

MEET AN EXPERT: KONRAD JUSZKIEWICZ

«BASICALLY, BATTLE WITH TB IS MY LOVE...»



Dr Konrad Juskiewicz acts as a Public Health specialist and project manager with over 13 years experience in Central Asia and Eastern Europe. Familiar with all aspects of health education in international communities, health administration and health projects.

He received his Bachelor Degree from Medical University in Lublin, Poland and Master Degree from New York Medical College in USA. Recent two years Dr Konrad Juskiewicz worked as a visiting professor of Asfendiyarov Kazakh National Medical University (KazNMU) at the Department of Microbiology. A year ago, he was employed as an expert of WHO in Afghanistan to tackle with TB and HIV/AIDS.

Dr Juskiewicz, could you tell us how did you begin your own way to medicine?

I got my MD degree from Medical University in Lublin, Poland. My master degree I received from New York Medical College in USA.

In USA I worked in several NGOs involved in public health and research projects. My international adventure with TB began after receiving MPH degree when I started to work in for New Hampshire State Health Department as a LTBI coordinator.

In 2002 I joined Project HOPE as a Deputy Regional Director and moved to Central Asia. Here I was working in Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan and Turkmenistan managing DOTS TB and maternal and child healthcare programs.

In 2004 I moved for 5 years to Afghanistan where I worked for several international NGOs, one of the biggest were International Medical Corps (IMC) and Swedish Committee for Afghanistan (SCA). My job there was mostly related to implementation of public health projects with special interest in construction and development of health facilities and health networks, training of the medical personnel, and management of the health projects.

A year ago, I was employed as an expert of WHO in Afghanistan to tackle with TB and HIV/AIDS.

In 2009 I joined Midwest Research Institute and I returned to Kazakhstan. I worked here on US government sponsored program dealing with especially dangerous diseases. Within the frame of this program I also started to work with specialists from KazNMU. Together we developed Biosafety and Biosecurity elective course on Epidemiology Department.

Recent two years I worked as a visiting professor of Asfendiyarov Kazakh National Medical University at the Department of Microbiology teaching English speaking KazNMU students. I also worked closely with Public Health, Epidemiology, Genetic Laboratory and Pharmacy Departments.

We know that you are a TB specialist, why did you choose tuberculosis as diseases to work on?

laughing ... That's a good question! Basically, battle with TB is my love...

My history with TB started when my grandma got sick with TB. As a child I went through all potential TB checkups. All my family was observed for potential

TB symptoms for a several years.

Then as a physician I worked in several village centers involved in TB control system. In Poland tuberculosis in 70s and 80s was still a big problem. When I moved to US, after finishing Master Degree I continued to be involved in TB programs as a New Hampshire State LTBI coordinator. In USA there were not that many TB cases and TB specialists were in big demand.

After moving to Central Asia I continued to be involved in TB programs working for Project HOPE, in particular in TB DOTS implementation within USAID financed programs. While working in Afghanistan for WHO and other NGOs again tuberculosis continued to be my prime interest.

So as you see TB was always part of my life. I think that this is a disease which not as sexy as HIV/AIDS but always with us. We kind of get used to it and it's wrong. That is probably the reason why I am so committed to fight TB and so dedicated to eliminating it.

And of course disease itself is a very interesting one, when TB bacteria enters our body they tends to hide and wait for the best moment to strike. It is hard to detect in latent state, hard to prevent since spreads through the air, hard to treat due to growing drug resistance and very dangerous, it can kill when not treated. Due to that quite often what we see is only a tip of the iceberg of the TB cases...

The interaction of tuberculosis with HIV seems to be a growing concern –can you walk our readers through the reasons why?

Tuberculosis is an opportunistic disease. So it likes to attack us when our immune system is weakened. That happens for various reasons: fatigue, malnutrition, stress, co-disease, cancer treatment, etc. HIV weakens our immune system and opens the door for TB; therefore, it works hand to hand with tuberculosis.

So who has HIV/AIDS, and get infected with TB bacteria, he/she has a great potential for getting sick with tuberculosis. Percentage chances are dramatically higher than average healthy person.



Dr Konrad Juskiewicz with English speaking KazNMU students



Dr Konrad Juskiewicz at the opening of Bioresource Center of American Society for Microbiology

What are the biggest obstacles in establishing and maintaining prevention and control programs for tuberculosis?

There are many problems in prevention and control of TB disease. First of all, we kind of get used to this disease. This disease is with us for a thousand years. It is spread by air; we get infected when we breathe it in. So, opposed to other infectious diseases, where we have to reach out for them to get infected, in TB case we would have to stop breathing to prevent its entry. But we all have to breath, therefore we all can be exposed to it.

There is misconception that this disease is a social disease, a disease of poor, and when I am rich it will not get me. That's not entirely true. Indeed, this disease affects mostly poor people but since this an airborne disease, this disease can infect anybody.

Less air movement and more people together,

better TB spreads around, so for example, our crowded busses, and small, not often ventilated and overcrowded apartments create ideal environment to spread disease.

In diagnosis of TB cases we can detect the active disease, latent cases are very hard to diagnose. That creates a huge pool of potential future TB cases.

Diagnosis of TB is also not so reliable when we are dealing with TB in children. In early stage of tuberculosis in children symptoms are not same as in adult. Many physicians have the trouble with right diagnosis at this stage.

We do not have an effective vaccine, therefore, so far prevention of this disease spread is not as effective as we would wish to. Present vaccine helps to prevent an occurrence in new born and children acute, deadly forms of TB disease, like meningitis or military TB but does not prevent TB infection. Work on new TB vaccines worldwide intensified lately. Many-many countries are working in this area, so there is hope for us but... So far there is no clear success.

By the way, talking about TB vaccine, I am proud to be involved in development of Kazakh TB vaccine. It has a promising results but it still requires a lot of work to be developed and registered.

Since this is an opportunistic disease and constantly around us any form of weakening of our immune system can cause us its spread in our organism.

Patient infected with TB bacteria in latent stage does not have any clinical symptoms. In the latent stage tuberculosis bacteria managed to infect us. but are a still not an active stage causing the disease symptom. It is waiting for the right moment. By epidemiological statistics about 10 % of TB infected people will become sick during their life. And that is the main problem with battle with TB as well. About 5 % of those people will get sick within first 2-5 years. The other 5% will get sick during the rest of their life. And since every third of human being in the world is infected with TB what we can see is humongous pool of potential TB cases for the future which we cannot well diagnose or treat at the moment.

When patient is an actively sick with TB, while

coughing, he/she can infect on average twenty or more people. It means that one active case TB might cause 2 new TB cases of those 20 infected.

We have to realize that anti-TB medications, however in most of the cases very effective against TB, are getting old. First line drugs like Isoniazid, Rifampin or Rifampicin were discovered in ninety forties and TB bacteria starting to be resistant to it. New, second line drugs are not that effective or specific against TB. So we have a problem here and we badly need new TB dedicated drugs.

This disease is very sneaky. It is like a ticking bomb. It is hidden, waits for our body to weaken and reach us in most unexpected moments.

Have you observed any appreciable changes in the trends of tuberculosis incidence in the past decade?

Definitely yes. I was born in Poland; in that time TB was a major problem. But in 1990s a clear progress in battle with TB was observed. By 2012 incidence rate dropped from about 50 new cases per 100,000 population to about 23/100,000.

In the United States in 1953 there were 83,304 new TB cases, 52/100,000 population. In 2013 a total TB cases dropped to 9,582 (a rate of 3.0 cases per 100,000 persons). As you can see both, the number of TB cases reported and the case rate decreased dramatically. That is a perfect example of success in decrease of the incidence rates.

When I came to Kazakhstan in 2002 the incidence rate was about 140-150 per 100,000 population, today it dropped to about 115/100,000. This is a solid improvement over last 10 years.

Over all I would say the rate of new TB cases has been falling worldwide during the last decade but the rate of decline (2% per year) remains slow. So far the biggest progress in decreasing TB incidence rates was made in Europe and USA, in East Asia Japan probably is the most advanced in this area. But TB is still remains one of the big problems in the developing countries.

And let's face it, despite this all progress tuberculosis remains the one of the world's deadliest diseases. One



Dr Konrad Juskiewicz with the introductory lecture at the Department of Microbiology, Asfendiyarov Kazakh National Medical University

third of the world's population is infected with TB in 2013. About 9 million people around the world became sick with TB disease and it caused around 1.5 million TB-related deaths. TB is also a leading killer of people who are HIV infected.

So, I would say again, there is a progress but... Is the battle finished? Definitely Not yet!

What are your hopes for progress in TB research over the next decade?

I am carefully optimistic about research in area of TB these days. I am sure we going to see a great progress in development of new TB vaccines, new TB drugs and new diagnostic methods allowing us detect TB in early stages.

My Kazakhs and Russian colleagues are working hard with me and our science group from DRK Biomedical Research and Development on the new forms of new vaccines. I also see quite nice progress from the other countries: United States, European Union countries, Canada, China, Korea, India, South Africa, Brasil are working on new vaccines. There is a great chance that in next decade we'll see the vaccines, which are more effective against TB. Of course, the question is "How much will it cost? Can certain countries afford it? And, of course, would it be possible to share newly developed vaccines with everybody? How safe and effective these vaccine would be?"

Another research area is performed in development of TB drugs. We urgently need new, more TB specific

and more effective TB drugs. Especially when we face MDR and XDR TB on the rise.

Length of the TB treatment at this moment is about 6 to 12 months, in some cases even longer. This length of treatment is an obstacle for patients and physicians; quite often it is a cause of MDR development due to patients not able to take drugs so long. There is a push to find TB drugs allowing shortening this period. Recent research results give us a hope that treatment period might be shortened to 3 months. Researchers are working on new diagnostic tools allowing reliable recognition of TB infection or latent TB forms, allowing early recognition of drug resistant forms, helping with better selection of effective drugs. New methods like PCR, TB gene sequencing, multiple diagnosis might be soon a new effective weapon in battle with TB.

So, you said that you are involved in the research work for the new vaccines. Does it mean that Kazakhstan might have its own vaccine like new kind of?

I hope for that. I think that Kazakhstan has a lot of very good TB specialists, scientists and great ideas. Moreover, the resources are getting better and better. So, I think we are going to see several vaccines, produced by Kazakh scientists. It is a cooperation effort, it is not just alone Kazakhs. In recent development Kazakh specialists are working back to back with our colleagues from Russia and US. Kazakhstan has a lot of TB cases and therefore, this is why it should be in lead in area of research for new vaccine.

**Interviewers:
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