

**“SCOPING UP”
DENTAL EDUCATION
TO ADDRESS SCIENTIFIC
UNCERTAINTY:
HPV AND
OROPHARYNGEAL
CANCER AS A CASE
IN POINT**

Dental education is undergoing a process of evolution. Whereas the traditional dental school curriculum has focused on a strictly defined role for the dentist in delivering services to patients, that role is changing as dental schools seek to give their students opportunities to learn with and from students in other health professions, with the ultimate goal of improving the quality of care.

The future dentist is widely expected to shift from a traditional “silo-like” or circumscribed model of dental practice toward one that includes dialogue with a wider range of colleagues, including but not necessarily limited to physicians, nurse practitioners, mental health providers, dental hygienists, and social workers. Dentistry is expected to align with medicine in new and different ways, not only to provide health care to patients, but also to play a



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larger role in promoting population health. The core concept animating this expectation is that no single healthcare profession can optimize patient care, a concept that underpins both the federal movement to create “health homes,” in which all of an individual’s caregivers communicate with one another so that all of a patient’s needs are addressed in a comprehensive manner, and the integrated payment plans being tested under the Patient Protection and Affordable Care Act.

“Scoping Up” and “Scoping Down”

Michael Sparer has used the term “scope up” to describe the dentist’s changing role as new graduates incorporate a broader range of primary healthcare activities into their practices. These activities include primary care screening for hypertension, diabetes, and tobacco use, and patient education about issues such as nutrition. Dentists’ adoption of these activities comes in tandem with interaction and collaboration with a wider range of

colleagues, significantly expanding the scope of dental practice beyond its traditional model of oral healthcare delivery.

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Sparer has likewise coined the phrase “scope down” to describe a future dentist’s decision to design treatment plans and then delegate parts of the traditional dental skill set to allied dental healthcare professionals. These professionals would perform dental prophylaxis, apply fluoride varnish and sealants,

and place uncomplicated restorations, while the dentist continued in the role of treatment leader and patient counselor.

Both of these scenarios envision the dentists of tomorrow as evidence-based decision makers and team leaders, in addition to clinicians. As new thinking upends the traditional model of care, there is understandable resistance within the profession to this new, albeit elevated, role of the dentist. Yet, within this context, the dental education curriculum must redefine the scope of care to enable future dentists to develop stronger critical-thinking skills

and scientific reasoning. In order for the dental profession to embrace “scoping up,” dental students must be exposed to and participate in scientific debate and ethical decision making to a greater extent than is currently the case. It is particularly important for students to learn to use the professional ethical decision-making framework (first advanced by Ozar and Sokol) when clear scientific evidence to support a treatment decision is lacking—a situation that dentists may increasingly encounter when presented with emerging public health issues such as the Ebola virus.

In fact, a number of these issues under investigation today, involving oral health, are fraught with scientific uncertainty. Consider the case of pregnant women with periodontal disease who are at risk of passing infection to their babies. Because scaling of teeth has not been found to improve birth outcomes, it has been proposed that mothers with this condition be treated medically to help develop healthier flora in their mouths. But the dental community is not composed of infectious disease specialists,

and the requisite clinical trials have not been conducted to test this approach. As the role of infection in periodontal disease is made clear, dentists must debate the risks and benefits of shifting from a surgical approach to a medical approach to improve the health of mothers and their babies.

Promoting Scientific Thinking in Dental Education: The Case of HPV

Few scientific controversies are more suited to engagement by the dental profession than the question of routine vaccination against human papillomavirus (HPV). The current effort to understand and address the rise in

HPV-related oropharyngeal cancer is an ideal case in point for rethinking dental education and the dental profession’s scope of practice because it invokes issues not only of prevention, screen-

ing, and treatment, but also of analysis of available research, ethics, and public health policy—areas that go beyond the dentist’s current role.

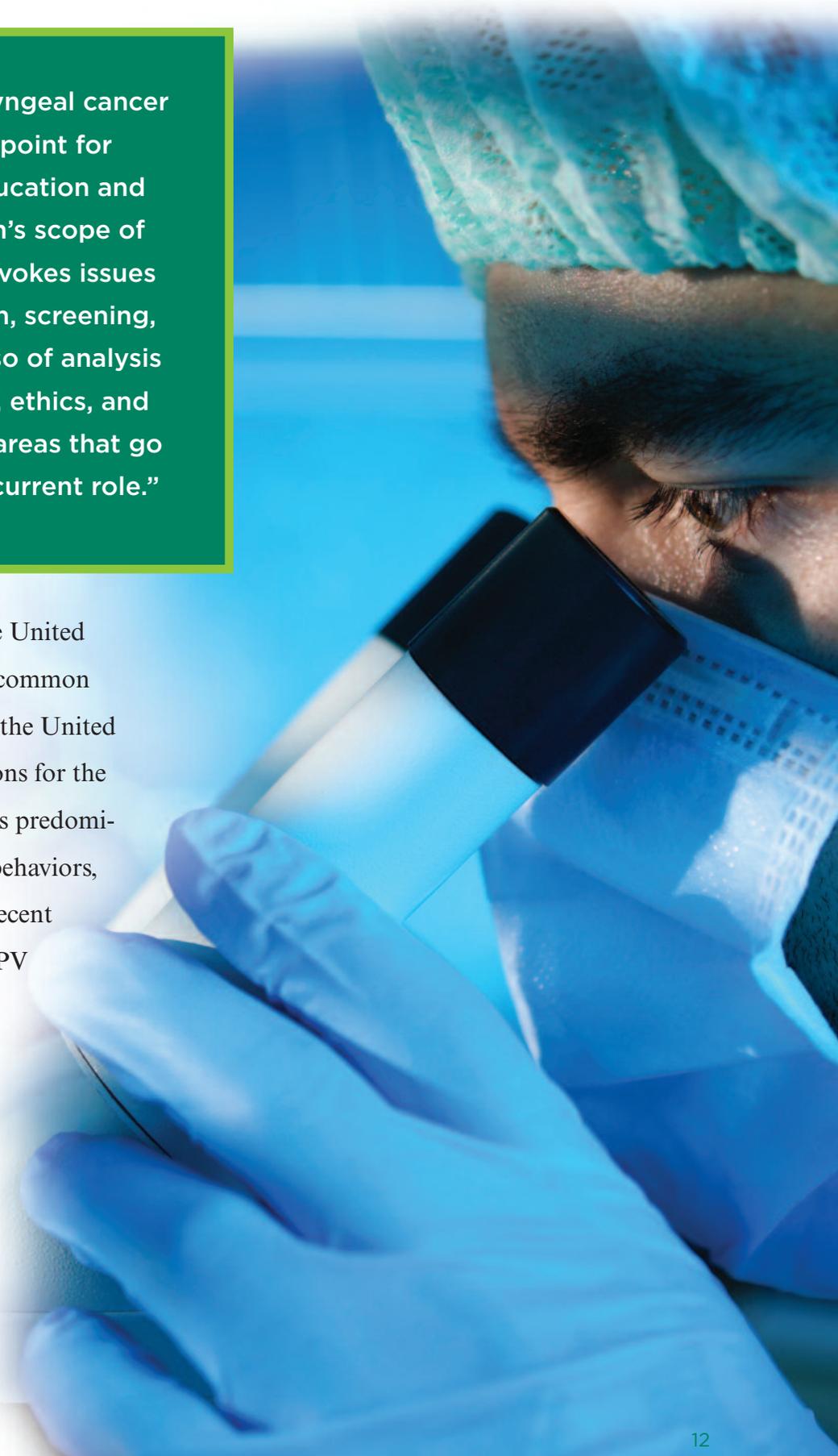
The Centers for Disease Control and Prevention (CDC) estimates that there are

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79,100,000 HPV infections in the United States. Indeed, HPV is the most common sexually transmitted infection in the United States, with significant implications for the practice of dentistry. Oral HPV is predominantly acquired through sexual behaviors, most commonly by oral sex. In recent years, public awareness of the HPV epidemic increased when the actor Michael Douglas told a British newspaper that his throat cancer had come from performing oral sex.

An estimated 41,000 cases of oral and pharyngeal cancers are diagnosed in the United States



each year, more than 90 percent of which are oral squamous cell carcinomas (OSCC). Whereas the typical and familiar risk factors for HPV-negative OSCC include alcohol and tobacco use, the risk factors for HPV-related OSCC include genital wart history, practice of oral-genital sex, a younger age at first intercourse, and a greater number of sexual partners. Notably, there has been an overall reduction in HPV-negative OSCC over the last 30 years due to decreased tobacco use; yet, there has been a fourfold increase over the same period in HPV-related OSCC, almost exclusively involving the oropharynx, predominantly affecting white males, and particularly gay white males. The increase has been linked to the rise, beginning in the 1990s, of HIV infection, which may have reduced the percentage of those who engaged in sexual intercourse in favor of other types of sexual activity, such as oral sex, especially among adolescents.

More than 70 percent of these oropharyngeal cancers are associated with an oncogenic

HPV subtype (almost exclusively HPV-16). Yet, despite strong evidence demonstrating a link between HPV and oropharyngeal cancer, systematic testing of patients for the presence of HPV is not a viable approach to prevention because of reports estimating a high prevalence of the virus throughout the population (approximately 1 percent). That is, most sexually active people acquire HPV at some point in their lives, and the body likely clears the virus within two years without medical intervention.

The only effective screening process for oral cancer is inspection of the oral cavity for early

lesions and palpation of the neck, yet early detection of HPV-related oropharyngeal cancer via this method is not always effective.

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potential type of intervention...and that is to recommend the HPV vaccine to their adolescent and young-adult patients. The question of whether to recommend this vaccine presents

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dentists with a certain amount of scientific uncertainty.

The CDC recommends vaccination with Gardasil or Cervarix for girls and women between ages 11 or 12 and 26, and it recommends vaccination with Gardasil for boys and men up to age 21 and up to age 26 for men who have sex with men. The evidence has shown that the HPV vaccine is effective in preventing 70 percent of cervical cancers in women and anogenital cancer in men. Yet, there remains scientific uncertainty over whether the vaccine protects against oropharyngeal cancer.

According to the CDC, while it is possible that HPV vaccines now on the market that were developed to prevent cervical and other less common genital cancers might also prevent oropharyngeal cancers, studies have not yet been done to determine if HPV vaccines will prevent oropharyngeal cancer.

Moreover, given the long latency and relatively low incidence of oral cancer as compared to other major oral diseases (caries and periodontal disease) in the general population, the link may take decades to be substantiated through research, and to date, the American Dental Association has not issued recommendations on this subject. Moreover, no state in

the nation mandates HPV vaccination for children to attend school. It is hoped that a general decline in the incidence of HPV in the population as a result of more widespread vaccination will result in less transmission of HPV to the oral cavity through sexual activity. Yet, there is reason to suspect that the vaccine will also protect against oropharyngeal cancer itself in the individual who has been vaccinated. Once this link is firmly established through scientific studies, the dentist's role in prevention will become clearer. Until then, dentists must rely on an ethical decision-making framework to consider their options in terms of counseling and referral.

The Dentist's Quandary in Dealing with HPV

When it comes to HPV, a dentist may elect to "scope up" by providing HPV consultation to his or her patients or "scope down" by delegating this responsibility to dental hygienists or dental assistants. But in either case, dentists are not accustomed to dealing with issues related to patient sexuality and may feel uncomfortable discussing HPV risk factors, modes of transmission, and prevention measures with their patients, especially given the uncertainty and lack of professional recommendations

about how to advise them. Moreover, in counseling their patients, dentists must be aware of the barriers that patients (or their parents) may encounter in seeking the vaccine. It is expensive when compared to other vaccines and not covered by all health insurance plans; it requires three doses for maximum effectiveness; and there are concerns about the sexual route of transmission of the virus in adolescents. These barriers may account for the fact that vaccination coverage (with at least one of the three recommended doses) is low: among girls ages 13 to 17, it has barely topped 50 percent and among boys, it is only 35 percent.

Dentists who counsel their patients (or their parents) about vaccination need to explain these potential obstacles and be prepared to refer to a treatment center where the vaccines are available affordably. Will patients at low risk of contracting HPV feel obligated to seek an expensive vaccination? Will dentists' offices need to send their patients reminders to get the booster doses? Could dentists compromise their relationships with their patients by over-

stepping cultural boundaries in discussing sensitive topics? Do they understand the legalities of confidentiality and informed consent?

These are the ethical and practical quandaries that might arise if dentists actively address this public health issue. Yet, the epidemic

presents dentists with an opportunity and a professional—perhaps even lifesaving—obligation to “scope up,” that is, to push the limits of their professional boundaries and play a greater role in their

patients' systemic health. It also provides a chance to contribute to policymaking within the healthcare community, with the goal of minimizing the spread of HPV infection.

The Need for Curricular Development to Promote Critical Thinking

Dentists are expert in performing risk-factor assessments and comprehensive head and neck examinations to identify patients at particular risk for cancer and to detect potentially malignant oral lesions. Developing this expertise is a central focus of dental education, but historically, mastering complicated dental procedures

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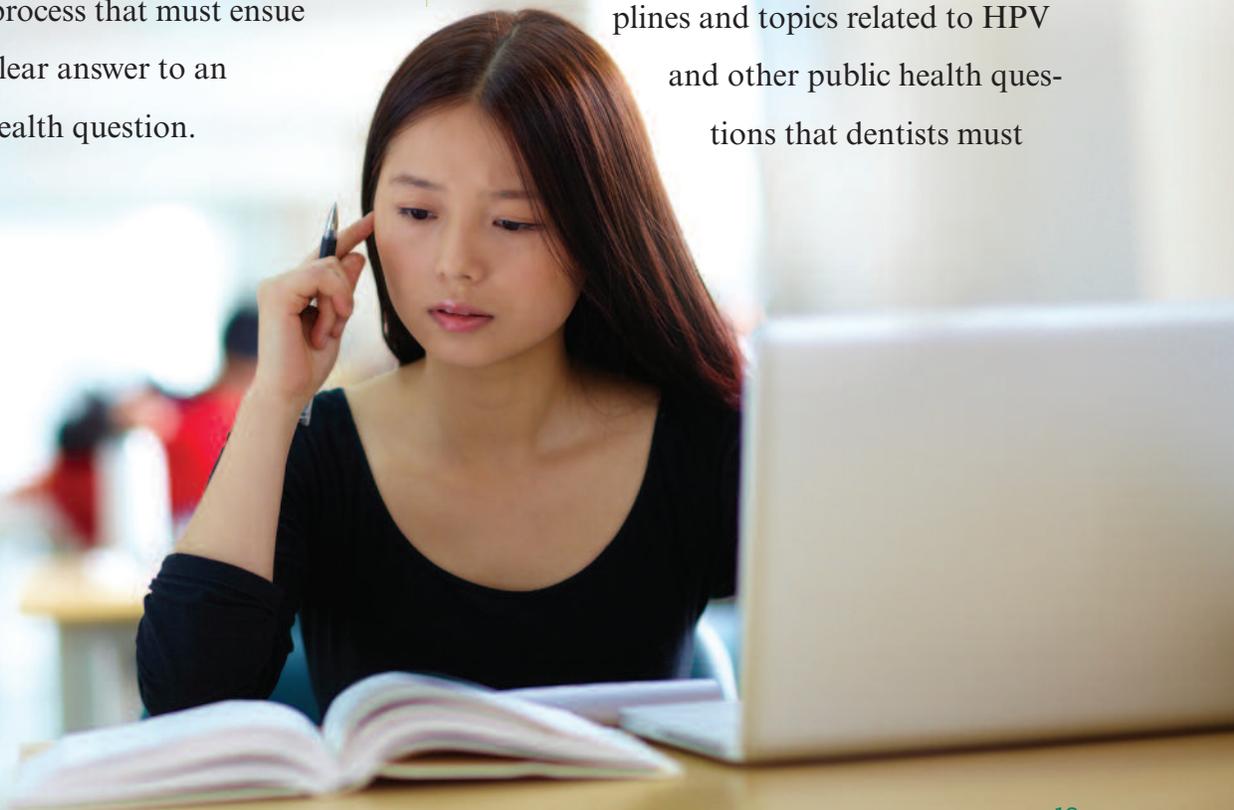
has allowed little time in the curriculum for scientific debate. Yet dental students must become more comfortable with a rapidly evolving professional mandate and uncertainty and know where to go to find the best scientific evidence available. Moreover, it is essential that students acquire a professional ethical decision-making framework, which is invaluable in thinking through the potential harms and benefits to patients of an intervention (or lack thereof) in the absence of professional guidelines.

As dental schools adapt to a changing overall healthcare environment, they have an excellent opportunity to shift their curricula to enable students to have this critical experience as well as to be exposed to the professional and ethical decision-making process that must ensue when there is no clear answer to an emerging public health question.

Proposed Curricular Changes to Foster Critical Thinking

To address dentists' potential role in helping to guide both their own patients and public policy on public health issues involving dentistry, such as HPV-related oropharyngeal cancer, an interdisciplinary, evidence-based expansion of the curriculum is needed. Such an approach would incorporate epidemiology, critical thinking, health promotion, pathology, microbiology, oral diagnosis, ethics, and health policy in the classroom, clinical, and community settings.

New York University College of Dentistry (NYUCD) already follows an evidence-based model that can provide the basis for revision of the current curriculum to include disciplines and topics related to HPV and other public health questions that dentists must



address in the face of scientific uncertainty. We propose a twofold framework for curriculum development to address these issues:

1. Provide students with the tools, critical-thinking skills, and knowledge to become scientist-practitioners who are on the leading edge of oral public health policy and provide the best possible care for their patients.
2. Offer a replicable model for other institutions to use as a template for addressing emerging topics and incorporating new findings into the education of future dentists.

Many of the courses in NYUCD's curriculum, including an honors course in the special patient care clinic during the fourth year and clinical rotations throughout the curriculum, lend themselves to a greater emphasis on critical thinking. The following examples illustrate ways in which current courses might be adapted to include additional consideration of emerging public health issues, ethical decision making, and greater scientific debate.

D1 Health Promotion, in which students learn the signs and symptoms of oral cancer,

can be enhanced to address the role and limitations of the dentist as counselor, incorporating the concepts of “scoping up” and “scoping down.” Students would learn to educate patients on HPV transmission. Timely case studies, in which current health topics are debated, should include the ethical obligation to confidentiality and privacy and related legal considerations.

D2 Systemic Pathology, in which students learn about the effects of HPV on the female reproductive system, presents an opportunity to include the effects that HPV may have on males and the link with oropharyngeal cancer.

D3 Ethics provides students with a framework for articulating ethical concerns, clarifying the relevant facts, applying the relevant ethical concepts, formulating reasonable options, and justifying a course of action. Recommended enhancements include the ethical framework for recommending vaccines to patients (or their parents) to prevent disease and the moral imperative to care for patients with emerging health concerns such as Ebola.

D3 Communication in Health Care, in which students learn communication skills by working with standardized patients (actors) who present a variety of scenarios and social histories, offers an excellent opportunity for them

to learn how to educate patients about the HPV vaccine and overcome discomfort about the sensitive nature of the discussion.

D3 Online Education and Assessment, a proposed interactive course designed to assess students' knowledge at the time of graduation, should include a student assessment of the prevention, diagnosis, and treatment of oropharyngeal cancer and its links to HPV.

Going Forward

As recent dental graduates begin to influence professional thinking, the ideas of “scoping up” and “scoping down” are likely to redefine the dentist’s traditional role in the provision of health care. In either context, it will be essential for dental education to provide broader instruction in critical-thinking skills

and assessment of evidence to address scientific uncertainty. On an individual level, dentists must consider how they will approach new public health questions as they arise, particularly in anticipating both patients’ and dental staffs’ questions about HPV and other infectious diseases. It is predictable that future dentists will “scope up” to refer more patients

to other members of the healthcare team and to interact with a wider range of medical specialists in immunology, dermatology, oncology, and infectious diseases. On a societal level, these behaviors will provide opportunities for

dentists’ voices to be heard in ethical debates about developing a national HPV vaccination policy.

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