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Morris Collen, M.D.
Kaiser Permanente Medical Care Oral History Project II
Year 1 Theme: Evidence-Based Medicine

Interviews conducted by
Martin Meeker
in 2005

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Discursive Table of Contents – Morris Collen, M.D.

Interview #1: November 8, 2005

Audio File 1.....1

Early interest in electronics and engineering—Switch from engineering to the study of medicine—Meeting Sidney Garfield at Los Angeles General Hospital—Working with Garfield and Associates in World War II—Working in Oakland and at the Richmond Shipyards—Garfield’s vision of medical care—Interest in medical care research—Development of the Department of Medical Methods Research and multiphasic screening—Introduction of computers for medical evaluation—Constructing the multiphasic screening program—Leveraging physician time—Physicians critiques of multiphasic exams and fee-for-service practice—Group practice and evidence-based medicine

Audio File 2.....19

Kaiser Permanente research database—Longitudinal qualities of Kaiser Permanente data—Evidence-based medicine and continuing medical education—Multiphasic screening and nurse practitioners—Changing physician population within Kaiser Permanente and managed care—Procedures for determining standards of care and costs—Patient knowledge, demand, and medical care delivery—Politics and the reputation of Kaiser Permanente in the 1950s—Transnational circulation of ideas about multiphasic screening

Interview #2: December 13, 2005

Audio File 3.....34

International implementation of multiphasic screening program—End of FDA funding of computerized multiphasic screening—Overview of medical informatics in Kaiser Permanente—Research and medical databases—Use of multiphasic screening data in clinical research—Electronic medical records, including implementation, history, functional requirements, pharmacology—End of FDA funding and impact on the Division of Medical Methods Research—Splitting of health services, clinical, and epidemiology research—Work as director of technology assessment—Garfield’s new Medical Care Delivery System

Audio File 4.....48

Editing *Hospital Computer Systems and Multiphasic Health Testing Services*—Developing data fields for multiphasic screening—Genetics and population differentiation--Neuromental Questionnaire—Bobbie Collen and medical education—Garfield’s Total Health Care project, including expense, savings, prevention, education

Interview with: Morris Collen

Interviewed by: Martin Meeker

Interview # 1- 11-08-05

[Begin File Collen, 01 11-08-05]

NOTE: Morris Collen also was interviewed as part of the interview series, The History of the Kaiser Permanente Medical Care Program I (before 1970), in 1986.

01-00:00:01

Meeker:

Thank you again for agreeing to sit down to yet another interview with us. As I mentioned on the phone, what I want to do first is really just cover some of the same territory that we covered in the previous interview with you, with the goal of getting some material on video for this documentary that we're putting together. So since you have an interesting educational background, engineering and medicine, I'm wondering if you can tell me a little bit about how you went into each of those fields, setting up for what happens later on when you combine both of those.

01-00:01:05

Collen:

Well, when I was a kid, I enjoyed working with electric batteries, and I remember I got a crystal radio set that I made with wrapping copper wire around an oatmeal box to change wavelengths, and worked with batteries and spark plugs and all that. So I naturally went into electrical engineering, but when I graduated I was not interested in power engineering or so much electrical communication as I became more interested in electrochemistry. I spent a lot of time in the chemistry department as well as in the electrical engineering department.

When I was graduating in June of 1934, I'd planned to go ahead and get a graduate degree in electro-organic chemistry. I was dating a nurse, Bobbie Diner at that time, and she was at Winnipeg General Hospital. I wrote her a letter telling her I was going to work for a doctorate degree, and I'll never forget her letter came back. "Isn't that nice? I'm going to be a nurse, and you're going to be a doctor."

I remember saying, "Oh, Bobbie, oh, you don't understand." And then a light went on, and I said, "Doctor of medicine? Well, maybe I should do that."

I asked my parents would they help support me for another three years to go through medical school, and they said, "Sure."

So a remarkable thing happened. It was May, 1934; and at University of Minnesota the medical school was just a block down the street from engineering, and chemistry a block this way. So over the lunch period I walked into the dean of the medical school's office, Dean Elias Lyon. To this day I can see his face with a walrus moustache. I told him that I was graduating in electrical engineering and wanted to go into medicine, and I'll never forget, he laughed and laughed and said, "What's the matter? Can't they find jobs for you engineers?"

In a way, he was correct, but then I guess something in the way I spoke to him must have got his attention, and he said, "Well, let's see." I had had chemical German; I had all the requirements for getting into medicine except zoology. So a remarkable thing happened, he said—and it could never happen today—he said, "You go take zoology in summer school. You get an A, and I'll admit you to medical school in September." Wow! Well, I did. I got my A, and he admitted me. That's how I got into medicine.

Then I graduated and then went to L.A. [Los Angeles] General for my residency, and that's where I met Dr. [Sidney R.] Garfield. He was a resident in surgery when I was a resident in medicine. Typical Hollywood style; he was a senior resident, but they called them super residents. So we got to know each other, because at L.A. County, the residents, you know, in the three-thousand-bed hospital, they ran the wards, and whenever I'd need a consultation in surgery, I'd call him, and he'd call me for medicine. That's how we developed a friendship and mutual respect for each other.

As I was finishing my residency program, Pearl Harbor came along. I had told my wife that I always wanted to stay in academic medicine and teach and do research and take care of patients, and I told her we'd never have much money, because professors don't make much. But Pearl Harbor, because of my asthma and 4-F status, I became a shipyard doctor, and there Dr. Garfield was my boss. That's how I started with Kaiser Permanente.

Meeker: You mentioned your residency status. How many years were you at LA General?

01-00:05:44

Collen: Two. I had spent two years at Michael Reese Hospital in Chicago, so the second year of the internship was credited as one year residency, so I finished the standard three years, and I was able to become a diplomat of the American Board of Internal Medicine, the American College of Physicians, and all that.

Meeker: How many years ahead of you was Sidney Garfield?

01-00:06:10

Collen: He must have been three years ahead of me, because during the two years I was there, he was already senior, a super resident, which meant he'd already

gone through three years of standard surgery residency to become the super resident.

Meeker: So basically he was there in his fourth year or fifth?

01-00:06:33

Collen: Fourth year or fifth year, yes.

Meeker: Well, what was the size of the residency class? How many residents were there?

01-00:06:40

Collen: Well, there must have been a dozen on each floor. For the medical residency, one floor was supervised by USC, the University of Southern California physicians, and the other floor was by the Loma Linda Seven Day Adventist school. So altogether there were a couple dozen medical residents, and that's where, when we were on night call, I got to know Raymond Kay, who headed up the USC group. Ray was the super resident on the seventh floor of USC at the same time Sidney Garfield was a super surgery resident on whatever floors they were on. I spent my time on the sixth floor. The sixth and seventh floor were all medical patients.

Meeker: It sounds like there were quite a few residents there.

01-00:07:54

Collen: Yes. Oh yes.

Meeker: How was it that you befriended Sidney Garfield? How was it you came into his orbit?

01-00:08:03

Collen: Well, I only met him when we were involved in the same patients. When the war came along, I heard that Dr. Garfield was being sent to take care of the shipyard workers for Mr. [Henry J.] Kaiser, and I guess that we had some choice, and I went up and was interviewed by Dr. Garfield in San Francisco, and I applied and was referred there by a procurement assignment. Somewhere in my files I have that paper that made me a shipyard doctor. I think it was July the 1st of 1942 that I reported to Dr. Garfield at one of the shipyard first aid stations, where I worked for only a couple days, because they were all trauma cases, but I wasn't trained in trauma.

I'll never forget as an anecdote, Bruce Henley was the surgeon there. Every time somebody came in with injuries to the extremity, I'd say, "Bruce, what I do to this guy? What do I do here?"

When I came back the second day—I'll never forget—Bruce said, "Collen, get the hell out of here. You're slowing us down." So I went back and talked to Dr. Garfield and Dr. [Cecil] Cutting, who then was the chief of staff.

Sidney Garfield and Associates owned us all; he was the proprietor. That was the name of his company. They were beginning to rent office space on Pill Hill in Oakland, so they asked me to do preoperative checks on patients that went to surgery there. So I did medical exams and checked them over.

01-00:10:09

Then in August of '42, Mr. Kaiser and Dr. Garfield dedicated the Fabiola Hospital, and that's when I got a floor there for medical cases. The first floor of Fabiola, there were a dozen offices around the perimeter of the first floor: Dr. Cutting, number one, and Bruce Henley, number two; I had number three, and all the rest of the chiefs. There's where we began to see patients. If I had to admit somebody to the hospital, I admitted them to the second floor.

Then we began to see patients with pneumonia. A lot of women came to work. That's where Rosie the Riveter started. Mr. Kaiser sent railway cars around to pick up men to work in the shipyards. All the healthy men were in the armed services, so the trains went around and picked up whoever wanted to get to work. So a lot of them were alcoholics and not in good health. When they hit the Richmond shipyards, where it's cool and damp, within a few months we were getting—I remember we had ninety patients with pneumonia at one time.

When we first started there was no treatment for lobar pneumonia, pneumococcal type, except horse serum, and the people almost always got sick with serum sickness. It was a terrible treatment, but was all we had. Then from Germany came sulfanilamide, and then sulfathiazole and sulfadiazine, and a series of sulfa drugs, and we began to treat pneumonias with them. That's where we began, I would say, our first clinical research, evaluating different treatments for pneumonia.

Finally when penicillin came along, Chester Keefer in Boston became the czar controlling penicillin. Ninety percent went to the armed services, and 10 percent, about, went to the United States. We had so many pneumonias and we had reported already in a journal that we were treating large series of pneumonias. So we got the first dose of penicillin in California, and treated a young man with a very severe lobar pneumonia, type 7. They all died from that, and this poor fellow was going to die. So we gave him this one shot of 15,000 units, and to this day I keep saying it was a miracle. He recovered. Then gradually more penicillin came, and we switched to using penicillin.

Meeker: How long did it take for penicillin to ramp up in production?

01-00:13:28

Collen: Oh, I don't remember exactly.

Meeker: When was it no longer a rarity to use in the clinic?

01-00:13:36

Collen:

Well, the war ended in '45, so it became available thereafter. See, when the shipyards began to close down from 90,000 members to 14,000, then most of these workers left. By then the first clinic building was built, and I had some twenty-five beds or so. We still had a fair number of pneumonias, but it wasn't like it was in the shipyard days. And then we used penicillin routinely, and we had no trouble in getting it after '45.

Meeker:

So after mobilization for the war ceases and it's not all going overseas, then you have more access to it for the domestic scene?

01-00:14:32

Collen:

That's true; it became available for civilian patients.

Meeker:

I'm wondering if you can describe something that I haven't really been able to uncover, at least in my research, and that is the structure early on of the organization, in particular the relationship between Sidney Garfield and Associates, and the Kaiser Company, which was building ships. I know that their relationship dated back to the Grand Coulee [Dam] project. Did Garfield maintain his separate organization, Sidney Garfield and Associates, up through that period, do you recall? Do you know anything about that?

01-00:15:14

Collen:

As I know his history, when Dr. Garfield, finished his senior residency in surgery, he needed a job. Then he learned that there was an opening in the aqueduct, building the aqueduct of the water down to L.A., and he got his first job there. You know, his "desert story," where he built a little hospital there and began to work for Mr. Kaiser for industrial care, and that's where the "nickel a day" prepayment started. Then whenever they came down with any nonindustrial illness, they would ship them into Los Angeles. Then he asked Mr. Kaiser and Industrial Indemnity, that for another nickel a day he would take care of their nonindustrial illnesses, and that's when the concept of ten cents a day for taking complete care of people began.

Meeker:

The prepayment.

01-00:16:32

Collen:

Prepayment, per capitation; there that basis of our program began. Then when the LA aqueduct was finished, he worked for Mr. Kaiser setting up patient care for Grand Coulee Dam and the other dams, and Bonneville Dam. I think that's where Dr. Cutting joined; I'm not sure. Cutting, of course, was one of the top residents at Stanford [University] and joined Dr. Garfield and was with him ever since. Always, though, it was Sidney R. Garfield and Associates. Well, when the war started, again it was Sidney R. Garfield and Associates. I was an employee of his and started out at \$600 a month. That was a pretty good salary in those days. Well, there's another anecdote that I enjoy telling people, another one of the marvels that I was so lucky the rest of my life to be working with him. I was his first internist and then medical patients began to

come, and I remember going to him and saying, “Dr. Garfield, I can’t work seven days a week for twenty-four hours a day. I need help.”

So he said, “Well, fine. Go hire a couple of internists.”

So I said, “OK. Well, I’ll go and find them, and then will you write them a letter?”

He said, “Oh, I’m busy. You write them the letter.”

I said, “Well, I’ll write the letter. Will you sign it?” After all, he was my boss and I was just an employee.

He said, “No, I don’t have time. You sign it.”

So I said, “Well, how shall I sign it?”

There was a long pause, and finally he said, “Well, sign it chief of medicine.” So I say that’s the way to become a chief of medicine when there’s no other alternative for the boss. [laughter] Then that’s when I began to find internists who joined us.

Then after the war, many of the physicians left and war time assignment was discontinued. I had always wanted academia, but I just loved being with this group of physicians, and with the vision and idealism of Dr. Garfield, Dr. Cutting, Mr. Kaiser. So I stayed on as chief of medicine. Well, then opportunities developed as we grew from 14,000 members on up, and I began to add more physicians, and my dream of being involved in patient care and research and teaching all came to fruition. The opportunities were so much greater than I could have had at USC or elsewhere, and so I started an intern/residency program. We were, of course, already doing research in our patients and reporting articles on them.

Then I started the *Permanente Foundation Medical Bulletin*, and we sent it to all the medical schools, and that was, I think, good for us, because it gave the medical schools an opportunity to see that we were doing pretty good care. In fact, Dr. Robert [J.] Glaser, who at that time was dean of the University of Colorado medical school, later became Dean of Stanford and then headed up the Kaiser Family Foundation. I heard he tells the story that he was going through their library at the University of Colorado, and he saw this *Permanente Foundation Bulletin* and read all our articles in it, and that’s when he developed his first interest in our program.

01-00:20:42
Meeker:

When you talk about your commitment to the vision of Garfield and Cutting and Kaiser and so forth, which is how you explain why you decided not to

leave Kaiser during World War II, what was that vision? How would you characterize it?

01-00:21:07

Collen:

Well, let's see. Kaiser and Garfield each had the visions, and they were a great team. Garfield had the vision for healthcare, and Kaiser also shared the vision for healthcare, and he provided the administrative expertise that we did not have in medicine. So Henry Kaiser and Gene Trefethen were the experts on healthcare financing, and Garfield and Cutting were the experts on patient care. It was a remarkable team, absolutely remarkable.

Meeker:

I know that it's been written, but I'm kind of wondering how you individually would characterize Garfield's medical vision.

01-00:22:08

Collen:

Well, he set up the basic principles of prepayment per capitation, integrated facilities, and physicians controlling care. His basic model was we must provide a good quality of care at a cost the members can afford; and he always supported research and education. I was lucky in being able to help carry out that vision, and that as being chief of medicine, I was able to—we were able to attract very good physicians from all over the country.

We were able to establish an intern/resident program, and many of the physicians who became heads of departments and physicians-in-chiefs and medical directors graduated from our resident training program. They loved the program as I did, and they spent the rest of their lives in it—like Dr. Wally [Wallace H.] Cook, who headed up and established the Walnut Creek group and was our resident in surgery—and that was very valuable.

The publications that we made, you know, the article on all the pneumonias that we published established that we were doing good care and good research and we did training and all the requirements for a comprehensive patient care, good quality care, research, training, education. We were able to set all those up in the first several years after we got started.

Meeker:

Was there like a particular element of that vision that was especially attractive to you, that you couldn't have done without?

01-00:24:12

Collen:

I think the research, because I've given talks on the history of research in our program. From the first day, you know, when Henry Kaiser dedicated the Fabiola Hospital, I was there. I was standing on the sidewalk, and he was up there. I'll never forget his words, that his mother died in his arms because she didn't get good patient care, and he vowed that whenever he had any employees or any people dependent on him, that he would arrange for good medical care. I may be paraphrasing a little bit, but clearly that's the message I got.

Then he and Garfield both realized that to provide good care, you have to continually do research how to do better care. Then you have to develop your own physicians to understand the principle of the Garfield-Kaiser program, and so the residents' training program were very important. Then we began publishing to let the rest of the country know, and so all of the basic foundations of good quality, good research, good training. I mean, I just count my blessings. It was just a marvelous opportunity.

Meeker: I wonder if we can talk about the question of research for a moment, because it's clear to me that at a certain point relatively early on, you and other physicians in charge decided that the kind of research that would be done would not be basic research, as it's described, and it would be more in the epidemiological or clinical vein. I would guess that there would be some physicians who would say that those kinds of research have to be combined. Is that the case? I guess I wonder how this decision was arrived at that basic research would not be done, in favor of a more clinical approach to research.

01-00:26:27

Collen: If one reviews the history of research in our program, actually, for the first few years we did basic research, as Mr. Kaiser and Dr. Garfield established an institute for research down on the Peninsula, and they were doing studies like arginine and cancer, very basic research. I remember Franz Goetzl, who was one of the internists in my department, was doing basic research. They published a lot of articles, but it became pretty clear to most of the physicians, as we grew, that they weren't helping us in clinical care.

So I think the major point in time, if I can use that expression, that we switched was when Dr. Garfield, in his vision—he was a remarkable visionary—1950. He was one of the few who knew that I had graduated in engineering before I went into medicine, because I didn't tell anybody, because in those years they'd say, "What kind of a kook were you? Didn't you know what you wanted to be?" Well, nowadays having the combined degree is the way to go if you're interested in what is now called medical informatics.

So he came to me and he said, "There is a meeting, the first international meeting on medical electronics in New York. With your background, I want you to go back, see what's going on. I think the time has come for us to use computers in medicine, so go and come back and tell us what to do."

Well, I got in there, and my brain became aflame, because all that four years in engineering, I had suppressed it for four years. It just all flared up, and I got so excited. He was absolutely right, and computers were beginning to be used in different aspects of patient care. So I came back and told them that he was right. So, he and Dr. Cutting said, "Okay, we want you to do research in computers as applied to direct patient care."

So I said, “Fine.” Then they gave me some offices on the tenth floor of the old Kaiser Building on 1924 Broadway, and I said, “Well, what do you want to call the department?”

Dr. Cutting said, “We want you to develop better methods of providing care, and we’ll call it Medical Methods Research.” So that changed everything for me. Now we began to hire research people to study how computers can help physicians to take direct patient care.

We were already doing multiphasic screening. That was another vision of Dr. Garfield’s that I just carried out for him. He came to me one day after the war ended, 1950 or so, and he said—because one of his principles was keeping people healthy. Preventive medicine was one of the important things in his vision.

01-00:29:58

He said, “Public Health is doing multiphasic screening. Go talk to Dr. Lester Breslow,” who was then Public Health’s officer on the Peninsula. “He’s doing it, and find out from him what he’s doing and how we can apply it.” So they had been doing screening, chest x-rays for tuberculosis and blood tests for syphilis in individuals. Breslow brought them all together in what he called “multiphasic screening.” It was very efficient in patient time and very cost effective from the viewpoint of providers.

So I came back and told Dr. Garfield, “We should start a multiphasic program.” The longshoremen, under Harry Bridges at that time, Dr. Garfield was trying to get them interested in the health plan. So Harry Bridges wanted examinations right there on the dock. I remember I took a crew, and I went right down to the dock and set up simple multiphasic screening. We collected urine specimens. We drew a blood specimen, whatever we could do there, and then took the specimens back to the Oakland Hospital laboratory, did the reports, and called in people with abnormalities.

Well, that worked so well they liked it, so then we set up multiphasic screening in Oakland Hospital. To do it economically and not disturb anybody, in the evening when the clinics closed, I had learned from Los Angeles General, you put colored stripes on the floors so when the patients come in, you say, “Follow the yellow stripe, or the blue stripe.” So right in the front door, we opened a desk at five o’clock after the regular clinics closed, and people would come in and register, and we’d say, “Follow this stripe to the laboratory, to here, to there,” and gave them paper-and-pencil questionnaires. So we did “manual” multiphasic screening. I would sit in the desk at the end of the line and go over their test results—if they had an abnormal urine or blood test, I’d give them slips to come back. That’s what we did for several months.

Well, after a while I got tired, this was so boring, so I asked the residents to do it, and they did it after a few months, and they said, “Please, this is so boring.” So we paid the residents to do it, and after a few months they said, “This is so boring.” Then when I came back from New York—when we started Medical Methods Research, the first place I thought it would be best and safe to use computers would be to do health checkups.

Computers were ideal for routine, repetitive procedures. When you do a health checkup, you do the same over and over, take a history, do a physical, do a lab test, and so forth. They were all 90 percent healthy people, so I figured if we made any mistakes, we couldn’t hurt people. We weren’t seriously taking care of sick people.

So that’s why we put a computer in there, and used punch cards in those days, and when the people went through the program, all the information was punched into the cards. They sorted out 200 questions into yes/no responses such as, “Did you ever cough up blood?” We ran in all the yes responses through a card reader into the computer, and then before the patient left we printed out a summary report. Then we developed what are now called “decision rules,” so if they had albumin in the urine, the computer printed out a request, “Come back with a morning urine specimen,” and all these decision rules were for the patient to do a secondary screening.

A remarkable event occurred when Congressman [John] Fogarty—he and Lester Hill were the two prominent Congress senators in healthcare in Washington [D.C.]. They had heard of the program, because we were publishing articles, and there is now a picture in many publications of Dr. Cutting and I showing Congressman Fogarty the multiphasic program. Somebody up there must have been watching over us, because it printed out on one patient, “A high white count. Consider leukemia.”

Fogarty said, “What does this mean?”

I said, “Well, this is supposedly a healthy patient who has a high blood white cell count, and we will have to rule out leukemia, and then we can treat it early.”

The remarkable thing was the next day he called, and on the telephone he says, “Did it turn out to be leukemia?”

I said, “Yes, sir, it did.”

He says, “Wow.” You see, with that sort of exposure, we began to get busloads of people coming in, from Japan and elsewhere, taking photographs and replicating the systems all over the world, Nancy, France, and London and Mexico City, and especially in Japan. Japan to this day has over 100 multiphasic programs. There’s one in Taipei, one in Hong Kong. I have

visited them. They call me the grandfather of it. When they open a new program, I come, so I was supposed to go back in January of this year again to bless the new one in Beijing.

But for various reasons, the concept—the process of automated multiphasic screening has not taken hold, except in industry, in the United States, primarily because the physicians do not support the program; and computers came in all over the medical centers, so we didn't need the computer just to do multiphasic screening. So as new members now come into our program, physicians will go through a similar exam, and the tests go into the computer, so we only do a very modified health testing currently. But still, especially in Japan and China, it's big business there.

Meeker: There's a few things I want to follow up on. One is I wonder if you could think a little bit about the Garfield vision. I'm wondering if Garfield was asked what was the source of his vision, for instance, to initiate a multiphasic health testing program, or what was the source of his vision to send you off to examine computers. Where was this wellspring coming from? Do you have any idea?

01-00:37:02

Collen: No, I really don't. See, I'm not very much a visionary person. I like to do things. I guess because of my engineering background, I love to use new technology to improve the process of patient care. The why and the how wasn't really my main interest. So where he got these visions, all I know is I'm very grateful that he and Mr. Kaiser both had these great visions. I always said they were like the generals, and I was the captain to carry them out. I always felt my main function was to carry out, to the best of my ability, Dr. Garfield's visions, and I was lucky that he gave me many opportunities.

Meeker: When he presented his visions to you—let's talk about the health testing and health screening, that, from what I understand, as you mentioned, started by about 1950. What were the instructions that were given? How did he communicate his vision to you, and then how would you have interpreted it?

01-00:38:20

Collen: Well, the multiphasic screening, as I said, was really a simple direction to me, "Go visit Dr. Lester Breslow and find out how he does his multiphasic screening, and then see what you can apply to our program." That was it, and then from then on I studied what was being done, the diseases needed screening, and that's about all. It was very simple until the computers came along.

The computers gave us an opportunity to do so much more in the time that the patient would stand being there, and with sorting cards and all that. Dr. Garfield did help design—we built a special center, actually. We got a grant from the Public Health Service a special center with a floor plan so that they

could go through station by station. When they came through, they'd wait till it all printed out, and get the end result.

Well, I developed all the stations to do, for example, a screening for diabetes. Well, you can do a fasting test, or you can do a so-called glucose tolerance test, and how can you take care of that? Well, one day when I came home, the kids had been drinking Sprite, and left the bottle there. When the bubbles and the chill is gone, it's just plain sugar water. So I said, "Wow!" You see how you can exploit opportunity.

01-00:40:11

So we bought a vending machine and put in glucose concentrations so they got a hundred grams in six ounces of water. The patient would then push a button, and out it would come—and they'd drink it down. It was chilled and cold and tasted like Sprite. So they'd go from one station to the other, and we continually added—we did a lot of research then on different things that could be done. We did test them for glaucoma. In the laboratory we tested blood and urine, and we did electrocardiograms; and as much as we could in that time.

We set up questionnaire booths where they sat down and sorted the cards. It was interesting. People from U.C. [University of California], faculty would zip through the cards, and then an old lady would come in and study each card and put it down. The difference in time; was interesting. Then we'd have them wait and they would see a slide projection on preventive medicine till the computer printed out things they should do as follow up.

Well, they gave me the opportunity to do whatever I wanted, actually. So we studied pain threshold. It was interesting to me that as a clinician I had learned some people have a heart attack and don't feel any pain. Some people have a lot of pain. Why? There was a test, a Lipman test where you could press on the styloid process. You can press so hard you hurt your finger, and some people don't feel it, and others jump out of their chair. So we did a pain threshold on the Achilles tendon and published that, but we never used it. And the orthostatic hypotension test—some people get up and they pass out. So we studied a lot of research tests. That's when we had an extraordinary opportunity. Then later on we weeded out those that didn't show worthy results.

Meeker: I'm really interested in that process, because when you spoke with Breslow, I'm sure that he had a recommended set of tests.

01-00:42:26

Collen: Right. Right.

Meeker: What then went into your multiphasic program? Were there certain things, certain kinds of tests that you added, and what were the motivations for adding those tests? Were they your personal experiences in the clinical

setting? Were they something that Garfield wanted to see? Were there contextual issues in which you were dealing with a certain population, like the IWLWU [ILWU, International Longshore and Warehouse Union], that needed certain tests to be done? In other words, how did this modification of the tests happen?

01-00:43:03

Collen:

Well, we were taking care of a general population now, from birth to death, you see. So starting with what was done by the Public Health Service, we added as much as we could, at essentially a cost that we could justify, and that we felt was clinically important. A good example is, for example, in chemistry we had to do a blood sugar. There are certain basic tests you need to do. Fortunately for us, Technicon in New York was beginning to develop the first automated chemistry test procedure, where from a sample of blood they would add reagents, pump it through a colorimeter, and then have a graph that printed out the value of the blood sugar, the nonprotein nitrogen and albumin, and other tests.

So I went back to Technicon and talked to a Mr. Whitehead, who was the president. Told him that we were setting up an automated multiphasic screening program, and we wanted to do twelve tests, and gave him the list. But we didn't want to have to do twelve punched cards. Could he put them all together? He had never done that, and he said, "Well, how much money do you have?"

I remember saying, "Well, I have \$25,000 in my grant to develop automated chemistry screening, and that's all I have."

"Well, if that's all you have, then we'll see if we can do it."

Well, a few months later I got back a letter that they could do eight. Fine, you know; take whatever you can get. And a few months later in Oakland came this first—and we have pictures of it—automated health chemistry testing, in which it punched the test results into cards.

Meeker:

Some hardware, right?

01-00:45:16

Collen:

Oh yes. They're all the plastic tubes all over the place, you see. But you put in one blood sample. It divides it up, and then you have all the graphs of all the eight tests results. We told them that it worked pretty well and needed some improvements, so he made a second one that went to San Francisco, and that was much better. So he made a third one and brought it back to Oakland and took the old one back, and we used those two from then on. But that's an example in which I knew what tests were important to clinicians, blood sugar, blood albumin, transaminase for the liver, one after the other. We did all of them and printed them out, and all automatically, see?

Meeker: So, in other words, what I'm hearing is that the tests that were done in the first multiphasic and then later in the automated multiphasic were mirror images of what an individual doctor would do outside of those systems. So it was basically just the methodology was—the tests were the same, but the methodology was different.

01-00:46:33

Collen: Right, the process was different. Yes, we did what a physician would call a good initial health examination, all automated, very low cost. I remember estimating, in reporting to our executive committee, that we were saving a half million dollars a year by having 2,000 people a month going through. We got up to 36,000 people a year when we opened in San Francisco. Well, a half a million dollars in those days was a lot of money, see? So that's why it was continued essentially until I retired.

Meeker: And the cost savings had to do with salaries?

01-00:47:18

Collen: Saving physician time. Eighty percent, 80 to 90 percent of the people that went through would then not need to come back for more tests. I mean, they all were required to see a physician in medicine, and the physician completed the checkup in thirty minutes. Ninety percent were taken care of by one physician visit. Otherwise it always took a physician two visits to do the history, physical, and all, send them off for lab tests, and either call them later or have them come back. Well, here they're all done in one visit, so the primary saving was in physician time and physician costs.

Meeker: Now, as the physician that was at the helm of this ship that was sailing off in a new direction, clearly you were able to anticipate how your own practice in working with patients would have changed. I'm wondering how you communicated this to other physicians and got them on board?

01-00:48:22

Collen: Well, I learned very early that if you want a physician to change his methods, that you had to do it as a role model. I always pointed out that the training of a physician has always been sort of an apprenticeship approach. You go in and do whatever the chief does—you know, you're in med school, and you do whatever the professor teaches you. In academia, the professors become the role models, and you learn from them.

In medicine, when we instituted new practices, I always went to the chief of the service and got him understanding, involved, enthusiastic. Then everybody else would fall in line. If the chief wouldn't do it, don't expect the others to do it. So that's why I always saw multiphasic patients on their return visit, and when a physician would come, "Oh, I can't do that in twenty or thirty minutes," I'd say, "Well, I can do it. Why can't you?" That was the method of essentially transferring new technology, is if I can do it, why can't you?

Meeker: There was the time issue, right, of a physician wanting more time with each patient, that would have been a source of critique of the program. What other critiques did physicians offer, as far as you can recall?

01-00:49:58

Collen: Of the multiphasic program?

Meeker: Yes, yes.

01-00:50:01

Collen: Well, physicians are brought up in academia in the traditional model. I am a fellow of the American College of Physicians, an internist. I remember going back to the American College of Physicians and explaining to them, describing, giving them an hour talk on what we were doing and explaining how you could do better preventive medicine by giving a more comprehensive exam at a lower cost, saving the physician time.

Well the American College of Physicians is made up mostly of physicians in fee-for-service private practice. They never would support this, because—my own interpretation is, well, they would lose one of their main sources of revenue, because when a patient comes in for a checkup, it's the easiest thing the physician does, as I explained, over and over and over. You can relax. Most of them are well. You give them slips to do this, that, and the other. If there is an abnormality, they come back and become your patient. They didn't want to give up that initial examination.

So we had a debate, and they said that case finding is the way to do it. Case finding is interpreted as it is unethical for a physician to do screening without a patient asking for that. Well, in fact, they did. They asked for their exams. But case finding means that you first examined a patient, a case, and if you find an abnormality, then you order the tests to determine what is the cause of the abnormality. Then you make a diagnosis and arrange treatment.

So they never supported doing the multiphasic testing, first before the physician sees the patient. They require fellows of the American College of Physicians to first see the patient, then order all these tests. We said, "We save one physician visit—that's where all the savings is to the public by doing the tests first, and then 90 percent can be taken care of in one return visit that's very short."

Meeker: You know, this first year of focusing on this concept of evidence-based medicine, is that notion at the heart of how evidence-based medicine is different from a traditional approach?

01-00:52:57

Collen: Well, evidence-based medicine is defined in different ways. The simplest definition that I find and that I follow is evidence-based medicine means providing the best care, given the current evidence. Now, actually, the best

evidence is based on the result of controlled clinical trials, where you compare one group getting the experimental medicine, another group getting the best known medicine, and then comparing a few thousand people and see which one gets the best results. That's great, and whenever that can be done, then when the results are published, physicians will all follow them.

Well, there are a lot of conditions in which you can't experiment, you know, when they're really sick, or with mental problems, and all that. So, overall, you get the best evidence you can. So since we began, you know, we used the best. When the sulfa drugs were the best we had, we gave up horse serum, and we used that. When penicillin came along, we gave up the sulfa drugs because of all their complications. When newer antibiotics develop, we use those.

So the advantage of group medicine in our group, you know, with several thousand physicians now and over eight million members nationwide, we can—and our pharmacy group headed by physicians, and our other clinical groups—evaluate new medications as they come up. That's why one of our physicians, in Oakland, recently determined that Vioxx caused heart disease, and now Food and Drug [Administration], and Merck has discontinued it. So it's our eight million members as a group, able to test things. Not only do we have the numerator of evaluation, the number of procedures, but the denominator, to provide the rate at which things occur. And eight million members, I mean, no place else in the world can do that. We're very unique and special. We can evaluate new procedures with a denominator to give you the rates per thousand members for 8.4 million people.

Meeker: We need to take a break.

01-00:55:45

Collen: Okay, great.

[End of file 1. Begin file 2.]

Meeker: We are back on again. So you had mentioned you wanted to follow up about the database, the 8.4 million-person database and what made Kaiser's unique.

02-00:00:17

Collen: I want to emphasize that there are very large research databases available, like Medicare has a very large research database, but it is only for the elderly people. The Department of Defense has a large database on armed services people. Veterans [Administration], the VA, has a large database on the retired armed services people. The Kaiser Permanente research database includes all ages from birth to death. So that is very unique, in that we have a continuing research database from birth—members come and go, but we have some who

have been with us for their whole lives, and their children and grandchildren are now in the health plan.

The reason I feel this is so important is that in the multiphasic program we accumulated all the results for those years, and to this day that multiphasic research database is being used by our Division of Research in Northern California to go back and compare data then with data now on similar things. So there's no question but that the research database that we developed in Kaiser Permanente is really a gold mine for health services research, clinical research. That's why I get so enthusiastic about it. If you were to ask me what I feel was, for the organization and for the public, one of the most important things we were able to do, establishing research databases.

Meeker: Comparisons with other databases, Medicare and so forth, is an interesting question. I'm wondering—you mentioned one of the important elements that distinguishes Kaiser's database, but what are some of the things that are shared with those other databases?

02-00:02:43

Collen: Well, clinical information in direct patient care is shared by both. So, you know, if an eighty-year-old gets care from Medicare, then the physician reports through claims systems the care, and then reimburse the physicians on a fee-for-service basis. Then Medicare builds up the number of patients with heart attacks and all that in their population, and some of our patients are Medicare-reimbursed patients, and so that group will have information in the Medicare files and in our files. Now, we don't take care of any armed services. We may be taking a few veterans who don't go to VA hospitals and come into our program. But any care that is direct patient care, if they're hospitalized for a heart attack or congestive failure or diabetes, that will be in both databases.

The main difference in our database is that we are able to follow a person as long as they stay on. They may leave their job, go to work elsewhere, and then through the employer, we may get them back. Then they retire and go to Medicare and stay with us and we get them back. So we have continuing information. That's the main difference between ours and theirs.

Meeker: Are they tracked as the same individual, if they leave and come back in the system?

02-00:04:41

Collen: Oh yes. We have a unique medical record number. I think Medicare and the others use social security or they have their own numbers. But our medical record number is unique to our program, so if you come back, then you have the same medical record number. Now, when we do research, we, so to speak, strip the identification data. We don't include the name or the address or anything that identifies them, and we assign them a new number, research

number. So you can always go back and analyze by the research data, but you are not permitted to identify people without their signed permission.

Meeker: I wonder if we could go back to this point of issue about case finding in the context of evidence-based medicine. I appreciate the definition that you provided. It provides some clarity on the evidence-based medicine. But in this dialogue, or perhaps debate, between physicians, like you are employing a multiphasic program that was predicated on testing prior to diagnosis, versus the case finding approach, which was predicated on diagnosis prior to testing, it sounds like.

02-00:06:41

Collen: No, I don't think there's a difference from the viewpoint of evidence-based, because when you do a multiphasic program, you come back, and the physician does the best quality treatment, diagnosis and treatment, and in fee-for-service medicine, the physician does the best quality of evidence-based medicine. The difference, of course, is one is prepaid, and the other is fee-for-service. But studies have shown that a good physician does the best evidence-based practice of medicine to take care of his patients. That's his first obligation. Whether he's in a Kaiser Permanente system or Department of Defense system or Veterans [Administration] system or private or any group practice, the Mayo Clinic, they all practice the best evidence-based medicine.

However, evidence-based medicine changes. A lot of the things we consider the best medicine today will not be the best medicine five years from now, and a lot of the things we did ten years ago we now regret, and it's being sued for, because when you give—women took hormones and that affected the babies, and the babies grew up and sued because we didn't know it at that time. So evidence-based means the best evidence available at that time, even though medicine changes dramatically every few years.

Meeker: So it sounds like the practice of evidence-based medicine influences medicine, right, influences medical care, but it doesn't necessarily change the role of the doctor fundamentally.

02-00:08:44

Collen: The role of the doctor fundamentally does not change. His practice does change, and that's why we all have to do CME, Continuing Medical Education, and if you want to maintain your diplomate of the American College of Physicians, you have to pass another exam every ten years, because medicine does change tremendously, from the viewpoint of technology, which includes new medications, new procedures, and you have to keep up with it as new evidence arrives that changes your practice.

Meeker: I wonder if we could talk a little bit about the people surrounding a physician, and how that relationship and the presence of those individuals changes with the emergence of multiphasic testing. You started hinting at it when you

talked about how you used to sit [recording is inaudible] hall, and then the residents did, and then it would be another technician that ultimately did. I think an important element to keep in mind, I guess, is the introduction and then expanded role of the nurse-practitioner. So I wonder if you could provide your perspective on that change.

02-00:10:06

Collen:

[Ed note: portions of this response have been rearranged in editing and thus will not follow the audio precisely.] In the late 1960s, Dr. Garfield further developed his vision of a systemized approach to medicine, doing the health examination first, then based upon all that information, developing a lifetime projection for the patient for optimum health. He initiated a program, what he called the new medical care delivery system; published an article in *Scientific American* and elsewhere, *New England Journal of Medicine*, “Healthcare as a Right,” a series of articles trying to implement his vision of optimal healthcare, preventive medicine, to decrease the potential for serious illnesses later, to stay healthier longer, and so forth.

Again, in his new medical delivery system, we were doing a controlled study in which 3,000 members, selected by the terminal digits of their medical record number, were invited to come in first for a multiphasic exam and see the physician. Another 3,000 came in for traditional medical care where they went to see the physician first. Furthermore, at the end of the multiphasic examination, the computer would print out a risk analysis, a health risk analysis. It was based upon did he smoke, and how much did he drink, and what his tests were, and what he needed to do to provide and develop a better program for care.

Nurse-practitioners were doing the physical exams, because they were very routine physicals. The interesting thing was that there was no school for nurse-practitioners, so Dr. Garfield set up a training program. We took our best nurses—they were all graduate RNs [Registered Nurses]—and trained them. Dr. Bolomey, cardiologist, trained them to listen to the heart and detect any abnormality. How to feel to see if there were any abnormal lymph nodes. They were so trained to detect normal that any variation from normal, they would pick up, and I and other physicians rotated and supervised them. So if they said, “These are big lumps here,” they’d call the doctor, and the doctor might say, “Those lymph nodes are still normal. Or, those are abnormal lymph nodes. You’ve got to do so-and-so.”

They’d pick up a murmur. They’d call the physician, and they’d say, “Yes, there is a murmur, but there are murmurs that aren’t important, and there are murmurs that are important.”

I’ll never forget one day a nurse-practitioner—we called them nurse-practitioners then—called and said, “Dr. Collen, there’s a lump here in the abdomen of this patient.”

I felt the abdomen, and I said, “I don’t feel any lump there.”

She said, “Well, I do.”

We called another couple of physicians, and one of them agreed, “Yeah, there’s something there.”

So we took the patient and examined him further, and sure enough, the patient had a mass, a cancer of the bowel. You see, the beauty was we had made them so sensitive to variations from normal that they did better health exams, physical exams, than the physicians.

Then eventually a training school was set up and nurse-practitioners were graduated with how they can assist physicians. Then, of course, there are now physician assistants, so you can graduate into a nurse-practitioner or a physician assistant, both trained to do routine, repetitive procedures that don’t need all the graduate work that a physician needs. I’m all for it, and the data is very clear that with the basic groundwork of physiology and anatomy that a nurse-practitioner or a physician assistant gets, they can relieve physicians of a lot of the routine, repetitive procedures, so he can use his advanced skills for the abnormal, the unusual, and keep up with evidence-based medicine. But they can help a lot in identifying variations from normal from which a physician then makes the diagnosis.

Meeker: Historians have talked about this period, roughly the 1950s into the 1960s, as a period in which people were talking about a doctor shortage, that there just weren’t as many physicians to go around, particularly with the expanding hospitals and the expanding expectations of medical care, with the entry of many doctors, formerly general practitioners, into specialization. To what extent did that influence the development of health testing, and then also the introduction of nurse-practitioners that would then relieve some of the pressure on doctors within the system?

02-00:16:26

Collen: I don’t think that was the primary reason that we initiated health testing and the nurse-practitioner program. The main reason was to maintain lower costs, because we had to compete with fee-for-service physicians and keep the health plan dues at a cost our members could afford and would stay with us.

The way we obtained new physicians was through an active recruitment program. I had to go to New York. I wanted Al Bolomey, the cardiologist, trained by Homer Smith—I learned that he was an outstanding cardiologist. I had to go to New York, convince him that he had greater opportunities, and he came, and the rest of his life worked with us. Ray Kay down south, he spent a lot more time than we did; he spent a lot of his time just recruiting physicians. That’s how we were able to maintain ratios of like one to nine hundred, or one

to a thousand, members per physician, which was always our standard, so that we were always able to have physicians available.

Of course, that's all changed now with so-called managed care and all the problems of filling out forms for fee-for-service, private practitioners. I learned that now a chief of medicine has ten to twenty cardiologists applying for a job. Currently Kaiser Permanente, the Permanente Medical Group [PMG], is getting the cream of the crop. If you look at all the new physicians that are joining our program, they come from Cal [University of California], Stanford, Harvard [University].

Meeker: What changed?

02-00:18:32

Collen: Managed care and malpractice suits. See, you go out into private practice, you have to take out malpractice insurance, you have to fill out forms for the different companies that the member is a Blue Cross/Blue Shield, or is a Health Net, or is it this or is it that. Well, in our program, it's marvelous. The physician just practices medicine. Malpractice is covered. No forms to fill out. The physician makes a decision what the patient needs, and the patient gets it. And if we can't do it, the physician will send them to wherever it can be done.

For example, if you need something that we can't do, and Stanford or Cal can do it, and our PMG physicians refer the patient, then the Health Plan will pay for it. So the physician makes the decision, not the health plan like in managed care. They complain the insurance companies control what the patients get. Our program, it's marvelous. The physicians determine the quality of care and Health Plan arranges for the dues to provide it, and Medical Group has to stay within what the public can afford. If the Health Plan says we can only raise dues this much, then we have to arrange the care that we give within that and do the best we can.

Meeker: How are those decisions made? Like, for instance, when we're talking about the overall budget that the health plan says that PMG has. How are the decisions made about how that budget is then spent in the context of PMG?

02-00:20:25

Collen: Well, I have to point out that I'm no longer directly involved.

Meeker: Yes. Well, I guess I'm not talking contemporary; I'm talking—

02-00:20:34

Collen: Well, during my time hospital was responsible for inpatient care, so they would decide how much of an increase per member per month they need for the next year. Then Medical Group, in those days, in August of each year, the physicians-in-chief of each facility would talk to their chiefs of services, and ask how many doctors do you need to add, and do you have to add more

equipment, a new imaging machine, this, that, and the other. Each August then they'd come together, and the physicians in chief would prepare a budget for San Francisco, for Oakland, for Walnut Creek.

Then the executive director, that was Cecil Cutting, would put it all together, and he'd sit down at that time with, representing the health plan and hospital, Carl Style, and then the health plan would say, "Well, we can only afford this much dues increase." The hospital would take its part of the dues increase and medical would have its part, and then then they'd come back to the chiefs of services and say, "Well, they've approved it all," or, "There are three pennies per member per month you've got to take off," and we'd go back and adjust our budget. So by the end of the year Health Plan could inform the membership that the dues would go up such a percent. It used to be like 5 percent or 10 percent. Now it's up to 12, 13 percent, because more technology expense, and people don't want an ordinary head x-ray, they want head scans, and they don't just want a cholesterol, they want a lipid profile. They want the best, and so you give them the best we can afford.

Meeker: When you say people, do you mean physicians?

02-00:22:27

Collen: The members. The members. Well, a member comes in and the baby has fallen off and hit his head, you know, you can't just do a skull film. You've got to do a CT scan, and see if it damaged the brain, and so forth. So you can't say that's too expensive; whatever you feel is best for the patient at that time, you provide, and Medical Group does the x-rays and does whatever is necessary. Health Plan monitors the cost of both hospital and Medical Group, and then figures out how many pennies per member per month they have to increase each year, and see what the competition will bear.

Meeker: You know, that kind of brings up something that's not really on my list of questions here, but I'm kind of wondering, in talking about the question of what members want, how have the members changed over the years, assuming that they have, in their knowledge of medical care?

02-00:23:33

Collen: Well, it's changed a lot since the Internet came. In the old days everybody with a cold wanted an antibiotic; "I want penicillin." The physician then had the responsibility of pointing out that what they want and what they need is different, and explaining that, "Well, you've got the flu, and nothing is going to help." Or, "You've got acute bronchitis, and yeah, well, you do need penicillin."

But now a patient—well, then, I remember when I was in practice, Paul De Kruif had a column; in the *Reader's Digest*. I would have to read *Reader's Digest*. A patient would come up with a page torn out of *Reader's Digest*. "Well, this is the best new medicine for rheumatoid arthritis." Then I had to

point out yes, it was, and we're doing it, or why it wasn't; it hadn't been proven, and that sort of thing.

Well, now everybody goes to Internet and Pub Med or Mayo, all the different things available, and they're very knowledgeable. Actually, that's great, because it's now become a partnership of care. Once the physician tells the patient this is your diagnosis, and if it's an unusual and difficult treatment like a cancer, well, they all go to the National Library of Medicine, Cancer Institute, clinical trials. They come in, and the physician essentially is discussing with them a partnership of treatment. So it's harder for the physician. He's not God anymore and makes all the decisions. It's a partnership of decision-making process. It's better for the patient. It's better for the physician.

We learned early in med school to learn from the patients, and also from the books and the articles. You soon learn patients are all distributed on a probability Gaussian curve, and not everybody is the same. Now with the genomic testing, which we'll be beginning to do and we'll do more and more, where you find out that Vioxx is good for one group, but not for the other, because the genes are different.

Medicine is going to become marvelous. Now you throw a bunch of pills, of chemicals into the body. You aren't quite sure what happens, but you follow enough people, and you say, "Well, this has helped the majority." Some get side effects, adverse events, and so you don't give them that. Why do they get it? Now with genomic medicine, genetic testing, we're able to determine those that have the gene that says I can't handle that—I can't make the proper protein out of this—from those who can. I wish I were forty years younger. It's a very exciting period.

Meeker: With the newly activated patient member population, does that, do you think, increase the cost of medical care? You mentioned the members of Kaiser, or just patients in general, are more knowledgeable through Internet research and then various options. Do you think that this eventuality has increased the cost of medical care?

02-00:27:31

Collen: Yes to the extent that the patients do demand the best technology. In technology we include procedures and drugs; there are all forms of technology. They want the best medicine. If they want a patented drug versus a generic drug, if the physician cannot explain or talk them out of the patented drug for the generic drug, after discussion, you almost always have to satisfy the patient. Patient satisfaction is a very important criterion of successful practice.

Most of the time, the patient has confidence and trusts the physician, so the physician-patient relationship is very important. They will accept that aspirin

is OK, in this case; you don't need Celebrex or a more expensive pain reliever. If you can't, then there's a problem, and that's why they always have a choice of physicians or a second opinion, and all that.

It all comes down to physician-patient relationship. That's why more and more our physicians now have Internet home pages, and the patient can check with the physician as to his qualifications, or his specialization. I think that maybe the care may be costlier, but the care will be more effective. The more the patients understand and the more a physician understands cost-effective medicine, quality of care is bound to go up. Cost of care may go up, but after all, when I started, it was 8, 9 percent of the gross national product. Now it's like 14, 15 percent. So I say why shouldn't it be 25 percent? What's more important than the health of our population?

02-00:30:05

Meeker:

It seems to me, though, just playing devil's advocate, to run counter to Garfield and Kaiser's vision, or not?

02-00:30:20

Collen:

I think it's all within the vision of giving best quality care at a cost the patient can afford, and this is an inflationary factor, you know, General Motors is going broke because its pension care and medical care are so expensive. But, sure, medical care has to go up. It deserves to, the people of the United States of America ought to get the best care that the country can afford. So inflation is a natural result of improved patient care, improved public health, the quality of life. So we'll switch to hybrid cars and all that, because even though they're more expensive, everything that is worthy and needs improved quality of care may cost more, but so be it. I mean, that's my personal opinion.

Meeker:

That's what we're here for. [laughter] I wonder if we can go back a little bit to the 1950s. There was just one thing that I kind of wanted to explore a little bit. That was in the context of Kaiser working with unions like the ILWU, and placing that in the context with, you know, looking in some of the history that I've read about the early years of Kaiser, that there was critique or suspicion of the health plan as being socialistic.

02-00:32:07

Collen:

Social?

Meeker:

Yes, socialistic during that time.

02-00:32:10

Collen:

Oh, socialistic?

Meeker:

Yes. Do you recall any of those critiques along those lines? I'm just getting this from reading books. I believe De Kruif talked about it in that famous book from 1946.

02-00:32:26

Collen:

Well, socialistic, I don't remember that that was a worry. We were called communists by organized medicine, and after the war they thought we'd fold up and disappear. They thought, "Well, that's just a war-generated healthcare entity." But as we began to prosper and grew from 14,000 members up to 90,000 members in a few years, they began to realize that no, we weren't going to disappear. So the usual technique was to try to undermine the organization, and sure, we were called communists. They implemented difficulties for us, for example, by not admitting our members to organized society.

When I became physician chief of San Francisco and they opened up the Geary [Boulevard] hospital, then with Dr. Garfield's help, he got Ben Feingold, our chief allergist, to join us, and Bristol Nelson from Harvard Medical School, a very distinguished physician, to join us. I wanted them all to get into San Francisco Medical Society, but I knew that they'd be turned down. So I enticed Bristol Nelson, who was a very prestigious—no one could say he wasn't qualified—and a very charming gentleman, "You go apply. How can they turn you down?" And they couldn't; they couldn't turn him down. So he became the first member of our medical group to join the San Francisco Medical Society, and that opened the door, and then everybody else in our group joined.

Now, in the same way with the AMA, the American Medical Association, I remember—I forget the exact year we heard that they were going to pass Resolution 16 saying that our type of medicine was unethical. Well, Ernie Saward, who was then the medical director of Northern Permanente, came down and told Dr. Garfield that one of the county medical societies in Washington State was trying to keep them out, had been declared breaking the law on constraint of trade, and he said that Dr. Garfield should go to Miami, Florida, and tell them that if they pass Resolution 16, we'll sue them based upon conflict of interest. So Ernie Saward and Dr. Garfield and I went to Miami, and when they learned that we were there, we were told, "You don't have to come. We've withdrawn Resolution 16." So that never came to pass.

But, you know, how things have now changed. Now the majority of members of the Contra Costa and the Alameda County Medical Society members are now Permanente physicians. We're now a role model for many. You know, the *British Medical Journal* says that Britons should copy our program instead of their program. We have now the majority of top physicians wanting to join our program. So I don't know if I'm answering your question. We were called communists purely as a matter of trying to demean our group. But they don't anymore.

Meeker:

The reason I asked that question is it's in the historical record that they did try to use Red-baiting, basically, as a tactic to disband Permanente Medical Group. But the fact that you were working closely with unions like the

ILWU, which was a well-known leftist union, I guess it just seems interesting to me that Garfield and others would have pursued that relationship even though it historically appears to have perhaps have invited those kinds of comparisons. I guess I just wonder if you have any memories of discussions happening about the viability of maintaining those relationships with unions, for instance, and if it was difficult.

02-00:37:13

Collen:

No, actually, we had excellent relations with the unions. Mr. Kaiser had developed a good relationship with them, I learned that from Harry Morton, who headed up his Labor Relations Group. Harry Morton was a patient of mine, and I got to know him very well, and learned how important Mr. Kaiser felt of having good relations with his workers. That was the key, not only healthcare, but good working relations. So although strikes have occurred, on the whole, to this day we have excellent relations, because the workers are our members. Not only do you have to keep them in good health, but try to keep them content. You can't be feeling good health if you're not content. You may not be perfectly happy, but at least you've got to be content with what you have.

So based upon the feelings of Mr. Kaiser towards his workers, for both health and other relations, we've inherited that. Although, as I say, we have had an occasional strike, our relations, in my opinion, compared to other hospital groups, is far superior. Our nurses, I think, are happier, getting paid more. Now we need lots of nurses, and I think it's easier for us to hire nurses than other hospital groups. I don't know if I've answered your question, but that's—

Meeker:

I think what I was getting at was—or maybe it was just a comment, and I was just wanting to get your response, and that was just that it seemed to me that with an organization that was relatively young, like the Permanente Medical Group or the Kaiser Health Plan, in the late forties, early 1950s, would have been presented with the charge of being communist in such a difficult environment as [Joseph] McCarthy years were, it just seems surprising to me, and courageous, perhaps, that they would move ahead with working with, for instance, a union like the ILWU. Maybe it's a question of not really why it was done, but I wonder if it's meaningful in trying to get a sense of what the clinical culture was like at Kaiser, or what were the personalities that allowed that to move ahead.

02-00:40:17

Collen:

Well, you do remind me that we did have a few physicians who were known Communists, out-and-out Communists, but we didn't fire them. I think that there was a time when Mr. Kaiser's group, somebody in his office, was screening people, ours, I think, during the McCarthy period for Communists.

I don't think, as chief of medicine, I was never advised against hiring

physicians because they were blacks or Jewish or whatever, on any basis. In fact, I'm sort of proud to remember that. I hired the first black physician, who was a radiologist in San Francisco, and of course we have many Jewish physicians in the group. As chief of medicine, or as the medical director of San Francisco and of Oakland, where after Dr. Fitzgibbon left, I was the medical director for a few years—I was never told who I could hire and who I couldn't hire. We were aware of the feelings, but I don't think it created any problems. I don't recall any problem in hiring physicians on that basis.

You enjoy hiring people. You hate to fire people. You never forget them. I did have to fire a couple of physicians, because, one, I found, after reviewing their charts, that they didn't provide the quality of care that we expected them to. Another one was calling patients back over and over and over, padding his workload, which, as chief of medicine, I didn't care for. They are the only two physicians I ever fired. They were not for reasons of politics or ethnics or anything like that, definitely.

Meeker: Was there a political culture among physicians at Kaiser?

02-00:42:56

Collen: No. No, never. Though we had departmental parties and all that sort of thing, I don't remember asking any physician his politics or religion or beliefs. I had a feeling I had a gay physician. I never asked him. As long as he did his work, it was none of my business, his personal life. All we required was to fulfill our standard of good-quality care.

Meeker: Because, for instance, the AMA has traditionally been associated with the Republican Party. Is that a correct assessment, do you think?

02-00:43:38

Collen: On the whole, as physicians, or anybody, gets older and establishes their estate, they want to protect their estate. So probably the majority of physicians are Republicans. They feel they have more control. Or they felt; what they feel now, I don't know. But whether most of our physicians were Democrats or Republicans, I have no idea. I wouldn't even care to guess at it.

Meeker: So there wasn't any sense of a political culture or like a shared purpose when election time came around or something like that.

02-00:44:21

Collen: No, no.

Meeker: It was like a depoliticized atmosphere.

02-00:44:24

Collen: Yes. Definitely. Just like I was taught as a kid, politics and religion you don't talk about. [laughs] We never talked about politics or religion.

Meeker: At work, especially.

02-00:44:36

Collen: At work, yes.

Meeker: I was reading through—I can't remember; I didn't bring that exact citation, but reading through essays and perhaps some of your essays in a couple of those books that you published. You talked about the implementation of the multiphasic health testing or screening, and at one point someone mentioned that it had never been adopted in Richmond or Hayward. Is that correct?

02-00:45:10

Collen: That's correct. Well, they were the smaller facilities. You need a large population to support—you've got to be able to do a thousand, two thousand a month. So, as a result, only San Francisco, Oakland, Santa Clara, Sacramento, Walnut Creek, I think those five were the only ones. Now, the L.A. group also similarly set up several, and Vince Felitti, Dr. Felitti, set up one there that persisted at least until his retirement. Whether it's still there, I don't know. But you need a large center, and that's the reason. Actually, Walnut Creek, because Dr. Pallignen, Fred Pallignen, was chief of medicine, and he had been my assistant chief and went to Walnut Creek, they set it up, because he had been trained on that. But Hayward, the smaller facilities, Richmond, we never pushed them to start up. They couldn't really afford it there.

Meeker: Okay. So it wasn't a question of them—

02-00:46:34

Collen: Oh, excuse me. If their members wanted to come, they would come then to Oakland, and we know we had Hayward and Richmond members going through the multiphasic program.

Meeker: So it wasn't so much a question of them, the believers in those various hospitals or clinics wanting to move in a different direction. It was just simply insufficient membership.

02-00:46:59

Collen: Yes, the same with the residency programs that I set up. You need a certain size hospital—number of beds and so forth to take care of, and so San Francisco, Oakland set up intern/resident programs, whereas Hayward and the others, they didn't have enough. So, all the training programs primarily were based in Oakland and San Francisco.

Actually, we were so operational in that regard, Dr. William Kerr, who headed up medicine at U.C. San Francisco, sent his residents through our program to teach them about pneumonia. We established with U.C. Berkeley a graduate program to get a master's degree, and they got their epidemiology and statistics from Dr. Leonard Syme, and we were like the laboratory; trained

them in medical care and health services in epidemiology and research.

So we had really good relations with the local universities. Now a lot of the physicians from Redwood City and Santa Clara, are professors at Stanford, and our physicians in San Francisco have academic opportunities at UCSF. So through the years, our relationships with academia, the surrounding academia, have been very excellent. And now we conduct research with them all in a collaborative way.

Meeker: Clinical research?

02-00:48:39

Collen: Clinical research, right.

Meeker: I'm wondering if we can talk a little bit more about the transnational or international sharing of ideas. I know that we had spoken about it shortly a few minutes ago. I guess I was wondering about how did doctors in the international community learn about the work that you were doing here at Kaiser, particularly in relation to the multiphasic?

02-00:49:19

Collen: Entirely through publications. Physicians all read several journals, and so essentially we used it as a tool and published articles, and they're read in all the developed countries. As a result, at the height of our multiphasic program, I was invited to give talks on it in Belgium and France. In Italy, one of our physicians, Robert Feldman, went and helped them set up a multiphasic program there. In Mexico City, as I said, and Japan. Some of my articles, when I got to Japan and China, they gave me copies translated. I have copies in Chinese and Japanese.

02-00:50:22

Through publications; see, there was no Internet in those days. And then I wrote some books. But primarily by the publications that, you know, when you publish in *JAMA* [*Journal of the American Medical Association*], *New England Journal of Medicine*, and we had our articles on multiphasic screening, and then Garfield's article in the *New England Journal of Medicine*. They're read all over the whole world. So that's how the interest developed.

Meeker: Was there ever an attempt to evaluate the impact that these had on the clinics of the world?

02-00:50:47

Collen: No, not throughout the world. I had to do it periodically in Northern California, because always I had to justify using space, that was the main problem. I got to San Francisco, and we took over a clinic, but after a dozen years, space became our main problem, and they discontinued the multiphasic in San Francisco because orthopedics needed a clinic. Patient care always

came first, and then the preventive care, as much as we could do. So space was the main capital expense. Otherwise, capital expense for equipment was nominal. The expense for personnel was covered by medical group, anyway.

So wherever we went, it was a space problem. That's why I was lucky, in that early on when we developed the automated program, Public Health Service gave us enough money under, I think, the Hill-Burton [Act] to build a building on Piedmont Avenue, and we took over the whole building. You know, computers in those days needed a large space, air-conditioned, and all that. Now you've got your desktop that handles it. We had a big computer center on the first floor, and then up above we had all the multiphasic program. Well, now that's gone and the space is occupied by pediatrics, and head and neck surgery.

Clinical services come first, and so that was one of the main reasons that the multiphasic program was discontinued and absorbed into all the other services.

Meeker: I wonder if you have any other thoughts about the exchange with doctors in the international community. In any of these exchanges did you feel like that you gained something from the programs that they were establishing? Is there any ways in which your visits to France or Great Britain, and you then brought back things to the Kaiser program?

02-00:53:16

Collen: Well, several things flood into my mind. The chief of medicine at Kings College Hospital and I became good friends, because we both headed up medical services. When I visited England, I'd stay with him, and when he visited California, he'd stay with me. One day he looked really depressed, and I said, "John, what's your problem?"

He says, "Well, I have four hundred beds, and my controlling,"—it's all government-controlled there—"my controlling group says I've got to cut a hundred beds."

I said, "Oh, my god, I've got a hundred beds. What if they told me I had to cut 25 percent to seventy-five beds?" So I thought, "Well, you know, I'd look around for other hospitals and see where I could put the patients." So I said, "John, what are you going to do?"

"Well, I will make rounds and pick one hundred that I cannot help, that have terminal conditions, and just send them home to die."

I said, "Oh, my god, I would never want to work in a system like that."

The good news that I learned was in Nancy, France, the French social security system pays for a checkup every five years for every French citizen. Whether

they do it now, I don't know. They came and copied our Oakland program, and I went back to Nancy, France, and I thought I was in Oakland, because they had duplicated it. I thought, "Wow, our Social Security system ought to do that for our people." Well, those who belong to Kaiser Permanente essentially get it, but those that don't, Medicare reimburses. Medicare does not reimburse for health checkups. You have to be sick. So once you're sick, Medicare pays for all your care.

So I came back, and I said, "My god, Medicare ought to pay for a defined health checkup periodically on their older people, and determine any abnormalities before they become severe." There's a lot of asymptomatic abnormalities, for example, you see. You don't know when you've got leukemia until the lymph nodes enlarge—but Medicare hasn't done that. Why? To this day, I don't know. But that was the good thing I learned from France.

Otherwise, I'd come back, and I would say to my group, "Boy, I feel like kissing the ground that Kaiser Permanente is on, because we've got the best program in the whole world." I've traveled to a lot of countries, and to this day I believe it. But that's one of the services that I think Medicare should do, pay for health checkups.

Meeker: We need to stop the tape again.

02-00:56:24

Collen: Okay.

[End of interview]

Interview # 2- 12-13-05

[Begin File Collen, 03 12-13-05]

03-00:00:01

Meeker: All right. Let me just put a sound mark on the tape to state that today is the 13th of December, 2005, and this is the second interview with Morris Collen, Dr. Morris Collen, for the Kaiser Two Project.

Let's just go back to what we were just discussing. You mentioned that a publisher is interested in having you write a short essay, or encyclopedia article, is that what it was?

03-00:01:04

Collen: The International Medical Informatics Association, IMIA publishes a yearbook of outstanding publications in the field of medical informatics. In the 2006 edition I just received a letter asking to write an article on my

perspectives of outstanding contributions to medical informatics technology. So I'm just addressing myself to that particular subject.

Meeker: What are the outstanding contributions that you might talk about?

03-00:01:54

Collen:

Well, for myself, I think as I review my activities of the past five decades, the two major contributions to international medical informatics both were inspired by Dr. Garfield's vision. He asked me in the fifties to set up a multiphasic program, and in the sixties to develop a hospital computer system, both of which resulted in publications that essentially appeared also in international journals. The multiphasic program, which probably received the most international attention, reached its greatest spread, widespread, in the seventies. There were copies of our Oakland multiphasic program in Nancy, France; Mexico City; Australia; Japan; London.

With the spread of computer systems, the need for a separate computer system for just multiphasic screening began to disappear as some computers came into hospitals in the 1980s. So in the United States the standalone multiphasic program, which at first was widespread, gradually began to decrease in numbers. So it was still used by some organizations for employees, but generally not for the public.

However, to this day in Japan and China, especially in China, where informatics technology is just beginning there as it was here in the 1960s, some of the largest multiphasic programs—in Beijing, Hong Kong, in Taiwan, Taipei—much larger, several times larger than what we had in Oakland, are very successfully operational.

Dr. Garfield was the one who asked me to start multiphasic, because the longshoremen wanted some screening right at the dock, and that's how I started. Then since the multiphasic systems included all the modalities that physicians provide during an initial health evaluation, including laboratory tests, x-rays, eye examinations, we had in the multiphasic program many systems, small systems for all these ancillary medical office and hospital subsystems. So it was relatively simple for us to expand from the multiphasic computer systems to using San Francisco as a base, because already we had Oakland and San Francisco, all the multiphasic programs, connected—to use San Francisco as a base for a hospital information system.

By 1970 it was operational in San Francisco in all the outpatient facilities, laboratory, pharmacy. When they'd come into the pharmacy there it printed out prescriptions for repeat medication orders. In the pediatric hospitals section, it was being implemented. In 1973, that medical center computer system, according to Dr. Donald Lindberg, director of National Library of Medicine, was one of the most foremost medical information systems in the world.

But unfortunately the economics in our country in the 1970s was very bad. In 1973, Nixon instituted wage and price controls, so that we could not increase our dues by even a penny per member per month, to continue developing hospital computer systems in all of Northern California. And Food and Drug [Administration] that was sponsoring a drug monitoring system; all the support of a half a million dollars, and our organization contributed a half a million. A million dollars in those days was a lot of money. Unfortunately, wage and price control stopped all government support of our research and development, and we could not raise our dues even a penny per member per month to continue to match the half a million that our organization contributed. So, all the research and development stopped at that time.

Then the whole Department of Medical Methods Research [MMR] was revised. Dr. [Edmund “Ted”] Van Brunt took over, converted the name to Division of Research, and all the research and development efforts in computer system were discontinued. Then the organization established its current information technology (IT) department that went on to develop the registration and appointment systems and pharmacy systems, which is now culminating in a great Epicare system, HealthConnect, in all our Kaiser Permanentes in eight national regions. Marvelous system; take a few years to implement it. But Dr. Garfield’s dream of using computers to help doctors provide good patient care is going to come to pass.

Meeker: So it sounds like in offering outlined history—which is very helpful, thank you—you identified perhaps three major technological innovations in the use of computers. The first would have been the multiphasic health testing program that was initiated in the 1950s. Then the larger hospital information system that you tried to get off the ground in the 1970s, but ultimately it was abandoned. Then, more recently, the larger information technology system that is being implemented today. Is that correct?

03-00:09:35

Collen:

That is correct. I have very little involvement in the current activities. However, I am very interested in seeing all the data that is coming in, and will be contained in our data warehouse in California—all the clinical data from all eight regions, of that data being available—relevant data being available from that database to support continuing research in all of our regions, because now we have more than eight million members. We have a unique ability, better than anyone else, in my opinion, in the world, because we provide comprehensive patient care from birth to death. So, although there are other large systems like Medicare and veterans and army, they take care of specific age groups, but we have people who, from the day they’re born to the day they die, are included, and will be included in that database.

03-00:10:49

When we were running the multiphasic program, we established a similar research database, which to this day is being used by our researchers as a

source of data. So a similar approach is being taken to use all eight million members' database, because that gives us a denominator; that is, for the rate of disease in eight million people. You can only determine rates, incidence, prevalence, when you know the denominator. In research that is very important. Everybody gets numerators—how many people do you see with this, that, and the other—but what proportion of the population? That we are uniquely able to do for all age groups.

Meeker: Is that a notion that was first employed in multiphasic health testing, that is, opposed to simply looking at discrete individuals and how they respond to medicine, or how they are infected by certain diseases, in looking at a larger population?

03-00:12:15
Collen:

In the multiphasic program we were able to do both of these things. As each individual completed all of the tests, before the patient left, we printed out a summary report. So a week or so later when they saw the physician, they had all the positive questions answered in history—200 questions they answered yes/no. And all the tests that could be done right there. Then later on when the physicians read the electrocardiograms and x-rays, those interpretations came in, so when the patient came in for the final visit, after which 80 percent of the people did not need to come back for any further visits, because they were well enough so they were taken care of just by the single visit, using the multiphasic final report. Those that had abnormalities, and secondary tests had been done, then the physician had a pretty comprehensive evaluation to begin to with for follow-up care or for whatever was necessary.

Now, using all of that data and being careful to avoid patient identification, which, for our current national research database we hide identifiers as required by HIPAA [Health Insurance Portability and Accountability Act] and international institutional review boards—confidentiality of patient care must be protected. So we take all the relevant data, which we did in multiphasic and which we will do in our national research database, and using a research identifier, then we can study groups of patients.

The difference from clinical care databases is there you want all of the information available for that patient at that time. For research databases you want all the information available for similar groups of patients with a single, or whatever, abnormality. Whether it's a cancer of the lung or diabetes, you want all patients with that variable. So, clinical databases are very different, and our Epicare warehouse is designed to provide a physician, at any time, information on the patient in front of him. The research database will be able to provide to a researcher information on groups of patients with a particular disease or a variation from normal that that researcher wants to study.

Meeker: When in the course of developing the multiphasic health testing program was there an understanding that there were basically two—if not two databases,

two datasets that were going to be needed, as you just described, and how technologically was that accomplished?

03-00:15:44

Collen:

It was accomplished similarly to what we're doing now, in that—if I understand your question—the need for care of that patient was collected and stored in the medical chart available to the physician for that particular patient. That was essential in developing a multiphasic health testing program for patient care.

Meeker:

And that was the primary reason why multiphasic was developed initially?

03-00:16:24

Collen:

Absolutely, initially, because patients had to go in and see a physician, who took a history, a physical, made a preliminary diagnosis, and then sent the patient off for lab tests, x-ray, electrocardiogram, whatever the patient needed, and it took a lot of patient time and delayed their return for two or three visits.

Here it was designed in the multiphasic to do multiple tests. That's why it's called multiple health testing. Everything we could do while the patient's there, even ocular testing for glaucoma, everything that could be done. We did electrocardiograms, screening chest x-rays, ocular tension, even hearing testing, we drew blood and collected urine, did a history, did a sugar test for diabetes, and everything that could be done right there before the patient left.

The computer had decision rules that said, for example, if there was albumin in the urine, have the patient come back in the morning for a morning specimen. If the patient had an abnormal hemoglobin, come back and do a complete blood count before they see the physician.

So it was all designed to save patient time. In two or three hours, patients would go through the multiphasic, and then they're all done, rather than having to spend a half a day or a whole day going from station to station to station.

Meeker:

It saved doctor time as well?

03-00:18:01

Collen:

It cut the doctor's time. Instead of the usual thirty minutes in our program, sixty minutes in private care, 80 percent or more of the patients could be completely taken care of with a twenty-minute visit. I used to make a report to the Executive Board periodically, once a year, projecting how much savings in cost that was. In the 1960s I recall presenting a report that estimated we were saving a half a million dollars a year in just providing health checkups, by saving physician time, which was the most expensive cost item. Of course, a half a million dollars a year, extrapolating to this time, would be a lot more. However, in our organization, as I said, when we began to develop complete information systems, we were able to do checkups and

almost approach the efficiency of multiphasic health testing, and it was discontinued here because multiphasic systems did require a separate facility, and with capital costs increasing, the space that was allocated for the health testing program was taken over by clinical systems.

Meeker: In what context then were the research possibilities discovered with the multiphasic health testing?

03-00:19:55

Collen: I'm sorry, I don't understand.

Meeker: You just spoke about the ways in which multiphasic health testing contributed to, directly, patient care.

03-00:20:05

Collen: Right.

Meeker: Okay, but the other ways in which you talked about it is as a research database. When was the value for research of database discovered?

03-00:20:24

Collen: That came very early, because physicians are interested, of course, in providing better care based upon better evidence, and the multiphasic program was structured as a very high quality program. Standards were used. Height and weight standards were very precise, and laboratory tests were monitored for quality control, so all the measurements were as good as one could get. As a result, researchers began to study the frequency—the prevalence of abnormalities.

For example, obesity at that time was the most common diagnosis, even as today. Nine percent of all adults were overweight. Well, now it's much higher. Then diabetes, 4 percent. So a lot of research was being done on diabetes and hypertension. For colon cancer, all patients had not only a stool test for blood, but recommended sigmoidoscopy. We published a sixteen-year follow-up in the journals showing that the multiphasic program significantly decreased mortality from colon cancer and hypertension. We were able to do that by using the data from people who had gone through the multiphasic, using the multiphasic database, compared to people who had not gone through multiphasic, using the patients' charts.

So more and more research studies began to use the multiphasic data, not only to compare it to non-multiphasic patients, but to follow multiphasic patients through time. To this day they're comparing members who are still in the Health Plan with their findings back in the 1960s.

Meeker: Could you describe some of the main feature differences between what you were doing with the multiphasic health testing and then what you hope to develop with the hospital information system?

03-00:22:55

Collen:

The hospital information system, the whole hospital and office information system is a very important but very difficult project. Paul Starr in his book, *Transformation of Medicine*, years ago said that the hospital is the most complicated organizational structure developed by man. So when people wondered why hospitals couldn't develop an effective computer system when banks and all the others were having them, well, that was the reason. To this day developing hospital information systems, computer ordering systems for physicians, as of this year, hospitals, medical offices, are having a lot of difficulty getting physicians to enter orders directly on the computer. It's so complicated and so difficult, different from the way we did it by writing orders and the nurses would carry them out.

However, the Institute of Medicine and others have shown that there are a lot of errors in the ordering of medications, and when orders by computer of medication, it eliminates handwriting errors, and furthermore, the computer can inform the physicians by going through the database that this medication will interact with prior medications and create drug-drug interactions and drug-lab interactions. There's no question it will increase the quality of patient care tremendously.

The other great contribution is that in our organization, where a patient can see the internal medical physician in the morning and perhaps the gynecologist in the afternoon and maybe the eye doctor in between, the paper chart was in one of these three places, and the others wouldn't have them. It was well documented in my days that 15 percent of visits we made were without the patient's record. Well, now all the physicians share all the computer-based records online. You can pull them up any time of the day. The patient is in the emergency room? You can pull up all the patient care he has received. That will help at midnight the physicians who see the patients, and know what was the prior abnormalities found, prior lab tests and prescriptions. The quality of care will clearly be tremendously increased.

Meeker:

When did—within the Kaiser system, at least, and this might have been after your time practicing, but when did the paper chart disappear?

03-00:26:11

Collen:

It hasn't disappeared yet. When I go in to see a physician now, the paper chart is still there, and the registration will stamp it and write the date in. But then you go in and see the physician, and he's pulling up and reading your record from the computer display. So it will gradually disappear. The Epicare HealthConnect system will probably not be completed for another year or two, and with technology advancing—the greatest advances are in technology; the greatest impact on healthcare, on besides legislation, so that we know that healthcare information systems will continually be enhanced and upgraded and modified to be able to take care of the important advances in technology and conform with new laws on security, confidentiality.

Medicare is changing, requiring claims reporting online. So, tremendous changes. Healthcare is a very complicated system.

Meeker: I'm wondering if you can, to the best of your knowledge, at least, describe the modifications between your vision of the hospital information system in the early 1970s and then what you're now describing as Epicare. Is that what it is called?

03-00:28:05

Collen: The company, Epic is the name of the company. Their system is Epicare, and they have sold systems to other organizations. In Kaiser Permanente, the system is HealthConnect.

Meeker: So it's not a system that Kaiser has developed on its own. It's a system that they've contracted.

03-00:28:32

Collen: That's correct. However, the Epic Company is modifying Epicare to satisfy our organization, so we call it HealthConnect. And because we are one of the largest organizations, they've never before had to satisfy the requirements of eight million people in all of our regions, from Hawaii, West Coast to East Coast. They've made tremendous changes, so it's specifically designed, Epicare and HealthConnect, for Kaiser Permanente national.

Meeker: Now, I'm understanding that you're not directly in the implementation of this. Do you know some of the major modifications that Kaiser has requested for this program?

03-00:29:30

Collen: I don't think I'm qualified to do that. I know that Dr. Andy Wiesenthal, would be the one that could tell you exactly what the requirements are, because he's responsible for that.

03-00:29:52

Meeker: Now, again, not being involved especially in HealthConnect, but would it be possible for you to compare the hospital information system that you theorized in the early 1970s with what is being implemented today?

03-00:30:11

Collen: Well, it's interesting that when you look at the two major approaches to a system, first you have to define functional requirements. What do you want the system to do? That hasn't changed very much. You could take the functional requirements we designed in 1970 to the current ones in 2000. The functions, or what do you want it to do, isn't very different. After you've defined what you want the system to do, you go on to technical requirements, how you're going to satisfy these requirements. There's where the major changes are.

When we started, we had an IBM 1440 system that had less power than some

of our current PCs have. It took up a whole room, air-conditioning, cables all over the place. So, you see, the technical requirements are very, very different. Now with gigabyte and terabit servers, big storage requirements, very fast computers, and with the connections by fiber-optics all over, you know, the communication systems, the technology, everything is so far advanced.

Meeker: So you're talking primarily about processing ability, connectivity.

03-00:31:50

Collen: Yes, communications, computer data processing, data storage, information retrieval, all the technology. The informatics technology has advanced greatly; just no comparison. But what the physicians want the computer system to provide to help them take care of patients, those requirements are very similar.

Meeker: Can you provide a brief outline of what those are?

03-00:32:12

Collen: Functional requirements? Well, you want to have available the system to provide, twenty-four hours a day, seven days a week, with a 99.99 percent reliability, to have available online—that means real time while you're taking care of a patient in the middle of the night or in the emergency room or in the hospital or in the office—that patient's record of care. You want to be able to not only get the report on the electrocardiogram, but you want to be able to see the signal of the electrocardiogram itself. Not only do you want the radiology report on the x-ray, but you want to be able to see it. So you want to be able to have signal transmission, image transmission, in addition to text transmission.

Meeker: And these were goals that you had in the early 1970s when you were developing that program?

03-00:33:37

Collen: Well, the functional requirements were the same. We compromised, though, knowing we would never see images or signals, only just the physician interpretation. In other words, when the radiologist looked at the chest x-ray and dictated or wrote his report, we got that report. Chest x-ray normal, or chest x-ray, tumor right lower lobe; we got that information. If we wanted to see the x-ray, we had to go to the x-ray department. Well, now the image is available on all your desktops.

Meeker: So you see that as a technological change?

03-00:34:15

Collen: That's a major technological change, absolutely.

Meeker: You brought up this intriguing area of advance, in which certain kinds of databases would be cross-referenced in order to better provide patient care, so I'm in particular thinking about oncology and the ways in which a physician would go online to recommend a certain medication, but then that recommended medication would also interact with the patient's record and also a database of other medications to make sure there wasn't a negative response. Was something like that theorized in the late sixties and early seventies as part of the hospital information systems?

03-00:35:08

Collen: The adverse reactions to a drug was a part of the system in 1970. We had all the pharmacy information, all the diagnoses, and so we actually had a contract with Food and Drug to provide early warning signals of possible adverse reactions. The post-marketing of known adverse reactions, that we could do, but we were ahead of the times in the 1970s in that whenever a diagnosis increased in frequency, we could look at the drugs the patient was getting and suggest to Food and Drug that maybe the increased incidence of skin rash, or another abnormality, was related to the drug or multiple drugs.

That's one of the things we hope to do in our new system even better, because we have a large population of people over eighty. They're all taking eight to ten medications. Currently post-marketing surveillance is on individual drugs. Merck can tell you what problems they have with their drug, Parke-Davis with their drug. We will be able to see whether, you know, like Vioxx our organization picked up quicker than anybody else, because we are monitoring post-market surveillance on drug reactions. But when you're getting multiple drugs, it takes a very sophisticated approach to monitor, when you mix all these eight, ten chemicals in your body, what's going on. We will be able to do that once we get a large population of eight million people, to be able to monitor adverse reactions of multiple drugs.

Meeker: During the period in which the earlier system was being implemented, can you recall any examples of the discovery of unforeseen side effects of certain drugs through this process?

03-00:37:37

Collen: We reported them to Food and Drug, and we published articles on several. In 1973 when Food and Drug terminated the contract and we terminated the study, we never were able to finalize the studies on suspected adverse drug reactions. So the answer is, unfortunately, we were never able to complete that study. Some researchers currently have contracts and grants from Food and Drug to do individual adverse events, drug reactions, for cancer and other things. The current studies are in each region, our researcher using Northern California, population—which are three million; it's no small number. But with our new program, we hope in a year or two that we'll be able to monitor. We hope to be able to expand that so they can get information on eight million people.

Meeker: So this use of the emerging dataset, for instance, to track possible side effects, unforeseen side effects, of drugs, seems to me a new functionality within the system that simply did not exist in 1950s or 1960s.

03-00:39:23

Collen: Well, not in the whole system. We did have it, as I say, in our San Francisco facility.

Meeker: Well, I guess if it had been implemented, it would have heralded the introduction of a new functionality in the system.

03-00:39:38

Collen: That's true, yes. This is different from other systems. Food and Drug requires a report to them of any observed adverse drug reactions, and they use that as their basis for approving drugs for patient care. The reactions between multiple drugs and the unknown potential adverse reactions to multiple drugs, that, to my knowledge, is not being done.

03-00:40:13

Meeker: So it seems to me that with the introduction of this new system and the new functionality that could have come with it if it was fully implemented, would have created the necessity for a new position of monitoring, or maybe a new role or a new kind of person in the healthcare system, whose primary job was to monitor, as opposed to or in contrast to other individuals within the healthcare system who had previously worked in that kind of work. Do you see what I'm getting at? I can try and explain it further.

03-00:41:09

Collen: Well, the pharmacy, we have pharmacists that do monitor adverse events, because they're required; they're required by Food and Drug, and by law.

Meeker: But this seems to me to go well beyond—

03-00:41:30

Collen: Yes, this is beyond that, because they're developing more and more surveillance systems on post-marketing of known adverse events. The early detection of unknown events, like Vioxx, is very difficult. It so happened that our physicians were very alert to determine that the patients who were getting Vioxx had a higher rate of heart attacks than those not. There was no organized surveillance system. It was just smart Permanente physicians and the pharmacists that picked that up. So with the new system we might have identified Vioxx earlier, and we hope in the future, when this is operational, that we'll detect not just Vioxx but multiple drugs causing increased strokes or heart attacks or this, that, and the other.

Meeker: Was it part of the task, really, of the Department of Medical Methods Research when you were here to engage in some of that monitoring?

03-00:42:56

Collen: Yes, that was exactly one of our functions, and that's why the department got a contract with Food and Drug, to do exactly that monitoring.

Meeker: When was that contract first—

03-00:43:10

Collen: About 1968 or '69, and it went on for two or three years, and then in '73 it was terminated. So we have several years of prescription drugs in the multiphasic database. But we didn't have it before, and we haven't had it since.

Meeker: I have read some articles by, for instance, Joe [Joseph V.] Selby, who's the current director, in which he's gone back and used that four-year period of data to look at things like diabetes and obesity and those sort of issues. It's fascinating that there's this one snapshot in time, right?

03-00:43:59

Collen: Right.

Meeker: So how did the ending of the Food and Drug contract affect your department?

03-00:44:11

Collen: Well, it was a disaster, because we stopped the Food and Drug study. We stopped the multiphasic program, its expansion. The whole department was changed, and Dr. Van Brunt took over and changed the name. No more research and development was conducted.

Meeker: Were you the director of the department when the funding was cut?

03-00:44:50

Collen: Yes.

Meeker: How did you respond to it? What percentage of that contract provided your budget? What percentage of your budget was that contract?

03-00:45:09

Collen: The Food and Drug contract? Well, I forget exactly how much. We needed a million dollars a year to do what we were doing in Medical Methods Research. Our organization provided half, and Food and Drug contracts and grants from NIH [National Institutes of Health] provided the other half. When the half provided from NIH and Food and Drug stopped, then we stopped everything. It was all terminated, and we stopped doing any computer systems development. The multiphasic program, the simplest multiphasic program continued for a while, but all of the organizational money was diverted. Neil Bell took over for information technology, and that's when PARRS started, Patient Appointment Registration System, Medical Methods Research has been primarily interested in computers helping physicians. That

was all terminated. The information technology was limited to purely administrative functions after that.

Meeker: So it sounds to me, and correct me if I'm wrong, with the ending of the NIH funding and the ending of the Food and Drug funding, what had previously been a combined research and information technology arm of Kaiser separated, and then information technology went in another direction. Well, what happened to the research component?

03-00:47:19

Collen: That's correct. Well, the Division of Research under Dr. Van Brunt continued to do what was now called health services and epidemiology research, which involved studying different methods of providing care for diseases like diabetes, cancer, heart disease. All these studies continued, but almost all the research went back to pulling paper charts and having chart analysts abstract from paper charts the data necessary for that research study.

Meeker: How did your role within Kaiser change?

03-00:48:25

Collen: Yes. I then became director of Technology Assessment, and they didn't let me do anything more in research and development. So I evaluated, as a separate division they call Technology Assessment, such studies as skull x-rays; if a patient hits his head, do they need a CT scan or a simple x-ray. Same with chest x-rays. I did studies like that. I did the assessment of mammograms. I did a half a dozen technology assessment studies that were published, but they were mostly for in-house evaluation. Dr. Bruce Sams was then the executive director, and since I was evaluating alternative methods of doing things within our organization, he was concerned that we did not release our methods of providing care that might be used by some of our competitors, because at that time we had considerable competition with other evolving health plans and organizations.

Meeker: What were some of these specific areas he was concerned about? It sounds to me like what you're saying is that he approached you and said, "We don't want to publish some of your findings." Is that—

03-00:50:13

Collen: Well, not quite that severe. Perhaps he had in mind Blue Cross.

Meeker: I probably need to change the disks, so—

03-00:50:54

Collen: Okay, you do that, and I'll review in my mind what I want—because, let's see, I did that until I was seventy, and then I retired from the organization; for the last four or five years I did Technology Assessment.

Meeker: So what year was your retirement then, official retirement?

03-00:51:13

Collen:

When Van Brunt took over, I think was—well, see, I retired at seventy from MMR; I was sixty-five. When Ted Van Brunt took over—let me check that—in '79 and '80. Yes, Ted Van Brunt became director in 1980. Oh, I did continue to work with Dr. Garfield on evaluating.

When Garfield continued to study the value of multiphasic health testing and his article in *Scientific American* represented his vision of everybody who joined the health plan having a multiphasic health testing, and then he divided them into four groups, the well, the worried well—who had a lot of symptoms, but not too much abnormality—and the early sick, and the sick. Then based upon those four categories, would refer them to appropriate care. He designed that system. He called it the new Medical Care Delivery System, MCDS.

So we evaluated that and selected a matched group of people, new members of the health plan, by age and gender. Three thousand, around three thousand, were invited to come into this new system, going through multiphasic and then being referred, and he set up nurse-practitioners to take care of the common problems, supervised by physicians. In fact, nurse-practitioners in the new system did the physical exam, and they were trained. We trained them, so they were very, very good. In fact, if you do the same thing, listen to the heart over and over and over and over, pretty soon you're an expert at it.

I'll never forget, when I had my time supervising the nurses, one of them called me and said she thought there was a mass on the abdomen. So I went, and I didn't feel anything. So I called another physician, and he said, well, he thought the nurse might be right. So we did studies, and sure enough, the patient had early cancer of the bowel. They were so trained that—you know, for example, the lymph nodes. We had to teach them—everybody's got little lymph nodes—what's normal and what is abnormal. So they were so expert on what is normal, because after you do a thousand, you know, you're an expert on what's normal, better than a physician, who's expert on what's abnormal. I developed a great respect for these nurses; nurse-practitioners, that's how they started. So to this day we do have nurse-practitioners.

Meeker:

Did you ever run into any trouble with the AMA [American Medical Association] about expanding the role of the nurse within your clinical settings?

03-00:55:09

Collen:

Not that specifically. We had a lot of opposition from the private sector. In fact, I was once interviewed on television with a private physician in Boston as to what we were doing for the initial exams, and the other physician, what he was doing. I was asked, "Why don't private physicians do more of the health testing?"

I responded by saying, “Why don’t you ask the private physician that question?” That terminated that discussion.

But I made a presentation to the American College of Physicians, of which I’m a member—it’s the college for internist specialists—on the advantages of automated multiphasic health testing. They voted me down on the basis that the traditional internist has to wait, that it might be unethical to do a lot of exams that are not requested by the patient. Therefore the traditional internist first waits for the patient with a symptom. Then a patient has a complaint; then they do a complete checkup after.

Well, Dr. Garfield’s point was why wait till they have symptoms? It’s already a symptom of an abnormality. He wanted to get them before they had symptoms, and that was the purpose of doing a multiple test exam on people when they’re well. That was a major difference, since our culture in our country, medical culture, is governed by physicians mostly practicing on a fee-for-service basis, why, the multiphasic health testing never was supported or got very active support by primary care physicians.

It is employed by industry. In Japan most industries there do it, and many of our industries provide employee checkups periodically. But the fee-for-service physicians prefer the patient to come in with a complaint, and then they do everything that we do in a multiphasic.

03-00:58:05

[End of file 3. Begin file 4.]

Collen: —Dr. Sams asked me to do.

Meeker: Of what sort?

04-00:00:05

Collen: Things that were considered different or innovative in traditional healthcare. Then it was appropriate to do a technology assessment, which is like doing research for the effectiveness of healthcare, but it brings in the cost-effectiveness. Technology assessment is basically evaluation of cost-effectiveness of alternative technologies, one technology being the traditional, the one being used, compare that with a new technology. So when CT scans came in, then I evaluated skull films. Acupuncture came in; I evaluated it. Biomedical feedback, I evaluated that, because the psychologists were using that, and I did determine that biomedical feedback does help lower blood pressure and does have some effect on the cardiovascular system. It can be beneficial for migraine headaches, especially.

So I think that it was approved by Health Plan, biomedical feedback for migraine. It became a health plan benefit, you see. Otherwise, it would not have been, because it would have been considered investigational. So I was doing that sort of thing for several years until I retired.

Meeker: Can we talk a little bit more specifically about the two major books you published during this period of time, *Hospital Computer Systems*, which was 1974, and then the *Multiphasic Health Testing Services* book, which was 1978? What was the initial impetus to produce these books?

04-00:02:13

Collen: Well, the multiphasic health systems book was based on the fact that I had written, if you've looked up my bibliography, several dozen articles on it, and articles were appearing internationally on *Methods of Information Medicine*, a European journal read all over. And *JAMA* [*Journal of the American Medical Association*], the *J-A-M-A*, published an article, and *Hospitals* published an article, and that's what developed interest in many of the countries. So as a result, I put all these articles together and wrote this book.

Hospital Computer Systems, again, we were one of the leaders in implementing it in the United States, but also, what I did was—and I had written a few articles on that. I asked John Anderson in London and Peter Reichertz in Germany and Paul Hall in Stockholm, those who had systems comparable to ours, to each write a chapter on their system. So we published that book, and that was translated elsewhere. When I went to China, they were showing me Chinese abstracts from the book, and also Japan. That became a basis for implementing hospital computer systems in many nations.

Mostly, like when I started the medical bulletin, the *Permanente Foundation Medical Bulletin*, I had learned from Bob [Robert J.] Glaser, who then at that time was dean at the University of Colorado—he became president of the Kaiser Family Foundation—that the way to get respect in medicine was to publish. You know, as in academia, publish or perish. So in 1943 I started; I was editor of the *Permanente Foundation Medical Bulletin* and got many articles in that. Bob Glaser told me that he saw that journal on the shelves—we sent it free to all the medical libraries—and he realized we must be doing something good, because these articles were scientific articles comparable to any.

If Pearl Harbor hadn't changed my life and made me a shipyard doctor, and ended me in Kaiser Permanente, I would have probably ended up in one of the universities, because I wanted to teach and take care of patients and do research. In our organization, Dr. Garfield and Henry Kaiser both felt research was important, and so I had the extraordinary opportunity of doing things, taking care of patients, doing research. I started the intern/resident program in Oakland, and later on in San Francisco and elsewhere.

So I guess my leaning towards academia made me publish a lot, so now I have almost two hundred published articles and various books. That's why we published, to compete with Mayo Clinic, universities, and so forth. Actually, our publications in pneumonia made us respected to the degree that shortly after the war, Dr. William [J.] Kerr, who headed up medicine at UCSF [University of California San Francisco], sent his interns and residents through our hospital, because we had ninety patients with pneumonia, to learn how to take care of them. Cincinnati General wanted to do the same; they never got around to it. But publishing was a way to get Kaiser Permanente respected in the medical arena, and not only in our country, but in the world.

Meeker: Do you know how many of these books ended up in circulation?

04-00:06:50

Collen: No. No, John Wiley—well, I did get some royalties from them; that would say how many. I've learned that a publisher has to publish at least a thousand books in order to pay off the expense of the publishing, and so it must have been more than a thousand copies.

Meeker: It seems to me upon reading through both of these books that one of the underlying themes is the centrality of improving communications to improving healthcare.

04-00:07:32

Collen: To which healthcare, to patient healthcare? You mean from physician to patient or between physicians or—improving communications, see, that's a big word.

Meeker: Well, it is. You know, it seems just overall improving communications through all these links, between patients and their doctors, among doctors, between doctors and pharmacists.

04-00:08:01

Collen: Yes, well, that's one of the differences now. Currently with the Internet, patients currently in our system can send e-mail to their doctors, and every physician has a home page, so patient-centered communications is essential these days. Patients are much more sophisticated. Most patients now have e-mail and go to National Library of Medicine's PubMed and all the other health programs available to them on the web.

I remember in the old days when, before the computers, somebody would come in, and *Reader's Digest* had a page on healthcare. A patient would come in and say to me, "Now, you're giving me this medicine. *Reader's Digest* says there's this other medicine." Well, I learned to subscribe to *Reader's Digest*, tear off the page, and be ready to respond.

Well, now patients come in with printouts from PubMed and all that, and so they're much more sophisticated, and that's great, because the patient's

participation in his or her care is much more likely to result in improved care than just the physician telling the patient to “do this.” Patients have to understand. Shortly after they leave the physician’s office, they’ve forgotten most of what a physician told them, anyway. That’s been proven by studies. So having it all printed out, having it available. You go and see the physician now, they’ll give you printouts of advice for your care. Then you can go on the web and find more about it.

04-00:09:55

But in those days we were primarily interested in helping the physicians. I recall now that when we had ninety patients with pneumonia, that I had a standard sheet of paper with all the orders based upon it, and so for a patient with pneumococcal type 7 pneumonia; I’d take out the sheet, circle this, this, this, this, and vary the dose, sign my name, and put it on the chart. That saved writing all these orders.

Well, now with the computer-based practice guidelines, computer order entry, the physician enters an order. The guidelines compare what is the best available, compares the drugs to other drugs, and it prints the best alternative out. So there’s a great expansion in communications between the record now in the computer and the patient’s old paper record; greater communication between the doctor and the patient, and between doctors to doctors. If I wanted a consultation in the old days, I’d have to send a note to a physician, write a note in the chart. Now you order consultation by the computer, and minutes later the consultant’s got it. So for communications, you know, there’s just no comparison. It’s an order of magnitude, or more even, better than it used to be.

Meeker:

Do you remember engaging with any sort of theoretical models that guide you about how to improve communications, and perhaps when maybe you’re online and encounter too much or unnecessary information, to sort of guide the ways in which you are then able to make that choice?

04-00:12:03

Collen:

Well, you know, information overload can be a problem. There are articles on that question. The psychosocial approach, which is what you’re leading to, to how to best provide information to patients, is a whole field on its own. People like Warner [V.] Slack, University of Wisconsin, a physician, first began to use the computer to obtain history information from the patients; made great contributions in how to ask questions.

He learned, for example, and published very early, that when using his secretaries as test patients, when a woman began to receive questions about menstrual periods, things like that, he said, “The secretary turned to me and said, ‘Dr. Slack, would you mind leaving the room while I’m answering these questions?’” He learned that the patients will divulge, through the computer, information which might be embarrassing or socially not correct, to the

computer that they would never tell a human. So the computer does open up a whole new field available for essentially socially, politically incorrect issues. The patients seem to have no problem talking to the computer and saying things they would not say to a human. I don't know if that's—

Meeker: Yes, that's exactly what I was getting at. In reading the articles, there seemed to be maybe a difference, however slight, between yourself and Dr. Garfield on what you thought the most important contribution of computers would be. Do you remember there being a distinction between your and Dr. Garfield's approach to computers at the time?

04-00:14:38

Collen: Well, he was the one who had the vision to ask me to institute multiphasic screening. He was the one who had the vision to send me to New York for the first medical electronics international congress to come back and start using computers. He was so far ahead of me. I remember once at a meeting when he was describing how he hoped the computer would help do all of these things, I was naïve enough to ask him in front of the others, you know, how was this going to affect the physician. I realized he had the vision; I really didn't fully comprehend this capability. So later on he said, "Please ask me questions in private, not before the group," because he didn't want me to depreciate and interfere with his vision.

He was a great visionary. Eventually I would catch up and understand, and then I would—as I say, he was the general; I was the captain. I was the engineer that would then implement these visions for him. So his new Medicare delivery system and when he wanted to, as described in *Scientific American*, build the system; he developed the "well, worried well" concepts and all that. He was really a visionary, and I just tried to carry them out best I could.

Meeker: You know, reading some of the articles that have come out that were based on the data that was assembled during the NIH period, they discuss something like—I can't remember the exact number, but several hundred data variables in the database, in everything from medical categories, but then categories that were differentiating patients from one another. It said things like age, weight, height, sex, race, those sorts of things. How were these data points arrived at?

That's something that I guess I've never really understood, it seems to me an innovation in the multiphasic testing and then the later elaborations on that, because I know when a patient goes into a doctor's office—I'm sort of thinking of the ways in which it was done before multiphasic—there is a certain observation that happens, and then there's a certain way in which a doctor works up the patient and observes certain things. But those are kind of more flexible. But then when you're actually working with a database, in which certain statistics are gathered and certain features are gathered, how are those settled upon? How are those arrived at?

04-00:18:02

Collen:

Well, I don't think there's any difference in the various attributes or data that we collect, because there is a standard approach. You start out with a chief complaint or main problem, and then you follow each particular problem. You go into the patient's identification data, you know, age and sex, and then you go into the family history, occupational history. All these are standard things to do in a comprehensive evaluation.

Meeker:

How do you determine when something is significant and then when something is insignificant? So why would occupational history make any difference, or why would sex make any difference in some of these problems?

04-00:18:55

Collen:

Well, you see, now we know that differences in sex or gender are primarily genetic. Now we're entering genetic information. In those days we put down the skin color. Now we don't put down, you know, skin color or race. If you look at race, there are half a dozen different ways to describe, and all the multiple racial mixes now, so more and more we're going to end up with DNA, and skin color may or may not be important. So, all of these various data or attributes change through time as we learn more and more about the anatomy and physiology and the biochemistry and genetics.

04-00:19:51

Now, there's a regular procedure that we've learned from the time of [William] Osler. You know, physicians primarily learn through what I call the apprentice approach. The professor, the chief of service, says this is the best way, and then we do it. Then as gradually new technology and information comes in, the chief modifies it, the professor teaches it, and then we do differently. Or, as now, they publish what's called evidence based, or a summary of articles that show, by clinically by controlled trials, that treatment B is better than treatment A, and we go that way.

Then standardization of data. In the old days asthmatic bronchitis, chronic bronchitis, we had different terms. Now there's a current medical terminology, a standardizations of terms, you know. In computers, HL7 standard terms so that everybody puts the month, the day, the year in exactly the same order. So there are many, many changes going on from the 1970s, where we did essentially what we were taught to do. Everybody did the same. So a good evaluation meant you record the patient's identification information. You take his present history; chief complaint; past history, with did he ever cough up blood, did he do this, did he do that; family history, what did his father and mother, siblings, illnesses they had and what did they die from; occupation, was he exposed to dust, to fumes, to asbestos, all these things.

You go through all of these things, and then you send the patient off for standard blood and urine and other tests, and then you have all this data, and you're trained then to collect the significant data that arrives. Usually first a

preliminary diagnosis, we call it. Then we arrange secondary testing to finalize. Eventually we end up with multiple abnormalities, like an abnormal glucose tolerance, or something special. *Pathognomonic*, we call it; pathognomonic. You find tubercle bacilli in the sputum; now you know he's got tuberculosis. You find a blood sugar of 200; that's pathognomonic. You know he's got diabetes. If you don't get pathognomonic information, you end up with a probable diagnosis, and then you continue to monitor and test till you prove it.

Nowadays older people have obesity, hypertension, diabetes, coronary artery disease. They've got half a dozen different diagnoses. They're all taking a dozen different medicines. So as we get beyond eighty, our patient population is very complex in pathology. You gather all the information you can, and then that's where the wisdom of the physician is to select together what makes up the best diagnosis, most of them have multiple diagnoses, and then with practice guidelines, experience, and all that, you decide on what's the best therapy. You get consultants; that's the advantage of group practice. We've got all the consultants we need to help decide on a patient with multiple conditions, what's the best treatment.

Meeker: Were you beginning to discover any particularly significant differences in patient populations? So, you know, for instance, what may appear—necessitating a real division of populations. So, for instance, separating a male population from the female population, in which blood pressure levels are going to be normal different in each of those populations. Were you beginning to discover any of those ways that might have necessitated kind of an overlap between who the people were and what sort of treatment they were going to get?

04-00:24:30

Collen: Well, to be a little more specific, what we did, I think we were able to do earlier and better than others, is that we were able to develop measurements in accordance with age and sex, and by time of day. For example, a blood sugar varies. See, as your cortico steroids in the body go down at night and up during the day, if you do a blood sugar on a patient, if even fasting, at different times of day, you find different variances. So you have to establish a reference, or normal values, by age and sex and height and weight. Like the body mass index depends upon height and weight measurements, and gender—for men and for women, there's about a five-pound difference—and so forth.

So for all these tests; we were able to then provide for the physician the best normal reference values for each individual by age, gender, laboratory tests by time of day. Even in those days the computer would print out “consider rules.” See, we weren't ready yet to say “diagnoses,” but we'd say “consider,” and we had decision rules, which is the simplest form of the—we never in those days had what is now called artificial intelligence, but we had

consider rules. If a patient had two or three abnormalities, we'd say, "Consider this diagnosis."

We worked with professors at Cal, Berkeley [University of California Berkeley]. We had regular meetings and published several articles with them on developing likelihood ratios for diagnoses of asthma, gastrointestinal disease, based upon several attributes of the patient, and we would publish likelihood ratios. Now we do much better, and we depend more on what's called clinical practice guidelines, which are based upon published, peer-reviewed articles from multiple sources. Eventually we'll use our own data, with other sources, to improve clinical practice guidelines. The future of quality of care will depend upon evidence-based studies, of our own and others, to then develop, by specialists in the field, of the best clinical practice guidelines for any condition that we have studied.

Meeker: When you were differentiating these populations by age, by sex, and by time of day in which these tests were taken, I understand that there was also an accounting for race, or skin color, as you said. This is one question that's particularly interesting, because at this point in time there was perhaps a sharpening in the cultural understanding of the racial differences. I just kind of wonder the extent to which there was an overlap between what was going on in the culture at large and the way in which—perhaps a contrast in the way in which medicine was beginning to understand racial differences, kind of just on the cusp of genetics becoming an important element in this.

04-00:28:40

Collen: Well, there are a few things, like sickle cell anemia occurs in blacks, and there are other diseases that we know. The Ashkenazi Jews have more of another disease, and so forth. So people like [Victor] McKusick at Johns Hopkins [University] published a whole dictionary of common inherited diseases, and you look at those, that clearly are based on following certain racial groups, and especially isolated groups of people. Homer Warner in Salt Lake City has studied the Mormons, so they can tell you if there are any diseases more common for that group. So whatever was known at that time, any good physician would keep that in mind when he arranged for studies of that patient.

We had different colored tiles that we compared skin color to. But we never did much of that, because we learned very quickly, skin color isn't too helpful, because, you, know, brown is—what's that?—a mixture. And more and more, when you ask the patient, "Where are you from? You're from Samoa; you're from Hawaii; you're from Africa." You know, there was such a mixture that we argued among ourselves, you know, what does this mean. Now with genetics and DNA, for genetic traits, the DNA is going to become very essential. Maybe in the new database that we're developing, when our genetics people begin to develop genetic markers rather than skin color markers, we'll build those in, and that will be a standard practice.

- 04-00:30:55
Meeker: In hindsight, do you think the skin markers were useful at all?
- 04-00:30:58
Collen: Not very much. Actually, we discontinued them after a few years.
- Meeker: It's sort of interesting, with the introduction of genetics, there is also a reintroduction of race as an important factor, but it's a concept of race that also removes the complex cultural interactions, so, for instance, what somebody thinks they are.
- 04-00:31:29
Collen: Yes, sure.
- Meeker: Because like, for instance, the one-drop rule generally works for blacks, but not for whites.
- 04-00:31:39
Collen: The what?
- Meeker: The history of the one-drop rule in defining white versus black.
- 04-00:31:45
Collen: One-drop rule?
- Meeker: Well, it was a legal category that said that if you had one drop of black blood, assuming that such a thing existed—
- 04-00:31:53
Collen: Oh. Oh, I see. Yes.
- Meeker: —that defines you as black. But one drop of white blood, for instance, does not define you as white. So there's a way in which then that played into ways in which individuals thought about themselves as having a particular race or not having a particular race, regardless of what their genetic heritage was.
- 04-00:32:17
Collen: Well, we did have a modified MMPI [Minnesota Multiphasic Personality Inventory], you know; the Mayo Clinic uses 500-some questions, and we took the MMPI and several others and developed what we called an NMQ [Neuromental Questionnaire]. Nick [Nicholas A.] Cummings was our head Ph.D. psychologist.
- Meeker: What does that stand for?
- 04-00:32:42
Collen: Neuromental Questionnaire was a psychological questionnaire. He developed that, and we tested it, actually, when I was in San Francisco; and worked with him. All the people going through the San Francisco multiphasic testing would answer not only the 200 medical questions, but 155 neuromental

questions. Then using psychological standard scales, they were sorted out, anxiety state, this, that, and the other. To evaluate them, they were—with any sort of abnormality in the scale, were sent to psychiatry and psychology. The psychiatrists and psychologists would either agree or disagree, and we proved in the study that the NMQ test was 80 percent in agreement with our psychiatrists and psychologists. It was a good test.

However, the psychiatry and the medical department didn't like it, because psychiatry said, "Some of these are false positives, and you're referring them unnecessarily." So although Nick Cummings later developed his own company that used all these things, and became a millionaire, our organization never did use them, and we dropped this Neuromental Questionnaire from subsequent studies.

You see, when you get into psychosocial studies, speaking for myself as a traditional hard-data man, I want objective data. I mean, if I have a hypothesis or a problem, I'm using the so-called scientific method. I define the problem, collect the data to see whether it confirms it, and then do it over and over. Well, I like hard data that can be validated and others can confirm. Soft data by questionnaire is less reliable. We validated our history questionnaire by sorting the cards with 200 questions into yes/no responses, and after they came back, we asked them the same question verbally. We found that when a patient says "no" to a question, the reliability of that "no" is 95 percent. If they say "yes," it drops real fast, because "yes" means, "Yes, I had the abnormality. Yes, I'm not sure, ask me again." The "yes" has many variations.

But we provided the physicians with all the yes responses, warning them that there were a certain number of false positives. If a patient said no, we said, "Don't bother with that question." That's how we saved the physician a lot of time, because of the 200 questions, on the average, maybe 20 would be answered yes. So they didn't have to ask 200, which took twenty, thirty minutes.

Meeker: So for the question, "Do you have a fever?" The answer "no" would be pretty readily understood, and "yes" could be less reliable.

04-00:36:02

Collen: "I'm not sure. Ask me again." In fact, when Warner Slack went on, he added not just yes/no to his questionnaires, but "I'm not sure" and "I don't know." So there were four possible responses, because he tried to convert a yes into something else than a "yes."

Meeker: When you were doing the multiphasic program, the various phases of it, were you including questions about psychological health or mental well-being?

04-00:36:35

Collen: Yes, in the Neuromental Questionnaire.

Meeker: Was that part of—

04-00:36:40

Collen: In the history, we also had a few questions we asked them. Let's see, it was a scale, something like "I currently feel very well; not so well." I forget the exact, but from "I'm poor, feel poorly" to "feel well." We did have that, and that correlated very well with the four groups that Dr. Garfield developed. If they said, "I feel well," and the physician found them to be well, then they were the "well well" group. If they said that they felt poorly and all that, they were either the "worried well" or the "sick sick." The "well sick" often said "well," because they had high blood pressure, but they felt fine, you see. So we did ask questions of that sort, and to everyone.

Meeker: Let me see. Actually, I'm wondering if you wouldn't mind talking about Bobbie, your wife—

04-00:37:51

Collen: My wife?

Meeker: —and some of her contributions, because I know that she also participated in some of these projects in an educational capacity.

04-00:37:57

Collen: Yes, she did. Yes, she did.

Meeker: Can you tell me about her participation?

04-00:38:03

Collen: Yes. Well, she was an extraordinary lady, besides agreeing to be my wife. She graduated college at sixteen—she was that smart—and wanted to be a nurse, but she had to wait till eighteen. She graduated Winnipeg General Hospital as a nurse, and then became a nurse at the University of Minnesota Hospital, where we got to know each other. Then when I left to take my internship at Michael Reese [Hospital], I didn't want to lose her, and so we got married, and she was with me for the next sixty years. She went on at Billings [Hospital] in Chicago to do some graduate work in health education. Later at UC Berkeley she wanted to get a Ph.D. in health education, but she didn't complete it all, because she figured by that time she didn't need the Ph.D. She had everything she wanted.

Meeker: But she took some course work?

04-00:39:26

Collen: [Ed note: portions of this response have been rearranged in editing and thus will not follow the audio precisely.] Yes, she did. She completed all the required course work for her PhD but did not prepare a thesis. Dr. Garfield, knowing of her background, asked her to supplement the multiphasic program with health education. So she did. She and I went to, I think it was Montreal in Canada, where they were finishing up the World Health Fair. They had a

transparent man and woman, in which they were plastic with all the illuminated organs, and they talked to each other. When the fair closed down, Bobbie got approval to—I think for a few thousand dollars—to buy that and ship it down, and that was installed.

04-00:40:25

There are slides and pictures that show the theater that she built, and her voice describes the brain, the heart, the kidneys in the man and in the woman. So when people finish the multiphasic examination, they could go into the theater and sit and listen to all this. Furthermore, she developed a whole series of programs for different diseases, and developed an education program—education group in which people could go into booths, and if they had asthma, they'd put in a video for asthma, and for different diseases.

They would bring in from all over Oakland; schoolchildren, who would come in and go through this health education center. They would look at the exhibits—there was a normal lung and a smoker, smoker's black lung, and I think that helped a lot of kids realize what smoking can do.

After she died and Dr. Garfield was gone, they needed the space, and terminated the exhibit. Eventually the transparent man and woman moved somewhere and all exhibits closed down. But you still, in all of our facilities, at least in Northern California, there is still a health education library that patients are referred to. They can go and sit down in their booths, for asthma and how to use the inhalers, in different conditions. So that has still persisted. She doesn't get enough credit, I don't think for all the things she contributed, but she was—I remember I was the accompanying spouse when she went to London and Stockholm, and described her health education program. She published several articles on it.

Meeker: Well, this might be a good opportunity, then, to talk about Garfield's plan for the Total Health [Care] Project, because it seems that patient education was a key component of that, perhaps more so than in previous projects.

04-00:43:03

Collen: Definitely.

Meeker: Well, first of all, I wonder if you might, just in your own words, define what the Total Health Care Project was and what your involvement in it was.

04-00:43:16

Collen: Garfield described it in great detail in *Scientific American*, which I consider now a classic article representing his vision of healthcare, even though in *New England Journal of Medicine*, "Healthcare Is a Right" presented his views of how important healthcare was to the people of this country.

The Total Health Care was the program to implement his idea that everyone who came into our program should get a comprehensive evaluation by

multiphasic health testing, then a health risk appraisal, which was a statistical method based upon figures from the Public Health Service on mortality by age and sex. You know, if they're overweight, if they smoke, and all that. It printed out after they'd go through the multiphasic, using all of their tests and their history and projecting a life time health program.

Total Health Care was his system for applying his principles of preventive medicine, utilizing the most available technology, and informatics technology, to have every new member get a multiphasic health testing. Then based upon the various measurements, do a health risk appraisal that gave the probabilities of living to a certain age. If you stop smoking and you exercise, you can increase it by so many years, and all that, and it was all printed out and given to the patient.

Then they would see the physician, as recommended according to his four categories; if they were well, then a twenty-minute visit with the physician finished it. If they had early asymptomatic conditions, like diabetes, hypertension, they weren't aware of, then they went to specialty clinics staffed by nurse-practitioners. Urinary infection was very common, so whether they were aware or not aware—a nurse-practitioner would then test the urine and recommend the usual treatment. A physician was there and approved every time they ordered something. So there were four or five of these, clinics, for hypertension, diabetes, obesity, and so forth, all staffed by nurse-practitioners, supervised by physicians.

If they were sick, then, of course, the physician took over traditional medical care and referred them to surgery or whatever they needed. Those who were the worried well were referred to psychologists. Then what we did to evaluate that, I think I said, is 3,000 people, adults, entering the program were urged to go through. Then we took 3,000, matched by age and sex, not urged. And monitored them both. We had a grant from the Kaiser Family Foundation, and we measured the cost-effectiveness. Dr. Garfield's point was not remembered, in that he wanted for the same cost to the program to get better quality care, better patient compliance, and possibly effect improvement in health plan membership.

Well, the studies showed that patient satisfaction was higher in that urged group. Patient compliance was equal. However, it did not impact health plan termination rates. Termination rate was just the same, 15 percent terminated after a year or so. And the costs were the same. We included unit costs for each of the specialists, physicians, nurses, lab, all the units; we got unit costs from our business office.

After Dr. Garfield died, the program was stopped because, they said, "You're not saving any money."

So I kept saying, “Well, Dr. Garfield, that was not his objective. It wasn’t to save money. It was to improve care.”

“Well, you didn’t decrease termination rates.” We had hoped we would and didn’t, but otherwise patient satisfaction was greater.

So they did preserve some nurse-practitioner functions, and the studies from the multiphasic program did show that after fifteen years mortality rates from colon cancer and hypertension were significantly lower in those that went through multiphasic exams and these were detected early, compared to those that did not. So we published all that, and we did publish cost-effectiveness studies, comparing the costs of completing the multiphasic and follow-up care, versus traditional care, and showed that there was savings in the multiphasic method.

04-00:50:02

I reported that, in Europe to some ministries of health, who wanted to set up multiphasic programs, which they did in France. But our country here never followed up for two reasons: Physicians wanted traditional follow-up, and the computers eventually took over the whole system and absorbed multiphasic, health testing.

Meeker:

How so? I don’t understand how computers would be able to absorb this health testing?

04-00:50:41

Collen:

Well, right now all the tests do go into the traditional database—you know, all the blood tests, the urine tests, blood pressure, all the measurements we do, electrocardiograms, x-ray, they all go into the current computer database. But the patient has to go from one center to the other, and the physician eventually gets all the test results back. So they said, “There isn’t enough difference to support capital expenses associated with a separate facility.” Actually, when we first started, and the government recognized and supported our program, they gave us money to build a little building on Howe Street that was all for multiphasic testing that was all on the main floor. Computer had a separate floor; it was all so big. Then when it was all discontinued, now pediatrics, and head and neck surgery are in there. So, eventually clinical departments took over all the space in Oakland and San Francisco and elsewhere.

Meeker:

Do you feel like some of the ideas—in addition to some of the tests that were conducted being adopted through other programs, what about some of the ideas of prevention? Did those go by the wayside, or are they somehow resurrected today as well?

04-00:52:29

Collen:

Oh, they’ve always continued. You look at Dr. Garfield’s primary objectives. Preventive medicine is one of them that we all practice. I don’t want to depreciate what all the facilities are doing, because we do have a Department

of Preventive Medicine in every facility. Dr. David [S.] Sobel heads up the Health Education Program, and prints out these books and all that. So we do all the preventive medicine we should be doing. It's just that now it's done through the Department of Preventive Medicine, and with our overall computers. Instead of segregating it into what we called multiphasic health testing, it's absorbed into the whole system. So I'm sure the same quality of care continues in all the health testing, because the laboratories and x-rays and electrocardiograms and physician interviews, they're all done appropriately and good quality. It's just that this was a systemized approach to health evaluation, it was a subsystem of the total system. Now that subsystem has been absorbed into the total system.

Meeker: Does this mean a systemized approach then?

04-00:54:01

Collen: No, it's no longer. It's part of the total systemized approach. There's no separate system for health testing.

Meeker: Okay. I think we're about to run out of time on this, too, so would you like to list any concluding remarks or any suggestions about things I might want to follow up on with other interviewees?

04-00:54:27

Collen: Well, I just want to thank you for the interview. I want to again emphasize that I'm very grateful for being able to do what I had never planned to do. I had always planned to be in academia, but thank heavens, Dr. Garfield devised this program in which I was fortunately able to contribute and help him carry out his vision and be able to establish a department of research and an intern/resident program and a journal. And *Permanente Journal* is back. Health education is here. Health testing has been absorbed into the whole system. Now in Epicare, the goal of the total information system is being implemented. So I just say you've got to live long enough, and you see wonderful things happen. I often end my talks by saying if there is such a thing as reincarnation, then I want to come back, go through medical school, and then come back and join Kaiser Permanente.

Meeker: Well, that's a good note to end on. Thank you very much.

[End of Interview]