

The Women's Board of The Johns Hopkins Hospital
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GRANT APPLICATION FOR FISCAL YEAR 2024

DIRECTIONS: Please complete the entire form. If appropriate, indicate "Not Applicable" and justify. The original application plus an electronic version is due in The Women's Board office on or before 4:00 pm on Friday, January 6, 2023. Only one (1) application from each department will be accepted. Late or incomplete applications will not be considered.

DATE: 1/5/23

CLINICAL DEPARTMENT: Otolaryngology Head and Neck Surgery

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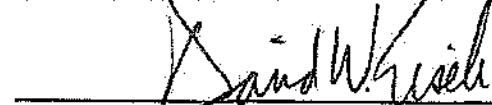
TITLE OF REQUEST: Use of digital audiogram to screen for hearing loss screening among head and neck cancer survivors

PHYSICAL LOCATION OF PROJECT: JHOC and Weinberg

ABSTRACT (Non-technical overview - 150 words or less):

Hearing loss (HL) has significant negative implications for quality of life, cognitive abilities, gait and social interactions, leads to dementia, falls, depression and social isolation. Identifying HL and providing hearing aids has been shown to significantly improve each of these domains and quality of life. HL is common in head and neck cancer patients (50-75%). American Cancer Society recommends routine hearing evaluations, yet at Johns Hopkins there isn't capacity to screen prior to or after treatments which exacerbate hearing. Head and neck cancer treatment can be disfiguring, increases rates of social isolation, depression and suicide, each of which is exacerbated by HL. HL screening can be performed without an audiologist and related-expensive equipment. Digital-based technology effectively identifies those who could benefit from professional hearing evaluation and hearing aids. Therefore, we propose to use this cost-effective technology to screen newly diagnosed head and neck cancer patients and survivors for HL.

SIGNATURE OF CLINICAL DEPARTMENT CHAIRPERSON:



Chairperson Name: David W. Eisele

Chairperson Title: Andelot Professor

Chairperson Email: deisele1@jhmi.edu

Use of digital audiogram to screen for hearing loss screening among head and neck cancer survivors

1. Impact on patient care:

availability of digital audiogram would permit the integration of hearing loss screening into clinic visits for head and neck cancer diagnosis and surveillance. This would improve patient care by:

- providing a service which should be the standard of care, however presently is not offered at Johns Hopkins
- identifying those with hearing loss prior to starting treatment
 - this would inform choice of chemotherapy,
 - alert clinical team of the need to accommodate patients with this additional co-morbidity which now is typically undiagnosed,
 - offer temporary non-customized hearing amplification at the time of clinical visits, decision-making and treatment and formal diagnostic evaluation with audiology recommendations for addressing hearing loss.
- improved patient comprehension of recommended care plans, engagement in care, shared decision making and patient satisfaction
- ease navigating the health care system which is complex for head and neck cancer patients as they typically have appointments with a multidisciplinary team of surgeons (ablative/ tumor removal, reconstructive), medical oncologists, radiation oncologists, speech language pathologists, and interventional radiologists within short period of time.
- increased appropriate referrals to audiology and otology, as needed
- identify those with hearing loss after treatment in survivorship
 - alert clinical team of the need to accommodate patients with this additional co-morbidity which now is typically undiagnosed,
 - reduce risk of social isolation, depression (suicide), falls and dementia which is already increased in head and neck cancer patients
- provide a free hearing evaluation for patients who may not have access otherwise

2. Number and type of patient who will benefit annually from this award:

Per year: 500 new patients, 1500-2000 follow up patients. Patients with newly diagnosed, previously treated, recurrent/ metastatic head and neck cancers (HPV-related tumors, larynx/voicebox tumors, tongue tumors, jaw tumors, nasal tumors (those that involve the nose or extend to the eyes and brain), saliva gland tumors, skin tumors, throat tumors).

3. Significance:

The availability of digital audiograms would afford head and neck cancer patients of the Johns Hopkins Hospital the opportunity for hearing to be measured as a vital sign and for their hearing to be screened in keeping with recommendations of the American Cancer Society. Undiagnosed and untreated hearing loss is associated with dementia, depression, poor quality of life, difficulty communicating with care team, accidental injuries, long length of stays in hospital, increased hospitalizations, high patient dissatisfaction, and leads to poor treatment adherence. Treatment of hearing loss improves mental health, social participation, and protects independence. Identification of hearing loss can also improve communication between patients and clinicians as temporary, amplifiers can be used around the time of clinical care, whether at the time of diagnosis with new cancer, treatment decisions or management of cancer-related issues.

With support of the Women's Board to purchase screening audiometers for head and neck surgical oncology clinics, patients diagnosed and treated with head and neck cancer by the multidisciplinary team at Johns Hopkins (otolaryngology, neurosurgery, radiation oncology and medical oncology) would be screened for hearing loss at diagnosis and at regular intervals after treatment during the survivorship period. Any patients who screen positive for hearing loss would then be referred to audiology for diagnostic (formal evaluation) of hearing loss and treatment. Studies to date suggest that screening audiograms have high sensitivity and accuracy, meaning they capture virtually all patients with hearing loss and the findings of the screening are reproducible in formal evaluations. Currently our patients are not screened for hearing loss. Only those with overt hearing loss or self-reported hearing loss who request audiologic evaluation are offered future appointments with audiology.

4. Implications, if any, that this has to the Covid pandemic:

None.

5. Personnel (Please note that we cannot fund grants that incorporate any salaries.)

The benefit of this proposal is that does not rely on additional personnel or intensive training, which typical audiograms require. This technology has been shown to be effective even as self-administered.

6. Budget: Total Request: \$24,600

A. Equipment - price per item and discount if applicable for multiples. Please add compelling justification if multiples are requested. (Itemize and justify):

\$3,075 per item. Eight are requested so that there is a sufficient number of devices in clinic rooms for patients seen in the head and neck surgery clinic of JHOC, radiation oncology and SLP in Weinberg and medical oncology clinic in Viragh (medical oncology). Availability in each room is needed to ensure that this screening occurs for each patient as a vital sign.

B. Supplies (Itemize and justify):

Click or tap here to enter text.

C. What is the out-of-pocket cost to the patient? (Itemize and justify):

None

D. Other Expenses, Hidden Costs (Please consider whether your grant proposal contains other costs that would require hospital funding, such as structural modifications for equipment installation, operating costs such as additional FTEs, training costs, etc.)*

Annual cost \$700 per device starting year 2.

7. Have you requested funds from any other source?

☐ Yes (What was the result?)

Click or tap here to enter text.

☒ No This is a newly developed concept for head and neck cancer clinics and a solution for a problem that we are not able to address with usual diagnostic care due to limitations in space, audiology booths and personnel (audiologists). Recent literature brought this concept to light. There is a precedence of successfully using this technology at Johns Hopkins Bayview Clinic for screening in a memory clinic (Dr. Esther Oh and Dr. Carrie Nieman).