

**Australia's role in the global fight against TB: an interview with Dr Eric Goosby (UN Special Envoy on TB)
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Camilla Burkot: Welcome to the Development Policy Centre podcast. My name's Camilla Burkot, I am a Research Officer at the Development Policy Centre, and I'm very pleased today to be sitting down with Dr Eric Goosby, who is the UN Special Envoy on TB. Welcome. Thank you for coming.

Dr Eric Goosby: Thank you. My pleasure.

Camilla: I thought maybe to begin, you could just explain what your role is as UN Special Envoy on TB.

Dr Goosby: Sure. Thanks for having me. I think that the UN is an organization that has many different agendas and focuses of activity that are not coordinated that tightly. And I think that as issues arise, or as issues get neglected, the Secretary-General tries to emphasize them in one way or another, either within their administrative management system or by putting a layer between the Secretary-General and the directors of agencies that can cross issues, concentrate issues, bring attention to issues.

They run the gamut from political attention, like a noted person/celebrity would bring, to people who have more of a technical background in the area, and then people kind of in between. So, you see a whole spectrum of types. I was appointed under Ban Ki-Moon, and his hope was that the countries that I already had established a relationship with through my work with HIV would be the same countries that needed strengthening and help in their TB response. Plus, there's a co-infection relationship with HIV. Most of the increases with TB globally are in one way or another connected to the HIV population, especially in the developed settings.

And because of that, I think my hope is we've been able to look at those areas that carry the largest burden, try to understand their current response, and are in the process of trying to bring technical assistance, support, and attention to the political leadership to continue to see this as an important problem that's impacting their population that they should invest in.

I think that the threat of economic instability and decline will come through a weakened workforce. TB tends to take your 15 to 50-year-old age group as the predominant group hit. It hits any age group, but in terms of those who mostly are out and about, and get infected.

And I think there is an economic threat that is looming, and I think that the tragedy of tuberculosis is that it also raises issues around human rights and equity, disparities, better than most diseases do. I think having a disease that you can prevent, diagnose, treat, and cure 90 percent of the time, and delivery systems have not found this to be the priority that it should be in standing up and sustaining that kind of response, is really a tragedy.

So, I hope that we're able to raise that awareness and allow people who need it to benefit from the science that we already know. In addition to kind of where we are in the state of care for tuberculosis, you know these drugs that we're using are old. They've been around a long time. You have to take four of them; two for six months and four for two months. It puts a burden on the delivery system to keep track of all that, just in general. But it's mostly that the drugs that are used have side effects that can be life threatening. As you move above 35-years-old, some of the

most effective antimicrobial drugs can cause liver damage that can kill you, and you can't predict who that person's going to be.

So, it presents a challenge to management that you need to keep on top of it. Not hard to do when you develop a system that's prepared itself to address those issues, but it's not the kind of disease that you can just kind of pop in and out of a primary care system without real preparation. Easily prepared for, but you need to prepare for it.

The idea that it's an inpatient treatment versus an outpatient treatment – the drugs in the 50s really pushed it into being an outpatient treatment mostly. But strategies to keep people on care for six months, which is all it requires – as compared to HIV, which is the rest of your life – is a challenge to every single medical delivery system I've looked at. So, it's harder than it seems.

Camilla: Yeah.

Dr Goosby: But I do think that we have the evidence base to hit all of those needs. We just need to put it together, and again maintain the political will to sustain it.

Camilla: Well thank you. That was a great overview of all the issues, and it sounds like you've got your work cut out for you in this role.

Dr Goosby: Yeah.

Camilla: Perhaps you can give us a bit of an overview of the burden of TB in our region, in the Asia-Pacific region.

Dr Goosby: So, you are in a region that's in flux in terms of our understanding of just the burden of disease. Prevalence studies that take four to five years to do, and are millions of dollars expensive – like \$10-15 million to do one – are labor-intensive and require an analysis of the data that delays your findings from when you collected it.

So, people are always kind of reminded, "You remember that thing we did? Well here's the results of it." So, it's never really served as a momentum generator, a prevalence study. They're always after the fact, and they're usually to validate numbers that people have already used, budgeted off of, and moved on.

So, making them more immediate and relevant is important. But the data's coming in, in Indonesia and the Philippines, that show 20 to 35, 40 percent increases in the number of people that are in those regions and those countries that are carrying TB, active disease. It's not that there's an expansion of the number of people; it's that we're counting them for the first time.

But it tells you that the burden is much greater than was anticipated and is being responded to, even though the response is underneath the expected—that is, the current burden of disease has a response that isn't what the needs demand, it's underneath that. But this just makes that disparity worse.

And I think getting a handle on that is going to be critical in the next few months, to understand the new numbers. But what's clear to everybody is that the response is under the need, and that these countries in the region need to start thinking about how collectively you can understand your burden of disease and share the responsibility to respond to it. For countries that are stronger to support countries that are weaker, not only in resources – and resources are important, we need to put more resources into this for sure – but also in technical assistance; training; pre-service training as well as post-; the use of mid-level providers; and the need to engage the community in concretizing and solidifying the response, especially in identification, outreach, and retention strategies.

So, it's pretty much across-the-board need, and I think that it would be a real contribution, not only to the region but to the planet, if countries in the region like Australia position themselves to convene, move through these challenges, and come up with a strategic plan/strategy that addresses them.

I'm hoping that the leadership in your country will see this as something that's not only needed but in their best interests, both on a humanitarian level but also a health and security level for Australia, to make sure that individuals who are suffering from, again, a disease we can cure, have the opportunity to get in front of the treatment.

It also is something that I think allows for disparities to be acknowledged. The intellectual honesty of acknowledging individuals who have not benefited from the science, for one reason or another, to be characterized, counted, and accommodated by leadership, is an act of leadership. And I think that opportunity's clearly in front of Australia now.

Camilla:

One of the things I was interested to ask you about was co-infection with TB. You mentioned earlier the interaction with HIV, and co-infection of HIV is quite widely known. Previously you were the US Global AIDS Coordinator, and so you have seen that interaction a lot.

But particularly in the Pacific region, I know that we've seen issues with non-communicable diseases, and particularly TB and diabetes co-infection has been an issue. I'm wondering if you have any comments on what needs to be done to address that, how do we need to look at that and start to deal with that.

Dr Goosby:

Well, I think as a global community, we need to acknowledge that infectious diseases are still the things that kill the largest number of people on the planet, if you eliminate accidents and motor vehicle accidents. When you look at the infectious disease burdens, these are the large killers.

But those individuals who have tuberculosis and have HIV are getting stabilized or cured, and are coming up with hypertension, diabetes, and coronary artery disease. The wave of obesity that was seen in the developed world is happening in the developing world, but it's happening at an age group that's 15-20 years younger. So, instead of in 50-60-year-olds, you're seeing it in 30-year-olds, 35-40-year-olds, at the same level, advancement, as you see in an older person in a developed setting.

No one really knows why that's the case. There are theories that go from, it's not genetics – those same genetics that travel to Europe or the United States don't show this. But the stress differences

that people are under was what people think is going to be the key. The cortisol levels you maintain as an individual who's immigrated into an area, or is dealing with issues of security around housing and food. When you have people whose immediate environment is politically unstable and no one can get a perspective on it to allow you to plan, make plans for your family.

It raises the level of stress in your daily life so much so that you don't perceive it as stressful. It becomes the new norm. But your cortisol levels in your body are two to three times the level that they are if you aren't under that background stress. You see the same kind of thing in bus drivers in large, urban settings. The fact that they're in a stressful job, having to go through traffic, they carry a higher cortisol level. Soldiers in the military, on deployment, the same thing.

So, it's a phenomenon that's well-described. But when you're chronically under that stress—we don't have a whole lot of data to look at people who are under increased levels of stress for years. That causes insulin resistance, and you push a whole group of people into not accommodating elevated glucoses with secretion of insulin to move the glucose into the cell and feed your cells. So, you have a pre- or a diabetic that you've created because of that. And that association has been pretty well-described is being further worked out. And so, I think that's what you're referring to.

Camilla: That's fascinating.

Dr Goosby: Yeah.

Camilla: I always find it interesting when you find these examples where you can think about these high-level structural issues, as you say like migration, governance, and it comes all the way down to people's physiology.

Dr Goosby: I know.

Camilla: That's fascinating.

Dr Goosby: Yeah, when you think about it, humans only have so many ways to react to everything. It's like 10 fingers, 10 toes, and your kind of physiologic response. And you just keep using those same tools over and over again even though the stressors change.

Camilla: Yeah.

Dr Goosby: But I think it's a legitimate thing to think about. Infectious disease is now moving to NCDs as the dominant disease that delivery systems need to be able to accommodate, and kind of an integrated primary care kind of health package is where the planet needs to go. The big killers, the infectious diseases, need to be taken care of, and not stopped. It's not going to be "Check that off the list. We've done that." It's going to be a concerted effort to catch up. Once caught up, we need to maintain. And that means continuing both identification and treatment efforts. But perhaps, if we're smart about this, being able to not have to do it to the entire population but to move to groups that we identify as at higher risk. So, I think the evolution of the delivery system's response is something that we can look to that will change the need, but also change the resources needed.

Camilla: Right, yeah. Something else I wanted to ask you about is antimicrobial resistance, which is something I think is really starting to come onto the global health agenda. I think last year at the UN General Assembly, there was a big meeting on AMR. And I understand just this month, there was a summit held in Berlin with the G20 Health Ministers. I wonder if you can tell me a little bit about that summit and its significance for the fight against TB.

Dr Goosby: Well, I think that this is a real common need, a common goal, in identifying antimicrobial resistance as a problem. The study that was done by O'Neil put a lot of emphasis on inpatient antibiotic resistance, which if you're a physician working in and out of hospitals, you see a lot of that.

But the largest killer, as you've alluded to, in antimicrobial resistance is the individuals who die from multidrug-resistant TB medications, the antimicrobacterial drugs that are available developing resistance to them. About a third of people who die from antimicrobial resistance on the planet are from TB, and it raises it to the top of the list in terms of concern.

I think that we need to acknowledge that we understand parts of the development of multidrug-resistant TB, but not all of it. It's clear you can develop it by the organism actually trading—giving—feeding genetic material to the next generation, and acquire it that way. You also can acquire it by taking the medications for drug-sensitive TB incorrectly. So, you have two mechanisms feeding the development of multidrug-resistant [TB].

The treatment for [MDR-TB] is really hundreds of times more expensive. It's a 50 percent chance of success, 50 percent chance of death. And as you get more resistance, acquire more resistance, it drops down to about 20 percent survival.

So, the costs skyrocketing, the threat to the patient, the person, and the spread of an aerosolized organism that has a good chance of killing you just by you being in the wrong line, or in a play or a movie or a store. Somebody coughs, you inhale it, and away you go.

The presence of diabetes impairs your ability to identify that organism on first exposure and clear it. But so does HIV. So does malignancies, if you had a lymphoma or had chemotherapy. Or if you were pregnant, interestingly, in your third trimester of pregnancy your immune system wanes by about 40 percent. So, women, pregnant, bloom in in their last trimester with active TB.

So, it's a real smart organism. It figured out how not to kill its host, to live in it as long as it can. But at the same time, it's figured out how to move within the hosts, kind of in an under the table way, very effectively.

So, I think that our ability to deal with the antimicrobial resistance challenge is going to require a response that goes to the countries that are most heavily burdened. The G20 falls into that category. And the O'Neil report recommended that a fund be created that would stimulate innovation in new drug discovery, new diagnostics, but specifically for the AMR agenda in new drug discovery to get drugs that people aren't resistant to in queue by pharmaceutical companies who right now don't have a financial incentive to take the leap into the R&D costs. So, this idea

would be that those countries most heavily burdened would put up a fund that could supplement that drug.

Camilla: Interesting. It sounds like, yeah, there'll be plenty of developments there, hopefully, going forward. I'm interested, as someone who works on a global level and travels to lots of parts of the world and has this quite unique perspective in that sense, your view on how Australia can be most effective in supporting the fight against TB. Is it about putting more resources up? Is about getting more political commitment? What do you think we need to do to help support the fight against TB?

Dr Goosby: Well, I think that Australia has a unique opportunity at this particular moment. The global narrative has shown countries – mostly talking about donor countries – the effectiveness of making a large investment against a single disease. That those types of investments actually can very dramatically impact the number of new infections and the suffering that those diseases generate in the person infected, and the community, people around them.

The Global Fund for HIV, TB and Malaria, GAVI for immunizations, bilateral programs like PEPFAR have been breathtaking in showing—you know, in Lesotho, where you were, huge drops in the number of new infections. Hospitals – Lesotho, the first time I went there, which was in the late 90s, had four to five people, not two to three, in the bed with active opportunistic infections from HIV, largely people with TB. 90 percent of them would not be diagnosed nor treated and would die. As they looked like they were going to die, the hospital would send them home to die, so they didn't have to deal with the actual moment of death.

That pattern went on for 20 years in sub-Saharan Africa. You had, in 2003, just 50,000 people who had access to antiretrovirals. But these programs that allowed the responsibility for response to be shared by rich countries that had the resources, that could come into countries that carried the heaviest burden to help them strengthen their response and maintain it – that knowledge that we gained from that extraordinary mobilization of resources is now kind of congealing in your region around tuberculosis.

The Indonesian numbers that we were talking about going up, and Philippines, the understanding of the responses and strengthening of them in Southeast Asia, Vietnam, Cambodia, have done strong work with this for many years. Myanmar is just starting to develop a response to it. Laos, the same.

But you have a long-term relationship with these countries, and an economic partnership that you've developed with them, that really positions you perhaps to take a leadership position, be a convener of these countries in the region, to define the problem and put a strategic plan together that allows the shared resources – not just money, that's needed for sure, but also the technical talent that Australia holds and represents is desperately needed in these countries to strengthen the capacity of Ministries of Health and civil society to mount a stronger response. To know the response that they are mounting has this impact, so they understand their investments and the outcomes that they buy, and see defined opportunities for resource infusion, for technical assistance infusion, for bringing people to Australia for training, both pre- and post-, and for a research agenda that addresses the unknowns that are present in these countries but takes the

talent that has been trained in Australia to benefit those in the region. And I think that opportunity's a real one.

Over the next few months, year and a half, there are platforms that Australia could use to concretize their commitment, places to have convenings where countries are probably going to be anyway. Moscow has decided to convene at a ministerial level, Ministers of Health, around TB as an issue in November of this year. And then in September of next year, 2018, the UN General Assembly has already decided to have a high-level meeting focusing on tuberculosis. Again, a platform for Australia to speak to what it's doing in the region.

Camilla: Great, well we'll look forward to that. I guess lastly, I'm interested in, from a sort of advocacy perspective, what is the case that we can make for why the Australian public should be interested in TB and should be interested in getting government to support TB, TB control and TB research?

Dr Goosby: Well, I guess there's the disparity argument; the ethics of knowing how to do something and not doing it. You've got to ask yourself, "Why aren't you engaging on that?" And I think that that's a real problem with the current disparity that tuberculosis represents globally, but also in the region even more so.

I think that we do have an obligation to act if we can, and again have to ask ourselves why we decided not to. The counterfactual needs to be on the table as a motivator in and of itself. I think Australia has been sensitive to that argument historically. I think your support of the Global Fund has been exemplary of a country that gets that responsibility.

And this would, to me, be along those lines of thinking. People who are infected with tuberculosis can easily, on an immigration or on a school vacation level – either those going from Australia to, or people there coming here – put a threat of infection out there. I think that understanding that you are part of the global community and that borders don't mean anything to these organisms is a real fact.

And I think that in epidemics that are out of control, that have not contained and are widely allowing people who are infectious to still remain in the general population, pose that threat more specifically, more rigorously, to your population that's not infected. So, with highly-burdened countries just on your northern border, it makes this, I think, more emergent, urgent.

The other reason is the instability that people who are infected with tuberculosis represent to economies. Not so much your economy, but the economies of countries that you're in economic partnerships with, and the workforce that is generated from them that you may benefit from as a country, in Australia.

You need to think about, 'we treat it there or we treat it here'. And the treating it here, waiting to treat it here, affords other risks to your community that are not there in treating it there. And I think that type of thinking is part of why engagement is, I think, in the interest of Australians. I think the first argument – being part of the global community, being part of the solution because you can be – is probably the stronger of the two. Yeah.

Camilla: Well, Dr Goosby, I want to thank you again for taking the time to have this chat. It's been really interesting, and thanks also to RESULTS for putting us in contact. Best of luck in the rest of your trip here.

Dr Goosby: Well, thanks. Kind of you to say. Thanks for doing it.

[End of transcript]