Published in final edited form as:

Int J Tuberc Lung Dis. 2020 January 01; 24(1): 36–42. doi:10.5588/ijtld.19.0183.

An assessment of current tuberculosis patient care and support policies in high-burden countries

A. M. Coccozza^{1,2}, N. N. Linh¹, R. R. Nathavitharana³, U. Ahmad⁴, E. Jaramillo¹, G. E. M. Gargioni¹, G. J. Fox⁴

¹Global Tuberculosis Programme, World Health Organization, Geneva, Switzerland; ²Global Health, Global Studies Institute, Université de Genève, Geneva, Switzerland; ³Division of Infectious Diseases, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA; ⁴The Central Clinical School, The Faculty of Medicine and Health, The University of Sydney, Camperdown, NSW, Australia

SUMMARY

CONTEXT: Adherence to treatment for tuberculosis (TB) is an important predictor of treatment outcomes. The World Health Organization guidelines recommend a patient-centred approach to adherence support; however, the extent to which policies in high-burden countries facilitate this approach remains uncertain.

DESIGN: A cross-sectional survey of current national patient care and support policies in high TB burden countries was performed.

RESULT: Responses were provided by TB care programmes in 23 of the 30 high TB burden countries, comprising 77.4% of TB cases globally. Clinic-based and household adherence support and patient education were recommended in all countries, while policies for digital technologies and social supports have been adopted in a small minority of countries. Financial or material support (such as reimbursement for transportation) and psychological support to patients—if included in the policies—was mainly recommended only for specific sub-groups of patients.

CONCLUSION: National policies in many countries have not yet fully adopted global recommendations for patient care and support. Further scale-up of evidence-based approaches to care is required to improve quality of care for patients in high TB burden settings.

RÉSUMÉ

L'adhérence au traitement de la tuberculose (TB) est un facteur de prédiction important du résultat du traitement. Les directives de l'Organisation Mondiale de la Santé recommandent une approche centrée sur le patient comme soutien à l'adhérence, mais le degré auquel les politiques des pays très affectés facilitent cette approche reste incertain.

Correspondence to: Greg Fox, The Faculty of Medicine and Health, Rm 5216, Level 2 Medical Foundation Building K25, 92-94 Parramatta Road, University of Sydney, Sydney, NSW, Australia 2006. greg.fox@sydney.edu.au.

The authors alone are responsible for the views expressed in this article, and these do not necessarily represent the views, decisions or policies of the institutions with which they are affiliated.

Conflicts of interest: none declared.

Une enquête transversale relative aux politiques nationales actuelles de prise en charge des patients dans les pays très frappés par la TB a été réalisée.

Des réponses ont été fournies par les programmes de prise en charge de la TB dans 23 des 30 pays les plus touchés, comprenant 77,4% des cas de TB dans le monde. Le soutien à l'observance en structures de santé et à domicile et l'éducation du patient ont été recommandés dans tous les pays tandis que les politiques relatives aux techniques numériques et au soutien social n'ont été adoptées que dans une petite minorité de pays. Le soutien financier ou matériel (comme le remboursement des frais de transport) et psychologique aux patients—lorsqu'il était inclus dans les politiques—a été recommandé principalement pour des sous-groupes particuliers de patients.

Les politiques nationales dans de nombreux pays n'ont pas encore pleinement adopté les recommandations mondiales relatives à la prise en charge et au soutien du patient. Une expansion d'approches éprouvées à la prise en charge est nécessaire pour améliorer la qualité des soins aux patients dans les contextes de prévalence élevée de la TB.

RESUMEN

La adhesión al tratamiento de la tuberculosis (TB) es un factor pronóstico importante del desenlace terapéutico. Las directrices de la Organización Mundial de la Salud recomiendan un enfoque centrado en el paciente con miras a reforzar la adhesión; sin embargo, se desconoce en qué medida las políticas de los países con alta carga de morbilidad favorecen este enfoque.

Se realizó una encuesta transversal sobre las políticas vigentes de atención y apoyo a los pacientes en países con alta carga de morbilidad por TB.

Se obtuvieron respuestas de 23 programas de TB, de los 30 países con carga de morbilidad alta que representan 77,4% de los casos de TB en el mundo. En todos los países se recomendaba el apoyo a la adhesión terapéutica en los consultorios y en los hogares y la educación de los pacientes, pero solo una minoría de países habían adoptado políticas en materia de tecnologías digitales y apoyo social. En países donde las políticas abordaban el apoyo económico o material (como el reembolso de los gastos de desplazamiento) y el apoyo psicológico, los recomendaban sobre todo para subgrupos específicos de pacientes.

Muchos países no han adoptado aún en sus políticas nacionales las recomendaciones mundiales sobre la atención y el apoyo al paciente. Es necesario ampliar la escala de aplicación de la atención basada en la evidencia, con el fin de mejorar la calidad del manejo de los pacientes en los entornos con tasas altas de morbilidad por TB.

Keywords

TB; patients; policy; multidrug-resistant TB; medication adherence

TREATMENT FOR TUBERCULOSIS (TB) has a considerable impact upon the lives of patients affected by the disease, their relatives and caregivers. In addition to the immediate physical effects of TB, many patients experience considerable psychological, social and economic costs, and poorer quality of life even after a bacteriological cure has been achieved.¹ Analyses of pathways followed by patients demonstrate unacceptable attrition at each stage of engagement with the health system.^{2,3} Likewise, the global average of loss to

follow-up was 3.9% among patients with drug-susceptible TB (DS-TB), and 14.1% among those with rifampicin-resistant (RR-) or multidrug-resistant TB (MDR-TB) in 2017,⁴ revealing substantial challenges for patients in adhering to the long course of TB treatment.

The World Health Organization (WHO) has recognised the importance of strategies to improve the support for patients affected by TB in order to reduce their suffering, enhance their quality of life and improve treatment outcomes.^{5,6} The first pillar of the End TB Strategy (2015) explicitly recommends an “integrated patient-centred care and prevention” approach. This is a key element for the benefit of TB patients, as it puts the rights, values and needs of each and every patient at the centre of TB control strategies.⁷ Human rights-based, patient-centred care is central to an ethical approach to TB elimination.⁸ As TB patients face considerable challenges that go beyond the clinical aspects of the disease, it is necessary to give priority consideration to the social and personal circumstances of the person affected by TB, rather than focus only on the immediate requirements of medical treatment.⁹ The WHO assessed the evidence available through the GRADE (Grading of Recommendations Assessment, Development and Evaluation) methodology to produce guidelines on patient care interventions to improve TB treatment outcomes.⁶ These include recommendations to provide social support (patient education and counselling, psychological support and material support) and improve communication and treatment monitoring using digital technologies and outpatient care, which may encompass community-based treatment administration. In case of DS-TB, an ambulatory or decentralised model of care is also recommended for MDR-TB instead of a hospitalised or centralised model of care.¹⁰ These evidence-based recommendations recognise the importance of person and patient-centred care and support in achieving optimal treatment outcomes and reducing continuing TB transmission.

In practice, it is well-known that adoption and implementation of WHO recommendations relating to person- and patient-centred care varies widely.^{2,11,12} Reviews of national TB programmes by external experts reveal a wide lack of emphasis on a patient-centred approach, with weak information sharing and poor awareness, lack of cooperation and/or coordination between stakeholders, and different levels of social and nutritional support from country to country.^{13,14} Many barriers all along the continuum of care continue to prevent TB patients from benefitting from accessible and affordable diagnosis, treatment, care and support.¹⁵

A more detailed picture is required to raise awareness on the subject, improve understanding of the barriers to uptake these WHO recommendations and prioritise technical support activities. We conducted a cross-sectional survey to determine and evaluate the current policy situation in the 30 WHO high TB burden countries.

The study aimed to determine the extent to which current WHO recommendations regarding patient-centred care and support have been included in National TB Programme (NTP) policies in the 30 high TB burden countries.¹⁶ This will provide an understanding of the extent to which WHO policies on TB patient care have been adopted by NTPs in these settings.

METHODS

Study design and country eligibility

A cross-sectional survey of national policies relating to patient-centred care and support was designed by a multi-stakeholder team, pilot-tested and undertaken among the WHO 30 high TB incidence countries. These countries comprised 86% of the global TB burden. Country eligibility was based upon the WHO estimated annual incidence of TB,¹⁷ and included the 20 countries with the highest number of incident cases of TB (Angola, Bangladesh, Brazil, China, Democratic People's Republic of Korea, Democratic Republic of Congo, Ethiopia, India, Indonesia, Kenya, Mozambique, Myanmar, Nigeria, Pakistan, the Philippines, Russian Federation, South Africa, Thailand, United Republic of Tanzania and Viet Nam), and 10 additional countries with the highest TB incidence rates (Cambodia, Central African Republic, Congo, Lesotho, Liberia, Namibia, Papua New Guinea, Sierra Leone, Zambia and Zimbabwe).

In parallel, the research team conducted a desk review on poster presentations made by participating countries during the Global TB Symposium (World Health Organization, Geneva, Switzerland)¹⁸ and on NTP review reports to obtain additional information regarding the current status of policy implementation in the surveyed countries.

Survey design and implementation

The survey was based upon the guidance included in the 2017 WHO "Guidelines for the treatment of drug-susceptible tuberculosis and patient care" that recommended patient care and support,⁶ as well as in the WHO's End TB Strategy and in the Handbook for the use of digital technologies to support TB medication adherence.¹⁹ Survey questions dealt with the current national policies regarding TB health education and patient counselling, treatment adherence interventions and methods for treatment administration outside of health facilities. We also evaluated whether national policies recommended decentralised models of care, including community-based care,⁶ and WHO-endorsed digital technologies to support people with TB.¹⁹ The implementation of national policies was not assessed.

TB national professional officers in all 30 WHO country offices were invited to complete a multiple-choice questionnaire survey, either online or through an editable portable document format (PDF) file, based on existing country TB care policies. The national health authorities, typically the NTPs, were then requested to verify and validate the information provided by the WHO TB professional officers. Policy documents were not personally reviewed and verified by the authors. The survey was administered electronically, using an on-line form in English or French, and an editable PDF form sent by email in English or French. Incomplete responses were followed up by the authors using phone calls or emails.

Country data collected from this survey were based upon existing country policy information, which is publicly available. As data collection did not involve human participants,²⁰ an official exemption from an ethical review was provided by the WHO Ethical Review Committee, Geneva, Switzerland.

Analysis

Descriptive, cross-sectional analyses were performed for all countries and stratified by WHO region and income status according to the World Bank classification.²¹ Statistical analyses were conducted using Microsoft Excel (MicroSoft, Redmond, WA, USA; 2015).

RESULTS

Responses were received from 23 of the 30 high TB burden countries (Table 1) between September 2018 and November 2018. These countries had an estimated cumulative incidence of 7 742 000 cases of TB, comprising 77.4% of all cases globally in 2017.⁴

Patient or staff education and social support

All countries had policies to provide health education to patients, and train health workers about TB. Only eight countries (35%) had specific policies recommending the provision of online materials for patient education, and 15 (65%) reported the existence of policy recommendations for peer education by TB survivors. The majority of countries lacked national policies to provide access to social support interventions for all patients. Material support for patients such as reimbursement of transportation fees was not considered at all in four countries (17%). In 16 national policies (70%), food assistance for TB patients was recommended only for specific groups of TB patients (mainly RR/MDR-TB patients). Psychological support for all TB patients was recommended only in 12 countries (52%). Table 2 shows results of specific policies regarding patient or staff education and social support in surveyed countries.

Treatment administration options

Nineteen countries (83%) reported policies requiring that patients commencing treatment for TB are assessed for their need for adherence support; of these, in 14 (61%) countries, this was done during household visits (Table 3). Twenty-two countries (96%) incorporated recommendations requiring direct observation of therapy (DOT) at some stage of treatment for all TB patients in their policies; one country had DOT provisions only for children and adults who are not able to take care of themselves. Among all the countries surveyed, 22 (96%) recommended treatment observation by health workers, 19 (83%) by family members and 14 (61%) by volunteers, treatment supporters or community health workers. These recommendations were not mutually exclusive. Two of 23 countries (9%) recommended that treatment should be observed by health workers only, while the remaining 21 other countries had recommendations for a combination of strategies for treatment observation.

In 17 countries (74%), national policies required recording of data about the presence (or absence) of adherence support. All countries had policies for household visits for those who do not complete treatment.

The policies for administering and observing treatment for TB during the intensive and continuation phase are summarised in Table 4. In the intensive phase, treatment for DS-TB was provided in an inpatient setting in 22% of the countries, while for RR/MDR-TB it was offered in 52% of the countries. For DS-TB patients, 14 countries (61%) recommended that

treatment be observed through in-person direct observation. Just one country (4.3%) recommended only self-administration, while 8 (34.8%) countries had provisions for a combination of self-administration and direct observation (6 countries) or direct observation and video observation (2 countries).

A high proportion of countries offered both outpatient and inpatient treatment as alternative policy recommendations (among the respondent countries, 52% recommended both alternatives for DS-TB patients and 43% for RR/MDR-TB patients).

Digital health interventions to support treatment adherence

Digital adherence support tools were used in a minority of countries (Table 5), and often only at a pilot stage. Video observed treatment (22%), medication event reminder monitors (17%), short messaging service (17%) and 99-DOTS²² (17%) were the most commonly trialled forms of adherence monitoring. Telephone calls were also often suggested (48%).

Specific sub-groups for which policy recommendations had been developed included people living with human immunodeficiency virus (HIV), children, prison inmates and patients with diabetes (Table 6).

DISCUSSION

This survey of 23 high burden countries, with a cumulative annual incidence of 7.7 million TB cases, found that a high proportion of countries had policies promoting treatment adherence. Facility-based DOT and home visits remained common strategies for programmes to ensure that patients adhere to, and complete, treatment. Patient and staff education regarding treatment adherence was included in policies in all of the surveyed countries. However, financial or material support and psychological support for patients—if included in the national policies—were mainly recommended for specific sub-groups of patients. The study revealed that national policies promoting the use of digital technologies to support patient care had been adopted in a minority of countries, and their use has been primarily restricted to research or pilot projects.

A limitation of the study is that responses from seven high TB burden countries included in the survey design were not received. Nevertheless, the 23 participating countries include the more than three quarters of people affected by TB globally and cover all of the WHO regions.

For the purpose of the present assessment, we did not intend to assess the degree to which these policies have been implemented in high-burden countries. However, indirect evidence regarding the policy-practice gap has been obtained from the desk review, where lack of policy implementation has been highlighted. These data suggest that substantial gaps exist between WHO recommendations and stated policy in high-burden countries and subsequent implementation practices for TB care and support. Further research is required to evaluate this issue since the true level of implementation of current policies remains uncertain. Robust methods are required to ensure the continuous assessment of the implementation of interventions to support people with TB, and these can be incorporated into cascade of care

evaluations by NTPs.²³ Recent WHO guidance regarding the monitoring and evaluation of digital technologies to support patients serves as a model for how the evaluation of processes and clinical outcomes might be scaled-up at national levels.²⁴

The survey highlights a number of important policy implications. First, we identified the need for patient-centred care policies to include the management and provision of social support to TB patients affected by comorbidities (e.g., mental illness, drug or alcohol abuse). Vulnerable groups of TB patients facing catastrophic healthcare costs, as well as those affected by malnutrition and the incarcerated also require greater attention. Given the potential for poor clinical outcomes, not only should such populations be provided proper management of medical comorbidities,²⁴ but also interventions to overcome economic hardship. Stigma is a pervasive issue that affects the majority of people affected by TB; this needs to be addressed more comprehensively as part of patient care packages but data on such interventions are limited.²⁵

In some countries, responsibility for some aspects of patient support may reside with welfare ministries outside of the healthcare system under the domain of social protection, or be funded by international donors such as the Global Fund. It is essential to establish close collaboration between NTPs, public authorities located outside of the health sector and donors to ensure programmes are implemented optimally. The sustainability of support strategies is also an important priority in the light of the potential disruption to patient care caused by the termination of externally funded initiatives, and exit strategies should be carefully planned. A multi-disciplinary approach to patient support can be achieved through an operational social protection plan designed to remove institutional barriers that prevent access to timely diagnosis and proper treatment adherence. This approach can contribute to the mitigation of the social and economic burden of TB and may increase the likelihood of successful treatment outcomes.²⁶

Finally, further efforts to incorporate metrics for patient-centred care in routine programmatic reporting are essential to ensure that implementation of national and international guidelines can adequately be monitored and sustained. Additional research is required to identify optimal methods for monitoring and evaluation of patient care. This will enable NTPs to identify opportunities for quality improvement, and provide a robust evidence-based approach for the delivery of patient-centred care.

CONCLUSIONS

This survey shows that important progress has been made in high-burden countries in the development of policies to support TB patients to adhere to treatment with a patient-centred approach. However, most national policies focus upon certain key populations with a greater need of support, while missing other key populations at risk of poor outcomes, and fail to address the wider needs of all TB patients. Reorienting national policies to focus upon patients will require strong political commitment by policy-makers, patient advocates and clinicians. Patient-centred approaches must be central to national and international discussions regarding all aspects of patient care. Further efforts are needed to engage these countries in adopting policies to benefit all TB patients who are in need of social, economic

and other infrastructure support, including better integration of TB services with mental health and substance use services, and extended use of effective digital adherence support technologies.

Strengthening national policies for patient care and support will be essential if NTPs are to reduce the burden upon patients, optimise patient treatment outcomes, reduce disease relapse and ensure steady progress towards the goal of ending the TB epidemic.

Acknowledgements

The authors thank the National Professional Officers and members of National TB Programmes who completed and validated data collected for this survey in the 23 participating countries; and D Falzon (WHO/Global TB Programme) for his expert support during the development of the survey and his contribution to the discussions from the beginning.

References

1. Bauer M, Leavens A, Schwartzman K. A systematic review and meta-analysis of the impact of tuberculosis on health-related quality of life. *Qual Life Res* 2013; 22(8): 2213–2235. [PubMed: 23232952]
2. Subbaraman R, Nathavitharana RR, Satyanarayana S, et al. The tuberculosis cascade of care in India's public sector: a systematic review and meta-analysis. *PLoS Med* 2016; 13(10): e1002149. [PubMed: 27780217]
3. Naidoo P, Theron G, Rangaka MX, et al. The South African tuberculosis care cascade: estimated losses and methodological challenges. *J Infect Dis* 2017; 216 (Suppl 7): S702–S713. [PubMed: 29117342]
4. World Health Organization. Global tuberculosis report, 2018. WHO/CDS/TB/2018.20. Geneva, Switzerland: WHO, 2018.
5. World Health Organization. The Stop TB Strategy: building on and enhancing DOTS to meet the TB-related Millennium Development Goals Geneva, Switzerland: WHO, 2006.
6. World Health Organization. Guidelines for the treatment of drug-susceptible tuberculosis and patient care (2017 update). Geneva, Switzerland: WHO, 2017.
7. World Health Organization. Implementing the end TB strategy: the essentials. Geneva, Switzerland: WHO, 2016.
8. World Health Organization. Ethics guidance for the implementation of the TB strategy. Geneva, Switzerland: WHO, 2017.
9. Williams V Universal patient-centred care: can we achieve it? *Int J Tuberc Lung Dis* 2013; 17(10 Suppl 1): 1–2.
10. Ho J, Byrne A, Linh NN, Jaramillo E, Fox GJ. Decentralized care for multidrug-resistant tuberculosis: a systematic review and meta-analysis. *Bull World Health Organ* 2017; 95(8): 584–593. [PubMed: 28804170]
11. Graham SM The management of infection with *Mycobacterium tuberculosis* in young children post-2015: an opportunity to close the policy-practice gap. *Expert Rev Respir Med* 2017; 11(1): 41–49. [PubMed: 27910720]
12. Odone A, Roberts B, Dara M, van den Boom M, Kluge H, McKee M. People- and patient-centred care for tuberculosis: models of care for tuberculosis. *Int J Tuberc Lung Dis* 2018; 22(2): 133–138. [PubMed: 29506609]
13. de Colombani P, Hollo V, Jansen N, Kremer K, Labelle S. Review of the national tuberculosis programme in Romania. Copenhagen, Denmark: WHO Regional Office for Europe, 2015.
14. World Health Organization. Review of the National Tuberculosis Programme in Ukraine. Copenhagen Denmark: Regional Office for Europe, WHO, 2010 http://www.euro.who.int/__data/assets/pdf_file/0007/142369/e95006.pdf. Accessed November 2019.

15. de Vries SG, Cremers AL, Heuvelings CC, et al. Barriers and facilitators to the uptake of tuberculosis diagnostic and treatment services by hard-to-reach populations in countries of low and medium tuberculosis incidence: a systematic review of qualitative literature. *Lancet Infect Dis* 2017; 17(5): e128–e143. [PubMed: 28291721]
16. World Health Organization Global Tuberculosis Program. Use of high burden country lists for TB by WHO in the post-2015 era. WHO/HTM/TB/2015.29. Geneva, Switzerland: WHO, 2015 https://www.who.int/tb/publications/global_report/high_tb_burden-countrylists2016-2020.pdf Accessed November 2019.
17. World Health Organization. Global tuberculosis report, 2015. WHO/HTM/TB/2015.22. Geneva, Switzerland: WHO, 2015.
18. World Health Organization. WHO Global TB Symposium: multisectoral action to accelerate progress towards ending TB. Geneva, Switzerland: WHO, 2017 https://www.who.int/tb/features_archive/WHO_Global_TB_Symposium/en/ Accessed November 2019.
19. World Health Organization. Digital health for the End TB Strategy: an agenda for action. WHO/HTM/TB/2015.21. Geneva, Switzerland: WHO, 2015.
20. World Health Organization. WHO Research Ethics Review Committee, Rules of Procedure. Geneva, Switzerland: WHO, 2012.
21. World Bank. World Bank Country Classification. Washington DC, USA: World Bank, 2018 <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups> Accessed November 2019.
22. Subbaraman R, de Mondesert L, Musiimenta A, et al. Digital adherence technologies for the management of tuberculosis therapy: mapping the landscape and research priorities. *BMJ Glob Health* 2018; 3(5): e001018.
23. Subbaraman R, Nathavitharana RR, Mayer KH, et al. Constructing care cascades for active tuberculosis: a strategy for program monitoring and identifying gaps in quality of care. *PLoS Med* 2019; 16(2): e1002754. [PubMed: 30811385]
24. World Health Organization. Monitoring and evaluating digital health interventions: a practical guide to conducting research and assessment. Geneva, Switzerland: WHO, 2016 <http://apps.who.int/iris/bitstream/10665/252183/1/9789241511766-eng.pdf> Accessed November 2019.
25. Sommerland N, Wouters E, Mitchell EMH, et al. Evidence-based interventions to reduce tuberculosis stigma: a systematic review. *Int J Tuberc Lung Dis* 2017; 21(11): 81–86. [PubMed: 29025489]
26. Andrade KVF, Nery JS, Souza RA, Pereira SM. Effects of social protection on tuberculosis treatment outcomes in low or middle-income and in high-burden countries: systematic review and meta-analysis. *Cad Saude Publica* 2018; 34(1): e00153116. [PubMed: 29412320]

Table 1

Summary of national tuberculosis programmes participating in the survey

Characteristics	Countries	
	<i>n</i>	% [*]
Income group [†]		
Low-income	7	30
Lower-middle-income	12	52
Upper-middle-income	4	17
High-income	0	0
WHO region (<i>n</i> = 23)		
African Region	10	43
American Region	1	4
European Region	1	4
Southeast Asian Region	6	26
Western Pacific Region	5	22

* Response rate was 23/30 (77%) WHO high-burden countries.

[†]2018 World Bank classification.²¹

WHO = World Health Organization.

Table 2

Health education and social support intervention policies in high TB burden countries

Indicator	Countries (<i>n</i> = 23)	
	<i>n</i>	%
Health education for patients *	23	100
Health worker training about patient education †	23	100
Financial support for patients		
For some patients	15	65
For all patients	4	17
Not recommended	4	17
Transportation reimbursement		
For some patients ‡	17	74
For all patients	2	9
Not recommended	4	17
Food assistance §		
For some patients	16	70
For all patients	4	17
Not recommended	3	13
Psychological support ¶		
For some patients	8	35
For all patients	12	52
Not recommended	3	13

* Includes printed materials (20/23, 87%), online materials (8/23, 35%), counselling about TB (23/23, 100%), counselling about adverse effects (22/23, 96%), peer education about TB (15/23, 65%), education on treatment adherence (21/23, 91%), other educational material (6/23, 26%).

† Includes providing patient education about TB (23/23, 100%), support for treatment adherence (22/23, 96%), assessing the needs of patients for nutritional support (14/23, 61%), assessing other patient needs (10/23, 43%), assessing the needs of patients for financial support (8/23, 35%) and other training (6/23, 26%).

‡ Transportation reimbursement for RR/MDR-TB patients only (13/17, 76%), for TB-HIV and RR/MDR-TB patients (1/17, 6%), for patients defined as poor according to national legislations (1/17, 6%), and other (2/16, 12%).

§ Includes free meals (6/23, 26%), food baskets (8/23, 35%), food supplements (7/23, 30%), food vouchers (2/23, 9%), and financial support or reimbursement for food (9/23, 39%).

¶ Includes formal counselling services (18/21, 86%), peer group support (13/21, 62%), mental health services (11/21, 52%), and combined options (14/23, 61%).

TB = tuberculosis; RR-TB = rifampicin-resistant TB; MDR-TB=multidrug-resistant TB.

Table 3
Treatment observation policies throughout treatment in high TB burden countries

Indicator	Countries (n = 23)	
	n	% [*]
Patients assessed regarding their adherence support needs		
All patients	19	83
MDR-TB patients only	2	9
Not specified	2	9
Methods of assessing the adherence support needs of patients		
Informal assessment by treating health worker	20	87
Home visits	14	61
Using a standardised questionnaire	3	13
DOT form for healthcare workers	2	9
Patient representatives had a role in adherence support	21	91
DOT recommended at any time in treatment		
All patients with TB	22	96
Some patients with TB	1	4
Person observing therapy		
Health worker	22	96
Family member	19	83
Other [*]	13	59
Routine documentation of adherence support is required	17	74
People responsible for identifying problems with treatment adherence		
Health care workers	22	96
Household member	19	83
Community member/volunteers	14	61
Methods for following up patients who do not complete treatment		
Written communication	1	4
Household visit	23	100
Electronic communication	18	78

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

* Included volunteers (5 countries), DOT watcher support group (1 country), community members (4 countries), peer supporters (2 countries), treatment partners (1 country), workplace supporters (1 country) and community health workers (2 countries).

TB = tuberculosis; MDR-TB = multidrug-resistant TB; DOT = directly observed treatment.

Table 4
Treatment administration policies according to treatment phase and drug resistance in high TB burden countries

	Countries with policies for patients with DS-TB		Countries with policies for patients with RR/MDR-TB	
	<i>n</i>	%	<i>n</i>	%
Intensive phase (<i>n</i> = 23)				
Type of delivery				
Delivered as an admitted patient in a health facility	5	22	12	52
Delivered as an outpatient in a health facility [*]	20	87	15	65
Delivered in the community	17	74	11	48
Facility-based delivery (only)	6	26	12	52
Community-based delivery (only)	2	9	1	4
Both interventions recommended	15	65	10	43
Recommended method of observation in the intensive phase (<i>n</i> = 23)				
Self-administration	7	30	4	17
In-person direct observation [†]	22	96	23	100
Video observation	2	9	1	4
Person primarily responsible for observation of therapy (<i>n</i> = 23)				
Health worker	21	91	23	100
Family member	21	91	12	52
Others	15	65	10	43
Number of required observations per month, where observation occurs				
Health worker, observations/month, median (range)	30 (1–30)		30 (12–30)	
	(<i>n</i> = 21 countries)		(<i>n</i> = 20 countries)	
Family member, observations/month, median (range)	30 (0–30)		30 (0–30)	
	(<i>n</i> = 19 countries)		(<i>n</i> = 16 countries)	
Others, observations/month, median (range)	30 (0–30)		30 (0–30)	
	(<i>n</i> = 17 countries)		(<i>n</i> = 15 countries)	
Continuation phase (<i>n</i> = 23)				
Type of delivery				
Delivered as an admitted patient in a health facility	3	13	6	26
Delivered as an outpatient in a health facility [‡]	17	74	18	78

	Countries with policies for patients with DS-TB		Countries with policies for patients with RR/MDR-TB	
	<i>n</i>	%	<i>n</i>	%
Delivered in the community	18	78	14	61
Facility-based delivery (only)	5	22	9	39
Community-based delivery (only)	6	26	4	17
Both interventions recommended	12	52	10	43
Recommended method of observation in the intensive phase (<i>n</i> = 23)				
Self-administration	8	35	5	22
In-person direct observation [§]	21	91	23	100
Video observation	3	13	3	13
Person primarily responsible for observation of therapy (<i>n</i> = 23)				
Health worker	19	83	22	96
Family member	21	91	16	70
Others	17	74	12	52
Number of required observations per month				
Health worker, observations/month, median (range)	30 (1–30)		30 (1–30)	
	(<i>n</i> = 17 countries)		(<i>n</i> = 20 countries)	
Family member, observations/month, median (range)	30 (0–30)		30 (0–30)	
	(<i>n</i> = 19 countries)		(<i>n</i> = 14 countries)	
Others, observations/month, median (range)	30 (0–30)		30 (0–60)	
	(<i>n</i> = 13 countries)		(<i>n</i> = 9 countries)	

* Includes observation by community members, health workers or family members; 20/23 countries recommended DOT *and* facility-based (inpatient or outpatient) delivery of treatment during the intensive phase.

[†] Others responsible for DOT during the intensive phase included volunteers and community members, village health support groups, peers and civil society organizations.

[‡] Includes observation by community members, health workers or family members; 16/23 countries recommended DOT *and* facility-based (inpatient or outpatient) delivery of treatment during the continuation phase.

[§] Others responsible for observation of treatment during the continuation phase included volunteers and community members, former patients, peers and civil society organisations.

TB = tuberculosis; DS-TB = drug-susceptible TB; RR-TB = rifampicin-resistant TB; MDR-TB = multidrug-resistant TB; DOT = directly observed therapy.

Table 5

Current digital adherence support policies for treatment of TB in high TB burden countries

Indicator	Countries (<i>n</i> = 23)	
	<i>N</i>	%
Methods of adherence support that have ever been used in the surveyed countries *		
VOT	5	22
MERMs	4	17
SMS	4	17
Other	4	17
99-DOTS	4	17
None	13	57
Digital technologies currently included in National TB Programme policies		
Pill count	16	70
VOT	3	13
MERMs	1	4
99-DOTS	4	17
MEM boxes	1	4
Two-way SMS	2	9
One-way SMS	2	9
Voice phone calls	11	48
Household visits	20	87

* Refers to use of these technologies at any time, either in small-scale pilot studies and/or larger national scale-up. Their adoption may not be reflected in national policies yet.

TB = tuberculosis; VOT = video observed treatment; MERM = medication event reminder monitor; SMS = short messaging service.

Table 6

Populations addressed by current patient support policies in high tuberculosis burden countries

Indicator	Countries (<i>n</i> = 23)	
	<i>n</i>	%
Policies exist for specific patient sub-groups		
Patients affected by HIV	16	70
Children	15	65
Prison inmates	11	48
Patients with diabetes mellitus	9	39
Pregnant women	7	30
Patients with alcohol use-related disorder	6	26
Patients affected by mental illness	4	17
Smokers	4	17
Patients who suffer catastrophic economic loss	4	17
Homeless	4	17
Patients who use injection drugs	4	17
None	5	22
Formal collaboration of NTPs with other health programmes for integrated care		
HIV care	22	96
Prison health services	21	91
Paediatric services	18	78
Army health services	14	61
Antenatal/obstetric clinics	10	43
Other *	6	26
Mental illness services	4	17
Intravenous substance use support programmes	4	17
Alcohol treatment programmes	2	9
No linkages	0	0

* Included collaboration with industrial workers, health services for person with diabetes, health services for persons aged >65 years, Non-Communicable Disease Departments, tobacco control programmes, integrated disease surveillance programmes, state-owned enterprise hospitals, faith-based organisation hospitals, primary health care services (integrated chronic disease management), and food and drug authorities.

HIV = human immunodeficiency virus; NTP = National Tuberculosis Programme.