Oral Health, Cancer, and the Quality of Life

Penn Dental Medicine’s Department of Oral Medicine and the University’s Abramson Cancer Center join forces in a powerful health care partnership.

BY JULIANA DELANY
In 2001, as an oral medicine resident at the Hospital of the University of Pennsylvania, Dr. Eric Stoopler (D’99, GD’02), Assistant Professor of Oral Medicine-Clinician Educator, was asked to examine a woman in the emergency room who was complaining of numbness in her chin and jaw. The ER doctors were puzzled. Was it some kind of dental infection? After carefully reviewing the patient’s history, performing a physical exam, and evaluating additional diagnostic tests, Dr. Stoopler concluded that the woman’s numbness was a neuropathy caused by an undiagnosed recurrence of her breast cancer, which had metastasized.

The case underscored the critical importance of dentistry in the care of cancer patients, an area in which Penn Dental Medicine has long been at the forefront. For more than 20 years, through a valuable collaboration with Penn’s Abramson Cancer Center, Penn Dental Medicine’s Department of Oral Medicine, working with faculty from Oral Surgery and Pathology, has been providing preventative and diagnostic dental care to patients with leukemia, multiple myeloma, lymphoma, and other cancers. And with it, helping to vastly improve the quality of life for many cancer patients.

Dr. Martin Greenberg (GD’68), who began the School’s residency program in Oral Medicine in 1980 and who is presently Chief of Oral Medicine at the Hospital of the University of Pennsylvania, believes that although Dr. Stoopler’s experience was particularly dramatic, cases involving oral complications in cancer patients are unfortunately very common. "Every patient who undergoes cancer chemotherapy or head and neck radiation is at risk for painful and sometimes life-threatening lesions of the mouth, for systemic infections that begin in the mouth, and, as was the case with Dr. Stoopler’s patient, for secondary malignancies that can present in the mouth," he says.

"Cancer and cancer therapy often have profound oral implications," adds Dr. Thomas Sollecito (D’89, GD’91), Interim Dean of Penn Dental Medicine, Professor of Oral Medicine-Clinician Educator, and a member of the Abramson Center. "Chemotherapy and radiation therapy can have devastating effects on oral health, and that’s why the team approach at Abramson is so important. We can ameliorate many complications from cancer therapy and make early diagnoses when we see cancer patients regularly before, during, and after their therapies. Avoiding oral complications during cancer therapy can minimize cancer treatment interruptions."

A Department Ahead of Its Time. The partnership with the Abramson Center continues a history of forward thinking in the Department of Oral Medicine, which has long enjoyed a reputation for its leadership in the discipline. Its first chair, Dr. Lester William Burket (D’32), is often referred to as "the father of oral medicine." As department chair from 1944 through 1951, and later as Dean of Penn Dental Medicine from 1951 through 1972, Dr. Burket consistently advocated for the integration of general medicine into dental education and practice. He is considered responsible to a great extent for the modern understanding of oral health as it relates to systemic health, and for reinforcing the idea of dentists as primary health care providers.

His book, Burket’s Oral Medicine, first published in 1946, quickly became the leading text within the specialty and remains so now in its 11th edition (published in 2008 with Dr. Greenberg serving as senior editor of the text and 9 other Penn Dental Medicine faculty members, including Drs. Sollecito and Stoopler, also contributing). Dr. Burket was also a leader in scientific research involving oral lesions, and his legacy of education and research continues to inspire and inform the department today through collaborations like those at the Abramson Center.

A Center for Excellence. The Abramson Cancer Center, founded in 1973, recently became a part of Penn’s new Perelman Center for Advanced Medicine, which opened this past fall, and is one of only 39 cancer centers in the country designated a Comprehensive Cancer Center by the National Cancer Institute. In a single year, the Center treats as many as 50,000 outpatients and 7,400 inpatients, and provides 24,000 chemotherapy treatments and 66,000 radiation treatments.

One of Abramson’s 300 faculty members, Dr. David Porter, Director of Allogenic Stem Cell Transplant and Professor of Medicine, runs one of the top transplant pro-
grams in the country. Dr. Porter performs bone marrow transplants for patients with leukemia, multiple myeloma, and lymphoma, and is grateful for the support and expertise of the Penn Dental Medicine team in his work.

"Patients undergoing cancer therapies are tremendously immuno-suppressed and are at huge risk for life-threatening infections that can develop in the oral cavity," he explains. Dr. Porter works closely with transplant patients experiencing graft vs. host disease, in which newly transplanted material can attack the recipient’s body, and which can often lead to complications in the mouth, including secondary malignancies of the tongue. His work has included a close association with Dr. Sollecito, whom he consults with frequently on cases. "In my mind, our partnership with Penn Dental Medicine is crucial to running a transplant program effectively," he says. "It is one of the easiest, most productive collaborations I have experienced at Penn. My colleagues in oral medicine are well-trained, effective, and offer superb patient care.”

Meeting of Minds. Abramson physicians like Dr. Bert O’Malley also find the dental perspective invaluable. "Identifying pre-cancerous and cancerous oral lesions is a highly complex area," he says. "Our dental colleagues are instrumental in helping determine what is cancer, what isn’t cancer, and what might eventually become cancer … it’s an excellent collective resource.”

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In addition to the Department of Oral Medicine, Penn Dental Medicine’s departments of Pathology and Oral and Maxillofacial Surgery also have faculty members who practice at Abramson. Dr. Faizan Alawi, Assistant Professor of Pathology, represents the Department of Pathology. Dr. Kendra Schaefer and her colleague Dr. Elizabeta Evtimovska, both maxillofacial prosthodontists from the Department of Oral Surgery, often review cancer cases at weekly meetings of the Abramson Center’s Tumor Board. Dr. Schaefer and Dr. Evtimovska work closely with the Abramson oncologists after cancer surgery. Many of their patients are missing the roofs of their mouths, their soft palates, their tongues or mandibles as a result of surgical procedures to remove tumors. Other patients might lose an eye, ear or nose from cancer.

"My job is to replace the missing parts prosthetically to help restore normal daily function,” Dr. Schaefer says. "Without oral prosthetics, many of the patients cannot talk or eat. Without facial prosthetics, many will not leave their homes. Basically, I tell my patients that after the surgeon cures them of their cancer, it’s my job to make sure they can maintain their quality of life.”

Groundbreaking Research. Since the department’s founding, research has been key to its mission. Drs. Greenberg, Sollecito, and Stoopler have all published extensively, authoring papers with doctors at the Abramson Center. In addition, each has expertise in cancer therapy as it relates to oral health.

For decades, Dr. Greenberg has been researching the relationship between chemotherapy, the oral cavity, and systemic infections. "When I first came to Penn in 1978, I became interested in the 25 to 30 percent of septicemia infections in cancer patients that are of unknown origin,” he explains. "I wondered if the mouth could be the source, and suggested a research collaboration with the medical center.” His research has changed the way that patients with leukemia, lymphoma, multiple myeloma, and those undergoing stem cell transplants are treated, beginning with a complete dental exam before starting any cancer therapy. Later, in 1985, Dr. Greenberg worked closely with Dr. Harvey Friedman, Chief of Infectious Diseases and a world-renowned researcher on herpes, in determining that herpes simplex infections are the source of serious oral ulceration in leukemia patients.

Dr. Stoopler is currently at work on two research protocols relating to multiple myeloma. The first, which he developed himself, is being funded by the Multiple Myeloma Research Foundation and is the only grant from that organization ever awarded to a dentist. It explores amyloid deposition, or the abnormal buildup of proteins in tissues and organs, which is a common cause of morbidity in patients with multiple myeloma. Dr. Stoopler’s goal is to determine the best biopsy sites, both in the mouth and elsewhere, for detection of amyloid in the early stages of multiple myeloma.
The second protocol deals with the pharmacokinetics and pharmacodynamics of melphalan, a drug used to treat multiple myeloma. In this study, Dr. Stoopler is responsible for performing periodic oral soft tissue examinations of participating patients for detection of mucositis (inflammation of the oral mucosa), a common complication of cancer treatment.

Dr. Sollecito has recently been involved with research projects involving oral mucositis. His current interest is in determining when a pre-cancerous lesion in the mouth might become cancerous, and if there is some effective method of treatment to eradicate the lesion prior to it becoming cancerous.

Students Play an Important Role. Drs. Sollecito, Greenberg, and Stoopler see cancer patients on a regular basis at the Hospital of the University of Pennsylvania and also at its suburban extension, Penn Medicine at Radnor. Each patient seen by a dentist there is also seen by a Penn Dental Medicine oral medicine resident and a fourth-year dental student, who are considered integral parts of the oral medicine team.

“As we deal with an aging population, managing people on chemotherapy is something dentists are going to have to do more and more often,” says Dr. Greenberg. “We need to educate our students in how to care for this group of patients.”

As a result, Dr. Lena Turner (D’07, GD’09), a Penn Dental Medicine resident in the Department of Oral Medicine, has already been exposed to countless oncology patients before, during, and after cancer therapy, and has seen firsthand both how the oral cavity is affected and how the oral disease can affect the cancer patient. “The oral cavity is full of potentially pathogenic organisms that an otherwise healthy individual might be able to control,” she says. “But in patients undergoing cancer therapy, this ability is compromised, so something as insignificant as a cold sore in a healthy individual might present as potentially life threatening. That’s why pre-screening by dentists is so critical for this group of patients.”

Undergraduate Penn Dental Medicine students also receive a thorough grounding in the field: first-year students are introduced to the topic through lectures on the signs and symptoms of disease, while second-year students receive in-depth lectures in Dr. Stoopler’s internal medicine course, including Dr. Sollecito’s lecture on bone marrow transplantation and its effect on oral health. Third-year students receive comprehensive background in Dr. Greenberg’s oral medicine class, in which he explores the diagnosis and management of diseases of the oral mucosa, facial pain syndromes, and temporomandibular disorders, all in light of how they can present in patients with severe medical disorders. In addition, as fourth-year dental students complete their one-month hospital externship, either at HUP or at one of about 40 hospitals worldwide that participate in Penn Dental Medicine’s externship program, they experience cases firsthand involving compromised oral health in cancer patients.

The Rewards of Working Together. For dental students at every level, Penn Dental Medicine’s collaboration with the Abramson Center serves as an example of the importance of working together across disciplines to provide the best possible patient care, and of the vast rewards that come from making life easier and better for patients struggling with devastating disease.

Personally, says Dr. Sollecito, the collaboration is extremely valuable for him as a dentist. “To be able to have this kind of interaction with such accomplished physicians on a day-to-day basis is very enriching for me,” he says. “We are all learning from one another.” But the true value of the relationship, he says, goes beyond individuals to something much larger… “providing the best quality of care to a very vulnerable population.”

“We are providing our students with an understanding of what it means to be a professional and compassionate health care provider,” says Dr. Sollecito. “In doing so, we are passing on a vital Penn Dental Medicine tradition of interacting with and contributing as dentists to a health care team.”