NIDCR Oral History Project

Interview with Dr. Dushanka Kleinman

Conducted on December 13, 2023

KD: This is an interview with Dr. Dushanka Kleinman for the NIDCR Oral History Project. Today is December 13, 2023, and I am Kenneth Durr. Thanks for taking time to talk with me today, Dr. Kleinman.

DK: Thank you very much, Mr. Durr. I'm looking forward to our discussion.

KD: Let's start back at the beginning a little bit, talk about how you got to undergrad, what you studied in undergrad, and how that turned you toward dentistry.

DK: I went to the University of Wisconsin in Madison, and I studied and majored in zoology with a thought of possibly going into the health sciences, and dentistry was one of the areas I was interested in. I found a paper on how teeth erupt when I was in high school and it intrigued me, the fact that these two sets of teeth interacted in a certain way. But that was where I got my basic sciences and pre-dental, and then I applied and went to the University of Illinois, now the University of Illinois, in Chicago College of Dentistry for dental school.

KD: Any notable mentors or anything like that during that time?

DK: Well, Dr. Seymour Yale was the Dean of the dental school at that time, and as I looked back through these past decades, at that time, I was exposed to Dr. Dan Laskin, who was at the college of dentistry, a renowned oral surgeon and then a leader in the research area, and Dr. Sam Pruzansky, who led one of the craniofacial anomaly centers.

And when you're a dental student, you don't really realize the broad impact of the people that you're meeting. After dental school, I wanted to have a little bit more time to actually apply what dental school offered, and I applied to a hospital rotating internship at the University of Chicago clinics, and the dental clinic, by chance, was directed by Dr. Robert Likins. Bob Likins was one of the original staff examining dentists in the U. S. Public Health Service working with the early water fluoridation studies (Grand Rapids-Muskegon Study).

Dr. Frank Orland, another leader in oral health research and instrumental in the Evanston water fluoridation studies, was one of the professors in the program that would lecture to us, as was Dr. Robert/Bob Goepp an amazing oral pathologist and researcher (and a NIDR scientific advisor). Unbeknownst to me, they all were related within the context of public health but also involved with the research enterprise at large and NIDR specifically.

KD: I've got a photo of Dr. Likens way back in Grand Rapids.

DK: Yes. He was a really impressive and nurturing mentor, and obviously always had more questions to ask of you when you asked him a question.

KD: So you studied/worked with some folks who had a public health bent. Is that why you ended up getting a public health degree?

DK: It was one of the areas that I thought would be really interesting to pursue. During dental school we were, of course, exposed to community preventive dentistry programs in the Chicago area. One of my faculty members there was Bruce Douglas, who exposed us to the international challenges as well.

One of my fellow colleagues, Warren Smith, was very active in the Student Dental Association and he connected me with Dr. Tony Jong, an academic leader with the student association. At

that time, Tony was an associate dean for academic affairs and student admissions at the Harvard dental school and was planning to establish a dental public health program at Boston University.

My husband-to-be and I were planning to move to Boston, and I started looking at opportunities in the Boston area. With Tony Jong's encouragement, I applied and joined the program that he just had launched. So things flowed together in a very unusual way for a mixture of personal and professional activities, and that's how I got into it.

The University of Chicago experience actually added another element of my exposure to public health. We were on call every fifth night in the emergency room. As dental residents we were covering the emergency room visits with ear, nose and throat and plastics colleagues who were residents, and so we were exposed to everything in the craniofacial area. The coverage at nighttime revealed the needs of the community.

KD: Yes, I guess you answered my next question, which was—this is the 70s, mid to late 70s?

DK: This was '73 when I graduated, '74 when I completed the Zoller internship, '76 when I received my MScD at Boston University.

KD: I just want to get a sense of what the staples were of dental public health at this point. What were the big topics that you dealt with?

DK: Several things were happening at that time, one of which was, of course, looking at how and to whom dental care services were being provided and reimbursed. The concept and the actual establishment of safety-net community health clinics were evolving. This was the decade after the establishment of Medicaid and Medicare and options for dental care were limited in Medicaid and nonexistent in Medicare. There was much more of an awareness and a need to address health insurance, and access to dental care, especially for vulnerable populations.

I had an opportunity to experience federal sector initiatives related to enhancing health resources and health services for communities in need. I had been fortunate enough to get an NIDR grant fellowship award to cover my master's training program. Part of the NIH national research service award fellowship requirement at that time was a payback. For me, this meant working an equivalent amount of time, which was two years, in either a dental school or a community center.

We were planning to move to the D.C. area, and I was lucky enough to get a position at the University of Maryland School of Dentistry, managing a grant award, developed by Dr. Lirika Joseph, from the then Health Resources Administration's Division of Dentistry to train dental teams—dental students, dental hygiene students, dental assistant students—to plan and provide preventive dentistry programs in the community settings.

One movement in dentistry was incorporating expanded function dental auxiliaries into dental practice. This included training in expanded auxiliary management team dentistry, increasing the efficiency of care delivery working with an assistant and doing "four-handed" dentistry. For care within community settings, that concept was really important as well. We used a similar mechanism to train dental student teams—dental assistant, dental hygiene, and dental students—to provide care in community settings serving vulnerable populations.

For two years I led an elective program. It was designed for senior students who had already finished all their clinical requirements for graduation. They were able to plan and implement six-week-long preventive dentistry programs in multiple community settings: the high school for unwed mothers, the Baltimore City prison, nursing homes, Head Start Centers and elementary schools. The health care infrastructure of elementary schools that was built in the 50s was failing at that time and not well maintained. The program allowed students to really see and experience the needs of different populations.

Dr. Vince Rogers was the Chief Dental Officer, the Dental Director, for the city of Baltimore at that time and was just a wonderful partner with the School of Dentistry and allowed our students to be trained in real life settings.

KD: That gave you a lot of perspective, then. How did you get involved with the Public Health Service and become part of the Commissioned Corps?

DK: We were married at the time, my husband and I. My husband, Joel Kleinman, is a physician and PhD neuroscientist, neuropharmacologist, and we were planning to move back to Chicago. And Joel was at NIH doing part of his training there which was part of his payback. And so he was already in the USPHS Commissioned Corps, and I said, "Well, we're in this area. If we're going to stay for another two years, maybe I should apply for the USPHS Commissioned Corps after my two years in the dental school. I'll experience that and then we'll go back to Chicago."

And so I applied and was fortunate to get a position in the Health Resources Administration's Division of Dentistry, the agency that funded the study that I was fortunate to direct on behalf of the School of Dentistry.

KD: Tell me about NIDR at the time. How much did you know about it? What was your general impression of this Institute?

DK: I have to say that for somebody that comes through the ranks of dentistry and dental public health, NIDCR was always the castle on the hill, so to speak. It was the voice and the engine that had produced and provided the knowledge that really infused preventive dentistry and dental public health. The scientists who had contributed to those studies were still in the Institute and were the authors of the literature that we were told to read and to use, so NIDR was not new to me at that time.

KD: How did you get the offer to join? Did you know David Scott? Was it a sudden thing or did you work on it for a while?

DK: It was sort of a mixture. The US Public Health Service Commissioned Corps is one of now eight uniformed services. Within the USPSH Commissioned Corps there are 11 categories, dentistry being one of them. At that time, RADM John Greene was the Chief Dental Officer overseeing all dentists who were in the Commissioned Corps. So when you're in the Corps, you report to two supervisors: at your primary deployment site, your job, and also to your Chief Professional Officer, in this case, Dr. John Greene, and to the Surgeon General.

I met with Dr. John Greene, who always brought all the dental officers together. He was, at that time, also the Deputy Surgeon General working with Dr. Julie Richmond, who was the Surgeon General at that time. He had mentioned to me that his colleague Dr. Lois Cohen, at NIDR, was looking for someone to work with her in the area of planning and evaluation. I contacted Lois and submitted my application, because I thought, this would be NIDR!

KD: The castle on the hill, right?

DK: The castle on the hill.

KD: Tell me about Lois Cohen. What was she up to at that point?

DK: She also was someone that we all knew about because she had been with the Division of Dentistry and had been recruited to come over to NIDR to establish the planning and evaluation activities. But her literature and her work and her background in sociology preceded her because she did bring in the critical behavioral and social science capacity that is so essential to translation/dissemination of research findings.

I was very excited to meet with her and to have the opportunity to work with her. She had unending ideas. She was organized and structured. She had and continues to have incredible frameworks for program implementation and evaluation, behavioral theories and a vast knowledge of government. With her extensive network of individuals from different disciplines and her ability to gather knowledge and information in a manner that is orderly and facilitates consensus recommendations, her expertise is in high demand. She had done quite a bit of work in the oral health area by the time I met her. One of the early projects she often refers to was her work in the dissemination, and the impediments to dissemination, of the early oral cancer diagnostic aids in dental offices.

Her international collaborative studies of dental manpower systems, a major series of studies she had collaborated with Dr. David Barmes (then the Chief Dental Officer for the World Health Organization) to lead, are landmark reports. I think the first report of that series had just been released.

KD: Did you meet with David Scott? Did you interview with him?

DK: Yes, I did. I just loved him from the very beginning. He couldn't have been more of a gentleman, but also down to earth. He was a people person. He would walk around the institute almost on a daily basis. He would either walk around our office to see what everyone was working on, go over to the intramural program, saying that he's going to "kiss the babies." That was his endearing term.

After I was there for about a year or so, he gave me a letter opener. They used to have letter openers before the internet, and it said something like "No amount of planning can replace dumb luck."

He had been, clearly, established in his own research intramurally, but also had been a dental school dean, before he returned to direct NIDR. The NIDR was his family, and I have to say, I had some personal health issues for a while at those early stages, and he couldn't have been kinder during that time.

KD: Let's skip past the dumb luck and get to the planning, which is what you were doing. I get the impression that there were a number of things happening in this group that Lois Cohen was running. Did you have your own planning project?

DK: She had participated and there were ongoing planning projects. Planning was part of the operations, but it wasn't formalized until Lois came and created a formal structure for it and a process. The project that I had at the time I came was overseeing the formal evaluation of the NIDR craniofacial anomalies research program activities. We had a vendor that facilitated outreach to our scientists, our advisory groups, and the broader public to get input.

The evaluation process and structure led to the recommendations. What are the recommendations for science? What are the recommendations for research training? What are some of the technologies that are needed in the field or research methods to be developed, move things forward?

The organizational structure, and the advisory structure, of the Institute including the then National Advisory Dental Research Council and the National Programs Advisory Committees, naturally informed the process. However, the specific input came from those who were conducting the science and were able to see where there were opportunities for progress.

KD: Are these opportunities for NIDR to change its function, to change its funding, or are these more providing recommendations to academicians and practitioners?

DK: It's a mixture of both, but I would say most of it, because it was scientists talking to scientists, was to the science. And so part of the recommendations included moving more aggressively into molecular biology, cell biology, human developmental biology, looking at teratology, and genetics and genetic studies.

And then back to your question about is it more for NIDCR or are they recommendations for others: they did recommend there needed to be more animal studies and more animal models available as well, and more clinical studies. Such recommendations raise questions about what NIDCR or any Institute can do to move science forward?

Recommendations raise topic areas for development or requirements for recommendations and program announcements. Or, they may stimulate hosting a work group, bringing different disciplines together, to further understand what the animal model would be or whether there should be a call for centers or programs.

Another part of the review raised the issue of how to manage congenital anomalies over the lifetime and what would be the best approaches to surgeries and management of biological, psychological as well as the physical development.

KD: You were in the craniofacial anomalies area. Did Sam Pruzansky consult with NIDR? I know he was big on clefting.

DK: Yes, Sam Pruzansky and Hal Slavkin were senior advisors to NIDR.

KD: Did this planning and evaluation continue for a long time? I know you moved out of it relatively quickly.

DK: Dr. Jim Lipton, a dentist and PhD trained at Columbia, was recruited a couple of years after I came in, and he became the Director of the Section on Planning and Evaluation. He played a key role, with the long-range plan for the 90s and several subsequent evaluations, and then made a major contribution in research training and working with the trainees.

The planning and evaluation component and office evolved into an Office of Planning, Evaluation and Communications, and then ultimately became the Office of Science Policy and Analysis that it is now.

KD: Somewhere in here you got involved with the *Challenges for the 80s*, essentially the first big strategic plan for NIDR. Tell me about the process. Was this an initiative from the top or was this something that came from the bottom up?

DK: This was from the top. It was similar to what other institutes were doing as well, looking forward. Dr. Dave Scott initiated the development of the plan and then it was released under the signature of Dr. Harold Löe.

Before we launched the *Challenges for the 80s* there had been an evaluation conducted by the Rand Corporation, of the dental research institutes and centers which were noncategorical investments that the Institute had made in basic, applied, and developmental science. The evaluation noted that there were more publications resulting from these centers in non-dental journals than dental journals, indicating the breath of the science adding to dental research and demonstrating that the craniofacial area research is relevant to many fields. And there was a beginning understanding that the capacity to expand the focus on oral health and oral-facial development was underway.

Challenges for the 80s really looked across the full spectrum. Hundreds of individuals contributed to its development, again, members of our advisory committees and research portfolio grant awardees. The state of the science was updated for seven different diseases and conditions, and seven different areas labeled "solutions," such as understanding more about the etiology and the pathogenesis and the treatment and management of those diseases, were described

The papers were developed by teams of scientists, using a structure that Lois had designed which gave a common framework: identify the most promising research areas; specify the impediments to the research progress; and describe what is needed to remove the impediments and help accelerate and support the research in those fields.

Several themes emerged. One was that we needed more epidemiology. We needed to better understand the magnitude of the problem in all of areas and use these data as a baseline to monitor progress. As a federal agency funded by Congress, you need to let them know what you've done for them lately.

Another theme was the recognition that we needed more dentally trained investigators; dentist scientists who would be able to ask questions and contribute to research that could then be applied and delivered within healthcare settings and predominantly by the dental profession, if appropriate.

Another recognition was the call to get more of these research findings into dental professional journals and to the public at large so that they would understand the value of investing in oral health sciences.

The overriding message of the plan was that the dental institute's research and reach is more than teeth. The oral cavity is more than the mouth. The oral-facial complex is really what we focus on, its formation, its functioning, the tissues and related pathogens. In a way, *Challenges for the 80s* set the tone for further research and communication and guided us into *Broadening the Scope* later on with the 90s.

KD: Is that the first time this whole idea of NIDR is more than teeth, is that the first time that this emerged?

DK: I would be surprised if it was the first time, to tell you the truth. We were among the few institutes that had an intramural program when we were established in 1948. A lot of our early work, not just the work on dental caries and fluoride, but also the work in collagen, mineralized tissue and craniofacial anomalies, let everyone know we were addressing more than just tooth decay.

It was more of a communication issue. The realization that our words weren't conveying what we knew, both within the profession and beyond, continued and ultimately resulted in our name change in the late 90s.

KD: Speaking of communications, by this point you've developed a lot of experience bringing together these teams of scientists, volunteer teams. It sounds like there was a lot of work. You're asking people to do a lot of work for these various studies. How did people respond to working in these groups for NIDR?

DK: This was a group effort. The American Association for Dental Research and the international association were well connected with the Institute. NIDR was, and I believe still is the only and largest entity that is dedicated to oral and dental and craniofacial research, and so

there wasn't any hesitancy in contributing to the creation of these plans. If anything, I would say someone may ask, "Why didn't you ask me too?"

I think everyone saw these contributions as part of their role. They were being funded for their research by federal funds, and this federal entity was trying to communicate and plan ahead for the future directions. By taking part in the planning, you're going to be in a position to contribute to where those directions may lead.

KD: The next step here was that you moved to the new Division of Epidemiology and Oral Disease Prevention. That was in the intramural program, is that right?

DK: The new division evolved from the National Caries Program. The National Caries Program was established in the early 70s under the Nixon administration. In essence, it was almost like an institute within an institute. The National Caries Program staff were able to award grants and contracts, conduct intramural research, and invest in dissemination and translation of research findings.

Harold Löe, as part of his review of where dental research is going, as a periodontist, and also with emerging recommendations of the *Challenges for the 80s*, saw that there was a need to focus also on broader oral diseases. And as I mentioned, epidemiology was one of the big themes of *Challenges of the 80s*, so the concept he had was to build on the National Caries Program model, which had worked well focused on one disease, to benefit a broader range of diseases and conditions, while retaining epidemiology and focus on prevention.

He had asked me to facilitate the transition to a Division of Epidemiology and Oral Disease Prevention. It took time to identify how to best extend the incredible work that was done on

caries. Where were there opportunities to build further on the epidemiology programs, and where were there needs to focus on some other diseases and conditions?

Harold Löe had several of his own ongoing studies. He was very active in longitudinal studies internationally, and some of his collaborators came and joined the program. In addition, we benefited from Dr. Jens Pindborg, an internationally renowned Danish researcher, as a visiting scientist. He was able to inform us and give us a framework for our oral mucosal, soft tissue, and pain section and later was essential in contributing to early oral health surveys and studies related to HIV/AIDS.

I gravitated more toward the area of soft tissue and mucosal pathology and pain.

KD: One thing's that interesting is that NIDR was founded by an epidemiologist. Epidemiology was really big way back. Had it fallen away? Is that why you had to rediscover epidemiology?

DK: Epidemiology was perpetuated through the National Caries Program and was integrated in the NIDR research training programs. The National Health and Nutrition Examination Survey, NHANES, which is supported by the Centers for Disease Control and Prevention, was ongoing. NHANES would be in the field for a set study period, followed by years when the survey was not in operation. Entities like NIH institutes could add an additional health component of interest. The first two NHANES surveys included oral health components, but the third iteration, held in the late 70s, did not include oral health measures. In addition, the survey focused primarily on adults. As a result, Dr. James Carlos, Director of the National Caries Program, conducted a national caries study of children in the late 70s, to obtain data needed to inform prevention initiatives.

Investments from NIDR supported epidemiologic studies in health science centers, such as at Michigan, Minnesota, Iowa and more.

KD: Was this Division of Epidemiology and Oral Disease Prevention sort of a public health slant, as opposed to a basic research slant? I'm trying to figure out how it fit in with the rest of the intramural program and whether fitting it in was difficult.

DK: That's a good question. It was separately managed, but was not, in my recollection, reviewed by the Board of Scientific Counselors, which oversaw the intramural program.

A recommendation of the Blue-Ribbon Pane, a review charged led by Harold Löe the Director, to move the epidemiology program into the intramural program. That was not done, and the Epidemiology and Oral Disease Prevention program continued to exist.

KD: That makes sense. You've spoken mostly about your administrative work, your making things happen, organizing people and programs. But I found some scientific papers from that period with your name on them in mucosal research. Tell me how you got involved in that and what you did.

DK: It really happened as a result of the development of the Epidemiology and Oral Disease Prevention program. The US epidemiologic literature in the area of oral mucosal soft tissue lesions and conditions was limited. This is where Jens Pindborg's advice and counsel became a major gift to us as an institute. He had led multiple international studies and worked closely with the World Health Organization. It was the right time. There were opportunities to add, and train examiners, an assessment of these non-tooth specific conditions—aphthous ulcers, herpes simplex, and other precursors to oral cancer—to several upcoming surveys. These included the

NIDR's children's survey and then the upcoming fourth NHANES survey. So that's how I got into that area. Once you're in that area, you start to look at other mucosal diseases and infections.

We also looked at other epidemiologic surveillance programs, such as the National Cancer Institute's SEER Program. We created a detailed report using their existing data to better understand the stage of diagnosis, survival rates and distribution of oral pharyngeal cancers, looking at the sociodemographic, geographic and site-specific differences. That project led us to additional collaboration with the National Cancer Institute staff. A specific study was done in Puerto Rico, where oral cancer was as prevalent as penile and cervical cancer, so we began looking to understand common risk factors, such as a HPV connection among other things.

Then reports emerged of unusual mucosal pathologies in young men, Kaposi's sarcoma, candidiasis, and hairy leukoplakia. Suddenly these pathological conditions in your mouth became synonymous with an early diagnosis of some type of immunodeficiency syndrome – the early days of HIV/AIDS. This is where Drs. John and Deborah Greenspan, from UCSF, really took up the fight. And also Dr. David Barmes, the Chief Dental Officer of the World Health Organization (WHO), said, "We need to do something internationally."

So together with Dr. Phil Swango, who was the dental epidemiologist with the National Caries Program, and he had stayed with the soft tissue area, and Dr. Ruth Nowjack-Raymer, who joined us, we worked with Jens Pindborg and David Barmes to develop epidemiologic survey examination guidelines for oral manifestations of HIV and also how to build the capacity for oral health response to this condition for other countries and for the WHO. Joining us was Dr. Don Marianos, then Director of CDC's Division of Oral Health.

This is a long answer to your question, but it really started with "here's some missing information and knowledge that we don't have," to "let's try to get and understand the magnitude of the problem" to, "here we go with a pandemic that we don't understand." And that's how I had the opportunity, and in many ways the opportunity was just having the ready access to incredible people who had the knowledge and experience, and I just joined them.

KD: I'm glad you brought up HIV. I was interested in that because NIDR put a lot of effort into HIV studies, getting involved, working with other institutes. Can you talk a little bit about NIDR and HIV generally, what the contribution was over time?

DK: I think it was across the board. We had incredible research in our intramural program, for example, identifying protective salivary components. The collaborative investment with the Fogarty International Center was really critical, designed to strategically train individuals from countries at risk but to provide their expertise in-country.

There was the development of diagnostic and management approaches, and the preparation, in collaboration with CDC, of clinicians and the refinement of infection control prevention.

We worked with the US Army, the Walter Reed Longitudinal HIV/AIDS Study, and were able to build, through those collaborations, integrate oral health within general health. This gave us an experimental, clinical, and policy pathway to give visibility to the role of oral diseases and conditions and the importance of them. It was, I would say, an all-hands-on-deck approach with the opportunity to, through HIV/AIDS, learn more.

KD: Very interesting. That was great. We've talked about Harald Löe a little bit. He obviously had an agenda because he created the new division that you were in for a while. Tell me about him as a person and what his vision was, generally speaking, for NIDR.

DK: He was an energized, energetic lover of life and science. He had led extensive research studies across the globe. He was an experienced dean and science administrative director. He was highly committed to investing in a research portfolio that would benefit the dental profession and would elevate the profession's capacity to more readily absorb the benefits of research. He wanted the dental profession also to value research. Toward that end, creating centers of excellence and funding dentist scientist research training programs were some of the approaches he used.

Of course, he really wanted to nurture the development of dentist scientists. He believed that having clinician scientists would ultimately make a difference in the clinical care that patients would get. His energy was never-ending. I think the work he directed during his term, which was a long term, really "broadened the scope" of the institute.

He brought all the dental deans together. He wanted the education community to know that they're a partner with the research institute and that the research is being, and can be, conducted in their backyard as well.

KD: He asked you to become Deputy Director, right? Was this 1991?

DK: He had an application for people to apply to become Deputy Director and I applied, so there was no guarantee. I was fortunate to join him as Deputy Director, but I was not the scientist that a scientist would look to as someone to serve as the Deputy Director because of my background. I think he felt that he had known me sufficiently in the years before he decided to recruit a Deputy Director and felt comfortable working with me.

KD: What was your job? What did you do?

DK: Everything. A mixture of activities were done during that time, including different workshops. It was a continuation of taking a look at where we were going with dental schools and where we were going with dental practitioners. He held a symposium for dental practitioners, highlighting scientific achievements that enhanced clinical care. It was the first time such a symposium was held.

There were several consensus development conferences, a process that preceded systematic reviews, and a technology assessment conference on dental restorative materials, their effects and side effects.

In the early 1990s, the National Advisory Dental Research Council recommended a Blue-Ribbon Panel to review the Intramural Program and provide advice to the Director. That was the first time that an intramural program was critically reviewed and stimulated the NIH Intramural Research Program to request such reviews of other Institute programs. The Panel addressed issues such as whether there were opportunities for the intramural program to be more aligned with oral diseases and conditions, opportunities for collaborations between the academic world and the intramural program and collaborations with industry. In addition, they looked at whether more could be done to contribute to training investigators through the intramural program, with a careful look at the need for investing in clinical research training and in expanding certain programs, such as bone research, within the intramural program.

KD: Was this a tough project? Because NIDR doesn't make the headlines very much, and there were articles in *Science* about this blue-ribbon panel and there were people on both sides, some saying, "Oh yes, we need to sharpen the science and focus it," others saying, "No, intramural scientists should do whatever they want to do." Did you get that kind of dichotomy from the people that you were working with?

DK: First of all, the issue of scientific freedom is always, to this day, something that is precious, right? Academic freedom is precious. So the thought of identifying areas of research that need more emphasis or that might get more resources is going to be controversial. The NIH intramural programs grew over the years. They were incubators for research that earlier did not exist in academic centers, and now were growing, while research centers at in other academic programs across the country were also increasing in number The tension was due to the budget allocation, the funds spent intramurally versus extramurally will be controversial.

He was operating as a director of an entity that has several programs and wanted to do an assessment to see what is needed. The reactions may have come from the perspective of some that the evaluation was looking through a lens that may have had more programmatic intent. The program was reviewed through the lens of the Institute's mission. And by looking at the mission, the natural shift would be towards a more clinically oriented, or disease- or condition-oriented focus.

KD: Ultimately, the Advisory Committee got behind this. Was that the way that it was settled?

DK: There were some changes but can't remember all of them. If you were to look at *Challenges for the 80s* and then review the *Long-Range Research Plan for the Nineties (Broadening the Scope)*, you would see the clear call for a focus on oral diseases and conditions. I can't recreate the angst of that time.

KD: But there was some angst, I guess.

DK: There was some angst.

KD: Let's head into the 90s and the next big report or strategic plan is *Broadening the Scope*.

DK: Jim Lipton was the Chief of Planning and Evaluation then and oversaw the development of that report. The 80s brought HIV/AIDS, and the end of the Cold War came with the beginning of the nineties. There were economic challenges as well.

Broadening the Scope included a similar approach to what we did with the *Challenges for the 80s* in terms of the advisory committee input. It included an extensive group of contributors: scientists, and input from practitioners and the public. It highlighted the need to go beyond caries and periodontal disease, recognized the need for a wider funding base, and acknowledged the changing U.S. demographics, bringing attention to the area of aging and chronic conditions.

One of the things, as I look back at it, is it really highlighted the need to move forward with the prevention agenda that the Institute has always had. Harald Löe really promoted prevention research and practice, highlighting actions individuals as well as practitioners could take. The long-range plan for the 90s also highlighted what we were learning about reversing disease and regenerating lost tissues. That was a very big issue and opportunity. And continued molecular biology techniques.

And then the other part was the whole dedicated section on epidemiology and behavioral and social sciences and health promotion and disease prevention. So it sort of had his mark there.

KD: He also, I think, was the first Director to fund minority oral health research centers.

DK: That's a wonderful story. It was under his leadership that the Institute started the Regional Research Centers on Minority Oral Health (RRCMOH). Norm Braveman, together with Lorraine Jackson from NIDR's Extramural Programs were key planners/implementers of these Centers.

As background, when Margaret Heckler was the HHS Secretary, she commissioned, and in 1985 released, her Task Force Report on Black and Minority Health. The report, referred to as the

"Heckler Report," highlighted the dire state of health care and health disparities and inequities and became a call to action for all agencies and beyond.

Harald Löe, Norm and Lorraine and our Advisory Council discussed the report and agreed that we needed to do something about it. The resulting Regional Research Centers in Minority Oral Health (RRCMOH) were awarded to minority serving institutions who partnered with research-intensive institutions. The intent of these centers was to involve was to involve minority faculty and scientists in applied and basic research to address issues raised in the Task Force report.

In some ways, some of the research conducted in these centers was a precursor to what we now call community participatory research or community-engaged research; working with the community to identify the problems, and jointly develop intervention studies designed to improve oral health and eliminate disparities.

The second round of competition came under Hal Slavkin's directorship tenure. Given the experience of the first round, a request was made to NIH, and approved, to fund the centers for 7 instead of 5 years. The rationale for the extension was to allow time to develop new investigators and to establish community partnerships essential to the success and sustainability of the research. Both the partnering of minority and research-intensive institutions and the extension of award time was unheard of at that time, and it set a precedent for other institutes to do as well.

These activities catapulted us into the development of the Institute's first strategic plan for minority health, a process overseen by Isabel Garcia. At the time, Offices of Minority Health were being established at HHS agencies, in response to the Heckler report, which asked for all to "do something." John Ruffin was appointed founding director of the NIH Office of Minority Health. Once he became director, asked all institutes to develop targeted strategic plans. We

already had created one, so we were well under way. Under Hal Slavkin's leadership the Institute's investments in research to address health disparities continued, and additional centers were funded. One of these focused on prevention of early childhood caries, the positive findings stimulated the state of California to support fluoride varnish services for children from families with limited incomes. He also initiated a program called Statewide Models for Oral Cancer Prevention. I'm really so proud of the work that the Institute has done and continues to do in minority health. The early beginnings occurred well before the National Center for Minority Health and Health Disparities, now the National Institute for Minority Health and Health Disparities, was established.

KD: Between the two Harolds there is some space there, and you were acting Director there for a little while. What did it look like when you got on the other side of the desk?

DK: It was the time when Harold Varmus was the Director, and he was an unusual NIH Director given his pedigree, his research, and his approach. The interim director role gave me an opportunity to really respect and understand the dimensions of sitting in that chair as Rena D'Souza does now and all the previous Directors of the Institute.

You are responsible for protecting the mission and the resources and do what you can to promote further progress, both for resources and for programs.

During that time, we launched the NIDR National Oral Health Information Clearinghouse. I was the interim Director for just a year, so during that time you are planning one year, implementing another, and closing out the other one. It involved implementing the concepts that have been in the queue, and bringing in new concept clearances that will come out subsequently.

KD: I didn't think about the fact that Harold Varmus was in there when you were acting. He implemented a lot of changes at NIH. Did you see that? Did he bring ideas to NIDR?

DK: There was some angst at the time he joined, including discussions about the possible merger of some institutes. He came about two years before Hal arrived, at the tail end of Harald Löe's term and my one year as interim. And when Hal arrived, the urgency was to really give visibility to the Institute's broad mission and to the importance of our research. Hal's skill at communication, the respect for his area of research and his affinity for genomics, reinforced the need the Institute and, not only that, but we needed to grow.

There also was a lot of internal work, Hal brought all Institute staff together as part of a strategic planning process to revisit the vision, mission and the operations of the Institute. This emphasized that the Institute involves all of us, not just the science.

He also opened the door broadly and routinely invited diverse partners to join discussions and contribute. For example, within a month after he came, he brought together editors of all the journals (so that they could hear about our science and promote it broadly. To promote the area of biomimetics, he invited representatives from industry and other disciplines.

KD: What kind of person is he? How did his style contribute to the work he was doing?

DK: He was always a positive, energetic, inviting individual; someone who was a good listener, and always engaging others by asking, "What do you think? What would you do in this case?" He had the ability to describe the intricacies of science so it could be understood by lay audiences. His enthusiasm for new knowledge alone was one of his major assets, in addition to his science and understanding of the broad fields. He created multidisciplinary teams for his

craniofacial anomalies, developmental biology and genetics research, and his experience and commitment to team science was another asset.

Hal was asked to lead a committee focusing on the intramural program and identifying ways to support a more diverse research workforce. The resulting report, called the Slavkin Report, made a series of recommendations, including ways to enhance recruitment and mentoring, partnerships with academic institutions and a proposal to establish an academy in the intramural program.

KD: You mentioned earlier the disparities work starting from the beginning, and I do think NIDR was the first. And that initiative was the model for things that came later. Did Slavkin change the disparities work? There were the minority centers. They were re-funded. Was that program shaped further or moved in a different direction over this period?

DK: Hal continued and expanded the Institute's programs aimed at eliminating health disparities. After the second round of the Regional Research Centers for Minority Oral Health, there were categorical initiatives, such as those focused on young children and prevention of early childhood caries and on early diagnosis and prevention of oral cancer. Research on health disparities continued and remains an essential part of our research portfolio now.

KD: One of the things that I think was in the job description that I read for the Deputy was liaison, working with the other institutes, maybe working with Congress. Did you do that kind of work, and what was involved?

DK: Through the positions, both with the USPHS Commissioned Corps and through NIH, there were routine meetings. At NIH the Deputy Directors of every institute met monthly. These meetings allowed us to keep our eyes on, and learn from each other, what was emerging. It also created a bridge from institute to institute.

During Bernadine Healy's time at NIH director, I was asked to be the representative for NIH to be a liaison to CDC, and Barbara Bowman was my collaborating liaison at CDC, in Atlanta. Our job was to take a look broadly at the prevention gaps between the research agenda at CDC and NIH, because the prevention agenda sometimes falls between the cracks of those agencies.

One consistent role that I had was being the NIDR/NIDCR representative for the Healthy People Initiative, the National Health Promotion and Disease Prevention Objectives for the Nation. When I joined the Commissioned Corps Julie Richmond was the Surgeon General, and he had released his landmark report on that topic (Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention). The year after, the first iteration of National Objectives was launched. Every ten years since that time, health outcomes, including oral health, have been monitored and the objectives have been updated.

Working with the Healthy People initiative gave me the opportunity to work with other oral health and general health representatives from HRSA, Agency for Healthcare Research and Quality (AHRQ), CDC and other federal departments as well. I also had a detail with Toni Novello when she was the Surgeon General, and my role there was to work across the U.S. Department of Agriculture, the Department of Education, and HHS in the area of children (Healthy Children Ready to Learn). Oral health was included in that initiative.

At NIH there were cross-cutting coordinating committees on pain, nutrition, prevention and more. These were a few of my liaison activities, in addition to ones I participated in for the USPHS Commissioned Corps.

KD: How about the Council at NIDCR? I'm really interested in how much the Council worked with the Director, how much the Council set the agenda and moved things forward, and how much the Council responded to what the Director was doing. Did that change over time?

DK: Council members are appointed at a higher level than the Institute and NIH. While the Director of the NIDR/NIDCR could recommend individuals to be considered, the decision to appoint was made at the department level since Council members provide recommendations to the HHS Secretary as well to NIH and the Institute director. The Council protocol and operations are formally and clearly defined. The diversity of the different disciplines and backgrounds of Council members allows them to offer advice and review from various perspectives. They also have the opportunity to learn about the Institute, provide input based on their extramural experiences, and share their personal expertise.

Council members provide a second level of review for grant applications, and they also review and respond to the Institute's initiatives. These may include concepts for funding new research, identifying applications for high or low priority, etc.

I think that there was a give and take. I think the Institute did its due diligence through and inclusive process to develop long-range plans and through open communications. I would say during my time the thematic concern was the interest to provide more funds to the extramural community: to the funds supporting the intramural program could be used well by the extramural community. We also had Program Advisory Committees in addition to the Council. Given their more tailored content charge, they were able to review and advise us in a more focused manner.

KD: So you found in general that the Council and program advisory committees were really doing productive work as far as looking at the programs?

DK: Yes. You benefit from hearing from a diverse group of individuals. You're going to get a range of perspectives. You have to operate a federally funded program in a manner that is open and transparent. The Council process provides that second level of oversight and reviews the program in a broader way than if it was only internally reviewed.

KD: Let's move to the Surgeon General's Report, moving up toward 2000. Where did that come from? Did the Surgeon General say, "Hey, I want to look at the mouth and craniofacial health"?

DK: There had been several attempts prior to that time to promote a Surgeon General report on the topic of oral health. Previous Chief Dental Officers made such recommendations. The Report that was released in 2000 was commissioned three years earlier by Donna Shalala, who was the HHS Secretary at the time. And unbeknownst to us, her dentist, John Drum, a D.C. dentist, as he was taking good care of her oral health, was telling her about the incredible things about the mouth, oral diseases and research. I think it was his whispering in her ear that inspired her to commission it.

So despite all the internal attempts, the tipping point was her exchange with her personal dentist. When she commissioned the report, the American Dental Association was represented, and Hal Slavkin, NIDR/NIDCR's director, was present. Caswell Evans was identified as taking the lead for the Surgeon General's Report and I was identified to work closely with him.

It took us a couple of years to complete the report which included a very broad-based approach involving numerous author contributors, and a federal coordinating committee. We wanted to have representation across the government and beyond.

The report had several operating principles: this was not a report on dentistry; it's a report on oral health and oral health is more than teeth. The report was charged to take an evidence-based

review not only of diseases and conditions and the association between general health and oral health, but also to inform what individuals, the community, and what practitioners could do to promote health in addition to preventing disease. In addition, the report looked to the future and projected what science could do, and what actions were needed to move forward.

The report was released in 2000, and highlighted the association of oral and general health, that common risk factors contribute to our overall health and to our oral health, while progress has been made health disparities remain and called for a much more structured way to move forward with a national oral health plan.

Surgeon General David Satcher, who also served as HHS Assistant Secretary for Health, released the report.

KD: And it focused on oral health, broadening the scope. One thing we passed over was the name change, something that Harold Slavkin pushed for, I guess. Tell me about the process. Was it contentious? Was it easy to do, no big deal? How did it work?

DK: As I look back, I don't think it was contentious. We had been discussing it but couldn't get to a point of agreement on what the words would be. As mentioned in our previous research agendas and long-range plans, the Institute's research includes but goes beyond the dentition. The contentious nature was more focused on not giving the impression that dentistry was not important or that the profession of dentistry was not an important recipient of the research.

The American Dental Association has been a strong advocate and partner, and so if I remember correctly, we played with the words> We wanted to be sure that the terms "dental" and also "research" remained. The terms "oral and craniofacial" were discussed. But there was concern

that most people would not understand "oral" in the way dental professionals use the term, so then the term "craniofacial" was adopted since it captured the entire body structure.

KD: I hadn't heard or thought of the whole idea of not leaving the dentists behind in all of that. We've done the Surgeon General's Report. You did some kind of follow-up action plan shortly after.

DK: In 2003 the National Call to Action to Promote Oral Health was released. Rich Carmona was the Surgeon General at the time. While we had the report there needed to be follow-up action, a little bit of a nudge. We have to give credit for this additional initiative to Cas Evans, who was still working with us. The "call to action" was done under the auspices of a public/private partnership with the Office of the Surgeon General, and it included a series of regional townhall meetings allowing individuals across the nation to provide testimony. We held these sessions concurrent with meetings of national professional organizations, encouraging people in the field, and whomever was interested to provide recommendations for action.

This resulted in the "call to action" that includes five major actions. These actions are still viable today. The first is to change perceptions of oral health of the public, of practitioners, both dental and non-dental, and of policymakers about what oral health, craniofacial/dental health is and what it could be if we invest in it.

The second one is to replicate and use evidence-based programs and efforts. Don't reinvent the wheel. There are lot of good evidence-based programs out there, just use them, invest in them. And thirdly build the science. There was a push to continue that, accelerate it, and transmit it. The last two actions include investments in the workforce and collaborations. For the workforce the focus was on diversifying it and building its capacity so we have a team that could take

things further. Since then, we have been joined by community health workers and others that extend the reach beyond the traditional private practices and into community settings. And lastly, the "call for action" emphasized the value and need to increase collaborations with public health practitioners and states and other organizations that can really make things move forward.

So the current update, *Oral Health in America: Advances and Challenges*, released 20 years later, identifies areas where we still need additional investment. While much progress has been made, we did not have as much positive movement in overall oral health improvement as we had hoped. This is the story of science, new findings emerge, and continual investment, translation and dissemination is needed.

KD: Speaking of collaboration. You were baking a lot of pies in the early 2000s. You became the Chief Dental Officer for the Public Health Service Commissioned Corps. At the same time, you're still Deputy at NIDCR. How did you keep those balls in the air?

DK: First of all, I have to say that was the support provided by Larry Tabak, who was the NIDCR Director at that time, and Hal Slavkin before him. Because there is no funding that comes with being appointed as the Chief Dental Officer, there is no office and staff. However, there are expectations.

As it happened, 9/11 happened three days after I was sworn in as Chief Dental Officer, and so there was an immediate need to respond. Dental officers were among the first to be called up, because of the anticipated role for dental forensics, which of course did not materialize. The anthrax attacks requiring emergency preparedness actions followed There also were issues during that time with the Indian Health Service and the training of dental therapists. Activities

that fell within the purview of a Chief Dental Officer had relevance to NIDCR and to what was occurring in public health broadly. The dental institute provided patient support and investment.

KD: There must have been more patience when Dr. Zerhouni came in and started the Roadmap project.

DK: That was more patience. I was asked to support the launch of the Roadmap for medical research and Larry said fine to having a member of his team in the day to day activities of the NIH Roadmap for Medical Research. Larry was one of three institute directors who were very much involved and on board with this initiative: Aging, Arthritis, and Dental. I think looking back, that my role facilitating the launch of the Roadmap was in line with Larry's thinking and, given the rest of his NIH senior leadership career, reflected his commitment to the agency as a whole.

KD: It's interesting, because you had spent a good bit of time, years, with NIDCR. This gave you an opportunity to really look at NIH as a whole. I assume you're working very closely with all the institutes. How did that perspective help you understand NIDCR as an institute? How does it stand out in NIH? How is it different, historically and today?

DK: First of all, I think NIDCR is the history of NIH. NIDCR's evolution to this day has shown innovation in many ways—sometimes before any other institute has done. My vision from that point was many of the initiatives developed as part of the Roadmap for Medical Research, which has evolved to be the Common Fund, were very much the type of initiatives that would benefit a smaller institute more, than a large institute. The large institutes were more likely than smaller institutes to have the capacity to create needed research resources, needed tools and technologies and research teams.

Also coming from an institute that knows that everything it does is related to the rest of the body, working collaboratively across institutes for NIH generic benefit was a natural role for me.

As Deputy Director, I loved the routine meetings with the other Deputy Directors and enjoyed the inter-IC committees (nutrition, prevention, pain, etc.) across the NIH.

NIH is a small place. While it seems like a large place, we had institute and deputy directors who had been there a long time and provided the historical context.

KD: Talk about your decision to move to Maryland.

DK: I had worked for two years in the dental school before being commissioned for 28 years in the USPHS Commissioned Corps, and I wanted to back into the community. What are some ways I can do that? And it just happened. This is like no amount of planning can replace dumb luck. A position was being advertised at the University of Maryland at College Park for an associate dean for research to help launch a new school of public health. And I thought, somebody must have written this for me.

I have to give Dr. Alice Horowitz a lot of credit. Alice Horowitz, who spent her career with the Division of Dentistry and then with the National Institute of Dental Research and NIDCR, the National Caries Program, and then heading the Institute's health promotion and health disease prevention programs, had worked closely with Bob Gold, who was the dean at what was then the College of Health and Human Performance at the University of Maryland.

Alice put in a good word for me, and I had an opportunity to interview and subsequently was offered the position to work with Bob Gold. The World Health Organization (WHO) had just come out with its report on the social determinants of health and how important they were to overall health, and they thought a land-grant institution with disciplines such as business,

behavioral and social science, public policy, urban planning and agriculture etc. was the right place and time to launch a school of public health. I was in a different stage in my career and have loved all the years I spent there.

KD: Terrific. Is there anything that we haven't talked about that stands out that we should?

DK: I think we've talked about a lot, but I do want to go back to Hal Slavkin. It was under his leadership that the first patient advocacy group was brought together. He felt, as I mentioned, with the editors, with the partnership between academia, industry and government, with different sectors, that the patient advocates were the ones who were important to bring together with researchers. Hearing their perspectives could stimulate needed research and initiatives.

Ultimately the patient advocacy group convening was transferred over to the American Dental Education Association.

KD: This has been a terrific talk. I appreciate it. I've learned a lot that I didn't know.

DK: I've learned a lot that I didn't know either.

KD: It's always eye-opening to go back over things from a distance, and that's the point of this history project. So thank you for making this interview a good part of it.

DK: Thank you very much.