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Proem

These days, several interests swirl through my mind and heart: disparities and equity in healthcare, community-research partnerships, and continuous learning about health. Swirling sounds too pretty and neat. Perhaps it's smearing through my mind and heart - murky and messy.

Introducing Matthew Hudson 00:41

Recently, I read a commentary in the journal, *Learning Health Systems* by my friend and colleague, Matthew Hudson, entitled, "General orders for the embedded researcher: Moorings for a developing profession." When I reconnected with Matt to congratulate him on his article and further explore the possibilities of embedded researcher, I realized that he thinks deeply about the whole smeared mess. I invited Matt to join us.

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Matthew F. Hudson, Ph.D. M.P.H. has over twenty years of experience conducting and teaching research in health care and academic settings. He has served on multiple private and federal research review committees prioritizing patient-centered outcomes research and health care organization science. Matthew also partners with other stakeholders to develop hospital-based programs educating patients about research design. He and his colleagues' efforts encourage patient engagement across the research continuum-from research question design to results dissemination.

Health Hats: Matthew, thank you so much for joining me. I appreciate it.

Matthew Hudson: I'm honored to be here.

Introducing an embedded researcher 02:58
Health Hats: Would you please introduce yourself and include the journey you went through to write that excellent article about the embedded researcher.

Matthew Hudson: Sure. Sure. Again, thank you very much for the invitation. It's always great to speak with you. For everybody else, my name is Matthew Hudson. You also call me Matt, and I currently work in a health system in the Southern portion of the United States. Professionally speaking, you could describe me as an embedded researcher. When I use the term embedded researcher, I describe someone possessing a research background. That's typically someone with some sort of academic or research degree, but not always. But that person would immerse themselves in a health system or some type of clinical setting. And they do that to collaborate with patients and healthcare providers to investigate problems people face in actual world clinical practice. And I help them figure out ways to perform better in whatever way you would define better. But when you become embedded in a health system, you realize that the people you work with grew up and are from a different culture and neighborhood than you. And of course, I'm speaking literally, but I'm also speaking figuratively. Because to the latter, my education didn't look the way that a doctor or nurse's education looked. We learned different things, and we learned them in different ways. Some hospitals value that other skill set that I might bring, and they asked me to help figure out how to solve problems in assisting clinicians in figuring out how to provide care in what can be a real black box for both patients and providers. You can easily minimize or just plain forget the importance of maintaining the wellness of a community. You have to be equally invested in figuring out how to encourage prosperity in a community and not just treat illness for a small group of patients. So, I've been challenged to retain that perspective, being embedded in a health system, and there's no instruction manual, at least not that I've found for how to work as an embedded researcher.

Skillset of an embedded researcher - like a musician 05:31
Matthew Hudson: Now, there are a set of skills that people expect embedded researchers to know and to apply, but that's not the same as teaching one how to be an embedded researcher. So, for example, if somebody asked you how to be a musician, I don't know that you would say you have to understand

how to apply major and minor scales. And you have to know how to execute a chord progression or plug in your guitar. Those are all competencies. They don't tell you how to be a musician. And right or wrong, when you say the word musician, there's an image that comes to mind. And it's not entirely somebody playing a scale. It's it comes a part of their way of being. It's a vocation. It's a way of living your life. And it seems to me that people assume that you can tell what a better researcher is by what they do. And what I would argue is you have to dig deeper to understand embedded research, and you have to think critically about who embedded researchers are. And there's no instruction manual that I know of to teach someone how to be that. So, I just provided in that article some general thoughts about how to live imbedded research as a vocation, for better or for worse.

Embedded researchers in the community 06:57

Health Hats: So, I love this idea. I had experienced when I worked at Boston Children's that there was an embedded researcher in the nursing department. So, she was a nurse researcher who built a bridge between the patients, the clinicians, and the system and helped formulate the study question design and execute the study. And she was familiar with a lot of different cultures, both internally and externally. And I thought that a lot of what she did was bridge-building, bringing her expertise to bridge building. But as I'm thinking about one of the things I like about this is the. I just spin off into other things. Like the other day, I was talking to a friend who told me about one of her colleagues who was a first responder in his community. And he was a researcher. That was his vocation, and his volunteer work was as a first responder in his community. And so, he found himself developing into an embedded researcher in the first responder community. And I want to talk to him some more about that experience. But the point that I've been thinking about with your work, your writing, is how can a health system afford it and have it be part of their business plan to have an embedded researcher, and they see its value. And I sometimes wonder about how that can happen to communities. However, we might want to define the community.

Employing, partnering with a researcher 09:10

Matthew Hudson: Let me back up and clarify one of your assumptions. And one can assume that quote health systems can afford to utilize an embedded researcher. Now, theoretically, that's true, but practically speaking, that may not always be the case. There are many different models that one can use to quote embed researchers in clinical practice. It's not uncommon that a clinical enterprise assumes no financial responsibility for bringing in an embedded researcher. The clinical enterprise, quote, merely provides a host environment where an embedded researcher works. But they may not necessarily support them in terms of a salary.

Health Hats: So, then they are grant-based. They're generating income. So, our research through grants. How does that happen? What's the business model?

Matthew Hudson: So how that happens can be in many ways. I'll just throw out a couple. An embedded researcher has a home institution in an academic setting. And that their paycheck, however that

paycheck is derived, comes from the university. And as part of the relationship between a university and a health system, a scholar from the academic institution may choose to be or solicited to be embedded in the clinical enterprise. The benefit for the clinical enterprise is that they now have an individual who has particular talents and skills that they can apply to clinical problems. The attraction for the scholar is that they now know that their research can be more readily translated into a usable product, where it's not uncommon that scholars' research interests lack a practical application.

Health Hats: Yes. Implementation science.

Matthew Hudson: I want to be very careful about that because I don't want to disparage it. Because the academy provides generalizable truths about human behavior that are gravely advantageous for informing clinical practice. There are also instances where both the researcher and the clinical enterprise would benefit from a specific application of solving problems. And so that would be the attraction for an academician to engage a health system. There must be a financial investment in developing an infrastructure where an embedded researcher and the embedded research team can thrive. For example, you have to have the personnel to facilitate electronic health record data access. And you have to develop an enterprise that can educate the system, not just on the nuts and bolts of conducting research, but the philosophy of data collection and why data collection is essential to improving clinical practice. And simply shifting a misperception that research, however one thinks about it practically speaking, is merely nothing more than a book report. Simply seeing on a piece of paper is not the same as writing a book report. A significant amount of reflection and consideration is necessary to develop a tenable research project informing clinical practice. That can't be a haphazard enterprise. The clinical enterprise must commit to improving practice, which can't be done cheaply.

Permission versus commitment to act on research 13:26

Health Hats: That's very interesting the infrastructure part. I think the research question is vital to either the communities being served, or the patients being served, or the clinicians treating those communities or people. There's the methodology. How is the research going to be done? What's the science of it? There's the recruitment of it and dissemination. And finally, what you're saying that I appreciate is action. A reasonable likelihood that research will inform how people are doing the work together, making decisions, trying to get better.

Matthew Hudson: That there is a difference between permission and commitment.

Health Hats: Say more.

Matthew Hudson: One may permit research to occur in a system, go ahead and do it if you think you can. Whereas commitment is we value these insights, and we want to marshal resources and a culture amenable to generating this for a greater good. I would prefer to be in the latter circumstance where an organization has committed instead of simply permitting me to do research.

Implementation science. Just do it. 14:56

Health Hats: Let me back up a step. In my seat on the Board of PCORI. One of the things that I try to bring up is that it's odd that sometimes it takes work for researchers to be interested in implementing their findings. Sometimes we're looking to recruit people who have researched to implement their findings. And that to me is a little bizarre, but I feel like you're explaining that a little bit because that's the commitment part.

Matthew Hudson: So, let me interrupt a second. Yeah, because I also want to clarify a statement that you made. The statement that I heard was that research is not typically interested in implementing their findings. Is that a fair paraphrase of what I heard? Okay. So, I would counter with the notion that there is an entire domain of scholarship called implementation science, which focuses on clarifying the steps that promote a systematic uptake of evidence and integration in the clinical practice. And so, there is a whole group of health service researchers who are infinitely committed to ensuring that information in evidence and interventions that are proven effective get rolled out in clinical practice. Now, digging deeper into your statement or your assumption, it would seem curious to know an effective intervention. Why is it that it's so difficult to get it implemented? Does it relate to the organization's affinity for the intervention relative to competing goals and demands? It's a product of whether or how information gets diffused through a system. So simply having the truth doesn't necessarily mean that other people know it or that it gets disseminated systematically to ensure everybody operates from the same premise.

Embedded researcher as steward 17:20

Health Hats: Do you think the embedded researcher might have a leg up on that?

Matthew Hudson: I would say that an embedded researcher would be a prime steward of that.

Health Hats: Okay. I like that. Yes.

Matthew Hudson: Still simply because of their training and background. I alluded to that earlier. You correct me if I'm wrong because I know you are a nurse, and I will create a story. How were you trained as a nurse, right? Given such a diagnosis, you were taught to focus on diagnosing a particular patient, treating a specific patient. A specific care plan for a particular patient. But I will create a story that you weren't readily trained in how the organization facilitated or impeded your ability to provide that care.

Health Hats: Oh.

Research in the context of care delivery. Individual health, organizational health. 18:18

Matthew Hudson: And so, the way I grew up, one of my degrees has three foci. One is health care policy. What is the general what are the general policies or regulations? Both at a hospital's level or a

miso level facilitates optimal care. So, there's health policy. Then there's quality improvement. How do we get better at doing what we know we should be doing? Then the third is understanding medical decision-making. What are the social, psychological factors that mediate either a patient or providers' predisposition to elect a care plan and stay true to that care plan? So, I have a background in thinking about all of these contextual factors relative to what you were trained to do to figure out the care plan and diagnosis. And someone like me is trained to think more critically about the influences and the context that allows the patient and provider to capitalize on the treatment plan. Does that make sense?

Health Hats: It makes sense. I've been a nurse for almost 50 years now. And I would say that my first, 15, 20 years was what you described, the art and science of individual care. And then, I discovered organizations, and it was understanding that I was operating in a context. And I was becoming more interested in organizational health. So, leadership and infrastructure and culture, and how that set a stage for individual care. Which is, I think, what you're describing.

Workforce context 20:16

Matthew Hudson: Right now, understand that at least my comments had been focused on what happens in this black box. We've observed that when an individual returns to a health system for the same condition, that is quite common due to nothing within the health system. The reason that they're producing is because of factors that operate outside of the health system. And so, if a health system fails to consider or help address the factors that portend somebody needing the health system, they will set up a revolving door such that a person can never prosper. They will continually be exposed to illnesses that require treatment within the health system. Now that is tragic in and of itself, but why is it essential in this day and age? The reason is that we have a health care workforce that is aging and getting closer to retirement. So we have fewer health providers, generally speaking, to address a population of individuals that will increasingly require health or health care. So we are putting more pressure on the individuals providing care now more than ever. Those individuals providing care are, in fact, individuals. They are real people who have to endure a work environment's stress. And so the health enterprise is becoming very concerned with workforce burnout, right? Yeah,

Health Hats: Especially with Covid now

Matthew Hudson: Without question, that's an unforeseen circumstance that's exacerbated the current concern regarding the proportion of patients that have to be cared for relative to the provider workforce. And ultimately, we're concerned that the stress of the health enterprise will not be able to provide patients with the optimal patient-centered care they need. So, we have to start thinking critically about two things: maintaining people's health and wellness outside of this black box. Secondly, we need to think critically about improving the workforce health of people within this black box, which requires a critical reflection on the organization-centric factors that mediate one's capacity to execute their sacred charge of providing patient care. Typically, people within a health system have not been exposed to the education necessary to develop research around those topics. Because they just grew up

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thinking critically about the biomedical paradigm. They haven't used these organizational frameworks to think through how that would influence care. And again, coming full circle, that is why some health systems reflect on their workforce and needs. And they say we don't have people trained in domains of, for example, the value of clinical science, implementation science, or comparative effectiveness research. And we have to solicit individuals outside of our clinical environs with the hopes that they would be interested in lending their expertise to these clinical problems that we face.

Continually learning what works 24:40

Health Hats: So, this is an excellent segue into this other concern that, I say other, but it just flows right into it. I'm interested in learning what works and that to me, learning what works is a continual process. And so, whether that's on an individual level and so whether the individual is a patient or an employee, or a caregiver or it's the systems trying to implement the findings of research and see does it work? And in what circumstances does it work in real life? And I've been thinking about this continual learning part. One of the things about research that I stumbled on is a beginning and an end to the research project. And it was for a particular group of people with specific circumstances and a specific setting, but we never really continue to learn. And I've tried to bring this up in many different forums over 20 years, and I've been pretty completely ineffective. And so, I've realized that I have this idea, and either the idea is not well-formed, or the idea is doesn't fit into the black boxes that we've been talking about. So, I wonder what you think about this idea of continual learning and growing this body of evidence.

Matthew Hudson: So, let me take a shot at this. This is me, again, creating a story. The reason that you have been exposed to research projects that seem to have a beginning, middle, and end maybe because there wasn't a sufficient consideration of the generalizable truth that we could extract from the specific line of inquiry. So, for example, let's take something easy, smoking cessation, right? Let's say that the trick is, or the not trick. I shouldn't say that the aspiration is to reduce the number of individuals smoking. If you design a study specifically focused on that, you can either observe that you had an impact or you didn't have an impact. And if your interest is myopic, that is, if your interest is exclusively constrained to whether somebody smokes or not, there's a beginning, middle, and end to that, in theory. But if you're trying to understand the generalizable truth about encouraging preventive behavior in the absence of illness, or if you're trying to understand the steps toward adopting a healthy behavior. You're trying to understand that, then the research will still live because once you solve the problem of smoking, there's always another problem around the corner that you could apply these generalizable truths to. So, in the same way, we had to try to figure out how to encourage people to obtain a polio vaccination. We were struggling with the notion that there's a way to reduce the evidence of polio. We have this, why is it that people do not avail themselves of the shot? And there are a couple of smart people who gleaned the generalizable truth that it has something to do with perceptions related to benefits of treatment, barriers of treatment, the susceptibility of disease, and the severity of a disease that informed this social, psychological wall called the health belief model. Now that health belief model could be applied and has been applied to mountains of clinical and population health and public health challenges. In that sense, the research has lived on. There is no end to it because they tried to understand the generalizable truth about human behavior in studying polio. Catch onto that. If you can

hook yourself to that, regardless of the specific research question, your research will live on because no matter how successful we are in solving problems, there will always be another problem that will emerge. Whether it's acquired immunity deficiency syndrome, COVID, or anything, any other tragedy that befalls our population. Then the idea is, and the trick is to glean the generalizable from the research that we undertake.

Health Hats: I appreciate that. Let's take that story a little farther and say that there's this generalizable truth, and does it work with HIV? Does it work with COVID? Does it work with measles? Continuing to ask that question and then building the pool of experience. Whether it's systemic like vaccination or whether it's individually related to smoking, did what we learned about smoking does that work on the reservation? Does that work with Gen X? Sure. It's like continuing that.

Music, again 31:05

Matthew Hudson: If I could extend this metaphor, there is a difference between learning a song and learning music. If you learn a song, you can only play that song, and you might get tired of that song. If you understand the musical theory that motivates that song, you can rearrange those notes to create a different composition. Consequently, the number of songs would be infinite. And so, the idea is to extract information that can be infinitely useful in an array of health service quandaries.

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Do we see the questions through the same lenses? Buffing out the scratches 32:29

Health Hats: Do you think I'm asking an important question, or am I asking the wrong question, or are there more questions?

Matthew Hudson: Oh, geez. I have a visceral reaction to that because it minimizes your insight. Okay. I want to start with the premise that the question you pose to yourself is important. That I accepted on its face, and it requires no justification or validation from me or anybody. Now I say that because of the context of our embedded research conversation, the charge of embedded research is not simply to avail them to the clinical enterprise for the sake of practitioners. It's to be of service to patients. And as a patient-centered outcomes researcher, or one interested in that, I most certainly operate from the premise that the question that the patient poses is gravely important. It provides insight into what a person values, and I'm interested in developing research relative to what individuals value and what patients value. All right. So, I bristle at the fundamental question about whether you were thinking

about this correctly or whether the question has any value. Now I'm going to buff out the scratches on that, and I'll rephrase it. And I'll say there may be a benefit to sharing your thoughts with another person to triangulate the question, right? This is the problem that I see. This is the question that I'm asking. Do you see the problem in the same way? Tell me how you see this problem. Yeah. Do you think that this is a problem? So, in that sense, your question to me is fair. Your follow-up questions are, do you see this as a problem? I am answering it from a sincere perspective of reflection, not as a point of evaluation where I'm the arbiter of right. I'm not judging your question. And so, I think that there is value in triangulating a question that you have. You seek out individuals both that you have something in common with and don't have anything in common with, to ascertain whether they see this as a problem or if they see the problem being resolved through similar media. Does that make sense? And the reason that I'm spending time on this is that it's not uncommon that one poses the question. How do you get patients, clinicians, and researchers to identify a research question correctly? We can talk about strategies to develop a research question, but before you get there, who's a group to come to some agreement on the problem? Write in English. And that does not mean necessarily we 100% agree. We can say that this group feels that this reasonably represents the problem. Rather we described the problem. What is the research question we can craft relative to addressing this problem?

Health Hats: Yes. So, what you're saying is in English, but I don't really mean in English. What I really mean is in lay terms. Forget science, forget research, just what's the problem? Then bring in expertise in terms of research to translate it into research terms and something that can be studied. And so now we're back at, as you're saying to the embedded researcher who that's the mitzvah that embedded research serves.

Reveal something about yourself, not easy 36:39

Matthew Hudson: Now I want to interrupt you and back up because I said we have to define the problem, right? Yes. Now I don't want to minimize what that means. Now, this is my opinion, editorial here. Yeah. But I think that to identify the problem; you have to reveal something about yourself. You become transparent about the way that you view the world. And one needs to be prepared for that to occur. You reveal something about yourself by what you identify as problematic or don't identify as problematic, and how you frame it reveal something about yourself that you may or may not be ready to admit to yourself, much less to other people. And that is when you are home alone, looking in the mirror. Now, if you were doing that in a group of people, it can become particularly volatile, which is part of why this work is so difficult. It's very difficult because it requires reflection that one may not be ready to address. And just because I said, first, you have to define the problem, and then you have to think critically about developing the research question. I didn't want to skip over that. Argue is a developing the research question that could be pretty formulaic. I can talk about the research question. That's defining the population, defining the outcome, defining the control, defining the intervention, and the timeline. I can spell all that out. But it's the lead work that is particularly challenging, right? A problem that reveals something about yourself that we have to consider if we want to go into those waters seriously.

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Self-reflection, values, and health equity 38:36

Health Hats: I remember the moment that I noticed you, meaning I may have met you already. I may have whatever, but the moment where I noticed you. Okay, this is somebody I want to know more was I think you said something similar when we talked about health equity and systemic racism. And you were talking about self-reflection. And the challenge of self-reflection. And then I thought, okay, who is this guy, Matthew Hudson? So that's so interesting.

Matthew Hudson: He's a tortured soul.

Health Hats: No. I thought it was brilliant. I appreciated it. It opened my eyes.

Matthew Hudson: I love that you appreciated that I think it reflects. It's part of my personal charge. We always need to reflect on who we are for ourselves and how we present to the world. But also, professionally that I'm of the mind that what one chooses to study does not occur by accident. It is a product of the values they bring to the scientific enterprise. And I'm of the mind that science isn't value-free. So, science can be subject to the same prejudices, biases, blind spots, and oversights. While I say that, I want to be clear that I'm not talking singularly about the real problems of institutional racism, provider racism, and provider bias. I'm also speaking about issues that I would consider to be in the domain of illusion. We genuinely think the world looks this way when really it is that way, whatever those ways are. We bring a naivete to the research enterprise that constantly requires me to question myself. To continually explore where might my blind spots be or identify this as a problem. What about me thinks that this is identified as a problem where that not so much and that's the same is true of health systems. Philosophically, why do health organizations prioritize population health now instead of 60 years ago? One could argue that the reimbursement landscape is that if we are shifting from fee for service where an institution receives a modicum of compensation every time they execute a treatment, there may be less urgency to consider how to restrict the revolving door. If you realize now that you are receiving a payment to address this malady the first lap around the track, and if you fail, your health system incurs the cost. That forces a change in thinking that a health system might start to value things more at time two compared to time one. And so, I just try to keep all of that in mind as I try to develop and think through how to develop research in a learning health system.

Health Hats: Wow. So, let's wrap this up.

Matthew Hudson: I regret that we have to wrap it up. I can talk to you forever.

Partnership: engage with blind spots and strengths 42:40

Health Hats: This is good. This is really interesting. So, what do you think if If you wanted listeners to take two or three things from this conversation, what would you, what do you think are key? So we've

talked about embedded researchers. We've talked about the problems. What do you think are the key things?

Matthew Hudson: I should be easily able to articulate a number of things, but I'm going to give you a stream of consciousness.

Health Hats: Sure. That's great.

Matthew Hudson: I'm of the mind that patients, providers, that is, healthcare providers and researchers fundamentally, they are people, and they present to the enterprise with ignorance and brilliance. Good intentions and less than good intentions. All equally. It behooves stakeholders to face their limitations and face their prejudices for themselves before they engage in partnerships. And when they engage in partnerships to accept each other for both what they can provide and their blind spots. Our obligation is to try to correct each other's blind spots. And augment the strengths. I think that's what I would hope individuals take from some of our discussions today. And that we understand that embedded researchers are particularly charged with thinking through those issues in service of developing generalizable knowledge that can be easily applied in service of the patients and the communities that we serve.

Health Hats: Brilliant. Thank you.

Matthew Hudson: I don't know if it's brilliant, but I think.

Health Hats: Thank you. Thank you. This has been great. I appreciate I appreciate your time. And

Matthew Hudson: I've been honored to speak with you, and I love this podcast, and I just want to thank you for the opportunity. And I hope that it's not the last time we see each other professionally or personally.

Health Hats: Yeah. Oh, I agree. I agree.

Reflection 45:05

Did you get all that, kind listeners and readers? Let me take a stab at summarizing the wisdom shared by Matt. An embedded researcher collaborates with people and organizations to investigate problems important to them. They act as listeners, translators, connectors, resources, and stewards. They can open doors to the black boxes of research, care delivery, and life. They can be employed by universities or health systems.

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Sometimes the research applies locally, sometimes in similar or diverse settings, or even to a different problem altogether. Some sponsors of research give permission to do the research, and some have a commitment to implement the findings - using the results in real life. Some researchers have expertise in implementing study findings, and some don't. Embedded researchers are more likely to bridge the two.

Healthcare providers (individuals and institutions) can directly control some of the factors related to health and can't control others. They can't necessarily control policy, laws, and regulations. They can't necessarily control wages, transportation, childcare, family caregiving. Institutions can affect workforce burnout. Embedded researchers can bring expertise about what they can't control into institutions and research processes.

Research about specific healthy behaviors, such as stopping smoking, feeds a continual learning process about other healthy behaviors. Questions people ask about healthy living require no justification. All questions have merit. Looking at questions through different lenses can help refine the problem statement and lead to more useful research. Asking questions about health can be scary – it reveals something about you and me, the askers. We need a safe place and courage. Embedded researchers can facilitate that safe place for self-reflection.

Matt seeks to walk the talk of facing our strengths, limitations, biases, and blind spots to develop knowledge to serve patients and communities. Inspiring.

Phew, how'd I do summarizing? Thanks, Matt and thank you. Onward!

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