

**“Giving them the best information I could with whatever I had at hand”. Physicians’ online health communication practices in a post-normal science context**

**Interview Guide**

**General icebreaker question:**

To start off, please describe how you use social media as a physician.

**Pandemic**

During the pandemic, what did you feel was at stake for physicians engaging in social media? Credibility, trust, reputation?

- What do you think was at stake for you personally?

During the pandemic there was a lot of scientific uncertainty. In what ways, if any, did you attempt to provide clarity during this time on social media?

- How did you decide what information to post about and how did you evaluate this information?
- What did you find most challenging about communicating reliable science and health information in this context?
- In what ways, if any, did you put disclaimers on information you shared?
- Who did you look to to validate information during this time?
- How did you rely on the physician community?
- When posting COVID related information, did you perceive any changes in the feedback / comments / engagement you were used to prior to the pandemic?

People have described information shared during the pandemic as value-loaded. Does that resonate with you?

- Can you give me an example?
- How do you think this influences people’s trust in science?
- In what ways, if any, do you think you communicate your values in your social media posts?

How did the pandemic influence how you engage with social media?

- In what ways, if any, did the pandemic influence your motivation to post?
- For content related to COVID, did you take different things into consideration that you might not have if the content wasn’t about the pandemic?
- In what ways, if any, do you think your use of social media during the pandemic was negative?

- Do you feel the pandemic has changed your social media habits? If yes, do you feel you will keep these new attitudes/habits?

During the COVID-19 pandemic many physicians turned to social media. Why do you think this happened?

- Some physicians we have spoken with have indicated that they felt it was their responsibility as a physician to post and/or engage on social media. In what ways, if any, does that resonate with you?
- Did you ever have a patient/patient's family come into your practice with misconceptions or erroneous medical concepts taken from social media?

### **Twitter's current situation**

Have you been following the discussion around Elon Musk's takeover of Twitter?

- Has this influenced the way you look at the platform? Would you consider leaving Twitter?
- Do you feel that the takeover has changed the landscape of disinformation on the platform?

### **Concluding Questions**

- Is there anything about physicians' use of social media that you think we should be asking about?
- Lastly, we are interested in speaking with additional physicians. When you think of other key physicians that engage with social media, who comes to mind and why?

**Table A: Representative participant quotations related to the four traits of post normal science<sup>1</sup>**

Traits	Quotes
Facts are uncertain	<p>You basically make the best decisions you can based on the data that's available to you. And then as more data becomes available, you may need to change those recommendations or decisions. (Participant C)</p> <p>One of the things that I tried to communicate is that uncertainty—being cautious in what you say or changing what you say with information—is actually a sign of credibility, because I think that there's this perception that if you change your position on something, it must mean that you didn't know what you're talking about to begin with. But actual scientific progress comes when you revise what you have to say, or learning that something that you said previously was not correct and correcting the record. That's actually a sign of a reliable source as opposed to a reason to stop trusting them. (Participant M)</p> <p>I think what a lot of the mainstream public doesn't understand is that the reason that we might pivot on messaging or change recommendations is because of gathering knowledge and information. Like, you can't know everything about a new virus out the gate. (Participant U)</p> <p>It's hard to communicate nuance. People want black and white answers. They want information that does not change, because they want certainty, they want to know. Okay, this is what it is. This is what I'm trying to build my life around, not having to keep shifting. And I think it's really hard when you have something where you're learning something new every day. (Participant X)</p> <p>For me the hardest part was walking the fine line between what we know, what we suspect, and what we know with certainty. Over time, I think many people, at least in my circles, got more comfortable with knowing that we didn't have robust evidence because a lot of the stuff was new. (Participant Y)</p>
Values in dispute	<p>I wonder if the lack of a central place for information and how to frame information may also have led to why there was more value judgments put on how information was shared. (Participant Y)</p> <p>I think that the greatest problems we have as a society is all of this information, this information being spread on us is not only leading to poor decisions, but it's leading to such great division between people socially, economically, politically. (Participant S)</p>

	<p>I'm sure [unclear communication] very rightfully contributed to feelings of lack of trust in the healthcare community and a frustration with, you know, who are we supposed to believe, if the message from the expert keeps changing. (Participant T)</p> <p>It got really polarized and there's a lot of people out there who are just spouting things that they don't really know anything about, even though they have maybe an MD after their name. (Participant U)</p>
Stakes high	<p>Early on I think a lot of us were trying to share as much and figure as much as we could for the sakes of our own families. I was initially potentially going to be deployed and had no idea what was going on. I didn't know if I'm leaving my family alone to go away and something that's gonna wipe out a quarter of the population or turn into basically a bad cold, I had no idea. (Participant W)</p> <p>I feel like I'm fortunate compared to some of my peers that might just be luck of the draw. What I've had, I've had anti-Semitic comments. I've had misogynistic comments. (...) I know some women who get just sexually inappropriate direct messages all the time. Comments about their appearances. I haven't gotten that but I certainly know that that's the way of the landscape. (Participant AC)</p> <p>There's definitely been more trolls. Especially anti-science trolls out there and more people that feel emboldened to express views that are inherently dangerous, both politically, and socially. (Participant S)</p> <p>I found that about a year ago any of my COVID posts were met with such vitriol. People coming out of the woodworks to say, "Where did you get your medical degree? Why are you so stupid?" Just horrible, horrible, horrible things. And that was really sad for me to see because being able to offer information perspectives from my end on COVID is one of the reasons why I spent time at all on Twitter. (Participant Y)</p>
Urgent need for political decision making	<p>Should the booster be Omicron, should it be bivalent or monovalent? What's the appropriate dose? And those decisions had to be made very, very quickly in order to have something available in the Fall. (Participant C)</p> <p>From my perspective, there was a tremendous lack of leadership from people and physicians in power in the government early in the pandemic. (Participant M)</p> <p>I think that there's just some decisions that politicians make that can have huge repercussions in health and so I think it's important to kind of call them out on that. (Participant R)</p>

	It is still frustrating when decisions get made not with pandemic principles or epidemiologic principles in mind, but more the economic and political realities that our country makes decisions on. (Participant A)
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<sup>1</sup> Funtowicz, S. & Ravetz, J. (1993). Science for the post-normal age. *Futures*, 25, 739–755.

**Table B: Representative participant quotations regarding normal vs. post-normal science communication practices**

<p><b>Normal science (pre-pandemic) communication</b></p>
<p>I use it [Twitter] in a variety of different ways to try to engage patients and also engage in dialogue when patients have questions on whatever medical topic it may be. (Participant B)</p>
<p>I really post for me, and that's why I guess I haven't worked really hard on trying to get a big follower base or anything because I'm not really trying to get people to like it. It's almost like an outlet for me in a way. (Participant D)</p>
<p>Before the pandemic I mostly posted on Twitter about medical education stuff and coronary critical care stuff. (Participant E)</p>
<p>I kind of have a pretty broad feed, which I wouldn't say [I] curate, because that's too precise a word, but, you know, I find out about most news and most, obviously, health news from Twitter as my kind of universal feed for everything. Good entertainment, new science literature, updates from friends, everything. (Participant F)</p>
<p>When I started on Twitter (...) I really used it as a very professional tool to talk about research meetings and things like that. (Participant H)</p>
<p>I share a lot of articles thinking about physicians, I share teaching tools, when I'm writing something that I think that people might be interested in. I'm certainly an educator, so I imagine some of those are useful for medical students. And I do share some, you know, very anonymous, general observations about patient care. I think that those are things that are probably interesting to the public and I do like the interaction I get about those things because we, as doctors, actually don't hear from patients that much in the room. (Participant J)</p>
<p>The big ways are patient and family education on medical things and then also advocacy quite a bit. For communication with legislators and things along the lines of public health topics. Then, to a lesser degree, kind of publicity. What's my hospital doing? What are the researchers doing? Just to let people know about cool things about our hospital, or our local doctors. And then also certainly sometimes there's fun posts just for fun. But mainly education and advocacy. (Participant K)</p>
<p>I was very lucky to have gotten into social media, to have started in Med Twitter, quote unquote, when I was in medical school, sort of, at the second year of medical school. I was able to really benefit from a lot of the early introduction to the tweetutorials (...) some of that hidden curriculum I think is really well taught on Twitter. That was an education tool within Twitter that I really benefited from. (Participant L)</p>
<p>I was just looking back to see how I've used social media and it's kind of changed over time. So I think I started using Twitter maybe about seven years ago. Initially I joined at the suggestion of a friend of mine because I'd written some op-eds in places like <i>USA Today</i> and <i>Time</i> magazine. So I thought that's a good way to want to publicize and to get feedback from people. [...] I think I've also used Twitter not strictly for professional reasons, but also, like, I'm into photography and astronomy, and basketball, whatever. So those kinds of non-academic things. (Participant N)</p>

It was really about consuming cutting edge medical information, learning about high quality practices, best practices, better approaches to patient care. And then, as time went on, contributing to that conversation as opposed to just observing it and receiving the information. (Participant O)

### **Post-Normal Science Communication (during and post-pandemic)**

I did [take extra caution], because I know there was a lot of misinformation out there as well. Oh, I'm just gonna retweet this—wait, that wasn't a really good article. The local level information I was sharing once or twice a week, I do a thread like "Hey, here are the five websites that I'm going to for local information, here's their latest updates." If there were discrepancies, I would say "This person's reporting this projection, this site's reporting this projection, here's both of the information." So yeah, I would definitely try to fact check or vet my sources. (Participant AC)

I think they [their social media habits] did [change] in terms of determining what my content was going to be. If I had 15 minutes in a day, right, five minutes in a day, I really tapped into and reflect[ed] on what I thought my responsibility was getting information out there in terms of role modeling, in terms of optics as well. And I think both during the pandemic, COVID itself, as well as following George Floyd's murder, and really think, am I being anti-racist? Am I being an ally? Am I giving other people a chance to speak? So early in the pandemic I really felt that moral pull to share as much local information as possible. (Participant AC)

The main reason I did that [change my Facebook settings to "Public"] was I was putting out a lot of information relating to the pandemic that I thought was important for people to see, and that my account was private. Only people who are my friends saw it. So I specifically made the choice to make it public when I realized that a lot of the information that I was giving was actually going to be relevant to a lot of individuals who weren't necessarily my friends. (Participant B)

At the beginning of the pandemic, I think I was utilizing it a lot. Probably the first year and a half of the pandemic. I was utilizing it quite a bit to spread information and to try to combat the infodemic. I think now we're what, year three in the pandemic, and I feel tired. So I'm doing it less than I was before. But I was on social media an unhealthy amount at the beginning of the pandemic for sure. (Participant B)

I started posting more and more and other people were posting more and more then as well about things that were changing sort of by the day and what the latest information was on where the virus was, how bad it was, what's the situation of testing availability and public health surveillance, for example. So I started engaging with a lot of other people and tweeting more. And then as I found I was tweeting more, then some of the tweets I did got picked up and amplified by other high influencers. I think it was probably in the first few months I got up to, I don't know, around 2,000 [followers] and sort of never gone beyond that because I've never aspired to sort of grow my social presence there. It's like, it's fine. But it was very useful to me back then. (Participant C)

I was a little bit careful with those things with masks and COVID. I did in the beginning, actually, when COVID first came out, share a lot of stuff about how masks were important, things like that, before I realized it was going to be a controversial topic. (Participant D)

When the pandemic started, it was to just sort of help people understand what was going on, because there's a lot of misunderstanding. And if I'm honest, most of the education that I did happened not on Twitter, but on Facebook. Because Twitter for me was an echo chamber and Facebook was a place where people really needed the information. And then and if you look at the growth of my Twitter account, a lot of it happened during COVID. I probably only had maybe 1,000 followers when COVID started. And now I was like, I don't know, 30,000 or somewhere close to 30,000. All that growth is COVID related. And so now I continue, although I backed off of it by design. (Participant E)

I would say in the pandemic, I definitely started doing more public health communications and I think that's fallen off a bit, but a pandemic, I'd say, kind of drags on and in general, [leads to] frustration and exhaustion. You know, I think, unfortunately, one of the problems with dealing with bad faith actors, it's just where it's exhausting to [be] continually pushing and pushing in nonsense, especially when the nonsense is good for the other side. Also, I think that the cost of potentially becoming a target of harassment has become more of a real possibility. They've been better organized, where we're trying to fight against things like conspiracy theorists, stand-up actors, etcetera, and that's a part of the spectrum, you know, use those tactics of specific harassment and we're doing some work in the area where people use those strategies and I don't want to be caught up in that. (Participant F)

I'm still cautiously there [on Twitter/X] because I do think that it's important for people to stay on there and to represent accurate medical information and fight disinformation but maybe not as emotionally invested in it as I used to be. (Participant G)

Even though I've done a lot of good work helping educate people about what's going on with the pandemic, I don't feel like I have the energy to do daily COVID content anymore like I used to because it just seems like a lose-lose for the majority of the population, where I get a lot of hate getting thrown back at me. It's often just saying the same thing over and over again. So, I am taking somewhat of a step back from that, but still going back to what I originally wanted to do, which is educate people about my specialty, educate about general medical education. (Participant I)

I think I liked Twitter a lot more pre-pandemic. At the beginning of the pandemic, March 2020, I honestly found it's something that was just worsening my anxiety about the whole thing because it was mostly people who didn't know what they were talking about. And then, you know, what happened is fairly quickly, well, maybe not fairly quickly, I think after a year sort of post vaccines, I think then things began to get very sort of split in people's feelings about COVID, belief about COVID. And then there was just so much arguing and it just took up so much space. (Participant J)

During the pandemic, it [their use of social media] changed from a dramatically much more focused on initially sharing my evidence-based perspective on what was happening, to some extent keeping up with what was going on in literature and with expert opinion. But then, a lot of times especially in 2020, really combating medical misinformation. As time has gone on and particularly with Twitter the landscape of how that platform has changed, my use has again changed. So we're—you know, in the early days it was a kind of conversation about medical care and then it was



really about spreading what I consider to be reliable or good medical information about public health and medicine and also some degree of combating misinformation. And then in the past, really like a year, or maybe even more now, it's really changed again. I'm not really engaging in conversations on social media anymore. I use it primarily as a free advertising service for other work that I'm doing. So basically, I tweet every time I have an article come out or a podcast or an interview that I conduct and that's about it. It's much less of a robust sort of rich conversation among experts and providers and clinicians and much more of just a platform for promoting other work. (Participant O)

I don't really post a lot about COVID anymore. Every so often I might if it's time to get boosters or if something new comes out that I think is important for people to hear about, I'll probably do that or I'll retweet something that our group puts out. But I don't feel that urgency of putting information, because now there should be better places for people to get their information. A Twitter account is really not where you want to get your scientific information. But there's a whole aspect of Twitter that I think we use for education. (Participant P)

With the pandemic, there was a sense of urgency of communication that led me to be a lot more active on social media and also using it more for more of an advocacy role that I've now scaled back because I don't...I guess I don't feel the same urgency that I did a couple years ago. I don't know if my colleagues who were in it feel the same way, but I'm also fatigued. I feel like it's just information overload at this time. I just don't have the same interests for my own mental health. There is so much contentious conversation on social media that I try to stay away from and so I've scaled back on its use and I only scroll. And when I start seeing things that seem very negative I rarely engage, rather just kind of shut off. I don't know how long that will last, I just think that right now I need that break. And maybe there'll be a point where I'll start using it more and maybe engaging with more of those contentious arguments. But at this point, I feel kind of burnt out from social media. (Participant R)