WHO Virtual Press Conference on substandard and falsified medicines

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Speaker Key:

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MD Michael Deats

SH Suzanne Hill

CE Celine Aemisegger

SW Shirley Wong

WN William New

BH Ben Herschler

NK Naomi Kresky

LM Lula Moran

CL Good evening, good afternoon and good morning. This is the World Health Organisation from Geneva. My name is Christian Lindmeier and I'm with the media communications team here. I'm joined today by Dr Suzanne Hill, who's director, department of essential medicines and health products here at WHO - good afternoon - and Dr Michael Deats, our lead on substandard and falsified medical products. Thanks and welcome to the two of you.

We're doing a briefing on two WHO reports on substandard and falsified medical products with new estimates on scope and impact and you should have been able to access these reports under embargo on the website, together with the executive summaries. We also just very recently were able to issue the press release under embargo; sorry for this delay but at least we have got it to you now.

The way this works; you should have signed in with your name and agency and if you did so we are also able to take your questions after we've gone through some of the briefings here. In order to ask a question please dial 0 1 on your keypad. If you have not entered with your full name and agency we

may not be able to take your questions. If you still would like to do so you will need to log out again now and sign back in with your name and agency.

So enough of the administrative procedures. Dr Deats, why don't you tell us about the main findings of these two new reports?

MD Okay, thank you, Christian, and good afternoon, everybody. There are two reports being published today and the first one relates to the WHO global surveillance and monitoring system. This system receives reports of substandard and falsified medicines and medical products and so far it's received 1,500 reports from 106 of our member states since 2013. 42% of these cases are reported from the African region, 21% from the European region, 21% from the region of the Americas and 16% from the rest of the world.

All WHO major therapeutic categories of medicines are reported. Antibiotics and antimalarials are most commonly reported, representing 36% of all the cases. Other reports relate to cancer, diabetes, heart disease, analgesics, emergency contraceptives, HIV and TB medicines. Vaccines are also reported, including some from immunisation programmes but more commonly yellow fever, meningitis, tetanus, rabies vaccines from private outlets.

Substandard and falsified medical products harm patients and sometimes cause deaths, disabilities and hospitalisations through toxic contamination but most often they fail to treat the disease or condition for which they were intended because they do not work; it's a lack of efficacy.

In 2011 over 200 patients died and 850 were hospitalised in Pakistan, having taken a substandard and contaminated heart medicine and more recently in 2015 to 2016 over 1,000 young patients were hospitalised with 11 deaths in the Democratic Republic of Congo, having taken falsified diazepam.

The second report that's being published is the report on the socio-economic and public health impact of substandard and falsified medical products and this is based on 100 medicines quality surveys carried out between 2007 and 2016. That involves over 48,000 samples of medicines from 88 countries and the observed failure rate in low and middle-income countries of those medicines that were tested is estimated at 10.5%.

The report contains an impact model on malaria conducted by the London School of Hygiene and Tropical Medicine and it's estimated that up to 116,000 additional deaths are caused annually by substandard and falsified antimalarial products in sub-Saharan Africa at a cost of up to US$38.5 million a year.

Back in 2012 33 million doses of falsified first-line antimalarial medicines were discovered concealed in a single shipping container by customs authorities in Angola. Analysis revealed the products were made of potato and corn starch but their physical appearance made them look identical to the genuine product.

The second impact model developed by the University of Edinburgh concerns childhood pneumonia. Based on a 10% prevalence rate it is estimated that up to 72,430 childhood pneumonia deaths can be attributed to the use of substandard and falsified antibiotics if there is a reduced efficacy in those medicines. This figure rises to 169,000 if there is no antibiotic effectiveness so if there is no active pharmaceutical ingredient in those medicines. 17% of substandard and falsified medical products reported to WHO are antibiotics, including those that are most critical for human use.

CL Thank you very much, Dr Deats. These are pretty stunning findings. Dr Hill, why don't you explain a bit of the causes and the solutions?

SH Thanks, Christian. I think what we see is that the three most common causes of substandard and falsified medical products that reach patients are first of all constraints in access so if patients are unable to get hold of the medicines they need this allows an opportunity for substandard and falsified products to enter the market.

The next major cause is problems with governance so this may range from just poor ethical practices in terms of distribution for example where somebody trying to do the right thing by a patient may buy a shipment of products that turns out to be substandard and false, through to frank corruption.

And then the third issue that needs to be considered in the causes of problems with substandard and falsified is actual weak technical capacity in countries and in health systems and in supply systems to actually manage supply of good-quality products.

So if that's what causes it I guess the question then is what can be done to solve the problem and we see that there are three actions that are needed in a co-ordinated fashion across health systems to both prevent, detect and respond to substandard and falsified products.

Specifically what we suggest is that countries need to increase efforts to educate and raise awareness in the community so that people in the community buying products are aware that what they may buy may not be what it's labelled on the box.

We also see that countries need to work to improve the integrity of the supply and distribution so to minimise the risks of substandard and falsified products entering into the supply chain. This requires that there is engagement with all relevant stakeholders and this is not just going to be the ministry of health or healthcare workers. It needs to improve customs officials, as Mick has already referred to, the law enforcement agencies, finance ministries and others who are going to help manage and investigate problems when they arise.

And countries also need to ensure that they have a comprehensive legal framework that they can use to respond and sanction those involved in the manufacture and distribution of products of unknown origin.

So detection of substandard and falsified products is the next key in the response mechanism. This requires effective border controls so that you can actually detect shipments of suspect products coming into a country. It requires rapid reporting systems so such products can be reported for further investigation. It also requires systems that allow risk-based inspections and post-market surveillance of products so we can see problems on the market as soon as they arise. And very importantly, detection requires that you actually have access to laboratories and screening equipment in the field to allow an initial assessment of whether a product is a particular problem or not.

The third part of the response and management mechanism is actually being able to respond as a health system to substandard and falsified medical products in an effective and proportionate way so this is where we work with countries to have a system of alerts and recalls. It requires a strong medicines and health products regulatory system to be in place. I think it's really important that there are transparent legal processes that can be applied to cases of concern. And finally what we also suggest is that we need to learn from the responses and the interventions that have worked so that we

have evidence-based policy and procedures that we can use and take forward to actually reduce this very significant public health issue. Thanks very much.

CL Thank you very much, Dr Hill. Let me remind everyone that you have to dial 0 1 in order to get into the queue for questions but before we get to the questions, Dr Hill, maybe in a quick summary, what are the main messages to take away from these new reports?

SH Firstly I think what they show is that the problem of substandard and falsified medicines is a global one. As Mick has described, we have reports from all over the globe from many countries, rich and poor and the reports relate to all types of products, both innovative products or generics, whether they're expensive or not so it's a genuine global issue.

But I think the important thing to emphasise is that the people who are most affected are poor patients who have to pay for treatment out of pocket as well as communities who have limited access to medicines. I think substandard and falsified products generally are a problem but particularly these communities who are perhaps struggling to afford medicines and health products; these substandard and falsified products not only harm the patients or fail to treat them but they waste resources that could be used for effective treatment.

What we see is that political will is required to translate the policies and strategies that have been agreed at the global level to try and combat this problem into sustainable actions on the ground and this needs to be backed by appropriate financial and human resources. Countries, I think, need to be prepared to assess their own situations and invest in dealing with this problem.

We need collaboration between countries to respond to this and that means that we need improved reporting systems and greater transparency both within countries but between countries and we need to have the effective multi-stakeholder engagement of all parties involved.

And finally I think one of the key issues is that without strong regulatory capacity and systems in place we will not see a resolution to the problem but we also need sound investment in safeguarding the manufacture, distribution and supply of medical products generally. Thanks very much.

CL Thank you. Now we are about to go to the first caller and for everybody else again, dial 0 1 to get into the queue. I have here a Celine, if I'm reading that right, from Geneva. If that is so, please specify your name and agency.

CE Yes, hi, thank you for doing that. I'm Celine Aemisegger from EFE Spanish news agency. Can you hear me? No?

CL We hear you well. Please go ahead.

CE Okay, sorry. My question is actually on the spending or cost because in the report you speak about the estimated spend and the current spending by counties [sic] on substandard and falsified products is about 30 billion but I'm not sure if you refer kind of, they acquire these products not knowing it, or is that the cost that results in further treatments by failing, by the failure of the meds?

CL Thank you very much. I think we got you. Dr Hill?

SH Thanks a lot, Celine, for the question. So you've hit on a really challenging issue; how much does this all cost the globe? One of the first problems that we had in trying to estimate that was trying to get reliable and accurate data from low and middle-income countries particularly with respect to

how much they spend on medicines in total and how much they spend on different types of medicine so this is national expenditure data and we only have aggregated, that is really consolidated data from low and middle-income countries so that we don't know for example whether - I'm just picking a country at random - Ghana spends 20% of its income or pharmaceutical expenditure on antimalarials compared to antibiotics; we just don't have that data.

So to try to estimate the financial cost to the countries individually or countries as groups or even the globe was really challenging. All we can do at the present time is say that we know from World Bank figures roughly the total pharmaceutical expenditure and this is just expenditure on the drugs, this is not expenditure on the treatment that you need to replace a false or substandard product with, this is just expenditure on the drugs themselves.

We know that that's roughly 300 billion a year based on World Bank estimates so if you say that we think the likely frequency of substandard and falsified products is 10% of products then 10% of 300 is roughly 30 but these are approximations because we do not have reliable data and one of the points we want to make in this report is that we need better data from countries on how much they spend on pharmaceuticals.

Now, why is the expenditure a problem? Well, as Mick has explained, what you can see sometimes is you can buy a packet of a product somewhere, whether that's the US, in Africa or in south-east Asia, and because you're buying a white pill as a patient you can't tell what's in it and so that's why people buy them, because they're looking for the brand - the brand name on the packet might be perfectly the same as the real one and as a patient you just don't know. So that's the expenditure piece and that's the problem with the costing data.

CL Thank you very much, Celine. Does that cover your question?

CE Yes, thank you.

CL Thank you. Before we go to the next one maybe one from here; how do these products that you have just described, Dr Hill, enter the supply chain, how do they make it into the market? Dr Deats.

MD Yes, can I deal with that one? One of the ways that these medicines enter the supply chain and get into hospitals and pharmacies and clinics is where the procurement practices are poor. Often we see medicines being supplied from unsafe sources. Sometimes we see medicines being procured from unlicensed or unregistered wholesalers or importers so there is very little due diligence carried out as to where these medicines are being sourced from.

Once they're purchased from, you know, somebody that's arrived at your premises with a truck offering medicines for sale you don't know who this person is. It's a cash sale, there's no paperwork, the price is right, the medicines will be purchased. If that's happening up the supply chain then a hospital will approach that wholesaler and ask for medicine and of course that's the one they'll be supplied so very little due diligence carried out and if you don't know where you're sourcing the medicine from then there's a great danger that you will encounter substandard and falsified products.

CL The internet is certainly not helping in that aspect. Is it okay to buy medicines on the internet, what would be the best practice here?

MD Yes, it's... Well, now e-commerce extends not just to internet websites but also to smartphone applications and social media platforms. Medical products are supplied from all these sources and our

advice would be that caution should be exercised if you don't know where that website is hosted, if there isn't a landline telephone number, if there isn't a way of checking that there is a bricks-and-mortar pharmacy behind this website. They're the sort of clues to look for but certainly it's a good outlet for substandard and falsified medicines and if you're unsure of the authenticity of a website then we would advise going and getting your medicines from a pharmacy.

CL Thank you. What kind of sanctions are there already or if not, would be necessary to regiment this a bit more?

MD Having a legal framework in place is a key element of the prevention, detection and response approach that Dr Hill was mentioning just now and part of that is having dissuasive sanctions but really our focus here at WHO is to prevent this happening in the first place and to raise education and awareness, to strengthen our supply chains, to make reporting systems better and...

But of course part of that holistic approach is to respond and take action where necessary. That needs a strong legal framework with dissuasive sanctions and then a transparent legal process that can see that case through the courts if that indeed is necessary.

CL Thank you. I turn to the next caller on the line and that should be a Shirley Wong - again apologise for the misspelling, most likely. Please introduce yourself.

SW This is Shirley Wong from Politico and you said it exactly correct. Just a quick question about the impact of these medicines; is there potential for substandard medicines to contribute to things like drug resistance as well, like say with malaria?

CL Dr Hill, maybe Dr Deats?

SH Okay, we can both do that one as a duet, I think. The answer is in short yes, thanks, Shirley. What we see is that for example if you have less than the necessary amount of the active ingredient of an antibiotic in a product for example you may be exposing people to low doses that don't produce the desired cure but they're high enough to induce resistance by exposing antibiotics to unnecessary anti... to unnecessary antibiotics, if you see what I mean. Certainly we see that that's part of the issue with the problem with malaria as well.

MD Yes, absolutely. Just to add to that, antibiotics and antimalarials are the two highest categories reported to the WHO by far and both of these can contribute to antimicrobial resistance and it's not just falsified versions of these products. Some falsified versions do have some active ingredient in them, sometimes the correct active ingredient and that's usually put in to try and defeat detection systems and testing that's in place, but also substandard medicines that can degrade during their transportation and storage. They can degrade to an extent that means that the active pharmaceutical ingredient is no longer effective, that it falls within a selection window which will make it vulnerable to the development of resistance.

CL Thank you very much. Shirley, does that answer your question?

SW Yes, thank you.

CL And I'm turning now to William Mairs. Could be CNN but please introduce yourself.

WN It might be William New that you're asking for, in which case that's me and I'm at Intellectual Property Watch and I'll go ahead and ask a question. I was just wondering, as I have scanned the

report and based on everything you're saying, obviously much of the, you know, burden lies at the national level to try to address these very complicated issues but I wonder if there's any vision yet or indication in the report of a way for an international-level approach to be taken beyond simply studying and, you know, making recommendations and this sort of a thing but something a little more concrete. Is there a call for that, for a global approach?

SH So thanks for your question, William. This work has actually grown out of the work of the WHO or member-state mechanism on substandard and falsified products so that is a collaborative group of member states from all WHO member states who are interested in trying to work together to address this issue.

So that's at the political level and I think at the technical level there has also been a lot of work done at sub-regional and regional level for example with respect to harmonisation of regulatory requirements as well as collaborative registration processes and investigation. I think Mick has got a couple of examples that might be worth citing about how this kind of collaborative approach across the globe has to come together and maybe he would like to elaborate on that.

MD Yes, it's really key that countries and member states have good systems in place in country, as we've said, with regulatory systems that are strong but it's also key that they are well-connected to their neighbours and that there's good communication, co-operation and collaboration between countries within regions and subregions.

But because this trade in medicines and active pharmaceutical ingredients is a global trade there needs to be global vigilance and we know that medicines from one side of the world can have an effect on patients on the other side of the world now so it's very important that we have this global connectedness in place to respond to the globalisation of the market that we've got There're some good examples around the world of good regional systems but it's the WHO surveillance system that then connects these regions together.

CL Thank you very much. William, does that cover your question?

WN It does but I would go ahead and just ask a quick follow-up to say, as I understand it - and I'm not sure that I've found it in the report yet - but that the sourcing of a lot of these types of medical products can be often identified as coming from a few primary locations, you know, that there's... If there were a global initiative to try to focus on the origin of these things it might lead to several, you know, specific nations or regions. Is that something that a global framework can address, bringing that kind of pressure on the few, you know, leading sources of this kind of thing?

MD Yes, thanks for that question. Just to come back quickly on that one, in the last four years of the surveillance programme here we've seen clandestine factories that have been making substandard and falsified medicines in every WHO region. We've seen them in developed countries, we've seen them in developing countries and quite often this - as we set out in the report, the packaging for products will come from one part of the world, the contents will be put in in another. The component parts - patient information leaflets, bottles, packets - will come from different countries to one location where they will be assembled and then distributed within the market.

So it's not a very clear picture but certainly international collaboration is absolutely key. Recognition that this is a problem and political will to deal with it are all key components that we urge and we are urging in the publication of these reports.

CL Thank you very much. My next caller here is a Ben Herschel or Ben Hershley. Is that correct? Please introduce yourself.

BH Yes, Ben Herschler from Reuters.

CL Good to hear, please go ahead.

BH Hi. Given that the report obviously focuses quite a bit on sub-Saharan Africa and highlights the lack of regulatory standards and good quality controls, I wonder if you could comment about the role that an African medicines agency could play in helping with this problem and how practical you think that is, that African medicines agency project. Thanks.

CL Thank you for that question. Dr Hill, please.

SH Thanks, Ben. It's a very important question. Clearly there's potentially a huge value-add from a harmonised agency such as the African medicines regulatory agency that has been discussed and developed. I think it is practical. However it's complicated because you've got 54 member states in the Afro region and, you know, whether it all ends up being all 54 or subgroups of that, I think, is really still being discussed at the political level.

But I think it's clear that particularly in the African region collaboration amongst regulators is utterly essential for combating this problem because while we see that there are some stronger regulatory authorities than others in that area there are still countries that have very limited regulatory capacity and that has to come together in some way to make a difference.

CL Thank you very much. Ben, does that answer your point?

BH Well, maybe I could just follow it up. I mean, they seem to be modelling it on the European Medicines Agency but, yes, Africa obviously doesn't have the same kind of legislative system that we have in Europe or a court to arbitrate so is it realistic to have a pan-African agency?

SH I think it's still a possibility to have a combined agency because, as you know, in a European context while the European agency for example does the approvals process for new products it's actually the member states' responsibility also to manage their markets internally so I think that kind of combined model where you have a collaborative process to approve products or to investigate products but you also have member-state responsibilities when it comes to managing markets is really, is feasible.

CL Thank you very much, Dr Hill. At this point I don't see any further questions so if you still have one please dial 0 1 on the keypad. Maybe one as a kind of a follow-up to what we had before; which part of the world are [sic] most affected by falsified or counterfeit products?

MD Well, Christian, all parts of the world are affected by this issue, to varying degrees. We see developing countries, low-income countries and some middle-income countries that suffer from this problem because there're some difficulties encountered there. Sometimes it's weak regulatory capacity; sometimes it's porous borders; sometimes it's weak legal framework. So that's where we see the issue manifesting itself and quite often we'll see medicines not just in the hospitals, pharmacies and clinics but we'll see it in street markets in the African region or some parts of Africa and the equivalent of a street market in Africa is an unregulated website in a high-income country.

So you mentioned the internet earlier and the internet is a source of substandard and falsified medicines so caution does need to be exercised but that's the equivalent of a street market in Africa. So this affects all parts of the world and you will see examples in both of the reports that have been published today, examples from high, middle and low-income countries; it affects everybody.

CL Thank you, Dr Deats. We have now a couple more callers. I'm first looking at Naomi calling from a German number. Could that be Bloomberg? Please introduce yourself. Go ahead.

NK Yes, this is Naomi Kresky from Bloomberg News. Thanks for taking my question. I'm just interested in - what role does industry have to play here, is there something that drug distributors are not doing and could be doing in terms of packaging or in terms of tracking or something that drug-makers themselves could do differently as far as how they distribute their products to ensure that there are fewer fixed [?]? Thanks.

MD Yes, thanks for that question. More and more countries are looking to secure their supply chains. Many are starting to implement track-and-trace, pack-specific identifiers being used on medicines now. We've seen that in the European region, we see it in at least 20 countries around the world where different track-and-trace models are being put in place and this will go some way to tackling this problem.

But it's also about those fundamental aspects that we mentioned earlier about due diligence. When we're talking about the distribution chain, carrying out due diligence as to where you're sourcing the medicine from, making sure it's coming from safe sources and that's one of the most common ways that these medicines do get into the system. Technology has definitely got a part to play but so has the behaviours of those within the supply chain to ensure that they're obtaining safe products.

SH That said, if I can just add to that, I think, you know, it's important to say that we encourage industry to report suspect cases as well and where there have been investigation of suspect products, you know, being able to have discussions with the purported manufacturer, if you like, or the manufacturer whose label is on the box and identify whether that's in fact a real batch number or not is critical to the investigation so I think there industry is very clearly playing a key role in helping manage the response to suspect products.

CL Thank you very much. Naomi, does that answer your question?

NK Yes, I think it does, thank you.

CL Thank you very much. I have another one here from a Luna Moren. Please go ahead and introduce yourself.

LM Oh, hello, yes, It's Lula Moran from Bioworld. That was going to be my question too; what do you think that industry could do to help with this problem so instead of that I'll ask you another one. Would you be concerned that the way that the medicine supply chains in Europe are going to be pulled apart as a result of Brexit could open the European market to further falsification of drugs?

MD Okay, yes, thanks for that question. I think when we - you know, we quoted some figures earlier; about 21% of the reports we see come from Europe and of course the European region from a WHO perspective is a very wide region stretching from western Europe and the EU countries right the way across parts of Asia as well.

This, the supply chains within the European Union countries as they stand are fairly tightly secured. Instances of falsified medicines reaching hospitals and pharmacies is fairly unusual. The reports that we see from European countries tends to be more internet-related, illegal supply chain sources so at the moment we would not foresee an increased risk emerging but nevertheless it's something that we will be keeping a close eye on as the Brexit negotiations develop further.

CL Thank you very much. Lula, does that take care of your question?

LM Yes, thank you.

CL Thank you. We have a follow-up from William from IP Watch. William, please go ahead.

WN Yes, hi, thank you. Sorry to take the floor again. I just quickly was wondering about - I see some references in the report to pricing and I know there're many factors, you've described manage factors but could you just speak to the issue of price of the legitimate medicines in countries and how that comes into play in consumers choosing other products that they presumably - I mean, if they're not actually duped and they believe are, you know, are more affordable? Thank you.

SH Thanks, William. It's complicated, as you know well. I think - first of all I think I'd like to reiterate the findings of the report, that the substandard and falsified problem seems to be found in both expensive and inexpensive medicines so just high price alone doesn't necessarily drive a problem with substandard and falsification.

That said, if you have a product that is in high demand, that is of low price, you can have a problem with substandard and falsified medicines entering the supply chain and we've seen this in some examples that are cited in the report where there's been a shortage followed by problem products arriving, irrespective of the fact that the price was not the driver.

I think in situations where patients are trying to buy out of pocket and they have a choice between high-price and low-price products from a private sector provider for example, or it might be a public sector provider, then we do have some documentation that suggests that there can be an opening in the supply chain for substandard and falsified if a patient is forced to buy - make an out-of-pocket payment for a product that is a low price.

But it's not simply high price equals more risk equals access to substandard and falsified. Mick, perhaps, do you want to add? Yes.

MD Yes, thanks, and all points well made. It's definitely a demand that tends to drive it so when we look at the reports that come into the WHO we carry out analysis into each case and we discuss it with our focal points back in the country that have reported this so that we can try and identify the trends and as was said by Dr Hill earlier, the three components that come together that result in substandard and falsified medicines reaching the market are constrained access to medical products, weak governance and weak technical capacity and when those three issues conspire together substandard and falsified medicines reach the market so if we just look at the access issue this is sometimes about affordability, sometimes about availability.

You know, shortages and stock-outs that are created will mean that substandard and falsified medicines will fill that vacuum pretty quickly and examples of that are shown in the reports, especially with the meningitis vaccine cases in Niger that are reported. This is as a result of a shortage of a vaccine at at time when there's a seasonal outbreak of meningitis. If there's insufficient product on the market within days the vacuum's filled with falsified versions so sometimes it is about access and

sometimes it's about affordability but not always. Sometimes it's about governance and that's where there may be no access problem, no quality problem, products actually being produced and supplied free of charge to the public but if there's spoor governance or corruption at work then those products won't reach patients So lots of causes for this; affordability is just one component in the bigger picture.

CL Thank you very much for this very important clarification. I see no further questions here on the line. Maybe as a quick follow-up to what you both just mentioned and what William from IP Watch has asked, can we maybe clarify again the difference between falsified and substandard medicines or medical products?

MD Yes, sure. A substandard product is one that's out of specification. This is relating to a product that's properly registered, properly licensed and there may have been an error in the manufacture or a mistake during its manufacture. It may have degraded during its transportation and storage or it may have just expired so no intentional or deliberate acts there. This is a medicine that's completely, you know, registered and licensed, as I say, but something's happened to it during its lifetime.

But a falsified medicine is one where there has been a deliberate and fraudulent misrepresentation of its identity, its composition or its source so this is a deliberate act to try and deceive a member of the public, a patient, a healthcare professional, somebody in the supply chain, whoever it may be, that the product is the genuine article when in fact it is not so a clear...

And with the first substandard medicine the response to that is probably going to be a regulatory response. With a falsified medicine then that response is likely to be a criminal act so this would be a criminal law response to that.

CL Thank you very much and, I think, an important clarification at the end of our virtual press briefing here. So I'm looking at both Dr Hill and Dr Deats; anything as a wrap-up? No? Thank you very much. Then I'm very happy we came to the end of a very important press briefing and let me remind everybody that in about 15 minutes, at 4:00 Geneva time, the embargo for this press briefing ends and hence all material is free and free to use. Please also note, as usual we'll send the sound files of this press briefing around in a short while and the transcript should be available most likely tomorrow.

With this, I think Dr Hill, Dr Deats and wish you all a good evening from Geneva.

SH Thank you.