

Putting the Mouth Back in the Head: HEENT to HEENOT

Improving oral health is a leading population health goal; however, curricula preparing health professionals have a dearth of oral health content and clinical experiences.

We detail an educational and clinical innovation transitioning the traditional head, ears, eyes, nose, and throat (HEENT) examination to the addition of the teeth, gums, mucosa, tongue, and palate examination (HEENOT) for assessment, diagnosis, and treatment of oral-systemic health. Many New York University nursing, dental, and medical faculty and students have been exposed to interprofessional oral health HEENOT classroom, simulation, and clinical experiences. This was associated with increased dental-primary care referrals.

This innovation has potential to build interprofessional oral health workforce capacity that addresses a significant public health issue, increases oral health care access, and improves oral-systemic health across the lifespan. (*Am J Public Health*. Published online ahead of print January 20, 2015: e1–e5. doi:10.2105/AJPH.2014.302495)

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DURING THE DECADE FOLLOW-

ing publication of the Surgeon General's Report, *Oral Health in America*, health professionals, physicians (MDs), nurse practitioners (NPs), nurse-midwives (NMs), and physician assistants (PAs) began to align with the dental profession to heed Satcher's call to "view the mouth as a window to the body."¹ The most significant interprofessional movement that followed this report occurred with family practice and pediatric physicians coming together to work on preventive oral health initiatives for children in which those professionals would provide screenings, fluoride varnish, and referrals for children to find dental homes.

Mobilization of the overall health community to work collaboratively has been slower. Development of "Smiles for Life: A National Oral Health Curriculum"² represented an important interprofessional "tipping point" for engaging health professionals focused on treating populations across the lifespan in considering oral health and its relationship to overall health as an integral component of their practice.

Yet, evidence from national databases monitoring oral health data continue to reveal a high incidence and prevalence of dental caries, especially in lower socioeconomic and minority group populations.^{3,4} Data from the 2009–2012 National Health and Nutrition Examination Survey⁵ reveal that approximately one in four children (14%) aged 3 to 5 years living at the poverty level

have untreated dental caries. The survey data further reveal that 19% of non-Hispanic Black children aged 3 to 5 years and 26% of Hispanic children aged 6 to 9 years had untreated dental caries compared with non-Hispanic White children aged 3 to 5 years (11%) and 6 to 9 years (14%).⁶ Although national statistics show an improvement in access to oral health care for children aged 5 years and older, the data reveal significant disparities in access to care for children aged 2 to 4 years.⁷

In the adult population, oral cancer morbidity and mortality rates have not declined over the past 10 years, at least in part related to absent or inadequate oral examinations,⁸ and human papillomavirus is associated with the recent rise in the incidence of oropharyngeal cancer.⁹ Among adults aged 65 years and older, only 30% have a dental benefit.¹⁰ Primary care providers have been challenged by the Institute of Medicine to play a significant role in improving these oral health disparities by building interprofessional oral health workforce capacity.¹⁰

One important component of the problem is that the majority of curricula for preparing health professionals have a dearth of oral health content and clinical experiences. Approximately 70% of medical schools include 4 hours or less on oral health in their curriculum; 10% have no oral health content at all.¹¹ Similarly, NPs and NMs have also not had a defined oral health curricular knowledge

base nor a set of oral health clinical competencies.^{12–16} The PA programs have generally followed medical school curricula and have not required curricular oral health content or competencies.¹⁷

The recent publication of several important national reports, two oral health reports by the Institute of Medicine,^{10,18} the listing of oral health as one of the Healthy People 2020 Leading Health Indicators,¹⁹ the release of the Health Resources and Services Administration document "Integration of Oral Health and Primary Care Practice,"²⁰ and the dissemination of "Oral Health Care During Pregnancy: A National Consensus Statement"²¹ all reaffirm oral health as a population health issue of importance for primary care providers with all data emphasizing the links between oral health and overall health and the magnitude of the national oral health access dilemma. The interprofessional education competencies²² provided significant momentum for interprofessional oral health leaders to capitalize on the "perfect storm" created by the confluence of seminal reports to propose that oral-systemic health is a perfect population health exemplar to illustrate the interprofessional competency domains across health professions curricula.^{23,24}

However, the science of performing a physical examination, initially established by Hippocrates more than 3000 years ago and refined in the 13th century with the resumption of the dissection of human bodies for education, does

not focus on the oral examination.²⁵ Health care providers have performed physical assessment of the head, ears, eyes, nose, and throat (HEENT) in the same fashion since its inception centuries ago. For the majority of primary care providers, the traditional HEENT examination excludes examination of the oral cavity, as well as omitting oral health and its linkages to overall health in the health history.^{1,10-12}

A simple solution to this problem is to introduce a paradigm shift to teaching the HEENT examination by using the “HEENOT” approach. Incorporating “O,” for oral cavity assessment, adds a comprehensive focus on the oral–systemic history and examination of the teeth, gums, mucosa, tongue, and palate. The HEENOT approach means that educators and clinicians can “NOT” omit oral health and intraoral assessment from the history and physical examination performed by NPs, NMs, MDs, PAs, and other health professionals. This strategy will increase oral health screenings, detection of oral health comorbidities, and preventive interventions, including referrals to dental colleagues by primary care providers in community-based settings for acute or chronic health problems commonly seen in primary care practice. This report outlines an innovative process for introducing the HEENOT examination in physical assessment courses and reinforcing the competency throughout graduate health professions curricula.

METHODS

New York University (NYU) College of Nursing, with its unique organizational partnership with the NYU College of Dentistry, is capitalizing on the growing momentum of the national movement to build interprofessional oral

health workforce capacity by “putting the mouth back in the head.” Building on the Health Resources and Services Administration report, “Integrating Oral Health and Primary Care Practice,”²⁰ we have identified interprofessional oral health core competencies for our NP and NM primary care students, introducing an oral health knowledge base and clinical competencies (see the box on this page) early in the curriculum that are consistently built on and reinforced in diagnosis and management courses and clinical rotations. Our innovation is the transformation from HEENT to HEENOT, so that oral health and its relation to overall health is integrated in the history, physical examination, risk assessment, and management plan completed by primary care NP and NM students. This innovation is applicable in MD, PA, and pharmacy programs.

Oral Health and Advanced Health Assessment Courses

The advanced health assessment courses taken by NP and NM students are designed to develop interprofessional oral health core competencies that are integrated into the comprehensive health history and physical examination (see the box on this page).

Faculty and preceptor development to build clinical competencies and an oral health knowledge base has been essential. Innovative curricular strategies have been developed to introduce the HEENOT content and clinical competency. Depending on the NP or NM program’s population focus, students are required to complete appropriate modules from Smiles for Life (SFL), the Web-based interprofessional oral health curriculum,² in preparation for didactic and clinical experiences. The SFL modules offer visual references to students in

Interprofessional Oral Health Core Competencies as Identified by New York University College of Nursing

- Demonstrate inclusion of oral health in the HEENT components of the comprehensive history and physical examination (HEENOT).
- Develop a risk profile that includes oral and oral–systemic health problems.
- Develop a patient-centered management plan that includes oral health interventions related to overall health.
 - Smoking cessation
 - Tooth brushing and flossing
 - Fluoride varnish application
 - Oral cancer screening
 - Engaging patients in behavioral change by using motivational interviewing
 - Parental anticipatory guidance
 - Lifestyle counseling
 - Eating disorders
 - Diabetes
 - Hypertension
 - Sexually transmitted diseases
 - Dentures
 - Symptom management
 - Xerostomia
 - Mucositis
 - Oral lesions
- Collaboration and referral

Notes. HEENOT = head, ears, eyes, nose, oral, throat examination; HEENT = head, ears, eyes, nose, and throat examination. The oral examination includes examination of the teeth, gums, mucosa, tongue, and palate.

the clinical simulation learning center as they practice their oral examination skills as a component of the HEENOT assessment and, ultimately, in the overall physical examination teach-back and competency evaluation.

Classroom presentations integrate oral health with traditional head and neck content. In the clinical simulation center, students participate in simulation experiences that include HEENOT complaints such as mouth pain, bleeding gums, mucosal ulcerations, and sore throat; they subsequently complete a variety of case-based clinical history and physical examination simulation and standardized patient experiences. Thorough oral examinations

involving intraoral inspection, as well as placing hands inside the oral cavity, are frequently unfamiliar occurrences for patients; therefore, students integrate reassurance and patient education about the importance of the oral examination and its link to overall health that is appropriate to the patient’s health literacy and cultural background. Summative evaluation includes a performance examination and checklist; each student must conduct a comprehensive history and physical examination on a standardized patient, including demonstration of the HEENOT competency.

The oral health curriculum thread is reinforced and increases

in complexity in diagnosis and management courses. Specific SFL modules assigned as review material or new modules are added as assigned course preparation. In the Health Promotion course, students complete the Geriatric Oral Health module because they participate in interprofessional oral cancer and diabetes screenings and health promotion presentations at senior centers focusing on oral health and overall health. In the Geriatric Syndromes course they integrate geriatric oral health with overall health needs of frail older clients with multiple chronic health problems. Diagnosis and management courses integrate oral health assessment into overall assessment and completion of an oral-systemic risk assessment profile, the development of the differential diagnosis, and a management plan within the scope of practice.

Recognizing that adequate access to oral health care is a major public health concern, students communicate with, collaborate with, and refer to dental colleagues, and expect reciprocal collaboration and referral patterns from dental practices to their primary care counterparts. Innovative interprofessional clinical simulations using standardized patients and case study sessions, using oral-systemic health and HEENOT as an exemplar, are held with NP, NM, dental (DDS), and MD students to develop HEENOT as well as collaborative competencies, as outlined in the interprofessional education competencies.^{22,26}

Implementing Interprofessional Oral Health Competencies

Primary care student clinical experiences provide opportunities to integrate the HEENOT

competency as a component of client encounters. At NYU College of Nursing's Nursing Faculty Practice (NFP), an NP-managed adult primary care practice located at NYU College of Dentistry, the standard of care has been revised to include interprofessional oral health core competencies (see the box on page e2), and NP and NM students are expected to demonstrate these competencies. Changes made to the electronic health record templates prompt student and faculty NPs to include oral health questions in the health history (e.g., orofacial pain, loose teeth, mouth burning, and so on). Prompts have been added to the physical examination section of the electronic health record for documentation of oral clinical findings based on assessment of the lips, tongue, gums, mucosa, teeth, and hard and soft palate.

Data from the comprehensive or focused history and physical examination, including HEENOT findings, are considered when students and faculty NPs synthesize information obtained from the history and physical to formulate risk assessments and develop treatment plans that include primary, secondary, and tertiary prevention oral health interventions within scope of practice, including collaboration and referral. The oral-systemic connection becomes a clinical reality when patients with diabetes are assessed and diagnosed: the risk for periodontal disease is documented, especially if bleeding or red gums and loose teeth are observed and the hemoglobin A1c is elevated. Management of diabetes is provided by NP faculty and students, and referrals are made to NYU College of Dentistry periodontal clinics. Any patient who does not have a dentist or has not had a dental visit in the

past year is referred to general practice dental clinics. Dental students and faculty refer dental patients to the NFP if they have not had physicals in the past year, do not have primary care providers, or have untreated general health problems such as hypertension.

Primary care providers also manage the oral health component of systemic health problems (see the box on this page). For example, an older adult patient presented with a chief complaint of dry mouth (xerostomia). Overall assessment data, including HEENOT, revealed that the patient was taking multiple medications for hypertension, chronic obstructive pulmonary disease, and depression, all of which have an anticholinergic effect contributing to the xerostomia. The NP student educated the patient to consider use of sugarless candy, toothpaste designed for dry mouths, and mouthwash to promote symptom improvement, and evaluated the patient's medications for a potential change in dosage or product to decrease the severity of the xerostomia.

In the pediatric nurse practitioner (PNP) program, the HEENOT examination is first introduced in the health promotion course with SFL modules and reinforced in

subsequent diagnosis and management courses. Students have a three-week rotation with second-year DDS students at a Head Start Center in which up to 50 high-risk children are screened and evaluated at each session. The NP and DDS students collaborate; dental students teach PNP students how to complete an oral assessment by using the knee-to-knee approach and to apply fluoride varnish. Nurse practitioner students teach the dental students how to use motivational interviewing as a tool to provide parents with oral health anticipatory guidance and how to behaviorally manage young children in a dental setting.²⁷

RESULTS

The HEENOT curriculum innovation at NYU, designed to build interprofessional oral health primary care workforce capacity, demonstrates significant scalability potential. Between 2011 and 2014, more than 150 NP, NM, DDS, and MD faculty at NYU have participated in oral health and interprofessional education professional development programs; approximately 350 adult, family, pediatric, and psychiatric NP

Systemic Health Issues With Oral Health Comorbidities, New York University College of Nursing

Diabetes: periodontal disease
Cancer: mucositis, xerostomia, bleeding gums, osteonecrosis
Hypertension: periodontal disease
Autoimmune diseases (e.g., pemphigus, lupus, Sjögren's): xerostomia
Eating disorders: enamel erosion
HIV: oral lesions
Human papillomavirus: oropharyngeal cancer lesions
Sinus infection versus tooth abscess
Older adults: xerostomia resulting in caries, root caries, diabetes, oral pain, and poor nutrition from ill-fitting dentures or bridges, and so on.
Palliative care: symptom management

and NM students have demonstrated interprofessional oral health competencies by including HEENT in the history and physical examination as well as integrating oral-systemic health data into their patients' risk assessment and management plan. One hundred percent of our NP and NM student cohort completed required SFL modules; 98% demonstrated oral health competencies in physical assessment performance examinations.

A random retrospective electronic health record adult patient chart review at the NFP documented inclusion of HEENT data by 58% of NP students and NP providers. The PNP students revealed 100% integration of oral health data documented in patient charts. Since 2007, 115 PNP, 20 family nurse practitioner, 20 MD, and 860 DDS students, as well as 130 pediatric dental residents have been exposed to interprofessional oral health experiences. Data from interprofessional adult oral-systemic health clinical simulations and case study experiences reveal that 330 MD, NP, NM, and DDS students demonstrated evidence of competency for interprofessional oral-systemic health assessment and treatment planning. Improvement in collaboration and referral is evidenced by more than 1000 referrals between 2008 and 2014 to the NFP from the NYU dental clinics that resulted in actual primary care appointments, and more than 500 referrals to the NYU dental clinics from the NFP.²⁶

DISCUSSION

The national public health challenge to improve access to oral health, thereby decreasing health disparities and improving both oral health and overall health outcomes, requires building interprofessional workforce capacity

among nondental providers. A paradigm shift from the traditional HEENT to the HEENOT approach will prepare the primary care workforce to meet this challenge by thinking about oral-systemic health as an important population health issue and by considering interprofessional oral health core competencies as integral with the traditional comprehensive approach to assessment, diagnosis, and treatment.¹⁸ Embedding interprofessional education competencies about communication and team building will facilitate preparation of a collaborative practice-ready primary care workforce that functions as high-performance interprofessional teams in accountable care organizations and primary care medical homes.

The results of the HEENOT initiative at NYU College of Nursing and College of Dentistry provide evidence that NP and NM students are ideal to involve with dental students, as well as medical students, for interprofessional oral-systemic health experiences that lead to the acquisition of interprofessional oral health competencies and become an integral component of primary care practice, thus contributing to the Healthy People 2020 goals for improving oral health. ■

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Contributors

All authors worked to develop the HEENOT innovation, integrated it into their practices, and contributed to the text.

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