Noise (SPRINT) Test
Brungart DS, Walden B, Cord M, Sandeep P, Theodoroff SM, Griest SE, Grant KW.

Tinnitus & You

NOISE Study findings reveal that:



4.5 out of 10 Service members reported tinnitus



6.5 out of 10 Veterans reported tinnitus

Concentration, emotional stability, alertness, and adequate sleep may all influence the ability for Service members to carry out their assigned tasks, especially in combat situations.¹

In addition, individuals who present with tinnitus are more likely to experience:¹

- Sleep disorders
- Depression
- Anxiety
- Suicidal ideations

If you are experiencing any of the above complications, please seek help from your medical provider or other help resources.

Resources:

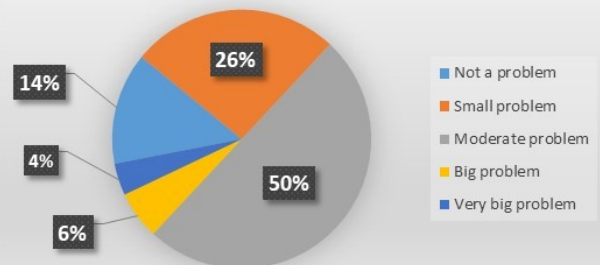
- "How's your Hearing? Ask an Audiologist" www.howsyourhearing.org
- American Speech-Language Hearing Association www.asha.org/public
- American Tinnitus Association www.ata.org
- If you are experiencing extreme depression or suicidal ideations, **please ask for help!** The Veterans Crisis line is 100% confidential and is available 24/7.
Call: 1-800-273-8255 and press 1 when prompted
Text: 838255
Talk to someone online: www.veteranscrisisline.net

Tinnitus is the sensation of hearing ringing, buzzing, hissing, chirping, whistling, or other sounds in your ears or head. The sounds can be constant or intermittent and can vary in intensity and loudness.¹

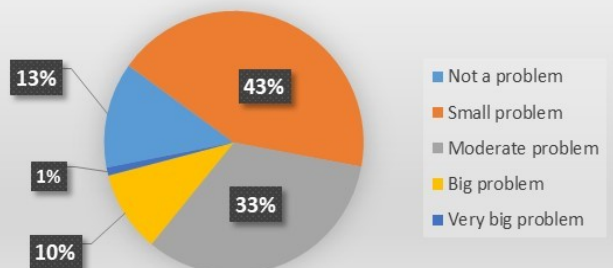
Chronic tinnitus is often a permanent condition, but with many tinnitus management strategies and tools available, its negative impacts on patients' lives can be minimized.

As reported in the Veterans Benefits Administration Annual Benefits Report Fiscal Year 2017, tinnitus and hearing loss are the **top two most prevalent disabilities** in Veterans receiving disability compensation.

Veterans, how much of a problem is your tinnitus?



Service members, how much of a problem is your tinnitus?



Who are we?

The NOISE Study is being conducted in Portland, Oregon and San Antonio, Texas. The main site is the National Center for Rehabilitative Auditory Research (NCRAR), located at the VA's Portland Health Care System. The second site for the Study is located within the Hearing Center of Excellence (HCE) at the Joint Base San Antonio Lackland Wilford Hall Ambulatory Surgical Center.



NCRAR Team—VA Portland

JAMES HENRY, Ph.D.
PRINCIPAL
INVESTIGATOR

**KATHLEEN
CARLSON, Ph.D.**
CO-INVESTIGATOR

**SARAH
THEODOROFF,
Ph.D.**
CO-INVESTIGATOR

TARA ZAUGG, Au.D.
CO-INVESTIGATOR

**M. SAMANTHA
LEWIS, Ph.D.**
CO-INVESTIGATOR

**SUSAN GRIEST,
MPH**
DATA MANAGER

WENDY HELT, MA
RESEARCH
AUDIOLOGIST

JANE GORDON, MS
RESEARCH
AUDIOLOGIST

**TINA
PENMAN, Au.D.**
RESEARCH
ADMINISTRATOR
& AUDIOLOGIST

**CHRISTINE
KAELIN, MBA**
PROGRAM MANAGER

**EMILY
THIELMAN, MS**
DATABASE MANAGER

**KELLY
REAVIS, MS, MPH**
DATA ANALYST

**LESLIE
GRUSH, Au.D.**
PROGRAM
COORDINATOR
& RESEARCH
AUDIOLOGIST

BEVIN MADDEN, BS
RESEARCH ASSISTANT

JOEY NADEAU, BA
RESEARCH ASSISTANT



HCE Team Joint Base San Antonio

CARLOS ESQUIVEL, MD
SITE PRINCIPAL INVESTIGATOR

TANISHA HAMMILL, Ph.D, MPH
RESEARCH BRANCH CHIEF

ELSA GRANATO, MPH
SENIOR RESEARCH ADMINISTRATOR

STACY LEONARD, CTR
INFORMATICS PROGRAM
MANAGER

**JULIETA
SCALO, Pharm.D., Ph.D.**
DATA ANALYST

ROZELA MELGOZA, Au.D.
RESEARCH AUDIOLOGIST

JORDAN CLINE, MA
RESEARCH COORDINATOR



Get to Know the Team

Each issue of this newsletter will highlight a member of the NOISE study research team.

In this issue the Study's Principal Investigator, James Henry, Ph.D., tells us a little bit about his career and what led him to the NOISE Study.



"I have to give credit to the many individuals who have contributed to my research. I have been extremely fortunate to work with many very talented and gifted individuals.

I am constantly amazed at the quality of work they do, and how much they know. I work with people who make me look good."

- Dr. Henry

I returned to school after careers as a musician and carpenter. My youngest daughter was deaf and we moved to Portland, Oregon so she could attend the Tucker-Maxon School that specializes in teaching speech skills to deaf children. I enrolled in the Audiology program at Portland State University, after which I was hired as a research audiologist at the VA Portland Health Care System. My eyes were opened to research, and I went back to school to earn a doctorate in Behavioral Neuroscience at Oregon Health & Science University (OHSU). I continued to work part-time at the VA, and my doctoral research at OHSU focused on tinnitus.

After OHSU, my first project was to develop and test a "computer-automated" tinnitus evaluation system – let the computer do the work. During the 1990s, Tinnitus Retraining Therapy (TRT) was the rage. I attended Dr. Pawel Jastreboff's TRT training seminar, and we conducted a study comparing outcomes between TRT and Tinnitus Masking – Masking is the method pioneered by Dr. Jack Vernon, which I had learned about while in his lab at OHSU. Good results were obtained with both TRT and Masking, and we started developing our own ideas for a stepped-care method – eventually called Progressive Tinnitus Management (PTM). PTM includes components of both Masking and TRT, as well as some new approaches. We also included Cognitive-Behavioral Therapy (CBT) in the protocol because of the strong research support for CBT. PTM is a multidisciplinary method that involves primarily audiologists and mental health providers. We have completed two randomized controlled trials (RCTs) of PTM. We've also completed two RCTs comparing hearing aids to hearing aids with a built-in sound generator (i.e., "combination instruments") for tinnitus management. Both devices were effective in each of the trials.

We are currently conducting our "NOISE Study" (which stands for Noise Outcomes in Servicemembers Epidemiology Study). The NOISE Study is evaluating the long-term effects of noise on tinnitus and hearing loss. Although this study will address numerous questions, the main question is, "can a person's new-onset tinnitus be the result of noise exposure many years ago?"

I'll end by sharing my dream. We have completed two studies, a pilot study and an RCT, providing tinnitus education over the telephone to people located all over the country who have bothersome tinnitus. We got such good results with this method that we believe it is a model for how anyone, anywhere can have access to quality tinnitus services. If tinnitus-specific intervention is needed, then we know we can provide self-help education over the telephone with excellent results. Such a program could be implemented fairly easily and for a relatively small cost. It would solve the problem of access to tinnitus services.

Awards and Achievements:

- ✓ 2017 Jerger Career Award for Research in Audiology from the American Academy of Audiology
- ✓ Rehabilitation Research and Development 2016 Paul B. Magnuson Award
- ✓ 2011 Research Award from the Association of VA Audiologists "in recognition of his significant research contributions to the advancement of VA Audiology"
- ✓ Has been the Principal Investigator for over 30 different Audiological research projects
- ✓ Has published 100+ scientific reports based on his research

A Letter from the P.I.

Dear interested reader,

I would like to take this opportunity to tell you about the study and why it is important for military Service members and Veterans.

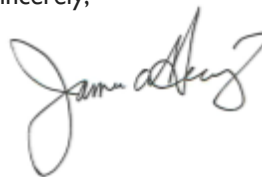
It is well known that exposure to high-intensity noise is associated with hearing loss and tinnitus. Military personnel are commonly exposed to noise, and it is thus not unexpected that many Service members experience auditory injuries. The high prevalence of auditory injuries is evidenced by tinnitus and hearing loss being, respectively, the first and second most common service-connected disabilities for military Veterans. Concerns about the relationship between noise in the military and auditory injuries led Congress in 2002 to direct the VA to contract with the Institute of Medicine to clarify this relationship.

The Institute of Medicine published its report in 2006. The report outlined areas where additional research was needed, including the recommendation for research to document military noise exposure following discharge from service and to perform follow-up evaluations to determine the short- and long-term effects of military noise exposure. In response to that recommendation, our research group initiated the Noise Outcomes in Servicemembers Epidemiology (NOISE) Study in 2013.

The NOISE Study focuses not just on noise exposure but any exposure or condition that might be associated with auditory injury, primarily exposure to ototoxic chemicals (ototoxicants), exposure to blasts, and traumatic brain injuries. The primary questions addressed by the study are, (1) how do hearing loss and tinnitus progress during and following military service? (2) Can exposures in the military cause hearing loss and tinnitus years after military separation? (3) What are risk factors for hearing loss and tinnitus in the military population? The primary aim of the study is to estimate and describe the prevalence, etiology, and effects of hearing loss and tinnitus in the military population. It is your participation in this study that is enabling these questions to be answered.

Most importantly, we thank our research participants for their service to our country. They are the reason for all the freedoms we enjoy every day.

Sincerely,



James Henry
Principal Investigator, NOISE Study

Do you or someone you know want to be a part of the NOISE Study?

We are continuously recruiting new participants for the NOISE Study. If you or someone you know is interested in participating, please reach out to your local NOISE Study Coordinator.

Requirements for participation:

- Current military personnel (i.e. National Guard, Reservist, Active Duty) **OR** Veterans who have recently separated or retired from service within the last 2 ½ years (San Antonio participants must be TRICARE eligible)
- Between 18-62 years of age
- Live within a reasonable driving distance to either study site and are willing to come in for a baseline hearing evaluation

NOISE Study Coordinators:

Portland, OR: Bevin Madden—503-220-8262 Ext. 58269

San Antonio, TX: Jordan Cline—253-381-0944



National Center for Rehabilitative Auditory Research (NCRAR)

VA Portland Health Care System
3710 SW US Veterans Hospital Road
NCRAR/P5
Portland, OR 97239

Hearing Center of Excellence

Wilford Hall Ambulatory Surgical Center
1100 Wilford Hall Loop
Bldg. 4554
JBSA—Lackland AFB, TX 78236

The NOISE Study is primarily examining long-term effects of military and non-military noise exposures on auditory functioning among Veterans and active duty Service members. This study, which includes comprehensive hearing evaluations, offers an unprecedented opportunity to investigate the impact of tinnitus and hearing loss on active duty Service members

For more detailed information about the NOISE Study, visit our web page at: https://www.ncrar.research.va.gov/Join_Research_Study/NOISEStudy.asp



Veterans Health
Administration



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