Conversations with Medical Informatics Pioneers:
An Oral History Collection

Engineering Computerized Multiphasic Health Screening

2005 Interview with Morris F. Collen

Interviewer:

Dean F. Sittig

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Oral History Interview with Morris F. Collen

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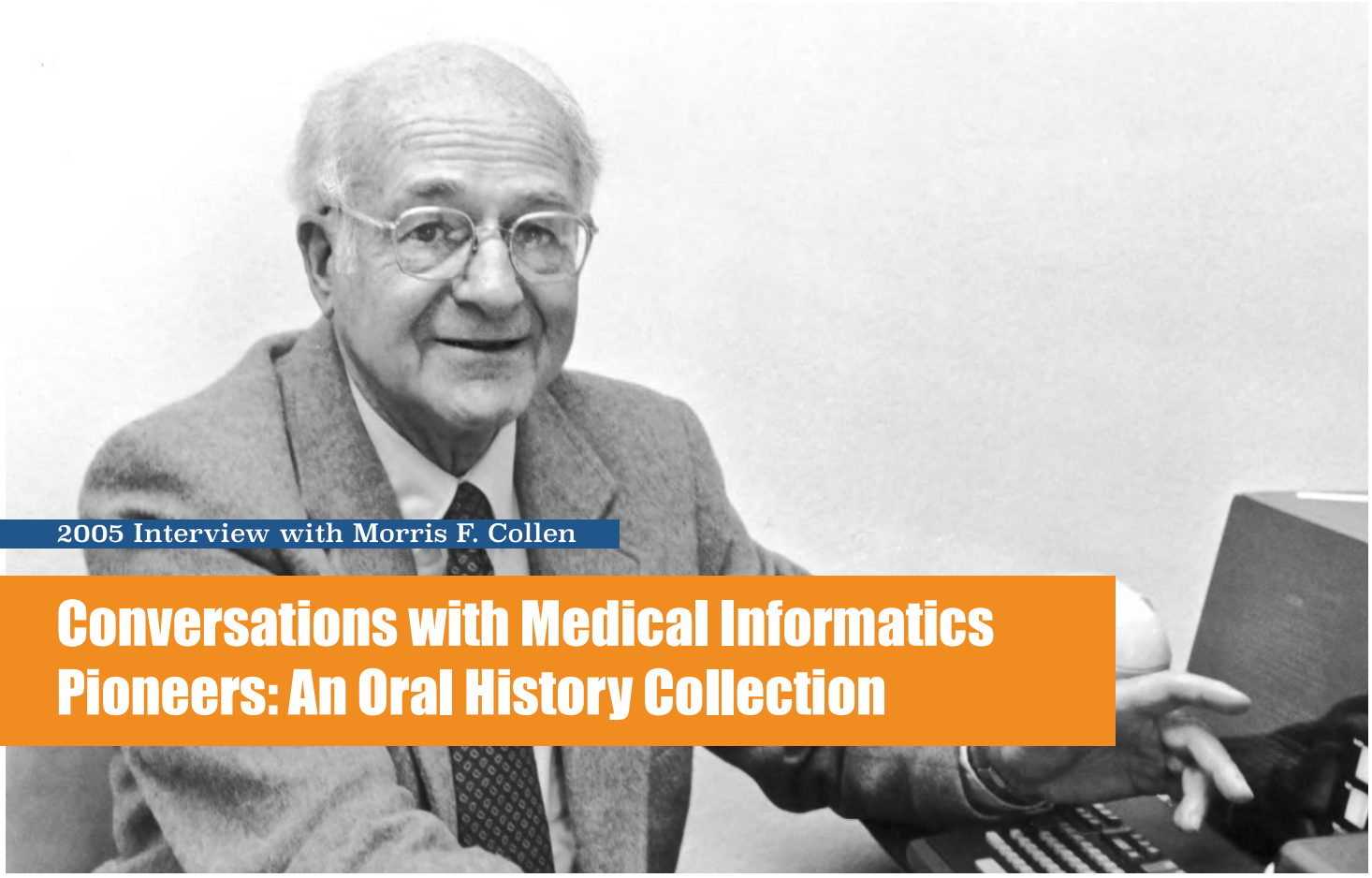


Source: Bryan Culp, Director, Heritage Resources, Kaiser Permanente, Kaiser Foundation Health Plan, Inc.

Dr. Morris Collen, circa 1975.

2005 Interview with Morris F. Collen

Conversations with Medical Informatics Pioneers: An Oral History Collection

Engineering Computerized Multiphasic Health Screening

Dr. Morris Collen is an internationally respected leader in medical informatics and a pioneer in electronic medical record systems.

INTERVIEWED BY DEAN SITTIG
AUGUST 1, 2005
OAKLAND, CA

From his time as a young doctor treating Henry J. Kaiser's shipyard workers in Richmond, California, in 1942 to many decades' of work in research and medical informatics, Morris F. Collen, MD, contributed to Kaiser Permanente's Division of Research (DOR), to the field of medical informatics, and to the public's health.[1–3] As Founding Director of the Department of Medical Methods Research, today's DOR, Collen grew the fledgling research operation, which opened in 1961, into a research institution renowned today as a trailblazer in drug safety, risk factor epidemiology, health services, and genetics research. One of Dr. Collen's major achievements at KP was the development of the multiphasic health checkup, which addressed the physician shortage of the 1950s, post-World War II. This series of procedures and tests, given to thousands of KP members, screened for conditions such as heart disease, diabetes and cancer. Not only did these revolutionary tests save physicians' time; they constituted a significant experiment in preventive care. Dr. Collen eventually automated the multiphasic health checkups, moving them onto a punch card system in 1964.[4,5] He was a founder of the American Medical Informatics Association, the American College

of Medical Informatics, and the International Health Evaluation and Promotion Association, and an active member of the International Medical Informatics Association. Among his many accolades, Dr. Collen was elected to the Institute of Medicine of the National Academy of Science in 1981. He was also honored by the American College of Medical Informatics (ACMI) in 1993 as the inaugural recipient of the highest honor it bestows, the Morris F. Collen, MD Medal for Outstanding Contributions to the Field of Medical Informatics.[6,7] Kaiser Permanente's Morris F. Collen Research Award recognizes the efforts of the Permanente Medical Group physicians who make significant contributions to scientific literature, the knowledge of their colleagues, and the health and welfare of Kaiser Permanente members and their communities.[8] In addition to his wide-ranging contributions to medical informatics, Dr. Collen was a valued advisor to the National Library of Medicine. He was a member of the Lister Hill National Center for Biomedical Communications Board of Scientific Counselors from 1984 to 1987. He served on the Literature Selection Technical Review Committee, which advises NLM on the journals to be indexed in MEDLINE/PubMed, from 1997 to 2002, chairing the Committee from 2000 to 2002. He also contributed to NLM Long Range planning. As an author and an editor, Dr. Collen published extensively in the areas of internal medicine, preventive medicine, health services research, multiphasic testing, technology assessment and medical informatics. His publications include about 200 articles in the scientific literature and numerous books. As an NLM scholar-in-residence (1987-1993), he wrote a highly regarded history of the medical applications of the computer.[9] The NLM was saddened by the passing of Dr. Morris F. Collen, known around the world as "Mr. Medical Informatics," on September 27, 2014.[10] He was 100 years old.[11]

DS ***This is Dean Sittig, and I'm here in Oakland, California, in Kaiser Permanente's Division of Research, with Dr. Morris Collen, August 1, 2005. Morrie, I mentioned I was going to ask you a little bit about where you were born and raised, and how you got interested in the field of informatics.***

MC I was born in St. Paul, Minnesota. My mother gave me a very unique date of birth, which is a series of three consecutive two-digit numbers: 11-12-13. I grew up in St. Paul, and went to the Mechanic Arts High School, where I became very interested in science and electronics. As a teenager, I made some of the earliest crystal sets, radios, and telegraph keys, learned the Morse code, and all that stuff.

So naturally, when I went to the University of Minnesota, I wanted to be an electrical engineer. I really didn't care for electric power engineering, which in those days, most electrical engineers focused on. I became more interested in chemistry. In my last year, 1934, we were still suffering from the 1929 Depression. And although I'd done very well in school and I was in the top of my class, all those around me were getting jobs only as draftsmen and similar. So I decided that I really wanted to go on and do some research in electrochemistry, in electro-organic chemistry.

As a personal aside in my story, I was in love with Bobbie Diner, who was then a student nurse at Winnipeg General Hospital, and she was going to graduate soon. I sent her a letter saying that I'd decided to go for a PhD in electrochemistry. I got this letter back that said, "Isn't that nice?! I'm going to be a nurse and you're going to be a doctor!" I remember saying to myself, "Oh, my! Bobbie, you don't understand. I'm not going to be a medical doctor." Then all of a sudden the lights went on. I talked to my parents and I said, "You've agreed to help me go through three years to get a doctor of philosophy degree —would you help me through four years for a doctor of medicine degree?" You know, to be able to say, "My son, the doctor." They said, "Of course."

What happened then was so interesting—it could never, ever happen today. At the University of Minnesota, the electrical engineering building was just a block from the chemistry building and a block from the medical school building. I was going to be graduating in June, and it's the middle of May. During a lunch period, I walked down the block to the medical school, and walked right into the dean's office—nowadays, who can just walk into the dean's office?! Elias Lyon, bless his soul, I can still see his face with a big walrus moustache, a rather small man sitting behind the desk. I introduced myself, and I asked him if I could I go into medical school in September. He laughed and said, "What's the matter, can't they find jobs for you engineers?" And he was partly correct. I told him of my interests, and that I was already doing some electrolysis of pharmaceuticals and electro-organic stuff. I must have gotten his attention, because he said, "Well, let's see, you've had a language,

chemical German, and all the requirements for chemistry." There was a long pause, and then he said, "If you go to summer school and get an A in zoology, then I'll admit you to medical school in September." And I did, and he did.

DS *Wow!*

MC Isn't that a remarkable story? So I went into medical school, and of course after four years there, I had pretty well suppressed my electrical engineering background, although it did help me to analyze stuff; and I loved diagnostic problems and any mechanical or electrical aspects of medicine.

I loved diagnostic problems and any mechanical or electrical aspects of medicine.

In those days, if you would tell somebody that you'd graduated in engineering before you went into medicine, they'd say, "What kind of a kook are you?! Didn't you know what you wanted to do?" You see how different things are now, because now that's the way to go.

I went to Michael Reese Hospital in Chicago for my internship, and learned that Dr. Sidney Garfield had graduated as an intern at Michael Reese. So I thought it must be good. Dr. Garfield was a medical doctor and pioneer of health maintenance organizations. He co-founded the Kaiser Permanente healthcare system. And then I applied for my residency. I wanted to go to the Mayo Clinic because I had spent a summer as a student there and I thought it was really an ideal place to train and practice. However, I had promised Bobbie that if she married me, I'd take her to California; so I also applied to the L.A. County Hospital. Well, I got both appointments; and fortunately for her, the appointment at Mayo Clinic was not until January, and the appointment at L.A. County was in July when I wanted to start my residency. So we took off and went to Los Angeles.

In my last year of residency, the war broke out. Pearl Harbor changed my whole life, because I

Source: Bryan Culp, Director, Heritage Resources, Kaiser Permanente, Kaiser Foundation Health Plan, Inc.

During WWII, Collen (pictured with stethoscope, circa 1943) worked for Sidney Garfield in the Kaiser shipyards in Richmond, California, where he gained expertise in multiphasic health testing. Garfield was committed to preventive medicine and he advocated periodic health checkups that could characterize examinees as "well," "worried-well," asymptomatic sick," or "sick."

had planned to be in academia and do research and teaching—but the war came along and changed everything. I had bronchial asthma and I was physically deferred, 4F. Henry Kaiser began to build ships, liberty ships, and he got Dr. Garfield to provide medical care for his workers.

I got my war-time assignment in July of '43 and went to the Richmond shipyards to work in the first aid station. Well, I didn't last there very long, because they were all trauma cases. Every time a case would come in, I'd ask Bruce Henley, who was the surgeon there, "Bruce, what do I do with this guy?" When I came back the second day, Bruce said, "Collen, you still here? You get the hell out of here, you're slowing me down!" So I told Dr. Garfield that I could not be of much help there, and I began to do preoperative physical exams. Then Garfield bought a small hospital in Oakland, the Fabiola Hospital, that was refurbished. I began to practice internal medicine.

The war came along and changed everything.

I love to tell this part of my story about when I started and was the first internist. As we began to get more medical patients, I went to Dr. Garfield and said, "You know, we're getting busy, and I can't be on seven days a week, 24 hours a day. I need some help." He said, "Well, fine, go ahead and hire two more internists." So I said, "Okay, I'll find two internists." At that time, we were employees of Sidney R. Garfield and Associates and as his employee, I said, "Well, when I find the physicians will you then write the letters to them?" He said, "You write the letter." So I said, "Well, you're the boss. I'll write the letter. Will you sign the letter?" And he said, as he often did, "Morrie, there's a war on! I'm too busy. You sign the letter!" So I said, "Well, how shall I sign the letter?" There was a long pause, and he said, "Sign it, 'Chief of Medicine.'" That's how I learned one way to be a chief is to be the first and only one on the job. So that's what I did during the war and that's how I got started at Kaiser Permanente. When the war ended, I realized that I loved group practice and when Dr. Garfield offered the physicians an opportunity to stay on, and he opened up the health plan to the community, even though the health plan had dropped from about 90,000 during the war to about 14,000 right after the war, I decided to stay on.

Now I'll tell you how I got into informatics. In the 1950s, the Longshoremen agreed to join Garfield's health plan if the plan would provide health checkups at the docks where the longshoremen worked.

Somehow Garfield was aware that Lester Breslow, who I've known since University of Minnesota days, had developed a program when he was a public health officer that he called "multiphasic screening."[12,13] He coined that term because the public health service in those days had separate units for screening for tuberculosis, screening for syphilis, and so forth. Breslow put these units together and proved it was very economical to do multiphasic screening.

Garfield said to me, "Since you know Breslow, go talk to him and see if we could do multiphasic screening at the docks." I did, and got Breslow's advice. I went with a nurse and a lab technician and set up a few stations, took the men's blood pressure, collected blood and urine specimens, and did whatever we could. They liked it and it was so successful that Garfield told me to institute it in our Oakland medical center. So one evening a week, after the physicians had all left, we placed a desk right at the front door, and we laid out what I'd observed at L.A. General Hospital, where they had colored strips painted on the floor, with signs: "For Laboratory follow color line red, and for X-ray follow color line blue." So I did that with colored tapes stuck on the floor. The patients came to the desk and registered, and then we'd give them a questionnaire history form to check, and measured their height and weight and blood pressure. Then they'd follow the colored tapes to the Lab for blood and urine tests, and to X-ray for a chest X-ray. Any

Source: Bryan Culp, Director, Heritage Resources, Kaiser Permanente, Kaiser Foundation Health Plan, Inc.

Morrie at home, circa 1948.

Source: Bryan Culp, Director, Heritage Resources, Kaiser Permanente, Kaiser Foundation Health Plan, Inc.

Dr. Collen explains how blood is analyzed by the equipment in the foreground and results fed to the computer (January 1966). Listening are (l to r): Dr. Cecil C. Cutting, Kaiser Permanente Medical Group (PMG) Executive Director; Representative John Fogarty of Rhode Island, Chairman of the House Appropriations Committee; Dr. Eugene Guthrie, Chief of the Chronic Diseases Division of the Bureau of State Services; and Dr. Aaron Christensen, Assistant Surgeon General of the Public Health Service and Chief of the Bureau of State Services. Senior Chemist George Young looks on (far left).

tests that could be completed while they were waiting on line would have the results come back with the forms. I would sit there at the end of the line and go over the data recorded on the forms while the patients were still there. If they needed any follow-up tests, I'd give them a requisition slip to come back the next day for secondary screening tests and also schedule each patient for a follow-up visit to a physician. Well, after a few months, the repetitive work got too boring for me. So we paid the residents to do this and after six months, they told me that it was too boring. So then we paid the interns to do it and finally the interns began to complain. That is when I first realized that computers can very well do routine repetitive work indefinitely without getting bored.

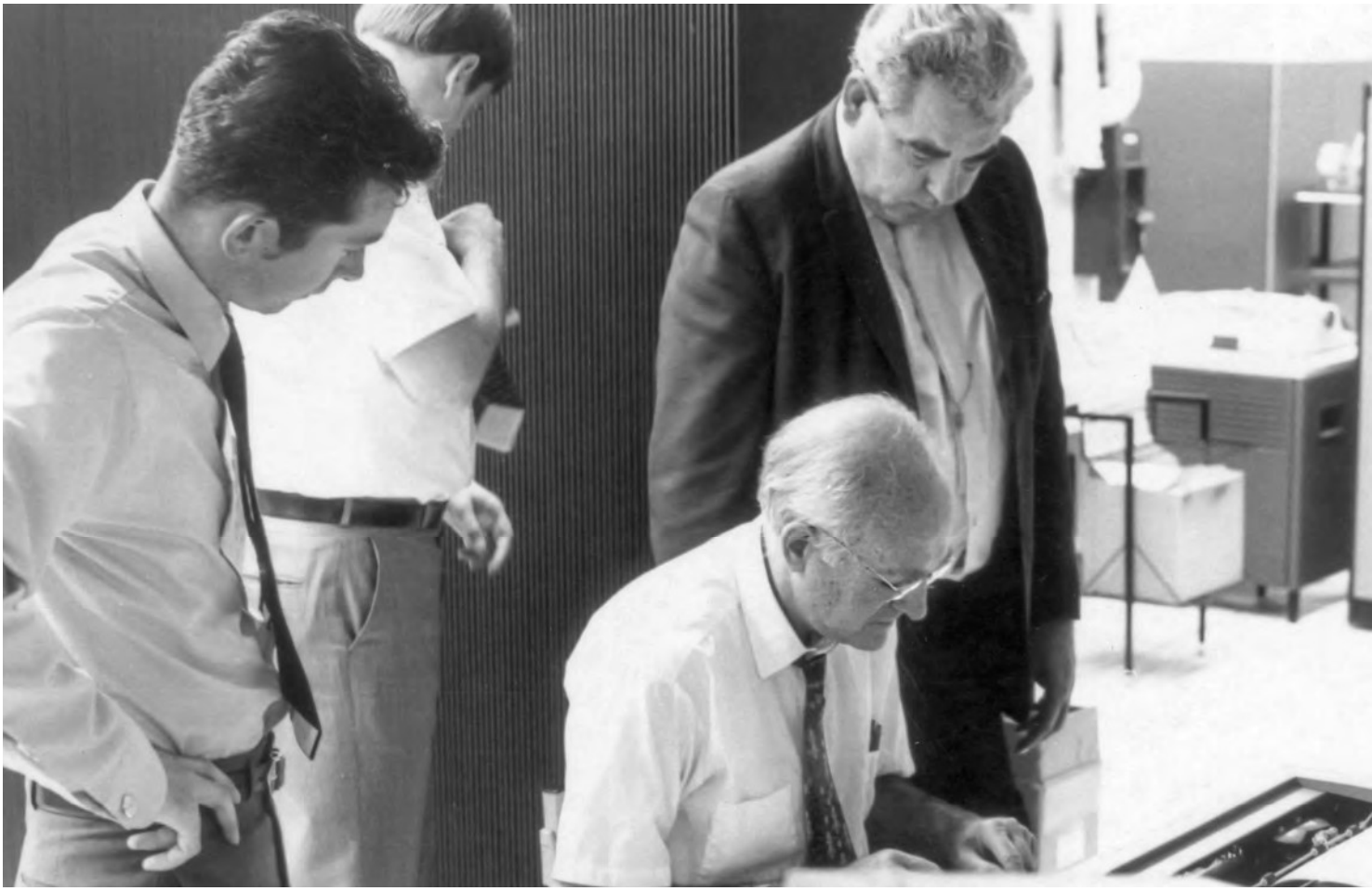
Computers can do routine repetitive work indefinitely without getting bored.

Well, it was around that time that Dr. Garfield came and told me—he was one of the few who knew of my background in engineering—"There's a First International Congress on Medical Electronics in New York. I think it's time we began to use computers to help our doctors take better care of our patients. So you go to this Congress and tell us what we should do." Well, I did and I got all fired up, so excited, because I realized then what we could do with help from computers. I returned and told him that he was absolutely right. So then Garfield established for me in 1961 the Department of Medical Methods Research. Dr. [Cecil] Cutting, the chief of staff, coined that term when I asked, "What do you want to call this department?" Cutting said, "We want you to develop better methods by using computers for providing patients' care. So call it "Medical Methods Research."

I did not entirely give up the practice of medicine and continued to see patients a couple of days each week— because I had learned how important it was when physicians were asked to change their ways, and they would say, "I can't do that," and my answer was, "I can do that. Why can't you?" That's how we got new things going.

Since computers are good for repetitive procedures, and the only really routine and repetitive procedure we do in medicine is a "health checkup," I figured if we made a mistake doing that, it probably wouldn't do much damage since we would be just collecting data on mostly healthy people. From our experience with the "manual" multiphasic health checkups, we applied for and got a grant from the Public Health Service and we installed a computer, an IBM-1440, in a room with air conditioning and floor cables and all that. The patients came in, registered, and walked through a series of testing stations where all of their data were punched into, or marked onto, computer-readable cards. They completed a history questionnaire by sorting pre-punched cards into a "yes" or "no" section of a box. At the end of the testing process, the computer printed out a summary of all the "Yes" responses and test results, with pre-programmed "advice rules" for any needed follow-up tests and visits to physicians. That's all been written up in several published articles.[8,12,14]

A very remarkable event occurred one day when Congressman [John E.] Fogarty and some Public Health Officers came from Washington, DC, to visit us in Oakland, because Fogarty had heard about our program and that we'd received a Public Health Service grant to start it. We have a framed photograph (that I treasure) of Congressman Fogarty, Dr. Cutting, and me standing by the computer while



Source: Bryan Culp, Director, Heritage Resources, Kaiser Permanente, Kaiser Foundation Health Plan, Inc.

Collen recalled: "To acquaint myself with evolving computer applications in medicine, I visited several people who were already recognized leaders in the field. To begin, I visited James Sweeney at Tulane Medical School (circa 1962), who with Joseph Schenthal, a clinician, had already begun to use a computer to process data with mark-sense cards for clinic patients.[15] Sweeney became the first Professor of Computer Medicine in the United States. When I asked him what his title meant, he said that he took care of sick computers."[9] Pictured: Morris Collen (seated) and James W. Sweeney, MD (standing, right).

it is printing out patients' summary reports with their appropriate "advice" rules. So right in front of us we see the computer printing out for a patient "consider leukemia," because the white blood cell count was high. Fogarty was so impressed that he called me the next day and asked, "What about that patient?" We had already done follow-up tests, and sure enough, that asymptomatic patient had early lymphatic leukemia.

Well, then we started getting more grants and that's how I moved further into medical informatics to try to bring about Garfield and Cutting's vision of how computers can help doctors take better care of their patients.

DS ***That's incredible. So when did you first start meeting some of the other people, like Octo?***

MC Well, in order to get some experience, since computer applications in medicine were all very new, I read one of the earliest articles on using computers in patient care that was by Jim Sweeney in New Orleans Charity Hospital.[15] He had used punch cards to collect outpatient visit and laboratory data so I visited him first. Then I visited Octo Barnett,* because he was already publishing his experience with a computer in the clinical laboratory at Mass[achusetts] General Hospital, and I learned from him that the nurses were the best medical systems analysts.[16] Then I went to visit Homer Warner* in LDS Hospital in Salt Lake City because he was already also doing multiphasic screening and some computer-aided diagnosis for congenital heart disease, and he was developing his advanced HELP program.[17-22] These three were the ones I visited and benefited from their experiences. From then on, we really moved ahead. We got a grant to evaluate the effect of multiphasic testing on the morbidity and mortality of examinees, and in '64, we expanded the program into San Francisco. In '66, we got a contract from the Food and Drug Administration (FDA) to monitor adverse drug events in ambulatory patients. In '68, we got a Health Service Research Grant. By then, Don Lindberg* and I were collaborating, since he had a similar grant from the National Center for Health Service Research and Development and both of our grants focused on informatics. As a result, we got to know each other very well. So my friendship with him goes way back to the '60s. In the late '60s, we were doing very well; our multiphasic program was being copied all over the world, and our San Francisco hospital and clinic information systems were operational.

However, '73 was a really bad year. The national economy was very bad. Nixon was president, and he instituted wage and price controls that limited our health plan's ability to raise dues. Food and Drug closed down our contract; the National Center closed out our Health Service Research Center grant. Our organization had been providing us with $500,000 a year and we had been receiving $500,000 in grants—so we had a million-dollar-a-year operation, which in those days was a lot of money. But we could not increase member dues by even just one penny per member per month to replace the half million we had been receiving in grants, so we had to close down all the computer systems development. At that time, we had electronic medical records in our database for more than one million patients, and that legacy database is still used to this day for longitudinal research studies.

Dr. Ted Van Brunt took over and changed the name of the "Department of Medical Methods Research" to the "Division of Research." He stopped all the computer systems development. Neil Bell, who had been one of the lead programmers, took over the further development of computer-based administrative programs and patient appointment and registration systems.

I then worked on doing some technology assessments for the organization and worked with Dr. Garfield evaluating what Garfield called a "new entry system to medical care." He published an article on it in *Scientific American*, which I assume you have read.[23,24]

DS ***Yeah, I saw one from the* New England Journal of Medicine *as well, evaluating the system.***[25]

MC I worked with Dr. Garfield until he died; when I was 70, I retired. As an emeritus director, they gave me an office and I have continued to be a consultant to the Division of Research.

Shortly after I retired, Dr. Lindberg asked me to write a history of medical informatics.[9] He offered me a small office at the National Library of Medicine, and called me a "scholar-in-residence." I felt very flattered since I was not really a scholar, nor a resident at NLM; but I very much enjoyed my visits to the Library. So that's how I got started writing my books on the history of medical informatics. You know, when you're

in the National Library of Medicine and you need to get a book or journal that is in the library stacks a couple of floors down, you either ask a librarian to get it for you, or you need to have a special "stack pass" to use the elevator. My God, did I love those stacks! You push a button, and the huge stacks slowly move apart so you can go between them—and I felt like Moses separating the Red Sea! There I collected and referenced lots of historical data, and took briefcases full of stuff home to work on my book.

I felt like Moses separating the Red Sea!

DS *So did you live there for a while?*

MC No, I just commuted every couple of months. The Library gave me a contract for $900 to cover my trips. After a few years, I gave up the travels and the NLM office, because I had boxes and boxes full of copies of articles. I'd done all the research, so I needed to finish the writing.[9]

DS *That's great!*

MC So that's the personal stuff.

DS *That's really great. The first SCAMC [Symposium on Computer Applications in Medical Care] meetings were in about 1970 or so. Do you remember going to those early meetings?*

MC Yeah. About that time, Marion Ball was president of SCM, the Society for Computer Medicine, and Rudi Bickel was president of SAMS, the Society for Advanced Medical Systems. We'd been trying to get those two societies together for years, because they had similar goals and a few hundred members in each. So Marion and Rudi brought SCM and SAMS together and held a joint conference in 1981, and then formally joined them to form the American Association for Medical Systems and Informatics (AAMSI). The annual Symposium for Computer Applications in Medical Care (SCAMC), run by Tom Piemme, was already going well.

Then another organization developed as people were beginning to talk about starting a college. So [Don] Lindberg and three or four of us who had been presidents of societies decided to start a college, the American College of Medical Informatics (ACMI). Scott Blois became the first president of ACMI; I was the second president. Then we got together and

Source: Bryan Culp, Director, Heritage Resources, Kaiser Permanente, Kaiser Foundation Health Plan, Inc.

An IBM 1440 computer system swiftly processes facts and figures and prepares patients' reports in the Kaiser Permanente Multiphastic Computer Lab, circa 1966.

decided to combine all three (SCAMC, AAMSI, and ACMI) into the American Medical Informatics Association (AMIA). That's how we went from SAMS and SCM into AAMSI, and then with ACMI into AMIA with ACMI as an independent subsidiary of AMIA so that no matter what happened to the others, ACMI would always be there, with a separate budget and all that.

DS *The number one award, the Lifetime Achievement Award in Informatics is named after you.[6,7] Can you tell me about how you found out about that, and how that started?*

MC Well, that's a very embarrassing personal part of my history.

DS *Why? I thought it was good!*

MC Ed Hammond* was president of the College at the time. I came to the AMIA meeting and saw Mary and Don Lindberg sitting in the front row. Suddenly, I was taken by the arm and led up onto the stage to stand next to Ed Hammond, who was talking about an award for me. I was so surprised and stunned that I do not remember a word he said, but I gathered that I was receiving an award that they had decided to surprise me with. Ordinarily, I'm used to talking, but now I was simply shocked, stunned, and speechless. I've never gotten over it. When Ed was through, he turned to me and asked if I would I like to say something. Well, I was so stunned that I was speechless and just wanted to disappear. I didn't even say thank you! I just ran off the stage. Later, I realized it was a terribly stupid thing for me to do so at the next College meeting, I made a point of getting up and apologizing to Ed, and explaining how stunned and speechless I was. I said, "Please, don't ever do this again! You've got to promise in future awards, to give the awardees adequate notice, so they can prepare at least a "thank you." I've never gotten over that. It was such an embarrassing moment for me that I was so overwhelmed I couldn't believe what was going on.

DS *It's quite an honor, I'll have to say.*

MC It is! It is! And I still wonder why they picked me; I just can't get over it. Anyway, the ones who followed had a chance to be forewarned.

DS *That's wonderful. You've told me about some of the people you've met. What do you consider your greatest achievement, the achievement you're most proud of in the field of medical informatics?*

MC Well, I think that I was very lucky to have been able to be a pioneer in the wonderful and exciting field of medical informatics; to have started using computers in Kaiser Permanente with an initial database of one million patients that has now grown with the Epic program to almost nine million electronic medical records;[14,26,27] and to have demonstrated that computers can definitely help to provide effective and low-cost preventive medical services using automated multiphasic health testing. However, my greatest disappointment was that, for various reasons, automated multiphasic health-checkup programs died out in the United States—I think mostly because physicians wouldn't support them. But if you go to Taipei or Japan or Beijing, they have physicians in charge of large multiphasic health-testing programs associated with nutrition and health education centers. I really was impressed when I went to Taipei and to Beijing and visited their programs. Whereas we had one automated health checkup unit in each of our medical centers doing 25,000 exams a year, in Taipei they have six parallel exam units operating in one building and do 100,000 exams a year. They profit financially because they are private operations. In Japan, Toyota and many large companies regularly provide similar health checkups for their employees.

I was very lucky... to be a pioneer in the wonderful and exciting field of medical informatics.

DS *Wow! You wonder why they named the Morrie Collen Award after you?!*

MC Well, I also was recently honored with an Honorary Doctor of Science degree from the University of Victoria, British Columbia, Canada.

DS *Oh yeah? That's wonderful. That's a great story.*

MC I tell my kids, "You've just got to live long enough, and wonderful things do happen."

DS *What would you consider your biggest disappointment in the field of medical informatics?*

MC As I said, the failure to get the support for multiphasic health testing in our country. I remember being invited to attend a meeting of the American College of Physicians, of which I'm a fellow. I described to them the advantages we had found from providing complete, low-cost, very efficient, high quality health checkups using a computer-based automated health-testing system. To my surprise and great disappointment, they took the position that it is unethical to invite a person to have a checkup who does not come to you with a medical problem. Their position was that it was more ethical to wait until a person comes to a physician with a medical problem, and then it is good practice for the physician to not only investigate the problem, but to then also provide the patient with a complete health checkup. In our program, we assume that no one is perfectly healthy and that when one is still asymptomatic is the ideal time to detect an abnormality, since early detection should help one to better respond to treatment. In our program we collected symptoms with our automated history and found that many patients have an early asymptomatic abnormality worth identifying before it causes signs or symptoms—as was demonstrated for the asymptomatic patient who was found in the multiphasic checkup to have early lymphatic leukemia. Furthermore, health education can then also be provided during a checkup as a good complement to providing preventive medicine.

Many patients have an early asymptomatic abnormality worth identifying before it causes signs or symptoms.

DS *Really?*

MC Yeah. My wife, Bobbie Collen, a nurse with a master's degree in health education, was asked by Dr. Garfield to set up a health education program in Oakland for the examinees as they went through their multiphasic health checkups. The Oakland health

Personal collection of Donald and Mary Lindberg.

Morrie Collen holding Donald Lindberg's grandson Martin, with Amy Lindberg.

education center was a model unit where she had many displays. Whole classes of school kids would come through. After '73, even after most health checkup centers closed, small health education units have continued in most of our larger medical centers.

DS *That's great. If you could give some advice to the new people coming into this field of informatics, what would you tell them?*

MC Well, since there are schools now where you can enroll in two-degree programs, I would advise them to get both an MD degree and a PhD in medical informatics. You need both degrees: first, to give you the knowledge, and secondly, to give you the peer respect. If you come up with something new in medicine and you want practicing physicians to change their ways, they will usually give you reasons why they do not want to, or cannot, do it. If you are also seeing patients yourself, and you say "I can do it then why can't you?" then you have a much better chance of implementing the change. Also, I would try first to win the support of the chief of the service involved. For example some years ago I needed to implement an early automated search and retrieval program, and I was telling the chief of Ear-Nose-and-Throat (ENT) about it. He said to me, "I have a patient with Bell's palsy who had Lyme disease—can Lyme disease cause facial palsy?" I said, "Well, try searching for it." Up comes the answer, "Yes," and with references to the literature. Well, that chief was so impressed that right away all the ENT physicians in the department began to use the program. So I went through this way with other services. I always first approached the department chiefs, had a sandwich with them, and showed them the new program; and if they were impressed, then I'd ask them to implement the new program in their department. When you think about this training process, during medical school and residency we use an apprenticeship system. Whatever the professor teaches and the chief of service does, you do. If it's good enough for them, it's good enough for you. If you just challenge established physicians to change what they are doing, it's usually harder for you to introduce change. So I always went to the chief first. Then it would usually trickle on down, since most in a medical system do what their chiefs say is the best way.

If you are also seeing patients yourself, and you say "I can do it, why can't you?" then you have a much better chance of implementing the change.

DS *I teach a class in clinical information systems at Oregon Health Sciences, and a lot of the times I try to get my students to argue about whether they think the field of medical informatics is more of a technical challenge, or whether it's more of a political and social challenge. How would you answer that question?*

MC The current implementation of electronic medical records has certainly demonstrated the problems created by technical, social, and political influences. I am not much on psycho-socio-political issues so I do not think I can help you much on this subject.

I follow my plan, but remember to be alert for opportunities, because my plans never come to pass exactly as I thought.

Anyway, I keep saying, my God, I wish I were 40 years younger.

DS *That's the same thing Homer Warner said!*

MC Yeah. You know, my grandkids tell me, "I'm going to be 30! I'm getting so old!" And all my four children are now in their 50s—actually, one just crossed his 60th. So I tell them, "If a genie came along and said, 'I can give you back the best 10 years, one decade,' what would you choose?" I'd choose my 50s in just a second. Because the kids were grown, I was established in my career, I still had good

health, didn't have to worry about "am I over 7,000 feet?" I think that was a great decade for me. I loved it.

DS ***Well, that's good, that gives me hope.***

MC You've just got to live long enough, and wonderful things happen. It's interesting. I keep saying, I'm always a great planner. I carry this little schedule book, I plan a year and a half. I follow my plan but remember to be alert for opportunities, because my plans never come to pass exactly as I thought. None of my plans ever came to pass.

DS ***That's a recurring theme with everyone we've talked to so far. Some of them don't even begin to try to plan. Like Octo wouldn't even admit to having a book. He said that same thing.***

MC It's good to plan, but you've got to be flexible and exploit the unplanned for opportunities.

DS ***Yeah. Well, thank you so much, it's been really great to meet you, and thanks for having the time to talk with us today.***

MC It's been my pleasure, Dean.

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Source: Bryan Culp, Director, Heritage Resources, Kaiser Permanente, Kaiser Foundation Health Plan, Inc.

Dr. Collen featured on the cover of *Modern Medicine* in December 1968.

For additional Conversations with Medical Informatics Pioneers, please visit:

http://lhncbc.nlm.nih.gov/project/medical-informatics-pioneers

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