

[“There is an inherent conflict of interest in professional self-regulation”](#): Interview with Bad Science Watch’s Ryan Armstrong

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Transcribed by Julie Ann Lee

(Theme song – soft piano music)

ABK: Today, I’m speaking with **Ryan Armstrong** of Bad Science Watch. Ryan has a Ph.D. in Biomedical Engineering and an undergraduate degree in Medical Biophysics. His research spanned across multiple domains including biomechanics, medical imaging, image processing, human-computer interaction, and surgical simulation. Ryan became interested in science-based activism after encountering false cancer treatment claims in his own community. Learning that these practitioners were regulated health professionals he found that the [health] regulatory system was not adequately protecting the public. Hi Ryan!

RA: Hello!

ABK: Tell us about Bad Science Watch Canada. It seems like the group is relaunching, is that right?

RA: Yeah, so, I’ll start with what Bad Science Watch is. In essence we are a non-profit dedicated to consumer protection. We focus on Canadian issues. We fundamentally believe that consumers have the right to informed decisions, and that the exploitation of consumers – particularly when it comes to issues of health and wellness is detrimental to all Canadians. More specifically, we aim to ensure that our legal and regulatory systems rely on sound science and generally act in the best interest of the public.

Now, on the relaunching note, we aren’t so much relaunching as kind of revitalizing and pursuing some new and exciting directions.

ABK: Wow, that’s great! And you look at pseudoscience in your organization or the types of products that get marketed – ‘natural health products’. What’s the definition, loosely at least, of pseudoscience so we can maybe start from that?

RA: Yeah, absolutely. So, there’s a lot of confusion around pseudoscience generally. **Pseudoscience**, when I use it, I don’t typically mean any type of practice or treatment that isn’t validated by science. There are quite a large number of practices that are performed clinically that are very plausible and don’t quite have the backing of very high quality randomized control trials. Generally, when I refer to

pseudoscience I'm talking about science practices that are not just lacking a firm validation but ones that contradict what is known, or are quite frankly implausible.

ABK: I see. Good, okay. Well, in Ontario right now, in terms of pseudoscience, there really isn't any kind of oversight for pseudoscience, is that right?

RA: Yeah. It largely depends on what type of oversight we're looking at. In terms of food, drugs, various health products, cosmetics, there is regulatory oversight of scientific issues to some extent we would argue that these aren't sufficiently effective. But this occurs at the national level through Health Canada, so it's not Ontario specific.

Provincially, the big concern in terms of consumer protection is the regulation of health professionals. In Ontario, as with most other provinces, the professions are granted the privilege to self-regulate through the **Regulated Health Professions Act**. The act itself lays out no specific requirements for science-based health services, instead it delegates expertise to the individual regulatory college of each profession. Obviously, this is a problem as there are entire health professions in Ontario that are *founded on pseudoscience*. So, as an example, just look at **Homeopathy**, which has been granted self-regulation under the RHPA. For anyone who is unfamiliar with Homeopathy, it's the practice of diluting remedies to the extent that there's nothing but water remaining, so it's complete pseudoscience. So, the question is how could they possibly set scientific standards for themselves?

ABK: Right. That's really interesting, and the idea of having regulation or oversight outside of the profession is something we don't see happening in Ontario, and as far as I see it there's a few parts to regulation of natural health products, or natural health services. There's inspection for product integrity; there's reviewing the labeling claims; and then there's the issue of consent for using treatments or products on children.

So, let's start with **inspection for integrity**. In Canada, what kind of inspection is currently being done on natural health products for example?

RA: Yeah, so as I mentioned this is all done through Health Canada and to their credit, they do a pretty good job in this domain. So, they actually require an array of tests to determine if a product is at least what it claims to be. This is where I have to admit that my chemistry knowledge is somewhat limited and I'm not an expert on the topic so I can't go into too much depth but there are a number of requirements for both the product security as well as its reliability in terms of manufacturing. So, if I were to buy natural health products for whatever reason, I'm fairly confident that the testing requirements are stringent enough that I would feel safe actually consuming the products, at least at the recommended dose.

That being said, not every batch of products is tested. You know, it's just infeasible to test every pill from the manufacturer to the consumer and there have been quality control issues in the past. So, the biggest risk really is the impact of the active ingredients, but I mean there is a minor risk with quality control and

really with both issues I would simply caution anyone against taking any risks when there are products that have no proven benefits and are really just implausible.

ABK: There *do* seem to be issues with the ingredients. There was that study a few years ago by the University of Guelph that did DNA testing and found that a lot of natural health products contained cadmium, arsenic...one of them contained walnut – it wasn't listed--which is of course a common allergen...and other ingredients not listed on the label, and also that the ingredients listed on the label were not necessarily contained in the capsules. For example, they were looking at echinacea and they found that like a pretty sizeable percentage of "echinacea capsules" *didn't have* echinacea in them, it just had a bunch of weeds, like roadside weeds in them.

RA: Ha!

ABK: And so, I was just wondering if it seems that the problem of quality control is really bigger than it might be for something like food products which are also regulated. How can Health Canada make sure that- that more of these products contain what they actually say they contain?

RA: That's a great question! I mean, you can always increase the regulatory requirements, the amount and types of testing that is performed. At some point, there is a balance between over-testing and testing appropriately. And those are going to, of course impact all kinds of things like the feasibility to actually sell a product and the cost and availability to consumers. So, it's a pretty complex question and as you mentioned there have been a number of issues in the past and one needs only look at the number of products that have been recalled...

ABK: Right.

RA: ...for various issues from contamination to not containing the right dose...I don't know the actual numbers. My perception has been that may be less of an issue compared to just the straight up fact that a lot of these products don't do what they're claiming to do and may even be harmful themselves, you know even getting the pure form of the active ingredients is maybe not something that people should be consuming. So, I still kind of go with the same line that you know if there are no proven benefits if you haven't been advised to take something from your doctor or another regulated health professional, then I would just say, avoid it and don't take the risk.

ABK: In terms of [natural health product] regulation, I wonder if they might want to move a little closer to how closely they regulate and inspect pharmaceuticals and apply some of the pharmaceutical standards to how they regulate natural health supplements.

RA: Yeah. I absolutely agree. There's definitely a double standard that's going on between pharmaceuticals and natural health products. A lot of that really is a business consideration. It's letting

consumers get cheaper and more accessible products that you know maybe on average are safer than a lot of pharmaceuticals but you know they still carry a risk and especially in terms of scientific validity...the standards are wildly different between a pharmaceutical drug and a natural health product. You know to be registered as a natural health product these products don't need to meet any scientific standard at all because there are exceptions allowing for **traditional use claims** where you can essentially as a manufacturer reference an old textbook that just claims 'this works for this' or 'we'd use this for this,' and seeing results ...and it's unfortunate, and it's unscientific. So, yeah definitely there are issues there in the double standard.

ABK: Right, so there's issues about product integrity. And then you're getting into **labeling claims** as well. There seems to be a double standard in terms of like, what kind of jurisdiction does our government *have* over the kind of claims companies make about their natural health products in comparison to the kind of claims that a pharmaceutical product might make?

[9:57]

RA: Yeah. Great question! So again, the double standard continues. Pharmaceuticals generally cannot directly advertise to consumers [in Canada], whereas natural health products can--and they can be permitted to make certain claims. So, again, Health Canada is the regulator tasked with authorizing the advertising claims that natural health product retailers are permitted to make. From our perspective, there are two issues with the system. The first is the **authorization of claims** without sufficient clinical or scientific evidence is pervasive as I mentioned. And the second issue is the **enforcement of unauthorized claims**. So it's one thing to have a system in place that says you need to have your claims be authorized, and there's another aspect that is enforcing those requirements.

ABK: Mm-hmm.

RA: And from my perspective, I don't see too much of that from Health Canada. It largely relies on consumer complaints and honestly it would not take me much time at all to pull up in a web browser to find a Canadian retailer making illegal advertising claims for health products, even for conditions as serious as cancer.

ABK: Right, right. And now it kind of gets us into grey area because if there's something new...or you even see clinical trials sometimes of natural health products... it starts to get really fuzzy about when is it valid to use them. And I think for a lot of people it kind of pivots on the issue of **consent**. People make the argument 'hey, keep big government out of my body'- whatever someone might say, 'I went through chemo, I got cancer again. I want to take this alternative thing. It's my body' and they might continue to argue that it's a slippery slope that if the government tells us what to take or do that's too much government control.

But, this argument falls apart when we start to talk about children.

And that's what I'm focussed on in my work is that I think it's different when you're talking about using products on a child who can't give informed consent. With something like chelation which is an off-label use of a pharmaceutical product, or chiropractic manipulations which are a natural health service – on *newborns* for example, or other products that have clear evidence of harm and no evidence of benefit....is it right that parents currently can consent on behalf of their children to these kind of procedures and products?

RA: Yeah... that's a very complex question. So, going back a little bit, for starters to clarify that personally, I have no issue at all with the availability of a wide range of health-related products and services. I merely want to see advertisers operate honestly and in line with the scientific evidence. The whole notion that better science-based regulations would restrict consumers ...in my opinion is largely a red herring put forward by the [supplement] industry. One thing I'm always reminded of is the classic industry-funded advertising from the 1990s that played in the US featuring Mel Gibson being arrested by a SWAT team for taking vitamins. I mean, things like these have quite a bit of staying power with consumers and the public, but they're really just hyperbolic scare tactics.

So, in moving now to the more complex issue of **proxy consent for children**...this is a little bit out of my expertise, but obviously parents subjecting their kids to unnecessary and potentially harmful therapies is a huge problem, but I would pose this question, who is really committing the greater ethical crime – the parent who is convinced that as an example being chiropractic convinced that spinal manipulation is necessary for their newborn; or the chiropractor who has convinced the parent that manipulation is necessary and who also performs the service themselves? I mean there obviously needs to be limitations on proxy consent, but I would much rather target what I believe to be the root of the problem that is unethical and pseudoscientific health professionals and manufacturers of products that target parents and children.

ABK: It's more grey area when you look at an adult choosing and consenting to have spinal manipulation, than say a newborn who doesn't even speak and can't make reasoned decisions being subjected to spinal manipulation when you look at the fact that there's evidence of harm and no evidence of benefit. And so, for me it feels like the state is really tasked with protecting the health and well being of children and then the responsibility might fall on the state to protect children from these kind of things.

Really, that is a pretty important issue to get on... that because they can't protect themselves, and we have child protection agencies, we stop kids from being abused by parents, we get kids out of bad situations in group homes. We do have a lot of precedent for the state stepping in and saying that the health and welfare of children is an important matter to the state. It's the state that prosecutes on abuse cases, it's not individuals prosecuting.

So I feel like the state has in some regards relinquished some of its responsibility and that's troubling to me. I'm hoping that our government can get in and decide to really look at this issue as a wellness and safety issue for kids.

RA: Yeah, I totally agree. I mean it's complex that on the one hand you know there are obvious certain treatments and procedures that are simply unethical and should not be performed on children. The other big issue with additional regulatory mechanisms are how would they be enforced? So again, I'm not an expert in this area – when I look at something like newborn spinal manipulation, something that is completely unnecessary - potentially harmful [and] at the very least, an unnecessary cost in terms of finances and time on the parents, and you know who knows what other pseudoscientific beliefs they're taking up to these practitioners. Many chiropractors who perform newborn manipulation also tend to be fervently antivax so, in my mind it seems like it would be much easier to monitor the professionals and go after them who we know are performing-providing these types of things for parents, but definitely it's a serious ethical issue of parents consenting for these types of things and I think we should look at every angle that we can to protect children.

ABK: Maybe like some kind of review or ethics board that's independent of the profession itself. So, if a parent wants to undertake one of these CAM [Complementary and Alternative Medicine] procedures for their child and wants to proxy consent to it, you would have to go through some sort of an independent ethics board that's really removed from the actual college of the profession, because what we have in Ontario now is just regulating bodies deciding whether this is okay. Self-regulating bodies, so the Chiropractic Board decides about chiropracty, the naturopaths review complaints about Naturopathy and to me- like what do you think, can this sometimes end up being like the fox guarding the hen house scenario?

RA: Oh yes, it is absolutely that. The current system has been constructed largely on the assumption that the majority of any given profession is well-meaning and ethical, and further that their organization into a regulatory body would help sort of weed out the outliers, the bad actors...this may very well be generally the case but it has not been taken into account the existence of what are essentially **cultural delusions** that can possess large communities within a profession, or even the entirety of a profession.

ABK: Mm-hmm.

RA: It's a very strange phenomenon to accept but there are very many professional organizations that effectively act like cults.

ABK: Mm-hmm.

RA: And they insulate their pseudoscientific belief systems from science and make quite the effort in advancing their agenda, especially within the regulatory system. And this is something that is in particular very interesting to watch right now in Ontario because we have a division within the chiropractic community and there's a very palpable battle going on at the regulatory college. So, it'll be interesting to see how that plays out.

Essentially this is why I believe we need an independent entity that is science based and ideally can make judgements on the solidity of diagnostic and therapeutic procedures rather than relying on individual “experts” or relying exclusively on practitioners of a specific art which might not even be valid at all.

[19:39]

ABK: And it’s so variable depending on the college. Like, the BC College of Chiropractors takes a very different approach than say the Ontario College of Chiropractors right now because it kind of depends on who’s on it. And then- yeah, putting it outside of that, like you said that almost like echo-chamber that’s within the profession.

But even within actual medicine we have the College of Physicians in Ontario where here we have doctors determining what doctors can do but we can see that this system also fails for some reasons for example like the first round in the **complaint on chelation for autism** in my opinion they failed to adequately self-regulate. They ruled that giving kids chelation for their autism was – fine. And that was the end of their ruling. So, we might not want MDs regulating other MDs when you see cases like this, that self regulation *regardless of whether it’s in one of these pseudoscience echo chambers, or whether it’s just professionals and colleagues who know each other regulating each other*. Maybe it’s better to move it all outside of the professions or at least bring in people – not just a token person but really bring people in from outside of the profession- ethicists or other thinkers who can assess things a little more clearly.

RA: Yeah. Of course, well the chelation case was a great example of the regulatory system failing.

Regardless of the profession there is an inherent conflict of interest in self-regulation. Now there are a few methods built in to mitigate this such as the provincial review board as well as the requirements for non-member positions within regulatory bodies, essentially members of the public. My opinion is that these are poor solutions at best, especially when dealing with matters of a scientific nature, because there is no scientific authority. It’s been suggested by a few that only some professions be granted the right to regulate, while others be externally regulated. I’m not sure I agree with this stance and of course the issue with the College of Physicians and Surgeons in Ontario is a great example because this is a college that we would expect to be one of the more progressive in terms of really adhering to science-based principles and yet they have at least thus far failed to regulate against certain types of pseudoscience that are being used against autistic people.

ABK: Right.

RA: And, I think we can do better to come up with **universal standards** especially on scientific matters.

ABK: I think we have the standard but it wasn’t adhered to in the chelation case and in some other obviously chiropractic colleges and naturopath colleges either. I mean, the standard would be, if there’s clear evidence of harm and no evidence of benefit, it shouldn’t be done to a child.

RA: Mm-hmm. Well, if I could just cut in there – the big problem with that is that even if we’re looking at the College of Physicians and Surgeons of Ontario, they have a CAM policy that effectively lays this out.

But they don't have strict criteria for what scientific evidence is, what is enough. You know, what is the appropriate level of evidence to pursue certain procedures and this is kind of the evidence- I mean this is kind of the issue that is prominent across all of the different health professions is that you know many of them believe that they're practicing within the science based standard, but they are applying their own standards to science and they're determining what they consider is valid evidence which in many cases consists of case studies that simply do not show what they think they're showing.

ABK: I think I'd bring it back to your earlier point though as well, because it's murky because there's also things that we *do* that we know are good that simply haven't had the resources yet, for example experimental medical treatments that are being undertaken in hospitals, or even some things that are home remedies that haven't had a double-blind study – right, gargling with salt-water or whatever (I'm not sure if that's been studied) but various things like that. So, it makes it really, really tricky especially for regulating of use by individuals.

And then when we do regulate: what happens to the purveyors of the products that are unsafe – where do they go? Are the products still available? Is there something good about having transparency? I know for example if you go into a doctors office and you say, 'oh, I'm taking you know Dong Quai for my arthritic shoulder,' the doctor's in a really difficult position because if they go like, [exaggerated] 'that's garbage!' or something like 'use real medicine,' then they're going to alienate the patient, so they want to try to be open, and I can appreciate – I can feel that vibe when I look at the [CPSO CAM Policy] document....written in 1994 or something or '97...never updated. I can feel that vibe when I look at that CAM document by the College of Physicians and Surgeons of Ontario that they want to make sure that they don't step on patients' toes because they want to respect patients and have them feel comfortable, so I think it really is complicated for doctors in terms of how they look at it.

RA: Yeah. I totally agree. Doctors are in a tough position and to a certain extent, especially when they are dealing with patients who are very hesitant about the medical system and about pharmaceuticals and who have in many cases been fed misinformation externally or done their own research that has led them to false conclusions. You know the doctors have to sometimes have to make tough decisions. Are they going to play ball with some of the patients' beliefs in order to get them better treatments? Are they going to try and spend a significant amount of their time trying to convince the patient otherwise or are they simply going to say you know 'this is my recommendation, you should do this'? These are a number of complex clinical issues that I am certainly not an expert in. I'm not a clinician but yeah, it's a challenge and at very least though I think that we can say that it's inappropriate for a doctor to *recommend* an invalid therapy.

A patient can believe that homeopathy is a valid vaccination approach or alternative, but I don't think it would be appropriate for a physician to say, 'yes I agree with you, let me treat you for these other things.' I think a doctor should make it clear that they disagree and they shouldn't necessarily try to parent the patients or they shouldn't refuse to treat them in those types of situations, but to an extent they need to work *with* the patients' beliefs and those are all the complex human interactions that occur in medicine that I know absolutely nothing about. So, that's where I'll call it quits on this issue.

ABK: Well, they might want to look at it in terms of what the physician is selling because physicians- some of them are selling supplements in Ontario.

RA: Yeah.

ABK: Right? You know there certainly are deals with pharmaceutical companies although the government does try to crack down on that but the kind of deals and things like that happen also really muddy the waters really quickly. And, it also doesn't just happen with pharmaceuticals, it happens with natural health products. I'm not sure where we would start with regulating those kind of things and that's only part of the picture because there also has to be public education and a bit of a culture shift and in terms of thinking about these issues- science and pseudoscience. Does your organization play a role in that as well in terms of broader cultural education?

RA: So we used to more target public awareness, public campaign and you know we always engage in a bit of that. We have social media after all, so we do have a connection to the public and we do try to market ourselves and our campaigns and some of the issues to an extent, but a lot of our focus really is on the other end, and that is on the regulatory issues themselves.

ABK: What kind of projects have you been working on right now with Bad Science Watch Canada?

RA: Currently we're working on a project looking at advertising claims of natural health products across Canada and specifically we're looking at the proportion of cancer treatment claims that are not authorized by Health Canada. We are very nearing completion to this project. It's been a long time coming, so any followers can look forward to that soon. We'll be publishing manuscript and we'll have a press release and probably some news coverage. That's a project we've focused on for the last couple years. It is very slow working with an organization that is entirely run by volunteers to put together these large research projects but we're very near to the end. Coming soon.

ABK: Wow, that's great! Is that going to be published online?

RA: Yes. Absolutely.

ABK: Great! How can people learn about Bad Science Watch? Do you have a Twitter, blog that you want to list?

[30:07]

RA: Sure. Yes. We have a website, BadScienceWatch.ca....we're also on all the usual social media....we put some information out through there but if anyone really wants to get involved or really go in depth with some of the issues, just contact us. We're very receptive to all types of communication. We seem to even receive the occasional angry letter, but I don't mind those either. So, bring 'em on.

ABK: That's great. Do you hear from Health Canada and do you see yourselves working with Health Canada as well as they try to improve their system?

RA: Yeah. Absolutely. So we're actually going to work directly with Health Canada, at least that's the plan with the data from our research project and hopefully as a result of that work we'll see some enforcement of some policies.

ABK: That's great. Are you speaking specifically about the labeling claims?

RA: Yes, absolutely.

ABK: Mm-hmm. That's so interesting. Can you tell me what else is on the horizon for Bad Science Watch in the next year or two?

RA: The horizon- great question. So, I can't comment at all the details quite yet. It's quite early on but I'm really hoping to expand our front-line activism and effectively become the watchdog that we call ourselves. With the long-term project where we make more of a coordinated effort to use the existing regulatory mechanisms against pseudoscience. So, looking at false advertising, and pseudoscientific practices health among health products, health professionals. We really want to see how far we can get with the existing system, how well the regulatory system reacts to different types of complaints, and you know shine a light on those things.

I mean this is something that I've kind of been doing on my own as an individual, lodging complaints with regulatory agenciesas you know, it can be quite frustrating sometimes. And it really is a lot of work to take on as an individual, so I'm really hoping to crowdsource this, and to do it in a coordinated manner that lets us really keep good information on the process and come up with some science-based standard and document how the regulatory agencies react. And we should be able to quantify some of the deficiencies from this and hopefully in addition to whatever change comes of the direct action, there's potential to gain a better understanding into the regulatory framework and how well it operates.

ABK: Well, that's really interesting. It sounds like you have a lot on the go as you've relaunched ...or how would you describe it, you've *reinvigorated* as an organization.

RA: Yeah. Just reinvigorating (laughter).

ABK: (Laughter) That's great. It's great to have an organization like you in Canada and looking forward to hearing more about what you're up to.

RA: Well, I'm looking forward to being able to share more.

ABK: That's great. Thank you so much. Ryan Armstrong is the Executive Director of Bad Science Watch Canada. Thanks, Ryan.

RA: Thank you very much for having me.

(Theme song – soft piano music)

ABK: We were speaking with Ryan Armstrong of Bad Science Watch. He spoke to us from Hamilton, Ontario. You've been listening to Noncompliant. I'm your host **Anne Borden King**. Noncompliant was recorded at MCS Recording Studios. Various episodes were engineered by Nathan Gravette and TJ Liebgott. Thanks to our engineers and thanks for listening.