



Explore the World of Hearing Loss Prevention

35th Annual Hearing Conservation Conference



Friday, February 26, 2010 NHCA 2010 Conference - Presentation Descriptions

8:40 a.m. – 8:55 a.m.

"Current Moves in Australian based Noise Exposure Research"

Warwick Williams – National Acoustics Laboratories

This paper will present an overview of current major research activities into noise exposure. This includes such areas as: the epidemiology of both work and non-work based 'noisy' activities – what is important, how important is it and when is it important?; community, workplace and individual attitudes to noise – what effects do they have?; specific communities such as rural and farming; and ongoing work on hearing protectors.

8:55 a.m. – 9:10 a.m.

"Noise-induced hearing loss in Asia"

Adrian Fuente, PhD - University of Chile, Medical Faculty - School of Speech and Hearing Sciences

Noise-induced hearing loss (NIHL) still remains one of the most preventable hearing health conditions in Asia and the rest of the world. Overall, more than four million disability-adjusted life years (DALYs) have been lost to NIHL. Developing Asian countries account for more than half of the years of healthy life lost. However, Asia represents a vast territory and indeed the issue of NIHL is different from country to country. Hearing conservation programs (HCPs) have been successfully run in some countries, whereas in others these programs have been almost totally neglected. Are the citizens of Asian countries aware of the deleterious effects of noise? Are local governments making an effort to prevent NIHL? Are workers who have acquired NIHL eligible for compensation? Is research on NIHL taking place in Asian countries? These questions as well as the challenges for Asia in terms of NIHL prevention will be addressed.

9:10 a.m. – 9:25 a.m.

"Occupational hearing loss in Brazil: State of art"

Ana Claudia Fiorini, Pontificia Universidade Catolica de Sao Paulo

Occupational hearing loss is one of the most common health problems among Brazilian workers. Brazilian policy includes specific strategies to control the problem across all industries. In every place with occupational risks, it is mandatory to implement health and safety surveillance to protect the workers. The maximum noise exposure level is 85 dBA for eight hours (5 dB exchange rate). When exposures exceed 80 dBA (action level), it is necessary to implement a Hearing Loss Prevention Program. There is no official statistical data about occupational hearing loss in Brazil, but scientific research shows rates varying between 20 to 50% in different industries. In 1998, the Brazilian government created a specific audiometric test program to allow early identification of hearing loss. Several epidemiological studies will be presented along with example hearing loss prevention programs developed in Brazilian industries.

9:25 a.m. – 9:40 a.m.

"Research on noise-induced hearing loss in Sweden"

Ann-Christin Johnson - Unit of Audiology, Karolinska Institutet

Noise-induced hearing loss (NIHL) is one of the most common occupational health problems in many areas of the world, including Sweden. The overall number of severe NIHL cases has been reduced during the last few decades through hearing conservation efforts; however, the number of reported occupational noise injuries still accounts for 7% of all occupational injuries in Sweden. In addition, the rate of NIHL among Swedish women has increased in the past ten years. To address these problems, Sweden has recently directed several large grants towards studying hearing loss in

working life. Funded research projects range from epidemiological studies of the prevalence, risk factors and genetics of NIHL to qualitative studies focusing on the working population with hearing disabilities to experimental studies investigating the mechanisms of hearing loss, effectiveness of prevention strategies, and potential treatments. Several of these projects will be presented along with preliminary results.

9:40 a.m. – 9:50 a.m.

Posters – TBA

10:20 a.m. – 11:00 a.m. – Keynote Lecture

“Noise and cardiovascular disease: can hearing conservation programs prevent heart attacks too?”

Keynote Speaker: *HW Davies - UBC School of Environmental Health*

Research evidence suggests noise is a potent stressor, and is associated with chronic health effects other than hearing loss - including cardiovascular disease. In the first part of this talk, I will review the evidence for these "non-auditory effects" of noise, including our work at UBC in a cohort of 27,000 sawmill workers among whom the relative risk of hypertension was increased 30% and acute myocardial infarction increased 50% in the highest noise-exposed groups. Comparing non-auditory effects with noise-induced hearing loss we then ask the question - are hearing conservation programs helping heart health, too? The answer is perhaps - and only if programs are effective. In the second part of this talk, I will describe how programs are evaluated using standard epidemiologic methods, the findings from one such study conducted at UBC, the limitations of this approach and challenges for the future.

11:30 a.m. – 12:50 p.m. – Luncheon Speaker

“Effective slides: Design, construction, and use”

Luncheon Speaker: *Jean-Luc Doumont, Principia*

Several hundred million copies of PowerPoint are turning out trillions of slides each year. Those of us who frequently attend presentations probably agree that most of these slides are ineffective, often detracting from what presenters are saying instead of enhancing their presentation. Slides have too much text for us to want to read them, or not enough for us to understand the point. They impress us with colors, clip art, and special effects, but not with content. As a sequence of information chunks, they easily create a feeling of tedious linearity. Inspired by more than 150 workshops, this lecture will discuss how to design, construct, and use slides effectively. Building on three simple yet solid principles, it will establish what (not) to include on a slide and why, how to optimize the slide's layout to get the message across effectively, and how to use slides appropriately when delivering the presentation.

Breakouts

HLP in the Military

1:00 p.m. – 1:20 p.m.

“Hearing changes among military conscripts in the Swedish Army”

Per Muhr - Karolinska Institute and the Dept of Audiology Karolinska University Hospital

Ulf Rosenhall, The Swedish Armed Forces

Aims: To estimate the prevalence of hearing impairment (HI), auditory symptoms and ototraumatic factors. **Methods:** Audiograms were obtained at military conscription in 301873 men from 1971 to 1995. Audiograms and auditory symptoms were investigated in 839 men at reporting for military service in 2002. **Results:** The prevalence of HI at 0.5 - 6 kHz decreased during the period 1971 to 1981 from 15.7% to 8.3%, and increased in 1986 to 1995 from 9.8% to 16.3%. In 2002 the prevalence values of HI was 10%, of tinnitus 23.2%, and of sensitivity to noise 15.5%. Conscripts who had experienced tinnitus/TTS after noise exposure had elevated risk of hearing impairment/tinnitus/sensitivity to noise. Conscripts who played loud music had elevated risk of tinnitus but not of hearing impairment. **Conclusions:** Hearing impairment decreased in the 1980ies and increased again in the 1990:ies. Experience of tinnitus/TTS after noise exposure was related to hearing impairment/tinnitus/sensitivity to noise.

1:20 p.m. – 1:40 p.m.

“Hearing loss among soldiers exposed to impulses”

William Ahroon, PhD - U.S. Army Aeromedical Research Laboratory

Melinda Hill, AuD - U.S. Army Aeromedical Research Laboratory

US Army hearing conservation rules are designed to protect 95% of exposed populations from hearing loss due to occupational noise exposures. MIL-STD-1474D “Noise Limits” Requirement 4 “Impulse Noise” specifies hearing protection requirements for impulse exposures. Suggestions have been made that the MIL-STD is too restrictive and should be relaxed or replaced. The rule can be relaxed if at least 95% of soldiers are protected from hearing loss. The Defense Occupational and Environmental Health Readiness System – hearing conservation database was queried for hearing

profiles of soldiers whose military operational specialties would be expected to include impulse exposures. Hearing loss rates in 2007 ranged from 10.5% in infantrymen and 9.4% in cannon crew members to 8.1% in mechanics. The finding that all military occupations evaluated have hearing loss rates in excess of 5% (the implied target for the Army Hearing Program) suggests that relaxing Army impulse or continuous noise protection limits is ill-advised.

1:40 p.m. – 2:00 p.m.

“Improved hearing protection regulations and the prevention of military NIHL and tinnitus”

Roderik Mrena - University of Helsinki, Finland

The medical records of 252 non-commissioned officers (NCO) and officers of the Finnish Defense Forces (FDF) examined at the Central Military Hospital from 1984 to 1986 (Period I) and 2003 to 2005 (Period II) were reviewed. Changes in hearing and tinnitus between these two time periods, during which hearing protection regulations were revised, were investigated. Hearing test results improved especially in the high frequencies both in NCOs and in officers between the study periods, in accordance with tightened hearing protection regulations, although the results were milder than expected. Prevalence of tinnitus showed a decline both in officers (68% to 63%) and in NCOs (76% to 72%) between the study periods, in accordance with tightened hearing protection regulations. The Cox regression analysis showed a significantly decreased hazard ratio for constant or disturbing tinnitus for Period II. Hearing protection regulations are useful in preventing hearing loss, and constant or disturbing tinnitus.

2:00 p.m. – 2:20 p.m.

“The Army Hearing Program: Supporting the soldier from training to combat”

Jillyan Curry-Mathis, Army Hearing Program Manager

Vickie Tuten - Office of the Surgeon General

The current deployment rate of the U.S. Army has resulted in most combat soldiers completing multiple tours of duty in the current theaters of operation. As a result, permanent hearing loss and tinnitus have continued to rank among the top four injuries in Iraq and Afghanistan. The leadership of the Army Hearing Program has responded to this issue with the development of a relevant, fast-paced preventive program that has allowed it to effectively adapt to the environment of the American soldier, be it in training or combat. An update on the ongoing expansion of this program will be presented by the Audiology Staff Officer to the Surgeon General and two audiologists that have completed very different tours in theater. The sustained operational needs of the soldier will be identified and the experiences, challenges, successes and recommendations for future needs and improvements will be reviewed.

2:20 p.m. – 2:40 p.m.

“Development of a computer-based hearing loss prevention education program for veterans and military personnel”

Robert Folmer, PhD - National Center for Rehabilitative Auditory Research Portland VA Medical Center

Noise-induced hearing loss and tinnitus continue to be prevalent and costly problems for military personnel and veterans. To reduce the prevalence and burden of these conditions, the Department of Defense and the Department of Veterans Affairs are working together to develop an interactive, computer-based, multimedia hearing loss prevention education program that can be delivered at military bases, primary care or other medical settings. Initial installations of this program will be at the VA Medical Center in Portland, Oregon; Madigan Army Medical Center at Fort Lewis, Washington; and Womack Army Medical Center at Fort Bragg, North Carolina. This presentation will provide information related to the project's initiation, development and implementation.

Breakouts

Music & Hearing Loss

1:00 p.m. – 1:20 p.m.

“TTS subsequent to music player use”

Colleen Le Prell - Department of Communicative Disorders, University of Florida

Noise-induced hearing loss (NIHL) is a significant clinical, social, and economic issue. Although it was once thought that virtually all NIHL was a consequence of direct mechanical insult, studies in animals have now shown metabolic stress, free radical formation, and reduced blood flow, importantly contribute. Our group has shown that beta-carotene, vitamins C and E, and magnesium combined are highly effective in preventing NIHL and sensory cell death in rodents, delivered either by injection or dietary supplement. Pre-clinical evidence will be presented, and NIH-funded clinical trials that test the efficacy of these agents in human subjects will be described. Finding safe and effective interventions that attenuate NIHL will reduce one major cause of acquired hearing loss. As the potential for therapeutics that protect the inner ear receives increasing attention in the popular press, patients will be increasingly likely to seek professional advice about the use of these and other agents.

1:20 p.m. – 1:40 p.m.

“Portable music players - Preferred sound levels and listening habits”

Kim Kähäri - School of Health and Medical Sciences & Institute for Medical Disability Research, Örebro University

The use of portable music players (PMPs) and the risk for acquired noise-induced hearing disorders is a widely discussed topic today. This is a case study done at Stockholm Central Station. People passing by were invited to measure their preferred PMP listening level using a KEMAR manikin. They were also asked to answer a questionnaire about their listening habits. Fifty seven persons (38 men and 19 women) took part in the questionnaire study. The average age of the men was 33 and the average age of the women was 31; they started to use PMPs on regular basis in their early twenties. Results showed that the most common headphone types were ear canal headphones and canal phones/ear buds. Fifty four percent of the study population used their PMP on daily basis and 60 second L_{eqA} levels corrected for free field ranged from 69-102 dB with a mean value of 80 dB.

1:40 p.m. – 2:00 p.m.

“The use of MP3 players as a possible cause of noise-induced hearing loss”

Wouter Dreschler - Clinical and Experimental Audiology, Academic Medical Centre (AMC)

The use and sound exposure of MP3-players have been investigated by a self-test on the internet (www.mp3check.nl). This site allows the users to estimate the sound exposure and corresponding risk for hearing damage on the basis of the type of mp3-player, the type of headphones, the musical style selected, the use (in hours per day and in days per week) and the average setting of the volume control. The responses of 100,000 users have been analyzed. 22% of the users choose a volume setting in the upper 20% of the volume range and almost 10% of the users listen to his/her mp3-player for more than 10 hours per week. Based on acoustical measurements of a large number of musical fragments, mp3-players, headphones, and the range and linearity of the volume controls, a fairly accurate estimate of the individual sound exposure can be obtained, based on the parameters of the individual use supplied. The results show that the sound exposure from the mp3-players alone exceeds an equivalent level of 80 dB(A) (40 hours/week) in 24% of the cases. In 8% of the cases the equivalent sound levels exceeded 90 dB(A). There were marked differences between the different musical styles.

2:00 p.m. – 2:20 p.m.

“Do Negative Attitudes Toward loud Music Prevent Music-Induced Hearing Loss”

Stephen Widen - Dept of Psychology and Organizational Studies, Institution of Social and Behavioral Studies

Attitudes have been identified as an important variable for understanding risk-taking behavior or health preventive behavior. One interesting focus for research is therefore to investigate possible associations between young peoples' attitudes, risk-taking behavior related to noisy activities, and hearing problems such as threshold shifts or self-experienced hearing symptoms. In a study among 258 college students we have measured attitudes towards noise, use of hearing protection, and self-reported hearing symptoms. After completing the questionnaire a hearing screening, including pure-tone audiometry and tympanometry, was conducted. Attitudes were significantly related to self experienced hearing symptoms, but not to threshold shift itself. Negative attitudes and noise sensitivity was in turn, significantly related to a higher degree of hearing protection use. It can be concluded that self experienced hearing symptoms are important for the formation of the individual attitude and may serve as an important variable in health preventive work.

2:20 p.m. – 2:40 p.m.

“It takes two: How partnerships help extend the reach of a national NIHL campaign for tweens”

Patricia Blessing - National Institutes of Health

In October 2008, the National Institute on Deafness and Other Communication Disorders (NIDCD), part of the National Institutes of Health, launched the health campaign “It’s a Noisy Planet. Protect Their Hearing.” This education campaign encourages parents of tweens (children 8-12) to teach their children about the causes and prevention of noise-induced hearing loss (NIHL). Tweens are at the age at which they are developing their own attitudes and habits related to their health, including their hearing health. The ability to reach the greatest number of people possible in a national campaign is a challenge that is not readily accomplished by one organization. An integral goal of the campaign is to identify, cultivate, and define strategic partnerships with other national organizations to help disseminate campaign messages and materials. These partnerships vary in scope and substance. How they have garnered increased exposure to the campaign among adults and tweens will be described.

Breakouts

Protection & Communication

1:00 p.m. – 1:20 p.m.

“Influence of headset, hearing sensitivity, flight workload, and communication signal quality on flight performance and communications: An Army Black Hawk helicopter simulator experiment”

Kristen Casto - U.S. Army Aeromedical Research Laboratory

Intense cockpit noise, in-flight workload, and hearing loss all likely influence overall pilot performance. However, hearing loss flight waiver decisions for U.S. Army helicopter pilots are largely based solely on audiometric evaluation results. Twenty Army helicopter pilots participated in a study that yielded results supporting a conclusion that factors other than hearing thresholds and word recognition ability in a quiet environment should be considered when evaluating pilots' flight safety with regard to hearing sensitivity. Rather, the synergistic effects of flight workload and communication signal quality with individual hearing levels should be considered when making continued flight recommendations and headset choice recommendations. Results also support a recommendation for hearing-impaired pilots to use assistive communication technology and to not fly with only passive headsets.

1:20 p.m. – 1:40 p.m.

“How well do hearing protectors work? Compiled field fit testing results”

Lee Hager - 3M/Aero Technologies

Field Attenuation Measurement Systems (FAMS) have enabled hearing conservationists to assess individual hearing protection device (HPD) performance. Another outcome of the data from these systems has been large scale assessment of real-world HPD performance. Seven studies in five facilities, yielding test results for nearly 400 workers, are analyzed to assess: individual HPD performance compared to NRR; range of HPD performance by HPD type/material; ease of fitting by HPD type/material as assessed by binaural difference (difference between left ear and right ear fitting results); where available, comparison of individual HPD performance to noise exposure to assess sufficiency.

1:40 p.m. – 2:00 p.m.

“Comfort and Fit of Hearing Protection Products in the Industrial Environment”

Martha Tate, PhD - Kimberly-Clark Corporation

Improved comfort of hearing protection devices (HPDs) should encourage wearer compliance and optimum hearing protection. Assessing the comfort of the devices, though, has been problematic and generally restricted to in-lab testing. We extend methods for the assessment of protective apparel comfort to HPDs in actual work environments. The importance of end-user evaluation in comfort research will be discussed. Over time, multiple studies were completed and will be reviewed. The hearing protection comfort and use studies demonstrated highly repeatable differences between commercial and experimental products. Much of the work required product wear during one or more full shift of work. To reduce testing time and throughput, the comfort evaluations were tracked on an hourly basis. Results became consistent and stabilized after 2 hours of wear. Screening studies were then conducted with multiple products screened in a single shift. A series of such evaluations, using the same products at different locations, showed highly repeatable results ($r=0.99$) validating the method.

2:00 p.m. – 2:20 p.m.

“Interventions to increase use of hearing protectors in construction”

Noah Seixas - University of Washington Dept of Environmental and Occupational Health Sciences

Noise-induced hearing loss (NIHL) is a well-characterized risk associated with exposure to high levels of noise. Construction industry workers have average exposure levels well above the levels associated with increased risk. However, the highly variable nature of construction noise makes its assessment and control particularly challenging. The degree of protection afforded by hearing protective devices (HPDs) in the industry is very low, primarily because of failure of most workers to use HPDs. This study evaluated the effectiveness of three different interventions intended to increase use of HPDs: a single training session based on a modified Health Promotion Model (HPM); a series of brief toolbox training talks designed to reinforce the main training messages; and use of a personal noise level indicator. Training, either alone or in combination with toolbox training, had minimal effect on HPD use. However, training in combination with use of the noise level indicator resulted in substantially increased use of HPDs among construction workers. HPD use can substantially reduce the risk of NIHL, but only if adequate support for proper and timely use of HPDs is provided.

2:20 p.m. – 2:40 p.m.

"Influence of hearing aid use in the workplace on noise exposure estimates"

Marshall Chasin, AuD - Musician's Clinic of Canada

Brian Fligor, ScD - Children's Hospital Boston

Wearing personal hearing protection is perhaps one of the most important elements in a hearing conservation program, but what about those workers with hearing loss who use hearing aids in high-noise environments? How does this affect their noise exposure? The answer depends on several parameters which will be addressed. Factors considered in this presentation will be (1) venting or earmolds; (2) using the newer "thin" tubes vs. conventional #13 tubing in behind-the-ear hearing aids; and (3) the use of compression to minimize gain in high noise environments (and how the attack and release times can be set). For these factors, the increase in dosage will be calculated for three conditions: (a) a worker wearing hearing aids, turned on (b) a worker wearing hearing aids, turned off and (c) wearing their hearing aids turned on but also using earmuffs over the hearing aids.

Breakouts

Otototoxicity & Otoprotection

1:00 p.m. – 1:25 p.m.

"Occupational exposure to chemicals and hearing impairment"

Ann-Christin Johnson - Unit of Audiology, Karolinska Institutet

Thais Morata - National Institute for Occupational Safety and Health

The ototoxicity of chemicals in the workplace and their interaction with noise were examined in a review coordinated by the Nordic Expert Group. Types of chemicals that have been studied for their ototoxicity include: solvents, metals, asphyxiants, carbon monoxide, organotin, PCBs, and pesticides. Hearing may be affected by high concentrations of chemicals even in the absence of noise. Reports from animal experiments confirmed earlier observations that chemicals can interact synergistically with noise or potentiate noise effects on the auditory system. Combinations of chemical exposure with noise and other stressors may lower the concentration of the chemical exposure necessary for induction of an auditory effect. Existing evidence has prompted the proposal of new guidelines and standards on hearing loss prevention. A new concept of creating an ototoxicity notation has been proposed. This presentation will examine these recent developments and discuss alternative strategies for preventing auditory effects of exposure to ototoxic chemicals.

1:25 p.m. – 1:45 p.m.

"The Weight of Evidence Approach in the Case of Ototoxic Chemicals"

Tony Leroux - Ecole d'orthophonie et d'audiologie; Universite de Montreal

Adolf Vyskocil - Groupe de recherche interdisciplinaire en sante; Universite de Montreal

Claude Viau - Groupe de recherche interdisciplinaire en sante; Universite de Montreal

Ginette Truchon - Institute de recherche Robert-Sauve en sante et en securite de travail

Sophie Lim - Groupe de recherche interdisciplinaire en sante; Universite de Montreal

Francois Lemay - Institute de recherche Robert-Sauve en sante et en securite de travail

Martine Gendron - Centre de recherche interdisciplinaire en readaptation - Site Institut Raymond - Dewar

France Gagnon - Groupe de recherche interdisciplinaire en sante; Universite de Montreal

There is accumulating epidemiological evidence that exposure to some solvents, metals, asphyxiants and other substances in humans is associated with an increased risk of hearing loss. This project was undertaken to develop a toxicological database allowing the identification of possible ototoxic substances present in the work environment. Critical toxicological data were compiled for chemical substances included in the Quebec Occupational Health Regulation. The data were evaluated only for realistic exposure concentrations. In total, 181 studies covering 29 substances were evaluated using a weight of evidence approach. Human and animal studies indicate that lead, styrene, toluene and trichloroethylene are ototoxic and for regulatory purposes it is safe to assume that ethyl benzene, n-hexane and xylene are possibly ototoxic at concentrations that are relevant to the occupational setting. In a second phase of the project, the effect of combined exposure to noise and chemical substances was evaluated and integrated to the database.

1:45 p.m. – 2:10 p.m.

"Pharmacologic otoprotective and rescue agents for noise-induced hearing loss: Current research"

Kathleen Campbell, PhD - Southern Illinois University School of Medicine

This presentation will review current research in otoprotective and rescue agents for noise-induced hearing loss including Dr. Campbell's own research with D-methionine as an otoprotective agent. However an overview of the various types of otoprotective agents currently being developed will be provided. Some of the protective agents are used only to elucidate mechanisms rather than to directly create patient therapies. Other agents have only animal data while others are in clinical trials. No agents are currently FDA-approved to prevent noise-induced hearing loss but several look promising. In the future, pharmacologic therapies may augment noise abatement and physical hearing protector programs. Dr.

Campbell owns several patents for protective agents which are now in clinical trials. Her patents are owned by her employer and licensed by Molecular Therapeutics. However, she also collaborates and assists others developing various types of otoprotective agents.

2:10 p.m. – 2:30 p.m.

“From bench to bedside and back again: Translating otoprotective agents from animal to man”

Colleen Le Prell - Department of Communicative Disorders, University of Florida

Noise-induced hearing loss (NIHL) is a significant clinical, social, and economic issue. Although it was once thought that virtually all NIHL was a consequence of direct mechanical insult, studies in animals have now shown metabolic stress, free radical formation, and reduced blood flow importantly contribute. Our group has shown that beta-carotene, vitamins C and E, and magnesium combined are highly effective in preventing NIHL and sensory cell death in rodents when delivered either by injection or dietary supplement. Pre-clinical evidence will be presented, and NIH-funded clinical trials that test the efficacy of these agents in human subjects will be described. Finding safe and effective interventions that attenuate NIHL will reduce one major cause of acquired hearing loss. As the potential for therapeutics that protect the inner ear receives increasing attention in the popular press, patients will be increasingly likely to seek professional advice about the use of these and other agents.

2:30 p.m. – 2:40 p.m.

“Misadventures of a hair cell”

Theresa Schulz - Sperian Hearing Protection

Kathy Campbell – Southern Illinois University School of Medicine

Renee Bessettee – Sperian Hearing Protection

Laura Kauth – Audiology Consultants

Dick Danielson – NSBRI

Mary McDaniel – Pacific Hearing Conservation

Apoptosis, necrosis, reactive oxygen species, antioxidants D-met ,NAC, ebselen, ACE mg, Prevention vs Rescue vs Regeneration... Are you confused about the latest cellular and molecular research regarding noise-induced hearing loss? This short skit might help you understand the drama of hair cells and the molecular heroic contenders to protect them from the evils of oxidation. Come join us for the fight of good vs evil in the life and death of our beloved hair cells.

Afternoon Sessions

3:10 p.m. – 3:30 p.m.

“Life cycle analysis of noise and hearing in Finland”

Esko Toppila - Finnish Institute of Occupational Health

Ilmari Pyykko – University of Tampere

Rauno Paakkonen - Finnish Institute of Occupational Health

The major causes of hearing loss among working people are early presbycusis and noise (work and free time noise). People with hearing loss have an increased risk of leaving the work force because of unemployment, elevated risk of accident, mental problems, and social isolation. In addition to causing hearing handicap, noise makes the life of workers more difficult because it reduces speech intelligibility. This handicap affects workers in noisy and non-noisy workplaces. In both types of workplaces, the situation may be improved by enhancing the prerequisites of communication. The incidence of early presbycusis and NIHL can be reduced. Environmental factors may cause about 30% of early presbycusis cases. When considering NIHL, promotion of hearing protection and identifying workers susceptible to noise are the major tools. The paper analyses the costs and means to reduce the combined effect of noise hearing handicap.

3:30 p.m. – 3:50 p.m.

“Introducing NIOSH surveillance program for occupational hearing loss”

SangWoo Tak - NIOSH, DSHEFS, Surveillance Branch

NIOSH proposed the first ever nationwide surveillance program for occupational hearing loss (OHL) using data from audiometric testing service providers in the US. Since the OSHA Hearing Conservation Amendment was enacted in 1981, no one has attempted to utilize for surveillance purposes the audiometric data collected nationwide by US audiometric testing programs. To develop a national surveillance system on OHL, we seek to aggregate audiometric testing data into a national data repository and estimate incidence/prevalence rate of OHL and average change in hearing ability per industry sector. This program will: 1) Measure the average change in hearing ability per year, by industry sector, 2) Identify industrial sectors and sub-sectors with the highest levels of OHL; 3) Measure trends in OHL by industrial sectors and sub-sectors. Results from this program will guide the development of intervention priorities by government and non-government groups to reduce OHL. Surveillance data and results will be disseminated through the NIOSH web site and through publications in scientific and trade journals. Reports will be made to audiometric service providers.

3:50 p.m. – 3:50 p.m.

"The threshold for hearing problems: Results from NHANES (1999-2004)"

Gregory Flamme, PhD - Western Michigan University

Data from 5344 participants in the National Health and Nutrition Examination Survey (NHANES) 1999-2004 were used to assess the odds of self-reported compromised hearing status by audiometric configuration (Ciletti & Flamme 2008). Relative to the best configuration, significantly greater rates of compromised hearing status were observed for all configurations (minimum odds ratio among men = 1.8), even configurations considered indicative of normal hearing or a minimal hearing impairment by conventional standards. People with asymmetric configurations were at greater risk of compromised hearing status than suggested by the conventional 5:1 weighting of the better ear. There is a mismatch between the degree of conventionally-defined hearing impairment and subjective experience.

4:10 p.m. – 4:30 p.m.

"Hearing loss prevention training, noise measurements and audiological exams improves work conditions among industrial fishermen in the south of Brazil"

Evelyn Albizu - Fundacentro/Ministry of Labor

Since 2007, hearing loss prevention training and education, conducted through research among industrial fishing fleets, has been given to commercial fishermen in a community south of Brazil. It has proven to be effective in identifying noise and hearing problems. There are around 6000 industrial fishermen working for 215 fishing companies. Among them, 3500 fishermen are unionized. An occupational health program conducted in 2007, 2008 and 2009 included noise measurements in fishing vessels and audiological exams. Results indicated exposure levels from 85 to 114 dB(A), noise-induced hearing loss among 51% of 365 unionized fishermen, and no auditory rest during working periods varying from 20 to 30 days of ocean fishing. In 2009, the Port Authority began requiring audiometric testing prior to issuing or renewing a fishing license. This is the first step in improving the severe working conditions.

4:30 p.m. – 4:50 p.m.

"Daily noise exposure monitoring to reduce risk of occupational hearing loss"

Peter Rabinowitz - Yale University

Sharon Kirsche – Yale Occupational and Environmental Medicine Program

Noise-induced hearing loss continues to occur despite the existence of OSHA-compliant hearing conservation programs. We report experience with a novel device to assess the daily at-ear noise exposure of industrial workers using a dosimeter and microphone inside of hearing protection. We also report on an assessment of whether the use of the device is having an impact on the risk of noise induced hearing loss.

4:50 p.m. – 5:20 p.m.

"2010 Safe-in-Sound Excellence and Innovation in Hearing Loss Prevention Awards™"

Thais Morata, National Institute for Occupational Safety and Health

Deanna Meinke, PhD – University of Northern Colorado at Greeley

In 2007, the National Institute for Occupational Safety and Health (NIOSH) partnered with the National Hearing Conservation Association (NHCA) to create the Safe-in-Sound Award™ for Excellence and Innovation in Hearing Loss Prevention (www.safeinsound.us). The objectives of this initiative are to recognize organizations that document measurable achievements and to share leading edge information to a broader community. Hearing health practices were evaluated against key performance indicators in a rigorous systematic review process designed to capture and evaluate the successes. The 2010 Safe-in-Sound Excellence and Innovation in Hearing Loss Prevention Awards™ will be presented. Each of the award recipients will accept their awards and briefly present their success stories. What better chance is there to learn from those in the forefront of our efforts to prevent work-related noise-induced hearing loss?