National Institutes of Health
Clinical Center

Oral History Interview with

DAVID HENDERSON

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PRESENTED BY:

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DAVID HENDERSON

Biographical Statement

Dr. David K. Henderson was born in Fort Wayne, Indiana, in 1947, and grew up in Wabash, Indiana. He received his B.A. from Hanover College in 1969, and his M.D. from the University of Chicago Pritzker School of Medicine in 1973. Dr. Henderson completed his internship (1973-74), residency in internal medicine (1974-76), and a fellowship in infectious diseases (1976-78) at Los Angeles County, Harbor-UCLA Medical Center in Torrance, California. From 1978-79 he was Assistant Professor of Medicine at the University of California at Los Angeles School of Medicine. In 1979, he was hired by the National Institutes of Health Clinical Center as the Center's first Hospital Epidemiologist, a position he held until 2014. Positions Dr. Henderson held concurrently (and beyond) at the Clinical Center: Coordinator of AIDS Activities (1985-88); Associate Director for Clinical Quality, Patient Safety, and Hospital Epidemiology (1988-2020); and Deputy Director for Clinical Care (1994-2020). Since retiring from his position as Deputy Director for Clinical Care in January 2020, Dr. Henderson serves as Senior Consultant to the Chief Executive Officer for the Clinical Center. He has published more than 160 peer-reviewed journal articles as well as dozens of book chapters, served on numerous editorial boards, including Annals of Internal Medicine, and has been an invited speaker internationally. Dr. Henderson's membership in medical organizations has focused on those in infectious diseases and hospital epidemiology. He has consulted with numerous organizations, served on national steering committees, and is a fellow of the Infectious Disease Society of America, the American College of Physicians, and the Society of Healthcare Epidemiology of America, as well as a founder and 2020 president of SHEA. Dr. Henderson has won many awards, including numerous NIH Director's Awards, the Feinstein Award from the American College of Physicians for career contributions to clinical epidemiology, and the Service to America Award.

Interview Synopsis

Dr. Henderson begins the interview with memories of growing up in the small community of Wabash, Indiana, and mentions some early experiences that led him to be interested in medicine. He remembers his undergraduate years at the small liberal arts college, Hanover College, and the culturally stimulating and intellectually demanding time he spent at the University of Chicago's Pritzker School of Medicine. Dr. Henderson recounts important lessons he learned at Harbor-UCLA identifying and diagnosing illnesses and learning the practice of medicine, as well as remembering mentors that helped him chart his career path. He shares the story of interviewing at NIH's Clinical Center—thinking he had bombed the interview when actually he was practically hired on the spot. Dr. Henderson recounts his experiences with the AIDS epidemic early on in his career at NIH and the difficulties and successes of being a hospital epidemiologist during the crisis. He speaks about helping to establish, along with his staff, safety protocols at the Clinical Center and also consulting with the CDC on national guidelines. He speaks about the changes that were accomplished during his time as Deputy Director, including establishing a Pediatrics Unit, Internal Medicine Consult Unit, and a Pain and Palliative Care Service. Throughout the interview, Dr. Henderson comments on the special place that is the NIH and the fact that the Clinical Center is a hospital like no other: It is a "hospital dedicated to science."

NIH-CC Oral History Project
Interview with Dr. David Henderson
Conducted on February 18-19, 2020 by Sheree Scarborough

SS: I'm here with Dr. David Henderson. This is Sheree Scarborough for the NIH Clinical Center, Oral History Project and today is February 18, 2020. We are in his office at the Clinical Center.

Dr. Henderson, as I just mentioned, we're going to do a total life-career trajectory in your interview today, more focusing on your science background and your career. I always find it interesting to find out something about your family, where you were born and your early years.

DH: I was born in Fort Wayne, Indiana, which was about forty miles from my hometown Wabash, Indiana. My father was one of the minor pillars of our small community. He owned a farm implement dealership. He sold tractors and trucks, International Harvester and Farmall tractors and trucks, and also for a while sold Packard automobiles. He was a member of the city council for seven years. He was on the board of directors of the bank. He was a community citizen and was a good role model for me as a kid.

My mom died when I was ten. She was pregnant with my sister. I remember vividly because she was in a high risk pregnancy, she was in her forties, and had a very difficult pregnancy with lots of horrible headaches, and that was a harbinger of things to come. She had a subarachnoid hemorrhage and died catastrophically about six weeks after my sister was born, so that was a challenge.

I grew up in Wabash, Indiana, a small town Indiana, not quite a farm boy, but almost. We lived in the city. Wabash is the county seat of Wabash County and the population then was about 13,000 people. Probably it's about the same now, maybe a little smaller.

SS: You were born in 1947?

DH: Nineteen forty-seven.

SS: One of the first baby boomers.

DH: I was a boomer, absolutely, yes. I went to the community schools in Wabash under the elementary school and my side of the town at one junior high school and then Wabash City High School. I went to Wabash High School.

SS: You had one sister who is younger?

DH: I have a sister who is ten years younger than I and a brother who is four years old who actually still lives in Wabash.

SS: Did he go on to city council fame?

DH: No. He has somewhat of a lower profile. We were like the city mouse and the country mouse. He was very comfortable in the environment in which we grew up and I always had my eyes on different things.

SS: Did one of your grandmothers step in to help raise the children?

DH: No. Actually, my maternal grandmother helped with my sister. It sounds like a series of tragedies. My mother died when I was ten and my grandmother did come and live with us for a while to take care of my sister. And then when I was in junior high school my father remarried a woman from the church that we attended in town, and she had a daughter who was my brother's age. She was in college at Ball State University, then Ball State Teachers College, and now Ball State University. My

dad went to pick her up and on the way had a terrible automobile accident, and was really incapacitated for about a year and a half. We lost our house, our business, everything. My sister was in the accident with my father and had a skull fracture, was airlifted to Indianapolis, and it was quite an event. I found myself on my own for a while. I was a freshman in high school at the time.

SS: I'm so sorry. It's good, though, you were in a small town.

DH: And that's the rest of the story and the important part of the story. I did fine eating out of our pantry until the pantry ran out and then I decided that I would go get a job because I had to have something to eat. I think it would be fair to say that I had a high opinion of myself and I couldn't imagine that anybody wouldn't want to hire me. So I decided I would go downtown and go to the different stores and see if I could find somebody who would offer me a job. They all had people doing those jobs and I was getting really quite discouraged because I was going from business to business.

I went to the local sporting goods store and I asked if they needed somebody to sweep or dust or work in the store, and he said he had a person to do that. Then he looked at me and said, "Aren't you Marshall Henderson's son?" I said yes. He said, "How is your dad?" I said, "He's doing better. He's still in the hospital." "Where is he in the hospital?" And I said, "In Muncie, Indiana." And he said, "Where are you living?" I said, "I'm living at home." He said, "Who's looking after you?" And I said, "No one." Because my stepmother had gone to be with my dad and my sister was in the hospital in Indianapolis, so I really was pretty much on my own. He said, "Maybe I do need somebody to help me." So that started a relationship.

Looking back, these people fielded me like a ground ball to the short stop, and took care of me. I became a part of their family and they basically adopted me. They were absolutely unbelievably wonderful people. They're both dead now. But they were spectacular folks.

SS: What a nice story.

DH: It's a great story, and they never, ever made me feel like it was handout. They always made me feel like I was earning my keep and doing stuff to be a part of what was going on. They tended me all the way through college and all the way through medical school as well.

SS: Even after you father came home?

DH: After Dad got home, absolutely. I had two families then. They would come to visit me just like my father would come to visit me. They're terrific folks.

SS: That is very touching. That was a really good thing for you because they provided stability.

DH: Absolutely. After I finally got through that stretch it was smooth sailing, all things considered.

SS: After you got out of high school?

DH: Even in high school, after the trauma of my freshman year and having all those things happen, things settled down. I was fine.

SS: What was the name of the couple?

DH: **Sam and Luanne Schlemer**—a good German name.

SS: What was the name of their business?

DH: Sam's Sports Shop.

SS: Is that how your interest in golf got started?

DH: That came from my father actually. He taught me how to play golf when I was about ten. It was sort of unusual in those days. He played golf when he was a kid and really liked it. And I still play. He said, "If you learn how to play this game you'll have this game for the rest of your life." He said, "You like baseball and basketball, but you won't be playing baseball and basketball when you're in your sixties and seventies, but you'll be able to play golf." So he taught me how. I passed that on to my son and it's a part of our life now.

The sporting goods store was one of the places where all the kids in town assembled. My friends would come by. It was not much like having a job, but I got paid for it.

SS: It sounds ideal. Did you play sports in high school?

DH: I did my freshman and sophomore year, and started my sophomore year, until my dad got sick. I initially tried to play football my sophomore year, the start of the year. I had that job and [**Mr. Schlemer**] encouraged me to go play. I could work whenever I could work and it just was too much for me. I couldn't do it and I may not have had that much talent, actually. (Laughter.)

SS: What else did you like? Did you take science classes? Did you have a love of science?

DH: Yes. I liked science from the get-go and always envisioned myself doing something in science. This is going to sound horrible, but it's true, so I'm going to tell it on myself anyway. I'm not that social a person, and people would ask me what I wanted to be when I grew up, and I didn't know at the time. I found that if I said that I didn't know then there were many other questions that got asked. If I said, “I think I might want to be a doctor,” then that's a really good thing, and that was the end of the conversation.

I started saying that long before I started really thinking that. I really enjoyed the biological sciences. I went through whatever advanced classes they had in my little high school and was pretty much committed to a career in medicine or biomedical science by the time I was headed off to college.

SS: That's unusual for that small town, I would imagine.

DH: I'd say it's distinctly unusual for that small town.

SS: Was there a teacher that you had that encouraged you?

DH: I had really remarkable teachers in high school. My absolute best teacher perhaps of my entire life was a woman who taught me English and English literature, who graded on her assessment of what you capabilities were. She would hand back papers to me with a B+ and I would look at other people who had A's and A-'s. I knew mine was better than theirs. And she would pat me on the shoulder and say, "Now David, you know you can do much better than that." She had my number. As a relatively larger fish in a very small pond, she had my number.

SS: What was her name?

DH: Martha Jones. She is also gone now, but if you were to go back and talk to anybody my age or even twenty years younger every one of them would say the same thing about her. Every kid in the class loved her. She was just an astounding teacher and she really could teach English literature. She made us all love learning, and she was exceptional. I had a great math teacher, Cecilia Mills. I had a really intense biology teacher named Robert Elliott, who was a very nice man, but his lectures left a lot to be desired, let's put it that way. He also loved the subject and some of that got transmitted for sure.

SS: Do you think the medical tragedies that you've talked about had anything to do with you wanting to become a doctor?

DH: Absolutely. Looking back at my mother's illness, I stayed with her part of the time. She actually went to Indianapolis because it was a real high-risk pregnancy and I stayed down there with her. And I remember her not being able to lie down. She had to sleep sitting up. I think anyone with any kind of insight whatsoever might have picked up on that. I think that probably influenced me.

And then my father's accident, there was a very young orthopedic surgeon at the hospital in Muncie who was just out of his training. My father had had a broken leg previously and his right leg was broken in literally hundreds of places. I remember him telling me when he woke up from the wreck he looked down and his right leg was about that long, and he was 6 foot 3 inches, and his foot was pointed in the wrong direction. That orthopedic surgeon took care of my dad in the hospital for eighteen months—this was a different time than we're living in now. He put him in a full body cast and said, "We're not going to lose that leg," and he didn't. It was stiff at the knee when he walked on it two and a half years later. That probably was a bellwether for the orthopedic surgeon and certainly also had an influence on me, watching him change my father's life.

SS: Right, interesting. Then you went on to college.

DH: I did, to Hanover College, a place you've never heard of. (Laughter.) There are a lot of excellent small liberal arts colleges in the Midwest. I got a wonderful liberal arts education. Not only did I have absolutely terrific science support, but I had to take all those other courses as well. So I had to learn who Agamemnon and Botticelli were. It also grounded me as a launching pad. I think it was a very good thing for me to do. I think had I tried to go someplace larger I could have easily gotten swamped. This was moving from a small pond to another smaller pond where I felt like I could compete, and did.

SS: That was in the sixties?

DH: Nineteen sixty-five to 1969 at Hanover College.

SS: That was an interesting time in America.

DH: It was a very interesting time. I had a student deferment. If you went to medical school you got another student deferment as long as you made your grades. That wasn't why I went to medical school. If you want to talk about interesting transitions, moving from Hanover, Indiana, the town of Hanover had a population of 700. Madison County seat had a population of about 5,000 when I was there. It was about seven miles away. I went from there to the south side of Chicago to medical school. It was frame shift. (Laughter.)

SS: (Laughter.) You apparently did well, though.

DH: I think I did fine, yes.

SS: Had the sixties reached Hanover?

DH: Yes, absolutely. There was a lot of campus activism. People didn't like the war in Vietnam, didn't like the leadership of the country. Hanover is a very controlled environment, so I wouldn't call it chaotic. I did go to the University of Chicago after that, so I know what chaotic is. When the horrible tragedy at Kent State happened and the students were killed, the undergraduates at the University of Chicago when out on the Midway out in front of the university and dug World War I trenches, and wore head gear like they were going to be attacked because they were sure it was coming.

When I went to interview for medical school I had no idea how to get there. It's the very first time I ever got on an airplane. I was supposed to drive, but at the last minute something happened and I

couldn't get there in time. So I had to drive to Cincinnati to take the plane to Chicago. When I got to downtown Chicago I asked the policeman standing on the corner if he could tell me how to get to the University of Chicago, and he said, "Yes, go straight to hell." (Laughter.) They didn't have much affection for the university students. It was very liberal.

SS: (Laughter.) Well that didn't help you get there.

DH: No. The Midwest is the Midwest. There was a woman staying there and she said, "I think if you go over and take the Illinois Central train, get off at 59th Street and you'll walk right over from there." It was a little bit traumatizing. I was a country bumpkin going there, but I think I got over that after I was at the university.

SS: That was in 1969?

DH: Yes.

SS: That is a huge shift.

DH: Oh yes.

SS: Did you take advantage of being in Chicago, for example by going to museums and hearing music?

DH: Absolutely. I was a little bit afraid because I was a country boy. So I wrote to the university and asked them if there was a laboratory I could work in the summer before medical school started. In those days it didn't start until the fall. So I got to work in a microbiology laboratory, interestingly, with a man who was interested in bacteriophage. It allowed me to adjust to the environment. I mostly washed dishes and made **auger** and did menial tasks, but it allowed me the chance to get settled in Chicago.

SS: How wise of you as a young person.

DH: I was terrified (laughter). That was a really good experience, and looking at the other people in my class it allowed me an advantage, because even though a lot of them were from big places it was really different. That set of folks, my medical school class had sixty-nine students in it and they were a remarkable set of people, really something.

SS: Tell me about that.

DH: Remember, I had been in Wabash, Indiana and in Hanover College and I thought I might be the smartest person in the world. I learned very quickly that I wasn't. These people were talented and I had for the first time ever had to pedal hard to stay up. I had to actually learn how to study in medical school because I never had to study prior to that, and it was humbling.

SS: Did you live in a dorm?

DH: The first year I was there I lived in a dorm called the International House, which had people from all over the world. It was a very interesting place to live. My room was probably about half the size of this one.

SS: And this is what 12 by 12 feet?

DH: I don't know. It was a closet before it became my office. But I'm so grateful to have it and I've got all my stuff here and feel like I've arrived, so it's okay.

That was the first summer, especially. Then midway my freshman year I made friends with people and we got an apartment, a tenement sort of apartment in Hyde Park. The first one three of us

shared and then we got a place in South Shore the following year, which I think had five or six people, and the sixth one was there most of the time. I'm not sure that person paid for anything. That was a two-bedroom apartment with six of us living there. We turned the living room into a bedroom. We got by. It was good.

SS: It sounds like for someone who calls himself “not social,” you became more social.

DH: You have to be social. This is a social world we live in. But if you give me choices I probably would avoid some social circumstances like this one, for example, not having anything to do with you, but just the idea of talking about myself.

SS: From 1969 to 1973, you were in medical school in Chicago with all of this stuff going on.

DH: Yes. You asked about the city. It's my favorite city in the world, still. The most amazing thing that happened was I had a colleague from Hanover College who lived in Wheaton, Illinois, which is about thirty miles west of Chicago. He said, "You ought to go hear the Chicago Symphony." So I looked it up. The tickets were twenty-five or thirty dollars even then. I said, “There's no way I can do that.” But as luck would have it, they made an announcement that the dean of the medical school, the academic dean, had a connection to the ticket office at Orchestra Hall, and that very often they got tickets on the day of a performance. If you wanted to go you should just stop in the dean's office. Well not too many of my colleagues were interested in going, but I was really interested in going at least once. My father liked music and we had music playing in our house a lot. So I wouldn't say at that juncture in my life that I liked classical music, but we went. I called my friend. I got two tickets to hear George Bizet's Symphony in C and Mussorgsky-Ravel, "Pictures at an Exhibition.” I'll never forget it. Our tickets were in the eighth row, close to the center because they were university patrons and they had good seats. I had no idea what to expect. Have you ever been in Orchestra Hall in Chicago?

SS: No.

DH: You should go if you like music. There's no better place. It's an incredibly vertical environment. There are five balconies and the balconies go clear out over the orchestra, and it's very close up, so the sound is astounding. The "Pictures at an Exhibition" start with the lead trumpet stands and plays the Promenade Theme. And this was a little guy. His name was Adolph Herseth. He stood up. He was probably about 5 foot 8 inches and cigar shaped, and put a trumpet to his mouth and made a noise I couldn't even imagine. I can still get chills remembering that experience and [it was] jaw dropping. You want to catch your jaw as the music played. So I was hooked, completely hooked.

I was the person who went to see the dean all the time. I have many stories to tell about tickets during a time when the Chicago Symphony was arguably, if not the best, one of the very best in the world. Seiji Ozawa was their conductor when I first went and then Georg Solti became the principal conductor, and they were dynamite under Solti. They were really astounding. So for nothing, I had 25 cents to get downtown and 25 cents to get back. I could go hear maybe the best Symphony Orchestra in the world, sometimes in box seats, whatever they turned in.

SS: What an education!

DH: It was wonderful. We did usual student things as well, but the things that were really special about Chicago, I'll never forget that.

SS: And you were also going to medical school at the time and learning how to study?

DH: Yes.

SS: Did you like medical school when you finally got there?

DH: I don't think I ever even asked myself that question during my freshman year. My freshman year was complete basic science. It was biochemistry, anatomy, neuroanatomy, just grinding through it. It was like going to college on steroids for me. It was a job I had to do, so I did it. Once we started doing clinical things I discovered that I really did like medicine. In the middle of biochemistry lectures—probably not. (Laughter.)

SS: Are there teachers that stand out to you?

DH: At Hanover there was a biology professor named **Ennis Prey**, who my freshman year, we had a large lecture and then small groups that did laboratories together. About halfway through the first semester he came up to me and said, "Would you like to be my lab assistant next term?" I was still in the class, and I said, "I'll be taking 116." He said," But you could be a lab assistant in another section, couldn't you?" And he said, "We pay." And I said, “Okay.” So that started a relationship with him that lasted. He was a good mentor. He desperately wanted me to be a teacher and not to go to medical school. Ultimately, I think he might have been happy with how I ended up, but I'm not sure he ever knew it, because I left there and went to medical school.

SS: He must have seen some special abilities that you had.

DH: I think he thought I was knowledgeable about biology and that I could teach my colleagues without having it be painful. We had many discussions about that. He said he thought I had a gift to do that.

SS: You didn't choose to go down that path.

DH: No, but I chose never to leave the womb. Academic medicine, I never left. I went from there to UCLA Hospital and was in a very academic environment, then immediately came here and thought I would be here two or three years, fatten up my CV and go off and get a real job. But I actually stuck and that's another part of the story.

My daughter is a pediatric resident at Texas Children's Hospital in Houston. I think when you're in medical school there is always a faculty person that you look at and say, “I would like to be that person.” When I was in medical school there was a young man, I have no idea what became of him, a hematologist named **Daniel Roth**, who was kind and cared about the students. So our hematology rotation, we had lots of patients who were very, very sick—leukemia and lymphoma—lots of people dying, lots of catastrophes. It was a rude awakening to how tough medicine gets.

No matter what ever happened I remember one night we had a woman who had myelomonocytic leukemia, who I had pushed platelets through a vein in her hand for hours trying to get her platelet count up. And when I had done four hours of that we drew a platelet count and it was zero. She died that evening of catastrophic consumption coagulopathy, blood all over everywhere. I knew her. It was really hard. It was in the middle of the night when she died. He came in and said, "We're going to talk about **disseminated intravascular coagulation. So at three in the morning with rapt attention of all the medical students and residents involved we went through what happened to this woman, what we might have been able to do, had we been able to give her platelets or get her clotting factors up.**

At that point I thought I wanted to be a hematologist I think entirely because of Daniel Roth, not only what he knew and how he knew it, but how he dealt with the students, how he cared about the folks, both the patients and the team, and tended to us all. If I had to pick one person from Hanover it would be Ennis Prey. In Chicago, it's Daniel Roth.

SS: That’s a wonderful story because there are a lot of professors in graduate school—and I’m sure in medical school—who aren’t kind.

DH: Oh, absolutely. I can name some of them from the University of Chicago as well. He was special. I think not far enough out of his own training that he hadn't forgotten what it's like to be in awe of what you're doing and trying to do anything you can to help. He was a very good teacher as well.

SS: So then you got your M.D.

DH: I did. Surprised everybody.

SS: And went to the opposite coast.

DH: My approach to my post-graduate training was straightforward. I wanted to go someplace where you saw a huge patient population. What I didn't want was the University of Chicago where the patients were admitted to the hospital with a diagnosis. So they would be referred in from someplace else with ulcerative colitis or some other kind of inflammatory bowel disease, but they would come with a diagnosis. I wanted to be someplace that had a really strong faculty, but had a large catchment where you would be the person who would actually work up the problem and make the diagnosis.

The places I looked were an unusual set of places: King County Hospital in Seattle, San Francisco General Hospital in San Francisco, Harbor General Hospital in Torrance, California, Parkland Memorial in Dallas, Grady Hospital in Atlanta, Washington University at St. Louis in St. Louis. That set of places, these big hospitals, big catchments, but I wanted to learn how to be a doctor.

SS: Were you accepted at numerous ones?

DH: So the way that worked, we were in the match even in those days. And the way that worked is you ranked your number one place and your number two place, number three place, number four place, and then when you opened up the envelope you found out where you were going. I'd like to tell you that where I went was my number one place, but it wasn't. I ranked San Francisco in front of Los Angeles, but it was close.

The thing that was a really a selling feature at Harbor in those days, I think it's probably not true anymore, but it may have been as good a place in the world to get an education in internal medicine. The faculty was astounding. They were mostly young, very many Daniel Roth-like characters, and dynamic. There was an amazing esprit de corps in the house staff and I was really impressed when I was there. It was my second choice and that's where I went. I don't know how many other places I got in because you never know that. It's a match. You rank and they rank. So if Hospital A has thirty-seven slots they rank one to 300 and then they match them up with the student actually getting the preference. So if your number six goes to Harvard then you go to number seven.

SS: Had you been to L.A. before?

DH: No. Geography had nothing to do with it. I had never been there before.

SS: Tell me about that.

DH: I decided I wanted to go visit these places. I didn't have very much money, any money, but the university had a travel agency that was run by the university in the administrative offices. I went in there and explained to this guy what I wanted to do. I wanted to go from Chicago to St. Louis, to Seattle, to San Francisco. I said, "I really don't have very much money." And he said, "I like this." So he fitted me out with an itinerary to visit all the places I wanted to visit.

I had instructions to some places. The one I remember was getting from Portland to San Francisco. He said, "You're going to go to the Portland Airport and you're going to walk up to the counter and say, "I have a ticket on this flight." He said, "They're ferrying that plane. There won't be any other passengers on it, but it won't cost you anything. You just to have tell them you have a ticket." So when I got there they said, "No one has a ticket." I said, "I have a ticket." They let them on that plane. I didn't pay a cent for that flight from Portland to San Francisco. He was a wizard and got me

all around. I got to all the places I wanted to go and all those places had that in common, a large catchment of patients, a terrific faculty, and a chance to learn how to make the diagnosis and then take care of the patient.

I ended up in Los Angeles. If you ask me geographically where I would want to have been that might have been last on my list. L.A. had no appeal to me at the time, but it has a lot of appeal once you're there. You figure out what to do. It was a great place to live. I lived there about as long I wanted to, five years.

SS: You have lived in the Midwest the whole time. I'm sure you were busy and you didn't get a chance to sightsee that much in L.A. (Laughter.)

DH: No. (Laughter.) In medical school you're very busy and the time I had off I told you what I did with it. When I was able to take off I often went to hear the symphony or did other things with the people I hung out with.

SS: The same was true with your residency?

DH: During residency you have even less time.

SS: Did you already specialize?

DH: You choose what program you want to go to. When my daughter graduated from medical school she had to decide whether she wanted to do internal medicine, pediatrics, surgery, anesthesia, some general choices. She decided for pediatrics. Then you take a general pediatrics residency for three years and then you decide in the last year of that whether you want to take subspecialty training. I knew I wanted to do internal medicine, so when I graduated from medical school I only

looked at internal medicine programs. All the places I told you I visited I just looked at the straight medicine internships at those places.

SS: Because you wanted to be the one doing the diagnosis?

DH: That's just what medicine appealed to me. By then you've had a taste. You've been through all the services. You rotated through obstetrics, gynecology, surgery, and psychiatry. I learned very quickly I didn't want to be a psychiatrist.

SS: Is there a story that goes with that? (Laughter.)

DH: (Laughter.) Yes. When I was a third year medical student, we each got to interview a patient and then present to the faculty what we had learned and what we thought about the case. The interesting thing about it was that I interviewed a young Southside Chicago boy, sixteen or seventeen years old who clearly had some behavioral issues and some funny thinking. I had no idea what was wrong with him. So when I presented, I presented the best I could, and then I listened to Daniel X. Freedman who was the world's expert on schizophrenia. And three or four other faculty people argued for about an hour and a half about whether what he needed was three outpatient visits or long term therapy. So it was clear that no one knew the answer. I said, “This is not for me.” Penicillin, Group A strep, they get well. (Laughter.) So I was certain I didn't want to do psychiatry. Medicine appealed to me. I looked at medicine programs around the country and went to Harbor.

SS: How was that experience?

DH: Transformative. It was exactly what I had hoped for in spades. In those days we spent a lot of time in the hospital that you can't do anymore. There was a famous case, I can't tell you the precise [circumstances], of a young woman house officer in New York who had worked too many hours and a patient died, and they sued. The young woman showed how many hours she had been working,

and that transformed postgraduate training in medicine. I know I averaged over 110 hours a week in the hospital during my internship.

If you do a good job with your patients, then the residents in the emergency room and the residents who are following people in their clinics will choose you for their difficult cases. So I had my fill of difficult patients and challenging times. I learned a lot. Probably at the end of my second year of residency in medicine I was the best doctor I ever was in my life. I didn't have any patina, but I had a lot of experience from both diagnostic and therapeutic perspectives, staying up with the literature, which was possible in those days, being probably at the top of my game.

SS: Tell me about how you made a shift into your fellowship.

DH: This is what I described for my daughter. You have in theory a two-year, in those days a one-year, internship and then two years of residency in medicine. And during the time you decide whether or not you want to do general internal medicine or whether you want to specialize in one of the subspecialties in medicine: rheumatology, endocrinology, infectious diseases, hematology and so on.

I thought I wanted to be a hematologist, but things change. The doctors who were the doctors' doctors at Harbor were the infectious disease team, and if you needed a doctor consult, not just an infectious disease consult that's who you called, and they would figure things out. I really admired that. So I initially signed up to do a hematology fellowship, but the chief of Infectious Diseases talked me out of it. He said, "I think you belong with part of our team." And I'm glad I did that.

SS: Who was that?

DH: The guy was the chief at the time was a man named **Lucian Guzet** who was trained at Yale and was a fellow with Paul Beeson, who is one of the famous internists of the world back in the day. He was

at both the Wadsworth VA and Harbor. But the person who really changed my life at Harbor was a man named Jack Edwards for whom I have the most affection of anyone in all of medicine.

He called me into his office. I was working with a very nice man in the laboratory named **Anthony Chau** who was an anaerobic bacteriologist. He was interested in anaerobic infections, skin and soft tissue infections, intra-abdominal abscesses and the like. I was bored silly and not having a very good time and not necessarily applying myself as much as I might have been.

Dr. Edwards, God love him, called me into his office and said, "You make me sick. You're wasting your time. You're wasting your life. Get your tail in gear and do something. You have talent." I said, "Oh, yeah?" (Laughter.) We had quite a little discussion, but he was right and I knew it. I said, "Okay, what do you think I should be doing?" He said, "I think you should come to work with me." So I did that. And he—to this day—remains one of my very best friends in the world.

SS: He was in infection diseases?

DH: Yes, and so was Dr. Chau. I was in the division and Dr. Chau is a terrific person. I wouldn't say anything negative about him. He is still working, although I think he's retired in Manitoba. He's a Chinese-American who had both Canadian and American citizenship and he went to Canada someplace to work. But Jack Edwards was in the mold of Daniel Roth, just my kind of person, and we really hit it off. He got me started for real in academic medicine.

SS: When you say academic medicine, what does that mean?

DH: Major university hospitals usually have medical schools and that's all part of academics. Johns Hopkins is an academic place, Harvard, Beth Israel, those places. When I talk about academic medicine that's what I'm talking about. What I'm not talking about is **St. Vincent's of the Swamp** or

some other large community hospital that doesn't have the kind of faculty [I'm talking about]. It's the academic environment that surrounds the hospital.

Harbor is a county hospital. It's Harbor UCLA Medical Center now and it has a catchment of about two million people in the south bay of Los Angeles. It had all the right stuff. The house staff was remarkable. I think a lot of people like the idea of going to California for the weather, so there was enormous amount of competition. There were only twelve of us in my internship class, straight medicine interns, and they were also a remarkable set of humans. The whole place ran on social pressure.

I was afraid to go home because I was afraid that one of my colleagues would find that I hadn't done something, hadn't dotted the last "i" or crossed the last "t," and it was just an incredible amount of peer pressure to be as good as you could possibly be. It was a very stressful environment and not always terribly healthy in that regard because if you're spending a hundred hours a week in the hospital, you're not getting enough sleep. Your judgment gets impaired. That's what it was like.

SS: It's not having a balance in life.

DH: Goodness no.

SS: Tell me about coming to NIH. How did that happen?

DH: Jack Edwards and Jack Bennett, two Jacks. I have had real good fortune with Jacks in my life. Because Harbor was an academic place, we had lots of people come through as visiting professors.

John Bennett, who is still working in this building came as a visiting professor and was the single best visiting professor I had ever seen. He was and is still the world's expert about clinical fungal infections in humans. If you have a patient who has a difficult systemic fungal infection almost

anybody in the world would call Jack. He is that good. But he also is a good scientist and he could listen to a fellow's presentation about something completely different and make constructive suggestions and was terrific.

So I finished my fellowship. I got fast tracked because in those days you could combine the last year of your residency with the first year of your fellowship and cut back a year, which I did. I probably wish I hadn't done that, but I did it anyway. Then I had a year after that where they put me on the faculty at Harbor as a very junior faculty person.

SS: 1978 to '79?

DH: Yes, and on soft money. There wasn't the likelihood of staying on for another year. So during that year I was pedaling fast to try to find a job. So I went across the country with my deck of slides meeting people in places with jobs and had similar experiences. Generally speaking, I put that carousel of slides on the slide projector, the lights went down, started giving my talk, some soft snoring, polite applause at the end, and you go on to the next place.

SS: These were job talks?

DH: These were job talks. I was interviewing for jobs at several different places, four or five different places and ultimately I got four job offers. None of them were at Harvard, none were at the University of Chicago. They were all at sort of metsa-metsa places.

So I decided I would call up Jack Bennett and say, "Dr. Bennett, I have these four job offers. Would you give me your advice about which one you think gives me the best chance for a career in academic medicine?" And he said, "Yes, I'll be happy to do that, but I'm going to give you a fifth option." I said, "Okay, what's that?" He said, "First, tell me about the other ones." So I told him about all of them. There was one, he said, "You absolutely must not do that. Do not do that." It was

someone who was willing to offer me the job to be the chief of Infectious Diseases one year out of my fellowship at a university affiliated hospital. He said, "You must not do that. You will not be able to make a career and do that." He was right about that. You have too many other things to do. To make a career you have to have a little bit of science and write a few papers, and that wasn't going to be happening there.

To cut to the chase, he said, "Why don't you instead come back and work in the laboratory with me. You can be the Clinical Center's hospital epidemiologist. I've been doing that with five percent of my time. You can probably do it with 10 percent of your time." That tells you a lot about Jack. I love him. "Then you'll have 90 percent of your time to work in the laboratory."

So I came here as my last stop. I came back from the West Coast, stopping at several places along the way giving my talk. Then I gave my talk on the 11th floor of this building in the NIAID [National Institute of Allergy and Infectious Diseases] conference room. The room was completely filled, and people were standing in the back. That was different than some of the previous experiences I had had. I started giving my talk and I put up about my second slide, and someone said, "What's on the X-axis here?" And, "Do you have a control for this experiment?" I'm telling you, it was like a free-for-all. My talk, which was supposed to be forty-five minutes lasted an hour and a half. I got through only half my slides. It was the only time in my life—and this is an absolute God's honest truth true story—I sweat all the way through my suit. I had rings on my suit down to here. (Laughter.)

SS: (Laughter.) Well, you do like to be challenged.

DH: I was pretty certain I wasn't going to be coming here after that experience. Then I had interviews with Jim McLowry who ran the microbiology laboratory, Tony Fauci, Mike Frank, who was the clinical director of NIAID, just a cast of characters. At the end of the day, I was completely exhausted. The last thing I did was give this talk. Then Dr. Bennett says, "We're going to take you out to dinner." I'm thinking, "I can't do this!" (Laughter.) It's now gone, it was a Chinese restaurant on Wisconsin Avenue in Bethesda, and the whole **ID** team was there.

I got seated next to Dr. Bennett's wife, Shirley, and we were making nice conversation. She says, "Have you started looking for houses yet?" I said (laughter), "Oh, Mrs. Bennett, no. I had such an experience today the likes of which I have never endured in my life and I'm pretty certain that no one is going to offer me a job." And she said, "They loved you." She said, "They thought you were marvelous." She gets up and goes over and says, "Jack, come over here." He says, "He has no idea." That's a true story.

We walked back and it started to snow. This would have been, it was a famous snow. It shut down everything. It snowed twenty-five or thirty inches. As I'm walking back with Dr. Bennett I said, "Does it snow here a lot?" And he said, "We get an inch or two a year." This was thirty inches. It should have been a warning. I was stuck here for three days to get home. But they offered me the job. I said, "When do you want me to start?" He said, "Next week." I couldn't do that. I came in May of 1979, even before my stretch was done [at Harbor].

And the way I came, we had a trial marriage. Dr. Bennett didn't really have a job to offer me. The job was working for the hospital and the hospital was then run by a man named Mortimer Lipsett. He was the director of the Clinical Center. So I went to meet with Dr. Lipsett and he said, "What we're going to do is we're going to bring you back on something called an IPA, Intergovernmental Personnel Act. We're going to pay your UCLA salary," which was way better than I would get here, "for a year or two to see how this works, see if we really need a hospital epidemiologist and so on." I said, "That sounds fine to me." And we agreed to that.

At the end of my first year I went back to his office and said, "Dr. Lipsett, a year is down. I am going to go start looking for jobs unless you tell me otherwise." He says, "You're not going anywhere. You're going to stay here." I said, “Okay.” “In fact,” he said, “I got the paper ready. We're going to hire you." So they hired me directly, you couldn't do that now, into a job as a hospital epidemiologist, after I was here for about year on the IPA.

SS: Dr. Bennett had been doing that job?

DH: No, he had been doing it on the side. Let me assure you that no one had been doing it.

SS: He had been doing it five percent of the time.

DH: Yes. There were two nurse epidemiologists, as they were called in those days, who worked in the hospital and did surveillance. But there wasn't really a program. The joint commission required that you have a program, so there were a lot of things behind the scenes that I couldn't see when I first got here and it took us about a year to get the program put together, but we got it all put together. Then I got some time to work in the laboratory with Dr. Bennett. I got a couple of good publications out of that experience, one in the *Journal of Clinical Investigation* and another in *Experimental Immunology*, some good papers. It was a great experience. I might be the only person who ever worked in Jack's laboratory who is still friends with him after all these years. (Laughter.) But I love him and he has affection for me as well. We're close. What happened then was AIDS.

SS: Was hospital epidemiology just starting?

DH: Yes. In the 1970s, the British Societies started focusing on hospital infections. In those days they thought a lot of them came from the hospital environment. We know now that most of them come from us, but that was the start of it.

SS: Us meaning doctors?

DH: Yes, and nurses working in the hospitals. It is on your hands, on your ties, or whatever else. At any rate, that was just getting started. I had no training in hospital epidemiology. I had good training in infectious diseases, so I could join the infectious disease team and felt comfortable doing that and I learned hospital epidemiology on the job.

SS: Everyone at that time was learning it across the nation.

DH: Right. The motherlode was CDC, infection prevention. What was called the Hospital Infections Branch in those days was the home of hospital epidemiology. A lot of the people who were epidemic intelligence service officers at the CDC became the biggest names in healthcare epi in the late 1970s and early 1980s.

SS: What was it like in 1979 here at the Clinical Center? There was construction going on, too.

DH: The construction that was going on was the ACRF [Ambulatory Care Research Facility] and the surgery wing. Don't get me started talking about that construction because it's terrible construction. But the hospital was very stable. I worked clinically mostly on the 11th floor and as an infectious disease consultant and then ran the Hospital Epidemiology team out of the basement, B1A28, clear at the back other end of this building and around the corner, but I had a window. Dr. Bennett told me that's how you know that they think you're something is that they've given you a window. (Laughter.)

SS: And you have one today. (Laughter.)

DH: The Infectious Disease team, the Infectious Disease Service, was [a group of] very weird infectious diseases. A lot of Dr. Bennett's systemic fungal disease patients, a lot of Tony Fauci's immunological patients, Mike Frank saw patients with hereditary angioedema and a lot of immunological perturbations, things I had never seen in my life, even though I was a very well trained young internist. So I kept my mouth shut for about a year, which is good advice for anyone coming here, by the way. Keep your head down and your mouth shut, and figure out how the place works. It's a complicated environment. The Infectious Disease team at that time was probably as good as any

service in the hospital and they had terrific folks, so it was fun to be a part of that team and fun to start the Hospital Epidemiology program.

SS: You had just started it when AIDS happened.

DH: We finally had an infections control manual, all the policies and procedures, everything that we needed. I was on service when the first patient with AIDS was admitted. I was on Tom Waldmann's service on the third floor of this building in the B wing. I went over and stood at the bedside with Dr. Waldmann and some of the world's best immunologists. And the only comment that I remember from that, the man was really sick. He had a whole bunch of things. One of the immunologists said, and I'm quoting here, "I don't know what he has, but I sure as hell don't want to catch it." I was there as the infectious disease doctor at the time, not as the hospital epidemiologist.

It became very clear, very soon that we were going to be having these patients in the hospital. The staff was terrified. No one had any idea about the epidemiology of the disease, whether healthcare workers were at risk or not. I called Atlanta and asked my friends at CDC and they said, "We don't think so." That's not a very reassuring answer. Then they said the epidemiology of the disease in the community was pretty close to Hepatitis B, a disease in which healthcare workers are at extraordinary risk. So I was not reassured.

I knew we were going to be seeing these patients. The staff was anxious, so we started a study basically just banking blood from people, so if something horrible happened we would be able to prove that it happened while on the job. We collected lots of information about what kinds of exposures people had had.

SS: Is this the questionnaire?

DH: It was thirty pages long and people filled it out.

SS: People who worked here? They were concerned.

DH: Yes. They were scared. Everybody was scared.

SS: You knew it was blood-borne?

DH: Not at the start. At the start it looked like it was a blood-borne disease, but whether or not you could catch it shaking hands or by being in the same room or not, it's like the coronavirus. We don't know right now exactly how transmissible it is. It's more transmissible than SARS, but we don't know at what level. Is it just droplets? Can it be airborne in the right set of circumstances? These are all complicated questions and that will be sorted out two or three years from now, but not immediately.

The staff was terrified. I spent a lot of my days starting on the 13th floor going down the hall and talking to every nursing staff, every team about what we had learned the day before and circled down the whole hospital and get back to my office, and get ready to start again the next day.

SS: It took a while to find out.

DH: A long time. And we learned a lot. We monitored all of our patients who had exposures. We didn't have a blood test to start with. The disease came around in 1981. We didn't have a blood test until 1985-1986, so there was all that time in between where we had to keep the natives from being restless, provide the very best care we could for these patients, and try to figure out what the hell this disease was.

SS: How difficult. Here you were this very young doctor.

DH: Yes, I was young in those days.

SS: You were in your early thirties if I'm doing my math right, and you were in charge of keeping the staff safe.

DH: Yes.

SS: Well, as I said before, you like a challenge.

DH: Yes I do. And I was pleased as I could to be in this place. This is a very special place.

SS: Tell me about that.

DH: There is no other place like this hospital in the world. It's a hospital that's completely dedicated to science. Everybody who comes here comes to participate in a science project. They sign consent documents that say, "I recognize that I might die as a result of participating." And they come anyway. We take really good care of them, and we learn, and push back the frontiers of medicine. I have lots of friends in academic medicine all over the country who are all jealous of the job I had for twenty-five years because our mission had nothing to do with market share, billing, Medicare eligibility, or any of the other things that they all worry about out there. When I got up and came to work my only job was to try and improve the health of mankind.

It's an astounding place, plus you get to work with an enormous number of smart people. That's the good news and the bad news because they are very smart and may be the best person in the world in whatever it is they do, but they also think that they know how to do your job better than you know how to do it, and they'll be happy to tell you that. I can assure that that's the case.

SS: You had that happen?

DH: Many times, yes. You have to learn how to work in this environment. The position of hospital epidemiologist is a little bit like the position of the chief executive officer in the Clinical Center. You have a lot of responsibility and not very much authority.

SS: You're now a special assistant to the CEO?

DH: I'm now a senior consultant, I think he calls me, and that's an insurance policy. I have forty-one years' worth of institutional and historical memory that he doesn't have, and if we get up against something he would like to have access to that. So that's why I'm still sitting in this chair. It was his idea, not mine.

SS: Okay, interesting. So you had these strong personalities and brilliant people working together.

DH: And they don't work for you. The doctors work for the categorical Institutes, most of them. Seventy doctors work for us, for the hospital, so you have to be able to convince them. As I said, it is lots of responsibility, not so much authority, so you have to be able to convince them to do the right thing, and generally they will if you can be convincing enough.

SS: It sounds like you were.

DH: I think I did fine. I think our current hospital epidemiologist is better than I was at it.

SS: Someone who came on recently?

DH: No. I looked for about seven years for somebody to replace me as hospital epidemiologist and just couldn't find the right person. I had people down here visiting. It's a combination of remarkable

personal skills, intelligence, having a little bit of a spine, but being able to deliver that with a soft shoe, so it's not painful.

I was lamenting to one of my colleagues from Johns Hopkins that I just couldn't find the right person. She said, "The person you're looking for works in the Clinical Center." I said, "Really?" She told me about Dr. [Tara] Palmore. I called her right up and said, "Come down and talk to me." I started talking to her coming to work in hospital epidemiology. Trish Perl from Hopkins had already spoken with her about it and thought she was ideal. I talked to her for about twenty-five minutes and I said, "Would you like this job?" She said, "This is the government. You can't offer me this job." I said, "Bet me." (Laughter.) So she came to work with us and learned on the job like I did, but had the luxury I think, such as it is, of working with somebody as opposed to doing it on your own, a sort of an old fashioned apprentice model. I say it was for two or three years. She says it was for seven. I have no idea how many it really was, but I bet she's right. I was working as the deputy director of the Hospital.

SS: Your title changed?

DH: It just kept moving up. So I had less and less time to do this. It actually worked out really well and she is way better at it than I ever was. She's dynamite.

SS: You really mentored her.

DH: I had a chance to mentor her. She would tell you that, I think. Mentoring is like pornography. You don't know unless you see it, and what might be pornography to me might not be to you. Mentoring is one of those words that has a squishy meaning. But I think I would claim mentoring her and she's wonderful. We are really lucky to have her.

SS: Sounds like waiting for the right person was the right thing to do.

DH: It almost always is. If you fill a job with someone that you think is not good enough to do the job you will always be sorry, in my experience.

SS: Let's go back to this idea of the different doctors. Tell me about the team that you worked with in AIDS who came in with different aspects, Dr. Waldmann for example.

DH: Waldmann, it was his first patient. Al Saah, S-A-A-H, worked for the Epidemiology and Biometry branch of NIAID, an extramural function, but was an infectious disease doctor and came to our rounds. He was a real epidemiologist, so he could help teach me. He and Dick Kaslow who was the chief of that branch helped me design that questionnaire and stuff that I would have had no idea how to do. I learned from them. Early on, they were a lot of help in terms of not so much with getting the program up, but in terms of managing the AIDS issue and trying to do the things we were doing such that we would end up being able to write about it and say here's what we learned, and have that be a value to other people, and I think it was.

Henry Masur who is still the chief of Critical Care Medicine here, his father Jack Masur was the director of the Clinical Center twice, and is the person after whom the first floor auditorium is named, the Jack Masur Auditorium. Henry was at Cornell and was the first author on one of the three papers in the *New England Journal of Medicine* that described AIDS. That is one of Henry's main claims to fame. He could recruit patients from New York. We had people who were studying various aspects of the syndrome and we all worked together on various aspects of the problem. My job was to keep the staff taking care of the patients.

SS: So the questionnaire helped. How did that come about?

DH: The questionnaire asked you what you do with patients. Do you draw blood? Have you stuck yourself with a needle? Do you have skin-to-skin contact with the patients? Are you ever exposed to

stool? Are you ever exposed to urine? We had gradations of those kinds of exposures. It turns out, as you correctly pointed out, it's primarily a blood-borne disease and the real risk is parenteral exposures, needle stick exposures. One of the things that we did is we helped characterize that risk. It's tiny considering it's a blood-borne disease. So if you stick yourself with a needle from a patient that you know is infected with HIV, what do you think the chances are you'll get infected?

SS: Well, I've read your previous interview [with NIH Historian Dr. Victoria Harden in 1996]. Is it three out of a thousand?

DH: It's three out of a thousand. So for a disease that's blood-borne, that's a pretty small risk. Hepatitis B, if you have someone who is "e" antigen positive or has a high viral burden, that's probably thirty-five, forty percent risk, not a .3 percent risk. Why that doesn't happen remains one of my favorite questions in medicine. We don't know the answer. I have suspicions but I don't know.

It may be that if you get a low enough inoculum your own immune system may be able to fight off the virus. The evidence of that comes from a couple of papers that were published from Chicago where healthcare workers had needle stick injuries known to come from someone who is infected with HIV, but didn't get infected. But then when they went back to study those healthcare workers they found that their lymphocytes were sensitized to HIV surface antigens, so one could make the argument that they met the enemy and won as opposed to the people who met the enemy and got infected.

SS: You were on the front lines and you also had to take care of your staff.

DH: We were indeed, yes. I didn't care of the patients; I took care of the staff.

SS: And there were some nurses that were also on the team?

DH: Barbara Baird worked for NIAID. We had a team because it was so much work they actually gave me more staff to deal with this problem. We had five or six at the peak, people who were helping keep the natives calm.

SS: And you were able to do that?

DH: I think we did a fine job. They were terrific and the staff was terrific. The staff took remarkable care of these patients. It's a great place.

SS: And there were only a couple of incidents where a staff member got the AIDS virus.

DH: One. That one I'll never forget. It was a set of circumstances where everything goes wrong. It was a young woman who was working in our Transfusion Medicine Department who did something I've done hundreds of times. She had a tube of blood from an HIV infected patient, let it clot, then spun it down in the centrifuge, had a rubber red stopper, took the red stopper out with her fifth finger, pipe patted off the serum, and then took her finger and cranked the red stopper back into the tube, and when she did that the side wall came out of the tube, broke and she cut herself. Eighteen days later, she had acute retroviral syndrome and two years plus later she died. This is before we had antiretroviral drugs. Today you wouldn't be able to tell her from any healthy person on the street because of the way antiretrovirals have progressed since that time. We didn't even know what caused it then.

SS: That must be a good feeling—not about her dying—but about the fact that now you can control it.

DH: Yes. Our part of that was the Cancer Institute had a drug that they were studying in HIV infected patients. I think it was BW509A or something like that. And they were studying that drug in patients, both adults and pediatric patients who had HIV infection. It was a drug that had been developed by the Cancer Institute by basically taking drugs that were already known to be in existence and

looking at the drug to see if it had activity against the virus's reverse transcript ACE enzyme. This drug had activity as that, so it became the drug Zivodudine or AZT. We could see some results from that drug at the very start. It was about at that time that this young woman got infected. And I went to the Medical Board and said, "I think if we have anybody else who has this kind of needle stick exposure we should offer them the option of taking this drug." And so we did that.

I think we were the first in the world to do that, either we were or my good friend Julie Gerberding, who was then at San Francisco General. We were doing similar things at the time. I wrote a protocol and everybody who had a needle stick injury got offered antiretroviral drugs. This was not very popular with my friends in Atlanta who thought they ought to make these decisions and we shouldn't be doing things like this without being told it was the right thing to do. It's a long, convoluted story that I won't go into. [**Because I don't want it to appear in print. Dr. Henderson, please take out anything you wish. Thank you, SS**]

The CDC had a study that was designed to try to measure the factors that are associated with increasing risk for getting infected. So if you had a needle stick exposure, what about the needle stick exposure conveyed risk. And what they showed in that study ultimately if we had one good bottle of wine we're just going to write them down, go through all of them, because it's what your mother would tell you. Because they didn't think that adding this drug after an exposure would make any difference they didn't believe it. They added that as a risk factor in their study basically to disprove it.

What they showed is that if you had a deep needle stick injury as opposed to a superficial one there was a higher risk. If there was visible blood on the device as opposed to no visible blood that was increased risk. And if the patient was late on in the disease, presumably a surrogate market for a high viral burden at the end of life then that was more risk. They also showed that if you took AZT it reduced the risk by about 80 percent. They didn't believe it. They thought it was an artifact of the way they did the study. So they sat on it for bit. [**This can't be in there because this would get people in trouble.]**

The true story is they went out to other places around the world who had needle stick studies and got the people who had acquired infection match them with controls from the CDC's needle stick study and looked at the data again—and again and it reduced the risk by 81 percent. Jim Curran who was then the chief of the AIDS Branch at CDC said, "We have to publish this data." They got published in *The New England Journal*, and I got to write the editorial that went with that **[Dr. Henderson, could you plug in the citation here. Thank you, SS].**

SS: Justice.

DH: There is more justice than that. *The New England Journal* fought me about this, and they don't do this, but I told them I would not write the paper unless they let me do it. If you look at the bottom of that paper it's dedicated to the technologist who died in the Clinical Center. I had to get approvals from her family. I felt like that closed the loop for us because it caused us to start looking at these injuries in a different way. We were just mostly collecting data prior to that and then we got into the prevention business. We started to look at all the things that we could do that would reduce those risk factors that we just talked about. If there is one device that's sticking everybody maybe there's a better device, those kinds of things. It really changed us. I got to write the editorial and I got to dedicate it to that woman. So that closed that loop for me at least a little bit.

SS: Along those same lines you were involved in creating guidelines.

DH: Constantly because there is no hospital at CDC, so they have to bring people in from hospitals and we had as much as experience as anyone, and that's how I got be good friends with Dr. Gerberding. She was doing this at San Francisco General, I was doing it here and we both had big populations of patients, and they would bring people from New York and other places where they had lots of experience. I got to contribute to lots of those guidelines and still do periodically get to do that.

SS: One thing I found interesting in one of your earlier interviews you talked about when you were becoming a doctor that sometimes covered in blood.

DH: Absolutely. No one at that time took me aside and said, "Every time you do that you're taking a little bit of risk." No one talked about that.

SS: It's remarkable how that changed so quickly.

DH: Yes. And we had known about the risk to healthcare workers to Hepatitis B, since 1949.

SS: So people should have been telling you that.

DH: Yes, absolutely. Culture is hard to change. That was just the culture.

SS: You played a big role in changing that culture.

DH: I played a role.

SS: Here and then also with your publications and being involved in creating the guidelines.

DH: Yes.

SS: Beyond the AIDS epidemic, you also worked on Hepatitis B and C and Ebola.

DH: That moves me into a different job. John Decker was the director of the Clinical Center. At that time there was a director, a deputy director, and an associate director. Those were the three big guns at the Clinical Center. The associate director was a psychiatrist and he was sort of a shame and blame

guy. The associate director's job was quality and safety, and he left to take a job in the Bureau of Prisons, interestingly. Dr. Decker called me down to his office and said, "I would like for you to do this job." I said, "I don't want to do that job. I'm happy with the job I have. I love doing what I'm doing."

I was still young. This is thirty, thirty-five years ago. I felt like I was just getting my sea legs in this building and he wanted me to come down and do something I had no idea I was doing. I said, "I think you need someone," I didn't have it at the time, "who has grey hair, who has experience, who has standing in the building." I gave him four names of people I thought would be really good for that job as associate director. I'm sure he talked to all of them and none of them wanted the job because it was viewed as sort of a police role.

About that time, Don Berwick, who is the founder of the Institute of Healthcare Improvement, published an essay in the *New England Journal* about using the concept of quality improvement and not using the bad apple theory to make things better, process improvement in the hospital. When things go wrong it's not necessarily someone's fault. So I wrote Dr. Decker a note saying, "Dear Dr. Decker, this is an elegant example of what I think this job should be and if you get someone to do this job, which I think won't be hard for you to do, then I think—." And I pinned that to the *New England Journal* paper. And he called me back down to his office and said, "You have to do this." I said, "Dr. Decker, I don't want to do this." He said, "I don't think you heard me. You have to do this."

I got drafted to the front office. It's an absolutely true story. It changed my career focus. I went from being interested in one kind of adverse event, hospital infections, to being worried about all aspects of patient safety and clinical quality. And that's what I did for the next probably ten years was to develop a patient safety and quality program in the hospital. I'm guessing the year.

SS: 1988?

DH: Yes. Then Dr. [John] Gallin came. Dr. Decker got sick and resigned. Saul Rosen was acting director for four years.

SS: You went to Building 1?

DH: No, the front office of the Clinical Center. I try to stay out of Building 1 on purpose (laughter). I moved to the front office of the Clinical Center, my title was Associate Director for Patient Safety Clinical Quality and Hospital Epidemiology, because I didn't want to give that up. I probably didn't do my hospital epidemiology colleagues any favor by doing that. I couldn't pay as much attention to it. But now we have Dr. Palmore, so I feel better about that.

Then Saul Rosen was acting director for four years during the time that Ruth Kirschstein was the acting director of NIH, so we had an acting here and an acting there. It was a very challenging time. Then Dr. John Gallin was chosen by Harold Varmus to be the new director of the Clinical Center, and he recruited for deputy director for operations and deputy director for clinical care, and I applied for that job actually. I didn't think I would get it, but did.

SS: What made you want that position?

DH: I enjoyed working in the front office and I thought that ultimately I would probably have been happy to have Dr. Gallin's job, but never got there and that's all right. But I enjoyed having the opportunity to look after the clinical enterprise in the entire building, to work with the Institutes and work with all my clinical departments. And that's what I did for the bulk of my career was that job.

SS: Did you ever think about leaving the NIH?

DH: Two or three time I got job offers, unsolicited. I never went out to look for a job. Two times I was seriously engaged in discussions and one time got all the way to having the paperwork in my hand.

SS: Can you tell me what institution?

DH: I would rather not tell you what institution, but I will tell you they offered me a salary that would have probably tripled my NIH salary and a large number of employees to work in the Safety and Quality and Hospital Epidemiology Enterprise in their institution, but it would not have been the same. All these other folks would have also had the job of making certain that each patient in the hospital was justified to be in the hospital for that day. I went to dinner, they gave me the paperwork, I took it home and looked in the mirror and said, "You can't possibly do this."

The one other time that I looked at a job was early on in my career. Mort Lipsett was the director of the Clinical Center. Griff Ross was the deputy director. Griff got prostate cancer. Griff was a Texan. If you want to look up someone really interesting, look him up. He went to medical school, finished when he was sixteen or something like that, went out to be a country doctor in Texas and then decided that wasn't enough for him. He went back and did a fellowship in endocrinology and ended up having a huge scientific impact in endocrinology. He was a great guy. He went back to Texas to the University of Texas in Houston and called me up and said, "I really want you to come and look at a job down here." So I went and looked, but I wasn't really interested. By then I didn't want to leave.

SS: You didn't want to leave academics?

DH: It's an academic place, but those places have all those other things that they have to worry about that we don't have to worry about here.

SS: It sounds like you have long relationships here.

DH: I do. A lot of people get bitten by the environment and stay.

SS: You said you needed to deal with these others things you were in a different position, associate director. You didn't have as much hands on with Ebola?

DH: No. I was deputy director for Ebola and so it was enough of a risk that I was the old man looking after the team.

SS: Deputy director, I'm sorry.

DH: We met every day at three o'clock and talked about what went well, what didn't go well, talked about what things we could improve and if they needed more resources I would try and get them for them. I was definitely a part of that team. That was fun actually. And to see our guys step up and do it really well made me really proud.

SS: Using some of the guidelines that you had helped create?

DH: Not so much. CDC created those guidelines. Being able to think their way through it, it's all grey matter; they did a great job.

SS: You've won so many awards I can't really list them all: NIH Director Awards, Clinical Center Awards and others. It sounds like a lot of people liked you.

DH: Or I was fortunate enough to have worked with a lot of good people. This award was my crowning achievement this one here from President Obama. It was absolutely wonderful, entirely due to Dr. Palmore. I just take credit for it. (Laughter.) That was quite a remarkable experience. We had an outbreak of **carbon [unintelligible] producing intra-bacteria ACE in the hospital** that was killing our patients. While we did everything we could to try to stop it, we also tried to learn as much about it as we could.

Tara and I had met Julie Segre who works for the Genome Institute. We had islets from these patients so we could sequence the islets. She sequenced them genetically. Your cells have enzymes that if you make a mistake and copy your DNA as you're dividing gets corrected. Bacteria don't have that enzyme so they make mistakes all the time. So we could look at if this one had this mistake and this mistake, it had to come after it because it only had this mistake, and we could go back and reconstruct the entire epidemic. And it has changed the field of hospital epidemiology to make it have a genetic basis that it didn't before.

So we got nominated for the Sammie Awards, Service to America Awards that are presented by the Partnership for Public Service. There are eight categories or something like that. These are really good people, so it was a real thrill to be included even as a finalist, and go down and stand in the same place, I stood next to the guy who built the Mars Rover. I can't remember the name of the movie about the Canadian Embassy where they kept the people in Iran and got them out safely, an Academy Award-winning movie [*Argo*, 2012], the guy who did that sat on the other side of me. It was really humbling.

And for reasons that I can't explain we were the grand winners overall. We beat the Mars Rover guy. (Laughter.)

SS: That's amazing.

DH: That's hilarious. It's really work that Dr. Palmore and her team did and I was happy to be included in it, but it was quite an experience. Like the Green Bay Packers, you get invited to the White House when you win, and we went. It was wonderful. We went to a really nice event where the celebration was something to hear the accomplishments of these people. We were named Federal Employees of the Year for the U.S. Government.

SS: That was 2013.

DH: Yes. That was I think for me the pinnacle of it. Just getting to go there and being around those other folks made me feel we had accomplished something.

SS: If you were going to talk about your legacy or your contribution to the field of hospital epidemiology, what would you say?

DH: If I have a legacy, I would think what we talked about earlier—if I'm known for anything, it's the quantitation of occupational risk for these blood-borne infectious diseases and taking that out of the mystery area into bringing it to light and then the administration of post-exposure prophylaxis for people who have had occupational exposures. I could show you the data. I think, since 2012, maybe earlier than that, 2008, there has only been one occupational infection in the United States.

SS: That's amazing.

DH: And it's not just because of post-exposure prophylaxis. The drugs are better. The patients take these drugs and suppress the viruses so they don't have as much virus to transmit. They're not in the hospital as much as they used to be. They don't have as many procedures. But we basically put ourselves out of business for occupational exposures. That's something of a legacy, I would say, so I would take credit for that.

With Dr. Palmore, the use of whole genome sequencing to evaluate the kinetics and epidemic of bacterial infection occurring in your hospital or any setting, it's really opened up a wide field. If you search it you'll see there are lots of these studies now published almost every week, which we were right in there at the start.

SS: That's the way the field is going?

DH: Yes.

SS: What are some other ways the field seems to be going? The coronavirus has just come up recently that is scaring everyone.

DH: For any one of these agents, if you work at the Clinical Center at the National Institutes of Health you have to anticipate that you're going to have these patients here. Someone, one of our scientists is going to have an idea about how to do something with these patients, and write a protocol and will be recruiting them. We did for SARS. We had two studies that were written. We never had a single patient. But someone will write a study. We've already started getting ready.

We have a plan and the plan includes we have lots of scientists on this campus who come here from China. A lot of them went home for the Lunar New Year, so we have a plan how to manage that.

The Hospital of Epidemiology team has a very concise, well thought through plan about what we're going to do if we have a person who needs to be evaluated. We've already had one. It turns out the patient didn't have it, but those are really good experiences. You can go back and look at those and say, “What went right, what should we have done differently, what could we have done differently, what could we have done to decrease risk?”

Talking globally about my career, I’ve focused mostly on risk as a concept. People are really worried now about this coronavirus infection and there are right now in the United States, since we just brought fourteen in yesterday from the cruise ship, I think there are twenty-nine people in the entire country [who have it] and we know who they are. Twelve to 15,000-16,000 people die from influenza every year and no one talks about that. People know you can get flu shots. I bet you if I offered a vaccine for the coronavirus tomorrow we would have people lining up all the way to Gaithersburg to get it. The way the public perceives risks and how they think about these risks is fascinating. That goes all the way back to the HIV risk.

SS: Which brings up the subject I neglected to bring up earlier of the media.

DH: I've had my time with the media. I told you I sat on *Crossfire*. That was fun.

SS: During AIDS?

DH: Yes. There was a young man named Ryan White who was a young hemophiliac boy who lived in Kokomo, Indiana, that became a pariah in the community. They wouldn't let him go to school. I ended up going out, because I knew about occupational risk, I could then go to places and talk about occupational risk. Anheuser-Busch had me come to several of their theme parks because a lot of their performers who had HIV infection, and they had people who were worried about it and they wanted somebody [to come talk about it]. So I got a lot of experience talking about occupational risk.

So the question was: "Should Ryan White be allowed to be in school?" And the argument was: "If he falls on a rock and my Johnny falls on the same rock they're going to get it." The same mother puts her child in the car to take him to school and takes a bigger risk. It's just how we perceive that risk that's weird. Yes, it was around the occupational risk issue, especially around school. I got to meet Ryan White and his mother before he died.

SS: You were out in the field.

DH: I got to go everywhere to talk about occupational risk. I traveled all over the world to do it.

SS: Was it interesting?

DH: Yes, it was. I felt sometimes that you did a lot of good. There were a couple of places I went where there was a lot of reluctance to talk about it, but when I got into the auditorium it was completely crammed and had students sticking their necks in through a door to listen because they had no information whatsoever. So yes, that was fun. I got to see a lot of places, not a lot of tourism, mostly the insides of planes, insides of cabs, insides of hotels, auditoriums then right back. It was a very interesting time. We worked on that project and I felt like sharing it was a good thing to do. It was all part of that.

My favorite media story—you asked about media—is I got invited by one of the local network news groups to come down and talk about occupational risk because their reporters were refusing to cover stories of people who had HIV/AIDS. So I got every horrible example from the lay press that I could find and made slides of them, and took them down and put it up, and said, "This is the bed you made for yourself. Climb in it." I was not very popular. (Laughter.) I said, "Here's the offer. Any time one of you has any story about this kind of thing that you would like information about, here's my telephone number. I'm in the telephone directory. Call me up. If I don't know the answer I will try to find the very best answer as quickly as I can."

I only had one person take me up on that. It was a guy from the *Washington Post* who went on to write for the *New York Times*, who wrote the single worst article I have ever seen about HIV/AIDS, after I had made this deal with him. He called me for some things, and most of the time it's stuff that if you understand what the risk is, there's nothing new here. It's like a parenteral exposure to blood and that's how it gets transmitted, so it's not very interesting.

But in the long run, he wrote a story that he did not check with me that was horribly wrong. He basically said that if you got blood on your hands you had about a 5 to 10 percent chance of getting infected, which there were no such exposures that produced infections to my knowledge. But it terrified people in the hospital. I called him up and I said, "Why didn't you call me?" He said, “Yes, but it was on the front page above the fold.” And I said to him, "Please, you have no idea what you're doing when you do this because it does a real disservice to our society." And he said, "Listen,

if it comes down to being right or being first, I want to be first." And I said, "I hope your doctor practices medicine the same way." True story. He went on to be highly successful working for the *New York Times*.

SS: That is unfortunate, but it sounds like you handled yourself well.

DH: Not always. I was not very nice when I went down and talked to the television people because what they showed on television was horrible. You probably remember. It was terrible and sensational. Whatever was sensational made it to the news, and I said, no. You have to learn to think about these things differently like the way you think about things in the rest of your life. Use your forebrains. Think about them.

Do you know the book, *Thinking Fast and Slow*? You should read it. It's a great book. It's a little bit about risk perception and how we decide things. The really functional part of our brain we don't use all the time. We use the sloppier part of our brain to make most of our decisions and that's how these decisions get made. It's a great book.

SS: I'll look that up. I could use that. We were talking about changes in the field, but we haven't really talked about the changes in the Clinical Center. Are there are a couple that you could throw out?

DH: I think the best example is from a long time ago, and it footnotes what a different place this is. The Heart Institute had a cardiac surgery program that was expensive and that they perceived that they weren't getting a lot of good science from. One day they just decided to close it and they started a stem cell transplant program instead. You can't do that anyplace else in the world. So it created a bunch of problems like the patients who had previous operations might need another operation, so they had to work their way through all of that. But they were able to do it and start a transplant program virtually overnight. There's no other place in the world that you can do that. It made for some unhappy cardiac surgeons. That's one example.

The new hospital was a great thing. A lot of things changed when we moved into the new hospital. You probably know that the Clinical Center had one of the very first electronic medical records from the 1970s, which included computerized physician order entry, which many hospitals still don't have. That's the good news. The bad news is we had that same exact program until we moved into the new hospital and then we changed it. Three things happened when we moved into the new hospital. We changed the information system. We changed the way we do business. It used to be the 11th floor was NAIAD, the 10th floor was the Cancer Institute, the second floor was the Heart Institute, and so on. We don't have that anymore. It's all program driven. Pediatrics is on the first floor and that includes the Genome Institute, Child Health, NIAID and so on. So we changed the way we provided care. And then third, we changed the geography because the old building was vertical, and the building is horizontal, and it changed the way we provide care. That was a painful, hard change, lots of change. Those are examples of the way the hospital has changed.

SS: You worked here for forty-one years.

DH: I did.

SS: They say you've retired, but you still have an office.

DH: I still have an office and I am hopefully still making a contribution. Sometime mid-year I'll go down and talk to my boss and see if he thinks it's worth his money. If not, I'll fade into the hinterlands. If it's still worthwhile, I'll keep doing it.

SS: And you said you were here for institutional history [and memory].

DH: And to help Dr. Palmore and her team. Dr. Palmore made it in the tenure track, so her clock is ticking now to become a tenured scientist and I would like to help her do that, and that was part of

the attraction for having me stay a little bit. I'm supposed to be here just halftime. I'm not here full-time.

SS: People like to stay here. I've interviewed some scientists who are in their nineties and still working.

DH: Yes. Dr. Bennett is approaching ninety.

SS: Is there anything that you'd like to add?

DH: There's a lot that I would like to add, but I'm probably going to not add it. (Laughter.)

[End of Feb. 18 interview]

[Feb. 19 interview]

SS: We're doing a short follow up with Dr. David Henderson. I'm at the Clinical Center. This is Sheree Scarborough and today is February 19, 2020. Dr. Henderson, you had some further thoughts after our interview yesterday.

DH: Yes. As I was driving home last night I thought that most of what we talked about focused on the early days of my experience here and I talked very little about what's happened in the last couple of decades during the time I was the deputy director of the hospital for clinical care. So I made a short list of things that I thought might be worth talking about because the hospital changes over time in relation to the studies that are being done and changes in medical progress.

Our hospital is unique in that every patient who comes here comes to participate in a science project. They're all volunteers. If you look at the protocols that are active currently, during most of my time here this has been pretty similar, about half of those studies are studies of the natural history or pathogenesis of almost always rare, often genetically determined diseases.

Patients come here because we have one of the world's experts in a gene, gene product, protein receptor, or something that's either over-expressed or abnormal in some way in that disease syndrome and our expert wants to study the role of that product, whatever it is, in normal human physiology. And while they're here we try to learn how to take care of those patients and make their lives better.

It's sort of a natural extension over time as those physicians have found the gene or then they want to do something about it. If you're going to do something about it you have to do that pretty early in life, so diseases that were being studied by general internists or subspecialists in internal medicine, suddenly became interested in seeing children with this disease and even much younger children.

Our hospital initially was set up, designed for each institute to have its own space. The Cancer Institute had several wards; Heart, Lung, and Blood had a couple of wards; NIAID had a couple of wards and that really didn't lend itself to pediatric care. The American Academy of Pediatrics believes that children should be on a pediatrics unit, not on an adult unit where they're familiar with their disease.

We had to make a change, so we created a pediatrics unit, this was still in the old building, and the Clinical Center hired a pediatrician to look over the pediatrics enterprise. That turned out to be a really good idea and the first person who had that job **[Dr. Henderson, do you want to name this person? SS]** was very successful in that job, was also successful as a scientist, made tenure in the Child Health Institute, and went on to bigger and better things, and is still here at the Clinical Center. The second person to have that job still has that job and made tenure in the Clinical Center as an investigator. She's an expert in congenital adrenal hyperplasia. **[Do you want to name this person?]**

In the process I think we decided that we needed to have an active pediatrics unit. So when we moved into the new hospital we had one pediatrics unit where all the pediatric patients are housed except for behavior health. They have their own behavioral health pediatric area.

That has escalated over the last several years that we want to see younger and younger patients for which we don't have the infrastructure. We don't have enough pediatric cardiologists or pediatric nephrologists, or pulmonologists to be able to provide comprehensive care, so we built a partnership with National Children's Medical Center, downtown, and that's worked pretty well.

SS: Downtown, D.C.?

DH: In D.C. That's an excellent point, so it's pretty far away. We recognized that we wanted to have some of these children here for the expertise that our investigators had, but we wanted to be able to have a higher level of care than we were providing because we worried about the safety of patients in the hospital.

We hired some pediatric hospitalists and created a unit, a smaller monitoring unit in our general pediatrics area for patients who are starting to get sick. The plan was they would go to this area and be monitored by the hospitalists with oversight provided by pediatric anesthesiologists and critical care doctors. And if they continued to get sicker we would then get them out of the hospital as quickly as we could to Children's. That has actually worked out remarkably well and it was something that I worked on for a couple of years to actually make it happen. That's one thing.

Similarly, maybe fifteen years ago, we identified the fact that for some patients admitted to certain of the institutes they didn't always get a comprehensive medical evaluation. I'll pick on the Eye Institute because the ophthalmologists really just look at people's eyes. But often they're studying patients who have systemic diseases, so we felt like there was a need to have a similar broad based internal medicine consultative service. So I beat the bushes looking for someone who I thought had the right skill set to work in this very unusual building and to provide their kind of complex internal medicine care to these very complicated patients who were being seen by specialists who were not general internists.

Ultimately we hired my doctor, the man who took care of me, who actually had quite a history here at NIH before he came here as a general internal medicine consult. His name was, he's now passed away, Fred Gill and he was a terrific internist. In fact he had a reputation in Montgomery County as being the person who if you had a really complicated problem send them to Fred Gill. He was a very careful, very thoughtful internist. After he retired there was a woman named [Penelope] "Penny" Friedman who worked in that team and worked with Fred, and [Madeleine] Schuyler Deming also was recruited because the demand for that service increased.

Not all the people here are comprehensive internists and it was valuable that if you had a patient on one of the surgery services who let's say had hypertension or diabetes, then we would have an internist who could come by and help the surgeons or someone else who would not normally be managing that problem.

So we developed that very successful internal medicine consult service, which is now run by Naomi O'Grady who is a critical care doc, infectious disease doc, and internist. She has broadened the space to make it even more useful in terms of having patients who are going to surgery, having very careful preoperative evaluations to make sure that we have a good handle on the risk for the patient going into the procedure.

Another thing that we did was to create a pain and palliative care service. One of the Institute's scientific director's spouse had a breast cancer procedure done here, and at the end of the procedure berated her husband that the Clinical Center was decades behind in pain management. Her criticism was fair. We really had not focused on that aspect of patient care.

So with Dr. Gallin, who was then the director of the hospital we had a meeting at the Stone House and brought in experts in pain and palliative care from all over, and said, "Tell us for this complicated hospital, what we call the Clinical Center, what should we have?" Some of our surgeons felt like we needed an anesthesiologist with a long needle who could make the pain go away, but

others thought we might need more comprehensive management, particularly in a place where the other half of the studies that I talked about earlier our clinical trials. And those clinical trials are often Phase 1 and Phase 2 clinical trials. More than 95 percent of them are first in human studies.

We're just learning about the safety of whatever it is. We have a lot of people who come here as a last resort, so we really need to focus on end of life therapy. We ended up much to one of my good surgical colleague's dismay, hiring someone who was an expert in palliative care, also knew about pain management, and developed a pain and palliative care service, which is really living at the heart of the organization. If you ask me to make a list of the things that I am proudest of, I am proudest that we have improved the quality of care that we provide and I think have provided a service to patients and families at the ends of their loved one's life that has made a real difference.

Interestingly, the woman who runs that service, whose name is **Ann Burr**, a wonderful palliative care physician, writes a textbook of palliative care and the very surgeon that I mentioned to you earlier, one of the anesthesiologists with the long needle, wrote the introduction to one issue of her textbook, because he became a convert. He could see what an impact she had not only reducing the pain of the patients that had post-operative pain, but also the pain and suffering that patients and families went through at the end of patients' lives.

Another challenge that I faced early on in my term being the deputy director was: The wisdom of the leaders of the NIH, when the Clinical Center was formed it was decided that the anesthesiologists who supported our surgery service would not be government FTEs. They would just be contractors. The view was that anesthesiologists were not likely to be scientists at the time. That's probably not correct, I would say.

For a long time we had contractor anesthesiologists in the operating room who were really not a part of the team. They felt like second-class citizens. We had chronic festering problems. Because they were contractors they could get paid a lot more than the surgeons who were operating in the operating rooms. There was a lot of tension in that set of circumstances. In short, when it became

possible for us to pay even remotely competitive salaries it was one of my jobs to assimilate that contract and hire anesthesiologists as government employees to come work in our operating room. And that has been a raging success. The current Chief of Anesthesiology, Andrew Mannes, has built the best perioperative team that we've ever had here, and that's also something of which I'm very proud because I had a hand in that.

Another thing on my list of the last decade or two is trying to stay in front of what's happening in biomedical science in the hospital. A great example is ironically the same surgeon I was talking about before, is a pioneer in the adoptive immunotherapy of malignancies. He's one of the people who had the idea that you can fight cancer with your own immune system and has pursued a path throughout his career. I hope someday he will receive the Nobel Prize for that work because I personally think he's totally deserving of it. It opened up the entire field of immunotherapy and malignancy, which is raging out there now in a very big way.

That person who was at the cutting edge of immunotherapy needed diagnostic procedures and things that no other hospital had at the time. Some of those he developed in his own laboratory and others we had to provide for him. So our Department of Transfusion Medicine developed a cellular therapy section, which has gone to become, now called the Center for Cellular Engineering. You can take patients' lymphocytes and put genes in them to fight infection or to fight malignancies, and that's really changed the face of malignancies, and we were pioneers at the Clinical Center. Developing that service was really the brainchild of the former Chief of Transfusion Medicine, Harvey Klein, who worked hard both with industry and with the investigators here on campus to create a resource, which has fed the investigators here and helped the science prosper during his time as leader of transfusion medicine.

SS: He's my next interview.

DH: Tell him I spoke most highly of him place.

SS: Can you give me the name of the surgeon?

DH: The surgeon is Steve Rosenberg and he probably won't like it that I remember that he wanted not to have palliative care.

Other technology things that I think are worth mentioning is we had the director of microbiology laboratory. I'm an infectious disease doc by training, so I grew up in the microbiology laboratory looking at **auger** plates, smelling the organism, looking at the sheen or color of the organisms on the plate. This particular director of the laboratory said, **[Dr. Henderson, do you want to name him here? SS**], "That's great, but that's going out with the end over and forward pass. We need to be in the front of what's happening."

He developed a technique to identify microorganisms from samples in the laboratory by mass spectroscopy. He was one of the first people in the world to use that technique, which is now used all over the world. We had to believe in him because mass spec was an expensive instrument at the time, I think even then, was maybe a half-million bucks to buy one.

He started a process which has kept our micro laboratory really at the forefront of clinical microbiology laboratories in the country, now run by a woman named Karen Frank, who has gone on to use not only mass spec, but also microorganism genomics that we talked about yesterday, to keep us really right at the front of that.

Of the things I'm most proud is that we created out of whole cloth with very few resources to start with a Patient Safety and Clinical Quality program at the Clinical Center. That program was born long before anybody was talking about patient safety in hospitals. We recognized that this environment was a risky environment. If you're getting something for the first time and you're very sick to begin with there's a lot of risk involved. So we tried to develop strategies to evaluate those risks and to manage those risks, and to mitigate them where we could.

I mentioned yesterday Don Berwick who was the founder of the Institute for Healthcare Improvement, who started us on the journey very early on before this was a buzz word, before the Institute of Medicine had attached itself to it or any of those things. And we built a program that had four or five FTEs that supported the institutes and our clinical investigators with patient safety and quality enterprises, metrics of safety, measures of success, before most people had ever even thought about it.

SS: Is that in the last couple of decades?

DH: Yes. We were also interested in how our patients, volunteers perceived the processes of clinical research, how did they like coming here and what can we do better. We started out, we were pioneers—the first ever to do this—by asking not just about the care people received, but about the processes of clinical research, what can we do better, because that's our core business we were interested in it.

The man who runs the Rockefeller University patient care area, Barry Kohler, who is a member of the National Academy, read our early work and was really taken by it. We wrote a brief paper in the New England Journal of trying to apply improvement strategies in clinical research so the process of clinical research could be more patient or participant friendly. We ultimately built huge collaboration with Dr. Kohler and Ron DeCosta who is also at the Rockefeller, and published a few papers talking about how we can make the process better for the people who come here.

Another thing that I was involved in—things that I never thought I would be drafted to do—was when the planes went into the World Trade Center and another plane went into the Pentagon we got a call from downtown, being HHS [Department of Health and Human Services], saying, "There's another plane in the air headed toward Washington, and oh by the way, the Clinical Center is, other than the Pentagon, the largest federal building visible from the air."

We had a hospital full of patients, patients on ventilators, patients who weren't going anywhere, so we didn't have any choice of what to do. I walked in to Dr. Gallin's office and said, "Do you think we should activate our emergency plan?" And he said, "Do we have one?" And we did. It was about this thick, nearly a foot thick, and it started out saying, "If you're dealing with a chemical exposure consult the NIH Manual of Issuance, Number 3.4.6." It was completely worthless—so we just threw it all away and said we need to have an emergency preparedness plan. So we, this is again with the Quality and Safety group, set about creating a plan for the hospital that was short enough you could hang it on the wall and if something happened, there was a little flip chart that you could tell what to do first.

On 9/11, I had probably 150 physicians standing outside my office saying, "What can we do? What can we do?" There wasn't anything for us to do. It was frightening. Just about that time or shortly thereafter the commander from what was then the naval base, what is now Walter Reed, but then the National Naval Medical Center, came across the street, and met with Dr. [Elias] Zerhouni [NIH Director], and said, "We should do this together." So I got the task, again, not what I do for a living, of building with the Navy a partnership and with Suburban Hospital on the other side of Old Georgetown Road, a partnership for emergency preparedness that the three of us all could participate in.

We don't have an emergency room, but we have lots of doctors and nurses that were at the time about 1,250 credentialed physicians on our staff, many of them working in laboratories and hardly ever seeing patients, but they're all medical doctors who, in a crunch, would be valuable resources. Similarly, there were researchers all over the campus and we could actually recruit those people to help.

So we came up with a plan with Suburban and with the National Naval Medical Center to create a partnership, the Bethesda Hospitals Emergency Preparedness Partnership, and that partnership still exists and we've tested it a few times. When we got the big hurricanes in the Gulf Coast, Hurricane

Katrina, we activated that. We were ready to take patients. Our plan was that if there were some emergent patients they would go either to the Navy or Suburban, we would take patients who couldn't be sent home but needed to stay in the hospital, we could provide care for them. Then as people that they stabilized got stable they could send them here.

The Secretary of HHS thought enough of the plan that he gave us a 250-bed contingency station hospital, which we still have in the basement of this building, such that we can add 250 beds in a heartbeat if we need to. Again, something that has nothing to do with my training or anything else, but building consensus and building a partnership was a part of what we did.

It's a longstanding joke, but bad things always happened when Dr. Gallin was away. During Hurricane Katrina, he was in Maine. When the earthquake happened here locally, we had a significant earthquake. The hospital shook. I was a veteran because I did my training in Southern California, so I knew from earthquakes, but never anything like this. The earthquakes in California give you this sort of rolling feeling. This was a really harsh shaking feeling. It shook the building really hard. Dr. Gallin was again in Maine, so we had to decide what to do. I had no idea at the start what to do. I walked around and looked at the building, and I could find the places in our brand new building then where there was damage. Then you have to get a structural engineer from our facilities folks. There are only eighty-five buildings on this campus and they're worried about all of them. I'm just worried about the hospital. I said, "You have to send them now. We have patients here. You can tell the other people to go home."

So we made our way through that and that activated the partnership as well. We still drill with the Navy and Suburban. We're very close to the 10 ring. If you think of the White House and Capitol Hill as being the 10 ring on the dartboard, if something bad happens down there then we would be ready to support that. And that was a really good thing that we did, again, with our Patient Safety and Quality group.

One of the most interesting projects I was ever given as a deputy director—Dr. Saul Rosen was the acting director of the Clinical Center. He walked into my office with Allen Spiegel, who was then the scientific director of NIDDK, National Institute of Diabetes and Digestive and Kidney Diseases. And he said, "He has a proposition for you." I said, "Okay, what is it?" He said, "We need to become a kidney transplant center." I said, "Okay, why?" He said, "We have a great scientific opportunity and I want to do it here."

At that time we had no transplant surgeons, no transplant coordinators, no transplant program. We had nothing. So I put together a team of stakeholders and started meeting with them every Wednesday morning at seven o'clock. Dr. Spiegel had said that we needed a unit to put these patients on. They had to have their own unit, so we had to get somebody out of a unit in the old building and we had to renovate it.

If you're familiar with government renovations that's usually measured in eons or decades. I said to the facilities folks, "We need this unit to be functional in one year. Dr. Spiegel wants to do our first transplant no more than a year away." We had to become certified by the United Network of Organ Sharing. We had to hire transplant coordinators. We had to do all that stuff. And we got it done in less than a year and transplanted kidneys.

The sad news is that the science breakthrough didn't hold. The story is a very talented surgeon immunologist named Allan Kirk, who I think is now the Chief of Surgery at Duke, had a laboratory model in monkeys where he could actually transplant a kidney from one monkey into another and by blocking the second immunological signal could keep the monkey from rejecting the kidney without having to give all of the horrible immunosuppressive agents that transplant recipients get. We thought it might work in humans, and in fact it did work, but the problem is that it caused complications in other systems that we weren't anticipating: cardiac disease, strokes, and other vascular problems. So, all that work and we don't have a transplant program anymore, but that's the nature of the place. It was a lot of fun to put that program together, I will tell you.

We created a bone marrow and stem cell transplant program in the Heart Institute. I mentioned this to you yesterday. As we looked at those programs we were struck by the fact that there was a program in NIAID, there was one in the Heart Institute, there were two separate programs in the Cancer Institute and they all did things somewhat differently. So we felt it would be in the best interest of our patients if we got some similarities in the programs, similar ways of managing patients and their problems in those programs.

Their goals were remarkably different. In NIAID, they were taking people with immunodeficiency states and trying to transplant them to make their immune deficiency state go away. The Cancer Institute was mostly treating malignancies, mostly leukemias and lymphomas. Then as we got into solid tumors, patients with breast cancer and got stem cell transplants, and so on. It took us a while, a few years, to get those programs harmonized, but they now all live together with slightly different goals, but shared procedures and I think a much better safer way to provide that care in the hospital.

Last but not least, right after the new hospital had been built, about 2006, there was a National Academy report that pointed out the horrible problem we have in the United States with morbid obesity. There was money available from Congress to do something in obesity. Several of the institutes got interested, so we had to find a place in our brand new hospital to accommodate such a program. That was something of a challenge.

When the new hospital was built there was a competition among architects in the country. It was a juried competition for the design of the building. And the number one criterion was flexibility, so that's why the new building, every other floor is infrastructure. The third floor is patient care, the fourth floor is infrastructure, the fifth floor is patient care, the sixth floor is infrastructure, except in the very front.

All of the air handling units, all of the cabling and so on that you need [are on these intermittent floors]. Many times I'm sure you've been in a hospital and as you're walking down the corridor

there's a maintenance person with a tile, like this one pushed up in the ceiling, up on a ladder doing something. Not necessarily here. That stuff is above the rooms, easily managed. The air handling controls can be modified to make rooms have different characteristics, so lots of flexibility.

So using that flexibility we created an area on the seventh floor of the hospital into which they put three metabolic chambers. They seem like Star Wars technology to me. You can put a patient in that room, get the room balanced the way it has to be balanced. Then as the patient is lying in bed you can tell how rapidly they are metabolizing fat, protein, and carbohydrates based on their expired gases, the temperature of the room and a variety of other variables. It's given us the opportunity to study not only obesity, but wasting states. Wasting disease occurs in HIV. Wasting occurs with some malignancies. And it's really been a great advantage to the NIH campus to be able to study that. But we had to figure out how to do it.

I lovingly referred to my job at the time, my deputy director job as being the “Deputy Director for Problems.” So when a problem occurred, Dr. Gallin usually came down to my doorframe and said, "Do you know about," whatever it was, "and can you fix it? Can you do this?" So I had that job for lots of things that I talked to you about. And I just felt like if we really were going to talk about my career, not just focusing on my infectious diseases career, that it would be better for us to mention some of those things.

I'd be remiss if I didn't mention people's names as well. For the Patient Safety and Clinical Quality program, the person who really made that program come alive is a woman named Laura Lee. She's a nurse, has a master's degree in patient safety and is just dynamite. She recruited Gina Ford and Mary Sparks, who were the core of people that I worked with, and really created the program. They basically have outgrown me and become a standalone in the hospital. They are as a core, Gina has now retired, but Mary is still here and Laura is still running the program. They are known by everybody in the building. And I believe probably Laura all by herself but certainly with Mary could probably tell you the names of almost every single person that works in the building, which is a really remarkable thing.

SS: How many people work in the building?

DH: In the Clinical Center, in the complex, there are probably about 2,000 Clinical Center employees and probably 4,000 Institute people who work in the laboratories. She would not know all the people working in the laboratories, but anybody who has anything to do with delivery of care to patients, they know and those people really rely on them. And they have become integral to the way we provide safe and comprehensive, and quality care in the building.

Those are the things I thought of that I wanted to add to our interview.

SS: Perfect, thank you. I thought of a couple of things as well.

DH: Okay, please go ahead.

SS: You served on editorial boards and still do.

DH: I do.

SS: *Infection Control and Hospital Epidemiology*, from 1985 to the present.

DH: Yes. I'm the only one who has been on that editorial board since its formation. I have no idea why they've kept me. I'm happy to do it and I am still doing it. In fact that's what I was doing when you came in here today. I was reviewing a paper for *Infection Control and Healthcare Epidemiology*. I don't know how many papers I reviewed for them over the years, but I think it's a large number, and I likely have set a record doing that. I really feel that's important.

We talked about academic medicine. That's an important part of being a contributor to academic medicine is reviewing the papers that people write, providing constructive criticism of the papers, and trying to get the very best we can into the journal. I think I mentioned to you I'm now the president of the Society of Healthcare Epidemiology in America and that's the banner journal for that society.

I've also been the editorial board of the *Annals of Internal Medicine*, which was, for me, a great honor. It's arguably one of the finest internal medicine journals in the world and I had not one, but two stints on that editorial board. In fact the editor called me up and said, "We don't usually do this, but will you stay for one more term?" And I said yes. I have enjoyed that enormously. That comes from Philadelphia, the American College of Physicians. It's the American Board of Internal Medicine. It's a dynamite journal.

SS: That was from 2013, I believe.

DH: Yes. I'm off now. I just came off this last year.

SS: Are there any honors and awards that we left out that you would like to mention?

DH: I'm a distinguished alumnus of Wabash High School in Wabash, Indiana. I'm a distinguished alumnus of Hanover College in Hanover, Indiana. And this past year, two years ago, I became a distinguished alumnus of the University of Chicago, School of Medicine, of which I was quite pleased to have that happen.

SS: It has come full circle.

DH: It is a nice circle and all three were meaningful to me. I got to attend the ceremonies for all three of them. Going back to my hometown, going back to my small undergraduate school and then going back to the University of Chicago all were fun for different reasons.

Others, I received an award from the American College of Physicians, their Epidemiology Award for the country **[Dr. Henderson, could you plug in the name of the award here?],** and that was an important award to me. I was proud to get it.

More than awards, I think, the things that I would be proudest of, seeing the success of young people who have come through our programs and have gone on to do bigger and better things. I talked about Dr. Palmore. And Laura [Lee] is one of those. I hired Laura as a special assistant while I was the deputy director for Clinical Care. I discovered that she had way more talent than I did and set her loose to become an important person in the Institution. Those are people in whom I've invested the most of me and have been pleased to see both of their successes.

SS: Your publications, you have over 150 papers, peer reviewed papers, and book chapters as well. So you've been quite busy over the last forty-one years.

DH: Yes. I've been working for a living.

SS: And you still are working.

DH: I'm still working mostly because I enjoy it and I love the place.

To really go full circle, the Clinical Center is the most special place you can imagine because of the mission, the way people connect to the mission, the way people work together. Even when it might not be somebody that you'd take home to meet your mother, you figure out how to work collaboratively and collegiately. It is truly a remarkable place. The nurses had a motto four or five

years ago: “There is no other hospital like it.” It's really true. There is no other hospital like it. That's most often good news. Sometimes it's bad news because bad things happen in places where you take risks. So you have to be prepared to manage those when they occur. And that's why I was the “Deputy Director for Problems.” I've enjoyed my time here. I wouldn't change much of it actually. A few things here and there probably could change, but not much.

SS: Thank you so much, Dr. Henderson.

[End of interview]