NEWSLETTER

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Inhalt

Internationale Nachrichten

1. USAID launches new tuberculosis control program in Tajikistan

(...) While joint collaboration between USAID, the Tajik government and other partners to combat TB has resulted in stabilization of TB over the past five years, the latest Global TB Report confirms an alarming increase in rates of multi-drug resistant TB in all five Central Asian countries. This five-year USAID TB Control Program aims to reduce the burden of TB and the development of multi-drug resistant TB (MDR-TB) in Tajikistan.

The program will focus on improving access to diagnosis and treatment for vulnerable groups, supporting a patient-centered system of care, and strengthening laboratories and other parts of the health system in Sughd and Khatlon provinces and the Rasht Valley, including policy development at the national level. (...) The program is implemented by a consortium of partners, led by Project HOPE and including the Royal Netherlands Association for Tuberculosis Control (KNCV), the International Organization for Migration, and AIDS Foundation East-West.

The USAID TB Control Program, with anticipated budget of $13.2 million over five years, is another example of U.S. government assistance to improve the health of Tajik citizens. USAID grant assistance to Tajikistan now averages $30 million a year, approximately 30 percent of which is directed to healthcare.

Source: TB Europe Coalition, http://www.tbcoalition.eu/2015/02/16/usaid-launches-new-tuberculosis-control-program-in-tajikistan/ (19.02.2015)

2. Tuberculosis concern should be on par with Ebola, CEO of World Vision says

The risk of drug-resistant tuberculosis spreading through Papua New Guinea and into Australia should be just as concerning as the spread of Ebola in parts of Africa, World Vision chief executive Reverend Tim Costello says.

The scale of the outbreak, combined with PNG's weak health system and the close proximity to Queensland, means that the disease is just as worrisome, Rev Costello said. "Ebola's a really good example of what happens when you haven't responded early enough, when you haven't built up fragile health systems," he said. "In that sense, tuberculosis, less the hysterical fear and paranoia of Ebola, is a parallel case saying we have to respond sensibly, mainstreaming it quickly, building up the systems, unlike how Ebola was treated."

Multi-drug resistant tuberculosis defeats the most common two treatments, while extremely drug resistant tuberculosis is even harder to treat.

Mr Costello said the sheer number of cases in PNG was staggering. "There's 30,000 cases a year; 400 cases of those are multi-drug resistant, and that's quite terrifying," he said. "We know of the super-resistant drug that saw a person in Cairns and nine others here affected and some dying. "This is very, very grave." Tuberculosis affecting half the population of one island township

Mr Costello is currently in PNG to accept an $18 million grant from The Global Fund to tackle tuberculosis. The grant comes just days after the Australian Government announced an extra $15

million towards its tuberculosis assistance. But despite the millions of dollars spent, the situation in PNG's tuberculosis hotspot is bleak. In the island township of Daru, directly above the northern tip of Queensland, around half the population has tuberculosis.
Doctors have walked off the job, some sick with the disease themselves and others fed up with hospital management. PNG health minister Michael Malabag said it was a national emergency. "Daru General Hospital is critical," he said. "The hospital is not currently performing adequately and urgently requires a competent CEO. "Fortunately we have recently negotiated with the Australian Government to support the international recruitment of a CEO."
Source: ABC (Australian Broadcasting Corporation), http://www.abc.net.au/news/2015-02-16/world-vision-raises-concern-over-drug-resistant-tuberculosis/6119162 (19.02.2015)

3. Marginalised Groups Struggle to Access Healthcare in Conflict-Torn East Ukraine
With international organisations warning that East Ukraine is on the brink of a humanitarian catastrophe as its health system collapses, marginalised groups are among those facing the greatest struggle to access even basic health care in the war-torn region.
The conflict between pro-Russian separatists and Ukrainian forces has affected more than five million people, with 1.4 million classified by the World Health Organisation (WHO) and human rights bodies as “highly vulnerable” because of displacement, lack of income and a breakdown of essential services, including health care.
Fighting and accompanying measures imposed by both sides have led to medical supplies being severely interrupted or cut off entirely, hospitals destroyed or battling constant water and power cuts, and crippling staff shortages at health facilities as medical staff flee the fighting. A complete lack of vaccines is threatening outbreaks of diseases such as polio and measles, while there are concerns for HIV/AIDS and TB sufferers as supplies of vital medicines dry up and disease monitoring becomes almost impossible.
Massive internal displacement because of the conflict – latest U.N. estimates are of 700,000 internally displaced persons (IDPs) with the figure rising by as much as 100,000 per week – has also left hundreds of thousands living in sometimes desperate and unhygienic conditions, creating a further health risk and the chance that infectious diseases, such as TB, will spread.
But while there is a threat to healthcare provision from collapsing resources, some in the region are facing extra barriers to accessing health care.
Ukraine has one of the worst HIV/AIDS epidemics in the world and the spread of the disease has been fuelled mainly by injection drug use. But, unlike in many Eastern European states, the country has been running for more than a decade an internationally lauded range of harm reduction programmes which have been credited with checking the disease’s spread. These have included opioid substitution therapy (OST) programmes available to drug users across the country. These are particularly important in East Ukraine because the majority of Ukraine’s injection drug users come from the Luhansk and Donetsk regions. But local and international organisations working with drug users say that addicts’ access to life-saving treatment in those areas has come under increasing pressure since the start of the conflict and that it could be cut off entirely within weeks as supplies of methadone and buprenorphine used in the treatment run out and cannot be replaced.
The International HIV/AIDS Alliance Ukraine which runs many OST centres as well as other harm reduction programmes, has said that stocks of antiretroviral drugs, OST and other life-saving treatments will have run out by February. More than 300 OST patients in Donetsk and Luhansk have lost access to treatment since the conflict began, while a further 550 patients on methadone will run out of drugs soon if emergency supplies cannot be delivered.
U.N. officials in close contact with international organisations helping drug users as well as doctors in Donetsk have confirmed to IPS that clinics have only a few weeks’ worth of stocks of methadone left.
It is unclear what will happen to all those no longer able to access OST treatment. Doctors say some have gone into detoxification, while others have moved to other cities in safer areas of Ukraine in the hope of continuing OST.

But with 60 percent of those receiving OST also being HIV positive, according to the Donetsk doctor, and reports that many are now turning to illicit drugs and needle-sharing again as access to OST is cut off, there are concerns that the disease, along with Hepatitis C which is rife among injection drug users, and tuberculosis, could be spread, and that the lives of many drug users will again be at risk.

OST patient Andriy Klinemko, who was forced to flee Donetsk with his wife when their house was destroyed in bombing last summer and who is now in Dnipropetrovsk in central Ukraine, told IPS: "OST patients in East Ukraine are being forced to move, but not all of them can and even those that make it to other regions may not be able to continue OST because there is no money left to run such programmes. It's a bad situation and at the moment I really can't see any way it's going to get better." But drug users are not the only marginalised community struggling to access health care.

Historically, the estimated 400,000-strong Roma community in Ukraine has, like Roma in many other Eastern European states, faced widespread discrimination in society, including in employment and education. They have also always had limited access to healthcare because many Roma lack official ID documentation which makes it difficult for many to obtain official health care, while widespread poverty also means services and medicines which require any payment are also inaccessible to most. Meanwhile, many Roma settlements are in remote locations, far away from the nearest health centres. Dr Dorit Nitzan, head of the WHO's Ukraine Office, told IPS: "Even before the conflict, Roma in Ukraine had limited access to curative and preventive health service. As a result, Roma children have extremely low vaccination coverage. Moreover, rates of tuberculosis and other communicable and non-communicable diseases are higher among Roma than in the general population."

Discrimination is also a problem. Zola Kondur of the Chiricli Roma rights group in Ukraine, told IPS: "In terms of healthcare, Roma are among the most vulnerable in the country. They are treated badly because of their ethnicity."

However, the problems for Roma have dramatically worsened since the conflict began. Some human rights groups have said that since the separatist regimes took power in the region, Roma have faced systematic violent and sometimes fatal repression.

According to a report this month of an international mission to monitor human rights by the Kharkiv Human Rights Protection Group, Roma living in separatist-controlled areas have been "subjected to open aggression from militants ....[who] have carried out real ethnic cleansing" against them. Many have fled and become IDPs, subsequently facing health struggles. Dr Nitzan said: "As in every crisis, if not given special attention, marginalised and vulnerable groups are at higher risk. In Ukraine, many Roma lack civil documentation, and thus cannot be registered as internally displaced persons and are not included in the provision of any health services. "Moreover, their inability to pay 'out-of-pocket' limits their ability to procure medication and/or services. Compounding this is that many Roma IDPs are residing at the margins of society, in remote geographical locations, where no services are available. All of these factors make health services inaccessible to Roma."

Local rights groups say that Roma who have managed to flee to safe areas have often ended up homeless and starving after facing problems accessing aid because of a dismissive attitude from volunteers and staff at social institutions, while their lack of identification documents also prevented them from accessing any official help. However, even those who have managed to find treatment have sometimes faced further problems. Kondur told IPS: "In one case a Roma family moved from Kramatorsk to Kharkiv. A little boy had a heart problem brought on by the stress of the fighting and he was taken to hospital. One night, a group of young people broke the window of the boy's hospital room, shouting 'Gypsies get out'. The boy had a heart attack."

Source: IPS News, http://www.ipsnews.net/2015/01/marginalised-groups-struggle-to-access-healthcare-in-conflict-torn-east-ukraine/ (Rev. 02.02.2015)

Forschung & Entwicklung

1. Shortening treatment of tuberculosis: lessons from fluoroquinolone trials

In clinical trial settings the standard 6-month treatment regimen for drug-sensitive pulmonary tuberculosis can achieve relapse-free cure in more than 95% of people. However, poor adherence might increase the risk of relapse and lead to drug resistance. Shortening the duration of treatment has become a major priority for global control of tuberculosis—it will benefit patients and reduce the selection pressures that lead to the evolution of new drug-resistant strains.

Attempts to use shorter courses of standard regimen drugs have not been successful except for smear- negative disease, and recent research has focused on fluoroquinolones. The authors of a Cochrane review of five studies assessing 6-month fluoroquinolone- containing regimens to treat drug-sensitive disease concluded that the available evidence was of low quality: the only consistently reported clinical outcome was all-cause mortality. However, data from studies of mice and phase 2 trials suggested that use of fluoroquinolones could shorten treatment for drug- sensitive tuberculosis from 6 months to 4 months.This possibility has now been assessed in human beings in four large phase 3 randomised controlled trials.

Although fluoroquinolone-containing regimens led to more negative culture results at 2 months, this did not translate into improved clinical outcomes when treatment was shortened.

The RIFAQUIN, OFLOTUB,a nd REMoxTB trials benefitted from large numbers of patients, more than 18 months of follow-up, and robust methods (such as the ability to differentiate relapse from reinfection by strain typing). A trial done by the Indian National Institute for Research in Tuberculosis was discontinued early on account of an unacceptable number of relapses. The non-inferior result of the RIFAQUIN 6-month group, in which high-dose rifapentine and moxifloxacin were given once weekly in the continuation phase, seems consistent with findings from previous trials of 6-months' treatment with fluoroquinolones, suggesting that they are broadly equivalent to the standard regimen. Apart from the 6-month RIFAQUN once-weekly regimen, which could be useful in some settings, it is disappointing that, despite these large trials—each costing several million dollars and lasting up to 10 years—we remain with the same 6-month regimen used in the 1970s. Since fluoroquinolones alone do not seem to allow treatment to be shortened, it is important to establish which other new drugs might be successful and how the process of evaluation in clinical trials can be sped up.

Ideally, a treatment regimen would be given to all patients, but this might mean that most patients receive unnecessarily prolonged treatment. An alternative approach would be to revisit the stratification of cases. A 4-month regimen of rifampicin, isoniazid, pyrazinamide, and ethambutol was shown to be effective for smear-negative disease in Hong Kong in the 1980s; 3 recent trials have focused exclusively on sputum smear-positive disease. With the advent of molecular diagnostics and the scaling up of active case finding, it might be possible to define a group of patients who might benefit from shortened treatment. Other simple markers of severity could include smoking, HIV infection, and chest radiographic cavitation. Shortening treatment in patients with cavitation who also have negative cultures after 8 weeks is associated with more relapses, although a modest increase might be acceptable for a shorter regimen.

Stratified analysis of data from the recent 4-month fluoroquinolone trials might provide further evidence to support this hypothesis. Stratification could also be made possible through the development of an effective biomarker for disease burden or response to treatment. For example, the semiquantitative outputs from GeneXpert or the Molecular Bacterial Load assay are associated with probability of relapse and changes in bacilliary load on liquid and solid culture over the first 14 days of treatment.

Previous attempts to assess new treatment combinations involved initial animal studies and early phase human studies before progressing to large randomised controlled trials of one or two regimens. The new trial results show two things. First, the present mouse model of human

tuberculosis does not fully represent the course of human infection. And second, 8-week culture conversion is not a completely reliable marker of the later course of human infection, perhaps as a result of bacterial persisters. Using animal models might inadvertently mean that effective drugs are screened out, thereby increasing the chances of failed phase 3 trials.
A solution might be to accelerate clinical trials, including safety analyses of new drugs and assessment of combinations in trials in human beings, to assess efficacy as soon as possible. Multi-group multi-stage studies identify the best regimen through parallel evaluation of several different regimens, with sequential interim analyses to stop recruitment to groups unlikely to be sufficiently effective.14 Two such studies are PanACEA MAMS-TB and TRUNCATE-TB. PanACEAMAMS-TB is a four-arm phase 2b study assessing combinations of high-dose rifampicin, moxifloxacin, and the new drug SQ109 for drug- sensitive tuberculosis.This approach allowed two SQ109 treatment groups to be dropped after the first interim analysis. TRUNCATE-TB is a phase 2/3 trial of several novel combination regimens (recruitment will start in 2015). Even when a classic multi-group multi-stage design is not possible, inclusion of several arms would increase efficiency, as for the STREAM trial (ISRCTN78372190), which will investigate short regimens for multidrug- resistanttuberculosis.
Because of the disappointing results of the 4-month fluoroquinolone trials, the lessons learnt should be combined with well established clinical trial infrastructure to accelerate the next phase of efforts to improve treatment of tuberculosis. New approaches to trial design, use of new drugs, and revisiting patient stratification might lead to shorter, effective treatment for tuberculosis.
Source: The Lancet, http://www.thelancet.com/journals/laninf/article/PIIS1473-3099(14)70885-0/abstract (24.02.2015)

2. UGA researchers discover potential treatment for drug-resistant tuberculosis
(...) "Multi-drug resistant TB is spreading rapidly in many parts of the world," said Vasu Nair, Georgia Research Alliance Eminent Scholar in Drug Discovery in the UGA College of Pharmacy and lead author of the paper. "There is a tremendous need for new therapies, and we think our laboratory has developed a strong candidate that disrupts fundamental steps in the bacterium's reproduction process."
Just like other living organisms, the genetic information contained in M. tuberculosis undergoes a complex process known as transcription in which the bacterial enzyme, DNA-dependent RNA polymerase, or RNAP, produces TB RNA. This molecule is involved in processes that produce critical bacterial proteins that the organism needs to survive. The compound Nair and his colleagues developed works by binding to magnesium and specific amino acids found within the bacterium, interrupting the production of RNA. "The compound we developed strongly inhibits the growth of the bacterium and renders it incapable of reproducing and spreading infection," said Nair. "More importantly, the compound shows very low levels of cytotoxicity, which means that it is not harmful to the body."
The research team members also performed extensive studies to determine if their newly developed compound had an appropriately long half-life and could be cleared from the body through normal biochemical mechanisms.
"All our tests were very favorable," Nair said. "The half-life is a little over 14 hours, and all traces of the drug are expected to be cleared through normal bodily functions."
While Nair and his colleagues were pleased with their new compound, they were surprised to discover through preliminary experiments that it also exhibited strong anti-HIV properties, opening the door for dual therapeutic applications. A dual-purpose drug would be a windfall for clinicians, because the risk for developing TB is between 26 and 31 times greater in people living with HIV than those without HIV infection, according to the WHO. "This discovery of dual activity against both retroviruses and drug-resistant gram-positive bacteria is unique and opens a new chapter in drug discovery in this area," Nair said.
Innovation Gateway, UGA's technology licensing office, is seeking commercial partners to help develop this drug. A license would include humanitarian licensing terms to help ensure access to the

drug by people in need at an affordable cost.
Source: UGA, http://news.uga.edu/releases/article/potential-treatment-for-drug-resistant-tuberculosis-0215/ (24.02.2015)

3. TB Alliance Advances Next-generation TB Drug Candidate into Clinical Testing
TB Alliance has announced the start of the first human trial of a new tuberculosis (TB) drug candidate, designated TBA-354. It is the first new TB drug candidate to begin a Phase 1 clinical trial since 2009.
"There is a critical gap of new compounds for TB," said Mel Spigelman, MD, President and CEO of TB Alliance. "The advancement of TBA-354 into clinical testing is a major milestone, not only because of the potential it shows for improving TB treatment, but because it is the first new TB drug candidate to begin a Phase 1 clinical trial in six years."
TBA-354 comes from the nitroimidazole class of chemicals, known for being effective against drug-sensitive and drug- resistant tuberculosis. The class also includes the experimental TB drug pretomanid (formerly PA-824), which is being tested as a component of other novel regimens in multiple clinical trials. TBA-354 emerged from studies designed to identify a next generation nitroimidazole for TB. TB Alliance conducted the studies in collaboration with the University of Auckland and University of Illinois-Chicago. Once identified, TB Alliance further advanced TBA-354 through pre-clinical development and is now the sponsor of the Phase 1 study.
In preclinical studies, TBA-354 demonstrated more potent anti-bactericidal and sterilizing activity compared to pretomanid. Recruitment is under way to enroll nearly 50 U.S. volunteers for the randomized, double-blind Phase 1 trial, which will evaluate the safety, tolerability, pharmacokinetics, and dosing of TBA-354.
The World Health Organization reported that 1.5 million people die each year from TB, and more than nine million were diagnosed with the disease. The lack of short, simple, and effective treatments is a significant obstacle to TB control. However, because there is little economic incentive to develop new tools, there are not enough promising drugs in the pipeline, which could hinder efforts to develop the appropriate treatments needed to combat the TB epidemic.
Source: TB Alliance, http://www.tballiance.org/newscenter/view-brief.php?id=1118 (19.02.2015)

4. Characteristics of Tuberculosis Cases that Started Outbreaks in the United States, 2002–2011
Tuberculosis (TB) is an airborne disease caused by the bacterium *Mycobacterium tuberculosis* that usually af- fects the lungs. Most TB cases do not start outbreaks. Contact investigations undertaken after a person receives a diagnosis of infectious TB ideally should identify and treat infected contacts before the infection progresses to disease. Genotyping data in the United States provide reassurance that most cases do not result from recent transmission.
However, when TB outbreaks do occur, they can put tremendous strain on local public health resources. A necessary component of all outbreaks is that they must be- gin with a source case. Recognizing the characteristics of such patients soon after the TB diagnosis could help focus interventions to interrupt transmission and reduce the risk for an outbreak. We describe a nonrandom sample of TB source cases that started outbreaks in the United States.
We identified outbreak source cases through a review of in- vestigation reports of TB outbreaks written by Centers for Disease Control and Prevention (CDC) staff during 2002– 2011. In a previous publication, we described how CDC teams that assist public health partners with TB outbreaks write standardized reports about field investigations, which include primary data collection and patient re-interviews. For this review, we included US-based outbreaks that 1) had >3 culture-confirmed cases that had epidemiologic links and TB strains with matching genotypes and 2) had the initial source case in the transmission chain, as ascertained by that investigation, identified in the written report. At least 2 co-authors independently reviewed each outbreak report to abstract patient demographic, clinical, and social characteristics. When this dual data entry pro- cess showed discrepancies, the authors met to review the report and achieve consensus.

Our main interest was the initial source case; that is, the TB case that began a chain of *M. tuberculosis* transmis- sion that would become locally recognized as an outbreak. Outbreak duration was calculated beginning on the treat- ment start date for the first reported case and continuing through the treatment start date for the last case as noted at the time of the investigation. The infectious period for pulmonary TB cases was assumed to begin 3 months be-ore TB symptom onset and to end with the initiation of TB treatment Of the 65 TB outbreaks that CDC helped investigate during 2002–2011, a total of 26 met the inclusion criteria. (...)

In this nonrandom sample of 26 TB outbreaks in the United States during 2002–2011, we found that characteristics common among TB cases that started outbreaks included pulmonary TB smear-positive for acid-fast bacilli, patient substance abuse, and prolonged infectious periods. The largest outbreaks involved source case-patients who were incarcerated or had been homeless.

Persons with TB can spread the disease until it is cor- rectly diagnosed and treated. In TB control, the focus is typically on the individual patient, health care provider, and public health factors that contributed to a delayed diagnosis, inadequate isolation or treatment, or otherwise suboptimal response to an individual TB case. As the frequency of TB cases continues to decline in the United States, however, so does provider experience with its diagnosis, which raises the possibility that the recent trend toward more cases of pulmonary TB being diagnosed in later disease stages might be a related consequence.

When contact investigations are incomplete because of limited resources or hard-to-reach populations, TB outbreaks can spread. Substance abuse, incarceration, and homelessness, social risk factors that are common among the TB source cases in our review but that greatly complicate contact investigations, have been shown to increase the likelihood of genotype cluster growth and outbreak development.

This retrospective review of secondary data sources has several limitations. The beginning of an outbreak can be difficult to determine; the concept of an initial source case is an artificial construct if one considers that every source must have had its own progenitor. In addition, the definition of the outbreak's duration and size was determined on the basis of the timing of the CDC field investi-gation. The generalizability of the characteristics of these source cases is uncertain.

However, a strength of this analysis is that a group of experienced TB investigators considered all the information available to determine which of the known cases involved in an outbreak most likely represented the source. An additional advantage over many population-based genotype studies is that epidemiologic links among pa- tients were ascertained, enabling confirmation that cases in the same genotype cluster were indeed part of the same chain of transmission. We also knew direction of trans- mission, enabling us to establish source cases without having to make assumptions on the basis of the timing of diagnoses. In addition, we had information from patient medical records about TB symptom onset, which enabled us to examine variables related to infectious peri- ods and delayed diagnosis.

TB contact investigations for all persons diagnosed with pulmonary TB with acid-fast bacilli smear-positive test results are a well-known public health priority. This review underscores the particular importance of prompt and thorough investigations for TB cases confirmed by posi- tive smear for acid-fast bacilli in which patients have ex- perienced substance abuse, incarceration, or homelessness. Public health departments should work with local health-care providers to address barriers to accessing care faced by marginalized populations and in recognizing and diagnos- ing TB once symptomatic patients seek medical attention.

Source: EID Journal, http://wwwnc.cdc.gov/eid/article/21/3/14-1475_article (19.02.2015)

Reportage

1. All the health money can buy

Lucy* knows the value of life: it's $10. Working for nine months in the Democratic Republic of Congo,

she saw her fair share of war, disease and death. Like that of her colleague's two-year-old daughter: "She'd had one round of fluids for malaria treatment and needed a second one, but the hospital wouldn't give it to her until the first had been paid for. Three days later, she was being buried," says Lucy, sadly. "Whether that child lived or died had all hung on $10 - you realize then how the value of a person is different than in other countries. Nobody here would have died for $10...it's hard to live with." But it's something that aid workers, like Lucy, have to live with. Because death comes with the territory when every day you're dealing with those living in such poverty, they can't afford to pay for healthcare.

Facing death through preventable disease - it's a common situation for the 1.2 billion people the World Health Organization estimates live in extreme poverty, living on less than $1 per day. No decent accommodation, no access to clean water or adequate sanitation and often malnourished - many people with such low incomes are forced to live in conditions that are more likely to lead to ill health. Like the two brothers Faridun* and Jamshed*, who Lucy met while working in in Tajikistan. "They were on a list of 300 people from the surrounding region and not going to get medicine in the foreseeable future," says the aid worker, who asked for her name to be changed as she was talking without the authority of the organization. "They were waiting for a miracle or to die."

Faridun, the older 19-year-old brother, contracted multidrug-resistant tuberculosis (MDR-TB) while in the cramped army barracks with his comrades. He was treated for four months in hospital, but sent home when doctors found the medication wasn't working. There, he infected his brother. Caused by a bacterial infection, tuberculosis is usually treated using antibiotics for a minimum of six months. But MDR-TB cannot be treated with the standard medications and patients must take a complicated cocktail of drugs for up to two years and with side effects that can include deafness. The wrong place, the wrong disease But while the MDR-TB treatment is difficult for anyone, in richer parts of the world patients have much better access to the medications and care and are, therefore, much more likely to survive the disease - if they get tuberculosis at all. Incidence of TB is low in the west where TB has all but been wiped out. In Europe's economic powerhouse Germany only 5.3 cases per 100,000 population were recorded in 2010, although the disease is thought to be a re-emerging threat.

The Tajik boys, however, were only given the drugs to treat the standard tuberculosis - medications that are ineffective against the multidrug-resistant strain they had contracted. It is likely that the Tajik boys are already dead, admits Lucy looking out of the window of her Berlin flat: "It's morally wrong that just because you are born in the wrong place you die of a disease that others get treatment for." Lucy takes out her laptop to show photos of the villages she visited in Tajikistan to demonstrate the poor conditions: Small houses made with what looks like grey mud, they are topped with corrugated roofs and surrounded by dirt and sparsely-leaved trees. Single-glazed windows provide little protection against the intense cold in the winter, meaning that families crowd into the one small room they heat to keep warm. Disease spreads easily. A cough, a sneeze or even just speaking projects the tuberculosis bacteria into the air, which then infects others. The disease is common in Tajikistan affecting around 206 out of every 100,000 people - the highest in this WHO region. Self-funded healthcare While access to healthcare in Tajikistan is free by law, many end up paying out of their own pockets due to the corruption the system, says Lucy. "Staff ask for a fee so that they can feed their own families and there's no public transport so people have to try to borrow a car," she says. "Treatment is so expensive, it's an extra burden. Many families sell off everything - their cars, furniture, animals. I've been to houses that are empty because people have sold everything to get treatment."

For Tsegi, the 19-year-old Life Links reporter Carolina visited in Mongolia, money is also a struggle. Living in one of the poorer districts of Mongolia's capital Ulan Bator, heavy air pollution and freezing winter temperatures in the city frequently cause Tsegi to get bronchitis. She must keep warm to stop the disease from recurring, but sometimes cannot afford the wood or coal she needs to heat her home. If Tsegi gets sick again, she risks developing chronic bronchitis, a condition that falls under the umbrella of chronic obstructive pulmonary disorder (COPD). While the Ulan Bator government has

been trying to combat air pollution with a scheme to part-finance the distribution of "clean" stoves, some are critical about the effectiveness of the new heaters and continue to use their old ones and meanwhile, the city continues to grow meaning more pollution and more sickness.. But because of such problems, COPD is fast becoming the third leading cause of death worldwide. Around 90 percent of those who get such a disease come from low- and middle-income countries. Like tuberculosis, it is a disease of the poor: while poverty leads to the conditions that allow the disease to spread, it also prevents those infected from getting adequate treatment. Drugs not even developed Still, for those diseases, there is a treatment. For others, sometimes the drugs have not even been developed in the first place or those people can access are ineffective or perhaps even dangerous.

"There is a lack of economic incentive to develop new drugs and vaccines for the poor population," says Bernard Pécoul, executive director Drugs for Neglected Diseases Initiative (DNDi), a non-profit dedicated to research and development of new treatments for such diseases. "You have to invest research, development, time and money and that is driven by the return of investment from the market. Neglected diseases affect the poor in developing countries...it is not a profitable market." While 1,556 new drugs were developed between 1975 and 2004, only 21 were made for such diseases and tuberculosis, although the conditions account for approximately 11.4 percent of global disease, according to DNDi. However, Pécoul says that in the future, that may change. In some cases, pharmaceutical companies are willing to be involved in drug development in an attempt to improve their public image - and there are also other reasons: "Businesses are very aware that markets in Europe, the US and Japan are not growing, there's no potential for development. But there is in the rest of the world." Generations infected by disease Still, a move of focus to emerging markets and other parts of the globe is not happening quickly enough. Some communities remain neglected and inflicted by diseases such as Chagas, or human African trypanosomiasis (African sleeping sickness). Medications for these neglected diseases attract very little investment because they affect the world's poorest - a population that is still worth very little to the pharmaceutical companies that develop drugs. Around eight million people are infected with Chagas and most are unlikely to receive pharmaceutical treatment. Caused by a parasite, the disease leads to the deaths of around 10,000 people per year, the majority of whom die from related complications. Generations of families have been infected by the disease and yet treatment through drugs remains limited due to safety and tolerability issues with no alternatives having been fully developed.

"There was a community where more than half the adults were positive for Chagas," says Carolina Batista, a former aid worker for humanitarian organization Doctors Without Borders (MSF). "They used to tell me about how their mothers and grandmothers had had the disease: 'And now I'm here and I have no hope', they'd say." It was this, says Carolina, that pushed her to change her career path and concentrate instead on drug development to help people, as medical director for DNDi Latin America. "It's a long battle, but I've got hope because recent studies show that we are going in the right direction. We can give hope to the patients, so they can smile in the future because their family history is finally being changed," she says. Improving healthcare to stop people from dying It is these organizations like DNDi and the World Health Organization (WHO) that try to improve healthcare through the setting of standards and policies and developing of drugs to help the poor and neglected. Others like MSF and the Red Cross, meanwhile, work on the ground to provide emergency aid to those unable to reach healthcare due to factors including war, natural disaster and epidemics. They have had some success, at least: Globally, cases of some diseases are falling. The number of children dying under the age of five has dropped from 12.6 million in 1990 to 6.6 million in 2012, the number of new HIV infections reduced by 33 percent between 2001 and 2012 and tuberculosis is also on the decline. But it is little consolation to those working in developing countries - for aid workers, like Lucy, who experience the deaths that result from a lack of funding, or a failure in policy: though they came to help, too often they have to helplessly watch people die.

Source: DW (Deutsche Welle) http://www.dw.de/poverty-disease-poor-health/a-18269868 (21.02.2014)

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