

GUARANÍ

VIDEO TITLE: Angela Rasmussen ndi ñomongeta (Coronavirólogo) | Pehẽngue 1

[00:00:10] (00:00:09) Maryn McKenna - Maitei. Tapeẽguahẽ porã ko pehẽ ñepyrũ oguerékóv a: “Momaranduhárakuéra oikuaava'erã COVID-19 Vakúna rehegua”.

[00:00:21] (00:00:40) Che Maryn McKenna, omo'akãva ko tembiapo. Ape aime Dra. Angela Rasmussen ndive, ha'e oĩ aty Centro Ciencia ha Seguridad de la Salud Global oĩva Georgetown Washington, D.C.,pe, ko'ẽroite ojetypekáta avei aty oĩháme tapichakuéra opovyvýva Vido Intervac Mbo'eha guasu Saskatchewan Canadá pe. Dra. Rasmussen, aguyje eimere ko mbo'esyrýpe.

[00:00:48] (00: 00:42) Aguyje che mopepirũre, Maryn.

[00:00:50] (00:00:49) Ñañepyrũhaguã ko mbo'esyrý iporã jaikuaa mávapa nde há mba'épa ejeporeka reikóvo.

[00:00:58] (00:01:23) Che viróloga ha ajeporeka umi virus pyahu oĩvare, ijapytépe coronavirus MERS, influenza, dengue, Ébola rehegua virus, ha ko'ãga che irũnguerandive rojeporeka SARS coronavirus-2 rehe. Ama'ẽ mba'eicha ñande rete ombohováí pe mbohupa oãua hẽva, pe'a he'ise nde Sistema inmunológico mba'eicha ombohováí pe virus pe, rohecha mba'eicha pe mba'asy oike ha mba'eicha vakúna oñangareko.

[00:01:30] (00:01:43) Upeicharõ coronavirus ne angirũ yma. Ha'evo pe'a, mba'épa nde ere, ko mba'asy vai jaguerékóva, ajepa pyáete osẽ pe vakúna. Ko ára ñañe'ẽ jave, ojapo aimete peteĩ ary OMS he'i hague ko mba'asy vai pandemia ha. Nda arei.

[00:01:51] (00:03:09) Nahaniri, nda arei. Ambohováivo pe porandu ha'e pyáe ha nahaniri avei. Nda che mopy'andýi vakúna kuéra oiporu rupi heta plataforma tecnológica – vakúna ARNm ha vakúna vectorial viral – ohasa heta aporeko heta ára, péicha avei umi vakúna ARNm .

Añete, ohasa aporeko coronavirus MERS, ojoguaiteva SARS coronavirus-2 pe. Upe'a rupi roikuaama mba'éichapa oiko ã plataforma vakúna rehegua umi beta coronavirus re. Aguipe che mopy'andýi ko aporeko ojegueraha peteĩ arynte, ha ndaha'ei tecnología añonte, upe pehẽ ha'e hagueicha ojejapomavoí kuri, ha ko'aga rojehesareko hese. Che mopy'andýi añeteva mba'eicha ojejapo pyáete umi ensayo kliniko upe fase III, mba'eicha ojegueraha pe aporeko regulatorio pyáete. Avy'a osẽ pyáere, ipukuvéaramo'a noñeikotẽveiro, oñemonéi haguã, oñetante'a haguã, ojejapo ha upéi oñemoĩ tapichakuéra jyvare. Opa ã mba'e che mbovy'a osẽ pyáere ã vakúna

[00:03:16] (00:03:3:29) Ne mandu'a umi ensayo kliniko re. Oimene opa omañava ohecha umi ensayo kliniko ojejapóva vakúna osẽvagui, opa vakúna oñemonéiva ohechauka oikóha, iñambue ojuehegui, ndojojái. Mba'épa ere, nde py'apýpa.

[00:03:32][00:04:01] Nahániri, nda che py'apýi, ha'ete ku ejoguaroguaicha masa ha narã. Ñ ensayo ojejapóva ñambue ojehegui. Opavave oheche'a kuaaha'ãhára, ojehecha jo'a jo'a. Ojeguereko umi aporeko pehẽ ikatuhaguã ome'ẽ py'a guapy. Ojejapo umi ensayo kliniko heta hendárupi, tapichakuéra ñambuéva ojehegui ha vakúna ñambue avei.

[00:04:04][00:04:59] Ndaikatui oñembojoja vakúna Pfizer BioNTech oikópa térã nahaniri vakúna Johnson & Johnson ýrõ AstraZeneca re. Opavave vakúna ñambue ojehegui pe ñemoĩme, oñemonéi haguã tapichakuéra a según mbo'y ary ogueroguata. Ojekuaa porãva opavave vakúna okumpli pe oñeha'ãrova ohape joko hañua COVID-19 sintomático.

Omo mombyry yvy pórape tasyógui, ojoko ñemanõ, oikove tapicha. Ñ mba'e jahecha ha ñamomba'e guasúva'erã. Katuete oíta he'iva ko vakúna iporãve ambu'egui. Upe'a o depende pe ensayo kliniko ojeporuvá'ekuere, upe'a avei nde'isei oikópa térã nahániri yvy ape ári.

[00:05:10] [00:05:22] Añete ha'e tuicha ñambue ojehegui, ndojejoguai katupyry ha'evere. katupyry rupi ojehecha mba'éicha osẽ umi ensayo kliniko, ha'eve rupi ojehecha mba'éicha ojeporu añeteháme pe vakúna. Opavave ñ vakúna ohechauka ikatupyryha arapy javeve.

[00:05:26][00:05:34] Tuichaite mba'e pe eréva. Aguyje ehechaukáre oreve mba'éicha ñambue ojehegui. Yvy póra kuéra oñevakuna arapy tuichakue, mba'epa nde py'apýva.

[00:05:38][00:06:19] Areko mokõi mba'e che py'apýva. Oĩ oñesaingóva ko tetãre ha oĩ ambue tetãnguera rehegua. Mokõive mba'e che py'apy, umi no ñe vakunaséiva ha avei vakúna toguahẽ, tojehupyty joja opárupi. Umi tetãnguera ohupyty hetava vakúna ko'ãga oguereko apañuãi oñuahẽ jojahaguã vakúna chupekuera. Heta tapicha oĩva oñevakunava'erã. tenonde apytépe ndohupityi vakúna. Ko mba'e ñambue avei tetãnguerare, mba'ere, ára pukukuemante jahechata mba'éicha oho ko pandemia, avei mba'éicha jaikova'erã.

[00:06:25] [00:06:54] Ñavakuna jojáva'erã umi tapichakuéra oĩva aty oikotevëvape rãe, ha opavavépe. Che py'apy avei pe vakúna noguahẽ jojai oparupi. ko'ãgaité umi tetãnguera ipira pirevéva Estados Unidos, Canadá, ha umi tetãnguera oĩva Unión Europea pe, ojagarrapa vakúna oñemosarambiva'erã yvy ape ári. Pe'a he'ise sa'ivetaha vakúna umi tetãnguera imboryahúva ýrõ irekurso'ivévape.

[00:06:59][00:07:20] Mañeípa ivai, ojekuaaháicha pandemia ha'e mba'asy oĩva ára pavẽ rehegua, ndaha'ei peteĩ tetãnte, upévare ñamombareteva'erã upe vakúna ñemosarambi, toguahẽ joja opavave tekove oĩva yvy ape ári, aní umi estadounidense, térã canadiense ýrõ europeokuérape garante .

[00:07:21][00:07:48] Avei che py'apy heta ndoipotáiva vakúna, katuete ñambue opa tetãme. Heta mba'e oĩ ojekyhyje haguã vakúnagui ha'ehagueicha, apañuãi tuicháva ndojojái, upévare heta ndoipotái, oĩ oguerékóva ñakãme "néi oñemotenonde ambue atýpe,

ha ambue tapichápe, che ha che aty kuéra oñembotapykue Upeicharõ ma'ëra romoïta vakuna”

[00:07:45](00:08:28) Avei heta maranduỹ yřõ marandu vai oĩ, ojereva vakúna re; ojejapo pya'eterei, oĩ vakuna oikóva ha ambue nahániri, ndaiseguroi. Ñ mba'ére heta tapicha ndoipotái vakúna. Aguive iporãva'erã ñañangareko tohupyty joja opavavé pe vakúna ha avei tapichakuéra toikũmby vakúna oipytyvõtaha opavavépe oñangarekohaguã ijehe. Iporã jajeapysaka avei umi oje'evare jaikuaa mba'épa oipy'apy chupekuéra.

[00:08:25](00:08:56) Nahendui gueteri oñeporandurõ “ néi amoïkáta vakúna, katu ndaikuaai mba'éicha rupi pya'ete ojejapo, umi ensayo kliniko oimépa ojejapo porã, che pytyvõtapa areko rupi mba'asy, na che resái”. Iporã pohãnohára ha kuaaha'ähára ombohovái ã porandu, tome'ë py'a guapy opavavépe ikatuhaguã ojerovia vakúnare.

[00:09:00](00:09:06) Upeicharõ, nde rehecha haicha, hetáma rehendu ñe'ëngue vakúnare, mba'épa pe ombojavo'óiva tapichakuérape.

[00:09:10](00:09:43) Néi, oiko peteĩ ñomongetajere mba'épa ojaopokuaa vakúna tapichare omoïka rirẽ. Ko'ã mba'é ojere ha ombojavo'ói, oimo'áva vakúna omoïkáramo nda hasymo'ãi, ko mba'é ojekuaa Inmunidad esterilizante ramo, sapy'a oikóro iporãitereiva'erã. Añete ha'e apañuãi ha py'apy ojeguerékova COVID rehe ndaha'ei tapichakuéra hasýre ha oñepama SARS coronavirus-2 gui, ha'e tapichakuéra hasýva oho tasyópe ha upépe omanõ COVID-19 gui.

[00:10:02](00:10:18) Upeicha rupi umi ensayo kliniko ojejapo ojehechahaãgua moõ peve ik atu ohape joko COVID-19, ndaha'ei oñangareko haguã pono mba'asy SARS coronavirus-2 oporohupyty. Heta tapicha okañy, oĩ oimo'áva pamadura orekore katujete orekóma mba'asy vai, ha oĩ orekóva COVID-19 asintomático, oñanduýre mba'éve, téra oñandu kangy'íva oñe infecta rirẽ SARS coronavirus-2 gui.

[00:10:29](00:11:16) Péicha heta oĩ hasýva oikuaa ýre orekoha COVID-19 ohova tasyópe ha omanõ, avei oĩ oñevakunámava oikuaaýre orekoha mba'asy, ndaha'ei apañuãi salud pública peguarã. Oikovéta ha oikove pukúta tesãime. Upevarã ojevichea umi vakúna, iporã ja'e avei vakúna oñangarekotaha ñande rehe, vakúna kuéra ojejapo ohenonde'a haguã mba'asy. Oñeimo'ã ikatuha ojoko ponotei pe pamadura oike nde rete pýpe, ikatu ojoko mba'asy. Ndaikatui gueteri roipapa upéva,ndaikatui, neira ogehupyty pe inmunidad de rebaño, ikatu gueteri oñembohasa mba'asy tapicha oñevakuna ýva, Upeicharõ ikatuguetari upe mba'asy ojuka chupe.

[00:11:40](00:11:39) Opa ã mba'ére rojehesarekova'erã roñe'ë haguã. Hetápe na hesakãi, mba'éicha vakúna ndo jokómo'ãi mba'asy ñembohasa, ha upéicharõ ma'ëra amoïkáta vakúna. Mba'épe oipytyvõtã tetãyguápe, noimeirõ ombohasa asy haguãicha COVID-19.

[00:11:59](00:12:20) Ndaikatui gueteri ro'e papaha rupi mbo'ýpa ikatu oñangareko ñande rehe vakúna ponotei oñepama tapichakuéra, avei ndaikatui ro'e mbo'ýpa ogehýta mba'asy ñembohasa, ñanepytyvõtahamante roikuaa. Upévare eñangareko nde jehe oñevakunameve, ikatu peve opavave nde jerére oñevakuna. Vakúna ñamoiva'erã jahape

jokoséro ko pandemia, upéicha avei jahape jokóta ponótei oñemanõ ha avei sa'ivéta mba'asy ñembohasa.

[00:12:37](00:12:35) Heta oikeva ñuháme, nahesakãi, umi variante asunto. Jajepy'apýva'erãpa umi variante oúvare, oĩ ipyahúva coronavirus, mba'épa ikatu ja'e upévare.

[00:12:52](00:13:05) Añete jajepy'apýva'erã, ndaha'ei ñasusũmbahaguã kyhyjégui. Umi mba'asy ou pyahúva, umi variante nda ore py'amondýi. Pe SARS coronavirus-2 ha'e virus ARN, he'ise katuete iñambuetaha, upévare oñaha'arõ orekóvo variante, hetáma iñambue ko pandemia aja, ni peteĩ na iñambuei ojuehegui, ova ojueheguaite.

[00:13:23](00:13:37) Avei opavave ojehape joko. Ore py'apýva ko'ãga oĩ rupi variante ipyahúva ha'etéva oñemotenondéva umi ymãveguaregui, mokõive variante ova, variante B117 ojehecha ñepyrũma Reino Unido pe, oĩ avei variante ikatúva ojeguereko pamadura rupi ýrõ vakúna rupive pe variante B1351 oĩva Sudáfrica pe.

[00:14:00](00:14:21) Opa ã mba'ére jajepy'apýva'erã ha jahechava'erã mba'e ikatu ojejapo. Ñañeha'ava'erã ñañe vakúna pya'e. Ape iporã ha'e oiméramo jepe pe variante B1351 ha P1 ojejuhu Brasil pe – ikatu omboyke umi antikuerpo, vakúna ha ñangareko ha'e gueteri pohã ko variantepe ojeporúva. Upéicharõ oiko, oporo pytyvõ, oñangareko ñanderehe. Omboyke mba'asy oiméramo jepe ojeguereko ã variante, upévare ñavakunava'erã ikatúma guive opavave pya'e porã.

[00:14:44](00:15:08) Avei jaikuaava'erã ko'ã variante ndaha'ei péichante osëva. He'ise pe virus ova, ha ova upekuevo iñambue. Ñande retepy vaicha ojuehegua ha katu ndaha'ei upeicha. Upévare ñambogueji haguã mba'asy ñembohasa jajapova'erã umi mba'e ojejapova'ekue pandemia aja jaiporu juru mo'ãha, ñañemomombyry ojuehegui, jaheja toike kuarahy ógapýpe, jajohéi porã ñande po, aní jaha aty oĩhame, ikatuvaguive jajapova'erã pono oiko mba'asy ñembohasa, ã mba'e jajapomemero jajokota mba'asy ha avei jahape jokóta umi variante pyahu.

[00:15:42](00:15:23) Jahechava'erã umi variante jepiveguáicha, ndaipóri ojekyhyje haguã oñeha'arõ. ã mba'e umi kuaaha'ãhára ha virólogo kuéra oha'arõ ikatu rupi ova.

[00:16:02](00:15:36) Jaikuaava'erã ikatuha jajapo heta mba'e jajokohaãgua ã variante pono ve heñoi. Oĩ porã jajepy'apý ha katu ndaha'ei jakyhyjeterei haguã.

[00:16:16](00:15:54) Areko porandu pahã ajaposéva ndéve. Reikuaahaicha ko mbo'esyrýpe oĩ tapicha heta tetãngua, heta hendarupi neira oñevakuna, tetã imboryahúva. Mba'e reipota ha'ekuéra oheka, mba'e tembiasápa ikatu oheka.

[00:16:37][00:16:08] Néi, peteĩ mba'é ikatúva ohapykuerereka ha'é umi tapicha hetãmegua ha avei tetã ambuegua mba'éicha oñemboyke vakúna ñemosarambi jahechahaicha ko'ãga.

[00:16:54][00:17:27] Añembyasy ahechávo mba'éicha ndaipori pytyvõ. Jepivémi Organización Mundial de la Salud opyta mbytépe ha oporomomandu. Katu jahecha umi tetã ipira pirevéva, Estados Unidos umía, ape che aiko, ohupyty ko mba'é chupekuéra garante. E E.UU pe, osẽ péicha roguereko rupi tendota pytyvõhára he'iva "Estados Unidos ra'ẽ". Het a tetã avei oñeha'ã hesekuéra garante ha noipytyvõĩ tetã ambuepe, ojejoko hañuã ko pandemia. Ha'é hagueicha Pandemia ha'é ojeguerekovove peteĩ mba'asy opa arapyre. Ndai katui jajepy'apý pandemia o'iva Estados Unidos, Canadá, Europa térã Australiape.

Jaguerkova'erã ko mba'é ñane apytu'ũme Pandemia oĩ oparupi, nañasẽmo'ãi chugui, ña sãhañua opavave ñañangarekova'erã ñañevakunava'erã. Iporãva'erã opavave umi tetã na iñe'ẽiva, ndo rekóiva apyka pe mesa oguapyhápe umi ipirapirevéva oikuaa mba'érepa no ñehendu'ĩ chupekuéra.

[00:18:10][00:17:41] Iporãva'erã oñehenduro umi ñe'ẽ, tojeguereko ñe'ẽme pe tesãĩ arapyre, toĩ pytyvõ oñembohováĩ haguã upe ta'ãnga tesãĩ rehegua ojeguerekóva.

[00:18:26][00:17:53] Tuichaíte mba'é pe eréva. Aguyjetaite. Aguyje avei reimére ko mbo'esyrýpe, reñe'ẽre temimbo'ekuérandive. Añete, aguyje.

[00:18:34][00:17:56] Che mbo angapyhy. Aguyje .

[00:18:35][00:18:18] O'iva guive ko mbo'esyrýpe, aguyje pe ma'ẽre ko tembiapo. Penemandu'a haguã ha'é Dra. Angela Rasmussen. Romombe'uta en línea opa mba'é ha'é ojapóva.

Che Maryn McKenna, omo'akáva ko mbo'esyry. Jajohecháta mbo'esyry orekova tenda en línea.

Interview with Dr. Angela Rasmussen | Module 1

[00:00:10] **Maryn Mckenna** Hello, and welcome to another video segment in the first module of our course Covering the COVID-19 Vaccines: What Journalists Need to Know.

[00:00:21] **Maryn Mckenna** I'm Maryn McKenna, I'm your chief instructor and I'm here now with Dr. Angela Rasmussen, who right now is an affiliate at the Georgetown Center for Global Health Science and Security in Washington, D.C., and will soon be a research scientist at the research group Vido Intervention at the University of Saskatchewan in Canada. Dr. Rasmussen, thank you for joining our course.

[00:00:48] **Dr. Angela Rasmussen** Thank you so much for having me, Maryn.

[00:00:50] **Maryn Mckenna** So, for the benefit of the course participants, let's start with sort of who you are and what your research is.

[00:00:58] **Dr. Angela Rasmussen** So I'm a virologist, and I study a number of different emerging viruses, including MERS coronavirus, influenza, dengue virus, Ebola virus, and now, of course, like many of my colleagues, SARS coronavirus-2. I focus on the host response to virus infection, so how your body and your immune system responds to infection with these emerging viruses and how that relates to disease as well as the protection that's provided by vaccines and immunization.

[00:01:30] **Maryn Mckenna** So, coronaviruses are old friends of yours. Based on that, are you surprised that coronavirus vaccines for this pandemic were produced so quickly? On the day that we're speaking, we're almost exactly a year from when the WHO declared this a pandemic. That's not long.

[00:01:51] **Dr. Angela Rasmussen** No, it's not long, and so the answer to that question is really both yes and no. I'm not surprised in the sense that vaccines using these different technology platforms. So mRNA vaccines and viral vector vaccines have actually been in development for a long time, including mRNA vaccines. By the way, that have been developed for MERS coronavirus, which is very related to SARS coronavirus-2.

[00:02:16] **Dr. Angela Rasmussen** So we already knew a little bit about how these different types of vaccine platforms work against beta coronaviruses. What I am surprised about is that this process only took a year, and not just in terms of the technology, that part actually didn't take very long at all because as I just said, these technologies already existed and we're in the process of being studied. I'm really surprised at how quickly they were able to perform really adequately powered phase III clinical trials and push it through the regulatory process so quickly.

[00:02:51] **Dr. Angela Rasmussen** That, to me, has been a very pleasant surprise. I would have thought that getting regulatory approval, testing the vaccines thoroughly to make sure that they're safe and actually manufacturing them and getting them out into people's arms would have taken longer than that.

[00:03:10] **Dr. Angela Rasmussen** So, I am pleasantly surprised at how quickly these vaccines have been developed.

[00:03:16] **Maryn Mckenna** So, you mentioned the clinical trials. I think anyone who's been following that knows that from trial to trial, the different vaccines that have been approved or authorized have shown different rates of efficacy. Is that important? Are you concerned about that?

[00:03:32] **Dr. Angela Rasmussen** I'm not concerned about that, because to a certain degree, this is like comparing apples and oranges. These trials were all done differently. They were all overseen by different independent study monitoring boards or data safety monitoring boards. They were all done in many cases in different populations of people that have different risk for infection, and they are all different vaccines.

[00:04:04] **Dr. Angela Rasmussen** So it's very difficult to compare, say, the Pfizer, Bio N Tech vaccine and its efficacy profile with the Johnson & Johnson or AstraZeneca vaccines. They're really different vaccines, they're different dosing regimens, and they were tested in different groups of people. What we do know is that all of the vaccines are efficacious and have really either met or exceeded expectations in terms of their ability to prevent any symptomatic COVID-19.

[00:04:34] **Dr. Angela Rasmussen** They all are very good at preventing severe or lethal COVID-19. So they keep people out of the hospital, they keep people alive. And that's really the major end points that we want for these vaccines. So I think that a lot of people can sort of fall into the trap of saying, "Well, this vaccine is better than this other vaccine because, look, its efficacy is higher."

[00:05:00] **Dr. Angela Rasmussen** That's going to be really dependent on the type of clinical trial that was used and that doesn't necessarily reflect its efficacy or effectiveness in the real world. That actually is the difference between efficacy and effectiveness. Efficacy is the results of the clinical trial, basically, effectiveness is how the vaccine is actually performing. All of these vaccines are highly effective so far in the real world.

[00:05:26] **Maryn Mckenna** That's a really important point. Thank you for making that distinction. So, people are being vaccinated around the world. As the vaccines roll out, what's your biggest concern regarding them?

[00:05:38] **Dr. Angela Rasmussen** So I really have two concerns, and some of them are really country dependent. Some of them are more global. But the two major themes are vaccine hesitancy and equitable vaccine access. So even in countries that that have large supplies of the vaccines right now, there have been major issues with equitable access to the vaccine.

[00:06:03] **Dr. Angela Rasmussen** Many subgroups of people who are at high risk and have been prioritized for vaccination are not getting those vaccines. And again, this varies from country to country, what the reasons are, but this is something that really is going to affect the length of time that this pandemic is going to go on in terms of how we live our daily lives.

[00:06:25] **Dr. Angela Rasmussen** It's really important that we are able to equitably vaccinate people who are in the highest risk groups, especially, and everybody. Over the longer term, I'm very worried also about equitable vaccine access globally. Right now, we have a situation where wealthy countries like the United States, like Canada, like countries that are part of the European Union, have really hoarded much of the world's supply of vaccines. And that means that there are fewer vaccines for people in other countries, especially in low and middle income countries.

[00:06:59] **Dr. Angela Rasmussen** This is really bad because by definition, a pandemic is something that affects the global community and not just individual nations. So we really do need to step up our efforts to distributing vaccines equitably for the global human population as opposed to just the American or Canadian or European population.

[00:07:21] **Dr. Angela Rasmussen** In addition to that, I'm very worried about vaccine hesitancy over the long term, and this is different in different countries. There are many reasons for vaccine hesitancy, but the issues with equity that I mentioned earlier actually contribute to vaccine hesitancy, because if people think, well, they're not prioritizing me or my community for vaccines, then why should we take them?

[00:07:45] **Dr. Angela Rasmussen** Also there is a lot of misinformation that has been out there just swirling around about the vaccines; that they were developed too quickly, that they may not be safe, as I mentioned before, that one vaccine is going to be more effective than another.

[00:07:59] **Dr. Angela Rasmussen** All of this can erode people's confidence in the process by which the vaccines were developed and make them more reluctant to take those vaccines. So I think over time, we really need to be focused not just on equity and making sure that everybody can access the vaccines, but also that people understand that the vaccines are going to be net beneficial for everybody and address people's concerns, which are very reasonable in many cases.

[00:08:25] **Dr. Angela Rasmussen** I mean, I think that I haven't yet heard somebody ask me a question about vaccines saying, "Well, I would take the vaccine, but I don't know about the speed at which the clinical trials were conducted or I don't know about how well it's manufactured or I don't know how well it's going to affect me, given that I have this other health condition."

[00:08:44] **Dr. Angela Rasmussen** And I think that it's really important for scientists and public health professionals to answer these questions in good faith, take them very seriously and make people feel more confident about taking the vaccines because they really are way out of this.

[00:09:00] **Maryn Mckenna** So from your point of view, since you have been hearing commentary about the vaccines, what aspect of the vaccine do you think is causing the most confusion?

[00:09:10] **Dr. Angela Rasmussen** Well, I think that there has been a real debate about the effect of vaccination on transmission in the community. This really has to do with the misunderstanding of how vaccines are even supposed to work.

[00:09:25] **Dr. Angela Rasmussen** So I think a lot of people are under the mistaken impression that vaccines are supposed to completely prevent any kind of infection. This is something that's usually referred to as sterilizing immunity. Sterilizing immunity is great when you can get it, but we have a number of effective vaccines that that don't rely on sterilizing immunity. For speed and also for the real problem overall with the public health concern with COVID is not just are people getting infected with SARS coronavirus-2, it's are people getting sick and going to the hospital and dying from COVID-19.

[00:10:02] **Dr. Angela Rasmussen** And so the clinical trials were designed to assess how well the vaccines can prevent COVID-19, not necessarily how well they can protect against infection with SARS coronavirus-2. And I think that a lot of people are confused because they may think that infection automatically means that you have the disease, but there are a number of people who have asymptomatic or very, very mild COVID-19 after being infected with SARS coronavirus-2.

[00:10:29] **Dr. Angela Rasmussen** So if you have, most of the people who would have otherwise gotten COVID-19 and ended up in the hospital or maybe even died from having it, if all of a sudden those people are vaccinated and they are getting asymptotically infected, then that's no longer a public health problem. They're going to continue to live healthy and productive lives. So that's what the vaccines were originally evaluated for.

[00:10:54] **Dr. Angela Rasmussen** But that said, we do think that the vaccines are probably protective against infection to a certain degree, and that is because they are so highly efficacious at preventing disease. It stands to reason that they would also have an effect of controlling infection, that's probably at least part of the mechanism by which they're preventing disease.

[00:11:16] **Dr. Angela Rasmussen** So the problem is we just can't really put a number to that yet, and without the entire world being vaccinated and without reaching the global herd immunity threshold, that means that if there's a chance that you could transmit the virus to somebody who has not been vaccinated yet, that person would still be at risk of severe disease.

[00:11:39] **Dr. Angela Rasmussen** So that's why people are trying to be very cautious, I think, in communicating this. And unfortunately, it has been very confusing in that people think that if the vaccines aren't going to have an effect on transmission, why should I take the vaccine? What good is it going to do for society, especially if I'm not at high risk of severe COVID-19?

[00:11:59] **Dr. Angela Rasmussen** But I'm saying to everybody right now that even though we can assign a number to how well the vaccines protect against infection and a number to how much they will reduce transmission in the population, I think it's safe to say that they will.

[00:12:16] **Dr. Angela Rasmussen** So, continue to take precautions until you can get vaccinated, until most of the people in your community can get vaccinated. But the vaccines really are the way to ending this pandemic, both through reducing the burden of disease and likely at population level, reducing transmission.

[00:12:37] **Maryn Mckenna** So I think a lot of people are confused by the topic of variants. How concerned should we be about virus variance with the novel coronavirus and what is the appropriate response to them?

[00:12:52] **Dr. Angela Rasmussen** So we should be concerned, but not surprised and not panicked. The variants are actually not surprising at all that SARS coronavirus-2 is an RNA virus, which means that it does have a high mutation rate. So variants are to be expected and in fact, variants have emerged throughout the entire pandemic. It's just the variants that have emerged so far, for the vast majority of them, they don't have any difference in terms of transmissibility or the severity of the disease that they cause.

[00:13:23] **Dr. Angela Rasmussen** They also have all been relatively neutralized by immune responses to any of them. So the concern right now is that variants are emerging that appear to have some sort of advantage over prior variants. And this is both variants that are more transmissible, such as the B117 variant that was first identified in the UK, or variants that can evade at least partially immune responses that are elicited by prior infection or by vaccination, such as the B1351 variant in South Africa.

[00:14:00] **Dr. Angela Rasmussen** So we should definitely be concerned about these and we can act on this in a couple of different ways. One way is to get vaccinated as soon as possible, and I'd like to emphasize here that even though the B1351 and P1 variant that was discovered first in Brazil are able of evading some antibody responses, the vaccines and prior immunity are still protective against disease caused by these variants.

[00:14:29] **Dr. Angela Rasmussen** So in other words, the vaccine still work against them. They will still save your life potentially if you are infected or exposed to one of these variants. So it's really important to make sure that we can vaccinate as many people as quickly as possible.

[00:14:44] **Dr. Angela Rasmussen** The second thing that people should know about this and that they should think about in terms of their daily lives is that variants don't emerge out of nowhere. They're a result of the virus being able to replicate and replicate in a lot of different hosts. And in this case, the hosts are us.

[00:15:03] **Dr. Angela Rasmussen** So by reducing community transmission, by taking normal exposure risk-reduction precautions that we have been taking throughout the pandemic, such as masking and physical distancing, increasing ventilation, practicing good hand hygiene, avoiding crowds, things like that, if you can do as many of those as possible, you will reduce community transmission that will not only reduce your risk of contracting one of these variants, it will also reduce the risk that new variants will emerge in the future that could have more of an impact in terms of transmissibility or the ability to get around immune responses.

[00:15:42] **Dr. Angela Rasmussen** So people really should think of variance as a normal and expected thing, not something to freak out about or not something that's unusual. This really is something that I think most virologists and evolutionary biologists expected, given that the virus has just had so many opportunities to mutate.

[00:16:02] **Dr. Angela Rasmussen** We should know also, though, that there are some things we can do about these variants to stop them in their tracks and to prevent new variants from emerging. So concerned, but again, not panicked.

[00:16:16] **Maryn Mckenna** So let me ask you one final question. As you know, a number of the participants in this course come from countries all around the world, countries where vaccination is not yet started, countries with lower resources. What would you want them to look for? What stories do you think they should be pursuing?

[00:16:37] **Dr. Angela Rasmussen** Well, you know, one thing I think that they should be pursuing is, making the people in their own countries, as well as the international community, aware of how they've been left behind by the nationalized vaccine efforts that we've seen so far.

[00:16:54] **Dr. Angela Rasmussen** The biggest disappointment of the pandemic for me is the lack of global cooperation and collaboration. Normally, the World Health Organization is sort of the central clearinghouse for this. But in this case, many of the wealthier countries, including the US, where I'm from, have really responded to this in a very nationalized way.

[00:17:15] **Dr. Angela Rasmussen** And in the US, of course, this was in part because we had a president whose entire foreign policy agenda was based on America first. But many other countries have really thought of their own countries first and not contributed as much as they should to the global efforts to control the pandemic. And as I mentioned before, pandemics are by definition a global public health crisis. We cannot say that we are only going to be concerned about the pandemic in the US or in Canada or in Europe or in Australia.

[00:17:47] **Dr. Angela Rasmussen** We need to be thinking about the state of the pandemic everywhere, because until all of us are safe, none of us are really safe. And I think that it would be great to have voices from the countries that haven't had a seat at the table where people in wealthier countries, especially, who have had very nationalized responses, haven't really thought I think about it as much.

[00:18:10] **Dr. Angela Rasmussen** It would be really wonderful to start hearing some of those voices making a call for the importance of global health, of collaboration in the global community to deal with what really is a global health threat.

[00:18:26] **Maryn Mckenna** That's such great advice, thank you so, so much. And thank you for being part of this course and speaking to our participants. We really appreciate it.

[00:18:34] **Dr. Angela Rasmussen** It's really a pleasure, thank you.

[00:18:35] **Maryn Mckenna** To the participants, thanks so much for watching. Again, this is Dr. Angela Rasmussen. We'll tell you in the online materials about all her affiliations. I'm Maryn McKenna, your chief instructor and we will see you in the course site online.