Engineering Computerized Multiphasic Health Screening

2005 Interview of Morris F. Collen

Interviewers:
Joan S. Ash & Dean F. Sittig

Editors:
Rebecca M. Goodwin, Joan S. Ash & Dean F. Sittig

Conversations with Medical Informatics Pioneers:
An Oral History Project

U.S. National Library of Medicine
Conversations with Medical Informatics
Pioneers: An Oral History Project

Origins of these Conversations with Medical Informatic Pioneers

How this oral history collection began and grew.

INTRODUCTION BY
JOAN S. ASH AND DEAN F. SITTING
JANUARY 2015

Medical informatics is a “scientific field that deals with the storage, retrieval, and optimal use of biomedical information, data, and knowledge for problem solving and decision making.” The field of medical informatics began in the 1950s soon after the first computers were developed. In those early days, researchers struggled with slow central processing units (CPUs), infinitesimally small (by today’s standards) memory registers, and programming that often required use of machine-level instructions. Notwithstanding such extreme constraints, these dedicated investigators were able to begin exploring important informatics concepts and develop prototypes of many of the same applications and systems that are still in use today. Because medical informatics is a relatively new discipline, we are fortunate that many of the founders of the field are not only still alive, but they remain actively involved. For this reason, in 2004, we decided...
that the time was right to begin conducting a series of oral history interviews with informatics pioneers. We had used modified oral history interviewing techniques in our NLM-funded research efforts since 2000 and one of us (JA) had been her university’s oral historian before that.

Oral history is a method for documenting history in a vivid way by recording the voices of those who have experienced it. An oral history, while subject to the frailties of the human mind, presents an unfiltered story. This story is presented without the interference of gatekeepers, such as journal editors, publishers, and colleagues, or the filtering necessitated by current office politics. The founders of informatics are a group of people whose spoken words are lively, fascinating, and wonderfully descriptive. While the history of medical informatics had already been well documented by Morris F. Collen, we envisioned a collection of narratives in the form of interview transcripts that would portray the varied perspectives of informatics leaders. Historic documentation alone cannot give a true picture of all the circumstances that have influenced the development of the field. Therefore, the goal of this set of transcripts is to capture a portion of the history of the medical informatics field in the words of its pioneers.

We began by making a list of 36 potential interviewees along with a list of topics we felt we should explore with them. We developed a generic interview guide with several very general open-ended questions we wanted to ask everyone—about their education and early careers, accomplishments and turning points, involvement in professional associations, and advice for future informaticians—and then tailored the guide for each interviewee with more specific questions about their particular research interests and most important projects. We contracted with a professional transcription service dedicated to this type of work and as we travelled the country to attend scientific meetings or study sites for our research, we contacted interviewees to arrange interviews. We had no external funding, so we used our own resources for transcription and expenses, but we still managed to interview 17 geographically available interviewees from our list of 36. We usually did the interviews together in tandem, with JA asking the more general questions and DS the more technical, probing questions.

Julie McGowan stepped in to conduct the interview with Lawrence Weed, for which we are grateful. We were then extremely fortunate, with NLM training program funds, to be able to hire a summer intern
to help us finish the project. Ana Stenescu worked with each interviewee to lightly edit the transcripts for clarity and accuracy and gain each individual’s permission to make them available. Finally, with the administrative support of Clem McDonald and others at the National Library of Medicine, which agreed to house them, we are finally completing the process of disseminating the words of these pioneers.

We hope you enjoy reading the transcripts as much as we enjoyed producing them. What cannot be captured in the transcripts is the graciousness with which we were treated when we visited interviewees in their homes or offices and the personalities of the individuals represented in their surroundings. In the transcripts, however, you will find stories that will make you laugh, bring tears to your eyes, surprise you, motivate you, and teach you a great deal. For example:

- Clem McDonald tells heartwarming stories about the early development of Gopher, the early order entry system at the Regenstrief Institute;
- Tony Komaroff describes the relationship between evidence based medicine and decision support and the beginnings of the use of clinical algorithms for the diagnosis and treatment of patients;
- Octo Barnett describes development in the early 1960’s of MUMPS, an early programming language still in routine use by the majority of electronic medical records today;
- Robert Ledley tells us about how developing the first whole body CT scanner involved getting a nearby automotive body shop to paint it;
- Homer Warner tells about reading the 1959 Ledley and Lusted paper from *Science* describing
use of Bayes’ theorem for clinical diagnosis and realizing that he could actually do something like that using real clinical data (which lead to his first publication in JAMA in 1961);

- Reed Gardner describes his early career as a shepherd in southern Utah;
- Ed Hammond tells how what he learned on naval submarines relates to informatics;
- Don Lindberg recounts many stories about how the political scene in Washington influences the field as well as the NLM;
- Morris Collen describes the history of Kaiser Permanente’s clinical information systems;
- Don Detmer gives a surgeon’s and administrative view of many important policy decisions affecting the field over the years;
- Tom Lincoln tells about using an early prototype of a tablet-like data-entry system in the 1970s at Rand;
- Don Simborg describes an early computer-based system he developed at Johns Hopkins in the late 1960s for entering and communicating nursing orders; and finally,
- Larry Weed tells tales about developing the problem-oriented medical record format and shares his views about the future of clinical documentation.

One of our interviewees offered the following advice: “Look at history, and look at it from the perspective of what was done. Then that becomes usable by me in solving the problems that I face now in today’s world. I look to see what’s the lesson.” This collection of narratives provides a look at the history of medical informatics through the eyes of an amazing group of thoughtful, innovative, and courageous individuals.

Joan S. Ash and Dean F. Sittig

January 2015

References


ACKNOWLEDGMENTS

Although no grant funding was used to directly support conducting and transcribing these interviews, Joan S. Ash and Dean F. Sittig would like to thank the National Library of Medicine and the Agency for Healthcare Research and Quality for funding our other research and teaching efforts (such as serving as faculty at NLM’s Woods Hole course during which a number of interviews were conducted), which involved considerable travel. Once we were at a site, we used our own time and resources for interviewing. We would of course like to thank our interviewees, who provided us with biographical information and gave generously of their time both during and after the interviews. We are especially grateful to Julie J. McGowan and her son Alex for braving a snowstorm in Vermont to conduct the interview with Larry Weed. We would like to thank our research assistants Eric Gebhardt and Ana Stenesca, whose editing and organizational skills helped produce these high-quality, vivid narratives. Thanks to Clem J. McDonald and Rebecca M. Goodwin at NLM for gathering the photographs that accompany these interviews and making this collection available, with the support of the NIH/NLM Intramural Research Program and the NLM History of Medicine Division.

Rebecca M. Goodwin is grateful to Joan Ash, Dean Sittig, and the medical informatics pioneers they interviewed to create this collection of oral history conversations. Thanks also to the family, friends, and colleagues of these pioneers, who generously sorted through their photographs and shared them to enrich this collection. Thank you to the many NLM colleagues who contributed to the collection.

We hope you enjoy these stories, which help illustrate the birth of the field of using computers in medicine. May they inspire you.

Joan S. Ash, Dean F. Sittig and Rebecca M. Goodwin

April 2015
“Memory is the core of oral history, from which meaning can be extracted and preserved.”

DA Ritchie

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. 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. 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. The NLM was saddened by the passing of Dr. Morris F. Collen, known around the world as “Mr. Medical Informatics,” on September 27, 2014. He was 100 years old.

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.

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...
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, “Colleen, 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.

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.”

Morrie at home, circa 1948.
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).

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.

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
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. 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 Massachusetts General Hospital, and I learned from him that the nurses were the best medical systems analysts. 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. 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.  

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

**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. 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.

**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.”

**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

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*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 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.

**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.

**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
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, 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.

**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.

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.

[Published: 3/14/2015; Updated June 30, 2015.]
References


