

March 11, 2022

American Head and Neck Society
11300 W. Olympic Boulevard, Suite 600
Los Angeles, CA 90064

To Whom It May Concern:

We are delighted to submit this project proposal titled, **“Screening Database Integration to Leverage and Address Outstanding Screening Efficacy Measures”** for consideration for the 2022 AHNS Cancer Prevention Service Community Service Award. The following letter outlines all project details.

Commonly utilized electronic health databases such as the National Cancer Database (NCDB), the National Cancer Institute’s Surveillance, Epidemiology, and End Results (SEER) cancer registry, the Center for Disease Control’s National Health and Nutrition Examination Survey (NHANES), the American College of Surgeons National Surgical Quality Improvement Program (NSQIP), and National Inpatient Sample (NIS) have allowed researchers to conduct epidemiologic research on a wide variety of health conditions. However, these databases fall short in assessing the utility and efficacy of screening programs for promoting population health.

When it comes to head and neck cancer awareness and free screening events (HNCAFSEs) in particular, existing data is fragmented among institutions, and often stored in either differentially formatted databases, or on paper. Overall, there is a paucity of sufficiently collated data with enough statistical power to derive preventative care measures. Literature in the field, albeit limited, cites referral rates between 2-15% (suspicious findings), and 0-1% cancer detection rates with skin cancers being the most likely HNC discovered (Urdang *et. al.* 2020, White *et. al.* 2012). There is conflicting literature that suggests HNCAFSEs are not effective in cancer prevention, education, outcomes improvement, and are not a cost-effective/efficient utilization of physician and health-care worker time/effort (Kozac & Achim 2022).

While the efficacy of HNCAFSEs to detect early cancers and improve cancer outcomes is currently unknown, HNCAFSEs public educational value is generally well accepted. While some data suggests education is a major motivational factor for participants to attend HNCAFSEs (Urdang *et. al.* 2020), and a related benefit for participants that many screening programs have implemented is on-site registration for participants who are eligible for government-assisted health insurance (Medicaid).

As such, evidence informed HNCAFSEs represents a knowledge gap in the promotion of population health and prevention of head and neck cancer. Active, systematic disease screening programs pose a unique epidemiologic opportunity for researchers to assess population (baseline) risk with paired biological specimen data. Studies utilizing samples including blood, saliva, and others have been utilized to measure baseline prevalence of risk factors such as HPV status. These control samples have also served as control cohorts for comparative studies looking at, for example, HNC epigenetic profiles as compared to a control cohort of biological samples collected at HNCAFSEs (Minor *et. al.* 2012). To address these research gaps, we propose a strategy utilizing a mobile screening platform with the capacity for clinicodemographic and biorepository data integration.

Overview of Thomas Jefferson University's HNCAFSE Program:

In 2021 Jefferson acquired a dedicated cancer screening RV unit equipped with a full women's health screening apparatus including mammogram, and pap smear sample collection capabilities. We have partnered with the screening RV to cross-promote screening events to provide broader health screenings and increase awareness beyond our usual on-campus audience. Other groups including the family medicine department have joined these efforts to provide general health screenings and target advertising towards underrepresented populations such as people who are refugees living in Philadelphia. To this end, we now provide HNCAFSEs approximately bi-monthly with the screening RV. This provides us the opportunity to provide services in



Top: Our resident/student team with Jefferson's screening RV during a screening at a historically African American church in N. Philly. **Bottom:** Our colleagues from Fabric Health (healthcare resources) at a HNCAFSE held at a laundromat in N. Philly. Free laundry was provided for all attendees.

diverse neighborhoods and area codes targeting urban underserved/underrepresented, rural underserved, and general populations in the greater Philadelphia area.

Another exciting development with our screening program is ongoing planning for collaboration with the 76'ers NBA team. We are in the planning phase to periodically hold HNCAFSEs at 76'ers basketball games. Of note, the 76'ers refurbish and revitalize decrepit public basketball courts in underserved neighborhoods with mostly underrepresented populations. We plan to collaborate with the 76'ers to bring out our screening RV to basketball court unveilings. This developing partnership with the 76'ers is exciting in that our message to the Philadelphia population, which has one of the highest smoking rates in the country, will be amplified by 76'ers PR platform. Furthermore, holding HNCAFSEs at basketball court unveilings presents as a fantastic opportunity to reach targeted underserved/underrepresented Philadelphia communities who will benefit disproportionately from the educational, health and social-capital services provided by our HNCAFSEs.

Our Team: Jefferson's HNC-surgery team consists of six surgeons with a full complement of advanced practitioners who provide HNC care for the greater Philadelphia catchment area. There are 25 residents, 9 research fellows, 3 fellows (HNC, rhinology, facial plastics), and 20-40 MD students affiliated with otolaryngology. Of note, Zachary Urdang MD/PhD joined Jefferson as a postdoctoral research fellow in 2021; he has 11 years of experience organizing and executing HNCAFSEs prior to joining Jefferson and has published on the topic. Dr. Urdang has emerged as a key leader, organizer, and scientific advisor for these efforts. Lastly, the screening RV has dedicated staff who manage the overall operations and maintenance of the RV.

Community Health and Scientific Aims of Jefferson's HNCAFSE Program:

Aim 1A: Promote a streamlined data integration strategy for a multi-institutional prospective HNCAFSE database:

TriNetX is a federated electronic health records (EHR) big-database that streamlines big-data analysis of patient EHR data. Along with Jefferson's data science department, we have devised a schema to prospectively collate Jefferson's HNCAFSE participant data. We are now logging each participant encounter in EPIC via a 'dotphrase' for the HNC alliance standard screening form. These EPIC notes track with a patient MRN and can be tracked via TriNetX. Any institution can utilize EPIC notes for HNCAFSE data and partner with TriNetX for tracking and outcomes research. With adequate community buy-in, we dream to accrue a prospective multi-institutional HNCAFSE database with participant numbers and associated statistical power unprecedented in the literature. To this end we will promote, share, describe, and collaborate with colleagues and like-minded institutions to share data into a centralized big-data database for HNCAFSE participant clinical data.

Aim 1B: Determine HNCAFSE outcomes via a prospective multi-institutional database: Once dataset integration reaches a critical statistical power level, and sufficient time has elapsed for outcomes to evolve, any institution sharing data to TriNetX may seamlessly address HNCAFSE outcomes and health variable correlations outside the EHR context of the actual screening event. *e.g.* Dx, PMH, surgery, stage, meds, labs, and/or any EHR variable. Furthermore, HNC patients *who have never* attended a HNCAFSE may be compared to HNC patients *who have* attended a screening event. Therefore, such an integrated database may directly address HNCAFSE efficacy by comparing HNC outcome measures and clinical characteristics between HNCAFSE attendee's vs non-attendees.

Aim 2: Measure HPV prevalence via tonsillar swabs from diverse zip codes: Zip code is a prime health outcomes determinant. With Jefferson's unique ability to host screenings at different locations and social contexts we plan to collect tonsillar swabbing, and saliva samples from our HNCAFSEs and store them in our otolaryngology biobank (generously funded by Jefferson Oto). Upon collection of enough samples from sufficiently diverse Philly area zip codes we will test samples for high-risk HPV DNA. We will then generate a biogeographical projection of our dataset comparing HPV prevalence and median income for the zip code where the respective HNCAFSE took place. We will therefore address if oral HPV-status correlates with zip code and community resources indices such as median income. Additionally, we will be able to cross-correlate HPV-status to our local HNCAFSE EHR database to measure HNC development of our cohort in real-time while stratifying by HPV-status. It is certainly possible for multi-institutional collaboration on this front. We will therefore promote and encourage other institutions to implement near identical HNCAFSE protocols to ultimately crowd-source data.

Budget Proposal and Other Funding: Our screening RV is funded via University Foundation support, and corporate sponsorship with Dietz & Watson Food Company. Our department supports HNCAFSEs by providing supplies, and physician effort. ***If we earn the opportunity to accept this \$1000 gift from AHNS*** we propose to use this gift to offset our costs to keep our biobank afloat by purchasing sample collection, and lab supplies. Utilizing the preliminary data collected through these initiatives, we intend to apply for additional and other grants and/or pursue alternative funding mechanisms in the future.

We thank the AHNS for this opportunity and are grateful for reviewing our proposal.

Sincerely,

Thomas Jefferson University Otolaryngology – Division of Head and Neck Cancer Surgery Faculty, and,



Zachary Urdang MD PhD

Postdoctoral Scholar - Otolaryngology and Clinical Pharmacology

Thomas Jefferson University