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Evidence-Based Practice and Implementation Science in Nursing

In this Nursing World Shared Practice podcast, Dr. Sharon Tucker reviews the foundations of Evidence-Based Practice and why it is important to nursing science. She discusses her body of work focusing on building evidence, implementing evidence into practice, and using frameworks that support Implementation Science. She explains how Implementation Science and Quality Improvement Science are related and how they can work together to improve nursing care.

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Lajoie *00:18*
Today, we have the pleasure of interviewing Dr. Sharon Tucker. My name is Deb Lajoie. I am one of the Directors of Nursing Research at Boston Children's Hospital. Dr. Sharon Tucker, who is going to be chatting with us today, recently joined the University of Central Florida as a Professor and Chair of the Department of Nursing Practice. Dr. Tucker is a change agent, scientist, clinician and educator. She holds board certification as an APRN, CNS in Psychiatric Mental Health Nursing, and as an Integrative Nurse Coach. She has cultivated research that has made significant and sustained impacts on science and practice in two areas: behavior change through mental health and wellness interventions and practice, and organizational change through evidence-based practice implementation science and practice tools and training. She focuses on women and children, employees and worksite interventions for health, well-being, stress reduction and mental health, and has received many grants at the local, regional and national levels to fund her research. She is recognized as a national leader in Implementation Science, which focuses on systematically studying methods and strategies for promoting adoption and uptake of evidence into practice. Dr. Tucker's practice, teaching and research include motivational interviewing as a key approach to behavioral change, and she is the primary faculty for an interprofessional motivational interviewing graduate level course. She has held leadership roles since 1997 and has been part of the senior leadership team in four organizations. She is a Robert Wood Johnson's Executive Nurse Fellows Program alumna and elected fellow of the American Academy of Nursing and National Academies of Practice, serves as an Associate Editor for World Views on Evidence Based Nursing, and publishes widely and serves on regional and national boards. She is the current president for the Midwest Nursing Research Society and the Chair for the Practice Committee for the American Holistic Nurses Association. Dr. Tucker was recognized in April of 2023 by the University of Iowa Hospitals and Clinic as one of 30 Revolutionary Leaders around the world in 30 Years of the National EBP Conference. Dr. Tucker earned her BSN from the College of St. Teresa in Winona, Minnesota, and MSN from the University of Wisconsin at Eau Claire and her PhD in nursing from Rush University in Chicago. Dr. Tucker, welcome. To start our conversation off, can you help us to understand what EBP is and why this is so important for nurses to understand and apply these principles at the point of care?

Tucker *3:21*
So, evidence-based practice emerged 30 years ago or more, following in the footsteps of QA, quality assurance, QI, quality improvement, and then what morphed into CI, which is continuous improvement. At the time, and still today, the focuses on quality improvement tend to be more process oriented, meaning, designed to address an issue at a local setting, local hospital. And the point is to look at efficiencies in the processes of some healthcare program or intervention and look at how we can improve it better. And much has been learned through the CI/QI process over the years. Later, or maybe adjacent to the time, the notion of evidence-based practice, and actually evidence-based medicine emerged to try to make sure that the healthcare we're delivering is based in the best evidence, scientific evidence. And over the years, we've also appreciated that there's other sources of evidence, quality improvement, what comes from these evidence-based practice initiatives and also clinician expertise. So today we see evidence-based practice as a three legged stool. The first leg, of

course, is the evidence that comes from mostly research, but there are other projects that are published, you know, guidelines, regulatory reports that come forward that we integrate into a pool of evidence. So we synthesize the evidence. We don't consider one research study a pool of evidence. We synthesize the pool of evidence, summarize what the findings are, and that is, in essence, what the best evidence suggests we should be doing. Now, just because we know what we should be doing doesn't mean it's going to get translated. And so the three legs are the evidence plus the clinician's expertise, because clinicians often know what the nuances are with each patient, their situation, the context of why they're seeking care. So they know from their years of experience where there may need to be some adaptation to what the best evidence suggests. And then the third leg of the stool, which is equally as important, is, what does the patient prefer? What do they value? And importantly, what are their circumstances? Because we don't want to recommend evidence-based interventions to patients only to know that they're going to leave and not implement them, because they don't have the resources, they don't have the internal capacity. So those three elements have to be considered when we think about implementing what the best evidence is. And again, this whole area has evolved to try to improve the care and the outcomes for our patients, keep them out of the hospital, keep them living longer, keep them living with quality of life, with minimal symptoms they have to manage, or managing their disease with whatever best evidence there is. So that's what's emerged. The nursing profession adopted this after medicine introduced it. And I might add that one of the front runners in evidence-based medicine was actually Florence Nightingale. Through years and years ago in the Crimean War, she recognized the importance of data to prevent infections and to reduce the numbers of infections. So she's actually named as one of the people that, along with others that have helped launch this whole field of evidence based care, practice, and certainly, we as nurses have, as a scientific discipline, we have continued to evolve what we see as the important elements of evidence based practice and how to implement it. The other thing I was going to add about the importance for nursing is, nursing as a scientific discipline. And so the care we provide should be based in science, as in all of our healthcare fields. So that's important for nurses. They want to be able to provide able to practice that way, and when they're able to practice that way, they're likely to stay in their jobs. So that's another satisfier and a retention element, by being able to professionally do their very best.

Lajoie *7:13*
So as you think about this, you've highlighted that nurses have to appraise the evidence. When they do that, are these findings immediately applied at the point of care? Or is there a gap to translating evidence into practice?

Tucker *7:28*
The short answer is no, it doesn't happen immediately. And this is not just nursing. This is across healthcare and actually even in some other industry. The notion of bringing a new way of doing something to an existing culture and an existing pattern of daily operations is a challenge. So there's an appetite for it, but it is a process that takes time. And you can even think of your own behaviors and think of things that you want to change as an individual, and you know you should. You got the knowledge you know you should maybe eat better, sleep, better, exercise more, manage your stress. And we all know how challenging that is to, first of all, make the change in a regular way and then sustain it over time. So it is hard and we often fail. So it's not unusual that clinicians, too, would have to give up a way of doing something and adopt a new way, and may struggle. So there's good reasons why it doesn't happen overnight. There is also a number of barriers that take place. There is time, there's attitudes, there's costs, there's knowledge, there is culture, there is leadership. There's

sometimes no incentives to change, and it's adding to competing priorities, and this notion of change fatigue. So there are lots of reasons that, in a comprehensive way, can impact the ability to translate evidence even when we know it's the right thing to do.

And, I might add that the culture in an organization matters a lot, and leaders drive culture, so sometimes early on, most times early on, after you've evaluated the evidence, you may want to look at what the cultural readiness is in your organization and what has to change first if your leaders don't engage and value the importance of evidence based practice and the resources and tools and models that are needed, that might be a place you have to start, because they have to really invest and care about this as a way to provide good, solid quality patient care. And so you may also have to, along with your cultural assessment, you may have to look at what are barriers, and there are validated and reliable tools to measure barriers and facilitators, because then your strategies might aim to target reducing some of the barriers and increasing use of the facilitators that may or may not already be there, but leveraging them or adding them that will then ultimately lead to your best outcomes.

I would mention another researcher, Everett Rogers, who developed the Theory of Diffusion of Innovation. And in his work, this was even outside healthcare, but in his work, he established a theory that is used ubiquitously across fields, healthcare and others. And it really looks at, how do we approach change? How do we approach a new innovation? And he saw it, and many others do today, is that he needs to go through a phased approach, helping people to see the knowledge, helping them to get excited about the project, helping them make a decision about the project, about the new way of doing things, implementing it, and then deciding if this new way of doing things will continue. And the reason this is important is we have some pretty strong evidence to show with all the reasons I just highlighted as barriers, we have some strong evidence to show that, on average, it takes about 17, maybe a little less in some of the more contemporary research studies, it takes anywhere from probably 13 to 17 years to bring a scientific discovery into routine clinical practice, where providers are using it without hesitation, and they're delivering it and nurses included delivering it with regularity. So you can see that process can be very lengthy, and that's a barrier, because of all the things I talked about. It's a barrier to making evidence useful to clinicians.

Lajoie *11:18*
So you're telling us that if it takes about 17 years to implement the science into practice, that we're probably, actually implementing older science into practice, right?

Tucker *11:32*
Well, said, yes, absolutely. Or there's even interventions that we do that, and nursing care actions that we do that maybe have no evidence. There's some things that are fine without evidence. You know, maybe some of the ways we interact with patients and we address them in their room, maybe we don't need evidence for some of those simple things. That doesn't mean we should eliminate them. But there are things that I would refer to as traditional practices without evidence that we haven't changed. I'll give an example. When a patient has an NG tube placed, we want to verify that it is indeed in the stomach and not in the lungs or in the bronchioles. So for years, we would put our stethoscopes on and listen to the injection of air through a syringe down the tube and hear that sound, and that would verify but the problem with that is it's not reliable or valid. And in fact, the most valid and reliable way is through radiographic imaging, and that should be the best practice. But I would submit to you, there are still faculty that teach that practice, and there are still probably nurses in the clinical setting that believe

in that practice when it should be extinguished, essentially. So there are reasons for us to, you know, take a look at what practices we're currently engaging in, if they're the evidence based, if they need to be evidence based, and then also what is being published as the best evidence. And how can we switch to those kinds of practices and with a much faster pathway, instead of the 13 to 17 years? Can we really accelerate that process?

Lajoie *13:04*
You know, you just brought up one more thought, the importance of sharing it within your organization. Do you encourage the nursing students you work with, and your nurses to disseminate this in publications or presentations.

Tucker *13:20*
Absolutely and in fact, the first audience for their dissemination is the C suite, or the top leaders to make sure, from the beginning, here's an executive summary of what we're going to do. Here's how. In the middle of the project, here's an executive summary of how this is working and what's going well, and then a final report that's really important to keep our leaders knowing the great work we're doing as nurses and our interprofessional teams. Then on top of that, yes, I strongly recommend where appropriate and when data is appropriately aligned with policies and privacy data is presented in publications, presentations at conferences, so that we can share what we're learning with others who may be struggling with or seeing the same clinical issues and want to make some improvements. But yes, we absolutely encourage and that, again, is a retention issue for staff as they see their professional practice improving and that they're the ones leading an improvement and just feeling like they're having the opportunity to share it as well.

Lajoie *14:18*
So thinking about your body of work, you've focused on both building the evidence, but then you also have focused on implementing the evidence into practice. So the term I've heard you use is implementation science. Can you explain a bit more about the concept and the frameworks that would support implementation science? Are there multiple different frameworks, and how would a nurse know how to best implement the correct framework?

Tucker *14:53*
Great question. And I have spent a lot of my career on really focusing on, so we know what the evidence synthesized says to do. In this case, maybe my example, we should be doing x-ray to make sure the NG tube is placed. We know that that is how we should best do this. And yet, there are, in my observation in many is, these best practices are not being implemented. So this whole field of implementation science, and I got very interested in it, because I've seen, as a clinician, how people resist change, and that it's not easy to engage in change. So this field emerged probably 20 plus years ago. It's called implementation science, and it is the scientific methods that look at how we can systematically have the best strategies, models, processes, to promote the uptake of evidence, and many times it's to promote the adoption to fit my patients, my practice, my setting, my culture. So adopting what the best evidence is, retaining the key elements, and then adapting it and then getting it used regularly by clinicians. That's what implementation science evolved to understand, is you know what the right thing to do is. How do we get people doing the right thing? And that whole field has led to what we call implementation practice as well. So now I can take this implementation science knowledge and use it to help improve the practices in my setting, to be the best evidence-based practices we can

have. There are many theories, models and frameworks that have been developed out of implementation science. Many of them are process based. They say, you start here and you go, A, B, C, D and E. Others are more determinants. You want to make sure you look at leadership. You want to make sure you look at context. You want to make sure you look at facilitation. That would be another model that just has these determinants. There's another model called the CFIR, Consolidated Framework for Implementation Research, that has five different elements in it that you want to consider as you're taking that best practice and how to get clinicians to use it, how to get patients to use it, how to get organizations to adopt it. And so those five elements in that particular model are, what is the intervention like? How complex is it? Is it like my current intervention? Intervention that I do, is it simple enough to use? Is it observable so I can see how it works? Can I try it out? So that's the characteristics of the actual evidence-based intervention. Then you've got, what about my setting? What are the characteristics of my setting that I need to know about culture, how we communicate, timeliness, priorities. Then there's the external environment. What's going on around me, whether it's the whole hospital or in my community in what is my competitors doing? Are they doing this way better than we? Should we be adopting this? Is their financial reward to adopt this from payers, for example. And then the two last categories. So I said the intervention characteristics, the internal setting, the external setting. Then there are, who am I expecting as key stakeholders to engage in this new practice. Staff, what are their attitudes? What's their knowledge? What's the readiness for this change? How do they feel about our organization? Are they prepared? Patients might have some of those same factors that we have to address if we're going to get patients to adopt a new way of doing something. And families. You think about children's hospitals. Oftentimes, the target for a children's hospital is the family members, and so we have to engage them in a way that they can, too, appreciate the evidence and appreciate maybe a new way of doing something. Could be maybe a new way of monitoring glucose in adolescents with diabetes, or their sugar levels, I should say. And then the final thing is just, how do we go about planning it, implementing it, evaluating it, reflecting on it, and then circling back to see if indeed we are on the right track, or we need to go back and refine.

Lajoie *18:41*
So, as you think about doing quality improvement science. How is that different from implementation science?

Tucker *18:49*
It's a good question, and I would say that there's a lot more overlap today than there used to be, because quality improvement also has a science of its own. It's called quality improvement science, and that unfolded to really address the processes we're learning, the efficiencies and inefficiencies of how we're doing a certain thing in our hospital, in our unit, those lessons might be useful to other people and processes elsewhere. So it's really focuses on the processes, whereas implementation science emerged to address the practice. So this is the evidence based practice, not the process. But how do we get so there now you can see processes play out in Implementation Science as they do with quality improvement. But how do we get the evidence that we know should be implemented or is the best we have? How do we what processes from an implementation perspective? How do we get those in place? And when you think about this, science evolved to be a scientific body of knowledge where quality improvement did not start that way, but there is a scientific element now that others can learn from where an implementation science it was really built to understand how to get the best evidence into practice. Processes are not the best evidence. And so along with those theories, frameworks and models, we've also identified a number of strategies, not to be confused with the intervention. So you

know, like the going back to the NG tube example, let's say we know that the best evidence suggests radiographic confirmation. How can we get clinicians doing that? What model would help us, and then what strategies do we need to teach them? Do we need to have leadership meetings? Do we need to have some way of the actual process of ordering the imaging. Do we want to do some auditing and feedback so that we can see that it's actually happening with some regularity and monitor trends over time? Do we also want to really acknowledge and celebrate the people that are doing a really good job of transfer translating this new way of doing things? So while there's overlap, think about quality improvement as a really locally driven processes efficiencies, whereas implementation science is related to the evidence based intervention, and how do we get that used by clinicians and patients?

Lajoie *21:03*
So that's interesting. You've given us a lot of information. One of the things I am wondering with so many different frameworks out there, how does an institution, or how does a clinician, decide which one to use? Should we pick a different model depending on the type of inquiry we'd like to understand more and implement?

Tucker *21:29*
That's a very good question, and we're asked that a lot. How do you know which one to choose? To some extent, it comes down to a match with the project or the intervention you're trying to put into practice how complex it is, how many staff are going to be involved? What are the internal elements of the culture that will impact it. So sometimes you want, you may want a step by step roadmap, right? We're going to do this, we're going to do this, we're going to come to this. Other times, you may say the model that will best serve us is just making sure we have key implementation elements addressed: leadership, culture, facilitation, context, it may be. There are actually some tools that can help you by just plugging in a number of questions that are asked you, just plug in your answers and it will spit out for you what might be the best model theory framework that you can use. So there are some of those that are available. Or what Washington University in St Louis has actually a couple of tools, as does, I think University of North Carolina or Colorado, there are some tools to actually help you decide on the model, but at the end of the day, you just want to choose one that the staff feel they can identify with, that they can hold them accountable to. Anybody that's on the team will know what their role is. They know what the timeline is. They know what the actions they're doing. There's another tool with CFAR, for example, the Consolidated Framework for Implementation Research called the logic model, the C for logic model that can, you know, guide you through the process that would probably make sense to many, many people. Other people may want something simpler, so it just doesn't matter. And the key takeaway for this is use something, use a science informed model or framework that will help you, from point A after you've synthesized the evidence and know what the best intervention should be, and maybe that we're not doing it so you've synthesized that. Now, how are we going to roll this out in this unit, in this division, in this department, in this institution, or maybe across institutions. How are we going to roll that out? And we want to have a model that will help us get there. And the model should include what do we need to measure? And it could be implementation outcomes, like feasibility, acceptability, appropriateness, cost, fidelity, penetration, reach. You know, those are all the things about how did we do getting this into practice and then, as well as NG tube placement, clinical outcomes, right? That it's actually where it's supposed to be, sometimes cost would be a clinical outcome that we would want to assess, certainly, return on investment. When we invest in these projects, we look to a return on investment. And I can cite from a recent paper that Linda Connor published in World Views on Evidence Based Nursing in 2023 she did a systematic review she and

colleagues to look at what is the relationship between evidence-based practice and clinical and other outcomes. And what was interesting is for the studies that they were able to say met eligibility criteria for their systematic review, they ultimately saw that not only were a number of clinical outcomes demonstrated with the evidence-based change, but also substantial return on investment. Of all the projects that measured cost, all of them demonstrated a positive return on investment, and that's really important for all of us to keep in mind that the work that we're doing, and the time and energy we're investing in changing practice to benefit our patients is also going to save us money in the long run.

Lajoie *24:54*
Well, thank you, Dr. Tucker for sharing your thoughts. Anything else you can think of?

Tucker *25:00*
If I could just maybe say a couple more key takeaways for our time today is one needs to understand how to evaluate the evidence and how to search the evidence and synthesize the evidence. That's always the first step, and it's usually based on that. We either identify we have a problem here, we're not getting the clinical outcomes we thought, or we have an opportunity here, or we have a cost opportunity, but usually there's a trigger of some sort that leads us to, okay, what is the best evidence say about this? Then we do what I just said, in terms of good, solid review of the evidence and search of the evidence and then a synthesis that, though in and of itself, often gets stalled. We know that best evidence, but we don't know what to do next. There's how the feel of implementation science emerged to help us take it to the next step, to be able to know. Okay, so this model helped me get through the evaluation of the evidence. Now I need a model that's more about change, and that's one of those implementation science models. Now I need one that can help me work with my key stakeholders, work with my leaders, work with my communication and networks, and be able to move it along in a in a systematic or phased approach, so that I can start to see that it's getting hardwired, and to monitor that over time so that it stays hardwired, and that now this is the new way we do things. We wouldn't think of doing it any other way. I think another good example is that is hand washing. For a long time, healthcare struggled with having reliable hand washing techniques and consistency in doing it, and I think we've done a lot to put the proper equipment in place. We've done a lot of training, we've done a lot of champion audit and feedback. Those are all implementation strategies that can help us ultimately lead to the outcome we're looking for. So the models and the strategies can really help bring about that change, and again, monitoring along the way that they're working can help us have confidence that indeed the clinical outcomes we ultimately want are there.

Lajoie *26:55*
Well, Dr. Tucker, you've just given us so many different things to think about, and it sounds like this is evolving so far into an opportunity for nurses to really advance the science and improve care and to develop the profession further. I've really enjoyed this presentation, and I think the nurses you shared with today your journey, your story and your recommendations will advance the science of nursing.

Tucker *27:25*
Fantastic, and thank you for inviting me, and I would encourage anyone who's interested more is to just do any kind of search into the literature. There's all kinds of papers now published on implementation science, on evidence based practice, with many nurses leading at the helm. So if you're interested more, please just reach out. You can always reach out to me too.

Lajoie *27:44*
Thank you, Dr. Tucker

27:47
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