

Make Me Care About...

Make Me Care About...Syringes

Podcast episode two transcript

Jen Hatmaker: Do you guys actually remember when that huge cargo ship got stuck in the Suez Canal? We were like maybe a year into COVID. It was crazy. It was on every single news channel. It was bananas. And I remember thinking, and I'm not proud of this, but I was like, you know what? The shoes I ordered are probably on that ship. I'm never going to get them. As it turns out, there was something slightly more important than my shoes that was on that ship. And if you can think about what it was like about one year into COVID, you might understand why the syringes on board were the bigger deal.

Surabhi Rajaram: While syringes are sort of critical to be able to give vaccines, in fact, you can't do it without them often. And safe syringes are really important to preventing the spread of illnesses in that process. So I will take you about 20 years ago to the year 2000 where the World Health Organization estimated that there were 16 billion injection events happening in a year that was for immunization, that was for any sort of therapy use. And they estimated at that time that possibly 40% of those injection events could be with reused equipment. That translated to approximately 21 million new cases of Hepatitis B, 2 million of Hepatitis C and 260,000 of HIV that were possibly conferred just by contaminated equipment alone.

Jen Hatmaker: Created in partnership with the Bill and Melinda Gates Foundation, this is Make Me Care About and with me is Surabhi Rajaram immunization markets expert at the Gates Foundation. And today, Surabhi is helping us care about syringes. Hi and welcome Surabhi.

Surabhi Rajaram: So, so happy to be here, Jen.

Jen Hatmaker: Will you tell me more?

Surabhi Rajaram: When I say safe syringes, what I'm actually talking about is a syringe called the auto disabled syringe, which has a special feature that physically prevents the user from being able to withdraw the syringe again. They're very cool because they're a silent or passive innovation like airbags in a car. So healthcare workers don't even need to think about activating it.

Jen Hatmaker: It's just a built-in safety guard.

Surabhi Rajaram: Exactly. An auto disabled syringe is qualified by three key features. The first is that it has a reuse prevention or auto disabled feature. And so this feature physically prevents a person from reusing the syringe. The second is that it has a fixed needle. This is similar in that the needle cannot be removed and plugged into another syringe for use. And the third is that it has a single line marking or it's fixed dose. That means you can only draw one volume with that syringe.

Jen Hatmaker: Wow. So when did auto disabled syringes become a common theme?

Surabhi Rajaram: So really in the 1980s, HIV was rampant, especially in low and middle income countries. It was an epidemic form. And at that point in time, syringe reuse was a huge driver,

especially in immunization campaigns of HIV transmission. The World Health Organization took note of this and put a call out to manufacturers, is there a way to engineer a device that can naturally prevent this from occurring? And so in 1990, more than 30 years ago, the first auto disabled syringe received international use authorizations. And so the credit really has to be given to the global development community for recognizing the issue and then industry for being able to respond with the device. And in 1999, the impact of that was immensely realized because over the decade that followed, there was a decrease in incidence of disease due to reuse from 40% all the way down to 5%.

Jen Hatmaker: Wow. That is such major progress. I'm surprised that this is not just common knowledge. So for us here in the US are all syringes auto disabling now?

Surabhi Rajaram: It's quite interesting because in the United States, auto disabled syringes are not the standard of care. What's often a vaccination experience in the United States is that you're used to seeing syringe with the vaccine already prefilled inside it. And one of the ways we do practice safe injection in the United States is by having a prefilled device. Because technically once that vaccine is exhausted, it's easy for a healthcare worker, a nurse to throw it out. So there are auto disabled syringes that are used. There are other safety syringes that are used that prevent, say a needle stick injury getting poked by the needle. Right. But it's definitely not a policy everywhere in the United States.

Jen Hatmaker: You just mentioned briefly the risk of either over or under dosing. How often does that happen as best as you can track?

Surabhi Rajaram: It's very hard to track as you mentioned, but there were definitely many stories that rose up to the surface during the pandemic. It was a new experience in the United States because instead of the prefilled syringes, we were drawing COVID vaccines out of multi-dose vials. So some vials had say 10 doses of vaccine or five doses of vaccine. And at the point in the pandemic where there were not enough vaccines to meet the demands of the population, many providers were trying to squeeze every last drop of vaccine out of the vial. Unfortunately, if you don't have the right syringe to be able to do that, you end up inadvertently under dosing. That was a recent example that happened all over the US. So there are many incidences of that.

Jen Hatmaker: So all right. I bet some of our American listeners are wondering this because I'm also wondering this, how does what happens with syringes and diseases across the world affect us here in the US? Or does it?

Surabhi Rajaram: Absolutely. We are. I mean, diseases don't know borders. And we've seen in many ways with especially the globalized world we live in, crossing borders is nothing for a disease, doesn't need a plane ticket. And so anytime there is increasing transmission of a disease anywhere in the world, we are all in it together.

Jen Hatmaker: So I will admit to you for [inaudible 00:07:32] I have literally never thought about syringes. I mean, I've thought about vaccines a bunch. I've got all these kids. We've been having vaccinations for 25 years. And so this has been really interesting to learn and I've got some more questions. When we come back I want to know what the future of vaccines are. Like is it shots forever? Is that all we get? Have we reached the edge of vaccine innovation? Maybe we have.

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Anyway, I'm going to ask Surabhi when we come back. This is Make Me Care About, I'm Jen Hatmaker and with me is Surabhi Rajaram, immunization markets expert. And today, Surabhi is telling us all about syringes. Surabhi, we obviously watched as the whole world struggled to distribute vaccines efficiently when they were sort of first hitting the market. So I wonder if you can parse this out a little bit more for us. What should we also know about the role of auto disabled syringes for future pandemics?

Surabhi Rajaram: COVID brought us many challenges and many limiting factors. And in the frame of vaccination, you don't have a vaccine without the associated syringes and without the associated cold chain equipment to keep that vaccine cold. And so what we saw, especially with regard to syringes, is that when vaccines became authorized and hit the market, syringes had to keep pace with that manufacturing. And historically, the syringe market was quite calm and always rose to the demand. So we went from a very predictable frame to a highly unpredictable and volatile scenario. The other interesting thing about syringes, especially for countries that don't produce syringes domestically, is that syringes are so bulky they have to go by ship. So where vaccines can be flown to a country, we had to rely on sea shipments for syringes and air is far faster than sea. And so the advanced planning even required for syringes was so much more because where you could fly something somewhere within a week, it took two months by sea to reach the same destination. And so in many ways, syringes were not able to keep pace at times with the scale of the vaccine need.

Jen Hatmaker: It's interesting to hear about the shipping issues. It never occurred to me that syringes would have to be transported on ships and boats as opposed to flights. And so it seems like to me when I'm thinking through just the basic size of a vial of vaccine and a syringe, they don't seem that different. What's the issue here in transportation?

Surabhi Rajaram: Vaccines come in multi-dose vials, and so you may see 10 doses in a small vial, whereas syringes have a lot of airspace and additional packaging that make them actually quite bulky products. They just take up so much more space. And so it's far more cost-efficient to send syringes in a container on a ship because for one shipment of syringes via sea, you may take five or six cargo planes to transport the same amount, and that's 10 to 20 times more expensive to transport syringes by air than by sea. I remember during the pandemic when that ship got caught in the Suez Canal,

Jen Hatmaker: Right.

Surabhi Rajaram: That was a terrifying moment for many of us in the syringe world because the Suez Canal is one of the most critical international passageways for ships, especially to Africa. And boy, were we hoping that none of them were backed up.

Jen Hatmaker: That is so true. Most of us in America were watching that story unfold and we were worried that the shoes we ordered weren't going to get to America. And meanwhile your team is going those syringes. Wow. That did not even occur to me.

Surabhi Rajaram: It was like, God, this is the last thing we need. We tried to predict everything, but we could not possibly have,

Jen Hatmaker: How could you?

Surabhi Rajaram: Predicted a ship getting stuck in the Suez Canal.

Jen Hatmaker: It's the craziest thing I ever saw. So what would you say we learned from that globally? Will we see a change in sort of best practices here in preparedness for any other global pandemic that hits? Do you think we'll see something different?

Surabhi Rajaram: Absolutely. And I think we are all shifting our mindsets to what that preparedness scenario looks like. Starting from the fact that we were dealing with two different industries, the vaccine manufacturing industry and the syringe manufacturing industry, and the need to even integrate from day one and to have those conversations together to ensure that vaccine doses are formulated for the appropriate syringes.

Jen Hatmaker: You're asking really great questions. That's encouraging. I'm curious what the future is here. What lies ahead? How do you predict as an expert that we'll deliver vaccines in the future?

Surabhi Rajaram: I think that definitely auto disabled syringes are part of the near future. There's a lot of current reliance on them and it takes time and money and effort to reformulate a vaccine. There have been a lot of advances in different delivery technologies for vaccines. One of those is a nasal mode of delivering a vaccine. So through a nasal spray feature. There has been a lot of groundwork laid for technology called microarray patches. So I'm told that if you go to a drugstore, you can find like a pimple patch that is quite similar to a microarray patch,

Jen Hatmaker: Sure.

Surabhi Rajaram: That zaps your pimple overnight. But think about it as a sticker that you put on that is able to deposit the vaccine through your skin. So there are a lot of new and interesting technologies on the horizon to look out for, but I think that transition is going to take a little bit of time, but definitely in the works.

Jen Hatmaker: Surabhi, thank you. I never expected syringes to be so interesting. Thank you so much for the work that you do, the care that you give it. So happy to have had this conversation with you.

Surabhi Rajaram: Likewise, thank you so much for the opportunity and huge thanks to the team that stands with me in this work as well.

Jen Hatmaker: You guys, I think I'm just glad to be alive at the same time as Surabhi and everybody in her industry trying to figure out how to make us healthier and safer, aren't you? We are living at a time with some of the greatest. Lucky us. Make Me Care About is produced by Jesse Baker and Eric Nuzum of Magnificent Noise. Our production staff includes Sabrina Farhi, Hewate Gatana, Julian Nat, and Kristen Mueller. Our executive producer is Eric Nuzum and I'm the host Jen Hatmaker.