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MDR and XDR-TB: Progress on Many Fronts

### SUCCESSFUL TREATMENT OF MULTI AND EXTENSIVE DRUG-RESISTANT TUBERCULOSIS

Change and challenge is in the wind as 2008 comes to an end. The same is true when examining this month's ReachMD XM 160 special series - Focus on Global Medicine. We take a look at both the changes and the challenges impacting global medicine.

More than half a million people around the world are stricken with multi or extensively drug-resistant tuberculosis every year, but only a fraction of these patient receive affective treatments for their disease. What are the keys to a successful treatment regimen particularly in developing countries with fewer medical resources. You are listening to ReachMD, The Channel for Medical Professionals. Welcome to special segment "focus on Global Health".

I am your host, Dr. Mark Nolan Hill, Professor of Surgery and practicing general surgeon and our guest is Dr. Sonya Shin, assistant professor of Medicine at Harvard Medical School. Dr. Shin is a co-author of 2 research articles published in the Journal Lancet and the New England Journal of Medicine documenting success in the treatment of multi and extensively drug-resistant tuberculosis.

**DR. MARK NOLAN HILL:**

Welcome Dr. Shin.

**DR. SONYA SHIN:**

It's a pleasure to be here Mark.

**DR. MARK NOLAN HILL:**

Dr. Shin, you have done studies in Russia and Peru. They seem very different places, certainly diverse. Is this helpful or does it hurts your research?

**DR. SONYA SHIN:**

I think it is very helpful. You know, not just from the research standpoint, but you know from what you can say from the programmatic standpoint. You know, here we have Peru, which is a pretty poor country, I think it is considered lower middle income, they have much less in terms of health infrastructure compared to Russia, and yet the outcomes of MDR-TB or XDR-TB are excellent in both settings. You know, Russia represents a different system where there have been a lot of social and political changes that happened in the 90s that caused sort of a shock in terms of the health effects, but at the same time, there is a fair amount of resources. There are many trained physicians and hospitals. So there are 2 different places, but by publishing results on outcomes of MDR-TB and XDR-TB in both settings, I think it provides a more sort of compelling argument to say, "look, you know, this can be done". These patient's can be treated and it's worth offering treatment to patient' with XDR-TB instead of considering them to be completely untreatable cases.

**DR. MARK NOLAN HILL:**

Are there differences in the characteristics of the populations in Peru and Russia?

**DR. SONYA SHIN:**

There are, there are. There are certainly social differences. In Russia, many of the patient's are homeless, a lot of them have problems with alcohol use disorders, many of the men have been in and out of prison. Whereas in Peru, we see more malnutrition, these are patient's who may not have as much problems with substance use, but there is sort of absolute standard of living, may be lower.

**DR. MARK NOLAN HILL:**

Well in your research studies, how do you account for these variables comparing the 2 countries having these differences?

**DR. SONYA SHIN:**

Well, you know, there are many things that we can't measure, you know it's difficult to compares the 2 cohorts head to head and at a certain point; we even thought about whether we should combine the 2 cohorts and do the analysis on the entire cohort. There are certain things that you can measure, you know like what is the baseline weight or who has an alcohol problem, but there are other you know sort of like essential characteristics of health services, you know where are physicians better trained or more engaged, how often do you have to talk out the second-line drugs and these things, you know, they are just so difficult to measure that in the end, we felt that the best way to do was to just tell the Peru story and tell the Tom's story separately.

**DR. MARK NOLAN HILL:**

Now could you describe the Clinic that you worked in?

**DR. SONYA SHIN:**

After all it is Peru; you know in Peru, they have pretty good TB system. In fact you know the WHO awarded Peru, you know, recognized it as sort of model TB program. They have health centers scattered throughout the communities, and typically, a TB patient will go to their health center everyday and their meds under direct observation at that health center. And if you have MDR-TB, your sputum sample is sent off to a lab where they will do drug susceptibility testing and that might take anywhere from a month to 3 or 4 months to

get the result and in the meantime, you will see a physician that is specialized in MDR-TB treatment to look over your clinical history and decide if she should start treatment for MDR-TB and if though with what medication. So there is sort of a tiered system where you have your kind of primary health sites where the patient get their medications and then you have a more sort of centralized system of specialists that manage MDR-TB. Russia is similar. Russia has also Health Centers that are in the community, but one of the differences is that they have more emphasis on inpatient management. You know so most of the TB patients in Peru will start treatment in, you know, like their local health center, but in Russia most of them are actually admitted into a Hospital where they start treatment and then once they are sort of stable, they are released back to their community.

**DR. MARK NOLAN HILL:**

Do you think that makes a difference whether they are inpatient or outpatient?

**DR. SONYA SHIN:**

It does, again you know, there are probably many immeasurable that were not able to assess, but you know, as a Clinician working in both sides, I can say that there is pros and cons, you know on hand, the patient is less likely to stop taking their medication. You know you have them in their hospital; you can follow their side effects. They are probably going to accept therapy the medications when the nurse comes around to give them their pills, but on the other hand, you have this sort of nosocomial setting where these strains of MDR-TB are intermingled with drains of susceptible TB and the patients probably are becoming infected and reinfected with drug resistant strains in the hospital. So there may be infection control implication.

**DR. MARK NOLAN HILL:**

Does this have any relationship to the specific community living aspect?

**DR. SONYA SHIN:**

Well you know it does, I say that in Russia the health system has been sort of established with this idea that inpatient care is best, but as they become more experienced with MDR-TB, our physician with Russian policy makers have been, you know, lets start to move this on to the communities. You know you can use community-based support like say, you know, lay health workers to deliver the medications. You know the patients are not going to sort of disappear off the face of the Earth, and little by little, but starting to become implemented. In Peru, you know because the approach was ambulatory from the beginning, we have always had a community -based approach where we trained lay health workers to go and do direct observation in the houses what also remains largely unexplored is, you know, what is going on in the households in terms of transmission. You know maybe there is a price of having these patients in the community instead of having them in the hospitals. So there I think are advantages and disadvantages to either scenario, but we have not really yet gone to the point where research is able to weigh, you know what those relative risks and benefits are.

**DR. MARK NOLAN HILL:**

Dr. Shin, when we talk about relationships between local non-governmental organizations, and governmental officials, how important is these relationships in terms of your research and your success?

**DR. SONYA SHIN:**

I think they are crucial, you know, when we started to work in Peru for instance, we were coming across these patients who the community were calling chronic patients. You know they like had chronic TB. It was not known at that time, but really they had MDR-TB because they were just taking, you know treatments and not getting better. So we were sort of faced with this idea like should we just, you know kind of set up shop and start to treat these patients as an NGO or should we work with the public health sector and the ministry of health and treat them in collaboration. In some ways, it is easier to go the first route because you manage everything yourself. You know you can sort of have more control over all of the factors you know of both clinical management and programmatic activities, but in the long run, it is not a great option. You know from the very beginning in both of our sites, the emphasis has been on working with the ministry of health, because ultimately they are the ones that are going to take these programs and assume leadership and scale the much international level.

**DR. MARK NOLAN HILL:**

You know, you spoke about your research in Russia and Peru, how do the United State stand in terms of our programs for tuberculosis?

**DR. SONYA SHIN:**

Well, now the programs are extremely strong and you know I will say that the United States have sort of wake-up call in the early 90s when there was pretty significant outbreak of multi-drug resistant TB in New York among HIV patients. At that time, you know maybe there was even a little bit of complacency in the public health system for TB control where you know there is a feeling like, you know, there isn't TB really and you know it does not look like a TB. So, the money in the TB systems was actually relatively low. When they uncovered this outbreak in New York city, the system had to respond with a huge influx of financial resources and as a result they actually contained the epidemic and did, you know, an excellent job of increasing TB surveillance and control, but you know, it did require sort of, you know, a wake-up call on our own part to really sort of increase the resources and you know the attention paid to TB control at the United States.

**DR. MARK NOLAN HILL:**

How does the research and the findings specifically that you discovered extended self to other countries that are battling tuberculosis.

**DR. SONYA SHIN:**

Well, I think there is couple of lessons that you know we would hope to impart on other countries that are confronting MDR and XDR-TB. On the one hand, you know maybe the biggest take home message is "this is treatable". There has been lot of debate as to whether or not extensively drug resistant TB is even treatable and we are saying, you know, look, at least half if not two thirds of patients can be treated. You know even with the sort of limited armamentarium of drugs that we have available today, so it is better not to give up you know before even trying and just do our best to treat these patient's. On the other hand, I think that it calls for a considerable amount of introspection at the global level about a degree of resources that are being put forward to deal with this problem. If you think about the magnitude of MDR-TB you know with the numbers that you mentioned previously, the amount of resources that are going into infrastructure currently, you know, do you have the labs, do you have the drugs, and then, you know, even in the long term are there new meds in development, are we going to develop new diagnostics. The money that is coming in is not adequate to confront this problem. So, at the local level, we would like to convince programmatic leaders, not to become paralyzed you know, by this overwhelming challenge of treating MDR-TB and just to go ahead and treat as aggressively as possible, but on the other hand, you know, we are hoping to also raise awareness that when you add up the numbers in terms of the number of the people that need to be treated and the

current status, certainly the amount of resources right now dedicated to the problem are woefully inadequate.

**DR. MARK NOLAN HILL:**

Dr. Shin, on a personal note, I am sure some of the listeners as well as myself are curious how did you get into this research?

**DR. SONYA SHIN:**

You know, I was medical student in 1996 and I was down in Peru and, you know, we started to just kind of find these people in the community and literally the health centers there were saying, "oh! Yeah, we have like 2 or 3." So, we thought well maybe we have maybe estimates of 50 or 60 people in the community and as a med student volunteer, I went around from health center to health center just asking the workers for names of people who had failed previous treatment and just going and visiting this people and finding out, you know, what is going on, how are you doing. It was really sort of an incredible experience to be literally kind of uncovering this epidemic of more and more people sort of hidden away in their houses as they had given up, you know, hope on getting more treatments that they want in the system. You know they are just kind of like resign to dying and you know they are being told by their doctors, it is probably better for you to invest in coffin at this point then trying to get more medical care. You know these were the quotes from the patient and you know so from the personal standpoint, I felt very compelled to try to do more to treat these patients and as an organization as well, we felt like the right thing to do was to try to provide the same standard of care afforded to United State citizens to these Peruvian patients.

**DR. MARK NOLAN HILL:**

I want thank our guest, Dr. Sonya Shin.

**We have been discussing successful treatment of multi and extensive drug-resistant tuberculosis. I am Dr. Mark Nolan Hill and you have been listening to a special segment, "Focus on Global Health" on ReachMD XM 157, The Channel for Medical Professionals. Be sure to visit our website at [www.reachmd.com](http://www.reachmd.com) featuring on-demand pod casts of our entire library and thank you for listening.**

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