BIOGRAPHICAL SKETCH

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NAME: Marilyn Dille

eRA COMMONS USER NAME: Dillem

POSITION TITLE: Research Investigator, VA RR&D National Center for Rehabilitative Auditory Research, VA Portland Health Care System, and Assistant Professor, Dept. of Otolaryngology, Head & Neck Surgery, Oregon Health and Science University

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Central Washington State College	B.A.	03/72	Communication Disorders
University of Washington	M.S.	08/77	Audiology
University of Washington	Ph.D.	06/99	Audiology

A. Positions and Honors.

Positions and Employment

1980-1992 Audiologist, Puget Sound Regional Healthcare System, Seattle, WA
1992-1999 Instructor and Research Assistant, Department of Speech & Hearing Sciences, University of Washington, Seattle, WA
1999-2001 Faculty, Department of Speech & Hearing Sciences, University of Washington, Seattle, WA
2001-2004 Director, Hearing Clinic, Department of Speech & Hearing Sciences, University of Arizona, Tucson, AZ.
2001-2004 Assistant Clinical Professor, Department of Speech & Hearing Sciences, University of Arizona, Tucson, AZ
2007-present Staff Investigator, National Center for Rehabilitative Auditory Research, VA Medical Center, Portland, OR
2008-present Assistant Professor, Department of Otolaryngology/HNS, Oregon Health & Science University, Portland, OR

Other Experience and Professional Memberships

Memberships

Licensed Audiologist, State of Oregon
Certificate of Clinical Competence, ASHA
Member, American Speech Language and Hearing Association (ASHA)

Professional Experience

2011-current Member & Alternate Member, VAPORHCS Research and Development Committee
2009-current Ad Hoc Reviewer: International Journal of Audiology and Neuroscience, International Journal of Audiology, Neuroscience, Journal of Chemotherapy, Journal American Academy of Audiology. International Journal of Pediatric Otolaryngology/HNS, Journal of Otolaryngology HNS.
2012- current Member, Pharmaceutical Interventions for Hearing Loss working group, Dept of Defense Hearing Center of Excellence (HCE)
2014-current Ad Hoc Reviewer, VA RR&D Review Panel: SPiRE grant applications
2014-current Member, VAPORHCS Institutional Review Board
2014-current Reviewer, ASHA Special Interest Group 6 (SIG 6).
2015-current NCRAR, Executive Committee

Honors

1998 Gatzert Child Welfare Fellowship Award, University of Washington
2002 Travel Grant Award, Deafness Research Foundation Workshop for Grant Writing
2003 Travel Grant Award, Grant writing conference, American Speech and Hearing Association Foundation
2013 Featured Researcher, VAPORHCS Research Service "Research Day".

B. Contribution to Science

1) Auditory impairment and tinnitus represent the most prevalent service-connected disabilities, resulting in one billion dollars in associated healthcare costs. As a result, prevention of these disabling conditions is a top research priority for VA and Department of Defense (DoD). As our nation's Veteran population ages, cancer incidence increases with many late stage cancers requiring treatment using ototoxic chemotherapeutic agents. Cisplatin is an effective though ototoxic chemotherapy that can result in irreversible cochlear damage in up to 50% of patients and new tinnitus in 40%. Yet despite substantial evidence and clear implications for alleviating preventable hearing loss, early identification and monitoring practices have not been implemented as a standard of care for patients receiving therapeutic treatment with potentially ototoxic drugs in most medical care settings, including those within VA and DoD. Our research projects include 1) development and validation of a series of abbreviated, cost effective tests, 2) pre-treatment prediction models based on planned dose of cisplatin and pre-existing hearing status and 3) DPOAE-based hearing change prediction obtained during treatment among those Veterans too ill to provide a reliable hearing test. Our extensive DPOAE data from multiple ototoxicity monitoring studies has been mined to establish DPOAE reference limits for serial DPOAE testing to be used in those instances when hearing testing may not available (e.g., pediatric cancer patients). Our current clinical trial will establish effectiveness of our comprehensive tools and techniques for ototoxicity monitoring.

a) Dille MF, Konrad-Martin D, Gallun FJ, Helt WJ, Gordon SJ, Reavis KM, Bratt GW, Fausti SA. Tinnitus onset rates from chemotherapeutic agents and ototoxic antibiotics: Results of a large prospective study.J Am Acad Audiol 2010. 21:1-9.
b) Dille MF, McMillan GP, Reavis KM, Jacobs P, Konrad-Martin D. Ototoxicity risk assessment combining distortion product otoacoustic emissions with a cisplatin dose model. J Acoust Soc Am 2010. 128:1163-1174.
c) McMillan GP, Reavis KM, Konrad-Martin D, Dille MF. The Statistical basis for serial monitoring in audiology. Ear Hear 2012 34:610-618.
McMillan GP, Konrad-Martin D, Dille MF. Accuracy of distortion-product otoacoustic emissions-based ototoxicity monitoring using various primary frequency step-sizes. Int J Audiol, 2012. 51:689-696
d) Dille MF, Wilmington D, McMillan GP, Helt W, Fausti SA, Konrad-Martin D. Development and validation of a cisplatin dose-ototoxicity model. J Am Acad Audiol 2012. 23:510-521.
e) Reavis KM, McMillan GP, Dille MF, Konrad-Martin D. Meta-analysis of distortion product otoacoustic emission retest variability for serial monitoring of cochlear function in adults. Ear Hear May 14 [Epub ahead of print]

2) Early identification and monitoring methodologies during treatment with ototoxic medication is best done either at bedside (for those who are ill) or chairside (on a treatment unit) to capture all Veterans in treatment. Ototoxic damage initially occurs first near the high-frequency coded base of the cochlea and progresses apically. The most sensitive screening procedure therefore employs testing at or near the highest frequency limit of hearing in each ear by each individual and was found to detect 90% of all initial changes in hearing. Currently there are no commercially-available portable audiometers capable of supporting this precision testing (up to 20 kHz in 1/6th octave steps with output of 105 dB SPL). To address this clinical need, we have developed the portable ototoxicity identification device, the OtoID. To further improve its efficiency, the OtoID supports patient self-testing using a simple validated protocol that steps the patient through a pure-tone air-conduction hearing screen in each ear. The OtoID transmits each hearing test result to a centrally-based audiology clinic inbox using simple messaging system (SMS) enabling translation of efficient, accurate, and evidence-based ototoxicity monitoring protocols into practice.

a) Jacobs PG, Silaski G, Wilmington D, Gordon S, Ellingson RM, Helt W, McMillan G, Fausti SA, Dille MF.

Development and evaluation of a portable telemedicine audiometer for high frequency screening of hearing loss from ototoxicity. IEEE Biom Engr Trans 2012. 59:3097-3103.

b) Dille MF, Jacobs PG, Gordon SY, Helt WJ, McMillan GP A new extended frequency portable audiometer for ototoxicity monitoring, the OtoID. J Rehab Res Dev 2013. 50:997-1006.

c) Konrad-Martin D, Reavis KM, McMillan GP, Helt WJ, Dille MF. Proposed Comprehensive Ototoxicity Monitoring Program for VA Healthcare (COMP-VA), J Rehabil Res Devel 2014. 51:81-100.

d) Dille MF, McMillan GP, Helt WJ, Konrad Martin D, Jacobs P. A store-and-forward tele-audiology solution to promote efficient screenings for ototoxicity during cisplatin cancer treatment. J Amer Acad Audio (submitted)

3) Diabetes Mellitus (DM) is a metabolic disorder resulting from either insulin deficiency (type 1) or reduced insulin production coupled with resistance (type 2). DM can produce devastating vascular and neurological complications. Excess glucose metabolism, the fundamental disease process of DM2-related changes in the body, leads to macrovascular disease (heart disease, stroke, high blood pressure), microvascular disease (kidney disease, blindness, hearing loss), neuropathy (autonomic and peripheral, declines in cognitive function), and loss of limbs. The prevalence of DM2 is nearing epidemic levels, affecting one in ten adults in the U.S. and one in four to five adults over age 60. Accumulating evidence suggests that DM2 may cause auditory system complications, which is not surprising given its pathological effects on the body's microvascular and nervous systems. Combining data across multiple studies, we found an estimated the prevalence of hearing loss of 25 dB or greater among individuals with DM2 to be roughly twice that observed among control groups. Further, after controlling for hearing loss, we found effects of DM2 on the auditory brainstem response at central auditory system levels (wave V and III-V) among those who were younger and insulin dependent.

a) Konrad-Martin D, Dille MF, McMillan G, Griest S, McDermott D, Fausti SA. Age-related changes in the auditory brainstem response. J Am Acad Audiol 2012. 23:18-35.

b) Reed NS, Dille MF, Reavis K, Austin D, McDermott D, Gordon J, Konrad-Martin D. Auditory and cognitive effects of diabetes: Influence of disease severity. Poster presented at the American Auditory Society in Scottsdale, Arizona, March, 2014.

c) Konrad-Martin D, Reavis KM, Austin D, Reed N, Gordon J, McDermott D, McMillan GP, Dille MF. (2015) Hearing impairment in relation to severity of diabetes in a Veteran cohort. Ear Hear, July/Aug 36(4) 381-394.

Complete List of Published Work in PubMed in MyBibliography:

http://www.ncbi.nlm.nih.gov/pubmed?cmd=historysearch&querykey=3

B. Research Support

Ongoing Research Support

C0239R Dille and Konrad-Martin (PIs) 4/14 – 3/18

Comprehensive Ototoxicity Monitoring for VA Healthcare: A randomized trial

The ultimate goal of our work is implementation of an evidence-based Comprehensive Ototoxicity Monitoring Program for VA healthcare (COMP-VA). The primary aim of this project is to develop and validate COMP-VA as an all-in-one portable "chair side" program.

Role: Principal Investigator

C74554R Konrad-Martin and Dille (PIs) 4/15-3/19

VA RR&D Merit Award

Longitudinal Changes in Auditory Function Among Veterans with Diabetes

This is a continuation of our previous longitudinal study to document peripheral, central and cognitive changes in auditory function among Veterans with diabetes.

Role: Co-Principal Investigator

Completed Research Support

C7455R Konrad-Martin and Dille (PIs) 1/11 - 12/14
VA RR&D
Longitudinal Changes in Auditory Function Among Veterans with Diabetes
The goal of this research is to measure long-term change in auditory function among Veterans with diabetes (DM). We plan to measure auditory function over time with tests of peripheral, central and cognitive stages of auditory processing, and determine the extent to which DM-related changes in these measures interfere with speech communication and daily living and we will also establish how changes in the auditory pathway relate to the characteristics and maintenance of DM and are linked to other major diabetes complications such as retinopathy or peripheral neuropathy.
Role: Co-Principal Investigator

CDMRP (DoD) Dille 9/13-3/14
Department of Defense
Rapid assessment methods for early detection of hearing impairment
The purpose of this research is to compare two methods of testing (pure tone testing and digits in noise testing) in order to determine which testing strategy performs best in forward military environments and other listening environments containing moderate levels of ambient noise in order to detection early changes in hearing status. Two OtoID audiometers were built to specifications for this project.
Role: Site investigator

C6373R Dille (PI) 7/08 – 9/13 (no cost extension)
VA RR&D
A Portable Audiometric Monitoring Device (the OtoID)
The goal of this research is to develop and field test a new portable (hand-held) audiometer that is capable of testing hearing in the conventional (250-8000 Hz) and extended high frequency range (9000-20,000 Hz) in 1/6th octave step sizes. Portability allows bedside ototoxicity monitoring during treatment. Additionally, the device allows for patient self-testing during treatment either at a chemotherapy unit or at home. Results of the testing will allow for secure transfer of the hearing results data to the audiology clinic.
Role: Principal Investigator

C7223R Dille, Konrad-Martin (PIs) 7/10 - 9/13
VA RR&D
Individualized Objective Techniques for Early Detection of Ototoxicity
This study is an extension of the previous study and is designed to validate important findings in which distortion product otoacoustic emissions when combined with information on cisplatin cumulative dose and pre-exposure (to cisplatin) hearing status can accurately predict if a patient, unable to take a hearing test, has undergone an ototoxic hearing change.
Role: Principal Investigator