CORPORATE PARTICIPANTS

Brian S. Tyler  McKesson Corporation - CEO & Director
Moncef Slaoui  Medicxi Ventures (UK) LLP - Partner & Member of Scientific Advisory Board
Angela Hwang  Pfizer Inc. - Group President, Pfizer Biopharmaceuticals Group
Stéphane Bancel  Moderna, Inc. - CEO & Director
Karen Sue Lynch  CVS Health Corporation - Executive VP & President of the Aetna

CONFERENCE CALL PARTICIPANTS

Cory William Kasimov  JPMorgan Chase & Co, Research Division - Senior Biotechnology Analyst
Christopher Thomas Schott  JPMorgan Chase & Co, Research Division - Senior Analyst
Lisa Christine Gill  JPMorgan Chase & Co, Research Division - MD, Head of U.S. Healthcare Technology & Distribution Equity Research and Senior Research Analyst

PRESENTATION

Cory William Kasimov  JPMorgan Chase & Co, Research Division - Senior Biotechnology Analyst

All right. Good afternoon, everyone, and welcome to JPMorgan’s 39th Annual Healthcare Conference. Sorry for the short delay getting started. My name is Cory Kasimov. I’m a senior biotech analyst here. And I’m joined by my colleagues, Lisa Gill, our health care technology and distribution analyst; and Chris Schott, our U.S. pharmaceuticals analyst. And it’s our pleasure to host this keynote on all things related to COVID-19 vaccines.

We’re very excited to have a really distinguished group of panelists today, including Dr. Moncef Slaoui, the Chief Adviser to Operation Warp Speed; Angela Hwang, Group President of Pfizer Biopharmaceuticals; Stéphane Bancel, the CEO of Moderna; Karen Lynch, the current President of Aetna and incoming CEO of CVS Health; and Brian Tyler, the CEO of McKesson.

So thanks to you all for taking the time to join us today. And even more so, I think I should speak for everyone when I say upfront, thank you for all your efforts in fighting this pandemic. So our hope with this keynote is to cover all things, all aspects of COVID-19 vaccines, from development, production to distribution, logistics and to longer-term outlook for the pandemic.

And so with that, Dr. Slaoui, perhaps you can take us a couple of minutes to set the stage for our discussion by providing some overarching perspective on where we are in addressing the pandemic and how you’re thinking about the priorities at this point in time.

Moncef Slaoui  Medicxi Ventures (UK) LLP - Partner & Member of Scientific Advisory Board

Thank you, Cory, and thanks for having – putting together this panel. I look forward to a good conversation. Really, in a few minutes, I’d say to an extraordinary pandemic that hit us starting, say, in January of 2020, there has been an extraordinary response from the health care ecosystem globally and the biotech pharmaceutical ecosystem more specifically in that period of no more than 11 months that elapsed between identifying the sequence of the virus and having 2 vaccines approved and in use in the U.S. population.

I think it’s truly an exceptional achievement, thanks to the great efforts in the companies whether large biotechs or large pharma, great efforts, thanks to various U.S. government entities within the Human Health Services or the Department of Defense. And also, I think, thanks to a very, very aggressive strategy put forward to incentivize and support financially but also operationally the discovery, the development, the manufacturing and now the distribution of the vaccines.

In May of 2020, there were, if my memory doesn’t fail me, more than 120 different vaccine programs described in the world and there may still be close to 100 of them at different levels of activity.
Within the U.S. Operation Warp Speed we’re set up to try and accelerate the development of a number of vaccines. Without getting into the detail, 6 vaccines were selected. Fast forward today, 5 of these vaccines are in Phase 3 trials or have completed the Phase 3 trials. 2 are approved messenger RNA. And we have representatives from Pfizer and Moderna, I think, that both spearheaded these programs to allow us to have vaccines approved and in use.

2 more have completed recruitment in their Phase 3 and are really accruing cases, 1 by Johnson & Johnson and should be coming to fruition very, very shortly by the end of this month or early next month, and 1 by AstraZeneca already approved elsewhere and completing Phase 3 trial here in the U.S., and potentially, getting an emergency use authorization in March.

And then still a protein vaccine by Novavax is in Phase 3 trial. More than 8,000 subjects recruited and a Sanofi collaboration with GSK with a vaccine that’s in Phase 2b trials. Great progress in terms of developing the vaccine clinically. Also great progress in terms of manufacturing the vaccines in parallel and at high risk, either within the companies as has been the case for Moderna and Pfizer or in manufacturing capabilities and facilities that have been accessed as part of the U.S. government contracting with contract manufacturers either for production of the vaccine. Drug substance are also critically for the finished activities are a major bottlenecks in same activities used for all vaccines.

To date, as I said, 2 vaccines are approved, 40 million doses have been distributed already. Only 9 million people have been immunized. There is a need to accelerate the immunization.

The distribution of the vaccine has been, I think, a remarkable also collaboration and partnership, which we -- McKesson, CVS, Walgreens, FedEx and UPS, and here, General Perna, my colleague in the operation and the DoD in general, I think what the companies have played a critical role in delivering exactly on time as was described yesterday in over 14,000 different locations, the exact quantities of the vaccines on the date that were suggested.

Where things need to improve is in the capacity of the health care system in general without getting into the politics of whether it should be at the states or the federal level that is what it is. And we need to improve the speed with which we are able to deliver these vaccines into the arms of people. That’s our #1 key area going forward.

I would say other areas that require absolute continuous focus are to continue to streamline and optimize the supply chain with the messenger RNA vaccine, but also with the other vaccine. I think it’s vital that we have more variety of platform technologies underpinning vaccines for use in the population in general.

It is, I think, very important in the context of a pandemic to be able to have a 1-dose vaccine. And it’s a development that could take place, frankly, with the current messenger RNA vaccine given the performance observed over a short period of time with 1 dose. But that would be a new kind of challenge and development, but also vaccines that are being developed as one of those vaccines such as J&J vaccine.

And finally, another area where we are very focused is identification of clinical correlates of protection. That’s a really critical enabler for the future of other vaccines given that the availability of vaccines now, particularly in the U.S., is making it effectively impossible to recruit high-risk subjects into placebo-controlled clinical trial. It will be the pragmatic way to demonstrate the efficacy of yet more vaccines.

We hope that the last vaccine that started Phase 3, the Novavax vaccine, will not be derailed by the fact that subjects in the trial will leave the trial to get access to a known vaccine versus an unknown vaccine or a placebo, and therefore, through that, make the vaccine study outcome highly improbable.

So identification of immuno correlation protection, which will be available to all players may enable the development of a second-generation of vaccines that can support vaccinations here in the U.S. as well as on a worldwide basis.

So all in all, I think this has been an opportunity for the industry as a whole to demonstrate to the world in general and to the U.S. population in particular its critical role in effectively saving the country and the world from a pandemic that has just brought our lives to a stop, has killed so many, infected so many, disrupted so many.
And I think it's very important to highlight the level of collaboration of partnership, a focus of commitment, of selflessness that has characterized the work of the industry and the U.S. government in tackling this pandemic.

I'll stop there. I just tried to refresh everybody's memory and mind on what has been done and the critical areas of focus going forward. And looking forward to the discussion with that.

QUESTIONS AND ANSWERS

Christopher Thomas Schott - JPMorgan Chase & Co, Research Division - Senior Analyst

Great. Thanks, Dr. Slaoui. Some great opening remarks.

I thought I'd just kind of cut to the chase upfront here with a question for everybody. When do you expect the population at large to be vaccinated? And what do you see as the single kind of main gating factor to getting there?

So maybe just -- we'll start with Angela, then go to Stéphane, then Karen and Brian with just that initial question.

Angela Hwang - Pfizer Inc. - Group President, Pfizer Biopharmaceuticals Group

Thanks, Chris. And thank you again for bringing us all together to have a very important conversation about a very important topic. I think that Moncef's introduction on sort of the state of where we are with the pandemic sheds a lot of light in terms of how we should think about where we are with the pandemic and how long it would take for us to vaccinate everyone.

You've heard him talk about the complexities of this vaccination campaign globally. But we have billions of people that we have to be able to vaccinate because of the pandemic. And the ability for us to vaccinate at the speed that we need in order to gain the herd immunity and to stop transmission is obviously of highest priority.

So as I think about everyone coming together, and I think that this panel is a great example of this industry, private-public partnership that we all need because it truly needs all of us to be able to make the impact in the world.

It's going to take time. There's a lot of people to vaccinate. Vaccinations are complex. And I think by virtue of that, I hope that in 2021, we will put a lot of this behind us. But I think that we should anticipate that there's going to be a lot of work to be done. And this focus on getting the rates of vaccinations up to be able to support the points of vaccination to increase the numbers of them, so that we can really increase the volume of people that can get through them, are going to be all important steps that will help us to achieve that.

Christopher Thomas Schott - JPMorgan Chase & Co, Research Division - Senior Analyst

Stéphane?

Stéphane Bancel - Moderna, Inc. - CEO & Director

So Chris, thank you, and thank you for having us on the panel. It's good to see everybody on this panel.

First, I would have to really thank Moncef and congratulate him. I think, really, the U.S. has done an amazing job to build the portfolio of vaccines. I have a chance to talk to different regions in the world. And a lot of countries are scrambling because I think they didn't do it as well as what the U.S. did. So kudos to what the U.S. government has done and to the collaboration between all the agencies of the U.S. government, channel for OWS and industry.
I mean, if you ask about the question about the U.S., Chris, but I think if it’s a worldwide question or U.S. question, it’s a very different answer. I think we’ve got a question about the U.S. and it is a question about people above 18 years of age.

If you do the math at 70% vaccination rate, which would be wonderful, given some of the calls we are seeing daily, that’s 150 million people. That’s 300 million doses in arms of the boost. Of course, less if you assume a single dose.

If you look at what, I think, Pfizer and Moderna have said, we will supply to the U.S. government by end of Q2. I cannot speak for Pfizer. Angela can.

I can tell you for Moderna. We have said it. We will have, before the end of Q2, 200 million doses of the Moderna vaccine to the U.S. government. We are, so far, on track to the plan we have given them. And we confirm that almost daily with their team.

So if you look at that number, I think if both companies can deliver a total of 400 million dose by the end of Q2, that will cover anybody above – I mean, 70% of population above 18 years of age. So I think the U.S. will most probably be one of the first country of size to get its population protected. I think smaller countries like Israel, Switzerland and so on are going to go pretty fast given how much vaccine they have ordered and the size of population.

I think Europe is going to be much later. We would not be surprised if it takes Europe potentially up to the end of the year to get a good immunization across the country and then where we can take them for other countries in the world. I will pass it over to you, Chris.

Karen, your thoughts on the topic.

Karen Sue Lynch - CVS Health Corporation - Executive VP & President of the Aetna

Yes. So first of all, thank you for bringing this group together. I think it does demonstrate how we can collectively come together as an industry to address pandemic.

And I think first of all, congratulations to Pfizer and Moderna for everything that they’ve been doing.

I do think it is what Dr. Slaiou said. It’s getting it into the arms of the individuals. And obviously, it all starts with the supply, and we know that people are working incredibly hard to get that supply.

And then it’s really, right now, it’s the allocation decisions that are being made by the states to go after certain types of individuals, so that we get our frontline workers and we get the most vulnerable population. And then obviously, it’s the education of people. There are certain people in the U.S. that are hesitant around the vaccine. And I think we all have a responsibility to educate around the efficacy and the importance of the vaccine.

And then from a CVS health perspective, we have a large reach. We have 100 million people through our Caremark and our Aetna members that we have the opportunity to educate. We have 10,000 stores across the U.S. where 85% of the U.S. population lives within those 10,000 stores, so that the distribution and the access, we can play an integral part in working in the communities to get people vaccinated.

Christopher Thomas Schott - JPMorgan Chase & Co, Research Division - Senior Analyst

Brian, pull it.
Brian S. Tyler - McKesson Corporation - CEO & Director

Well, Chris, it’s tough to go last after this esteemed panel. I do want to start though with my sincere appreciation for what the teams at Pfizer and Moderna have done, for their great partnership and also the great partnership with OWS and the U.S. government. I do think this really has been a partnership.

And I certainly would echo the previous comments, right? It’s going to take product. It’s going to take patience. It’s going to take physical people patience to get shots in arms and willing people to get shots in arms.

And I think it’s going to take a little bit patience in the early phases. I mean, this is a very new program. It’s very complex. There’s obviously a lot of passion and energy and some learning that is going to go on around this. And I think we’ll continue to get better and better as we go through that.

And I do echo Karen’s comments that I think all of us, particularly as health care leaders and leaders of large organizations, have to do our part to convince people that it’s not just safe to take this, but there’s also an element of responsibility to yourself and your community that, inherently, this is a battle we’re facing that we’re in together. And it’s not so much an individual as it is a community that will beat this back.

Cory William Kasimov - JPMorgan Chase & Co, Research Division - Senior Biotechnology Analyst

All right. So I have a question probably for Stéphane and Angela. One of the most discussed topics right now in this ever-changing environment is the emergence of mutations.

So I’m curious how you’re thinking about variance in the SARS-CoV-2 virus. And do you worry new strains could render the vaccines we have today less effective or even ineffective? Maybe Stéphane first?

Stéphane Bancel - Moderna, Inc. - CEO & Director

Sure. So thanks, Cory. So first, the virus has been mutating since January. It’s not something that happened in the last few weeks as reported by the media. The industry, again, with academia has been collaborating extremely well to document mutations for them, (inaudible) sera and virus strength to help us assess things.

I think it’s important that people appreciate the difference between a monoclonal antibody and the vaccine, a vaccine when you vaccinate and remake (inaudible) protein in your body. We’re not going to make one antibody, but a super antibody is binding many epitopes for the virus.

And so we are following very closely as we have the last 12 months. We, as we said, do not believe that the current strains in the U.K., South Africa, I know there’s a new one being discussed from Brazil, cause a problem to the current version of the vaccine. As you know, one of the beauty of mRNA technology is how quickly you can go. I remind everybody, we went from sequence to shipping GMP product last year in 42 days. I believe we should be able to do even faster at this time, we will (inaudible).

I think the question is not for the short term. I believe for those mutations, it’s going to be fine. I think the question is going to be more midterm, which is you have a U.K. strain now, but you might have a new strain from U.K. strain and then another strain from (inaudible) of it.

So the question is, as you see the virus mutating over time is are we going to have in 6 months, in 9 months, in 2 years such a drift from, I would say, the original SARS-CoV-2 sequence that came out of 1 — a year ago? Are you going to need to have a new vaccine and potentially combinations of vaccine? But is it a world that’s going to evolve basically like what’s happening with flu or what you see for example with a product like Prevnar where you keep adding -- Brian, I mean, the beauty of mRNA is you can combine several molecule in a vial.

We currently have been going to Phase 3 of vaccine against CMV, cytomegalovirus with that 6 mRNA in Israel. We are demonstrative that we can get that done technically and as the regulator are comfortable just taking products from the get-go with combination.
So I'm not worried for the short term, but we are watching that very closely. Because I think that we might evolve into a world where we need new strains of vaccines down the world, but not in the short term.

**Cory William Kasimov** - JPMorgan Chase & Co, Research Division - Senior Biotechnology Analyst

Angela, anything to add there?

**Angela Hwang** - Pfizer Inc. - Group President, Pfizer Biopharmaceuticals Group

Yes. No, likewise, Pfizer is closely monitoring and studying these new strains, these new variants and the mutations from these variants.

Just last week, we published data that demonstrated that in vitro, the sera of those who are vaccinated with the Pfizer BioNTech vaccine was able to neutralize, had immunity against the particular strain of the SARS-CoV-2 variant. So we know that in this specific instance, it's working.

Likewise and continued, we are looking at other mutations as well, and that's being studied. And actually, very shortly, we'll be publishing on that. So all to say that I think all of this coming together, we're bullish about what our vaccine is going to be able to do in its ability to respond to the various mutations and the variants.

That being said, what we have to realize is that the virus could change. And that we may need a new vaccine altogether. So it is important that we continue to monitor that as well. And to stay on top of whether it's really a mutation and a small change or whether it actually moves to a place where we need a new vaccine.

But again, as we've said, that's where the beauty of the mRNA technology comes in. With the sequence, we're going to be able to be able to make a new vaccine in very short order in as little as 6 weeks. And so that, together with working with regulatory agencies, to really understand what are the studies and maybe what are the data that they would need in order to create a regulatory pathway, for authorization or approval.

Pretty much what we've been doing for the last several months, we'll continue to do, but obviously, do it in a way that helps us to get ahead of it. But I think that we should anticipate that there's going to be changes, and we need to be ready for these changes, and we are.

**Cory William Kasimov** - JPMorgan Chase & Co, Research Division - Senior Biotechnology Analyst

Okay. Okay, great. And Dr. Slaoui, we obviously have representation here. The first 2 vaccines both based on this messenger RNA technology. Both have demonstrated pretty remarkable efficacy.

I wanted to ask you, though, about your level of confidence in the non-mRNA approaches that are out there. And what do you think maybe the bar for efficacy is given what we've seen so far? So for example, what kind of role might a vaccine with efficacy on the order of 70% to 80%, not 95%, have in this market and the global fight against the virus?

**Moncef Slaoui** - Medicxi Ventures (UK) LLP - Partner & Member of Scientific Advisory Board

So it's a very important question, and frankly, a very delicate and difficult one. Because I'm going to say having a 50%, just to change from 75%, and the regulators have put a bar at 50%, having a 50% vaccine is so much better than having no vaccine. It would allow with appropriate immunization throughout the population to save millions of lives over the years.

But of course, once the 95% benchmark has been set, the individual benefit dimension takes somehow instinctively the frontline in people's minds versus the population benefit. So the answer -- the scientific answer to your question is the 70% or 80% vaccine can be highly effective in inducing herd immunity, particularly if the vaccine, for instance, has a very high efficacy against severe disease and decreases the -- I'm pretty sure studies
are -- will define this, but I think it’s a very reasonable thing to expect, that even a 70% or an 80% vaccine, effective vaccine, is actually going to substantially decrease virus with most people immunized, will induce herd immunity if 80% or 90% of the population is immunized. But you don’t have the level of certainty that you have when you take -- when you have a 95% effective vaccine.

Now my projection, as to the efficacy of the vaccine, I would say, is very high. I do remember in June and having said that I expect the vaccine to be 85% to 90% efficacious, and it was a shock, I remember.

So it was very satisfying to see that efficacy was very high. And the number was not coming out of the blue. I actually believe that this virus -- fortunately, this virus is actually a somewhat slow virus from a pathogenesis standpoint. And if you are able to either have a low virus load inoculated or have immune responses able to control your virus load spread quickly, so that by the time the bulk of your destructive immune response against the virus is at its peak, not most of your lungs are infected, but only 5% of your lungs are infected, you are going to clear this virus out and most likely be asymptomatic or have very, very small cough, right, or, if your nerve in the -- olfactory nerve, that you may lose a little bit of smell. As is the case, in effect, in probably 85% to 95% of people that are naturally exposed to the virus, some have still no immunity.

So the reason I went through that is just to say my expectation, frankly, is that most vaccines if they are immunogenic in -- particularly, in the elderly, will be effective at a high efficacy rate in the 70s or the 80%. I think some challenges observed with other vaccines may have other explanations than the intrinsic efficacy of the vaccine itself.

My -- and this is one of the reasons why we felt that it was appropriate to select one of the vaccines and test it as a 1-dose vaccine. And as you know, the Johnson & Johnson vaccine is being tested both as a 1-dose and as a 2-dose vaccine in large Phase 3 trials. And the expectation is to have, I hope, 80%, 85% or maybe more efficacy.

The -- what people need to realize is that in real life, a very large percentage of people immunized with the first dose will not get their second dose for various reasons. Maybe in a pandemic, at the height of the pandemic, this will not be so, but maybe in the month of May or April or June as the percentage of population becomes larger and larger, a substantial number of immunized people may not get their second dose. Having a 1-dose vaccine is, therefore, very important. And I believe that the Moderna vaccine and the Pfizer vaccine, if tested as 1-dose vaccine, are likely to also demonstrate very high efficacy.

So my expectation is high efficacy. My expectation is that anything north of starting with an 8, I hope, will go through. I think a 70% or 65% vaccine that can be made into billions of doses very quickly can be transformative on a global basis.

But I do think it will raise really in the North, South, Western world, developing world questions. But if you look at it, firstly, from a public health global health standpoint, any vaccine above 50%, 60% will make a huge difference if available very quickly.

Cory William Kasimov - JPMorgan Chase & Co, Research Division - Senior Biotechnology Analyst

Great. Maybe as we transition to discussion a little bit to logistics here. There seems to be something we’re hearing from the media, almost on a daily basis, about the challenges of delivering some of these vaccines. So maybe just another quick comment from everybody about how much of a concern you see these logistic dynamics? Is there a short-term issue? Is this a longer-term issue? Maybe Brian, we’ll open up with you for initial comments here, and then go to Karen, Angela and Stéphane.

Brian S. Tyler - McKesson Corporation - CEO & Director

Sure. Well, it’s -- I think, top of everybody’s mind for very obvious reasons, and not unexpected, getting a lot of scrutiny and commentary, I guess. I will say, we’ve had the chance. This is my Day 3 of the JPMorgan conference. I haven’t had a lot of chances to talk about this over the course of the last few days. And one of the things that I’ve noticed is a little bit of confusion in the language between distribution and administration, and Dr. Slaoui actually referenced this. The distribution has actually gone quite well. And I think it’s now that last inch, so to speak, of getting it from the provider site into people’s arms.
So just to maybe clarify the way the process works for everybody's benefit and to frame the conversation and the comments that will follow, the jurisdictions based on their local decisions on how they want to address this will filter up request, so to speak, to Operation Warp Speed and the CDC, who will then make allocation decisions based on a variety of factors, turn those allocation decisions into orders that are pushed down to McKesson.

That's really when our role starts. We receive that order. We walk into the dedicated facilities that we built that are securely storing this vaccine. We do the pick, pack and ship, believe it or not, in a freezer to maintain the temperature controls around this virus, and we work with our partners, UPS and FedEx, to get those products out to the provider sites, usually within 24 hours. And I believe our accuracy rate right now is 99 -- in excess of 99.99%.

So I'd say the distribution component has been remarkably well, and that's really kudos to the great coordination from all the companies on this call, Moderna, Pfizer, certainly Operation Warp Speed team.

So we're proud of what we've been able to do. We just talked a little bit about the need to build the practice and refine the process to compress further the time to get that at the provider site, to get the administration, to catch up to the distribution.

Karen Sue Lynch - CVS Health Corporation - Executive VP & President of the Aetna

Yes. And I'll pick it up from there. We've had a lot of experience with the long-term care facilities. We've obviously been working very closely with Operation Warp Speed and the launch and the CDC. How that process worked was that the nursing homes would select the pharmacy carrier that they wanted to administer the vaccines, over 40,000 selected CVS Health. Then what happens is the states need to determine the allocation to those facilities.

So once the states turn on or activate those nursing homes, then we're able to go in with our pharmacy techs, our pharmacists and nurses, and put the shots in the arms of those in the individual nursing homes. So there's -- that's the way the process has been working.

We're very hopeful that the federal program will open up soon. And then that will open up more of a direct distribution into pharmacies across the country. And then I think that will open up the ability for access of individuals to go to their community-based pharmacy so that we can have more people getting vaccinated.

We -- I shared with Lisa yesterday, we have the capacity to do 20 million to 25 million of vaccinations a month throughout all of our retail locations. And what that means is we can do 1 million a day.

And just to put that in context, we're just coming up to 1 million vaccines this week on all of our long-term care facilities, so we can open up the aperture to get more shots in the arms as soon as the federal program is fully in play.

Cory William Kasimov - JPMorgan Chase & Co, Research Division - Senior Biotechnology Analyst

Stéphane?

Stéphane Bancel - Moderna, Inc. - CEO & Director

I mean just to add a quick word. I mean, we are not in charge of distribution of vaccination. So I will just speak from far away, saying that, first, the job that Brian and his team at McKesson have been doing has been fantastic in the coordination.

And then I think you have some teething problem, I will characterize them as such. I don't think it's a good idea to bet against America. I think it was just because of very tight supply and mostly I can't talk about it. Because of very tight supply, the allocation was a big struggle. And in some places, I think people spend too much time thinking about allocation and staying in line versus shooting vaccine in arms.
I think there’s more and more supply available and as we use the enterprise like CVS and other pharmacy chains and stadiums and a lot of things just to get vaccination, then I think the numbers are going to go up pretty quickly over.

Cory William Kasimov - JPMorgan Chase & Co, Research Division - Senior Biotechnology Analyst

Angela?

Angela Hwang - Pfizer Inc. - Group President, Pfizer Biopharmaceuticals Group

Just to add more color to what was already discussed, just from a Pfizer perspective, to give you some numbers. To date, globally, we have distributed, so shipped out 30 million doses to about 10,000 different points of vaccinations, right? So this is through using logistics partners like UPS, FedEx, DHL, so on and so forth for us to take it from our sites in Kalamazoo, Wisconsin or in Belgium to get it to the various sites.

And I have to say that like everyone has been saying, consistent with what you’ve heard, it’s gone remarkably well. All the doses have gotten to where they needed to get to exactly on time with almost negligible variances.

And we had almost no product returns. We’ve had everything arrive on time at the right temperatures. The couple of boxes that -- where we had excursions, and literally, it was a couple, we’ve monitored, and we have tested those to realize that the product was still intact. So honestly, this has gone almost as perfect as it could possibly go.

As you know, however, we’ve invested a lot in making sure that this works for us, right? We have our shippers that are temperature-monitored. We are tracking all of these boxes wherever they’re going. And we’ve also provided a tremendous amount of training and support at the points of vaccination because we believe that our job ends when the vaccine is administered, not just where we drop off. So I think this entire infrastructure from beginning to end is what has helped us to really achieve the outcome that we had hoped for at the points of vaccination.

Lisa Christine Gill - JPMorgan Chase & Co, Research Division - MD, Head of U.S. Healthcare Technology & Distribution Equity Research and Senior Research Analyst

Great. I just really wanted to dig in a little bit, Brian, to what you talked about around this whole process and really maybe just better understand where the product is being delivered to, the safeguards around that product. I think one of the things we hear about is concern around a potential counterfeit product.

And then dealing with public health. So when you’re delivering that, how does it determine that it’s going to a hospital or to a CVS? And when we start to think about those logistics, how coordinated is that effort? Is that something that you’re coordinating and if they just tell you here’s the drop spot? Or is that something that McKesson has a more involved process when we think about dealing with public health?

Brian S. Tyler - McKesson Corporation - CEO & Director

Okay. There was a lot of questions. Let me kind of peel them back one at a time. You think you started with the safety and security. And I think one of the attractive features of the logistics design that was selected is there’s very few points of handoffs. So -- and we’re not handling the Pfizer vaccine. They’re handling their own distribution.

But with Moderna, we’re picking it up right at Stéphane’s factory on -- our controlled transportation vehicles bring it into our secured facility. The next place it arrives is at the provider site. So there are very little -- very few points of encouraging or opportunities for that chain of control, so to speak, to break down.
When you asked about the -- where does it end up going? I mean, remember, in the early phase, this is the 1a phase, the target for the program was really our frontline health care workers and the really elderly and sick, right? So Stéphane made a great comment about its teething pains and the administration in the sites, right -- well, we rolled out really literally in the middle of the holidays and the target audience was those who are most busy taking care of the sick patients. So maybe the teething pain should have been expected, and I do think we're continuing to see that get better and better.

The way our program is designed and the reason another attractive feature to the model that OWS selected in our opinion is there is very little lost inventory filling up the supply chain. It literally goes from us to the provider site in 24 hours. And in early stages where supply is limited, that's really a critical feature. But McKesson has really no role in deciding who gets it. I mean, that's the role of Operation Warp Speed. So I think the local jurisdictions develop their local plan for -- I can tell you, I believe the state of Texas has 7,000 providers that, at some point, will be involved in this, but that's their decision. The allocations are the decision of the CDC. We view our job, and we built our facility and our infrastructure to simply take those orders and make sure we could get it out to hundreds of thousands of sites of care within 24 hours.

Moncef Slaoui  - Medici Ventures (UK) LLP - Partner & Member of Scientific Advisory Board

If I may add something there, just to complete what was said, which I completely agree. But it’s important for people to understand that to realize -- to put into context the various discussions that happened in the media.

There are 70,000 locations that have been validated, and they had to meet certain criteria that were offered by the 63 or 64 jurisdictions in the country as potential recipients for the vaccine. Every single dose of vaccine that is shipped because there has been a pull, not a push.

In other words, a state says I would like to have 257 doses of vaccine in address 255 blah, blah, blah ZIP code this, which is one of the 70,000 areas. And that's shipping to there.

The assumption behind that is that whoever sat down, and we went and visited all the health departments of the various states and jurisdictions, the assumption is, when you decide I want to have X hundreds of doses in this particular location, is because you, at the same time, have organized to immunize those number of doses in the area.

And this is, frankly, it is in that transition from deciding to ask for a number of doses in a given place and administering them that we need to optimize. Clearly, the holiday season wasn’t a great thing. Clearly, the surge that’s happening overwhelming the health care workers in the health care facilities and hospitals is a problem. And therefore, the decision to accelerate going to broader population, and as was said, open the aperture further is the right thing to do to decrease the pressure, continue working into the health care workers and hospitals, but also distribute elsewhere and immunize elsewhere.

Lisa Christine Gill  - JPMorgan Chase & Co, Research Division - MD, Head of U.S. Healthcare Technology & Distribution Equity Research and Senior Research Analyst

Dr. Slaoui, I think most of us understand the different rankings by the CDC as far as when people should be vaccinated just at least the first 1A, 1B, et cetera. But can you reiterate that number one for people?

And then I'd like to bring Karen into the discussion because one of the concerns that I think a lot of health care investors have is concerns about the underserved populations.

And I think, Karen, you talked a little earlier about how you educate people around taking the vaccine, but less educated people have a tendency to not be vaccinated in the same way as educated people.

And so how do you meet those underserved populations? So Dr. Slaoui, if you can start with just the understanding of who is getting vaccinated and then, Karen, if you can add to that, that would be great.
Moncef Slaoui - Medicxi Ventures (UK) LLP - Partner & Member of Scientific Advisory Board

So very important questions, again. And very early on, we realized that it was going to be super important to have a well-thought through ethically defined approach to giving access to vaccine into the population, because, obviously, you’re not going to have enough vaccines quickly to immunize 330 million people, let alone the global world.

And we actually involved the U.S. Academy of Medicine to have a discussion, that was at that time a conceptual discussion, to suggest how to go about it. And that there was the first reports that came, I believe, in the month of August or something like that, describing the health care workers, the elderly and frail, first-line workers as the first 3 areas in 1A, 1B, 1C, and then looking after the overall population, the first dose with comorbidities at higher age and then at lower age, et cetera. And then that was further refined once we had the vaccines by the CDC and its ACIP committee.

I think the issue about the minority population and underserved population is a critical one. And as Stéphane can attest to, the starting point of paying attention to that problem, which to that challenge, which is a real problem that we must address overall, was at the level of the clinical trials. And enormous efforts have been put and continue to be put to make sure that there is appropriate representation of the minority population and underserved populations in the clinical trials and in that process to have engagement at the level of the community leaders from those underserved population to engage with the population, participate into the trial and have appropriate representation.

All the companies have worked very hard to achieve those objectives and to have at least double-digit representation in percentage of African-American, of the Hispanic population and in generality underserved population.

I think that was a critical starting point, but we cannot stop there. I mean, at this moment, the key is to continue the engagement into the communities at the very local level. I mean, one of the learnings we got from the clinical trials is that, frankly, it is irrelevant for somebody out in national level to stand up and say something. I mean it’s interesting, but it’s interesting for 3 or 4 people to do it. What really is meaningful is for a church leader or a sports leader or just a community leader to whatever process to be engaged and understand what the vaccine is, why vaccination is important, to get the vaccine themselves and engage with their neighbors and other members in their community to be vaccinated.

There was a challenge in this -- the work that took place to have the vaccine. There was a real challenge to engage the population before we knew we had the vaccine, because it’s really a double-edged sword to talk about what a vaccine can do when we don’t know. And then once you know, you’re going to have to change your methods, right? So for quite a period of time, it was very difficult to have a concrete conversation that is relevant to people that can understand it, feel it and sense it.

I think once we had data on efficacy and safety and once discussions happened in the open at the FDA to the VRBPAC process, I think that opened the way for more engagement.

We are talking to companies that are really experienced in simplifying, visualizing, translating into everyday words complex medical or scientific messages in order to help, again, with the engagement process is critically important.

Karen Sue Lynch - CVS Health Corporation - Executive VP & President of the Aetna

Yes. Lisa, I’ll just echo Dr. Slaoui’s comments. The -- I think it’s an important responsibility and obligation of all of us to make sure that we are in the local communities, serving the underserved population. And it is all about working with community leaders about education.

We’ve had a lot of experience during testing. When we were doing testing in the local communities, we’ve learned a lot about how to use the community leaders, how to work with the community leaders. And as Dr. Slaoui mentioned, it’s about those local community touch points that people are familiar with.
And as you think about -- even in our retail pharmacies, where the pharmacist is one of the most trusted clinicians in the local community, that is another avenue for people to think about how to get -- to use them to educate and coordinate the vaccines. But it is an important responsibility.

I think as Dr. Slawoi said, for us to have that herd immunity, we need to make sure that everyone gets vaccinated. And it is a responsibility for all of us to make sure that we're local and in the communities and working with those community leaders to educate and ensure that vaccination process occurs.

Cory William Kasimov - JPMorgan Chase & Co, Research Division - Senior Biotechnology Analyst

Okay. So we don't have much time left. And we want to make sure that we get to another question we get all the time, and that's how long COVID-19 is going to persist as a significant public health concern?

And I know it's kind of the unanswerable question, but we're going to ask it anyway, and kind of keep you -- we've been doing. We're going go around (inaudible) or at least what I see on my Zoom screen, maybe start with Stéphane, Karen, Brian, Angela, and then wrap it up with Dr. Slawoi. So Stéphane, on the duration here?

Stéphane Bancel - Moderna, Inc. - CEO & Director

You should have started with the doctor before asking the business guy. So I mean, our thesis as a company is that SARS-CoV-2 is not going away. We are going to live with this virus, we think, forever, like flu and RSV and other vaccines.

The key, I think, is going to be to stay really close to the mutation, as we talked before, and to be able to very quickly find a regulatory pathway to evolve our product so that we can keep protecting people.

What I think is unknowable today is what's going to happen in terms of duration of vaccination. We just don't have enough data. As you know, the Phase 3 started in end of July. What -- we have a good sense now looking at neutralizing antibody, as well as what Moncef say, getting a surrogate is very important for all industry. But with the sense of the antibodies of at least our vaccine, I can speak that it'll go down slowly.

So I think the nightmare scenario that was in the media in the spring like the vaccine might not even work 3 months, I think that scenario is off the table. But then a question of frequency of injection and what different strength you need of a vaccine to be able to protect people, I think it's on a different question moving forward.

Karen Sue Lynch - CVS Health Corporation - Executive VP & President of the Aetna

Yes. Correct. I wish I had the answer to that, but I would agree that we'll have the virus for a long time. And it's important for us to remain vigilant. We're in the heat of it right now. And as a society, we need to remain vigilant about keeping social distancing and doing the things that we've been -- wearing masks and doing the things that we've been doing.

But the most important part here, and that's what we've been talking about, is making sure that we get people vaccinated and that we continue to drive the education and work on getting people vaccinated all across the country, and quite frankly, the world. And that's my hope, that we can at least slow the pace that we're feeling right now. And I think the vaccine is our light at the end of the tunnel.

Cory William Kasimov - JPMorgan Chase & Co, Research Division - Senior Biotechnology Analyst

Brian?
Brian S. Tyler - McKesson Corporation - CEO & Director

I don’t have any more informed opinion than my first 2 colleagues, other than to say I’m incredibly encouraged by what the industry has accomplished in a relatively short period of time to at least begin to arm us with the tools that we need to fight this back.

Stéphane’s comments about the science and its ability to adapt and I know our colleagues at Pfizer are tracking it closely are equally important. I mean the question for me becomes not -- will we ever live in a world where we’re not battling some variant of this, what have you, but how do we get through this sort of crisis phase.

And that is going to be as production comes online, and hopefully more vaccines get approved, as availability increases and then our ability to make sure that our teams and the people in our communities and around us are getting vaccinated and practicing the important social responsibility measures Karen just talked about, wash your hands, stay distanced, wear a mask, so -- because until that herd immunity comes, that’s also very, very important. So I don’t want us to get overconfident in the science and let go of these social behaviors, because I think we should be focused on those as well.

Cory William Kasimov - JPMorgan Chase & Co, Research Division - Senior Biotechnology Analyst

Okay. And Angela?

Angela Hwang - Pfizer Inc. - Group President, Pfizer Biopharmaceuticals Group

Likewise, I believe that this is something that is going to be with us for a long time. We know that it’s a global pandemic. It spreads everywhere. We know that it’s changing and whether it’s changing a little or a lot, that is something that we’re anticipating. So we may be in a place where we may need a new vaccine. And then we have to get so many people vaccinated. So I think that with all of this really generating the data that will help us to understand the course of disease is also important. And that’s why, I think from -- at least from our perspective, the data that we have now in terms of where we are with our Phase 3, but also the extension, right, following our patients for another 2 years and understanding that, is going to be important. Understanding the transmissibility, understanding the durability of response but also making sure that we are staying on top of the tracking so that if we do need to make a new vaccine, we can, like all of these things are going to add to the body of evidence that will give us the confidence to be able to manage this disease as it progresses.

I think what’s clear is that it won’t be the crisis that we are in today forever. But what I think is also clear is that very rigorous surveillance and response is going to be absolutely important.

And so I think from a business perspective, and from where we sit here at Pfizer, we see this as a durable business. And something that is -- and it’s a business and a piece of research that we’re going to have to continue to do for a long time.

Cory William Kasimov - JPMorgan Chase & Co, Research Division - Senior Biotechnology Analyst

Okay. And a final word from Dr. Slaoui.

Moncef Slaoui - Medicxi Ventures (UK) LLP - Partner & Member of Scientific Advisory Board

Well, first, I completely agree that in the short term, social distancing, wearing a mask, washing our hands, being aware and socially aware are critically important.

I do want to remind us, however, that SARS-CoV-2 is only one of the very many viruses that are deadly viruses, which we have been living with forever, that we need to also remember that without vaccines, to the many viruses -- pathogenic viruses that exist in the population, we would be living all our lives in a confined environment much more than we have experienced over the last 11 months.
And therefore, this gives me optimism that as the vaccine gets more and more used, and, here, I'm talking about a global basis, not on a singular country basis, the circulation of this virus, the intensity of transmission will, by definition, decrease. And we will, little by little, get ourselves in a situation like we have with RSV, for instance, which is a virus for which we do not have a vaccine yet. Yet we live with this virus, and we have lived with this virus, and we continue to live with this virus. And people may not know, but the very frail elderly people for instance have significant morbidity and mortality associated to RSV infections. And a number of companies are working on an RSV virus, but did not slow the population.

What's the difference? The difference is as we are born, we meet the RSV virus step by step. And as with SARS, when you're a baby, unless you're really a pretty very, very, very young baby, you are usually not ill with these viruses. You learn to live with them, you're primed. And once you're primed, usually, your protection from these viruses will last your life, long life, until you become frail or comorbidities interfere with your immune system, then it becomes susceptible.

I do think that we will get to that stage with this virus. Thanks to the vaccination, we will get there quickly, which it will not be through birth cohorts, but we'll do it in a few 2 or 3 years. But what we absolutely must remember and -- how all the time, indeed, to avail this strain, this virus, new strains or other viruses, there is a very long list in the WHO of potential pandemic agents because they will come again. There will be more pandemics, impossible to predict when. We need to be even faster and better equipped for the next one than we have been for this one.

So I'm optimistic we'll get this virus under control. It will not disappear, completely agree, but it will stop changing our life and turning it upside down. But we cannot forget. We forgot with Ebola, we forgot with Zika, which were orange lights. We got a huge red light here. We cannot forget. We should be ready.

Lisa Christine Gill - JPMorgan Chase & Co, Research Division - MD, Head of U.S. Healthcare Technology & Distribution Equity Research and Senior Research Analyst

Well, I want to -- on behalf of the JPMorgan Health Care team, I want to thank all of our panelists today. It was incredibly insightful. This is probably the most important topic going into 2021. And I'm really hopeful that we'll have the opportunity to see each other face-to-face in 2022, thanks to the great vaccines that are out in the marketplace. So with that, thanks again.

Moncef Slaoui - Medicxi Ventures (UK) LLP - Partner & Member of Scientific Advisory Board

Thank you for having us.

Brian S. Tyler - McKesson Corporation - CEO & Director

Thank you.

Angela Hwang - Pfizer Inc. - Group President, Pfizer Biopharmaceuticals Group

Thank you.

Stéphane Bancel - Moderna, Inc. - CEO & Director

Thank you.