

Tomas Pueyo

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Female: Welcome to Conversations on Health Care with Mark Masselli and Margaret Flinter, a show where we speak to the top thought leaders in health innovation, health policy, care delivery and the great minds who are shaping the health care of the future. This week Mark and Margaret speak with Tomas Pueyo, Silicon Valley startup entrepreneur, engineer and writer whose recent in-depth articles in the online publication Medium have garnered worldwide attention more than 60 million view. He's applying his engineering and data analytics acumen combining disparate information about COVID-19 to pull it all together for a published guide on how nations, governments, health systems and individual should be responding to this pandemic.

Lori Robertson also checks in, Managing Editor of FactCheck.org, always separating the fake from the facts. We end with a bright idea that's improving health and well-being in everyday lives. If you have comments please email us at chcradio@chc1.com or find us on Facebook, Twitter, or wherever you listen to podcast. You can hear us by asking Alexa to play the program Conversations on Health Care. Now stay tuned for our interview with Tomas Pueyo here on Conversations on Health Care.

Mark Masselli: We're speaking today with Tomas Pueyo, Vice President for Growth at Course Hero an online reference source for students, an engineer and entrepreneur with an MBA from Stanford. He's played a significant role in a number of other Silicon Valley startups, including Zynga and the online investment platform SigFig. He has recently gained worldwide attention for his in-depth analysis of the global health data around COVID-19.

Margaret Flinter: Tomas is a published author and a public speaker on the neuroscience of storytelling, and he's recently become a very important thought influencer on coronavirus with a series of well received articles published in the online site Medium. Tomas, welcome to Conversations on Health Care.

Tomas Pueyo: Thanks for having me.

Mark Masselli: Tomas, an engineer, data analyst and self-described storyteller. You saw a lot of disparate information emerging around COVID-19. You took really a deep dive into the global data around COVID-19, including each country's different approach. You wrote the first piece, I think early in March, Coronavirus: Why You Must Act Now and much of what you predicted and laid out has happened. I'm wondering what actions should have been taken in those early days of the pandemic and so necessary for us to get ahead of the pandemic?

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Tomas Pueyo: Yeah, much time has passed. I think it's important to go back to the mindset that the world had around that time. March 10th China was already close to being out, the daily cases in Hubei had been going down substantially. At that point, it was South Korea, Iran and Italy, that we're exploding. Each one of them had thousands of cases and nearly all other countries just had a few dozen. What people thought was, well, you know I only have a few dozen cases, this doesn't matter. That was the mindset of most people. If you see something happening in China, and then the exact same thing happens in three other countries a few weeks later, and you see the same beginning in every country. Then you can just predict what's going to happen very easily.

I think on March 10th Italy had already locked down, so it's not like it was only a Chinese thing, and you could see all these other countries going through the exact same thing. You took Spain and France, for example, one more -- nearly one more week to make decisions. It took the UK, I think, two or three more weeks to do that. Then in case of the US it was just at the state level, it never happened at the federal level. I think that's where the mistake happens, and then history repeats itself. Assuming that it is not going to happen to you is a mistake.

Margaret Flinter: Tomas, we are watching the predictions that you made play out in real time in our nation's hospitals in particular in our cities and increasingly rural areas, which are being overwhelmed. Your follow up article, The Hammer and the Dance explores what has to be done now that we are living in the midst of a pandemic. The hammer, the strict shut down of schools, businesses, most of society has bought us time. Still 50,000 people are dead, millions are sick. Talk with us about why this hammer phase is a harsh, but a really necessary approach right now?

Tomas Pueyo: You see a country like South Korea, like they had an outbreak, but they knew exactly what they needed to do because they had something similar happened to them five years ago with MERS. They had the right laws, they had the right public education, and so they didn't even need countrywide lock downs. They just did what they knew what to do, and the results was very positive. Most of the countries did not have this experience. Most of the countries were completely overwhelmed. Their healthcare system completely overwhelmed. It meant also that they didn't know exactly what to do to control this. That's what the hammer is. It's realizing that you have a massive outbreak, you need to stop it. That buys you time to understand the virus, to understand how to handle it, and to take all the measures to control it. Controlling the epidemic, and understanding what to do to prepare for the dance are the reason why you need to be very aggressive for a few weeks early on with a

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hammer to buy yourself time.

Mark Masselli: Tomas, a lot of people are really eager to reopen the economy, which you refer to, I think, is the dance part of the equation. We haven't even hit peak outbreak in many parts of the country and yet people are marching in the streets. You say there are some clear strategies that would help facilitate opening things up again, but that we have to be patient if we we're to do this without initiating another wave of outbreaks. I'm wondering based on your data analytics of countries that have done it right, what must we do here in the United States, especially without a viable treatment or vaccine? How do we continue to sort of minimize the risk to human life while preserving the economy as well?

Tomas Pueyo: Yeah, there are some people in some places going on the street and many, many more staying home. Now, obviously, you don't see them because they're staying home. Tens or hundreds of millions of people who are staying home are the very vast majority. It makes sense that people are angry, because this is very hard. So many millions of people lost their jobs, some businesses are going to have to close and in many cases, unfortunately, it was also an avoidable situation if we had taken the right measures at the right time. It makes sense that people are angry, but it's also true that most people understand what to do. What do we do to move forward as fast as possible? The issue with the measures that you're mentioning that some states want to relax is that you haven't changed anything. I am a bit concerned about some of these measure relaxations that happen in different places.

To your point now, what can we do instead? The hammer is this very blunt force that you apply, a scalpel enables you to be much more precise on exactly what you need to do. It is a combination of testing, contact tracing, isolations and quarantine. First, you need to test everybody, because if you don't test, you don't know who is infected. If you don't know who is infected, you cannot isolate them to prevent them from being infectious. Then you also want to see all the contacts that they've had over the last couple of weeks, so that you can isolate them. You test them to see if they're positive, if they're positive, you isolate them, and if not you ask them to stay at home for a couple of weeks, so that they can't transmit the virus to anybody else. If you do this, you can isolate only a few people and enable everybody else to go back to work, but those are not easy things to do. We all know that our testing is not the right level. We know that our contact tracing is basically non-existent. We need to set up these things.

The question is not we've already been in lock down, are we ready yet? But rather, what measures are we taking? When are these measures going to be ready for us to dance? I mentioned four, there's a few more, for example, everybody should be wearing masks even

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homemade masks make a huge difference. It is a no brainer just everybody should be doing this. Then there's the obvious things of hygiene, physical distance, and public education, all of these things are pretty cheap to do, and we should be doing them all.

Margaret Flinter: I want to talk about the group of people that are just paying such an incredibly high price, and that's our frontline healthcare workers. They're in our hospitals, they're in our clinics, because we didn't flatten the curve early on weren't as prepared as we should have been. We have a system that's overwhelmed and people just don't have the basics of what they need to fully protect themselves. We hear about governors bidding against each other to get the essential protective equipment that they need. What's the best way to go forward based on your analysis to make sure that across the country our health systems are supported, and healthcare workers have what they need to be protected while they carry out their life saving work?

Tomas Pueyo: Thankfully, we're in a place where these people selflessly go and fight this day in and day out, which by the way I think is heroic, but also putting stark contrast with the sacrifices that we ask everybody else to do, and some are not willing to make. They are dying for all of us. The obvious one is our personal protective equipment. You want them to have their masks and their screens, for the face, and their gowns, and we just don't have that -- enough of that still, so that's crazy, so that's the first thing that we need to keep doing. A lot of the production of these things was happening in China, they are price gouging now. There is homegrown desire to build these things, but then nobody's controlling and coordinating it.

I know a bunch of manufacturing plants that say, I can recycle into building masks, but I don't know the designs that I should be using. I know there's demand, but nobody's contacted me, so how do I do it? I think that's one of the key roles is the want of coordination that the federal level should have had, and unfortunately hasn't happened. I think obviously, ventilators everybody talks about them, ICU beds. Another one of the keys that we will need over the next few weeks is understanding better the virus and the illness and how they work, because we know that a big chunk of the issue is due to the virus, but another issue is due to the immune response to the virus. For example, ventilators might not be helping for the immunity response, understanding the details there first, obviously, to do the proper treatment, but also then to understand what are the assets that we need to deliver those proper treatments.

Mark Masselli: We're speaking today with Tomas Pueyo, engineer, data analyst, entrepreneur, author and writer whose collections articles on COVID-19 published in the online site Medium have been widely acclaimed. Tens of millions of people have viewed them. Tomas, one of the

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articles in your coronavirus series really caught my attention in the piece out of many one. You do an in-depth analysis of why a cohesive public health approach is so much more effective than this piecemeal approaches received right now. For example, we've all read where Georgia, Florida are reopening, in that piece I think you do a great job of laying out some very specific reasons why a unified strategy across the country will not only save lives, but serve the economy as well. I'm wondering if you could illuminate more of your thinking on.

Tomas Pueyo:

Yeah, the places that are impacted first are always going to be the ones that are most connected to the world because they are the ones importing the cases, and then the ones that have the more density because then the transmission rate is going to be higher. That's because in this country, urban areas tend to be more Democrats, and rural areas tend to vote more Republican, that meant that democratic areas were impacted first. Then it might be perceived as a more of a party line kind of issue. But the problem is when you look at historically, how these kinds of illnesses spreads, then they end up spreading everywhere.

Early on, it was perceived as a partisan issue because of this reason, but it wasn't. The reason why you need to coordinate, you don't want different states to be bidding against each other for these kinds of assets. In fact, you want to allocate these assets to the right basis and you want one single buyer so that they have all the force of their purchasing power. The other one is obviously knowledge, right, because you have the CDC at the federal level, you don't have the CDCs at the state level. The epidemiological experience and the ability to research everything that needs to be done, it makes sense to centralize that.

Whenever you have an impact at the economic level, you will have some parts of the economy that are worst hit than others. You want as high level as possible to go and spread the pain. For example, Florida's economy relies very heavily on tourism. Tourism is very affected by the coronavirus. If Florida has to make a decision between health and economy and their economic impact is going to be so much higher than in other states, they will have a different conclusion. That is probably the right conclusion for Florida, which might not be the right conclusion for the rest of the country. That is why you need a higher level coordination. Federal government saying you know Florida for the good of all the states, you need to shut down, but you are going to incur more cost, so we need to compensate you for that.

Margaret Flinter:

Well, Tomas, and in the coming months, we will as a nation, I hope, be on the downside of the COVID-19 outbreak curve, but we are clearly going to be left with an enormous hit to the economy, to our

healthcare system, maybe to our just national sense of well-being. You've talked about we need to get back to a new normal and learning a new way to dance. As a dance aficionado, I really appreciate your quote from Martha Graham that dance is discovery, discovery, discovery. We're going to have to discover a lot of new dance steps, but what are they? How do you envision this rebuilding of the country after the worst of this is behind us? What are these projections look like in terms of getting back to this new normal and how people learn the steps to get there?

Tomas Pueyo:

There's a very short term, there is a medium term and there's long term. Short term is the next few weeks, then is -- the medium term is the dense period, and then the long term is once we're out of this, and each one of them has their own challenges. Right now, the short term, the challenge is figuring out which measures we're going to bet on. I mentioned a few of them very quickly summarizing, testing, contact tracing, isolations, quarantines, masks, public hygiene, public education, and physical distancing. There's also probably a couple more that we need. One of them is some travel restrictions, the other one is limits on social gathering side.

If we can do an amazing job locally, but then you import cases from abroad, then you have a problem. This is exactly what happened in Singapore. They're doing a great, great job locally and then imported cases from workers, and then they had an outbreak. I think that we might need to do is also limits on social gatherings, because if you have, for example, a very big fair that lasts three, four days with 5000 people, the likelihood that one of these people or a few of these people come and infect all these other networks that are available in that place is very high. Then you can have a huge super spreader event like this, like the one that happened in South Korea, where just a woman went to a church twice, created 5000 cases. That's the medium term. How do we live with these measures? The new normal might be, now you have a mask on you all the time.

Now, if you're in a meeting, you should not have 10 people in a small room, but maybe it's two or three people and you're sitting in a way that you don't face each other. There's a lot of these small things day-to-day that are going to change. Then there's a question of after that, right, after there's a vaccine, after there are treatments, how we can tackle this. I think there's a lot of questions that we will need to ask. Many of the systems in the United States were not well equipped to respond to these crises, but the government is just a tool and is just a tool for coordination. If you face a situation like this one where you need coordination, you need the government in this case to provide a solution.

The fact that my wife, for example, was in isolation because three

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weeks ago, she might have had the coronavirus and she turned out to be negative, but it cost us over \$2,000. If it's going to cost us through the current healthcare system \$2,000 per person to be tested for the coronavirus, nobody's going to get tested. If nobody gets tested, we can't control the epidemic. You need an intervention of the healthcare level to prevent these type of epidemics from happening again. This is the type of conversations we're going to have for the long term.

Mark Masselli: We were fortunate to have Dr. Fuci on our radio show, I think, early in March, but I think there were only -- whatever it was, 15 cases were out there. But he has talked since then about the second wave of COVID-19 outbreaks once the society opens up again. We're still learning more about the capacity the virus has spread. Your latest installment, in this really great lexicon of work that you are doing entitled *The Basic Dance Steps Everybody Can Follow*. You really sort of lay out for the public the role, the important role they could do. It's just really the fundamentals of blocking and tackling, if you will, of wearing mask, hand hygiene, simple behaviors, so really I think we have to retrain our mind about how we do a dance with somebody, right, maybe a little more distant dance. Tell us how that public plays, perhaps the most vital role?

Tomas Pueyo: Yeah, my interpretation of it is based on what he understands and what's happening in the US, it is likely that we will be suffering another one. Many other countries will probably not. It really depends on us. We've seen that governments in different levels are taking the right decisions, but not all. Citizens have a role to play, businesses have a role to play in. Blocking and tackling I think is important to understand the science that we know today of the virus. What we thought a few weeks ago is that it was just transmitted through droplets. You speak or like you cough rather and you made a few droplets that fall on the ground within six feet, and so you're good as long as you're not coughed in the face. We've learned since that that's not the case. It's only the coughs but it might be you speaking. It might be you just singing, like a choir in Washington State. 60 people, 45 got sick in the church, the mega church in South Korea. These people are singing a lot still.

We also know now that you can emit when you cough, for example, a cloud of droplets that stays in the air for longer and goes farther away for a couple of meters. One of the fascinating study in the Chinese city of Guangzhou, three families sitting in three different tables at a restaurant, and just one person in one of the tables ended up spreading the virus to seven or eight people in three different tables. That tells you some of the patterns of the spread. It happens exceptionally when there's a lot of talking, singing, contact close to each other in confined environments for a long period of time. This is

what you need to avoid.

The things that don't look like they are infecting too much, are for example, walking outside. Once you understand that, you start understanding some of the things that you can do to prevent these from happening. For example, why are masks so important? Because half of the transmissions are pre-symptomatic, which means that people don't have symptoms yet, but they're sick, they're already transmitting the virus. If you have a mask, all these droplets are going to stay in the mask. Everybody should be wearing these masks. First, because it prevents others from being infected. It also obviously, because it protects you from being infected too, but you shouldn't be sitting in a meeting with five people in the same room talking for an hour, because that's a recipe for disaster. Now you start understanding what are some of these measures that you can take.

Margaret Flinter: We've been speaking today with Tomas Pueyo, engineer, startup entrepreneur, author of a series of powerful articles on the coronavirus, published in the online site Medium, you can find them and we encourage you to read them through his pages on Facebook, LinkedIn and on Twitter @tomaspueyo. Please also follow his work on Medium. Tomas, we want to thank you for sharing your really remarkable skill for clear communication and taking complex data, turning it into digestible stories, and giving us a guidebook for navigating this pandemic what we need to do, what we need to avoid doing. Thank you so much for joining us today.

Tomas Pueyo: Thank you so much for having me. I think what you're doing is extremely important. Spreading this message is the single most important thing and the most impactful thing that we can do for the health and the economy of this country. Thank you very much.

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Mark Masselli: At Conversations on Health Care, we want our audience to be truly in the know when it comes to the facts about health care reform and policy. Lori Robertson is an award winning journalist and Managing Editor of FactCheck.org, a nonpartisan, nonprofit consumer advocate for voters that aim to reduce the level of deception in US politics. Lori, what have you got for us this week?

Lori Robertson: Online posts have claimed to reveal various cures for the novel coronavirus. Some are benign like eating boiled garlic, while others are potentially dangerous like drinking chlorine dioxide and industrial bleach, neither will cure the virus. One rumor claims that boiled garlic can cure the virus. Another says that loading up on vitamin C will do the trick. Yet another would have people essentially drink bleach. None of these "cures" will treat the virus. As for the dangerous idea of drinking bleach, chlorine dioxide kits are sold online under various

names, miracle mineral solution, miracle mineral supplement, but there are most often referred to as MMS. These kits typically include a bottle of sodium chloride and a bottle of an activator such as citric acid. When the two chemicals are mixed together, they make chlorine dioxide. But MMS hucksters sell the chemical solution as a cure for cancer, AIDS, autism and now the novel coronavirus.

One popular conspiracy theorist wrote on Twitter “no known cure for coronavirus. They say, well, it sure sounds like chlorine dioxide could wipe it out.” He directed his 116,000 followers to a website called TV’s Corner which posted a banner at the top of its site telling customers it was experiencing a high volume of orders. Chlorine dioxide is used as a disinfectant in municipal water treatment, but the Environmental Protection Agency has set a maximum allowed level of 0.8 milligrams per liter. The FDA has warned against using MMS since 2010 and reiterated in a statement to FactCheck.org that “The FDA recommends consumers do not ingest these products.” That’s my fact check for this week. I’m Lori Robertson, Managing Editor of FactCheck.org.

Margaret Flinter: FactCheck.org is committed to factual accuracy from the country's major political players and is a project of the Annenberg Public Policy Center at the University of Pennsylvania. If you have a fact that you'd like checked, e-mail us at www.chcradio.com. We'll have FactCheck.org's Lori Robertson check it out for you here on Conversations on Health Care.

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Margaret Flinter: Each week Conversations highlights a bright idea about how to make wellness a part of our communities and everyday lives.

Mark Masselli: When Jennifer Staple-Clark was a sophomore at Yale, an internship at the ophthalmology office turned out to be a life transforming experience. She realized that many of the patients who had limited access to medical care were coming into the office with serious eye conditions that had gone past the point of reversing, leading to unnecessary blindness. What she launched from her dorm room was a local initiative to improve access to preventative eye care to the neediest population in her local community.

Within two years, she took her organization Unite for Sight worldwide, and has since turned it into one of the leading providers of global eye care in hundreds of communities around the world. Unite for Sight brings social entrepreneurs, public health experts, local eye surgeons and volunteers together to bring eye care into some of the most underserved areas of the world. They use each country's existing pool of ophthalmologist and eye surgeons to treat their local patients. They also train community health workers in each area they serve,

thus removing traditional barriers to eye care experienced by many in extreme poverty.

The community health workers provide education and transportation to get doctors to the patient's communities and patients to the hospital if surgery is indicated. Since its inception, Unite for Sight has served 1.4 million patients worldwide and restored eyesight to roughly 55,000 people restoring not only their sight, but their dignity and ability to be productive members of their communities as well. Using global health delivery models and improving the quality of life by offering basic preventative eye care to those who had previously gone without, now that's a bright idea.

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Mark Masselli: You've been listening to Conversations on Health Care. I'm Mark Masselli.

Margaret Flinter: And I'm Margaret Flinter.

Mark Masselli: Peace and Health.

Female: Conversations on Health Care is recorded at WESU at Wesleyan University, streaming live at www.chcradio.com, iTunes, or wherever you listen to podcasts. If you have comments, please email us at chcradio@chc1.com, or find us on Facebook or Twitter. We love hearing from you. This show is brought to you by the Community Health Center.

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