## Thrivecast Episode 56: Bringing a Clinical Idea to Market

**Trish Kritek:** [00:00:00] Welcome to another episode of the University of Washington's Thrivecast, the podcast designed to help school of medicine faculty thrive. I'm Trish Kritek, and today we're joined by Dr. Nathan White. Dr. White is a professor in the Department of Emergency Medicine and the associate dean for research and graduate education centered at Harborview Medical Center.

The other hat he wears is as the director of the Resuscitation Engineering Science Unit, and it's kind of related to that work that I thought to invite you today, Nathan. I'm just going to say that sometimes we have listeners who suggest topics, and this was a topic that was suggested by a listener, which was could you talk with someone about being a clinician and bringing an idea to market?

And so I think you're a perfect person for that and thought we could have a conversation about exactly that.

Nathan White: That sounds great, Trish. Thanks for having me on.

**Trish Kritek:** It's my pleasure and I think it's all of our pleasure. So, you know, I've kind of framed it a little bit, but I think maybe the best way to start [00:01:00] talking about this process is for people to have a little bit of an idea of what you did and what you're kind, what you brought to market.

So maybe you could talk briefly and tell folks a little bit about, I think it's called Stasys, but I could be saying it wrong and what that is, and then we can kind of work backwards.

**Nathan White:** You said it right. It's, it's called Stasys Medical Corp. It's a startup, a spin out from UW. So homegrown. It is a biomedical device company.

It's a diagnostic device that focuses on diagnosing platelet health. So, so my main research focus is, is on bleeding emergencies, mostly associated with trauma and these sorts of things. Have a research lab. That's what rescue focuses on, is a big part of that is developing technology that can be applied for critical bleeding situation.

So, this is all a part of that. It is a very cool technology that [00:02:00] is a microfluidic device designed to measure the strength that platelets contract. Which is a bit, which is a bit of a mouthful, but platelets, you know, we have about a billion of them swimming around in our blood right now. And when you get a cut or a bruise or something, that's when they go into action and they, they seal the wound.

But one particular thing that they do that most people don't realize is, is that they're very mechanically active and they contract very strongly once they bind to wound edges and to clots and things like that. And it's a huge part of what helps us to actually stop

bleeding. So this device actually gets in and measures that contractile force directly actually in nanonewtons.

So we're able to show how healthy a platelet is, essentially by how strong it's mechanically.

**Trish Kritek:** That's super interesting and wearing my hat as an intensivist, I'm like, wow, that's really cool. And I bet there are some listeners who are like, please [00:03:00] just keep talking about stasys and how that works. Because that's so interesting and I'm going to disappoint them because I'm going to now say I appreciate that framing and it's really pretty novel and cool.

I want to understand this thing about where you got the idea. Did you work with CoMotion? I, I talk with folks from CoMotion and, and a. Preceding podcast. And then, yeah, how did you go from that idea to, to it becoming a startup? Because I think there are people in our community who would really like to do that.

So let me start with this very first question, which is, I know this is your lab and the work that your lab does, and I, I have to assume it's tied to the clinical care that you deliver, but. I'm going to ask it explicitly, did the work you do in the emergency department lead to the ideas around this strategy of kind of assessing platelet mechanical potential and function?

**Nathan White:** Absolutely. So, you know, a big thing what we deal with, so I work clinically at Harborview, in the ER at Harborview, and you know. Level one [00:04:00] trauma center, regional center, lots of critical care people are bleeding like crazy. Everywhere you look, somebody's bleeding. Right?

Trish Kritek: It is so true.

**Nathan White:** It's just the way it is. It's what happens. So, yeah. So this comes directly from what I experienced as a gap as a clinician, as the inability to rapidly diagnose why someone's bleeding and to be able to do something about it. Just because if we just talk about trauma, for example, I mean. Trauma patients who are bleeding and if you're unable to control their bleeding, the, you know, mortality is within hours, first couple hours at least.

So it, it happens fast, uh, needs to be diagnosed. And if there's something wrong with the actual coagulation or, or the blood itself that's driving, uh, the bleeding, then you need to know about it as fast as possible. So, so yeah, that's where Stasys really came from.

**Trish Kritek:** I think that that's gotta sound exciting to people who are listening because [00:05:00] so many of our faculty, not all our faculty, we have faculty who are biomedical researchers, but so many are clinicians and they're faced with issues in the

care that they deliver where they're like, I have an idea about how we could do this better.

So how did you go from. The realization, which you said, which is exactly right, like there's so many bleeding people and it's incredibly life-threatening to bleed like this to, you know, the science part of it and turn it, that kind of observation into an idea that you studied. Let's start with that and then, then we'll go to like, and then it becomes a business somewhere along the way.

**Nathan White:** So turning an idea into a product. So a lot of steps in between there, right? So initially it really stemmed from fundamentally understanding or trying to understand what's going on, which is a big. Topic of my research, right? Yeah. So I, I try to generate new knowledge, figure out what's going on, and realizing that the, the platelet [00:06:00] component and the contractile component of platelets is a huge deal.

And most people don't know this, right? You know, as clinicians, we basically deal with platelets in terms of numbers. Right? Are there enough? Are there not enough? Let's give some more. Oh no, that's too many. You know, and, and you can swing back and forth and get in trouble both ways. You know, you got too many, you get thrombosis.

I've done both. You get bleeding? Yeah. I mean, we all have, right? Because it's really hard to know if they're actually working or not. So this is an attempt after a realization, you know, from the research lab, from the clinical experience that, hey, we just, we need to know more about platelets. Um, and so how can we do that?

And then you start to layer on those clinical needs. It's like, I need to know if these platelets in this patient are healthy and I need to know. In 30 seconds.

Trish Kritek: And quick. Yeah. Know it quickly. I was just going to say that.

**Nathan White:** Yeah. So not tomorrow - doesn't help me. Not [00:07:00] next week, you know, not an hour even. You know, I need to know right now.

So that's how you start to think about how do I solve that problem?

**Trish Kritek:** I like that a lot. There's a scientific question, I'm curious about X, and I think lots of our community has those questions. And then there's the value of the clinical lens that says. That's an interesting question, but how is it practically applicable?

And start to translate that into something that you could create, design build that could leverage the science, but also be clinically valuable to a clinician. So you're kind of going down those two threads together. When did you know you had come up with something that you could patent or that you had the ability to do more with?

**Nathan White:** Got lucky. So when I say, when I say I got lucky is that I met the right people. So, um, early on, and this was an intentional process actually, so I went out and I started looking for people [00:08:00] who could help me solve the problem. Right. You know, looking at people's web pages, looking at basic scientists, looking at engineers, you know, faculty members.

I came upon Nate Sniadecki who's a great friend of mine for a long time, co-founder of Stasys, professor of mechanical engineering. And he does cellular mechanics, so he specializes in making flexible microstructures to measure cellular forces. So I saw his lab website, I said, "there it is."

It's in there somewhere. Right. And he had actually done some platelet work already. So I said, there it is. You know, I gotta go send this guy an email. Go have a chat with him. And you know, there we were. We at least had a very vague idea of a way to fix the problem when Nate and I got together.

## Trish Kritek: Okay.

So many things that I'm going to tease out. So, number one, you started off saying you got lucky, which I think is not true because then you said. [00:09:00] There was a lot of intentionality to this, so I, I want to say, Hey, faculty, if you have this idea, start looking around. Start looking on the, you know, look at websites, look at the scientists who are in our community, look beyond our community, but who could be a good partner who has some of the skills that might move this forward?

So you did some. Investigation and research into who could be partners. And then the second thing that I heard you say is, and then I reached out to them, and this is a thing I want to also encourage our faculty to do, which is there is no real barrier to sending an email and saying, Hey, can we chat?

And maybe not everyone's going to respond, but it sounds like you got a good response when you reached out and said, Hey, could we talk more about this?

Nathan White: Yeah. That's a great thing about UW. I mean that I've done this many times and I very rarely. Do I get any sort of less than stellar response? And this is UW faculty in many departments, many scientific areas.

Everyone loves to work together. For me, my elevator pitch is kind of easy because it's, it's kinda like, Hey, [00:10:00] you want to help me stop people from bleeding to death.

Trish Kritek: Yes, that resonates.

**Nathan White:** You know, it kind of works, right? So, it's not too hard for me for what I focus on, but, you know, I would, I would encourage anyone, any clinician out there, if

you've got a problem, chances are there's probably someone on campus that's got a solution.

And you would be amazed at what folks in, you know, school of engineering can do, um, you know, what the other schools can do. Even in the school of medicine, in our basic science department. It's a, it's really some amazing stuff going on.

**Trish Kritek:** I think it's easy to end up in kind of our own little spaces within this really big complex organization and, and you know, medicine is complex, but the University of Washington and I really like that encouragement to look, you know, across the school for sure.

There's so much. Biomedical research happening in our school that people probably don't fully appreciate. And for the biomedical researchers who are listening, they're saying, yes, I want to partner with you. But then, you know, you look beyond the school of medicine. And I, I think those are really nice things to emphasize.

Obviously you found a [00:11:00] great partner. You ended up with a, a business at the end of this. And I going to guess you worked with CoMotion to work through those steps. Uh, is that right? And if so. Are there any things you want to tell about, you know, I talked with Fiona Wills from CoMotion in a separate podcast kind of talking about what CoMotion can do, but I'd be curious your perspective on that partnership as well.

**Nathan White:** Yeah. Yeah, actually it's been a really great partnership for us and super helpful. So CoMotion was a big part of our early funding strategy. They helped us with that. Uh, there used to be the, the Coulter Foundation used to have an active program here. We were lucky able to get some initial early seed.

Seed grants from that to develop this idea. Um, and then Commotion was really helpful in pointing us towards funding strategies and helping us out. One of the huge things that they offer is the Entrepreneur in Residence Program, and when we actually found our first CEO, uh, Bob Berry, uh, for the company through, he was a local entrepreneur in residence with, [00:12:00] with CoMotion.

So they helped us with our IP, helped us with our patent applications and got those through, which is a very important step when you're talking about taking technologies out to commercialization. And, you know, they've been with us the entire time, all the way from, almost from very early idea inception and very early working prototypes all the way through licensing and creation Stasys, which we came back and our original home was in CoMotion, where we had our first office for, for the company actually.

So yeah, it's been really great.

**Trish Kritek:** Really appreciate all you said and I think I'll reinforce what Fiona said was like, partner with us early. And it sounds like you did that and that was particularly

successful and then you partnered at a variety of different points along the way. And she'd also talked about this space that can be used when you're really starting your, your startup.

And sounds like you did exactly that. So seems like it was a very good partnership in many ways. Were there hard parts? What was hard about this kind of pathway? Like [00:13:00] what were the, what were the challenging parts for you?

Nathan White: I'm a clinician by training. Right? I am. I like to think I'm a scientist too. Maybe, maybe not, but I am not a businessman.

That's for sure. That I know for sure.

**Trish Kritek:** I think that's going to resonate with lots of people in our community that they would agree that they aren't either.

**Nathan White:** Yeah. So through this entire process of creating your company, there are milestones that you need to hit. Um, and a lot of those early milestones, as a clinician, you're, you're driving.

Right, because you know what this thing needs to be used for? You know who it's going to help, and that drives the initial thrust into commercialization. And then you get to a point where you know the technology is most is developed. You know, you market right? You know what it's going to be used for, and then it's all business.

How do I get it through regulatory hoops? How do I [00:14:00] get to technology design, freeze? How do I create a team and get marketing? How do I get through, you know, FDA, how do I do all these things, which I, so, so there's a point where you have to say, okay, not that I'm done, but I'm, I'm here to help. At this point,

Trish Kritek: I think that's interesting that that's a transition point.

That's a place where things changed. Is that right?

Nathan White: Yes, absolutely.

**Trish Kritek:** I think that that's a really good point because I do think there's some people who are clinicians and are like, actually, if I were going to do it again, I would've gone down a business pathway. I have a good friend who like got an MBA right out of training, but I think most of the people who are listening probably are like, I find that intriguing, but that's not my wheelhouse and that's not my strength.

So it sounds like finding good partners. Both on the science side, but also on the business side end up being really key.

**Nathan White:** It's huge. It, it's really huge. Everything is about the team and you have to be realistic with yourself. You know, as clinicians, especially [00:15:00] as faculty, we're used to being team leaders, you know, in the hospital.

That's our role in the research lab or PIs in this. You can help things along, but you are probably not going to be the person that's going to take this home.

**Trish Kritek:** I think that's a really good teaching point. What is your title in Stasys right now?

Nathan White: I am a clinical consultant and co-founder.

Trish Kritek: Yeah. So that, I think that's really interesting, right?

Co-founder, but mostly now you're a clinical consultant, which is a big change from like being the person driving everything forward. Yep. I'm going to ask two more questions because we could talk for forever and I already think you've shared so much. That's great. You did this. Would you do it again? Like was it rewarding?

Do you feel good about it or was it a lot of stuff that you're like, at the end of the day, I'm not sure I would have put all this energy and time into this path.

**Nathan White:** Yeah, I would do it again. I'd probably do it a little differently. Mm-hmm. Uh, to, to tell you the truth, so one of the things that we didn't do so well is that we actually, I feel like we, we [00:16:00] went into the commercialization route, uh, too early, especially when you're doing new diagnostics, new biomedical devices and that sort of thing.

Uh, there is a period of time when this needs to get developed, right? And there's iterations, there's changes that happen and all these things that happen. So that's research. Uh, if you can do that in your laboratory, if you can do that at UW as a faculty member, uh, and you know, you can have a great team, interdisciplinary team, but that's research, right?

And then what I would advise is that commercialization is when it's just about done. Like all that stuff is done because, uh, what you realize when you get out into commercialization into industry and you start getting investors. Who come in is that everyone who gives you money takes something with that.

So you start to get what we call diluted. Oh, massively diluted. So that all this effort and all this, you know, [00:17:00] blood, sweat, and tears you put into this company and this device and all this thing, you start to see all these chunks being carved off, cough off, which is totally fine, right? If someone's going to give us money to, to make this happen, that's great and they deserve their 10 x return.

Uh, so, you know, it's all fair in commercialization, but it's, it's a little heartbreaking to see that happen. So what I would advise. Do as much as he can before you take it out.

**Trish Kritek:** That's a super helpful message. And that also that kind of, this is your baby. You want to get it as fully formed as possible before taking it forward to commercialization.

But also at some point it becomes not your baby entirely anymore. When people start giving you money just to move this forward. That's a different phase. And so that I think is both useful to think about, you know. When you're timing for commercialization, but also just kind of the, the emotional side of this about how things change at that point.

I think both are, are helpful. You've shared a lot [00:18:00] of wisdom and really great insights already, and I, I think hearing just about your journey is really interesting. Do you have one last pearl for folks who might be thinking about embarking on this? Any last kind of, here's one thing that I wish someone had told me before I started.

**Nathan White:** I mean, I would do it, you know, if you have an idea, I would go for it. I highly encourage people to do this because it's such a huge learning opportunity to be able to do these sorts of things. And UW is very supportive. Uh, it's a great environment to, to do these, these types of activities in always start with the end in mind, right?

So as the clinician, your job is to know what the end application is, and start with that. And you've got to be a little protective of that because a lot of people have a lot of other ideas, maybe some good, some not so good that's going to steer you in different directions as you go down this pathway. So, you know, stick with what.

You feel [00:19:00] like this is going to do to help you, to help your colleagues, to help your patients especially, and sort of be a bit bullish about that through this entire process? That would be my, my main piece of advice.

**Trish Kritek:** That's great advice. And I think it, I'm hoping it resonates with people because that's the unique lens you bring as a clinician to the table.

I find myself sitting here saying. I have this thing I've been thinking that we should create for a long time, and I bet I'm not the only person who's having that thought right now. So I want to say really thank you for being willing to talk about your journey with Stasys, but also just kind of those different points of how to navigate this and that it's worth navigating this.

I really appreciate that.

**Nathan White:** Absolutely is. Yeah. Highly encourage these types of activities. Like I said, it's a great place to do it at UW.

**Trish Kritek:** Nathan, thank you so much for all that you shared today. I'm confident that our listeners will learn a lot from our discussion.

Nathan White: Thank you, Trish. Happy to be here.

**Trish Kritek:** As always, I'll end by saying, if you want to listen to more episodes of Thrivecast, you can find them at Apple [00:20:00] Podcasts, Spotify, or wherever you listen to your podcasts.

You can also find them at the UW School of Medicine faculty website at faculty.uwmedicine.org. Thanks for listening and have a great day.