Transcript

00:00:09 Speaker 1

Welcome to season two of UBC CPD in Practice, a podcast for health professionals where we sit down with expert colleagues to learn about leading edge clinical medicine and share practical tools and knowledge you can apply to your daily work.

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I'm your host, Dr.

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Chris Morrow, Associate Dean of UBC Continuing Professional Development.

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The In Practice podcast is recorded on the traditional, ancestral, and unceded territories of the Musqueam, Squamish, and Tsleil-Waututh peoples.

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In this episode, I'm joined by Dr.

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Adam Shalevsky, an emergency physician, researcher, and educator based in Ontario.

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His academic work focuses on cognitive load theory and its application to clinical practice.

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Dr.

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Shalevsky is an associate professor at Queen's University, where he also serves as an educational scholarship lead in postgraduate medical education and program director of the Fellowship in Resuscitation and Reanimation Medicine.

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He's the principal CPD strategist for the Royal College of Physicians of Surgeons of Canada and host of Key Lime Plus podcast, a medical education podcast exploring innovations in medical education and their impact on the healthcare landscape.

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Today, we'll be talking about cognitive load theory in medicine, what it is, how to manage it, and how it shapes the way clinicians think and make decisions in everyday practice.

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We'll get into how cognitive load shows up in clinical environments and techniques for

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for managing it.

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So let's dive right in.

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Well, welcome, Dr.

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Shalepski.

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It's so exciting to have you today and to be able to discuss cognitive load and other things together.

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Well, thanks, Chris, for having me on your show.

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We're very excited to have you.

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And I know you've done a lot of amazing work around cognitive load and how clinician thinks.

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I think you've even been said to say that one of your big interests is in how clinicians think.

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Did you want to tell us a little bit about just right off the bat, the basics of what is cognitive load theory?

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For sure.

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It's a big topic and it's typically a topic that is mostly grounded in educational science, but we've tried to borrow it and bring it into medicine as well because there's so many parallels.

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But the short version is cognitive load is the amount of working memory resources that an individual is investing or using at any given time to accomplish a task.

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And usually that's a learning task.

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And are there different components of cognitive load that you think?

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If we really want to simplify it for listeners of this show and for most clinicians, I would say that there's intrinsic cognitive load and extraneous cognitive load as the two major components.

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Intrinsic cognitive load relates to the difficulty of a task and is really influenced by someone's prior knowledge.

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So what that means is if you're an expert in an area and you see something that you've seen before and you're already quite familiar with it, that might not take as much mental effort as it did 20 years before when you were learning your trade.

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And so that's what we talk about when it comes to intrinsic cognitive load and the complexity of the material and the prior knowledge of individuals.

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Extraneous cognitive load is a little bit different and it relates to extraneous stuff that takes up brain space but isn't actually conducive

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to learning at all.

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So there's some practical things like, the traditional way we thought about this was in educational environments.

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So how noisy a room was, the temperature of the room, the comfort of the learners.

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those kind of basic things are extraneous to learning.

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Okay, great.

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So that's good to hear.

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So that's a little bit of theory about cognitive load.

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And I guess for our listeners, we're going to try and relate this to their practice and maybe how they might make their work better or more efficient or more enjoyable.

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So tell me a bit, I know you've been doing work in translating that theory into clinical medicine.

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What have you been up to?

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Well, we've done, and this is all work that I get to support, but it's mostly

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really smart residents and graduate students and medical students who are actually doing the work.

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There's some cool stuff that we've looked at.

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Some of these studies are getting a little bit older now, but some of my favorites have been using eye tracking to augment cognitive task analysis type interviews.

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of clinicians in busy environments and trying to figure out how they think and getting under the hood of their thinking using some of that technology.

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That's been a really fun thing.

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Another really fun project has been measuring cognitive load.

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It's a tough thing to do sometimes in non-laboratory environments because...

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As we all know, our real world is a really complex, messy thing.

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So measuring cognitive load can be a little bit tough there, but we've done some work in that as well.

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And then translating the theory into practice, because I mentioned at the beginning of our conversation, cognitive load theory is really is an educational theory, right?

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It's born out of classroom settings.

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What we're talking about now is its translation into learning settings in sort of residency and medical school curricula, but also in performance type settings for attending physicians who are working

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working in these complex environments.

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So it sounds like super interesting work, and I definitely agree with you.

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Cognitive load is a big part of practicing clinical medicine, and that applies to us.

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We're both emergency physicians, but to anybody who has a busy practice or a busy environment, the load can definitely go up and impact you in a big way.

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Oh, it's huge, right?

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Because in the emerge anyway, as we take on more and more patients on a given shift, that's going to add to our load, but then we're interrupted because there's a phone call from another physician who's hoping

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send someone to the emerge and then there is a clarification of an order and maybe there is a patient who's getting progressively more sick all at the same time.

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And all of these things are adding to that burden.

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I think any clinician has felt this before, right?

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I would say every single clinician, no matter the specialty, feels it in some way.

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And so, you know, when I was going through residency training, I was feeling all of these things that we all feel, but we don't always talk about and simultaneously, sort of serendipitously, I was also reading

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some cognitive psychology books that a mentor of mine had suggested I read.

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And I was looking at this and I was saying, there's so many parallels here.

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I think we can start explaining some of what we do in clinical medicine and the way that we think based on some of these theories from cognitive psychology.

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They just apply so well.

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And that's how this interest began.

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Yeah, and it's really fascinating thinking about how do they, those clinicians hold it all together when there's so many balls in the air, so to speak.

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And I know that it definitely, you can see how applicable it is to emergency medicine, but really the family doctor with a really busy clinic, urgent care, a busy hospitalist with multiple patients on their list.

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I mean, it probably applies to everybody who practices clinical medicine.

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Yeah, I think you're absolutely right.

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I think we can all also identify if we've been in clinical practice for long enough.

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that the way that you deal with and manage those challenges changes with time.

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Like I still remember being a senior resident and a junior attending, struggling a lot more with.

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what now has become to some degree second nature.

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It'll never be fully second nature, but I feel like I can manage more now than I did before.

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And it's not like I'm any smarter than I was.

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It's just that I've developed certain cognitive schemas to identify certain types of illness patterns, to deal with things like uncertainty, to be able to flow patients through a department.

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And it's not magic, it's just it's experience.

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But it's fascinating to see how your level of cognitive effort for any given task changes over time.

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I hadn't really thought of that.

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Speaking of that, what have you learned or what do we know about how clinicians work under pressure, a busy clinician?

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What are some observations?

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Like if we're looking at it from a cognitive load theory perspective, I think the first starting principle is that the amount of working memory anybody has is a static entity.

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So we talk about the ability to reason and to manipulate anywhere from five to seven independent pieces of information at any given time.

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point in time.

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And that doesn't change.

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Whether you are a junior medical student or a senior attending doc with 25 years experience, your working memory in general, some exceptions, it doesn't change very much.

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But what you do with that working memory changes.

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So the example I always give is like the example of heart failure.

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So you'll remember when you were a medical student,

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You learned about heart failure.

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You learned that sometimes patients present hypoxic and they might have crackles when you auscultate them.

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Nowadays we're doing POCUS, of course.

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So there's beelines on POCUS and they might be a little bit hypertensive and maybe you can give some positive pressure or diuresism.

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There's six things right there.

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And you're trying to keep that all together and it's tough to remember what you need to do.

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But now I bet you if you, Chris, were to look at a heart failure patient, you wouldn't think of all six of those things, you'd think about two things.

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You think about what is this and what do I do about it?

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And what is this?

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Well, you've seen heart failure patients in the past.

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You know what they look like.

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That now is 1 little chunk of your working memory as opposed to five or six.

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And what do you need to do about it?

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you probably have an approach.

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You have a general way that you manage patients like this, and that is the second piece of your working memory.

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And now all of a sudden, instead of having six or seven independent chunks of information that are taking up the space in your brain, you only have one or two.

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And so you've developed that automated schema in order to make that easier for your working memory to deal with.

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So I think that's part of what happens to busy clinicians, and that's how busy clinicians get better with time.

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Now there's other pressures on your working memory that we haven't talked about yet, but it's fatigue.

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There's ideas around working memory depletion, where at the end of a shift, you might not be making decisions at the same quality level as you were before.

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We can all probably attest to that.

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And then there are also effects around sleep deprivation, stress and emotion that also take up cognitive resources.

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And there are ways to strategize and to make that better with preparation, with experience.

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And then there's other things that you can't really

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prepare for.

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Interesting to hear you describe the working memory.

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It reminds me of RAM in computers, the same kind of idea.

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It's funny though.

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I remember when RAM was a real big thing when there wasn't a lot of RAM in computers, but nowadays, I don't even know, it's like terabytes of RAM.

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And so at this point, it's sort of unlimited, but your brain and my brain, we're still operating on like a 1998 RAM system.

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Exactly.

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That's pretty funny.

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So we've seen how clinicians perform under pressure and how as we get better

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schemas you mentioned, then there's less load and maybe you will be more efficient or be able to take on other things.

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I can totally relate to that and I can picture the student or the resident that's really bogged down because they've got this vast amount of knowledge that they're sort of trying to figure out what's important and what's not.

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Yeah, lots about learning.

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What are some skills besides just getting experience that can help people with cognitive load?

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You know, experience is important and we can never, I don't think there are any real great shortcuts for experience, but there are some strategies that I think are worth talking about because I don't think they get taught as often as I think maybe they should.

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And I'll give you an example from simulation that I think illustrates this point.

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So we've done lots of simulation studies around ideas of cognitive load and the way doctors make

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decisions under pressure.

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And one of the examples that I sometimes like to give is the example of a sim of a ruptured abdominal aortic aneurysm patient.

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And so here's a patient who.

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comes into the simulated recess bay.

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And, you know, this is an older guy who's in his 80s and he comes in with abdominal pain and he's pale and diaphoretic and hypotensive and maybe a little tachycardic and his belly is really tender.

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And, you know, the residents are very quick to assess the patient.

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They get a pocus, there's a big aorta, you know, so there's not a huge diagnostic dilemma here, but it's really fascinating to watch how novices and more expert physicians approach this patient because the novice will do

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certain things that the expert doesn't do.

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So for example, as you know, as part of any workup of any real sick patient, every patient gets a set of vital signs, gets an IV, and often will get an ECG and a couple other tests right off the bat.

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And so in this sim, we provide, along with the vital signs, within a minute or so, an ECG for this patient, because that's something that comes up.

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And it's interesting to watch the juniors look at the CCG

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and they focus on it, right?

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And they're looking hard at every single interval and they're spending time and we put eye tracking glasses on them and so we can see exactly what their eyes are looking at any given point in time.

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So that's one set of behaviors.

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And then you take the expert and you put that expert in that same room.

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And guess what that expert does when he or she receives that ECG?

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They look at it.

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Looks at it for a second.

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Yeah, great.

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And they move on with it and they pick up the phone and they call the vascular surgeon, right?

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And so I find that really interesting because here is the same information, it's the same clinical case,

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but the way that information is processed is a little bit different.

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And what I'm getting at here is the attention to task relevant details.

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That's what we call this in cognitive psychology.

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We call this attention to relevant details and then appropriate deprioritization of task irrelevant stimuli in your environment.

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And so in this particular case that I just described for you, that ECG in the case of a patient with a ruptured AAA, that ECG frankly is not that helpful because I can tell you what it's going to show.

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There's going to be some tachycardia.

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There might be some diffuse

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depression, and I don't actually care about either of those things.

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What I care about is the impending disaster that's happening in the abdomen.

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But when I was a medical student, I for sure would have taken that ECG and I would have been staring at it because that answer has to be there somewhere.

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Why would I be given this ECG otherwise, right?

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I find that kind of behavior really fascinating to study, and that's what we've been looking at.

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Amazing.

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Then have you seen any pitfalls that people fall into with cognitive load that steers them the wrong way or they should avoid?

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There's lots of pitfalls.

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To really set this example up, I'll have to take a step back and talk a little bit about the way we make decisions.

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There's a few different theories, but one of the theories that's popularized and developed by Daniel Kahneman, who was a behavioral economist who died not that long ago, who's a Nobel Prize winner as well for this work, is this idea of a dual process model of system one and system two thinking.

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System one thinking is

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Exactly, Thinking Fast and Slow, that's his famous book.

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Actually, when I mentioned earlier to you that I was reading books while I was in residency, this is the book that kind of changed the trajectory of basically my career and wanting to do research in the 1st place.

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But anyway.

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System one thinking is typically pattern recognition thinking, quicker thinking, and it's thought to be prone to error sometimes.

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Whereas system two thinking is supposed to be a little bit less error prone.

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We look at first principles and it's a little bit more analytical.

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There's not one system that's better than the other system.

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You just have to know when to use the right one.

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But when you're asking about pitfalls, one of the pitfalls is an over-reliance on system one sometimes.

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And the strategy around that is really to listen to your spidey sense, right?

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So we've all had cases that look like a certain thing until they don't.

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And if you really start to analyze, what was the thing about that case that made it look like something else?

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Well, there was often some kind of piece of information, whether it was on history, on physical, on an investigation that didn't quite fit.

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The quote, good clinician will listen to that and will say, my spidey sense is saying that this is something weird, there's something different about this patient.

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And so I need to slow down here a little bit and to think a little bit harder.

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Surgeons talk about slowing down when you need to.

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That's a phrase that's been used in the surgical literature.

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And it's the same sort of idea for clinicians who maybe don't do a lot of technical skills.

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It's slowing down your thinking process when you need to.

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And there's a lot of analogous ideas between those two things.

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Interesting.

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So what I'm hearing now is cognitive load theory is crossing over maybe into the world of cognitive error.

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And that's really pretty fascinating area as well.

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So I promised our listeners that I know we might be talking about a little bit, but that also this is applicable to everybody who's got a busy practice.

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So.

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I know that you've studied some strategies or tools to help deal with cognitive load.

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I've heard about the medical pause, about pre-briefings, about checklists, all sorts of things.

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Did you want to comment on any of those?

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Yeah, I mean, my favorite of all those things that you mentioned is the pre-brief, or some people call it the zero point survey.

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And I know this is sort of emergency medicine centric.

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And so I'll have to apologize for that because that's what happens when you get two emerge docs talking to one another.

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But the pre-brief, I think, is a really critical thing.

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What it is, when you.

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a sick patient is coming to your department, the wrong thing to do is to just arrive at the same time as the patient arrives in that room and to start to get things going.

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The right thing, and this is only if you have time, but even if you only have two or three minutes, is bringing your team into that room before the patient arrives and anticipated priorities.

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It can take a few different forms, but one of the forms that I like to use in a pre-brief is to use mental simulation.

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And so I think about, the really tough cases when a traumatic cardiac arrest is coming in to the emerge and there's three or four or five things that we have to do for all those patients and they usually include.

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decompressing both sides of the chest, getting some IVs and fluids into these patients and intubating them in fairly short order.

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Those are many of the things that we do in addition to a few others, but those things always have to happen in a traumatic cardiac arrest.

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And I find that if you ask the people in your room to mentally simulate what they need to do in the first minute after that patient arrives, it's the best type of preparation.

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Because what it does, so for example, if I ask you, Chris, to be tasked with decompressing one side of the chest and you think

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about how you're going to do that, well, all of a sudden, you're going to make sure you have your equipment.

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You're going to make sure that you have a scalpel, you have a gloved finger ready to go.

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Maybe you have a large bore chest tube.

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Maybe you have a Kelly.

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But if you haven't mentally simulated that, there is a chance that in all the chaos that ensues when a patient like this comes in, you might have forgotten to have your Kelly, or you might have forgotten to have your scalpel ready.

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And it's not to say that you didn't know those things were important, but when there's so much happening at the same time, it's

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sometimes it's difficult to remember those little things.

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And so that mental simulation is really helpful.

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And it's not just helpful from an equipment perspective.

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It also is helpful to kind of steady your thinking so that you know what's coming next and what the next steps are.

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So that's one of my favorite things when it comes to pre-briefing.

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Yeah, I've really found that super helpful too.

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And now I'm gonna, tell me what you think.

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I'm gonna try and translate this into like the primary care environment where a clinician is about to go in and see a complex patient and they can see on the chart that there's multiple complaints.

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It would probably be a good idea to, if not with the team, but by themselves, think about the visit before they go in.

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and what they might anticipate, rather than walking in cold and then being bombarded with a lot of unexpected things.

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Does that make any sense?

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Oh, it totally does.

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I mean, you're describing.

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a structure.

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And essentially what I was describing in the traumatic cardiac arrest example is also just a structure, just a slightly different structure.

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But I think if you have that set up in your head, you're going to be expending less cognitive load and trying to, well, number one, remember all the things that you wanted to cover, but also doing so in an organized way that makes sense to both you and your patient.

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So let's switch gears.

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What's this medical pause thing?

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Tell me about that.

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Well, the medical pause is a similar concept to that pre-brief that we talked about, but the medical pause can take lots of different

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And the main researcher on the study that you're talking about, the medical pause study is someone named Joy Lee, works in Belgium.

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And she's looked at medical pauses in serious medical gaming.

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So they're gaming platforms and it can also be done in virtual reality platforms where you have a medical case that you have to work through.

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And she's described that cognitive load is optimized when you do pause at certain junctures in that case, which makes a lot of sense.

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If we were to translate that into the more messy world of, again, a recess,

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to that 'cause that's my world.

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The way that actually looks sometimes is in the form of a recap.

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I don't know if you've ever been in a busy room where there's lots going on and there's 50 different priorities.

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And then at some point, once things are a little bit settled, the team leader says something like, okay, let's just recap where we've been and where we're going.

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So we have done A, B and C for this patient with this issue.

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Our next priorities are D, E and F.

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And to me, that serves a couple of purposes.

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One, it serves the purpose that it gets your whole team on the same page, and so it helps to distribute some of that cognitive load.

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They talk about these concepts of shared or group cognitive load.

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That's one part of this.

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But the other part of this is a really good way for the team leader to get their thoughts grounded a little bit.

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As you put that out there, it allows you to structure things and it allows you to simplify things.

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And essentially what you're doing there is it's a type of pause.

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You are slowing down, you're getting your thoughts together again, and you're reprioritizing.

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And that's a way of pausing.

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And that's this idea of a medical pause.

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I love it.

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thinking about with I'm interviewing somebody and it's complex and I'm maybe not sure where I'm going, it helps to just stop and summarize.

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And I think that's a tool that a lot of people have met as well with the patient.

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So there's something about that process where you're communicating with the patient, but it's also taking you through your mental algorithm and often leads you to the next step because you've reflected it allows space for insights.

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That you might have not been thinking about in the first place.

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And if you're in a team environment, it allows for insights of other team members to come up to the

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surface as well.

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Right, okay, so that's the idea of the medical pause.

00:21:47 Speaker 1

What about things like checklists, cognitive aids?

00:21:51 Speaker 2

Yeah, I think checklists have a role for sure.

00:21:53 Speaker 2

And checklists have been shown to reduce cognitive load as well.

00:21:57 Speaker 2

I think we just have to remember who we're targeting with some of these strategies.

00:22:02 Speaker 2

And the only caution I would give around checklists is sometimes in certain circumstances, and I'm thinking of sort of the more rare circumstances when patients are particularly sick, sometimes checklists can get in the way if checklists themselves are exerting an extraneous cognitive load to the task that you have at hand.

00:22:22 Speaker 2

So if the checklist is well designed for your specific case, then they have an excellent role.

00:22:27 Speaker 2

But if you're trying to fit a square peg in a round hole, you're going to get into issues.

00:22:32 Speaker 2

So the perfect spot for checklists are for complex routine procedures.

00:22:37 Speaker 2

You're thinking about the OR, you're thinking about central line checklists for a patient who's mostly stable, makes a lot of sense.

00:22:42 Speaker 2

Or even in trauma patients, we have checklists before the patient leaves the room, we want to make sure we've done these things because they're easy to forget.

00:22:50 Speaker 2

And so there certainly is a role,

00:22:51 Speaker 2

But I just, I caution that checklists aren't always, it's not always a panacea.

00:22:55 Speaker 2

We have to be mindful of when we're using checklists.

00:22:58 Speaker 1

Yeah, and I also know that like if I find a new diagnosis, even in a clinic of.

00:23:02 Speaker 1

diabetes or AFib, it's really helpful to have some kind of list somewhere to unload me 'cause there's so many variables.

00:23:09 Speaker 1

And I think that's where people also appreciate pathways that have been provided.

00:23:13 Speaker 1

That's an example of a checklist.

00:23:15 Speaker 1

And I do, I think the surgical checklist has just revolutionized the surgical world, right?

00:23:20 Speaker 1

It's a big piece now.

00:23:21 Speaker 2

Huge, and I mean, it's huge for patient safety.

00:23:24 Speaker 2

I mean, there's lots written about that and cognitive load theory is related to that, but it's a bigger concept.

00:23:31 Speaker 1

And I think you probably don't think about it very much, but when I was preparing to speak to you and thinking about this, it really makes one reflect on their own practice and how cognitive load impacts them and how maybe that you deal with it in your practice.

00:23:45 Speaker 1

And there's probably something really good about reflecting on that no matter what your practice environment is and you could.

00:23:51 Speaker 1

come up with some things that can help you, like taking pauses, like having lists, like being aware of cognitive load, like summarizing.

00:23:58 Speaker 2

Yeah, just naming the concept I think is powerful.

00:24:01 Speaker 2

One of the things that I enjoy the most is just the language and how the language has changed over the last, I've been in the field for, we'll call it 10 to 15 years if you include residency.

00:24:13 Speaker 2

And early in my residency, I don't think anyone was really, maybe some people were talking about it, but I didn't hear anybody talking about cognitive load, and then we started doing this work

00:24:21 Speaker 2

And it's not just us, right?

00:24:23 Speaker 2

It's a larger group of researchers.

00:24:25 Speaker 2

We started naming these things and bringing it back to medicine.

00:24:28 Speaker 2

And now when I hear the residents speak amongst themselves, like they will often call out cognitive load very specifically.

00:24:35 Speaker 2

I was at a meeting earlier today with hospital leadership and.

00:24:38 Speaker 2

We were talking about our electronic health record, which is one of these soapboxes I like to get on sometimes.

00:24:43 Speaker 2

But what came up a lot was the cognitive load.

00:24:45 Speaker 2

And this is something that's making its way into our lexicon.

00:24:49 Speaker 2

And I think it's for the better.

00:24:51 Speaker 2

I think people are starting to understand that we all have a very finite limited capacity in terms of our working memories.

00:24:58 Speaker 2

And if we can start identifying that, then I think that goes a long way in optimizing some of our systems.

00:25:05 Speaker 1

Yeah, amazing that you just mentioned that because that was my next question or my next topic.

00:25:10 Speaker 1

I was gonna talk about what electronic medical records and in particular computerized order entry has done to cognitive load.

00:25:17 Speaker 1

Because in my own experience, it's been a quantum leap in cognitive load in the extraneous zone.

00:25:23 Speaker 1

So you took a task that was already hard and gave me 15 more clicks and more places to think about and go.

00:25:28 Speaker 1

Any thoughts on that?

00:25:30 Speaker 2

The optimist in me would say electronic health records have the potential to make our lives so much better and to reduce cognitive burden, administrative burden, and make day-to-day easier.

00:25:42 Speaker 2

I use potential very purposefully there because I think in reality, that's not actually what's happened.

00:25:47 Speaker 2

You talked about 15 clicks.

00:25:49 Speaker 2

There's no doubt that poorly designed electronic health records are, these issues are rampant there, right?

00:25:55 Speaker 2

So extra clicks, extra screens on any given screen, you might have 75 different pieces of

00:26:00 Speaker 2

three of which are relevant and you have to know the system well enough to be able to identify those without being overloaded by all the other junk.

00:26:07 Speaker 2

So an example that would be relevant in emergency medicine and primary care is a penicillin allergy.

00:26:12 Speaker 2

Every time I order cephalexin on a patient with a penicillin allergy, I get 50 pop-ups.

00:26:18 Speaker 2

Are you certain that you want to go ahead and do this?

00:26:21 Speaker 2

And maybe it makes sense to give me one pop-up, maybe, but we all know that the cross-reactivity of penicillins and cephalosporins

00:26:30 Speaker 2

in terms of allergy is quite low.

00:26:32 Speaker 2

It's not zero, but it's very low.

00:26:35 Speaker 2

And so if we think about the cognitive burden that all those pop up windows create, is it worth it?

00:26:42 Speaker 2

And maybe sometimes it's worth it, but I think an intentional design would suggest that the way that's done is not done well.

00:26:49 Speaker 1

You made me think I was reflecting on, you know, back in the day, you might have a paper chart or in a family doctor's office, you have a one pager that summarizes the patient's medical conditions.

00:26:59 Speaker 1

And now with

00:27:00 Speaker 1

electronic medical record, you're kind of overwhelmed.

00:27:03 Speaker 1

You're basically bombarded with data and that's an additional cognitive load.

00:27:08 Speaker 2

I would also, just to build on your point, the hope is that artificial intelligence will help us in some way to summarize these incredibly long electronic medical records where sometimes it's hard to find the relevant information that you need.

00:27:23 Speaker 2

That's the promise of that and hopefully that will bear some fruit and I think it is in some areas.

00:27:30 Speaker 2

But that hasn't really translated down to the front line yet in an effective way.

00:27:34 Speaker 2

I'm still waiting.

00:27:35 Speaker 2

Maybe your system is better than mine.

00:27:37 Speaker 2

I don't know.

00:27:37 Speaker 2

But let's hope, right?

00:27:39 Speaker 2

Eventually, maybe it will make our lives easier.

00:27:42 Speaker 1

So in addition to all your other roles, I know you have a role at the college, you're in a merge doc, you do other things.

00:27:47 Speaker 1

You are also the host of Key Lime.

00:27:49 Speaker 2

Yeah, Key Lime, it was rebranded Key Lime Plus a couple of years ago, and it is one of my favorite things to do is to get an opportunity to speak with a whole bunch of smart people and cold call or cold e-mail them and see if they want to chat with me.

00:28:05 Speaker 1

And the focus of Key Lime is.

00:28:07 Speaker 2

So the focus of Key Lime Plus is to get the stories behind the papers and to get the stories behind policy decisions in medical education.

00:28:14 Speaker 2

So often what we'll do is I'll find a paper

00:28:18 Speaker 2

that I find is really exciting and interesting.

00:28:20 Speaker 2

And I'll ask the author to come on the show.

00:28:21 Speaker 2

We'll talk about some of the findings from the paper, but mostly we talk about implications and we talk about some of the stories that maybe don't come through in the manuscript itself and what do the results mean for practice and for education?

00:28:35 Speaker 1

So mostly medical education focus.

00:28:37 Speaker 2

It's primarily medical education focus, but we sometimes we've broadened our interviewees out a little bit.

00:28:43 Speaker 2

to also talk to people who are, I'll call them medical adjacent, who have some really great insights that we in medicine can learn from.

00:28:49 Speaker 2

So for example, this past season, early in the season, I interviewed a retired fire chief for the New York Fire Department about leadership, about mentorship, and about,

00:28:59 Speaker 2

coaching because they do that obviously in that field and we can learn a lot in medicine from those folks.

00:29:04 Speaker 1

Right, that sounds interesting and I'm sure a lot of our listeners probably recognize your voice because they're already Keen Lyme Plus listeners but if you're not you should check it out.

00:29:14 Speaker 1

All right, it's time for our knowledge nugget.

00:29:16 Speaker 1

So there's no surprise that there's plenty of research out there looking at how cognitive load impacts clinicians and their practice patterns.

00:29:23 Speaker 1

For example, studies estimate that clinicians make hundreds to thousands of micro decisions in a single day.

00:29:32 Speaker 1

From medication dosing, interpreting tone, answering questions, or assessing risk, these all take up mental resources.

00:29:40 Speaker 1

And noise alone increases cognitive burden.

00:29:43 Speaker 1

Background alarms, conversations, and overhead pages increase mental workload even when being consciously ignored.

00:29:50 Speaker 1

The brain still expends energy filtering irrelevant stimuli, making busy clinical environments cognitively expensive.

00:30:00 Speaker 1

And so decision fatigue is a real thing in medicine.

00:30:03 Speaker 1

Research has also shown that clinicians become more likely to prescribe antibiotics,

00:30:08 Speaker 1

defer difficult conversations, and to choose default options later in a cognitively demanding day.

00:30:17 Speaker 1

And speaking of demanding days, have you ever noticed your empathy wanes as the day goes by?

00:30:23 Speaker 1

I think we can all relate to this as patients and providers.

00:30:27 Speaker 1

When cognitive demands rise, the brain shifts resources towards task completion and away from social emotional processing.

00:30:36 Speaker 1

So ironically, physicians under the greatest cognitive stress may appear less empathetic precisely when patients need them the most.

00:30:45 Speaker 1

However, there is some good news.

00:30:47 Speaker 1

As we become more expert, clinicians take information in bigger chunks.

00:30:52 Speaker 1

As our reasoning becomes more intuitive, we can do more with the same level of cognitive load.

00:30:57 Speaker 1

So hang in there everybody and use those tools Adam described in the podcast.

00:31:04 Speaker 1

So I've really enjoyed this conversation.

00:31:06 Speaker 1

I mean, we started with some basic theory on cognitive load.

00:31:09 Speaker 1

We talked about how it applies to medicine.

00:31:11 Speaker 1

We talked about some practical things you can do in your practice to help with a busy day and overload.

00:31:16 Speaker 1

And then we had a little bit of a gripe at the end about increasing cognitive load in medicine.

00:31:21 Speaker 1

I think our listeners are going to have a lot to think about and maybe take home some tips and maybe do some more thinking or learning themselves as well.

00:31:30 Speaker 2

Chris, it's been a pleasure to talk to you about my favorite topic.

00:31:34 Speaker 2

So I appreciate the invitation and it's been a great conversation.

00:31:38 Speaker 1

Thank you so much, everybody, for joining us for this episode of CPD in Practice.

00:31:43 Speaker 1

And a big thank you to Dr.

00:31:45 Speaker 1

Adam Shalevsky for sharing his expertise on cognitive load theory and how it shapes the way we learn, think, and work in clinical practice.

00:31:54 Speaker 1

We hope you're able to take away some tools you can use to manage cognitive load, whether that's pausing to reset, creating checklists, or summarizing loud.

00:32:03 Speaker 1

I don't know about you, but I'll be thinking a lot about Adam's inspiring question.

00:32:07 Speaker 1

What can I do to be 1% better every day in my clinical practice?

00:32:12 Speaker 1

And what the heck, maybe I'll go for 2%.

00:32:18 Speaker 1

Thanks for listening to CPD in Practice.

00:32:21 Speaker 1

Season two of CPD in Practice meets the certification criteria of the College of Family Physicians of Canada and has been certified by UBC CPD.

00:32:29 Speaker 1

To learn more about today's episode, find related resources and references, and learn how to earn Maine ProPlus credits through CPD in Practice Plus, visit ubccpd.ca/inpractice.

00:32:43 Speaker 1

Research mentioned in this podcast is listed in the show notes.

00:32:47 Speaker 1

CPD in Practice is produced by Julia Donahue with research and administrative support from Camilla Ho.

00:32:52 Speaker 1

Our original music by Andre and Michael Diacanu of Cosmic Mansions is inspired by West Coast and Amazonian medicine music traditions.

00:33:02 Speaker 1

I'm Dr.

00:33:02 Speaker 1

Chris Morrow.

00:33:03 Speaker 1

Thanks for listening to In Practice and we'll see you next time.