Is It Science or Snake Oil? A Physician’s Guide to Smarter Health Decisions Transcript

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Dr. Bobbyu2019s Early Entrepreneurial Shift

My entrepreneurial spirit reared its head. And so there was a few of us from Ram that split off, that started a company focused on how do you decide who needs expensive surgery and who doesn't, and to create a win-win-win opportunity.

How can you do well for the patient, meaning avoid unnecessary surgery, do well with the doctor, streamline those surgeries that are clearly necessary, and the insurance company who's paying the bills where they would only pay for the stuff that was really needed?

And we were kind of in the right place at the right time. Insurance companies managed care was really trying to do this, but they didn't have the tools.

So we created expert systems built around practice guidelines, all based on evidence. And that was kind of the beginning of Medicine Meets the Marketplace for Dr.

Bobby. Welcome to Ever Young, a podcast for high performers who live deliberately and age with intention. I'm Rich Hanley, Harvard trained, military tested, and still chasing P Performance at age 60. Here we explore what it really takes to stay sharp, strong, and deeply alive.

So let's get to it. Welcome once again to the Every Young Podcast. I'm Richard Hanley. Thank you so much for joining us. Today we have a very, very special guest, Dr.

Bobby Du Bois. He is an MD, a PhD, physician, scientist. He did his undergraduate at Harvard University. He did his medical school training at Johns Hopkins University.

He did his PhD at the Rand Institute, and he's published over 180 peer-reviewed articles on what truly works in healthcare and has led multiple organizations as chief medical or science officer, focused on building win-win-win solutions for patients, providers, and payers.

He's also an Ironman triathlete with 15 marathons and 18 Ironman races under his belt and still competing at age 69.

Harvard, Medicine, and Business

And when he's not racing and researching, he hosts this show, live long and well, where he breaks down the evidence behind longevity, wellness, and what actually helps you live a longer, healthier life.

Thank you for joining us today, Dr. Du Bois. Oh, it's great to be here. And thanks so much for having me and giving me a chance to chat with your audience.

Excellent. So you did your internal medicine residency at UCLA here in Los Angeles. Tell me a bit about that experience. Bring us back even further. Let's go back to your days in undergrad at Harvard College.

You're on campus at that point studying pre-med. What was your thought process? Had you thought about being a physician early on in life or did that happen while you were at Harvard College?

No, it began long before that. My father is a doctor. My grandfathers were doctors. And at the age of four, I got the most attention of my siblings because I said, I'm going to be a doctor.

And it was inevitable I would be a doctor until I got midway through college. And I realized, you know, I'm kind of entrepreneurial and maybe I should go to business school.

And I went to my father and this was now in the early seventies. And I said to him, look, I'm torn. I could, I'm interested in business. I'm interested in medicine.

Is there a way to think about both of them? This was very old school. He said, look, there's medicine, there's business. They're completely separate. Figure it out.

So I made the choice, I would do a medical school and medical training and all the rest. But then as I was in the middle of all my training, I realized, well, wait a second, my dad is wonderful.

But I think he's completely wrong. I think medicine really is a business and needs to be both sides of both clinical and health economic, and that bringing those together was the right thing to do.

Now, in the latter part of the 70s, nobody was doing that. But now, a decade, two decades, three decades, four decades after that, it's very clear that you need to keep both in mind if you're going to really take care of a population of folks as well as possible.

Excellent. So bring me up to the point where you're now in internal medicine residency. What are some of the disparities in healthcare that you're beginning to see as a trainee in your first second?

You did three years in internal medicine. Did you do a fellowship out past the three years? I did. Okay, great. Can you tell us a bit about that training, what that looked like?

Residency, Research, and Health Policy

Sure. So my internal medicine training was done in the early 80s. And yeah, for folks who didn't live through it, you have no idea kind of how different it was.

Nowadays, we've got fancy MRI scanners and we have, you know, ultrasound units everywhere you need them. You've got portable ones that attach to your phone.

But back then, The ultrasound to look at your heart was A, primitive and B, not very available. And at our inner city hospital, we had a lot of IV drug abusers that would come into the hospital with a fever.

And you always have to consider whether they have an infection in their heart, infectious endocarditis. And the way you would solve that diagnostic dilemma is to do an ultrasound.

Well, it turned out we had so many patients and so few resources for ultrasound that there was a limit. And so I just got fascinated like, okay, well, how do you choose the right patients when your resources are a bit more constrained?

So I did a research project, came up with a prediction algorithm of who needs it and who doesn't need it. and publish it, and that was really the beginning of me stepping back from one patient, one doctor, to saying, how would you handle 1,000 patients, 100,000 patients, 300 million patients, when you're balancing access to care, quality of care, and cost of care?

And so finishing my clinical training, I realized if I really wanted to pursue this, I didn't have the skills. I had the clinical skills, but I didn't have the other skills.

I got a fellowship that focused on kind of research, research methods, and I decided to get a PhD in health policy at the Rand Corporation. And that's what I did.

And that taught me all the other wraparound skills, some statistics, organizational behavior, how to think about

policy issues. And it was just the beginning of what became my career and then my entrepreneurial spirit, you know, reared its head and so there was a few of us from RAM that split off that started a company focused on how do you decide who needs expensive surgery and who doesn't and to create a win-win-win opportunity.

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Bobby. Wow, fantastic. So I could imagine in that scenario where you're going through this, you're seeing the disparities at hand and patients do you want to treat everybody, but the resources at hand are limited.

And so you're forced to these decisions where some patients get the care that they need, the ones that are at the top of that list who are obviously in need of that care and others that could probably benefit but unfortunately don't have access or the means to get it done.

What was your emotional state at that point when you're seeing like, you're going to have to say no to some and yes to some, those that you can't care for.

What was your thought process behind that?

Building Win-Win-Win Healthcare Solutions

How did you feel about that? Well, for the patient that came in with fever and we were trying to rule out a cardiac infection, we didn't say, okay, we're not going to take care of you.

We would still take care of them. We would make our best guess what was going on, but we might not have access to the diagnostic tool that would make it clearer.

We're never going to close the door on people. But in my later career with our company, it was very clear that about a third of all back surgery, hysterectomy, tonsillectomy were clearly unnecessary.

And the definition of unnecessary and appropriate is risk versus benefit. So when you operate on somebody with a back problem, yeah, you're hoping you're going to relieve their pain.

but you're also introducing risk associated with the surgery. So if it's very clear from the evidence that the risks outweigh the benefits, you're actually helping the patient by stepping in and talking to the doctor and saying, you know, patient might need surgery later on, but have you tried physical therapy?

Have you tried steroid injections? Have you tried other kinds of things first? So it really was a win, win, win. Now, later in my career, my last 12 years, I helped run a think tank in Washington, DC.

And at that point, I was really focused on value. So, you know, if you think about taking care of a patient with rheumatoid arthritis, just as an example.

There are thousand dollars a year drugs and there are hundred thousand dollar a year drugs. How do you decide who needs the hundred thousand dollar drug versus the thousand dollar drug?

There's a whole research discipline to figure that out, what the value of an intervention is. And so again, you're not saying no, no, no, you're trying to stratify the population into who's really going to benefit and making sure they get

access to those wonderful treatments.

and suggesting alternative ways for the people who really aren't ideal candidates for the expensive stuff, because we can't afford everything for everyone.

I wish we could, but we can't. The tale is old as time. There's amazing medications that have come out recently regarding cardiovascular disease. Pelicarcin is another medicine that's due out in the next couple of years.

That's an oligonucleotide medication that worked really well on Lp little a. In the meantime, we've got medications like Repatha that work really well for cardiovascular disease, particularly with really high LDLC.

That's a great example of gaining access to a medicine like that. There's a lot of people, myself included, who probably benefit from Repatha, but I've held off.

I'm on a statin. which works really well to crush my LDLC. I feel really good about that. It's basically stabilized my heart disease. Let's think about those medications through the lens that you just described.

where yeah, probably benefit to be on Repatha for me. What are your thoughts about that? Not me specifically, but patients in general, specific to the high dollar medications who might greatly benefit, but can do just about as well, maybe not as well, but darn close, but other medicines that are tried and true, been around for a while, much less expensive.

Right. Great question. And I'll try to take a half step back before diving into the medication points you, you just raised.

Evidence-Based Medicine and Repatha

So my whole career really has been built around what does the evidence tell us? And on my podcast, you know, I, I'm a myth buster, you know, should we fear seed oils?

What's the evidence there? I've got one coming out on microplastics next week. You know, should we really worry? What's the evidence tell us? So I'm, I don't really care what they did in Petri dishes or mice.

I want to know, did you test this in people and did the people get better or not? And if you haven't done the testing in people, it's just a theory. And I know we'll get into really the theme of today, which is why is there so much hype in health?

Okay. So let's take your heart patient. So. Twenty, thirty years ago, people felt that heart disease was a plumbing problem. Oh, your arteries are narrowed like a fire hose.

That can't be good. Not enough blood is getting to your heart. You're going to get a heart attack and die. And so people would get procedures that would show pictures of your arteries.

If they showed any narrowing, inevitably you end up being recommended for either bypass surgery or angioplasty and placement of a stent. Again, a plumbing problem.

We see the problem. We know that this is going to potentially cause you a risk. We're gonna expand that vessel. All goes well. And the reigning wisdom was this is what you need to do.

Of course, what happened was there were some landmark clinical studies, ones called the orbitotron, where they took a group of folks that had very stable disease.

They had chest pain if they exercised, but it was stable. And they asked the question, who's going to do better? Those that get the angioplasty, the expensive invasive procedure with complications, or just medical therapy, like a statin and treating your blood pressure and whatever else.

And everybody assumed that the plumbing solution was the way to go. It turned out there was absolutely no difference. And that was an eye-opener for the cardiology community that, wait a second, we had this theory that was so obvious, narrowed arteries, and we assumed that invasive procedures was the way to go, when in fact, it wasn't.

And so that is really kind of the theme I always focus on. What does the evidence tell us? So let's get back to your statin example and Repatha. We absolutely know that cholesterol is a risk factor for heart disease, along with obesity, along with blood pressure problems, and a variety of other things being sedentary and all the rest.

So we look at each of these risk factors and say, well, you really don't want a cholesterol level that's elevated. No, that can't be good. And so we need to treat that.

And they typically begin with people that already have bad heart disease. That's the way drugs get developed. You try to take the sicker patients and then move on from there.

So very clear that if you give some of these drugs to patients that have had a heart attack, they do much better with the drug lowering the cholesterol level.

But then people are like, well, yeah, but if cholesterol is bad for you, it's got to be bad for you even before you have heart disease. So we definitely need to do it in people before they have heart disease.

And again, we're back to our story with the chest pain and angioplasty. Yes, there's value in using these drugs if you have heart disease. The benefits are not as clear if you have no heart disease.

Now, I have an elevated cholesterol like you. I'm on a statin. It's done great. I'm doing well. I've never had a heart problem. I hope I don't. But when you now ask the question, well, this Repatha is stronger, more powerful than a statin.

Oh, by the way, it costs a hundred times as much, maybe more, you know, statins cost. For me, I get them for free because I guess my insurance company, which is Medicare, assumes it's so valuable.

They don't charge me, but if they did charge me, it would be 10 bucks a month. It's almost nothing. Repatha, I don't know what the latest price is, but it's probably a thousand or $1,500 a month.

So, you know, could cost you a hundred dollars a year, could cost you $15,000 a year. Now, if you're trying to do absolutely everything for absolutely every patient and you succeed in getting your cholesterol pretty much down with statin, you might say, oh yeah, let's give you the Repatha.

Now it is an injection, so it's not so much fun, but that's a way to go. The problem is that it's obviously a lot more expensive and somebody else by and large is paying for it, which is if you were paying $100 a year for statin, $15,000 a year for Repatha, most of us would say to our doctor, do I really need the more powerful thing?

And they might say, no, your cholesterol came down nicely. You don't need it. And so the insurance company is asking the same question. And so they put together protocols.

Now you might love it, you might hate it. If you can't tolerate a statin, you get muscle pain, whatever, or you've tried a number of statins and they don't work, they don't bring your cholesterol down, then they will approve Repatha.

But they won't approve that for everybody because the cost benefit analysis really doesn't support it for everybody. So that's a lot of what health policy done right is about, which is let's find the patients that need the really leading edge stuff and make sure they get it.

And if you're not one of those people and it's not really necessary, then let's see if there are other good ways to care for you. I love that answer. That is so well spoken.

Thank you. Yeah, it's true and accurate. And it talks to you know, the ability to provide good care for everyone at scale, right?

Why Health Hype Spreads

There's a lot of stuff that's out there in India, there's like guys that we're seeing now, particularly in social media where it's N of one, it's huge dollars to gain access.

It's well and good for those that can gain access, potentially well and good. That's actually in question as well. But you know, the fact is that not everyone can gain access to some of the things that we're talking about.

And that's unfortunate. So it's kind of a mess out there. So there's examples where the hype exceeds the evidence. For example, you mentioned in an email, red light therapy, how it can grow hair, but there's no evidence, you know, it reduces fatigue.

There's the fear and you mentioned seed oils. There's kind of this religious zeal about eating organic food when evidence doesn't really show. you know, that it's that much better than regular, you know, produce.

Let's talk a bit, let's dive a little bit deeper and get more granular on those thought processes. What are your thoughts there? Absolutely. And I think to set the stage, I would like to ask the question for our listeners, what do you hear on social media about what will be the solution to your problem?

It might be all these fancy supplements. Oh, you need to take AG-1. It has all the benefits of vegetables and a simple pill. It's great, you can do it.

Or it may be red light therapy, or it might be hyperbaric oxygen chambers, or it may be Your mitochondria are getting old and fatigued, and that's why you don't have the energy you used to.

Oh, by the way, I sell a supplement, not I, Dr. Bobby, but whoever's touting this is doing that. And so for me, there's a huge question, which is why is there so much hype in health?

Now, if you go back 150 years, there were always what were referred to as snake oil salesmen. who would have their covered wagon and they would go around from rural town to rural town and they would have this potion or elixir or salve that they would sell you.

And they would say, oh, it's really expensive. It comes from snakes. 99% of the time it did not come from snakes. So we've always had people selling stuff that probably didn't work.

So that's always been there. We also have a history of We're never talking about charlatans just causing this, but we doctors have a history of getting it wrong.

So as an example, when I was in training, eggs were bad. Eggs have cholesterol. Cholesterol is bad. Don't eat cholesterol. You'll get a heart attack. And for decades, we told people, don't eat shrimp, lobster, or eggs.

Oops, we were wrong. No, eggs are great. They have protein. They're not going to hurt you. You know, we had a generation of kids that we told their parents, oh, don't expose them to peanuts when they're young, because if you do, they'll become peanut allergic.

And we ended up with an epidemic of peanut allergies because in reality, we should expose our kids when they're young to peanuts and other things. Linus Pauling, who was a Nobel laureate back in the 70s and 80s, was pushing vitamin C.

Now, for those who may remember, vitamin C is amazingly important if you're a sailor in the 1700s and you're gonna get scurvy because you don't have any citrus fruits.

So there are absolutely tremendous uses for vitamin C for scurvy. The problem is people like Linus Pauling was like, oh yeah, it does this in the lab and you need to take it to stop and avoid colds.

And so he pushed that everybody was taking vitamin C. Oh my God, I got a scratchy throat. I'm going to take, you know, grams of vitamin C. Later we learned absolutely 100% useless.

Um, people would have a fracture of their back and they would have a lot of back pain and people said, Oh, I know what we need to do. We're going to put some cement in your back, which will stabilize the spine.

Again, great theory made perfect sense. And lots of people got this surgery. Okay. Later on, they finally did the proper studies. no benefit whatsoever.

So there is a long history in the medical community where we often get it, we sometimes get it wrong. And I would say the present day example is hormone replacement therapy for menopause, where 30 years ago, every woman practically was on it.

Then there was a study and oops, Women's Health Initiative and oops, no, no one should be on it. And then we ended up with 20 or 30 years with women suffering from menopausal symptoms, their bones were weakening.

And now we look back and say, well, I think that was way overblown and a lot of women can benefit. So there is a lot of examples out there when the proper studies haven't been done, we take a theory and run with it.

And again, today's examples are, oh, you have inflammation, whatever that means. Oh, you have a leaky gut, ooh, whatever that means. Oh, you need a detox to get rid of those heavy metals and other things that are in your body.

Oh, we have this treatment for mitochondrial dysfunction and all the people who say we can, you know, change your biologic age. It's all based upon no evidence in people.

And so I came up with an equation. I'm a nerd. And I'm like, okay, can we look at all of these examples and say why it is that it's now run amok? You know, every longevity guru, podcaster, supposed smart person, you know, is touting one of these things.

Oh, by the way, they own the company that sells it. They don't necessarily always tell you that. And many of the major people that people listen to on the podcast world really push these things where they get a lot of money out of it.

Okay. So what is the equation? It has three components. The first is you start with a cool theory or a compelling theory. The reason you have fatigue is because you have inflammation.

And the reason for that is your leaky gut. We're going to do something about it. or your mitochondria need help, we're gonna give you NAD, which will help make everything better.

Or you need magnesium, whatever it is. So you have a cool theory, a reason to get excited. And I gave you the examples of injecting cement in the back and opening up your blood vessels for your heart.

So there's no lack of cool theories. Now, cool theory isn't gonna get people excited by itself. Now you have to add the second element, A compelling anecdote.

Oh, Sally tried this and my God, she is all better. And then Tom said, you know, I did the same thing.

The N of One Trial Approach

So now we have our cool theory where we think it's going to work. Now we have people telling us it made all the difference in their lives. And then we add the third key piece of the puzzle.

a credentialed expert. Dr. So-and-so says the theory is right. These anecdotes are real. All my patients get better with this. You need to do it. And if you have that perfect storm of compelling theory, anecdotes, and a credentialed expert Social media runs with it.

The problem is the sum of those three does not equal credible evidence. So people will be swayed by all of this. But in the end, that's not evidence. I've given enough examples of where we thought anecdote and cool theory made a difference, and we certainly had experts pushing it.

But when we did the real studies, it didn't pan out. And so on my podcast and in my life, I refer to myself as an open-minded skeptic. Meaning if people come to me with these theories and how to solve the problem, I'm skeptical.

I want to see the evidence, but I'm open-minded. So if you show me evidence in people that tried it and they got better and the people that didn't try it didn't get better.

Okay. I'm open-minded and I will change my mind. That's great. That is such a beautiful theory and a beautiful construct upon which we can think about all of this.

It is, it's really, really beautiful and simple. It's akin to Peter Attia's mantra from there with Peter Attia. Absolutely. It's all about the evidence.

Like show me, show me the money. Where's the, where's the detail? The devil's in the details. and large end, you know, double-blinded placebo control, if at all possible.

And where it's not possible, at least trying to quantify the anecdote as much as humanly possible, as large end as possible. And also being able to change his mind.

He's changed his mind on a number of things, which is great. I really appreciate that about him. And I appreciate that about you too. And he's a rare bird, right?

There's so many people in this space that are touting, you know, treatment and protocols that are just not quite baked yet. They're half-baked. And we're trying things out, you know, outside the context of US soil, outside of FDA context.

And some of that's well and good. Some of it's very dangerous and has harmed people. So, and buyer beware if you're going to go try these things. It's exciting.

It's cutting edge. You know, it's ahead of what we're able to do because the FDA is very It's a big spoke. It's a big wheel that takes time and energy and money.

But that's kind of the best way to do things in my opinion. You need large N to solve these problems. So for you to come up with this very, very simple beautiful hypothesis of mechanism compelling anecdotes, credential providers do not equal evidence.

That is so true. You hit the nail on the head. So there is a workaround for some of this because people will say, do I have to wait for the evidence? And by then it'll be too late.

I mean, Peter T is very science-based in his podcast discussions in his own life, he does take theory and put it into action. So he was really big on fasting.

And then he did it way beyond what most people would ever think of doing. Years later, it's like, oops, that didn't work. In fact, it made me worse in the following ways.

You know, then it was, you know, metformin for longevity purposes. Now he's not taking that. Rapamycin was another one he was pushing. So, you know, when he discusses topics generally, he's very evidence-based and I love it.

His own life, you know, he's an early adopter of theories, which isn't necessarily how I do it. Okay. So I do have a partial solution. I'm not an nihilist.

I don't say don't do anything. Of course, I'm a doctor. I recommend what people need. Sure. So there's something that's been around a long time, although I suspect I've popularized it a lot.

And that's an N of one trial. So there may not be a study of a thousand people for this drug for migraine headaches. Maybe there is? Great. But even if there was that study, that doesn't necessarily mean you are going to have the same results.

Right. Because what they publish are averages. Some people do better, some people do worse, some people get no benefit, some people get tremendous benefit.

So for a lot of things in healthcare, I'm a big proponent of an N of one trough. Now, what is an N of one trough? Let's say somebody comes to me and says, I'm not sleeping well.

And I've been told that melatonin can be really helpful. And I would explain to them, yes, there have been studies of melatonin, but on balance, it only gets you to sleep five minutes early.

That's what the data show. But I say to them, You know, if five minutes is enough for you, great. But some people get no benefit from melatonin. And I'm talking about regular sleep problems, not you've traveled to 12 different time zones and you need to adjust there.

The data is stronger for melatonin. But if it's some general difficulty with sleeping, I said, look, some people get no benefit, but some people get a lot more than the five minutes.

The average is five. So what we need to do is test in you. And people say, Dr. Bobby, well, how do I do that? Well, you can't just take melatonin for a week and say, oh my God, that helps.

Because there's a very strong placebo effect for a lot of what we do. So we have to do our N of one trial in a scientific way. How do we do that? Well, we measure a baseline.

Okay. I've been sleeping poorly. What does that look like? I have an aura ring, I have a Fitbit, I have something. I can look at my sleep numbers. Or I don't have one of those fancy things, but I went on the web and there's a Pittsburgh sleep questionnaire, asks you a bunch of questions.

How long did it take you to fall asleep? How many times did you wake up at night? Did you feel rested when you woke up in the morning? Did you fall asleep in the afternoon?

Cause he didn't get enough sleep. So you can come up with a score. You don't need a fancy device. Okay. That's your baseline. Then try your sleep aid.

Now I have a whole podcast on 12 ways to improve your sleep. It could be the melatonin. It could be lowering the temperature of your bedroom. It could be eating earlier before bedtime.

It could be stopping alcohol for a period of time. There's 12 of these different things. Now you try one of those. All right, I'm going to try my melatonin.

Then a week later, because the beauty is this stuff doesn't take long to figure out. You measure again, it may be your oral ring, it may be that questionnaire.

And then you say, oh my God, it really worked or didn't. Now, once you get that point where you say it really worked, I would then say to you, yeah, but it could have been a placebo.

So what you then need to do is stop it. and remeasure it a week later. Oh, my sleep got bad again. Then you

restart it. Now, yes, the placebo could keep happening, but it's less likely to do so.

So by doing this off, on, off, on in a objective way, you can tell how much benefit it gives you. Another common example I talk about with folks is blood pressure.

If your blood pressure is elevated, your doctor is inevitably going to say, You need to cut out salt in your diet. No added salt and don't have those canned sauces and, and soups and things.

And I'm like, uh, okay, that sounds interesting, but it turns out 25% of people with high blood pressure, salt makes no difference. None. Zip difference.

And now you're denying yourself something that I love, which is salt. And you might be able to continue having salt. So what do you do? You do an N of one study.

You take your baseline blood pressure over the course of a week or two or three, and then you start a low salt diet. And you come back a couple of weeks later and say, did my blood pressure get better?

Then you put yourself back on a higher salt diet and you see if it makes a difference. For me, I am not salt sensitive. I love salt. Gail and I, my wife, We joke that food is merely a salt delivery vehicle, just an excuse to add salt and eat it.

So for me, it doesn't matter. My blood pressure is not sensitive to it. So when there isn't perfect data, then an N of 1 study works great. Now, before people get too excited, you cannot do an N of 1 study for something that takes 20 years to figure out.

How to Evaluate Health Claims

These have to be short-term things that would make a difference. Oh, I'm going to try curcumin, and that's going to prevent my heart attack. Because again, there's a cool theory, there's anecdotes, and an expert's pushing it.

The problem is, though, that you could try it, but you're not going to know for 20 years whether it made a difference. You're not going to try and end of one study for your chemotherapy.

So you have to choose when it's appropriate. But for a lot of situations, it can be very, very helpful. And it gets you a lot closer to rigorous evidence.

I love that. That's great. That can be so applicable to so many things that we're seeing on social media, things that you might want to try and that are accessible to most people.

It's hard to measure some things. You mentioned red light, right? How do you really measure your mitochondrial function? How do you really measure your skin health?

They're all theoretical and you probably won't be able to go that deep with a red light therapy. So you use it. Nonetheless, I've got a red light therapy machine in my house.

And I know that there's enough robust evidence to support that it is probably helping on some level. I'm in my 60s. I've had it for a number of years, and so I find it helpful.

You know, I use it very often for recovery. Do I know definitively that it's reducing my inflammation? I haven't done careful enough in one study to see that's the case, but I know that in theoretical means, it's probably helping on some level.

It was worth the time and money for me and that I'm doing it and the money that I spent on the machine. to do this, but it's a bit off the beaten path for what's available to most people and what most people are willing to do in terms of expenditure of their own time.

So am I going to tell my patients, hey, go buy this red light machine because it's going to improve your health in X ways? Probably not, because I don't have enough confidence, you know, long term personally, and the evidence is there, but it's mostly in, you know, well, it's there, but it's not so robust that I'm going to tell somebody to spend $5,000 on a machine that may or may not help them in any meaningful way.

So it's interesting to think about this through the lens of N of one and the way you describe the N of one. is akin to what Brian Johnson has been doing, although he has scientists and physicians that decide, you know, spending millions of dollars a year doing this.

The beauty of your construct is that it's accessible to everyone and any one of us, no matter where we are and what resources we have at hand. It's simple and it is pretty robust in the sense that you're basically taking the idea of a study that if you do it just once, then yeah, you can't really suss out the details of the placebo effect.

But if you do it multiplicative times and you're honest with yourself and you're reporting, you're documenting before and after, then you begin to increase your validity within that N of 1 study, which is beautiful.

It's simple. It's cheap and available to every single one of us. And you can tease out the positives or negatives in some of the therapies that we're hearing about online.

So let's talk about that. Oh, go ahead. I'm sorry. You're going to say something. The fun thing is once you learn the technique of the N of 1, and all my listeners just, you know, I don't know if they rolled their eyes, but they've certainly been told about N of 1 a million times.

But people have tried that same exact approach, having nothing to do with health. I wonder if I walk up to my wife every day and kiss her on her neck and say, I love you.

I wonder if that will change the dynamics of our relationship. Do an N of 1. Do some way of a baseline assessment of how close you guys are. Try out that technique or leaving a note, you know, thinking of you.

Come back a week or two later and measure again, then stop doing it. Again, it's a technique that can be used broadly. People do, they find it both funny and helpful.

That's so awesome. That's so great. Yeah, I was watching a video the other day. He's an MD, PhD. He did his MD out of Harvard. He just graduated last year.

A young guy. He's probably, I'm guessing, in his mid-30s, early 30s. PhD out of Cambridge. His name is Nick something or other. I can't remember the name off the top of my head.

But anyway, he was talking about this. He did the sardine diet. He's a specialist when it comes to metabolic health. And so he tried the sardine diet.

And it's the end of one study. And part of the problematic part of being on a sardine diet is the smell inherent that that diet. So he has a girlfriend and his girlfriend just was like, just get away from me.

You smell so bad. And so he did an animal study of kisses. He was actually doing, she wasn't aware, but he was doing an N01 of like, okay, well, what's the tincture of time that passes between my consumption of these sardines and getting kisses from her?

And he was able to actually measure, you know, the further out he was from the ingestion of the sardines, the better the kisses got, the more frequent the kisses got.

That was very apropos. You just described that. I love it. One topic that's here is also, what are folks supposed to do? So now we've raised this issue of a lot of what you hear may not have scientific evidence to support it.

And again, you're going to hear 10 things on a given day. You'll read something in the New York Times. You know,

here's something on TikTok and it's everywhere.

You know, what do you make out of it? How, you know, I'm trained in evidence-based medicine. I spent decades honing skills and I hope to believe that in my podcast, I can really share information that you don't have to go search for.

Now, sometimes it's a lot of fun. Like one that just came out, it was on the five second food rule. You know, food falls on the floor. Is it okay to eat it if you get it within five seconds?

And I look at the evidence on, you know, what, what is that?

AI, ChatGPT, and Clinical Reasoning

I hope people look to me and say, okay, you don't have a dog in this race. You don't really care whether red light therapy works or doesn't work. You're just gonna look at the evidence on our behalf.

Okay, so you have a question and you wanna know how do you figure out whether in fact this therapy I'm just hearing about makes sense or not? Well, here's some things that folks can do.

First is, you should have in your toolkit some questions to ask. Ask yourself, ask the internet, ask the people that are touting it. Is there any evidence in people?

Have they tested whatever it is in people? Are there risks associated with it? Red light therapy, probably not so much. Hyperbaric oxygen therapy, which may sound really cool, can cause potentially cancers to grow more rapidly.

So what are the risks associated with this? Is there a financial motive? Is the person touting this somehow, directly or indirectly, making money off this?

Do they present the scenario as black and white? Oh, it's very clear that your mitochondria are the source of this problem and we're going to help you with it.

Or do they come at it with some ambiguity and humility? Well, we think this is going to help. Some data supports it, but it's not really definitive. It might be worth trying.

If there's that kind of humility, you can start to maybe believe it. A bit more. So those are questions you can ask. Okay. What about sites to go to? Obviously my podcast is a good place.

Send me questions about topics you'd like me to look at. Somebody just sent me one this morning on how about all these collagen things? Do they help your bones and joints?

You know, will it reduce your arthritis if you take collagen supplements or conjoined supplements? So that may be one I do in the near future. Since a lot of these questions are related to supplements, diet, things you do by yourself that you'll hear about in the longevity space, one website I really like is called evidence.com and they summarize the evidence on various topics.

You know, does green tea, is it going to improve my, you know, my cognition or I mentioned, you know, curcumin and, you know, cancer, whatever it is, they summarize the evidence for you.

So that's a nice place to go to. There are, you can, you know, people are like, what about the Mayo Clinic letter or the Harvard newsletter or whatever it is?

You know, they have, you know, fancy names attached to them. I think it's a reasonable starting point, but oftentimes those articles are not written about by their diabetes expert.

They're written by. you know, journalists, people that do this for a living. Now, if they then interview 10 of the leading diabetes people at Harvard, okay, now that gets to be a little bit more interesting.

If they cite studies, like in this study, which looked at a thousand patients who tried this or didn't try this, did it work or not? You know, should you get an injection of a steroid in your back if you have back pain?

Well, if the newsletter basically says, you know, our orthopedic surgeons do this all the time, patients do well, I'd probably ignore it. If they are like, yes, and here are some studies that support that, great.

You can look at the studies or whatever if you wish to. So there's a few tools that I think people can try to help answer some of these questions for themselves.

Yeah, no, that's great. I agree. There's also AI now, right? Early AI was pretty weak in terms of being able to answer these questions with any degree of accuracy.

Certainly it's gotten better. Open AI has worked very hard with Chad GPT. Grok is fairly accurate, still hallucinates from time to time. Are you familiar with OpenEvidence, which is an AI specific to clinicians with an NPI number?

Are you familiar with that? I am, and their database is only a small number of journals that they feel are rigorous. It's one resource. It doesn't scan all of the world's information.

There's a lot of stuff that didn't come out in the New England Journal or JAMA or something like that. Yeah. I have been really working on AI for understanding various topics and I've delved into some of the scientific literature about it.

So here's a couple of interesting data points and studies. If you take chat GPT or one of those, it will pass the physician's licensing exam with a hundred percent accuracy.

Right. Way better than I would or, you know, almost anybody else. So the knowledge base is absolutely there in the GPT. If your measure of will it is, is GPT correct?

Well, they answered all the multiple choice questions on the exams perfectly. Okay. So that's a data point suggests maybe it's good. Then there was another state.

It's not yet been published. So we'll see when it goes through peer review, but it's a fascinating study. They said, okay. Who did the study? Do you know who did the study of words coming out?

I, I could look up where, who, where the authors came from. It was from an academic institution, but I don't remember which one. And I don't know where it is in the, the, um, peer review process.

And it may, maybe won't get published, but when I tell you what they found, it makes a lot of sense and people can test this out for themselves. Okay.

So what do they do? They said, okay, we're going to come up with 10 clinical scenarios. Maybe one of them is you have an awful headache that just came on.

You know, what should you do? What is it and what should you do? Okay. Another one was, you know, you've been feeling short of breath lately. You've been coughing.

What should you do? What is it and what should you do? came up with 10 of these scenarios. Then they took a bunch of volunteer subjects and they say, okay, you have scenario A, you have the headache, that's you, and you're gonna be the actor interacting with GPT with that problem.

So they're a whole bunch of people. work with GPT, and they ultimately then explored, did GPT come up with the right answer, both in terms of the diagnosis and what the next steps were.

I was really surprised because when I began with a hundred percent accuracy on the licensing exams, I assumed it would do really well with these scenarios.

Well, it turns out it did really poorly. Maybe a third of the time it got it right. And so as I read through the study and I reflected, I realized what was going on.

The, what was that the person who had that problem typed into GPT, a certain set of symptoms. I have a headache. It's really bad. It came on suddenly at eight in the morning.

Yeah. Maybe they added a couple of other things and the GPT basically, you know, analyze it came up with its diagnosis and didn't say rush to the ER. but what the GPTs don't do is what your physician does.

Okay, have you ever had a headache like this before? No doctor, this is the worst it's ever been. Do you have any family history of problems in the brain?

Yeah, my sister died last year with an aneurysm. GPT does not ask you those questions. Now maybe future ones will, but today they don't. And so it's gonna get the wrong answer because you didn't give it the right information.

The Future of Doctors and Robots

Anybody who has worked with GPTs for their business or personal use realizes you get better as a prompt writer. You know, for my podcast, I get guidance on, you know, what should I call this thing?

And I've learned that I have to talk to GPT in a particular way. I need to tell it, you know, I'm evidence focused. I'm not just a charlatan, but I want a catchy title.

This is the area I want it to be, but I don't want it to be too cutesy. So I give it a long. set of information, and it comes back with a really good thing.

If I don't do a good job of typing in stuff because I'm lazy, it will come up with garbage. So it doesn't surprise me what the results were that it takes a back and forth.

Now, if I had typed into GPT, worst headache of my life. Sister last year had an aneurysm. You know, I'm this age, never had a headache in my life. Um, you know, et cetera, et cetera.

And now, oh, by the way, I can't move my left hand. Yeah. Yeah. It'll get it right. But that's, that's so I love GPT, but just listeners need to be cautious about it.

And maybe a year or two from now, it'll do exactly what your doctor does and ask the right questions right now. Generally it doesn't. It doesn't do it by default, right?

So yeah, you're talking about the meta-prompt. So you can ask the GPT, say, you are an expert physician of the top grade. You're the best among the best.

I need you to ask me questions that are leading that will help you in your diagnosis and pinpoint the accuracy. So, and then GPT will then act like a physician and ask you all those…

Exactly. That's what you have to do. They need to know that. Yeah. Without that, you're right. You're going to get garbage in, garbage out. You have a great practical solution.

Yeah. So yeah, it's very powerful. And it will probably do it, you know, intuitively, eventually, you're right, it's not there now. And without the meta prompt, you're lost in the woods.

My friends come to me, you know, and they'll ask questions. I checked with chat GPT, you know, and it said this, and I'm like, well, let's, let's, let's work to this day.

And I'll work with chat GPT with them. And I'll say, this is how you get chat GPT to act and think like a physician and ask it, you know, and I go through that whole you know, recommendation of like, you know, tell GPT to act like this.

And I said, now go through and ask your questions again, or tell them what your symptoms are again. And they're like, wow, that is night and day. That is very different.

I said, exactly. It's all about the power prompt and the meta prompt. But it's wild to think, I mean, I trained in the late 90s. And also, again, I was a PA for a couple decades and then went back to medical school before GPT was a thing, graduated in 2018. So had the benefit of being a PA for 20 years, seeing thousands, tens of thousands of patients in the context of emergency medicine and family medicine.

and occupational medicine and some dermatology as well. So these vast amounts of clinical data points that I could hang my coat on when I got to medical school in my 50s, I was like, hey, I've seen this.

I've seen this. It was crazy going through PA schools, drinking from a fire hydrant, and you don't have any context upon which to hang things on. As an older guy in my 50s going through medical schools, everything just was like, oh, if only I had known this pathophysiologic, this pathway back when I was studying to be a PA or in that moment in the clinic.

It was like, it was awesome to go through everything that I had done for the last 20 years and kind of do a reset and a recalibration of things and an update.

But then to see ChatGPT and all these LLMs come out, I'm like, oh my gosh, it's mind blowing to be able to take patient data. not, you know, redacted from, you know, personal medical history, but be able to take the information that you know, you know, that you've been trained in and understand quite well from practical application and experience and didactic, and then sift it through these LLMs.

It's mind blowing how I don't have to keep up with the journals. It was impossible to keep up with all the journals, you know, how many tens of thousands of papers come out on the daily or weekly.

It was an impossible task. And imagine, you know, being in a primary care clinic setting or an emergency room setting where you have to kind of know a little bit or a lot about a lot of things.

Nowadays, clinicians have got it on lock, but they, you know, things like being able to go to open evidence now and get the latest and greatest in real time specific to that patient and that particular question that you have without having to sift through everything else that's not really related to that question in that moment of time and caring for that particular patient.

That is a massively powerful tool. But to your thought process, it doesn't take the place of a physician for the reasons you just described. And I don't think that it ever will to the degree that we hope it will.

And I, and I, and I, I believe that physicians will, I think there'll be less physicians in time given powers of these LLMs, but ultimately that patient to patient, you know, patient to doctor interaction is going to be irreplaceable.

You're not going to see, you know, Elon's robots taking the place of that physician. I don't think to any significant degree anytime soon. What are your thoughts on that?

Let's project out 10 years, and you've got Elon robots and other robots running around in the clinical setting. What does that look like for you? What do you think that that future will look like, and how will that play out, and how do you hope it doesn't play out, and how do you hope that it does play out?

Well, I have a podcast episode I'm working on, which is entitled, The Doctor Won't See You Now. which is basically built around you make your appointment with your doctor.

It takes you a month and a half to get to see your doctor. And then you end up in the exam room and your doctor doesn't walk in. You've got a nurse or a nurse practitioner or a physician's assistant, and it's not what you thought.

And so I am exploring what the evidence tells us. You know, should you be unhappy about this? Should you be happy about this? What does the evidence tell us about quality of care and various things?

And there's absolutely a role for non-physicians in caring for you, but it has to be in the proper circumstances. So, okay. So that's kind of where we are today with the training of these other providers and versus a physician and where's the role of physician.

Okay. So now crank it forward 10 or 20 years. I believe there will be huge inroads into the care we receive that's delivered by AI. Now, that doesn't mean there won't be doctors.

Maybe the doctors will take on a completely different role, but I'll give you a couple of examples. Already, AI can do better at looking at mammogram results, looking at the back of your eye results than humans can.

They're now able to pick up things on MRI scans like cancer detection that humans can't because the ability to differentiate little shadows from this, that or the other.

So we're already seeing areas of medicine. Now this is probably 0.1% of medicine. there's a lot being done on diagnosing skin lesions. Well, is it cancer or is it just a freckle?

And people take pictures of these things. And again, the AI is equaling and sometimes bettering physicians. So we're seeing it in lots of different areas.

My wife was diagnosed recently with stage four endometrial cancer. Luckily, she is doing very well, but she underwent a very extensive surgery. Now, the doctor used a robot to do the surgery.

Now, when people think of that, they're like, oh, you just push a button and the robot does everything. No, it's robotic in the sense that she never, in essence, never touches Gale.

there are just these probes that go into you like some science fiction movie that cut and do this that the other and she's got a joystick and is looking at a computer screen now obviously there is a human very much involved in making it happen but it's not a huge leap To say, well, you know, the robot has now observed a thousand of these operations.

Might it be able to do some of it? Most of it, all of it on its own. And I think the answer is probably yes. You know, if you go back 30 years. Diabetics had to prick their finger, check their blood sugar, then determine their insulin dose and then give them a shot of insulin.

Then we invented the continuous glucose monitor. So now people have this thing on their arm and it has a readout of what your blood sugar is. And so people look at that and say, oh, okay, my blood sugar is this, I'm about to have lunch.

I'm going to give myself an injection of this amount of insulin. I don't have to prick my finger, but I do have to give myself the insulin shot. So that was the next phase.

Then the third phase was, why do I have to keep giving myself a shot?

Where to Find Dr. Bobby

Can't we just put a port in with a reservoir and dial in how much insulin it needs? Great, now I don't have to stick myself to get my blood sugar and now I don't have to stick myself with insulin.

So the final piece of the puzzle is called the close loop, which is why do I as a human have to do this? It's just an

algorithm. Can't we just connect the glucose monitor that says your blood sugar is 200 and the time of day when you're gonna have lunch with how much insulin you need and just get rid of the human part of this.

and not routine, but this is out there. So we're seeing all of this happening in an evolution. And I think a lot of this will happen. Will Elon Musk robots, you know, take a full history, do a physical exam, do everything?

No, but it can probably do a lot. And, and I don't know what it'll look like completely in 20 years, but I can tell you it's only going in one direction.

How far, how fast, I don't know. But we're moving in that direction. That's fascinating. Yeah. Well said. Yeah. So interesting to contemplate. Exciting.

And I think it'll help patient care on the whole. Absolutely. It already seems to be. We're already seeing that at play, as you described. Wow, this has been a fascinating conversation.

We could probably go for hours. And hopefully we get to talk again in this context or outside this context. I'm so honored and privileged to have you on my podcast.

I'm excited about joining with you as a new friend. And I think you're an amazing guy and your thought process, the way you think is really on point. I'm a huge fan.

So thank you for being here today. Tell us where we can find you. You mentioned your podcast. Tell us where else we can find you and how you might help others.

Absolutely. So my podcast is called Live Long and Well with Dr. Bobby. You can just go to Apple, Spotify, wherever and just put in Dr. Bobby and you'll find me.

So that's easy. If you want to find me on the web, I have a long web address, but if you just put in Dr. Bobby evidence, it'll find me again. And you can sign up for my free newsletter and learn all sorts of cool things, because I have a whole host of articles on lots of different topics that you might want to take a look at.

And in my spare time, Gail and I run an exotic animal ranch. and bed and breakfast, where a lot of the principles of longevity and wellness are kind of embedded in the guest experience.

And if folks are interested in that, they can look at my kangaroos and alpacas and whatever else, and sauna cold plunge, all the rest, yoga studio and fitness center.

That's called Madrone Springs Ranch. which has really very little to do with my other stuff, but it's a lot of fun and people enjoy coming here. So that's something we're outside of Austin, Texas.

So it's, it's a fun place to be. That sounds amazing. Yeah. My wife and I would sign up for that in a second. I'm going to tell her about it actually.

That's awesome. Take a look at the website. There's a wonderful video, gives you a sense of it. It's on Instagram, Madrone Springs Ranch. And we have all sorts of crazy things.

We now have a three legged kangaroo because she severed her leg, back leg, which is a really important leg for a kangaroo. And she had to be the foot, the leg amputated, which is almost never done.

I don't think anybody ever done it around here. So she's coming home today. So that, that her name is sweet potato and she's the daughter of sweetie. So we have about a dozen kangaroos among all the, we have about 75 exotic.

So it's great fun. Wow. That's amazing. That sounds incredible. Yeah. I'd love to see that. Yeah. Great. Well, thank you so much, Bobby. It's been amazing.

Thank you so much for being here. Oh, it's my great pleasure. Thanks for having me. My pleasure. You take care now. We'll see you. Thank you for watching and or listening to the Every Young Podcast.

This podcast is for educational purposes only and is not intended to diagnose, treat, or cure any disease. I'm Richard Hanley, a licensed and board certified physician associate, PAC, trained at Harvard Medical School and the USC Keck School of Medicine.

And while I do hold two doctoral degrees, including the doctor of medicine and doctor of health science, I'm not a licensed physician. I also hold a master's degree in healthcare quality and safety from the Harvard Medical School and bring over 30 years of clinical and executive leadership experience.

I continue to serve as an interviewer and admissions assessor for Harvard Medical School's Master of Science in Health Care Quality and Safety program.

That said, the views expressed herein are entirely my own and do not represent the official views of Harvard Medical School. Always consult your own health care provider before making any medical decisions.

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Remember, age is just a construct. Vitality is a choice. Stay ever young. Thanks. We'll see you next time.