Episode 21- FYI & ACIF Go Live Joint Series: History of Medical Informatics - Mentorship

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Welcome to another edition of For Your Informatics, a podcast where we explore the limitless world of medical Informatics. Created and led by the women in AMIA, we offer insights into career paths, leadership and education. Thanks for joining us as we highlight lives to inspire greatness inclusion and diversity in the field of Informatics.

**Dr. Karmen Williams:** This special episode is a part of a joint series with AMIA’s For You Informatics and ACIF Go Live podcast. We will highlight the history of medical Informatics through the lens of pioneers in the field. I am your host, Dr. Karmen Williams, For Your Informatics podcast and cohosting with me today is Dr. Meera Subash, the most recently for the AMIA Clinical Informatics Fellows Go Live podcast. We have the pleasure of speaking with the first guest of the series, Dr. Patty Brennan. But before we get started, let's have a brief introduction to the series by

**Dr. Brian McConnell**: Medical Informatics gain traction in the 1060s and remains a relatively young discipline. The development of the mum's computer language in Doctor October's Animal Lab at Massachusetts General Hospital is an early example. Pioneers in the field knew that computers could be used to augment clinical decision making and improve healthcare discovery and delivery, including through the health evaluation through logical processing. By Homer Warner in the History of Medical Informatics is a rich tapestry of innovators leaders and educators such as Rey Gardener, Clem McDonald, Margo Cook, Lawrence Weed, Ted Shortlift only to name a few. In this podcast series, we aim to highlight historical events in health Informatics as well as contemporary topics of interest to new and upcoming professionals. We begin with the theme of Mentorship in Medical Informatics in an attempt to illustrate how pioneers in the field build their mentorship networks at a time when the field was in its infancy.

 **Dr. Meera Subash:** Thank you all for joining us today. Patty is a nurse and industrial engineer specializing in biomedical Informatics. She is the first nurse and the first woman appointed permanently to serve as a director of the National Library of Medicine at the National Institutes of Health. Today we have the special opportunity to discuss history and mentorship in medical Informatics.

**Dr. Karmen Williams:** So let's get started. Patty, thank you for joining us. You were one of the first people I started following in the field of Informatics and in AMIA, and I'm sure everyone ask you this question, but how did you get into Informatics and how did you get into your current position?

**Dr. Patricia Flatley Brennan:** Thank you so much and thank you for the opportunity to be here. I have to say, I got into Informatics, probably accidentally. In 1975, I was graduating from my undergraduate program in nursing, and just about the last week I was leaving the building. I saw this article tacked up on the bulletin board the way faculty would tack things interesting things up for people to read. And it was an article by Margo Cook, who's quite well known as an early leader in nursing Informatics, and it talked about what computers were doing for health care and the lucky few nurses that were getting to do them to work with them. And so that got me interested in thinking about technology. What might it do for healthcare? I was on the way, actually, to becoming a psychiatric nursing specialist, so it wasn't a major commitment, I just thought, was rather intrigued by this computer thing and what would make it interesting for health care. Well, five years later, I found myself really wanting to understand better how we could get beyond the idea of using computers just for recording things or billing things, and we could begin to use them to actually maybe forecast or predict what a nurse should do in a particular situation. Given all the possible outcomes of that uncertain situation at the time, I didn't quite realize I was talking about early decision support systems. But what I realized is that in the moment, nurses had to consider many things in their practice, and knowing what the right thing was to do was not always that easy because you had to be clairvoyant to be able to see in the future. But maybe computer simulation could help that. I began a pursuit for doctoral study and ended up at the University of Wisconsin Madison, where I studied industrial engineering as the framework to better improve health. Industrial engineering is quite a bit like nursing in the sense that we both disciplines understand the human performance and try to improve human performance through the use of technology. So my entree into medical Informatics actually was a very unusual one, particularly at that time, because at the time we were just seeing the beginning of medical Informatics training programs around the country, and I actually wasn't in one. I began my studies with a focus on computer-rated decision making. I had tremendous mentors, Dave Gustafson and Danny Fryback. Both were very influential in my work. Joy Koch and a nurse colleague was another important early mentor. They gave me the freedom to explore. At the time, Dave was really quite interested in patient use or self management through computers. He was particularly interested in adolescence, making risky decisions and learning how to better make tradeoffs of risk. So I found myself in a welcome and receiving environment that patients could be users of computers the same way clinicians could be users of them. I managed to connect to the early nursing Informatics formation groups and had his great colleagues and mentors at the time. Rita Zillow Store, Virginia Saba, Judy Ozbolt, Carol Romano. And through the engagement with this group and then through what was then called Scamsia, or the Symposium on Computer Applications and Medical Care, which, as you know, became AMIA. I met nurses who were thinking about computers, technology, healthcare, and how to bring them together. In fact, I met lots of different people nurses, physicians, computer scientists. And it was a vibrant and tremendous group. I completed my PhD and went on to work at Case Western Reserve and then back to University of Wisconsin. Having spent 30 years as an academic, I would characterize my program of research in the area of what we would consider patient Informatics or devising and evaluating computer systems for self management in the home. But along the way, I also learned the importance of two other aspects that really have shaped my career a lot. One is the importance of a professional society and being a member of a professional society like AMIA that brings you in contact with the newest knowledge in the field with others who are working in the field gives you lifelong friendships as well as mentors and teachers and colleagues that can help you learn is just tremendous a wonderful way to amplify one's own contribution. The other thing I learned is that research, medical Informatics is really expensive. And so I became very good at writing grants and being able to secure federal funding and private foundation funding to advance my work. Now I would say I studied basically the same thing for 30 years. How can we build computer systems to help people better take care of themselves? But I studied it from various perspectives. Computer network services in the beginning, mobile technologies in the middle and towards the very end, virtual reality.

**Dr. Meera Subash:** Wonderful. Thank you, Patty. You've definitely done it all and thank you for sharing your story and how you got it started and we're able to make a break ground in this field. I want to touch on the point you mention about the importance of joining a professional society. You mentioned some of the key mentors in your early career. Can you go into a little bit more how mentorship shaped your career? Mentors come in various shapes and sizes and forms. Did you seek out certain types of mentors along the way? Could you give us a little bit of a story about your mentoring experiences?

**Dr. Patricia Flatley Brennan:** Sure. And it's a really good question. I have had some mentors that have been lifelong mentors who I have turned to for guidance about every step of my career. Judy Ozbolt is one of those people I met Judy in the early 80s and I still have contact with her now. She has helped me grow in a field she has helped me understand from the perspective of someone who sees across disciplines the importance of multidisciplinary work. Sometimes my mentorship relationships have been shorter. They've been around a particular set of projects or getting started. In the late 1980s, I encountered Sid Schneider, who was trying at the time to use something that we at the time was called CompuServe Network Services to help people with smoking cessation. I worked with Sid because I needed to better understand from a psychologist perspective, how do you design systems and how do you make them useful for people? Sid and I don't have much conversation anymore, but he's been a strong influence in my life. Some of my mentor relationships have been what I would call mutual mentorships that's, like me and Sue Bacon, we help each other. We guide each other a little bit forward in the areas where we're very strong and otherwise the other takes over. Some of my mentors have been outside of the field of medical Informatics. I have drawn very strongly on mentors in the general field of industrial engineering and in the fields of academics, not just academic nursing, but the general Academy. Overall, because being a lifelong academic, you need to understand and develop your skills in interpreting faculty governance, engagements with Deans, understanding how to position research and teaching. And those are things that are hard to learn on your own. I don't want to close this part without talking about Charlie. Charlie Saffron is a friend and a mentor and has been both through a great deal of my life. Charlie was important because he understood patient engagement as part of legitimate medical Informatics research. Nowadays, it seems probably pretty unusual that anyone would have questioned that. But in the late 80s and early 90s, when my work was just starting and Charlie was working with people with HIV in Boston, the idea that we would sort of skip over the clinician and go right to the patient was considered really quite controversial. There was a sense that technology was for professionals and we were building for professionals. But my work and Charlie Saffron and the work that's come on come after that going on through Leon Ku, a whole range of people. Now we recognize that the support Informatics has to consider the participant, the patient, the layperson is user. And so mentors sometimes push your boundaries beyond that where you begin, and they also sometimes open up new doors to close. I want to say that mentors are also there when you hit a stone wall when you have a failure in your life, when you're embarrassed about something that you've done publicly. And it's because of my conversation with mentors like Billstead, that when I think I've really made a mess of things. Really, I'm able to go to a trusted colleague and say, what do you think I should do about this one? So mentors, we think of them in very positive ways. They bring us good life, supporting growth in our career. But they also are there to pick you up when you hit a bump in your career.

**Dr. Meera Subash:** Thank you, Patty. I think my teachers and mentors have always recommended to seek out people you could have a cup of coffee with. That's usually a good sign where you can share your successes and your challenges that you're facing. I want to just chat now a little bit more about your role as a mentor. And is it something that you have been able to devote energy and time to now that you are further along in your career and in senior positions of leadership?

**Dr. Patricia Flatley Brennan:** I'd like to believe that I'm thought of as a mentor across my whole career. I've certainly done it in different ways. Sometimes I've been a formal mentor to people. When Greg Alexander was beginning his work with nursing homes and understanding the information technology adoption in nursing homes, he came and spent a summer with me in Wisconsin, learning a little bit about the research project process, how we wrote grants and such like that. So sometimes my mentorship would bring people in to my research group, and we would work side by side, and that would help the person grow. Other times I've had mentors where I've served as a mentor for people where the conversation was the important part of the mentorship, sometimes just for a single activity, sometimes periodically through someone's career. I have someone that contacts me now about every two years and says, I just need a half an hour with you to talk about something. Let me talk to you about some of the ground rules of mentorship. Mentorship, and whether you're the mentee or the mentor has got to be purposeful. You have to know you're in a mentorship relationship. There's a lot of people I have conversations with. They're wonderful conversations, but when you enter into a mentorship relationship with someone, you're entrusting them with the direction of your career and of important choices in your life. That person needs to be ready to accept that and be willing to walk with you through the process. Sometimes people have wanted to initiate a mentorship relationship with me, and it has not been a time I've had that kind of flexibility. I was a single mom for 15 years with a busy research program, and there were times that I just couldn't take on another responsibility. So it's very important as a mentee if you're seeking out someone, particularly someone that you don't really know very well to make sure that your idea of mentorship fits in with what they're able to do. Secondly, mentorship is characterized by a great deal of Privacy and confidentiality. Not that I wouldn't name the name of a mentor, but I don't actually identify all the people who've served as my mentors or for whom I've been a mentor, sometimes at the request of the person, sometimes because it's just not been the nature of a relationship that I think should be made public. Mentors must, though, be even though we keep them confidential outside of the interaction. Remember, they still need to be acknowledged internally. The third thing I think is important about mentorship is that it does take on different phases at different times, and so being prepared for the shifts that happen in relationships and having a strategy for ending a mentor relationship are both really quite important. Sometimes we end up ghosting each other in mentor relationships. They sort of fall away, and we kind of forget to have those conversations other times there's a natural end. Okay, this has been a wonderful couple of years now you're ready to go on your own, or I'm going to devote my energies elsewhere. I much prefer the clean, clear breaks, but I probably have been involved on both sides of the vetting and mentorship relationship. Fade away. I don't really particularly like that. I'd like to see them then more formally.

**Dr. Karmen Williams:** Thank you**.** These are wonderful tips for characteristics of a good mentorship relationship and building those. So I appreciate. Meera, I know that you recently participated in the American College of Physicians webinar on demystifying careers in clinical Informatics for internal medicine trained physicians, and so building a pipeline or a pathway into Informatics for various specialties. We all need good mentorship. So, Patty, I know you touched on this a little bit, but do you have advice for seeking mentors in tangential areas?

**Dr. Patricia Flatley Brennan:** So I learned this from my graduate school advisor, Dave Gustafson, when I need to learn something and I think there's a person that can help me do it. I reach out to them directly. Sometimes I'll ask someone else to do the introduction. Sometimes I'll make a cold introduction, but I've learned from Dave that opening the door, even opening it yourself to a relationship is actually a very important part of maturation as a professional, being prepared to interact with that person and explain what it is that you want, what it is you're looking for is also really quite important. I have been privileged to consider Ted Shortlift as a friend and a colleague for most of my career, but every once in a while he steps in as a mentor. I was making a very serious decision about a career move at one point in time, and I called Ted, and I said, I need to talk with you, get your perspectives on this particular situation, and I think we'll be able to do it just in one visit, which we did. I met with him. We chatted it through and I came away with a plan of action, so it's okay to call people. It's okay to transition a friendship to a mentorship and then let it go back to a friendship, and it's okay to seek out people who you believe know more than you do about what you need to know. It's possible that they don't or they're unable to at this point in time, and you have to be open to them saying, actually, that's not a way I can help you right now. That has happened to me. Sometimes it feels a little awkward, but mostly having it had the discussion early that this is what I want to meet with you for precludes some of those awkward conversations of we don't know how to say we don't want to talk to each other anymore. So we make a plan for the next meeting and then cancel it.

**Dr. Meera Subash:** Wonderful. Thank you for sharing more wisdom on your role as a mentor. And also you finding mentors. Patty, we have heard a bit about your trajectory from your undergraduate. How you, as you mentioned, accidentally fell into this world of Informatics and have ascended the ladder as you look out for the next five to ten years, could you share with our listeners what inspires you to continue to work in this field and to keep pushing the needle forward in Informatics?

**Dr. Patricia Flatley Brennan:** Well, that inspiration is what got me to come to be the director of the NLM at a point in time that I thought I was retiring from professional service. And so right now it's quite different than it was five years ago. There's so much work that needs to be done to make sure the information needed for care is present in the hands of people who need it. So the demand, the need from society, that our work is important and is essential and promotes health is really quite inspirational to me. I have to say very honestly, that success begets inspiration, begets more success. So in the late 80s and early 90s, when we were first starting to build computer networks for home care, we started to realize that they filled a niche that people didn't have in their life. There was not enough nurses to go around to provide the support services for people with AIDS or the caregivers of people with Alzheimer's disease or people recovering from cardiac surgery. And technology provided a way to extend nursing to places that needed to be. But as I became more sophisticated about technology, I started to experiment more with different kinds of technology. So my inspiration shifted a bit from what was considered, if you will, a clinically focused use of technology to a technically focused design strategy. Over the course of that time, I became increasingly interested in the environment as a source of support and disruption for care. Informatics innovations in general. Don't consider the environment very well. We think about the interface, the person looking at a screen or the person seeing a monitor. But we don't think about where are they sitting when they are using that. Are they moving or still? Are they upset or are they comfortable? Are they feeling knowledgeable or empowered or fearful? And beginning to think about the psychological and physical and social environments that people live in allowed me to understand technologies in a very different way. It brings a human factors focus and again, in order to bring content that I didn't have, I partnered with people like Pascal carry on to be able to have that knowledge base brought in. A critical part of mentoring and mentoring relationships. By the way, is to figure out whether what you wanted someone to teach you something or to help you acquire and engage with an expert in that area. Both are good, but in the mental relationship you have to be clear which one you're going after. My latest work focused on use of virtual reality and Immersive VR to better understand the environment where people take care of themselves. So we can understand how to best design technologies to fit in that environment. Now, as the Director of the NLM, I'm inspired by the fact that we are computationally catching up to what we wanted to be able to do with information and data throughout my entire career. That is, we have better computing power, we have more access to open data, we have greater emphasis on data science and the analytics needed to manage massively large data sets that come from a small sample of people. The idea are they confluence, the interface, interlinking of technology, the kinds of questions we need support answering, and the analytical tools that we're able to build has really, to me propelled to a whole new level of engagement with the community and engagement in Informatics. Right now, I realize I have a very unusual position of influence that by my attention to an activity. As the director of the NLM, I'm able to shape others thinking and use of these tools. For example, in the last three years, Clem McDonald and I have partnered at the NIH with some of our internal colleagues, such as Susan Gregory and Teresa Zayas Caban, to accelerate the NIH's adoption of the FHIR standard common data elements. USCDI. This use of clinical terminology tools and clinical vocabularies is almost unheard of across the NIH, but we recognize how important it is to accelerate the use of clinical data for research. And one of the things that we can do by the nature of our Institute's investment in data in common data elements in standard terminologies in FHIR is we can set the tone of NIH, so we've been able to use that both mission setting as well as if you will, the gravitas of my position to bring the NIH around to make a commitment to using standard languages, terminologies and messaging standards in the course of research, inspiration leads to success leads to more commitment, more inspiration, and it keeps going.

**Dr. Karmen Williams:** yeah, it sounds like you all have already started on this work of growing new informaticians. And so this question is just more how do we provide that more inclusive environment to continue to grow informaticians?

**Dr. Patricia Flatley Brennan:** It's an important question, and I could take it from a couple of perspectives. Let me talk to you about first. What I think the problem is we're trying to solve. Our Informatics community and our Informatics workforce does not represent the national diversity that we know exists or the international diversity that we know exists. And we must make our workforce more diverse, diverse workforces, workforces that are made up of people that look differently that have different patterns of thought. Maybe different frames of reference are well known to be way more productive, more creative, more innovative, and more successful than work teams that are more similar. So it is in our best interest in Informatics to develop inclusive environments that engage a lot of people, lots of people from different backgrounds, different colors, different races different ethnicities into the Informatics challenges we have in front of us. So how do we do that? Well, we can't make diversity the responsibility of the diverse person. Diversity has to be everyone's responsibility. I find when I go and visit our training sites around the country that some have been more successful than others in recruiting students of color or students with different ethnic backgrounds. But by and large, we're still seeing a lot of majority male students and trainees. Now they're good. We need to have them, but that's not enough. And yet we can't wait for Representational diversity to increase the capacity of all of our trainees and all of our researchers to embrace inclusive concepts and Informatics. Inclusive concepts in Informatics help us better understand how data should be represented. To capture the phenomenon as experienced by lots of different people, as opposed to the experience of one, inclusive environments, make the workplace much more welcoming and acceptable to everyone at every level so that the contributions of each person are valued. The confidence of each person is enriched and enhanced. We need to address the inclusiveness of environments both by removing harassment and any other barriers to good science as well as enhancing the environment. We're beginning to learn that sending people through lots of training programs isn't necessarily helpful, but helping people having people have experiential opportunities to test out thinking to uncover what might be hidden biases to elaborate what the belief are is about hiring and bringing new workers and helps to make sure that the practices we have to engaging new workers in our workplace are going to yield a diverse workforce. In addition, once we have engendered that workforce, we need to continue to listen to each other on a peer level. We need to continue to speak to leadership and management and management and leadership, in turn, need to constantly be monitoring to be sure that unintended bias doesn't turn into dismissiveness towards other staff and faculty and students. We need to make sure that the voices and the proper attribution of ideas is made across all groups and not just to the loudest or the fastest talker. We need to make sure an environment that celebrates diversity actually moves towards a broader way of conceptualizing problems and designing solutions rather than an adherence to a narrow and dominated way of addressing a problem, characterizing its features and developing a solution. I believe that creating an inclusive environment finally, really does require us being able to know that we all as professionals, live in multiple environments. We live in our workplace. We live in our family, we live in our professional society, we live in our communities and looking towards those various sources of support will help us build inclusive environments in the workplace.

**Dr. Meera Subash:** Patty, thank you so much for your time and for sharing your stories and wisdom with us. It's been wonderful to hear about your experiences with building bridges and mentorship. Increasing Diversity Equity Inclusivity, training programs for Informatics and really, how you're shaping the future of Informatics through your position as a director at the NLM. We're very grateful for your time.

**Dr. Patricia Flatley Brennan:** Thank you so much. I appreciate the opportunity.

**Dr. Karmen Williams:** Yes. And before we let you go, do you have any last words of wisdom for our listeners who are branching into this new field and would like mentorship?

**Dr. Patricia Flatley Brennan:** Well, I want to actually say that everyone at every point in their career has the potential to be a mentor as well as seek a mentor. While the balance isn't always exactly even throughout one's career, the situation where we can offer mentorship to another, seeking that person out, perhaps reaching out to someone who you don't know as well whose needs you might be able to fulfill, as well as using your own networks to reach in to find mentors for yourself. So it is the combination of being and doing in mentorship that makes it such a rewarding and important part of a professional career.

**Dr. Karmen Williams:** Wonderful. Thank you again, this is Dr. Karmen Williams and Dr. Meera Subash. Concluding this joint podcast episode of AMIA’s For Your Informatics and as if Go Live podcast, you can listen to all of our episodes at <https://amia.org/news-publications/podcasts/for-your-informatics>. Thank you so much.

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