An overview of tuberculosis and migration

P. Dhavan,* H. M. Dias,† J. Creswell,‡ D. Weil†

SUMMARY

With nearly one billion migrants worldwide, migration is both a dynamic and a divisive phenomenon facing the world today. Migrants are a heterogeneous group, and the conditions surrounding migration pathways often pose risks to the physical, mental and social well-being of migrants, with certain subgroups being more vulnerable than others. Several determinants of health and tuberculosis (TB) interplay to increase the vulnerability of migrants to tuberculous infection, TB disease and poor treatment outcomes, making them a key population for TB. This article is the first in the State-of-the-Art series of the International Journal of Tuberculosis and Lung Disease on TB and migration. It provides an overview of migration trends, migration pathways and social determinants, and impact on TB. This article outlines a framework for the prevention and reduction of the TB burden among migrants, adapted from the World Health Organization’s End TB Strategy, and in accordance with the Stop TB Partnership’s Global Plan and the Sustainable Development Goals (SDGs) agenda. The framework highlights the need for migrant-inclusive national TB plans, and calls for action across all three pillars of the End TB Strategy for migrant-sensitive care and prevention, bold intersectoral policies and systems supportive of migrants, and operational research. More research is needed on the TB burden and challenges faced by migrants and on the feasibility and effectiveness of approaches proposed here and the scaling up of models already underway. Political commitment at the highest national and international levels will be critical to intensify action for promoting the health of migrants on the road to achieving the end TB targets. KEY WORDS: migrants; refugees; End TB Strategy; key populations; Global Plan

HUMAN MIGRATION—THE MOVEMENT of a person or a group of persons, either across an international border or within a State—is in equal measure a dynamic and a divisive phenomenon facing the world today. Migration is driven by a combination of ‘push-and-pull’ factors, such as the push exerted by the fear of persecution or natural disasters, and a pull of better economic and social opportunities; modern migration pathways are therefore often characterised by mixed migration.1–4 Migration and migrants themselves are critical drivers of development in countries of origin, transit and destination, although popular public perception is often to the contrary; migration itself has a significant impact on migrants’ well-being.5,6

This review article is the first in the State-of-the-Art series of the Journal on tuberculosis (TB) and migration and builds on a descriptive review of peer-reviewed literature, unpublished data, project reports and National Strategic Plans (NSPs).7 The article provides an overview of the current migration trends, migration pathways and social determinants, and impacts on health, including TB. It then outlines critical steps in preventing and mitigating the burden of TB among migrant populations. Migrants are a key population for TB, and this article presents the rationale and strategies for promoting the health of migrants through the global efforts to end TB.7 The approach is adapted from the WHO End TB Strategy and is aligned with that of the Global Plan to End TB, 2016–2020 (Global Plan), and the Sustainable Development Goals (SDGs) agenda.9–11

MIGRATION TRENDS AND LINKAGES TO TUBERCULOSIS

Migrants form a heterogeneous group (see Table 1 for selected definitions), including documented and
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition/explanation</th>
<th>Source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asylum seeker</td>
<td>A person who seeks safety from persecution or serious harm in a country other than his or her own and awaits a decision on the application for refugee status under relevant international and national instruments. In the case of a negative decision, the person must leave the country and may be expelled, at may any non-national in an irregular or unlawful situation, unless permission to stay is provided on humanitarian or other related grounds</td>
<td>11</td>
</tr>
<tr>
<td>Forced migration</td>
<td>A migratory movement in which an element of coercion exists, including threats to life and livelihood, whether arising from natural or man-made causes (e.g., movements of refugees and internally displaced persons as well as people displaced by natural or environmental disasters, chemical or nuclear disasters, famine or development projects)</td>
<td>11</td>
</tr>
<tr>
<td>Internal migration</td>
<td>Refers to a move from one area (a province, district or municipality) to another within one country</td>
<td>12</td>
</tr>
<tr>
<td>Internally displaced person</td>
<td>Persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of, or in order to avoid, the effects of armed conflict, situations of generalised violence, violations of human rights or natural or man-made disasters, and who have not crossed an internationally recognised State border</td>
<td>13, 14</td>
</tr>
<tr>
<td>Irregular migration (irregular migrant or undocumented migrant)</td>
<td>Movement that takes place outside the regulatory norms of the sending, transit and receiving countries. There is no clear or universally accepted definition of irregular migration. From the perspective of destination countries it is entry, stay or work in a country without the necessary authorisation or documents required under immigration regulations. From the perspective of the sending country, the irregularity is, for example, seen in cases in which a person crosses an international boundary without a valid passport or travel document or does not fulfil the administrative requirements for leaving the country</td>
<td>11</td>
</tr>
<tr>
<td>Labour migration</td>
<td>Movement of persons from one State to another, or within their own country of residence, for the purpose of employment. A person who migrates from one country to another with a view to being employed otherwise than on his or her own account</td>
<td>11, 15, 16</td>
</tr>
<tr>
<td>Migrant</td>
<td>A migrant is any person who is moving or has moved across an international border or within a State away from his/her habitual place of residence, and his/her children, regardless of 1) a person's legal status, 2) whether the movement is voluntarily or involuntarily, 3) what the causes for the movement are; or 4) what the length of the stay is</td>
<td>11</td>
</tr>
<tr>
<td>Migration</td>
<td>The movement of a person or a group of persons, either across an international border, or within a State. It is a population movement, encompassing any type of movement of people, whatever its length, composition and causes; it includes migration of refugees, displaced persons, economic migrants, and persons moving for other purposes, including family reunification</td>
<td>11</td>
</tr>
<tr>
<td>Mixed migration</td>
<td>Migration process where persons with mixed motivations or multiple causes move along similar pathways. Can, for example, refer to when ‘refugees and other migrants move alongside each other, making use of the same routes and means of transport and engaging the services of the same smugglers’. Reflects the complexity of migration with refugees, asylum seekers, labour migrants, undocumented migrants, etc., as part of migrating populations over the same period or same migration pathways</td>
<td>Adapted from 17.</td>
</tr>
<tr>
<td>Refugee</td>
<td>A person who, ‘owing to a well-founded fear of persecution for reasons of race, religion, nationality, membership of a particular social group or political opinions, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country’ Similarly, the 1984 Cartagena Declaration states that refugees also include persons who flee their country ‘because their lives, security or freedom have been threatened by generalised violence, foreign aggression, internal conflicts, massive violations of human rights or other circumstances which have seriously disturbed public order’</td>
<td>Art. 1(A) (2)18–20</td>
</tr>
<tr>
<td>Trafficking in persons</td>
<td>‘The recruitment, transportation, transfer, harbouring or receipt of persons, by means of the threat or use of force or other forms of coercion, of abduction, of fraud, of deception, of the abuse of power or of a position of vulnerability or of the giving of receiving of payments or benefits to achieve the consent of a person having control over another person, for the purpose of exploitation’. Trafficking in persons can take place within the borders of one State or may have a transnational character</td>
<td>Art. 3(a)22</td>
</tr>
</tbody>
</table>
undocumented (or irregular) migrants, refugees and asylum seekers, internal migrants, internally displaced persons (IDPs), students, labour migrants and seasonal cross-border workers. The categorisation of a migrant is important, given the specificity of national and international legal and regulatory frameworks that may influence rights to health and other human rights obligations. Whatever the characterisation, however, all migrants leave a residence of origin and transit to a new destination (Figure 1), and likely have shared experiences of losing structural and emotional support systems, and coping with different customs and legislation in new social, cultural and economic environments.23

Globally, one billion people, or close to one in every seven persons, are migrants; approximately 244 million have travelled across international borders and 740 million within national territories.24,25 Nearly half of the international migrants are women, and nearly 70% reside in high-income countries. Over 150 million international migrants are migrant workers and, of the estimated 21 million forced labour victims, about one third are minors.26 Compared with the historically larger numbers of South to North migration, South to South migration reached slightly higher levels than South to North migration in 2015.27 An estimated 50 million persons live as irregular or undocumented migrants worldwide.28 Numerous and large complex emergencies in recent years have driven up the number of individuals forcibly displaced as a result of persecution, conflict, generalised violence or human rights violations. Globally, there are now about 65.3 million people in forced migration, including 21.3 million refugees, 40.8 million IDPs and 3.2 million asylum seekers.29

People move between geographic areas or countries with different health profiles affecting their access to health care and health-seeking behaviours and, ultimately, their health status.30 TB is a disease of significant public health concern, with about 30 high-burden countries identified for TB, multidrug-resistant TB (MDR-TB) and TB-HIV (human immunodeficiency virus) for the period 2016–2020.31 In 2015 alone, the World Health Organization (WHO) estimates that 10.4 million people fell ill with TB, and there were 1.8 million deaths, including 0.4 million deaths among people with HIV, placing TB as the single leading cause of death from an infectious disease.32 The manifestation of TB is a function of strong sociocultural dimensions as well as biomedical causative factors.33,36 Migration itself can impact TB epidemiology, especially in countries with low TB incidence.33–38 Furthermore, migrants can face an increased risk of tuberculous infection, TB disease and poor treatment outcomes, as well as drug resistance, wherein risk factors such as living and working conditions, legal status, poor access to services or discrimination can all play a part.8,39,40

Figure 1 Migration pathways. Source: International Organization for Migration.

Migration pathways, social determinants of health and tuberculosis

The conditions and circumstances surrounding migration pathways often pose risks to the physical, mental and social well-being of migrants.41–44 Various factors along migration pathways can, therefore, themselves be regarded as a social determinant of health (see Figure 2).45–47 While the factors discussed here can affect health risks for all those who migrate, certain subgroups may be more vulnerable than others due to gender and age, and by legal status.48

Pre-departure conditions and place of origin

The health status of migrants, along with the availability of and access to health services before migration, including the experience of any epidemics, disasters or conflicts, contributes to overall health and TB risks among migrants. The large international migrant ‘sending’ countries include several of the 30 highest TB burden countries. The top five countries contributing to international migrants living abroad are Bangladesh, China, India, Mexico and Russia.44 All but Mexico are among the highest TB burden countries. Most international migrants live in low TB incidence countries; the top 10 countries where 51% of international migrants reside are Australia, Canada, France, Germany, Russia, Saudi Arabia, Spain, the United Arab Emirates, the United Kingdom and the United States.29 The most systematic evidence of the TB burden, including that for TB and MDR-TB disease among migrants, comes from low TB incidence countries in Europe and North America, where foreign-born persons sometimes account for more than half of the TB incidence; migrants also often have higher rates of MDR-TB.38,49–57 Studies have also reported a high prevalence of tuberculous infection or active TB disease in migrant children, as well as among immigrants and migrant workers in low TB incidence countries in other regions, such as the Middle East.58,59 In Lebanon, the increasing TB burden in recent years has been associated with
increased numbers of migrants, including from high TB burden countries, and large numbers of refugees displaced by the conflict in neighbouring Syria; some studies have shown that despite their origins in a low TB incidence setting, Syrian refugees in Jordan have higher rates of disease.60,61

Transit
The nature of migrant travel and transit conditions for migrants can influence the health and TB risks for migrants. Certain migrant groups, such as labour migrants and refugees who move with requisite approvals and documents for immigration or resettlement, may travel in an organised and safe manner, often with pre-migration health screening, whereas others may travel under dangerous conditions, such as on foot, by boat or in crowded and unsafe means of transport.62 A recent study among asylum seekers in Switzerland, for example, reported an association between ground and sea modes of transit and increased risk of latent tuberculous infection (LTBI).63 The resulting high risk of tuberculous infection or TB disease may be related to the transit conditions or the underlying social and economic conditions before and during migration. The complexity of mixed migration flows, with diverse groups such as refugees, high or low skilled labour migrants and trafficked or smuggled persons moving along similar pathways, can potentially result in varying degrees of vulnerabilities to overall poor health and TB.4 Modern migration patterns, with frequent travel between a migrant’s country of origin and destination, also increase the risk of tuberculous infection, transmission and interrupted treatment.64,65

Place of destination and host community
On arrival at the destination, individual-level factors, social and community influences, living and working conditions, and general socio-economic, cultural, language and environmental factors can influence the risks of tuberculous infection, TB disease and treatment outcomes (see Figure 3).66,67 Limited knowledge of TB causes, symptoms, transmission and treatment can influence migrants’ health-seeking behaviours.68 Migrants’ knowledge of TB and availability of services depend on access to and uptake of personal communication, awareness materials or communication campaigns appropriate to different languages and literacy levels.69,70 Specific migrant communities may also follow closely held sociocultural beliefs, such as highly mobile nomadic populations who are often reported to distrust public services in favour of traditional healers, which may delay health care seeking.71,72

For those with symptoms or known disease, legal status at the destination is among the determinants of TB outcomes.73,74 For undocumented migrants, fear of encounters with police or legal authorities and discriminatory deportation policies can be a major deterrent to seeking health care.75–79 This is applicable also to internal migrants or IDPs who may not have the right to access health care in a different state or province within the same country.80,81 Without national identification or proof of residency, many
migrants may seek care in the private sector where they feel safer. Access to health care for refugees and asylum seekers can also be varied and influence their access to TB care.

TB continues to be associated with stigma around the world. Migrants in low TB incidence countries may face stigma, given the exaggerated and false public perceptions of the risk posed by migrants in increasing TB transmission in host communities. When migrants seek care, the attitudes of health care workers can influence treatment adherence and outcomes. Migrant-unfriendly health services, such as the absence of interpreters or medical social workers, as well as misinformed, unwelcoming or xenophobic health care workers, can negatively impact TB outcomes.

Living conditions are known to have an association with the risk of acquiring tuberculous infection or developing TB disease. For asylum seekers living in overcrowded camps or urban settings, or for migrants and refugees in reception or detention centres, factors such as poor ventilation and lack of sufficient food may increase vulnerability to TB. Poor working conditions for migrants in the formal or informal employment sector, no sick leave benefits for health care visits and the lack of health insurance coverage can lead to poor or late health-seeking behaviour, low or late TB detection as well as poor treatment adherence. For example, mining communities in Southern Africa, often composed of migrants from neighbouring countries in the region, have been shown to have among the highest documented TB incidence rates (3000–7000/100 000 in miners compared with 981/100 000 in the general population in South Africa) due to the exposure to silica dust, poor and often crowded living conditions, and social factors resulting in high HIV infection rates.

Challenges associated with a lack of continuity of care along the migration pathway can increase vulnerability to TB. Cross-border migration between mid and high TB burden countries can also contribute to challenges with MDR-TB prevention and management due to such factors as delayed diagnosis, interrupted or poor quality of treatment, and unavailability of appropriate drug regimens at various stages of migration. With delayed diagnosis and interrupted or substandard treatment, the emergence of MDR-TB can be of concern in conflict situations with forced displacement. Similarly, disruption of anti-tuberculosis treatment due to internal migration without mechanisms for continuity of care can be associated with TB risk, as shown in China, where migrant workers from rural areas living in Shanghai City accounted for 55.2% of the TB notification rates in 2000–2008 and had poor treatment outcomes. In the case of conflicts or natural disasters, interrupted anti-tuberculosis treatment and poor access to diagnostic services can be factors contributing to higher TB prevalence in displaced groups such as refugees and IDPs who move to live in camp or non-camp settings, compared with reference populations (overall national population for IDPs or population in countries of origin and destination for refugees, respectively). Migrants may be subject to catastrophic financial burden due to direct and indirect costs of anti-tuberculosis treatment if policies on the coverage of migrants with free TB treatment are not adopted or implemented, and may face additional risks due to targeted funding cuts in prevention or treatment programmes for non-
nations during economic crises.\textsuperscript{68,93,102–104} Even with free access to TB diagnostics and drugs, the costs associated with ancillary tests, nutrition supplements and lost livelihood may be prohibitive.\textsuperscript{70}

Several broader legislative and policy-level factors in destination countries can affect TB risks among migrants. This may include the lack of multi-agency coordination, for example, between public health authorities and correctional or detention facilities where undocumented migrants may be held.\textsuperscript{105} There is wide variability in approaches in addressing undocumented migrants with TB, even within the European Region, and such migrants may be deported without regard for continuity of treatment.\textsuperscript{74,77} Labour and social policies that do not include health insurance and social protection coverage for migrants can have negative TB outcomes.\textsuperscript{106} In several countries, although supportive health policies may be in place, the problems faced by migrants persist due to low awareness levels and poor enforcement capacity with administrative challenges.\textsuperscript{107}

For labour migrants who cross borders for short periods of time, poor housing, low wages and limited access to health care may mean they return home less healthy than when they left.\textsuperscript{108} Without reliable access to TB services, returning migrants may be faced with treatment interruption and complications due to drug resistance.\textsuperscript{109}

**ADAPTING THE END TB STRATEGY FOR THE NEEDS OF MIGRANTS**

The size of the migration phenomenon now and the range of challenges faced by migrants to prevent TB risks and seek treatment and care for TB disease demand a coherent response. The United Nations SDGs agenda is founded on principles and approaches that can enable this. These include the principle of ‘leave no one behind’, explicit health targets, including universal health coverage and ending the TB epidemic by 2030, and targets on ensuring safe and orderly migration, thereby emphasising the interrelationship between health and migration for sustainable development.\textsuperscript{11,110} The WHO’s End TB Strategy, with ambitious goals for ending the TB epidemic, builds on a ‘know your epidemic’ approach and includes a special focus on serving those not reached—the most vulnerable and marginalised populations, including migrants—and on universal health coverage and social protection.\textsuperscript{111} The Stop TB Partnership’s Global Plan also identifies the need to bring more attention to key populations, including migrants and mobile populations who may be at higher risk for TB or who have limited access to services to prevent, detect and treat TB, and may be missed by current systems.\textsuperscript{9} This work builds on longstanding efforts to guide effective TB care among migrants and refugees, and more recent regionally specific WHO approaches to reaching and serving the TB prevention and care needs of migrants, including in Europe, the Western Pacific and the Eastern Mediterranean Regions.\textsuperscript{98–102,111–116} Another key guide is the WHO framework towards eliminating TB in low-incidence settings, which includes focus on migrants and other vulnerable groups among its eight action areas.\textsuperscript{117}

Building on the End TB Strategy, the WHO and the Internation Organization for Migration have proposed actions for TB and migration (see Figure 4),\textsuperscript{119} and the key recommendations for each of the three pillars of the Strategy are summarised here. As Member States move to operationalise the End TB Strategy, these recommendations can enable the inclusion of migrants.\textsuperscript{120} The underlying four principles of the Strategy also all apply and can enhance the effectiveness of the response—those related to the role of governments as stewards and their accountability to act; to engaging in a coalition with the civil society; to protecting and promoting human rights, equity and ethics; and to adapting the Strategy.

**Pillar One: migrant-sensitive care and prevention**

The first pillar of the End TB Strategy puts persons with TB at the heart of service delivery, and aims to ensure that all persons who have TB or need preventive services, including migrants, have equal and unhindered access to TB diagnostics, treatment, care and prevention services, integrated with other health services. These approaches can be adapted to the specific needs of migrant populations, including for TB diagnosis, MDR-TB, TB-HIV management and TB prevention.\textsuperscript{121} Service delivery models, such as deploying effective mobile clinics and TB screening or contact services for hard-to-reach areas and for refugee populations living outside camps, prolonging clinic hours to ensure migrant workers can attend, and providing flexible treatment options enablers and support to migrant workers for treatment completion, are examples of migrant-sensitive TB services.\textsuperscript{51,121,123} Innovations such as cell phone applications, family-supported anti-tuberculosis treatment and home visits for counselling should be considered to meet treatment supervision challenges, as noted earlier. In several countries, clinics operated by private providers or non-governmental organisations provide health care for urban migrants, asylum seekers and residents in border areas, and should be factored into TB services planning and sustainability.\textsuperscript{123,124} To enable access and adherence, provision of food and financial support, such as transportation and income replacement stipends, catering to the specific needs of migrants can help.\textsuperscript{125}

Health education and awareness raising programmes should be an integral part of TB services for migrants.\textsuperscript{126} Communication strategies should be responsive to level of literacy, language needs and
access of target populations to diverse public health information sources. Systemic measures should be in place to address stigma and discrimination by raising awareness among health workers and ensuring the privacy and confidentiality of medical records, including essential ‘firewalls’ with immigration authorities for those in vulnerable situations, such as undocumented migrants, asylum seekers and trafficked persons. Empowerment and social mobilisation of migrant communities for overall health and well-being is equally important, and should include capacity building of migrant worker associations or community leaders in camps and urban settings, engaging social or medical workers from within migrant communities, and enabling community patient support groups, as appropriate to the context. Models that promote community ownership of screening camp activities can offer opportunities to improve TB detection and, with proper follow-up, treatment success rates can also be achieved.

Patient-centred care for migrants cannot be achieved without international cooperation and well-functioning cross-border referral systems with contact tracing, information sharing and harmonisation of treatment protocols to ensure continuity of care and monitoring of outcomes. There are emerging models for regional and bilateral cross-border collaboration among countries for the management of infectious diseases, including TB, that can be further applied. A key component of such collaboration pertains to health information sharing about TB patients with transnational linkage between Ministries of Health, National TB Programmes (NTPs) and relevant health centres in the receiving and sending countries. This would allow TB care providers in receiving countries to follow up migrants with TB (and those with LTBI), as well as monitor treatment outcomes. TB record sharing should follow national and regional guidelines for confidentiality in medical records and enable migrants to ‘own’ and move with their records. Health passports or electronic medical records that have been successfully applied in delivering antiretroviral therapy services could be adapted for TB patients in border regions. New and emerging tools for such cross-border sharing of TB information should be piloted and adapted for migration between high and
low TB incidence countries, and among high and mid TB incidence countries.\textsuperscript{114,141}

Low TB incidence countries that implement overseas or in-country screening programmes for active TB or LTBI should consider harmonisation of screening protocols, along with contact tracing, in-country follow-up of migrants and migrant-sensitive screening services.\textsuperscript{137} TB screening programmes for migrants should address barriers faced by migrants to access health services after arrival. Low-incidence countries should also contribute to broader international efforts to end TB in high-incidence countries of origin and transit.\textsuperscript{38,142–145} Targeted TB screening policies for migrants should respect public health ethics and be linked with parallel regulatory efforts to enrol migrants for national health systems to ensure timely and equitable TB diagnosis, treatment and care for migrants.\textsuperscript{146,147}

**Pillar Two: bold inter-sectoral policies and systems supportive of migrants**

The second pillar of the End TB Strategy focuses on actions to enhance government stewardship and accountability, to enhance financing and systems for universal health coverage and to pursue TB-sensitive policies across multiple sectors of the government for social protection and to address the social determinants of TB. Adapting the second pillar for migrants requires establishing and strengthening bold policies across health and non-health sectors for equitable health care access for all migrants, as well as strengthening linkages with non-governmental partners and the civil society.\textsuperscript{148} It means first that national TB programmes must comprise financing and operational structures that include migrants not only within national strategic planning for TB, but also within national health and development plans more broadly. It means acting on the social determinants of health for TB. Policies and regulations are needed to improve migrants’ access to public services and decent living conditions, promote ethical recruitment and decent working conditions, and grant financial, legal and social protection coverage to improve their overall health status.\textsuperscript{149} Cross-border collaboration between countries for TB control should address not only health, but also the non-health sector policies that can improve the overall living and working conditions of migrants.\textsuperscript{130,151} Health-related strategies should be included in bilateral or regional policies and agreements on migration, including engagement with private sector employers and migrant organisations to promote access of migrants to TB continuum of care throughout the migration pathway.\textsuperscript{152} Integrating TB services for high-risk migrant groups in other health service settings, such as maternal and child health care, can also contribute to increasing access to TB diagnosis and treatment.\textsuperscript{153} Furthermore, health insurance policies should be designed with portable coverage mechanisms, including those for anti-tuberculosis treatment and care for immigrants and labour migrants, as well as their families.\textsuperscript{154,155}

National policies should adopt an overall health promotion approach for migrants by avoiding stigma, discrimination, restrictions to travel and deportation for those affected by TB without appropriate access to treatment.\textsuperscript{79,136,157} Bold policy implementation that allows for undocumented migrants to receive health care without notification to immigration authorities can create enabling conditions to ensure TB treatment for all, regardless of status.\textsuperscript{128} Innovative community-based solutions should be designed for undocumented migrants to overcome legal and administrative barriers for TB treatment and care as an integral part of national TB policies.\textsuperscript{158} In prolonged conflict and disaster settings, TB detection and treatment policies for refugees and IDPs should be included in the health and humanitarian response, and strong partnerships built among national and international agencies serving these groups.\textsuperscript{115,159–162}

**Pillar Three: operational research**

Scaling up effective coverage and ending TB altogether will require intensified research and innovation—this is the third pillar of the End TB Strategy.\textsuperscript{163} Operational research is needed to develop and assess approaches to ensure equitable access to care for migrants. Innovative tools to prioritise and target interventions for disease or infection should be applied in low TB incidence countries to identify those who may be most at risk.\textsuperscript{164} Identifying the health needs of specific migrant groups requires the application of participatory methods to inform policy development and implementation, as well as to enhance the delivery and utilisation of care services and health promotion programmes.\textsuperscript{165} Research is needed on broader determinants of TB for specific migrant populations and to identify cost-effective interventions to address barriers to end TB among migrants, including in high and mid TB incidence countries.

**Current relevant actions proposed in National TB Strategic Plans**

An NSP for TB prevention, care and control reflects the vision of the NTP in accordance with national health policies, and is considered to be the key instrument for implementing TB policies in a country.\textsuperscript{166} It must reflect the vision of the NTP and be in line with the national health policies and strategies as well as with the general health plan for the country. It is critical that actions on TB and migration are included in the NSPs that help guide TB responses within national health sector plans, and provide critical input into financing frameworks, including
Table 2: Review of selected NSPs for TB

<table>
<thead>
<tr>
<th>Countries</th>
<th>Migration issues of concern</th>
<th>Key findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chad, DRC, Ethiopia, Jordan, Kenya, Lebanon, Pakistan, Uganda*</td>
<td>Large refugee populations are hosted here</td>
<td>Of the top eight refugee hosting countries whose NSPs were reviewed, five countries (Chad, DRC, Ethiopia, Kenya and Pakistan) listed a range of activities such as screening, sensitisation and better care provision for refugees and migrants, and indicators to address TB in refugees as well as migrants in some cases. These activities were mainly allocated to partner agencies such as UNHCR and IOM. One country did not include any activities to address the needs of refugees or migrants. In the case of Lebanon, the overall Health Response Plan highlighted the increasing incidence of TB and MDR-TB among migrants, but there were no activities outlined which targeted the disease and related needs. The Public Health Strategy for Jordan, developed jointly by the Hashemite Kingdom of Jordan National Tuberculosis Programme, UNHCR, IOM and the WHO, listed comprehensive activities to address TB transmission, morbidity and mortality among Syrian refugees in Jordan. Key objectives include increasing TB screening and diagnosis among refugees, providing support for better treatment outcomes, building increased knowledge and awareness and preventing preventive therapy for contacts in line with WHO recommendations.</td>
</tr>
<tr>
<td>Nigeria, Sudan*</td>
<td>Large numbers of IDPs</td>
<td>The Nigerian NSP outlines the importance of reaching the over 500 million IDPs and unknown numbers of migrants with TB care services. Active case finding and communications are listed as key activities in the NSPs of both Nigeria and Sudan to address TB among IDPs, migrants and nomadic populations.</td>
</tr>
<tr>
<td>India**</td>
<td>Large numbers of internal migrants</td>
<td>Addresses TB among internal migrants with comprehensive actions listed on screening and awareness building</td>
</tr>
</tbody>
</table>


** NSP = national strategic plan; TB = tuberculosis; DRC = Democratic Republic of the Congo; UNHCR = United Nations High Commissioner for Refugees; IOM = International Organization for Migration; WHO = World Health Organization; MDR-TB = multidrug-resistant TB; IDP = internally displaced person; MoH = Ministry of Health.

The Global Fund. In the absence of a systematic review and in light of the rapid evolution of TB planning in many settings, a desk review of selected NSPs was carried out for this article in mid-2016 (see Table 2).167–171 The review covered eight of the top 10 refugee-hosting countries for which NSPs or equivalent plans were available, two countries with large numbers of IDPs and one country with a large population of internal migrants. 

TB is addressed in most NSPs, but activities focus predominantly on screening and communications outreach. To effectively pursue the approaches recommended here and ensure financing of these activities, actions under all the three pillars described above need to be addressed in greater depth in strategic and operational TB plans. The Global Fund, which is the major external funder of TB efforts in most low-income countries, requires countries to align components from NSPs with their concept notes for Global Fund financing.172 Furthermore, these concept notes call for explicit attention to serving key populations. It is therefore critical that NSPs and aligned Global Fund concept notes have evidence-based components for TB and migration, and that migrants are themselves included in the development of NSPs and Global Fund concept notes.173 Furthermore, domestic sources that predominate in TB financing should also cover the needs of migrants. India and China, especially, which have the largest numbers of internal migrants, should seek to take steps to explicitly include the needs of migrants in their programmes.

**CONCLUSION**

This article has shown how several determinants of health and TB interplay at various stages of migration pathways to increase the vulnerability of migrants to tuberculous infection, TB disease and poor treatment outcomes. Successful implementation of the End TB Strategy and its first 5 years as envisioned in the Global Plan will require design and implementation of migrant-inclusive NSPs in accordance with the principles and adapted interventions proposed here. More baseline research is needed to better understand the nature of the TB burden and challenges faced by migrants, especially those living in high TB burden settings, and to evaluate the feasibility and effectiveness of approaches proposed here and the scaling-up of models already underway.

Migration is not a problem to be solved; rather it is an opportunity to be managed with political com-
mitment at the highest national and international levels, especially for achieving the ambitious equity, health and TB goals of the SDGs era. There is a long road ahead to end TB, and countries, regional bodies, United Nations agencies, civil society organisations, migrant communities and donors need to intensify action.

Acknowledgements

Conflicts of interest: none declared.

WHO disclaimer: HMD and DW are staff members of the World Health Organization (WHO). The authors alone are responsible for the views expressed in this publication, and they do not necessarily represent the decisions or policies of the WHO.

References


40 Maltezou H C. Antibiotic resistance and the refugee crisis in Europe—preemptive action is indicated. Travel Med Infect Dis 2015; 13: 46–70.


Bell J. UAE Cabinet decision clarifies rules on tuberculosis. The National, 3 March 2016. Abu Dhabi, UAE.


An overview of TB and migration


Avec près d’un milliard de migrants dans le monde, la migration est à la fois un phénomène dynamique et un sujet de division dans le monde d’aujourd’hui. Les migrants sont un groupe hétérogène, et les conditions entourant le parcours de la migration comportent souvent des risques pour le bien-être physique, mental et social des migrants, certains sous-groupes étant plus vulnérables que d’autres. Plusieurs déterminants de la santé et de la tuberculose (TB) interagissent pour augmenter la vulnérabilité des migrants à l’infection tuberculose, à la TB maladie et aux mauvais résultats du traitement, ce qui en fait une population clé pour la TB. Cet article est le premier de la série de pointe de l’IJTLD sur la TB et la migration. Il offre une vue générale des tendances de la migration, des parcours de migration et des déterminants sociaux, et de leurs impacts sur la TB. L’article présente un cadre visant à prévenir et à atténuer le fardeau de la TB parmi les migrants, adapté de la stratégie Halte à la TB de l’Organisation Mondiale de la Santé et en accord avec le plan mondial du partenariat Stop TB et l’agenda des Objectifs de développement durable (SDG). Le cadre met en lumière le besoin de plans TB nationaux incluant les migrants ; il appelle à prendre des mesures impliquant les trois piliers de la stratégie Halte à la TB pour une prise en charge et une prévention adaptées aux migrants, des politiques intersectorielles ambitieuses et des systèmes de soutien aux migrants, ainsi qu’une recherche opérationnelle. Il faut davantage de recherche sur le fardeau de la TB et les défis auxquels sont confrontés les migrants et sur la faisabilité et l’efficacité des approches proposées ici et l’intensification des modèles déjà en cours. L’engagement politique au plus haut niveau national et international sera crucial pour intensifier l’action afin de promouvoir la santé des migrants sur la voie de la réalisation des cibles d’élimination de la TB.