American Medical Informatics Association Nursing Informatics History project

Purpose

The overall purpose of the Nursing Informatics History Project is to document and preserve the history of nursing informatics.

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Suzanne Bakken

Interviewer: What is your name?

Suzanne Bakken: Suzanne Bakken, S-u-z-z-a-n-e B-a-k-k-e-n, the Alumni Professor of Nursing, and Professor of Biomedical Informatics, Columbia University, in the city of New York.

Interviewer: Talk about your career and how you got into informatics.

Suzanne Bakken: Yeah, from the very beginning, even as a nursing student, I was always interested in more systems approaches, rather than other, other kinds of individual patient things. And I went to a very unusual nursing program at the time, which was at Arizona State, and when we learned systems, we learned systems theory, rather than body systems. And it was very self-directed, independent, etc. When I did my… when I started working as a nurse, I found I enjoyed the nursing, but if I saw a problem, I was always wanting to develop a system solution, rather than something just for that patient.

When I did my master's training, I did it as a critical care nurse specialist at UCSF. And shortly after graduating in 1980, I was doing a lot of continuing education courses. And while teaching a CE course in coronary care nursing at Cal State Stanislaus, which is in the, the Central Valley of California, they had… the institution had received a grant to develop some computer-assisted instruction. And so they asked me if I wanted to be involved, and I said yes right away. And their intent was they wanted… they got money to develop this continuing… this computer-based continuing education for nursing. And as a topic, they had chosen 12-lead EKG interpretation, which I didn't know a lot about. So what I did was to get them to change the topic of their computer simulations to diagnosis and management of arrhythmias, which is not only something that I knew a lot about, but it's also something that is much more typical, something that nurses do, rather than interpret 12-lead EKG… 12-lead EKG strips.

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So it was during that period of time when, you know, I was being more of a content expert. And I tried to talk them into developing it on a microcomputer, and they refused, and they did it on a mini. But I was one of those people that saw the famous Macintosh Super Bowl commercial and when down and signed-up, so that was my first computer. Although, I had used another one, you know, prior to that that looked like a little singer sewing machine. It was a early Compaq that was big and clunky.

Interviewer: 'A-ha' moment?

Suzanne Bakken: Well, I, I think I thought about it a lot between my master's program and my doctoral program, and I had about five years in-between those two things. And I can remember the… kind of the moment I decided to do a doctoral study. And my mentor, whose name is Bill Holzemer, who's still at UCSF, was one of the early pioneers in computer applications in nursing. And he for a very short period of time had a, a column *American Journal of Nursing* on computers in nursing. And apparently I saw one of those few columns, and he was across the bay at UCSF, and I had been a nurse at Stanford, and just said, 'I'm going to go… I'm going to go study with this man.' So it…

And so it wasn't so much thinking about the power of the technology for the general healthcare systems. Like many nurse… nursing informaticians of my era, many of us started with thinking about its value and training healthcare professionals, rather than thinking about clinical care. And that was… that was a little bit of an evolution for me from the education to the clinical arena.

Interviewer: Was there a time when you started thinking of yourself as an informatics nurse?

Suzanne Bakken: Oh, yes. Well, there's actually, there's… there's really, I would say, two different… there's really two different phases, and one was the… one was the phase of thinking about myself as a nurse who did informatics. And that probably went up… I'd say that

stage probably went from the early 80's until the… probably into the early 90's. And after that point, I started to think about myself as an informatician who was a nurse. And so that definitely is… was, you know… and, and, I still make that… I still make that… I still make that distinction, and I never hide the fact that I'm a nurse, because that brings a perspective to, you know, to the informatics. But my primary identity as a researcher is as an informatician, not as a nurse researcher.

Interviewer: What would you consider some of your major accomplishments?

Suzanne Bakken: I think my primary contribution is in… is in the area of creating computable representations of nursing data. There were many people who had been involved in developing terminologies, and sometimes putting them into information systems. But I was the first person that was formally.. .had the formal preparation through a post doc in medical informatics at Stanford that I think really got some of the knowledge representation issues, and what it meant to move from having lists of terms to having… to representing concepts in a formal way that allowed computers to do automated processing on them. And so I had a set of papers that, that kind of looked at this in the area of nursing interventions and then nursing diagnoses, and, and goals. And a part of that effort was not only… if was a combination of doing the, the… kind of the basic science stuff around the computable representations, but also having an applied research agenda, in which I led two initiatives. One was getting nursing terms into SNOMED clinical terms, initially. I headed the SNOMED Convergent Terminology Group for Nursing. And then subsequently, I was the technical lead on the effort to get a international standard for reference terminology model for, for nursing at the International Standards Organization. So that's kind of having a basic science part, a more national applied policy piece, and then trying to do something internationally as well, so…

And like… as… in contrast to many of my, my medical informatics colleagues, for me it's never… it's never been about the technology. It's always been more around, you know, supporting, supporting the practice and what it is we want to do, and so my… what passion I have for terminology and computable representation did not come from… you know, because I… because I like computers. It, it came much more my passionate belief that nursing is a practice discipline, and we need to be able to build knowledge out of the practice, and we can't do that unless we can get the language of nursing incorporated effectively into computer systems in a way that supports nursing, nursing practice.

Interviewer: What were your papers about, what timeframe…?

Suzanne Bakken: They were… they were all related to terminology, I re… I remember that. But I, I believe I got the Harriet Worley Award three times, and my students got it two additional times, where I was the, the senior author on the… on the paper. And for the most part, to the best of my recollection, it was things around probably testing… I think the first time was around an intervention terminology model, so it was formal representation of nursing interventions, I believe. And I know the last one was on some work around patient goals, and I don't remember what the middle one was. But I could tell you what my students' paper was, so…

My most recent student that, that won it a couple years ago, Lee Ann Curry, so it for looking at information needs while using a clinical information, information system. So I remember her better than me [laugh].

Interviewer:

Suzanne Bakken: Yeah, I, I can talk about in a, a little bit different way. One of the big issues we have… from two different perspectives. One, from the perspective of hospital nursing is that hospital nursing care is not reimbursed, and you get a nurse with your bed, basically. The

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nurse is in with the… in with the… in with the bed charge. And yet we know that people go to the hospital to get nursing care, and not to get medical care. And… so it's very… it's, it's very important to, to actually document what are the problems nurses are addressing, what are the interventions they're doing, and what impact that… does that have on, on nursing-sensitive patient outcomes. One of the reasons I've been a real proponent of getting the nursing terminologies integrated into these broader healthcare terminologies is because I believe we can hypothesize what outcomes are sensitive to nursing care, but unless we could have the nursing data integrated and look at the impact of the interventions, the various… of various professions on patient outcomes, we don't truly know which ones are sensitive to nursing care.

From the perspective of… much of my more recent work has been around advanced practice nurses, and I was funded in the… oh, I think it was in the… in the mind 90's, to do… in a study that was really looking at the language of nurse practitioners versus physicians in ambulatory AIDS care. So holding the practice environment and the role constant, seeing were… did NP's and physicians document, document different. I was pulling a couple of sets of work together. My nurse practitioners are a hybrid model, that is, they have a basis foundation in nursing. Then they get advanced, advanced training, and, and medical diagnosis, and man… and patient, patient management. One of the things that studies of nurse, nurse practitioners have consistently shown is they have equal results to physicians on any number… any number of indicators—mortality, patient satisfaction, etc. But because nurse practitioner, as well a physician documentation is really driven by reimbursement, not about describing their, their practice, I don't think we've answered the right question, because I firmly believe that there are things that nurse practitioners do that they don't… that they do not document that would, in fact, make them have superior performance in… to physicians on different types of outcomes. So if we're looking at impact on functional status, we're looking at patient coping, we're looking at change in knowledge, compliance with therapeutic regime. But because advance practice nurses are not reimbursed for these, these kinds of things, they don't

necessarily document them, and you get into this very circular thing. They'll never be documented for them if they don't begin… they'll never be reimbursed for the, excuse me, if they don't document them, and we can't tie them to… tie them to the outcome. So much of my recent work has been much more around advanced practice nurses and giving them hybrid applications, that include both the language of nursing and the language of, of medicine.

Interviewer: Talk about some of the people you collaborated with.

Suzanne Bakken: Yeah. My first informatics meeting was at USC in… it was a meeting sponsored by USC, and it probably was in… spring of 1985, I believe was when it was. And so this was when I was… had not yet started my doctoral program. It was at that meeting that I met Bill Holzemer, the man who was already assigned to be my doctoral advisor. But we'd never met. I'd just picked him out of the magazine. [laugh] And I was very excited to say, 'Guess what? Oh, I'm so excited to see you. I'm going to be your student in the fall.' And he had a stack of recruitment brochures, and he threw them at me. He hand… not threw them, and he handed it to me and said, 'If you're going to work with me you can start working now. Please hand these out.' [laugh] And that's my first meeting, and he continues to be a very positive influence on my life, and has been my absolute, you know, greatest influence. For the first time, at that meeting, I met another… a number of other people, who continue to be very active. I'm, I'm thinking specifically, Diane Skiba was someone who I met at that, that particular… that particular meeting.

My next meeting was the Net Info that the U.S. hosted in 1986, and that's where I really met a number of… a number of people, who have grown to be close colleagues and… close colleagues and friends. That was where Patti Brennan and I met, and that's where I met Virginia Saba, who I… Virginia and I have collaborated a lot through the years.

Interviewer: What was the acceptance/non-acceptance level of nurse informatics…?

Suzanne Bakken: For… I think my situation was probably a little more open than many others, because I had… well, I can think of the first day of the doctoral program at UCSF, and I was sitting between J. Norvek, who went on to become the Dean of UCSF, and Afaf Molise, who went on to become the Dean of the University of Pennsylvania School of Nursing. And I was sitting between them at this doctoral luncheon, and I told them what I was going to study, and they were pretty dumbfounded. And I'm sure I wasn't very articulate, but I said I was interested in the use of computers and critical care… critical care nursing, basically. And my perception of their reaction was they thought that was very inappropriate for doctoral, doctoral study. However, I have a very… I had a very strong mentor who, who was an early leader in nursing informatics, and he understood… he understood the potential, so he was… you know, he was always there for me. And UCSF… and I was in the Department of Physiological Nursing, the… they, they kind of went with the flow of it, and even though everyone else was doing physiological stuff, and at one point people thought I had to take neuro anatomy because I was studying clinical decision-making, which is something you do with your brain, I had good support to have that… you know, to have that not happen. And they knew I was doing something atypical for… you know, for the department, but the, the support was there… the support was there to get it, you know, to get it done. So it wasn't… it wasn't such… it wasn't such an issue for me.

And I was… you know, people on the faculty after I finished my doctoral program, and I… my first job was working as Bill Holzemer's doctoral… excuse me, project director on a early HIV/AIDS quality of care grant. And it was in that where the, the terminology ended up being an issue, and what we were trying to do in terms of answering our, you know, our research questions. But I, I owe… minimally, I always had him.

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And, of course, then going to these… going to these other, other place. And I… coming to this particular meeting, I ran into some of our current biomedical informatics students at Columbia, and they said, 'What is this like for you? Do you know everyone? What is this like?' They said, 'Is it like… is it like coming to a family reunion?' And I said, 'In many ways it is,' because… not so much for people like me who are… I think we're probably the biggest biomedical informatics group in the world, with having maybe 35, you know, info… biomedical informatics faculty, so we're a huge department. But, still, from those early days, it would be here where you would meet the people that thought most, most similar way… to the way that you thought, and, and thought things were fun that other people might have… might have seen as irrelevant.

Interviewer: Are there any milestones that you see, or people that have done particular things that you see as bringing this practice along?

Suzanne Bakken: Yeah, I think there have been… you know, when I think about what are some of the… what are… what are the ways I think about it, would be what are some of the programs of research that have advanced, advanced the science of… the science of the field. And so one of them is absolutely Patti Brennan, and all her work in patient-centered computing, you know, computer-based support, what's come to be known as consumer health informatics, and now personal health… personal health record. And many people would not think about those… they're not necessarily nursing-specific applications, but they're, they're coming at that issue from the perspective of nursing in a way that I think any nurse would… you know, would see as an extension of nursing care in terms of, you know, supporting communication, providing coping support, helping with decision-making and education, which are things that are very, you know, typical in… typical in nursing practice.

I also think something that's been very important in an area where nursing informatics is ahead of some of the other flavors of informatics has been around the work in, in

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competency develop, and really be able to specify both the generalist nursing informatics competencies, as well as those for specialists and innovators. So I think very much of the work that, that Nancy Staggers and Carole Gassert and… have done in recent years, but that was preceded very much by work that people like Susan Grobe had done quite some years ago, and that Diane Skiba had been involved with through the national league of nursing. So I think we have a real… I think we have a real body of work in… a real body of work in that… in that particular area as well.

Interviewer: HBO Scholars.

Suzanne Bakken: Yes, and I was… I was in the first group of HBO Scholars, and it's a very special treat for people who are in academic environments, especially state-funded academic environments, because it was very… a very big treat to go to corporate America, where they… you know, where you could get fountain Diet Coke, and, and you got… and you got treated very well. But the, the, the most significant kind of treat and the most decedent thing about the HBO Scholars experience was the fact of the experts that they brought in to talk to us. And so for every topic, we would have the nurse that knew most, most about it, and that was… you know, that was very, very special. And so one of the… and then Diane Skiba and Roy Simpson would, would integrate it and take it… take it back into the curriculum. And so that was really a very nice experience.

They asked us to… they asked us to set professional goals for, for ourselves, both the long-term, and… as well as the short-term. And I did do that, and I, I hit them all, I'm happy to say, so… and mine were around… I had… I had some specific… I had specific re… you know, specific research goals, and that… and that kind of thing. So I was… I was able to achieve those goals.

One of the people that I met there, who has probably had the biggest influence from that group on me was someone who was one of the faculty members, and that was Judy

Ozbolt. And Judy Ozbolt and I really connected there for the… you know, for the first time. And it was through that kind of connection that we started talking about post doc possibilities, and, and got me… got me thinking about that particular, particular opportunity. And she was also someone who put… you know, who was whispering in the ear of the, the Stanford people that, you know, maybe a nurse post doc would be a very kind of good thing, and help facilitate those initial discussion. And Judy and I continue to collaborate very, very closely through her leadership in the Nursing Terminology Summit. And so we've published together through the years, and… as well as done other kinds of policy-related things related to nursing terminology, and in trying to improve the visibility of nursing practice.

[change tape]

Interviewer: Core values…

Suzanne Bakken: Yeah, in thinking about core values and principles, core leadership in informatics from my perspective as a nurse, one of the things I, I actually first think about in deciding whether or not I'm going to participate in something or possibly leave something is for myself, I tend to choose things that are interdisciplinary, rather than related specifically for nursing. And there's a couple of… a couple of reasons for that. One of the reasons I think is because I did have post-doctoral training in, in biomedical informatics that I can operate from a similar science base, as many of the people I might be operating on, on some of these particular committees. So it's not that I never do anything specific for nursing, but I'm much more likely to pick out something that would be interdisciplinary, because I think that fits who I am a little bit better.

That being said, the nursing is always important to me. And I'll give you an example of that. For about five years, I was the Chair of the Convergent Terminology Group for SNOMED, which is the standardized healthcare vocabulary. And we went through a…

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we went through a process of engaging the nursing terminology developers to work with SNOMED, that, that kind of thing. The nursing group was, was very effective. We had people from more the implementation side as well as eventually got SNOMED staff member, Deb Konicek, as part of that group; also, also Judy Warren. One of the things about it is, one, we were always well prepared to defend the nursing perspective and got our ducks lined up in a row before we got there.

And… but from, from my perspective, our work within that group for me was always about nursing. It wasn't about… it wasn't about SNOMED. I felt that SNOMED had a good chance of being a national standard through some earlier research I had… I had done. And for me, I wanted… if I thought this was going to be a winner, I really wanted to make sure that we got nursing data in it. That being… that being said, when… at the time I was still heading the SNOMED group through the nursing terminology summit, we were going to do some, some basic work on representing goals and outcomes, and I really felt that another clinical terminology, clinical LOINC had the better semantic… better semantic model for representing those kinds of things. So I did an experiment that resulted in, in the beginning of incorporating some standardized nursing research instruments, as well as some assessment terms from Omaha, and the Home Health Care classification into clinical LOINC. So some people would say, 'Well, you know, I thought you were heading SNOMED. What are you putting these things into LOINC, and the point that I want to make with this, this, this story, is for me, it really was about the nursing data, and it wasn't about, you know, promoting SNOMED or promotion LOINC, it was getting the nursing data into the terminologies in a proper way, that they could be implementing in, in systems, rather than promoting this terminology or that terminology.

Interviewer:

Suzanne Bakken: Yeah, and I'm thinking of another instance in leadership, and one of the things that, that does happen to people in nursing informatics, and also in nursing, in general, you might

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be asked to be at a particular table in which you're the only nurse. And this happened to me with an Institute of Medicine report on patient safety data standards. And it was a committee of about 25 people, about half of them I would know from, from medical informatics, a number of them having, having worked with, with closely before, and then some other folks as well. And in that… those particular types of things, and the Institute of Medicine reports really operate like, like think tanks, and so one of the principles I always take forward is that it's really to be, you know, strongly operating from… you know, from a base of expertise, which in this instance was, you know, the data standards. The way I kind of operationalized with… within the committee was it lasted, I believe, 18 months, and for about 12 months, I was very much focused on the standards part. I was the lead author of the chapter on national health information infrastructure in, in the final report, and was very set on getting, getting that right, and technically accurate, and those kinds of things with my… with my… with my coauthors.

But when we came down to actual report recommendations during the last six months, I'd step back a bit and wore… as I said, all of a sudden, I put my nursing hat on my head, and I thought, 'What I don't want to happen is for something to look at this report and saying they should have had a nurse on this panel, I didn't believe… I don't believe they… they couldn't have had a nurse on this.' So I looked very carefully at every aspect of, of the report, not only the recommendations, but if they were talking about computer-based provider order entry, and they used the word 'physician,' I would try to change it to prescribers, or there might be instances in which they could 'clinicians,' or changing the 'physician' word to 'physicians and/or nurse practitioners,' to try to make it… to, to try to make it less, you know, less physician-oriented.

And so I think it's some of those kinds of things. It's really a… it's really a balance. I think it's hard for people to listen to the issues about nursing until you kind of establish a common expertise and a common understanding of the problem that they respect, and then after that period of time, then if you truly come in with something that says that's all

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good, that this truly is what we need, this truly is something that's different about nursing. I think they're much more like to listen, listen at that point in time.

Interviewer: What would you say to somebody who is considering nursing informatics?

Suzanne Bakken: I would say that it's fun. I don't know. What can I say? [laughing] So I think nursing informatics is, is a wonderful specialty with… within in nursing. I'm one of those people that would never have changed my decision to become a nurse because nursing has, has never been limiting to me. I've always been able to be challenged, and, and to grow. And with, with nursing informatics, there's always a… there's always a new challenge. And it tends very… what I tell people who think they might be interested in it, if I had a one-question entrance exam for nursing informatics I would, I ask people, I said, 'Well, when you were in grammar school did you like story problems, or the so-called word problems?' You know, if they say, 'Oh, God, I do, I really love story problems, they're really fun.' And it's because in nursing informatics is like… is like a word problem, and that is because you… you're always doing problems, decomposition, pulling out a problem into its various aspects, and then trying to… trying to find a solution to it. Where for me, it's, it's not about… it's not about the computer experience, people need to not be afraid of computers. It's not about having, you know, just super math abilities. It's having that analytical kind of mind. It's also for people who were the kind of child that probably got bored fairly easily because it's… it tends to be many things are around the particular problems, that you have a ramp-up, you have a solve, you have this, and then you go on to another project. And so that's very appealing to some kind of people and not to other… not to other kinds of people. So I tend to think about it in terms of trying to help people think if they're a match for nurse… nursing informatics, I, I try to get a sense of what are the ways they like to think, and what are the kinds of problems, you know, they like… they like to tackle.

Interviewer: What have you enjoyed most about your career?

Suzanne Bakken: I've enjoyed a number of different things, a number of different things about my career. In my particular role in nursing informatics, which is primarily an academic role, is very well suited to the kinds of things that I… that I love to do. So I'm very much a traditional academic, who, you know, loves to come up with new ideas. I actually like to write, which many people hate… you know, hate to do. I love to teach, so that's very… that's very rewarding. And at this point in… so there have been different things that have been kind of the best at, at different points in, in the… in the career. At this point, the kind of thing that I… that I probably enjoy doing the most, that I'm most proudest of are my pre- and post doctoral trainees that, that I'm putting out of my program at, at Columbia. And so I feel just… it just is such a sense of accomplishment when I see people that I, I guess collaborated with on their doctoral or post doctoral education, going out into very good… very good positions, and just feel like a, a proud parent in that aspect of it.

I have also, in terms of other things I've really enjoyed about my… about my career in informatics, is there really is a, a strong sense of community, both within the nursing informatics community, and within the broader biomedical, biomedical informatics community, and, and many, many opportunities to collaborate, not only with other people in nursing informatics, but lots of… with the broader biomedical informatics community as well.

Interviewer: Talk about the next wave of informatics nurses.

Suzanne Bakken: Well, I… you know, I think about… one of the things I think about in, in nursing informatics. I'm not sure kind of what generation of, of nursing informaticians we're… you know, we're in now. I consider my mentor very much in kind of first generation of people in nursing informatics, who recognized the power of computers for nursing, but weren't formally trained informaticians. And so that was really… that was really one

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generation, just saying, 'Yes, we should be using computers for research, we should be using computers for administration,' that kind of thing. In my generation, it's much more people who have some type of formal training in, in informatics, whether it's occurred specifically in nursing, or it's been broader in biomedical informatics. For the generation that's me, for many of us, it was more post doctoral training than really in, in our doctoral program. So the, kind of the integrated interdisciplinary perspective possibly came after the doctorate. So what's different about, about the people that I'm graduating now is that integration is throughout, throughout their preparation. So from the very beginning they're learning to work in inter... interdisciplinary teams. And it's not trying to fit it together… it's not trying to fit it together at, at the end.

And so I think one of the things about the future will be more and more interdisciplinary training, and not seeing institutions that might have biomedical informatics in a nursing informatics program with very little interaction between them. That's not our experience at Columbia. We're completely integrated. And I think that's what making some of my graduates be quite hotly recruited by, by schools, because they want… they want to have… they want to have faculty who can be jointly appointed in both nursing informatics and biomedical informatics.

Interviewer: Anything you would like to add?

Suzanne Bakken: Well, I guess I'd just say one more thing, where I've kind of put some of my emphasis, and that might be one of the reasons why I particularly pointed out the, the work of Nancy Staggers and Carol Gassert, Chris Kern, etc., those folks that worked on the, the Nursing Informatics Competencies. For me, when I was at University of California San Francisco, I primarily ran a master's program in nursing informatics. And I really wanted to do two things in the shift to Columbia University. One was to hopefully develop a world class research training, training program. I'm not preparing nursing informatics educators. I'm, I'm preparing nursing informatics researchers.

The second is a firm belief in the power of informatics for every nurse. And so that's why during this period of time, I've really worked on things like integrating competencies into the curriculum, making sure that students across our programs have, have exposure to not only didactic content that would assist with informatics competencies, but one of our, our, our current research projects that we've been doing—we're in about year four or five now—is a PDA-based clinical documentation system. So we do a lot of benchmarking of student performance, and now we've moved on to doing decision support. But I really feel it's important to not only focus on the preparation of a specialist and innovators, but really to make sure that every nurse is coming out of education programs with the basics set of competencies that allow them to practice both safely and from a evidence, evidence-based.

I think one of the things that's really going to end up being a recruitment tool for organizations is having some type of informatics infrastructure in place, because once we're training nurses to understand these tools and to use the tools, they want to go in a place that has them. And so it's not so much making our graduates more competitive, because they're competitive already. It's much more just making sure that they're prepared for a variety of environments.

End of Interview