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**TRANSCRIPT - GR 06 24 22 “Pitfalls of Reasoning in Medical Practice” – Donald Redelmeier, MD from the University of Toronto**

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- I am very excited today to introduce Dr Don Redelmeier.
- 00:24: a physician and division of general medicine at stony brook health sciences Center in Toronto, and a professor of medicine at the University of Toronto.
- 00:24:16He received his medical degree from the University of Toronto, and then a masters in health services research from Stanford university.
- 00:24:23In his academic career to explore how positions and.
- 00:24:31judgments and make.
- 00:24:36is in fact the Canadian.
- 00:24:37Research chair of medical decision making, and is it knowledge as a national.
- 00:24:41specialist in the area areas of cognitive psychology and clinical reasoning in this vein, you also functions as a senior research scientist at the sunnybrook research institute.
- 00:24:51And the Institute for clinical evaluative sciences back to read liars the earliest work.
- 00:24:58On the link between cell phone, use and road collisions receive international attention and lead to policy debates over a new over new legislation in Canada and beyond.
- 00:25:07Today, you will use his expertise to speak to us on pitfalls and metaphor reasoning, please give a warm welcome Dr da higher.

**Don Redelmeier**

00:25:18Thanks very much Sam it's a it's a privilege to be here.

- 00:25:22Thanks also to the aura.
- 00:25:23Of the audience for for organizing the hassles and dealing with the inconvenience of zoom I know I am competing against the entire Internet for your attention, but.
- 00:25:38What I lack and Polish talk.
- 00:25:39To me.
- 00:25:41Because this material you just cannot find with.
- 00:25:44A Google search or.
- 00:25:46headlines, specifically the topic.
- 00:25:49of pitfalls of reasoning.
- 00:25:51In medical practice.

**UVA ERC**

00:25:53i'll grant you.

**Don Redelmeier**

00:25:54That my style.

## UVA ERC

00:25:55Is a bit awkward.

## Don Redelmeier

00:25:57Because i've got limited familiarity with this audience and the audience with me and dive.

- 00:26:03In physicians are a diverse.
- 00:26:05i'm also going to stay.
- 00:26:06really close to.
- 00:26:07My script so that I do not go over time, which is something my residence cannot stand.
- 00:26:14Next slide Sam.
- 00:26:16The overview overview mode my talk if the slides will advance is to.

## UVA ERC

00:26:22start with an individual patient.

## Don Redelmeier

00:26:26Because.

- 00:26:26The more unorthodox the content, the more conventional the packaging has to be and then.
- 00:26:34i'm then going to introduce my.
- 00:26:36My medical field of cognitive psychology science defined loosely as science of thinking about thinking I won't cover the entire field but i'll focus mostly on five specific pitfalls.
- 00:26:53In reasoning and for those who fall asleep or get.
- 00:26:57A call i'm going to highlight right now my ending point on the role always.
- 00:27:04Try to cultivate.
- 00:27:06A good friend at work.
- 00:27:08For a successful.

## Unknown Speaker

00:27:10career.

## Don Redelmeier

00:27:11Like questions at the end and throughout i've got no conflicts of interest, except my own ego bias next Sam.

- 00:27:21And we start with an individual patient case.
- 00:27:26The next lie.

## Unknown Speaker

00:27:29First.

**Don Redelmeier**

00:27:33The choreography on zoom is always a stress here we go all right.

- 00:27:37With nearly.
- 00:27:39six year old woman working as a corporate trainer with a past history about sickle cell trait not disease high blood pressure, a stroke one decade earlier.

**UVA ERC**

00:27:50Definitely after this.

**Don Redelmeier**

00:27:51disorder only a total of four medication.

- 00:27:56To for the high blood pressure, one is an Anti platelet.

**Unknown Speaker**

00:27:59agent.

**Don Redelmeier**

00:28:00For as an Anti convulsive now she came to medical attention because.

- 00:28:06visual loss best characterized as a dark patch immediately in front of her right.
- 00:28:15And the diagnosis was a.

**UVA ERC**

00:28:16matter hall.

- 00:28:18For treatment.

**Don Redelmeier**

00:28:18Was with a whole bunch of.

- 00:28:20them all.
- 00:28:21I don't really.
- 00:28:24Specifically.
- 00:28:26membrane.
- 00:28:28And gas bubble Tampa net notice here that i'm grounding my science in a real case that embodies patients suffering this is how all medical science ought to be done, Sam next slide.

- 00:28:46So.
- 00:28:48Of course, though.
- 00:28:50have everything complicated I constellation of.
- 00:28:53IP learning through the periphery of the right i'm not just the central field.
- 00:29:00As well as injection and redness and physical exam so.
- 00:29:06For Neil staining and it fairly.
- 00:29:09Large my feet.
- 00:29:11And, and to NAMA tree of the eyeball showed the.
- 00:29:15highest pressure.
- 00:29:16I have ever.
- 00:29:17witnessed I eat 54 millimeters mercury.
- 00:29:21And the affected I as compared to 16 millimeters mercury in the unaffected I, so the diagnosis was now a Retinal.

**Unknown Speaker**

00:29:30Secondary blog.

**UVA ERC**

00:29:33Network.

**Don Redelmeier**

00:29:33For stuff about ophthalmology I don't.

**UVA ERC**

00:29:35really know.

**Don Redelmeier**

00:29:37And the plan was pressure reduction agents.

- 00:29:41Local drainage.
- 00:29:42And some systemic man at all notice how this is the typical exposition.
- 00:29:49Grand rounds, at least in my home institution, ie to show numbers and to tell stories next slides Sam.
- 00:30:00Now.
- 00:30:01Then that comes with complication on top of a complication.
- 00:30:05Specifically, the patient suddenly.

**Unknown Speaker**

00:30:08Last.

**Don Redelmeier**

00:30:09Last.

**Unknown Speaker**

00:30:11Last.

**Don Redelmeier**

00:30:12pass that right in front of the ophthalmology nurse before care.

- 00:30:17was even started before even the mandatory now the ophthalmology nurse then calls the ophthalmology fellow who then calls me and I respond.

**Unknown Speaker**

00:30:26immediately.

**Don Redelmeier**

00:30:28Possible vasovagal syncope as the diagnosis and my treatment initially was to lie the patient flat and think about transferring her to the.

- 00:30:39Emergency department and I was not too concerned because I've seen a lot of patients pass out in all sorts of clinics and i'm a little bit blunt as a these days.
- 00:30:50notice how this shows, one of the advantages from clinical training, namely the capacity to think calmly, sometimes in sudden scary situations, just because you're calm, though, does not mean you're correct okay next slide all right now i'm more detailed.
- 00:31:11On the next slide great.
- 00:31:15showed stuff that did not actually.
- 00:31:18match my.
- 00:31:18Patients because her pulse was neither distinctly slow nor definitely fast and her blood pressure was neither particularly high or particularly low and her voice was remarkably sluggish.
- 00:31:33And vacuous despite having a.
- 00:31:35career as a public speaker and the content, the substance of her speech showed a lot of amnesia I mean around what it happened earlier that morning all of our all of our initial blood tests were completely normal when expressed in these funky Canadian.
- 00:31:55units.
- 00:31:57side from some mild.
- 00:32:00academia and notice here that there are all sorts of details that are standard in clinical practice but almost always edit away and.

**Unknown Speaker**

00:32:12reduction.

**Don Redelmeier**

00:32:14So that's the medical exam by the time I get to her next slide Sam.

- 00:32:20Now the next distinction here is that it's not all about.
- 00:32:26Internal medicine, namely, there are a few other things such as a 12 lead ekg with the overall pattern.
- 00:32:33is showing here normal sinus rhythm which we sort of knew from the initial vital.

### **Unknown Speaker**

00:32:38signs.

### **Don Redelmeier**

00:32:40That show, incidentally.

- 00:32:41By the long extended view.
- 00:32:44At the bottom of the trace and there's almost no motion artifact that is shown by this beautiful stable baseline in the extended lead to now there is some LV H with deep s waves in V2 and every polarization change but don't be too alarmed that's mostly in keeping.
- 00:33:03With her hypertension.
- 00:33:05And not attributable to acute ischemia and there's also some left atrial hypertrophy best shown in in lead to there but.
- 00:33:16With no cure legation and that's also in keeping with her sickle cell trait and, instead, I invite you to take a good hard look at lead one there.
- 00:33:30Which it's pretty hard because there's so much other clutter.

### **Unknown Speaker**

00:33:34On a 12 lead ekg.

### **Don Redelmeier**

00:33:36one.

- 00:33:37there's only actual two beats visible alright, so instead let's blow up.
- 00:33:43Just that sector of lead, one on the next slide Sam.
- 00:33:49So here's our expanded vision of just those two beats in lead one and really much easier to see on this supersize view and notice all that high speed.
- 00:34:01irregularity at over 1000 hertz.
- 00:34:05Those bumps are completely unrelated to the regular ekg wave forms of course and they're not being.
- 00:34:13caused by what's inside them myocardial but instead they reflect this charges over the chest wall and Upper extremities from arm muscle for circulation.
- 00:34:25All those little lumpy bumps that you're seeing there are classic for somebody with a metabolic instability, or the neuronal disease or a person who's just had a seizure.
- 00:34:40Now notice the clinical logic here right specifically to detect a very small finding and from it, to try to learn to draw a larger.

- 00:34:53Next slide so instead a treat her with just increasing dose of Veneto in and here's her ekg just one hour later.
- 00:35:02All right, the top of that is again showing just the magnified view of lead one and again near complete resolution of those situations.
- 00:35:13So the diagnosis, then switched from vasovagal syncope in the ophthalmology clinic to an exacerbation of your lying see sorter in the in the ophthalmology clinics and so.
- 00:35:27I try to increase that that Veneto in told her to stop driving for a while recheck the CT scan that did not show anything else and said.

### **Unknown Speaker**

00:35:38Okay.

### **Don Redelmeier**

00:35:41I paracentesis of the I all right, and which she endured i'm actually several of them with no further fainting spells.

- 00:35:51But i'm certainly.
- 00:35:52No real improvement.
- 00:35:53In in her vision of her right I end of the case now we move to the next slide here.
- 00:36:02And I want to use just declare that I want to use this case not to study the management of a macular hole or a secondary.
- 00:36:13Or the strange nuance in ophthalmology of continuing.
- 00:36:18To.
- 00:36:19get our girl with an interactive.
- 00:36:22Nor do I want to turn us all into general internist instead I want to use this case to springboard into five classical pitfalls and.

### **UVA ERC**

00:36:32reasoning.

### **Don Redelmeier**

00:36:33Which is my domain of sight exploration and i'm going to ground my talk here with the formal definition of cognitive psychology normally this, namely the science.

- 00:36:46How people reason formulate judgments and make decisions that's my plan for today all right now included in this definition is that it's this term science, implying that the errors are not all anomalies of nature or average.
- 00:37:04Bad performers instead.

### **UVA ERC**

00:37:07These pitfalls are sufficient.

## **Don Redelmeier**

00:37:09As common that they are made on a.

- 00:37:11Repeated basis, like.
- 00:37:13All of us leverage Hence, there is no point punishing people since the replacement clinician is going to be every bit as.
- 00:37:22imperfect instead of a goal here is to learn from pitfalls all right, and so that that's for the remainder of my talk next slide Sam now the first insight from cognitive psychology is that our minds.

## **UVA ERC**

00:37:37Just like ours.

## **Don Redelmeier**

00:37:39Are not built perfectly instead our minds are limited and they're prone to fallibility that cannot.

- 00:37:47be turned away these lapses are not entirely random yet they're not usually discussed.
- 00:37:53openly this slide the analogy between cognitive illusions and visual illusions, you see here this image of a road on a hot summer's day and the optical illusion.
- 00:38:06makes it seem as if there's a large puddle of water straight ahead and no matter how many times you drive up and down the road way you cannot help but see the water.
- 00:38:17Yet if you act in accord with that impression, and you put on the brakes you get yourself into no end of troubles, hence you teach yourself that your eyes can be fooled and you use that insight to facilitate roadway say.
- 00:38:32It does not mean that you start driving with your eyes.
- 00:38:35And in Madison I argue, you have to bring the same insights about how your own mind I can be fooled it does not mean that.

## **Unknown Speaker**

00:38:45You.

## **Don Redelmeier**

00:38:47are using judgment.

- 00:38:48It just means that you bring some insights.
- 00:38:52About judgment.
- 00:38:54Next, slides.
- 00:38:55And Sam now the second nuance of cognitive psychology it's at the hard road illusion presents because outdoor horizontal sections do usually.

## **Unknown Speaker**



00:39:06indicate.

### **Don Redelmeier**

00:39:08and cognitive illusions persist, because the underlying.

- 00:39:11shortcut and reasoning.
- 00:39:13is usually correct and so here's an example I use of josh Donaldson hitting a home run for the blue jays against.
- 00:39:22A few years ago.
- 00:39:24I noticed the josh has done know studying.
- 00:39:28Economics, it is necessary for the mathematics.
- 00:39:31projectile motion.
- 00:39:33nor the fancier differential equations of fluid dynamics and wind resistance instead his years of trial and error practice made him excel based.
- 00:39:44purely on intuition, furthermore, no amount.
- 00:39:47Of robotics or artificial intelligence.
- 00:39:49could ever imagine.
- 00:39:50Is versatility yet so much of that wisdom is subconscious, which means that he's not necessarily a good coach.
- 00:39:59So the big point here is that shortcut same reasoning are just fine under average circumstances, moreover, thinking hard at the wrong moment.
- 00:40:10would be disastrous, the analogous point, therefore, is not to eradicate cognitive illusions sidestep them in tricky situations and some critical situations are so simple that hard thinking is not justified next slide Sam.
- 00:40:30Now the third fundamental of.

### **UVA ERC**

00:40:32cognitive psychology.

### **Don Redelmeier**

00:40:33Pasty for self deception that's the one resource that our mind does have.

- 00:40:39In the.
- 00:40:41line, namely doctors.
- 00:40:44Patients families administrators is your therapist just don't see reality as it truly is, in particular, we have all have an overconfident view of our own judgments and insights.
- 00:40:59See most errors in judgment or more easily spotted in others than in ourselves, and so the art of cognitive psychology is to try to set the record straight without being too antagonizing and my next slide i'm going to discuss why.
- 00:41:17These specific pitfalls and reasoning, so these slides are going to be the toughest part of my slide thanks Sam OK, so the first pitfall is to realize that I based my thinking on perceiving the world and making up my mind I trust my sentence my census, and I also assume that others.
- 00:41:38do the same thing and I don't often for dissent, such as in this painting up by my Green, that is.

- 00:41:46 is instead a picture of a plank more formally naive realism is defined as the human tendency to believe that we see the world objectively.
- 00:41:59 And that those who disagree with us must be misinformed irrational or biased, this is a profound deep disrespect for dissent that holds on both sides of any disagreement.
- 00:42:14 And I think that this pitfall underlies conflicts between doctors and administrators about how to run a service and between researchers and editors.
- 00:42:26 And with every medical student who feels they've been marked unfairly that's naive realism next slide now the classic demonstration of naive realism.
- 00:42:38 Studies of the false consensus effect, for example, this study asked undergraduates would you walk around campus for 30 minutes holding a large sign and they're seeing yourself bearing the message eat at jugs.
- 00:42:53 Now it turns out that you know, some people say yes, and some people say no, they agree to it, they do what they don't agree.

### **UVA ERC**

00:43:00 to it, but the most interesting thing.

### **Don Redelmeier**

00:43:02 Is that those people who say.

- 00:43:04 Yes, judge that the vast majority of their peers would also say yes, whereas those people.
- 00:43:12 who say no.
- 00:43:14 judge the vast majority of.
- 00:43:16 their peers would also say no, and only a minority would say yes, ie that's the idea that we all feel that our views are normal.

### **Unknown Speaker**

00:43:26 and shared broadly.

### **Don Redelmeier**

00:43:29 that's the pitfall of naive realism.

### **Unknown Speaker**

00:43:32 such as in the case.

### **Don Redelmeier**

00:43:35 Where.

- 00:43:35 I showed the blood sugar, which I perceived as normal and the Canadian units.
- 00:43:43 But that most Americans would have felt awfully terrible if the normal range is about 80 so or the task of deciphering the.

- 00:43:53 phone in that my hospital as compared to your hospital.
- 00:43:56 What looks one way to me looks I can look very differently to another person.
- 00:44:03 False consensus next point okay next we move to confirmation bias and, of course, sometimes I feel a bit uncertain and under those circumstances.
- 00:44:16 I seek more information and I tend to seek supportive.
- 00:44:20 Information still the case and bolsters my confidence, such as in this image of republican partisans who seek republican media to.
- 00:44:31 To promote their positions more formally.

#### **UVA ERC**

00:44:35 The pitfall of confirmation.

#### **Don Redelmeier**

00:44:36 bias is the tendency to search for interpret.

#### **Unknown Speaker**

00:44:41 favor.

#### **Don Redelmeier**

00:44:43 In a way, that that.

- 00:44:44 one's natural spontaneous pre-existing beliefs and that holds on the political spectrum, that is, we quickly form first impressions and then we want to prove ourselves right.
- 00:44:58 Next slide Sam now classic demonstration of confirmation bias comes from studies of selective searching for example, this study and volunteers to read an online magazine, and then they tracked subsequent hyperlinks about.

#### **Unknown Speaker**

00:45:14 What that reader was subsequently.

#### **Don Redelmeier**

00:45:17 Now importantly whole bunch of participants that earlier indicated their beliefs.

- 00:45:22 As either.
- 00:45:23 Life or pro choice and the main finding here is that you spent more time reading pro life if you.
- 00:45:31 already started.
- 00:45:33 Pro life, and if you started on.
- 00:45:36 Pro choice, that is, we tend to also to look for new future information.
- 00:45:42 That narrows our preconceptions.
- 00:45:45 that's the pitfall confirmation bias.

- 00:45:47And it's fun and it violates the fundamental axiom of science of always hunting and checking for disk confirming.
- 00:45:55Evidence, such as in the case today, where I really over emphasized vasovagal syncope and my heavy.
- 00:46:05motivation for ordering the ekg was mostly to look for signs of braided Kar Diya not the residual physically patients have a seizure, as well as my initial distraction that's selective searching.

### **Unknown Speaker**

00:46:20Due to confirmation

### **Don Redelmeier**

00:46:23Next pitfall and then number number three Sam now sometimes I make a large enough mistake that it.

- 00:46:30does reach my.
- 00:46:31awareness and I can't just fluff it off or deflect it with confirmation bias now in such cases, tend to blame my lapses on how the circumstances.
- 00:46:42conspired against me, such as showing the Simpsons cartoon with the caption boy everybody is stupid except me.
- 00:46:52More formally the fundamental attribution error is that people place undue emphasis on factors like time when explaining their own mistakes, but they emphasize internal factors such as intention when explaining other people's poor behavior.
- 00:47:12People like responsibility for their failures, despite being eager.
- 00:47:18To take credit for their successes, myself included, that is, the locus of control shifts in a self serving way.
- 00:47:27When you consider yourself, rather than.

### **UVA ERC**

00:47:31Considering.

### **Don Redelmeier**

00:47:32A quality next slide.

- 00:47:36So now, the classic demonstrations of this platform.
- 00:47:40Studies of self serving bias, for example, here's a study that examines asked students.
- 00:47:47to watch a video game.
- 00:47:48football game and to count the number of infractions committed by Dartmouth against princeton and and, importantly, some students were already enrolled in Document where others at princeton and overall those.

### **UVA ERC**

00:48:04enrolled at Dartmouth.

## Don Redelmeier

00:48:05 All the candidate half the number of infractions committed by Dartmouth.

- 00:48:11 Hence we tend to view poor behavior.
- 00:48:14 We bought our cabinets areas.
- 00:48:16 as serious.
- 00:48:18 Whereas our behavior from our allies are often a scribe a product circumstances that's the fundamental attribution error of trying to separate the person from the situation, such as in the case today.
- 00:48:34 Where, in the aftermath, we tended to blame the patient for skipping her furniture when on the morning of the intervention and not blame ourselves for having failed to check the affinity and level that morning, which turned out to be sub therapeutic and that is what explained procedure.
- 00:48:58 we're up to pitfall number four now Sam.
- 00:49:02 Now.
- 00:49:03 Occasionally at the extreme success or a failure is so blatant objective an ambiguous and undeniable that I can't just describe it in a self serving way to surrounding circumstances.
- 00:49:16 Yet, people can always find a way of imagining how things could have been different, such as in this image of Olympic medalists, including one who won silver and looks a little bit doll.
- 00:49:28 More formally the pitfall of counterfactual rationalization is defined as a Defense mechanism where our feelings are swayed by ad hoc conjectures about a different situation that is a bankrupt corporate leader.
- 00:49:46 And cannot.
- 00:49:47 say I still have my health and a traffic crash victim can always claim it could have been worse and every patient diagnosed with cancer.
- 00:49:58 Can view themselves as quote lucky unquote by thinking of others who are worse off, there is no end to this non lout non logic in Madison next slide.
- 00:50:12 Now the classic example of counterfactual reasoning comes from studies studies of social comparisons and one study, for example, actually rated the emotional happiness by base some mapping of Olympic medalists on the podium.
- 00:50:29 And, as expected, those winning gold were indeed the happiest as scored on a 10 point scale, whereas zero meant agony and 10 meant elation now importantly those winnings silver were less happy than those winning bronze.
- 00:50:49 Now the basic explanation was the silver winners often viewed themselves as losing gold, whereas the Bronze winners could more easily imagine themselves winning nothing.
- 00:51:02 And now, since upward comparisons are dreary and downward comparisons are comforting The net effect is that people who are objectively better off.
- 00:51:12 feel subjectively worse off that's the pitfall of counterfactual rationalization and selective comparisons, such as in the case today we're counterfactual rant and thinking was rampant, including the patient herself who remain grateful because she still had one good eye.
- 00:51:34 And, most of us here today have got to indulge in counterfactual rationalization and be satisfied with our our career, despite never winning a Nobel Prize in medicine things could have always been better next slide Sam.
- 00:51:52 Now the fifth and final pitfall today.
- 00:51:56 relate to HALO effects, since I don't work in isolation and i'm surrounded by bright colleagues who I seek for help.
- 00:52:05 And some colleagues are impressive by being attractive successful eloquent energetic well driven.

- 00:52:13main impressive, such as Steve Jobs shown here who looks charismatic despite needing a shave.
- 00:52:22More formally the pitfall of HALO effects are deemed as a bias, where my impression of a person in one domain.
- 00:52:30influences, my impression about them in a completely unrelated domain Respected colleagues of course deserve attention.
- 00:52:39Without the polarization are exaggeration, just because I know something about general internal medicine does not make me qualified to talk anything about sports or politics next slide Sam.
- 00:52:54Now the classic dump a demonstration of HALO effects come comes from the subjective grading of written essays, for example in this study that asks undergraduates.

#### **UVA ERC**

00:53:06To mark.

#### **Don Redelmeier**

00:53:07college application essays now by random the same and.

- 00:53:11The essay was accompanied by a fraction.
- 00:53:15Of the lighter.
- 00:53:16In half the cases or unattractive photograph of the writer in the other half and all participants then graded the essay.

#### **UVA ERC**

00:53:24On a.

#### **Don Redelmeier**

00:53:25scale.

- 00:53:26Where one indicator or.
- 00:53:28And nine indicated excellent and it's the quality of the writing is being.

#### **Unknown Speaker**

00:53:33marked.

#### **Don Redelmeier**

00:53:36Not the photograph now in chord with the general HALO effect the essay was rated two points more favorably when shown with the attractive rather than unattractive photograph that's the spillover from a halo effect.

- 00:53:53Because it's the same written essay.
- 00:53:56In both cases that's why I saw.

- 00:53:59For grants.
- 00:54:00People.

### Unknown Speaker

00:54:01About.

### Don Redelmeier

00:54:03More generally, high status in one domain leads to undue praise in an unwarranted domain, such as in the case today, where a halo effects that be mostly to spend my time speaking with the ophthalmology fellow than.

- 00:54:20The ophthalmology nurse.
- 00:54:22Yet it was the ophthalmology nurse, who would later give me the very best history of the drooling and the urinary incontinence but because she lacked.
- 00:54:32My a halo I did not give her the respect she deserved in medicine, you must respect your colleagues, without lapsing into hero worship, for the select few.
- 00:54:47Next slide Sam.
- 00:54:49Now here, I want to summarize these five pitfalls of reasoning, in practice, and I want to again emphasize that these shortcuts in reasoning usually work just fine.
- 00:55:02And reliance upon them as efficient, because the human brain does not have infinite resources so here's a listing of the five discuss today and how each can cause problems in medical care.
- 00:55:16naive realism, which, which means, I believe that people like me see the world as things truly are often there's way more divergence than we realize confirmation bias, which means that if I am uncertain, on my own initiative, I seek more information, mostly to build off of.
- 00:55:39The fundamental attribute.
- 00:55:41Which means my minor lapses I tend to ascribe to external circumstances not or not character.
- 00:55:50But i'm not equally charitable with my colleagues.
- 00:55:54counterfactual rationalization, which means that clearly bad events can sometimes be reconciled by imagining something worse.
- 00:56:04And finally HALO effects which means ambiguous data can be interpreted interpreted correctly by impressive our colleagues, those are the five pitfalls now cognitive psychology science has also suggested one potential remedy for all of.
- 00:56:23These tips on the next slide Sam.
- 00:56:27And that is to highlight the huge value of a supportive colleague to help mitigate each one of those problems, simply because it is just so difficult to spot the pitfall.
- 00:56:42In itself, partially because of self deception, but it's so much easier to spot it in a colleague that judgment like bad breath goes unnoticed.
- 00:56:54The source.
- 00:56:56Now, a friend vice versa, that can also help you.
- 00:57:02straight.
- 00:57:03A good colleague, can he help you with naive realism actively invite.
- 00:57:08me back with an honest, open mind a colleague can help you with.
- 00:57:13A confirmation.
- 00:57:15bias, if you deliberately invite them to sometimes play the devil's advocate a colleague can help you with fundamental attribution error by being nother.

- 00:57:28set of eyes to deal paycheck for alternative explanations in the surrounding environment.
- 00:57:34A colleague can help with counterfactual rationalization by identifying multiple rather than a single i'm an alternative outcome.
- 00:57:44And a colleague can help you with HALO effects, provided that you remember that no individual is always reliable, all this is to say how supportive colleagues can reduce the excess confidence that is a.
- 00:58:01problem with all expert.

### **Unknown Speaker**

00:58:03physicians

### **Don Redelmeier**

00:58:05Colleague will tell you.

- 00:58:06If you've got bad breath.
- 00:58:09friend will tell you what's wrong the way you're practicing.
- 00:58:15Next slide.
- 00:58:18Now, on My penultimate slide here I just don't want to oversell my problems so here's the big caveat specifically on this slide we see images of the same river by my hospital one day apart notice the same crosswalk sign green fence and big Bush now during a punishing storm.
- 00:58:43The record is fast forceful cloudy turbulent and perilous this river during the storm can kill a grown adult.
- 00:58:56Whereas after the storm the river is clear calm and shallow easy to see the bottom that river is safe for a small child.
- 00:59:07By analogy.
- 00:59:08Real clinical care is way more snore me and just five pitfalls of reasoning that is my tidy talk this morning, does not come close to solving all the brutalities of Mother Nature.
- 00:59:23practicing medicine is just way more complicated than a classroom a courtroom or grand rounds setting the demands of practice exceed our far reductionist science so on the final slide.
- 00:59:38Here it is, and it reviews my talk, where I started with an individual fiction case introduced the general field of science and then went through five specific pitfalls of.
- 00:59:51reasoning ending with a strong recommendation to cultivate a good friend at work, not for cronyism but for your own and reasoning won't have my patient recover her eyesight, but it can help you in your future careers.
- 01:00:08In medicine, regardless of special try to avoid the pitfalls naive realism confirmation bias, the fundamental attribution error counterfactual.
- 01:00:21rationalization Lol.
- 01:00:24Moreover, in your own practice try to spot these pitfalls in your colleagues and encourage them.
- 01:00:32To return the favor when it's polite to do so with you.
- 01:00:38That ends my talk and we are now opening it up for questions and more collegial interactions.
- 01:00:49And here, is where Sam plays moderator and tries to break the ice hey.

### **UVA ERC**



01:00:55 So I think one of the questions I had and listening to your talk was.

- 01:01:00 These insights I have certainly tripled into.
- 01:01:04 The mind of the.
- 01:01:06 People in all sorts of.
- 01:01:09 Industries so whether that first came from airline pilots to.
- 01:01:13 CEOs to medicine those insights seem to be there, well categorized, how do we actually translate this knowledge now.
- 01:01:22 To learners medical students residents in a you know how do you see people doing this, or how do you do yourself in a way that is beyond a lecture format and is kind of at the bedside with the residents are.

### **Unknown Speaker**

01:01:39 learner's.

### **Don Redelmeier**

01:01:41 All right now I do it all the time, good morning important all right, but.

- 01:01:44 It requires tremendous amount of tax alright, so as not to offend people, I think the main advantage of cognitive psychology science is that.
- 01:01:54 It provides a language.
- 01:01:57 And a logic or discussing pitfalls and reasoning so they're neither demonized or did not.
- 01:02:05 In terms of where to pitch it.
- 01:02:07 I think it's going to pitch the residency level, not so much at the Medical School level a new Medical School people are just trying to memorize the Krebs cycle, for example.

### **UVA ERC**

01:02:21 Is there are you.

- 01:02:23 Part of or have you seen.
- 01:02:25 form, I guess, in a sense, formal and then it's part of the curriculum but.
- 01:02:31 there's forums and this where it's either like small group discussions or case presentations on a small.

### **Don Redelmeier**

01:02:37 level.

### **UVA ERC**

01:02:38 yeah I mean, I think it works.

### **Don Redelmeier**

01:02:40 way way better in a small case presentation, especially people just won't see it in themselves, so that when you get people to discuss their own case it's the only opportunity for an Epiphany whereas if it's a standardized.

- 01:02:55 Case there's.
- 01:02:56 Just this muchness.
- 01:02:58 Well gee I would have never made that mistake all right, it also, I think, cognitive psychology like good makeup works best when it hides itself when it's into digital with mostly but the medical.

### **Unknown Speaker**

01:03:11 Days.

### **UVA ERC**

01:03:19 passed around the audience.

- 01:03:20 Here we got.

### **Unknown Speaker**

01:03:21 A financial.

### **UVA ERC**

01:03:29 standpoint i'm wondering whether you're familiar any literature out there.

- 01:03:35 What files apology biasing.

### **Unknown Speaker**

01:03:38 And, or just.

### **UVA ERC**

01:03:40 perspective settings.

- 01:03:43 To formalize how this.
- 01:03:45 Training actually your answers.

### **Don Redelmeier**

01:03:49 All right, so as an awareness and insight, I mean actually changed your behavior or really matter that's hotly debated that's hotly debated in some sense the you know.

- 01:04:05 Like the other water illusion doors it just cannot be trained away all right, even by sort of grandmasters, on the other hand, I think that.

- 01:04:16 For me what's been a huge advantage is that, at least when you make a mistake there's not the self loathing that I used to have during residency.
- 01:04:27 All right, that that it does help a little bit with the capacity to laugh at yourself, but whether the insight really makes you i'm going to superior position I don't you know they're the jury is still out, but I think it.
- 01:04:45 It can help reduce.
- 01:04:47 You know, but the amount of burnout and frustration when when I myself make a mistake.

#### **UVA ERC**

01:05:07 question here yeah, thank you for that talk is really insightful and interesting.

- 01:05:13 and introduce terms that I didn't know which is really nice.
- 01:05:16 I be curious about your thoughts about the intersection between cognitive psychology and I think counteracting cognitive.
- 01:05:24 bias and the world that we're living in with the computer decision support and on.
- 01:05:31 Another Malacca other diagnostic tools, I guess, goes from computer decision support, even to things like.
- 01:05:38 You know, IBM Watson things like that sort of the intersection, for you know, positive and negative with with AIDS diagnostics and counteracting bias, or maybe reinforce advice.

#### **Don Redelmeier**

01:05:51 yeah I mean, I think that you know all of the technology is a great big help I love the spell checker on my electronic health record, I would just be you know at see without it, so that there's a lot.

- 01:06:06 A lot of technologies echocardiograms save me for hospitalization a long, long time the MRI of the brain sure beats my neurological exam every day of the week alright so assistive technologies but they're not going to be sufficient.

#### **UVA ERC**

01:06:22 Because the practice of medicine will ever require.

#### **Don Redelmeier**

01:06:26 So much judgment that there's just not no getting around a physician who thinks.

- 01:06:34 All right, that you know but but that I mean we're just not going to be replaced any time soon all right now the tricky thing, though, is that you know.
- 01:06:44 assistive technology is just so attractive that you can eat it contempt you into not think all right, I either people say well that's what the computers.
- 01:06:55 I said and they never really take a look at the ekg themselves.
- 01:06:59 And isn't it so wonderful when the ekg computerized interpretation is wrong, it gives me a huge sense of satisfaction, so I think that the technology to answer your question will be assistive, but it will not replace the central role of clinical judgment anytime soon.

**UVA ERC**

01:07:25 Look here at our chat to see what questions.

**Unknown Speaker**

01:07:28 come through here.

**Don Redelmeier**

01:07:36 don't usually quiet.

**UVA ERC**

01:07:40 yeah yeah one more question here.

- 01:07:44 i'm curious about the ill effects before and out how also deeply rooted social psychology that pitfall is that.
- 01:07:57 We often kind of pulled our expert.
- 01:07:59 diagnosticians and clinicians very highly probably.
- 01:08:03 Appropriately so.
- 01:08:05 I feel like just reminding ourselves that these people are prone to error is to.
- 01:08:12 somewhat of a simplistic answer to that football, I wonder if you have any other insights into.
- 01:08:18 How you approach it without necessarily discrediting that.
- 01:08:21 person's expertise and how they got that.
- 01:08:24 first place.

**Don Redelmeier**

01:08:26 yeah I mean, I think that the HALO pitfall is just rampant all right that.

**UVA ERC**

01:08:32 You know.

**Don Redelmeier**

01:08:33 do some advanced prep or.

- 01:08:35 Grand rounds and you watch some.
- 01:08:36 videos and some photographs of Sam and Laura but they're all there and it's just unduly glamorizing all right in the same way that the picture of my own bicycle.
- 01:08:49 looks more attractive than my own bicycle in real life now what I do is instead of castigating colleagues because that's just so distasteful I turn it around with a lot of self deprecating humor.
- 01:09:06 Not just to my radical students but to you know, not just to my residence but.
- 01:09:11 Also, my.

- 01:09:12 Students one of my early lines is you got to consider that rattle mine, a three dimensional object with lots of assets all right, a lot of strengths, a lot of weaknesses and and so your job is to filter me all right, and you take what is good and you.

#### **UVA ERC**

01:09:32 throw away what's bad just.

- 01:09:34 So difficult but.

#### **Don Redelmeier**

01:09:35 Sure, at least half of the.

- 01:09:38 Of what i'm telling you is just wrong it's just that I don't realize it yet right so that I invite my own team to treat me with that amount of skepticism otherwise it's just too much of a runaway appeal to authority.
- 01:09:59 me thank you.

#### **UVA ERC**

01:10:02 I think that to read a liar that sums up here for questions here in the audience, I really do thank you for this wonderful top is very insightful and length diversity mentioned earlier, some new terms for me to.

- 01:10:16 pick apart and learn myself, so thank you for taking the time to speak with us today, and we really enjoy it.
- 01:10:30 signing off.
- 01:10:31 bye everyone.