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Mental health of people with neglected tropical diseases

Towards a person-centred approach

World Health Organization

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Recognizing the mental health needs of people with neglected tropical diseases

Neglected tropical diseases (NTDs) frequently cause distress in affected people and their carers, because of both their direct impact and stigma and discrimination. For some people, distress can lead to more severe mental, neurological and social problems; distress may even lead to substance use as a means of coping or thoughts of self-harm or suicide. Effective ways of supporting affected people and their carers and addressing community stigma and discrimination should be appropriately considered in the health sector, as well as informal systems of care.

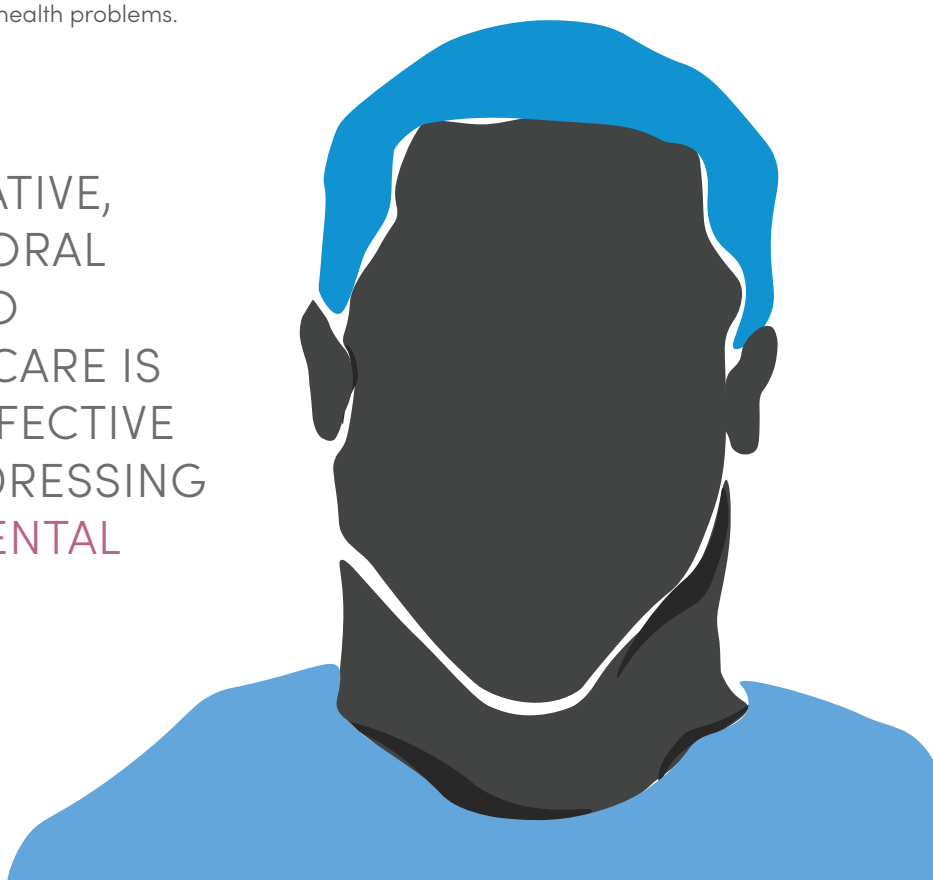
The main aims of this document are to call attention to the **mental health** needs of people affected by NTDs and to call for the use of psychosocial, pharmacological and educational interventions to address those needs. The wider aspiration is to raise awareness about the double burden of mental health conditions and NTDs and to advocate for a more person-centred approach. The document also highlights the importance of collaborative action and an integrated approach by policy-makers, funders, programme managers and health service providers to strengthen the profile of and investment in mental health in NTD programming.

The document is intended for national policy-makers and programme managers, relevant programme leads and staff in participating United Nations agencies, civil society and nongovernmental organizations working on NTDs, agencies that fund work on NTDs and mental health, health service providers, the academic and research community and people with these conditions and their carers.

KEY MESSAGES

- People with NTDs are at high risk for mental health conditions, and people with mental conditions are at higher risk of an NTD.
- Mental health and psychosocial well-being should be recognized as important in NTD work in view of the high levels of comorbidity and the impact on individual and community well-being.
- Mental health must be included in comprehensive, person-centred services and universal health coverage.
- Mental ill health strongly influences help-seeking behaviour and may affect physical outcomes in ways that directly compromise achievement of broader NTD goals.
- People with NTDs often experience severe stigma and discrimination, which may also negatively affect their mental health and their help-seeking behaviour.
- Practical guidelines are available for feasible, evidence-based interventions, which could be incorporated into NTD work.
- Mental health programmes and specialist services should work with and support NTD programmes in training, supervision and referral for people with severe or urgent mental health problems.

A COLLABORATIVE, CROSS-SECTORAL APPROACH TO INTEGRATED CARE IS THE MOST EFFECTIVE ONE FOR ADDRESSING NTDS AND MENTAL HEALTH.



Understanding the problem: comorbidity of neglected tropical diseases and mental health conditions

NTDs are communicable and noncommunicable, often vector-borne, diseases that occur in 150 tropical and subtropical countries. WHO currently recognizes 20 conditions or groups of conditions as NTDs (**Annex 1**). These diseases affect more than one billion people globally and cost developing economies billions of dollars every year. Populations living in poverty, without adequate access to water, sanitation and health services and those in close contact with infectious vectors, domestic animals and livestock are the worst affected.

Mental health conditions (i.e., mental, neurological and substance use disorders, suicide risk and associated psychosocial, cognitive and intellectual disabilities) contribute substantially to the global burden of disease. Currently, an estimated 1.1 billion people are affected worldwide, and the burden is increasing continuously. Mental health and mental health conditions exist on a continuum that ranges from mental well-being to mild, temporary distress to chronic, progressive, severely disabling conditions.

- *Psychological distress* comprises the worry, fears, sadness and insecurity often experienced by people with an NTD and the associated stigma. It can result in reduced social functioning and self-isolation.
- *Mental health conditions* are characterized by changes in thoughts, perceptions, emotions or behaviour that affect relationships and the ability to perform expected social roles and can cause significant functional impairment. Some examples include depression, anxiety, harmful use of alcohol and other psychoactive substances.
- *Psychosocial disability* refers to the interaction between impairment caused by mental health conditions and barriers to participation in society experienced by many people with these conditions.

NTDs are major drivers of mental ill-health in affected people, their families and their caregivers. Because of chronic pain, discomfort, reduced functioning, and stigma, people with NTDs are at high risk for mental health conditions, and they often cite mental health as a priority. This document addresses the forms of mental ill-health most common in

people with NTDs: psychological distress, social isolation, depression, anxiety, harmful use of alcohol and other psychoactive substances and suicidal ideation. For instance, in people with lymphatic filariasis, depression was estimated to almost double the total burden of disease (measured in disability-adjusted life years), from 2.78 to 5.09 million) (*1*). Many people with leprosy experience anxiety, depression, psychological distress, isolation and suicidal ideation. Cutaneous leishmaniasis, onchocerciasis and snakebite envenoming are often linked to anxiety, depression and psychological distress.

ONE IN TWO PEOPLE WITH LEPROSY OR LYMPHATIC FILARIASIS EXPERIENCES DEPRESSION AND/OR ANXIETY (*2*)

The strong links between NTDs and mental health conditions often lead to chronic comorbidity, which adds additional, often unrecognized disability. Higher rates of depression, anxiety, self-harm or suicidal thoughts are found among people with chronic NTDs than in the general population, and they are even higher than in people with other chronic conditions. Carers of people with NTDs are also at increased risk of mental health conditions.

Mental health conditions and NTDs are highly interdependent and often occur together. People with NTDs are at high risk for mental health conditions, and people with mental conditions are also at higher risk for an NTD (*3*).

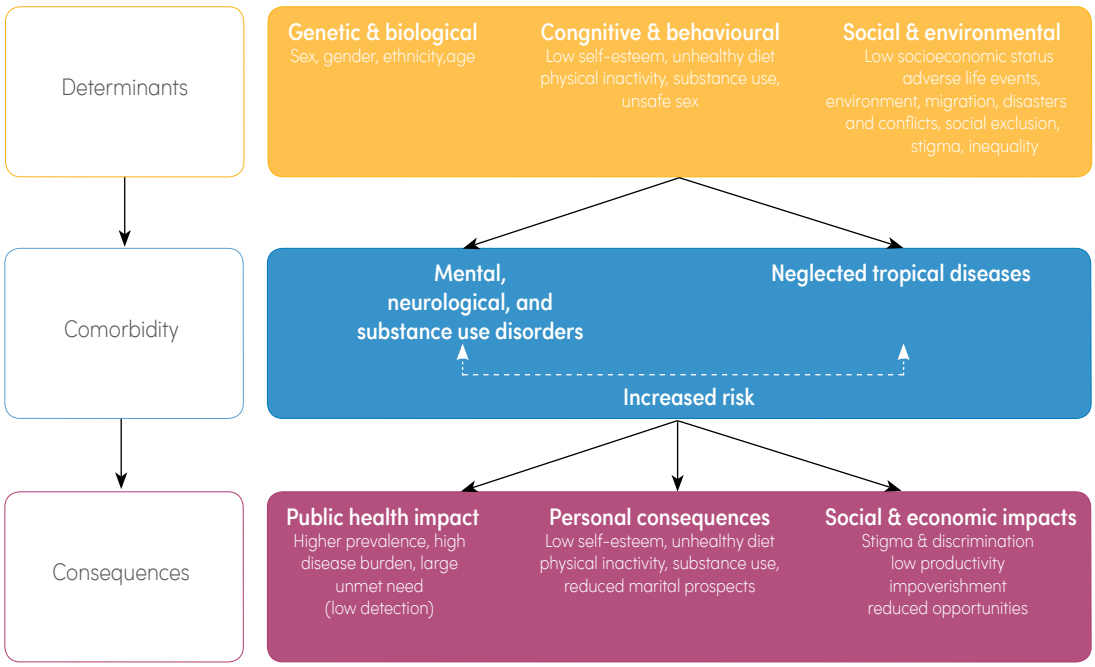
Pathological links between NTDs and brain health have also been found, leading to neurological consequences. Neurological complications of NTDs can cause significant morbidity and mortality (*4*). For example: human African trypanosomiasis causes sleeping sickness and is linked to impaired intellectual development and learning; and, neurocysticercosis (caused by *Taenia solium*) is associated with epilepsy. Neurological complications may be due to direct infection of neurons (e.g. rabies), direct infection of brain tissue with provocation of local symptoms due to mass effect and local inflammatory reaction (e.g. human African trypanosomiasis, neurocysticercosis, leishmaniasis, dracunculiasis, echinococcosis, food-borne trematodiasis, neuroschistosomiasis), a systemic inflammatory response to the pathogen at the time of infection or of treatment (e.g. filariasis, soil-transmitted helminthiasis), an increased risk of cerebrovascular disease (e.g. Chagas disease) or immune-mediated nerve damage (e.g. leprosy). Some NTDS cause neurological complications by several mechanisms.

In addition to comorbidity with mental, neurological and substance use disorders, people with NTDs are at high risk for other severe physical health problems and disability. The combined health, social and economic impacts of NTDs and mental health conditions are unacceptable, and can be substantially reduced in simple ways. Cross-sectoral and integrated approaches are the most appropriate, evidence-based, effective way of preventing and managing mental health conditions in people with NTDs.

COMMON DETERMINANTS

NTDs and mental health conditions have many common determinants and risk factors (**Fig. 1**), which combine to increase negative health consequences. Thus, the poorest, most marginalized people are at highest risk, are more likely to be affected by both conditions and are also the least likely to have access to care. NTDs are so closely associated with poverty that reductions in their prevalence are recognized as markers of progress in economic development in the Sustainable Development Goals (SDGs).

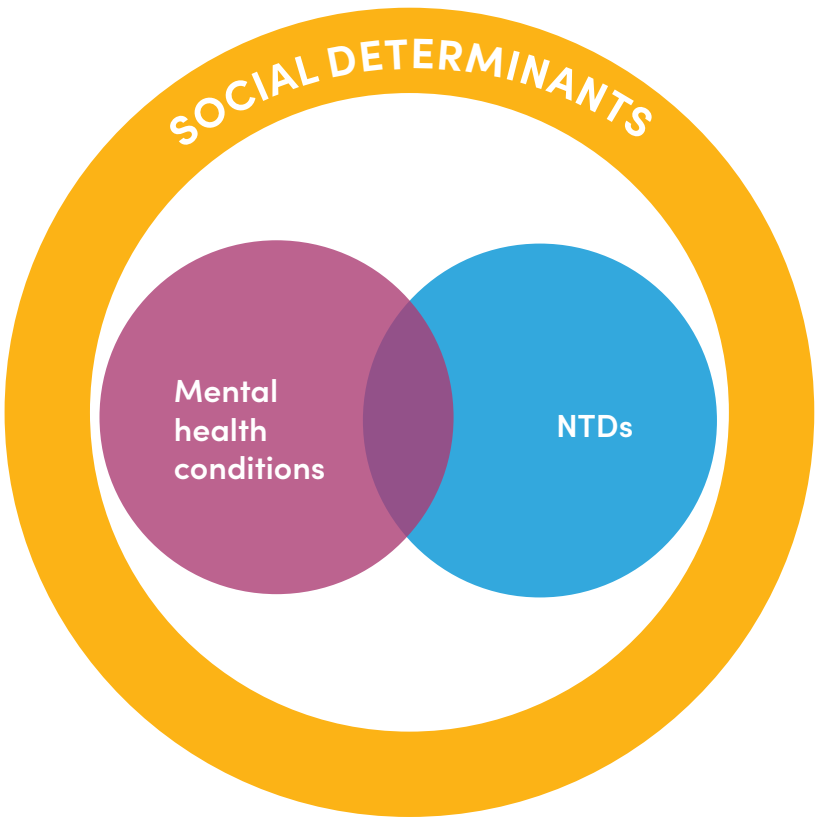
FIG. 1.
Shared determinants, comorbid conditions and consequences of mental health conditions and NTDs



SOCIAL IMPACT

The combination of NTDs and mental health conditions causes suffering for millions of people and disproportionately affects the poorest people in low- and middle-income countries. People who are already facing multiple social adversities or the most severe conditions tend to be most affected (**Fig. 2**). Additionally, the stigma surrounding NTDs and mental health conditions can lead to discrimination and social exclusion, which compound the suffering of individuals and their families. Long-term disability, poverty and unemployment form a vicious circle and reinforce suffering and the economic impact on affected people, their families, communities and health systems.

FIG. 2.
NTDs and mental health conditions: comorbidity and social determinants



Spotlight on stigma, discrimination and social exclusion

People with NTDs often face stigma, discrimination and social exclusion, particularly when they show significant physical disfigurement, because of negative public beliefs about some NTDs. As a result, people with these diseases are less likely to seek help, access treatment or adhere to it. This cycle again negatively affects their disability and recovery, as well as overall work to eliminate and eradicate NTDs.

UP TO 40 MILLION PEOPLE SUFFER FROM THE LONG-TERM, STIGMATIZING RESIDUAL SCARRING ASSOCIATED WITH CUTANEOUS LEISHMANIASIS (*5*).

Stigma is a negative stereotype or perception that can lead someone to unfairly judge another person and falsely attribute negative characteristics to them. Stigma can result in prejudice (negative attitudes) and discrimination (negative behaviour) towards people with NTDs and/or mental health conditions and their families. Discrimination occurs in communities at a personal level, such as fewer marriage prospects, job loss, fewer income opportunities or direct abuse. It also occurs at the structural or institutional level, in which policies of private and governmental institutions intentionally or unintentionally restrict the opportunities of people with NTDs and/or mental health conditions, including lack of resource allocation, reduced access to health and social services, lack of educational opportunities and exclusion from income-generation and employment opportunities.

Internalized stigma are the negative beliefs that affected people have about themselves, such as feeling shame, guilt, worthlessness or blamefulness, which result from negative attitudes and stereotypes in the community.

Anticipated stigma are the expectations of people with NTDs and/or mental health conditions of future experience of prejudice and discrimination, which limit their actions accordingly (such as avoidance of social relationships, reduced help-seeking). They are linked to internalized stigma.

Populations at increased risk for stigma and discrimination are vulnerable groups such as people with several health problems, women, children and other marginalized groups. The risk factors for stigma are age, low socio-economic status, low educational level, disclosure of stigmatizing status, substance use and unemployment. Migrants and people with NTDs and/or mental health conditions living in extreme poverty or in areas of conflict are also at increased risk of stigma and discrimination.

ALBERTH

NTD programmes that incorporate effective elements to reduce stigma and discrimination not only improve mental health but reduce exclusion and promote social participation, for example by providing livelihood and economic benefits. Greater inclusion, better mental health and social status are likely to improve the help-seeking behaviour and physical health of affected individuals and communities, contributing to population health goals, including elimination of NTDs.

ECONOMIC IMPACT

The economic impact of NTDs and mental health conditions is large. It includes direct costs such as health care, and indirect costs such as income loss and reduced productivity.

THE DIRECT AND INDIRECT GLOBAL ECONOMIC COSTS OF MENTAL DISORDERS ARE ESTIMATED AT US$ 2.5 TRILLION (*6*).

The global direct and indirect economic costs of mental disorders are estimated at US$ 2.5 trillion and are expected to exceed US$ 6 trillion by 2030 (*7*). The anticipated global economic loss in output for mental disorders by 2030 is US$16.3 trillion. The global cost of NTDs is also very high, with the cost in terms of lost productivity of trachoma alone estimated at US$ 2.9–8.0 billion (*8*). The impact of both conditions on the productivity on individuals, households and nations is substantial, such as the unpaid work of often female carers, who take over the main burden of care.

THE ANNUAL ECONOMIC COST OF NTDS ARE VERY HIGH. FOR EXAMPLE, THE ANNUAL ECONOMIC COST OF TRACHOMA IN TERMS OF LOST PRODUCTIVITY IS ESTIMATED AT US$ 2.9–8.0 BILLION (*8*).

Why countries should act

An integrated approach to managing NTDs and mental health conditions, including mental, neurological and substance use disorders, can increase the efficiency and effectiveness of overall care. Integration of mental health services into all phases of NTD prevention, control, elimination and eradication, with appropriate measures against stigma and discrimination, is feasible and effective.

The global community has recognized mental health as a key issue in NTD work, and several core agreements and frameworks have been adopted, with clear goals to reduce the burden of NTDs and mental health conditions.

- **United Nations Sustainable Development Goals (SDGs)**. A call to reduce the burden of NTDs and mental health conditions by 2030, with a clear statement of the relevance of health (including mental health and well-being) for the economic and social development of a nation or community.
- **Universal Health Coverage (UHC)**. UHC aims to provide all people with access to high-quality, effective health services at costs that do not create financial hardships for people who use those services, no matter where they live. It is a central focus of the UN SDGs and is one of the three main priorities in WHO's 13th General Programme of Work (2019–2023).
- **WHO Roadmap on Neglected Tropical Diseases 2021–2030**. Defines global goals, regional targets and strategies for controlling, eliminating or eradicating 20 NTDs by 2030, with specific targets for each NTD.
- **London Declaration on Neglected Tropical Disease**. A call to endemic countries and funders for collaborative action to control or eliminate at least 10 NTDs by 2020, including resources to remove poverty and exposure, the primary risk factors for NTDs.
- **WHO Mental Health Action Plan 2013–2030**. A call for collective action to extend mental health services and to reduce stigma and discrimination, with clear targets and indicators to strengthen mental health leadership, care, prevention, information systems and research.
- **WHO Mental Health Gap Action Programme (mhGAP)**. For scaling up services for mental health conditions, particularly in low- and middle-income countries, with an evidence-based intervention guide and tools for assessment and integrated management of mental, neurological and substance use disorders in nonspecialized primary health care.
- **WHO QualityRights initiative**. To improve the quality and human rights conditions in mental health and social care facilities and empower organizations to advocate for the rights of people with mental and psychosocial disabilities, with practical guidance on the standards to be met in all mental health services.

- **The Convention on the Rights of Persons with Disabilities**. A United Nations human rights convention to protect the rights, freedom and dignity of people with disabilities, including non-discrimination, participation, inclusion, autonomy, equality, accessibility and equal opportunities. Calls on States to prohibit all discrimination on the basis of disability and guarantee equal, effective legal protection of people with disabilities from discrimination on all grounds.
- **Global strategy to reduce harmful use of alcohol**. International consensus that reducing the harmful use of alcohol and its associated health and social burden is a public health priority. Provides guidance for action at all levels, including 10 recommended target areas for national policy and interventions to reduce the harmful use of alcohol and the main components of global action to support and complement national activities.
- **United Nations General Assembly resolution to effectively address and counter the world drug problem**. Recognizes that the world drug problem is a common, shared responsibility that should be addressed through effective international cooperation in an integrated, multidisciplinary, mutually reinforcing, balanced, scientific evidence-based, comprehensive approach.

Mental health services are cost–effective

Increased coverage of effective mental health treatment significantly improves population health, can be achieved at a very reasonable cost, and is proven to be cost-effective. The expected global returns on investment in scaling-up effective treatment for common mental disorders such as depression and anxiety are extensive (*9*). It has been estimated that scaled-up treatment can lead to 43 million extra years of healthy life, an economic net present value of US$ 310 billion and several hundred US$ billion in productivity gains. The resulting benefit:cost ratio would be 3.3–5.7:1, including health returns.

COST–EFFECTIVENESS OF AN ESSENTIAL MENTAL HEALTH INTERVENTION PACKAGE IN NIGERIA (*11*): A PACKAGE OF SELECTED INTERVENTIONS RESULTS IN 1 EXTRA YEAR OF HEALTHY LIFE AT A COST OF < US$ 320, EQUAL TO THE AVERAGE PER CAPITA INCOME IN NIGERIA.

In low- and middle-income countries, scale-up of mental health care is estimated to cost less than US$ 1.50 per capita and depending on the context and content of the intervention, the cost–effectiveness would be US$ 100–2000 per healthy life year gained (*10*). Moreover, in low- and middle-income countries, for every US$ 1 million invested in interventions to reduce mental disorders, 350–700 healthy years of life are gained (*5,9*). The additional value of economic benefits of mental health care may exceed the investment costs for mental health system development.

Additionally, integrating mental health interventions in primary care is cost-effective and is recommended for lower- to middle-income countries (*12*). Use of lay health care workers (task-shifting) for common mental disorders was both cost–effective and cost-saving in India. The inclusion of family psychoeducation (psychosocial support) increased adherence to and the outcomes of medication and was the most cost-effective option in a study in Thailand (*13*).

Community mental health services, such as psychosocial support, are also cost–effective and can contribute to greater equality of access to care and better health and social outcomes. Community care can save treatment costs and is not inherently more costly than care in institutions.

The annual cost of scaling up mental health service coverage and expenditure in basic, non-specialist health care district health centres is similar to that of mass drug administration (MDA) for NTDs (US$ 0.2–0.56 per capita for an evidence-based package of care) (*9*).

A COLLABORATIVE, CROSS-SECTORAL APPROACH TO INTEGRATED CARE IS THE MOST EFFECTIVE ONE FOR ADDRESSING NTDS AND MENTAL HEALTH.

Integrated services are effective

Integrated services are effective and provide more equitable, cost–effective access to care. A holistic, integrated approach to care for people with NTDs includes NTD care, mental health and psychosocial support services, additional physical health or disability care, improvement of quality of life and addressing stigma and social determinants. Integration should be sought at all levels of the health system: primary care, community care, general hospitals and, for a small minority, long-stay facilities (details vary by country). Integrating mental health directly into NTD treatment packages also can increase the efficiency and cost-effectiveness of the packages due to better treatment adherence and improved health and well-being.

Improving the quality of life of people with cutaneous leishmaniasis with psychotherapy in the Islamic Republic of Iran (*14*)

Cutaneous leishmaniasis (CL) is a parasitic disease that leaves affected people with skin lesions and permanent scars, which are often the cause of serious stigma. In a study in the Islamic Republic of Iran, the quality of life of 40 women treated with both medication for CL and group psychotherapy was significantly higher than that of 40 women who received medication for CL only. A mental health consultation was thus recommended for people with this disease.

The experience of Muhammad Jidda (*15*)

Muhammad Jidda was born in 1959 in Borno State, northern Nigeria, to a family of nomadic cattle-keepers. He became superintendent of customs. In 1990, he consulted a doctor in Port Harcourt for swelling of his buttocks. After a misdiagnosis, visiting international doctors working with Doctors without Borders (MSF) diagnosed lymphatic filariasis; however, he was told that no effective treatment was available. His leg continued to swell, in a process commonly called "elephantiasis". Friends and family thought that he was cursed, and he saw traditional healers (babalao) and religious healers at great expense but without benefit. He then travelled long, costly distances to specialist hospitals in Abuja for repeated skin grafts to reduce the swelling. The situation made him feel hopeless and depressed, with suicidal thoughts. He withdrew from people, as they ran away from him, fearing infection. Four of his wives left him because of his disability. His wife is now supportive, but he did not consider seeking mental health care, as he feared being labelled as "mad", which he felt would be even worse than his physical disability. He kept working despite his disability but lost his job and, with it, a sustainable family income. The cost of his treatment exceeds his small pension, and he now relies on friends and family. Mr Jidda told the researchers that emotional support should be accessible for affected individuals but must be offered in a non-stigmatizing way and not labelled as "psychiatry" or "mental illness", which would make people reluctant to use it.

Collaborative action: a model for integrated care of neglected tropical diseases and mental health

Addressing the double burden of NTDs and mental health conditions requires cross-sectoral collaboration and a coordinated, integrated approach within the health sector. Mental health is an important element of comprehensive, person-centred services and is aligned with universal health coverage. An integrated approach that covers all the physical and mental health needs of a person is a feasible, efficient means of providing care for people with NTDs and will:

- protect present and future generations from the double burden of infection and physically and mentally disabling diseases,
- enable millions of people to continue or return to productive lives and contribute to economic growth,
- contribute to a long-term reduction in poverty and to the economic growth of countries and
- strengthen the capacity of health care facilities to manage chronic disease and disability.

The governments of endemic countries, health service planners, the international community, donors and partners should coordinate cross-sectoral collaboration and provide the necessary resources to reduce and control the primary risk factors for NTDs and mental health conditions. Countries should strengthen their existing mental health services and establish additional services in areas where they are lacking, at all levels of the health system (community, primary and specialist care), to ensure access to both psychosocial and pharmacological interventions. National NTD and mental health programmes and services should collaborate in integrating services, based on a solid policy framework to ensure that national plans and global programmes are aligned with good practice and include mental health, neurological and substance use services, anti-stigma interventions and social support.

In addition to programmes in health care facilities, such as primary care, community health programmes should be strengthened to address the needs of people living with NTDs and mental health conditions. Referral systems within communities should be established for more severe mental health conditions, and mental health and community-based inclusive development programmes should be part of NTD programmes.

Ten principles for successful integration (Adapted from reference *16*)

The way in which mental health and NTD programmes are integrated depends on country capacity, but usually requires activities at various levels to combat stigma and address the needs of people with chronic, comorbid or multiple conditions.

Policy. Government policy and plans should strengthen mental health services and integration between mental health and NTD services or incorporate mental health into NTD programmes.

Engagement. All stakeholders should be continuously engaged in cross-sectoral collaboration and integration of services as a process, not an event.

Collaboration. Cross-sectoral collaboration with government non-health sectors, nongovernmental organizations, village and community health workers, people with NTDs and volunteers is essential.

Resources. Financial and human resources must be allocated for the mental health of people with NTDs, mental health programmes, NTD programmes and integrated initiatives to reduce stigma.

Coordination. Activities must be coordinated among levels and between NTD and mental health programmes.

Interventions to reduce stigma. Social contact and education are required to change stigmatizing behaviour and attitudes, supported by advocacy or protest, particularly by people who have experienced it and their carers.

Training and supervision. Staff and managers must be adequately trained and supported to address mental health needs (such as psychological distress, anxiety or substance use) in people with NTDs.

Roles. The tasks of staff who lead and work on such programmes must be clearly defined and feasible; work in multidisciplinary teams is desirable.

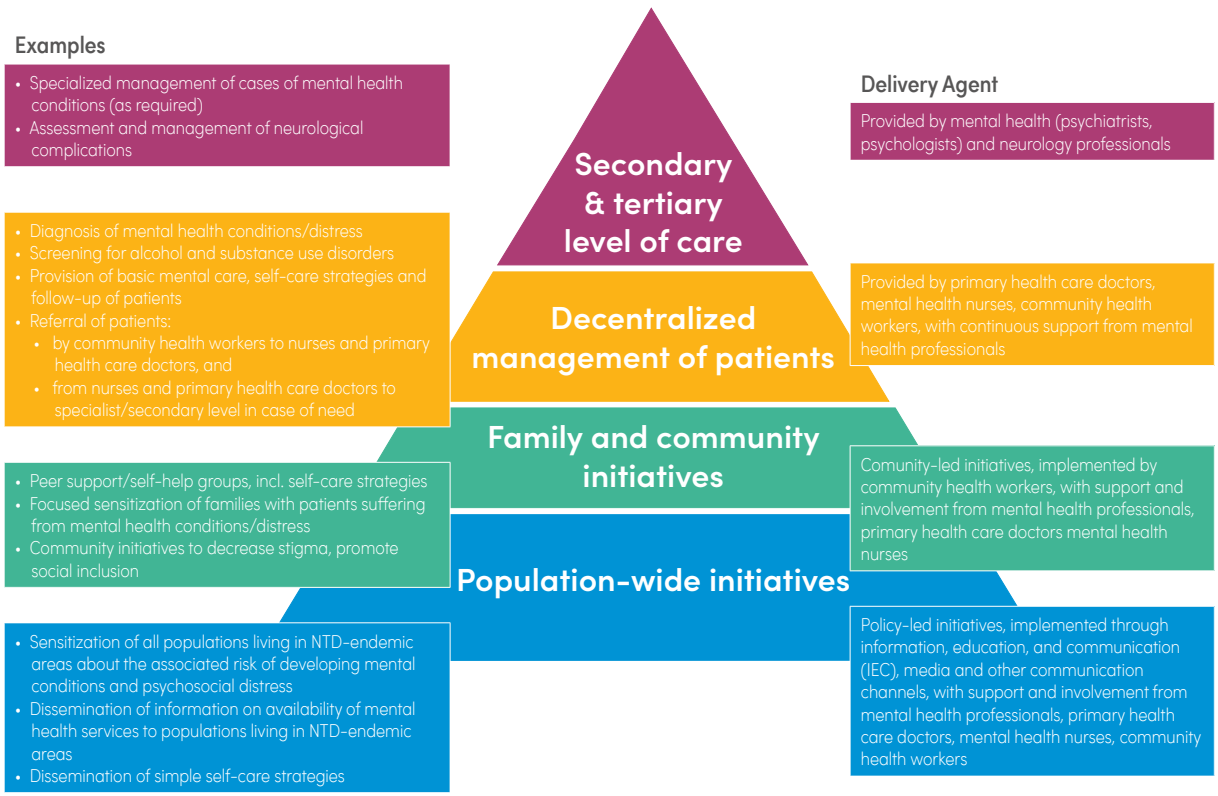
Support. Mental health and neurology specialists and facilities must be available to support complex and severe health needs.

Medicines. Access to essential psychotropic medications as well as those for physical needs should be ensured.

Integration of NTDs and mental health

Integration of mental health and NTD programming for people spans the health system to ensure a continuum of care, from prevention to treatment and management of neurological complications. The intervention pyramid (**Fig. 3**) illustrates the steps, examples and delivery points relevant for integrating mental health into NTD programmes at the different levels of the health system. Through cross-sectoral collaboration and a coordinated, integrated approach within the health sector, mental health professionals can provide technical guidance and capacity-building. In the next section entitled, "Actions for integrated care of neglected tropical diseases and mental health", specific actions for various stakeholders are detailed, while practical guidelines and manuals for integrating NTD and mental health activities are listed in **Annex 2**.

FIG. 3.
Intervention pyramid for integrating NTDs and mental health



Three elements that need to be considered in planning interventions for people with NTDs and mental health conditions are addressing stigma and discrimination, providing mental health and psychosocial support and managing neurological complications of NTDs.

1. Addressing stigma and discrimination

Stigma is a major barrier to seeking and engaging with care and adhering to treatment. It is therefore an important social determinant of the effectiveness of disease control. It also influences political commitment to advance NTD control and mental health support. As stigma and discrimination are found at many levels, interventions must be addressed at personal, interpersonal and community levels in order to bring about institutional and structural changes (**Fig. 4**).

FIG. 4.
Addressing stigma and discrimination at five levels

Stigma reduction interventions are necessary to both mitigate the harm and change harmful attitudes and behaviour. The intervention strategies that have been found to be effective at each level are described in **Table 1**. People with NTDs and mental health conditions have a central role to play at all levels and interventions. A key effective ingredient to reduce stigma and discrimination is social contact with people living with these conditions. In fact, the most effective means of combating stigma and discrimination are interventions that empower and involve affected people in the development and implementation of these interventions themselves.

TABLE 1.
Interventions to address stigma and discrimination of people with NTDs and mental health conditions

LEVEL	FOCUS OF THE INTERVENTION	INTERVENTION STRATEGIES
Personal	Individuals living with NTDs and mental health conditions	• Empowerment • Self-help, advocacy and support groups • Counselling • Cognitive-behavioural therapy • Education to reduce internalized stigma and encourage access to care • Enable them to access their rights and social inclusion • Enable them to engage in social contact
Interpersonal	Facilitating positive interaction (social contact) and increasing care and support in the person's environment.	• Social contact with people with NTDs and mental health conditions • Education • Behavioural intervention (contact-based) • Peer services • Narratives of inclusion • Care and support • Home care teams • Community rehabilitation
Community	Reducing stigmatizing and discriminatory attitudes and behaviour	• Social contact with people with NTDs and mental health conditions • Education • Advocacy • Protest
Organizational & institutional	Reducing discrimination and stigma in organizations and institutions	• Training, including social contact with people with mental health conditions and NTDs • Person-centred, integrated institutional policies
Governmental & structural	Establishing and enforcing legal, policy and rights-based structures	• Legislation and policy to change norms and policies that discriminate or facilitate stigma (with a focus on social contact with people with mental health conditions and NTDs) • Policies and laws to prevent and remove discrimination and stigma • Strategies and campaigns to increase understanding of mental health and behaviour (social contact with people with mental health conditions and NTDs) • Design, evaluate and disseminate effective, evidence-based programmes • Improve the accountability of duty bearers using rights-based approaches (e.g. government, service providers) to people with mental health conditions and NTDs

Adapted from references *18–22*.

Reducing stigma in people affected by leprosy in Indonesia with a rights-based counselling intervention (*24*)

Stigma is most effectively reduced by addressing both the people affected and the populations in which they live. Enabling people with NTDs and mental health conditions to speak for themselves and building their capacity to become champions are key elements. For example, an intervention could support people with leprosy to deal with experienced stigma and overcome internalized stigma and also help community members to change harmful attitudes to leprosy by social contact with people with the condition, community dialogue and anti-stigma messages from local leaders.

A module for reducing stigma through counselling was studied in Cirebon District, Indonesia. The module was offered for 2 years to 260 individuals, families and groups by lay and peer counsellors who had been affected by leprosy. The aim of the module was to build knowledge about leprosy, increase awareness of human rights, develop confidence and empower people affected by leprosy. Counselling was found be effective in reducing stigma.

"INTERVENTIONS BASED ON THE CORE PRINCIPLE OF INTERPERSONAL CONTACT ARE THE STRONGEST EVIDENCE-BASED METHOD FOR REDUCING STIGMA AND DISCRIMINATION, AND THEREFORE FOR PROMOTING THE HUMAN RIGHTS OF PEOPLE WITH MENTAL HEALTH PROBLEMS".

THE LANCET COMMISSION ON GLOBAL MENTAL HEALTH AND SUSTAINABLE DEVELOPMENT, 2018 (*23*).

2. Provision of mental health and psychosocial support

The WHO mhGAP programme recommends various interventions that could be integrated as basic mental health care into NTD control packages (25). WHO's QualityRights programme recovery approach states that people with mental health conditions and NTDs should be involved in decisions about their treatment and care, building on their own strengths (22). The interventions may be directed to individuals or populations and were identified for their efficacy and effectiveness, cost–effectiveness, equity and ethical considerations, including human rights, their feasibility and acceptability. The interventions are not separate activities but should be delivered in packages at various levels of a health system in order to be effective and cost–effective in terms of training, implementation and supervision. Many can be delivered by the same person at the same time. They are suitable for specialist, primary care and community facilities, as appropriate, where adequate facilities and supervision for training are available. They should be adapted by countries or regions according to their priorities and methods.

Mental health and psychosocial support includes screening for depression and mood disorders, anxiety, substance use disorders, post-traumatic stress disorder, self-harm and suicidal ideation (as appropriate and feasible), included in routine assessment. It also includes psycho-education, self-care strategies and psychosocial support for affected people and carers and psychosocial support for families and communities. Screening, brief interventions and referral may be used for harmful use of alcohol and other psychoactive substances and harm-reduction interventions and management for substance use disorders. Psychological treatment, such as cognitive–behavioural therapy, interpersonal therapy or problem-solving, motivational interviewing and contingency management, may be used in specialist facilities, primary care or the community when adequate resources for training and supervision are available. Pharmacological management of mental, neurological and substance use disorders may be provided by trained primary health care professionals.

Effective integration of mental health into primary health care (*26*)

In Goa, India, a randomized controlled trial conducted to evaluate an intervention by a trained lay counsellor for collaborative care showed better recovery from common mental disorders (depression and anxiety) among people attending public primary care facilities.

3. Management of neurological complications

Management of neurological complications begins with greater awareness of the neurological manifestations of NTDs to increase early identification and treatment. If a neurological complication is suspected, the person must be referred to a specialist for a detailed clinical assessment and management. Rehabilitation is essential for people with established and advanced neurological complications to optimize function and reduce disability. It is most effective when delivered by a multidisciplinary team. Rehabilitation can be delivered in various settings, including the home and the community. The interventions should be tailored to individuals and their settings, with advice and education throughout. The results of rehabilitation should be monitored, and the programme should be adjusted regularly as necessary.

Norms and standards for integrating mental health care

Norms and standards are available for integrating care for mental, neurological, and substance use disorders and delivering psychosocial and pharmacological interventions in non-specialized health care settings. Available norms and standards include:

- Mental Health Action Plan 2013–2030 (*27*)
- mhGAP Intervention Guide for mental, neurological and substance use disorders in non-specialized health settings (version 2.0) (*28*)
- mhGAP Operations Manual 2018 (*29*)
- mhGAP Community Toolkit 2019 (*30*)
- Guidelines for the management of physical health conditions in adults with severe mental disorders (*31*)
- Psychological first aid: Guide for field workers (*32*)
- Inter-agency Standing Committee guidelines on mental health and psychosocial support in emergency settings (*17*)
- International Federation of Anti-leprosy Associations/NTDs NGO Network (ILEP/NNN) Guides on Stigma and Mental Wellbeing (*33*)
- SAFER alcohol control initiative to prevent and reduce alcohol-related death and disability (*34*)
- United Nations Office on Drugs and Crime–WHO international standards for the treatment of drug use disorders (*35*)
- Guidelines for the psychosocially assisted pharmacological treatment of opioid dependence (*36*)
- Community management of opioid overdose (*37*)
- International standards on drug use prevention (*38*)
- WHO QualityRights Toolkit (*39*)

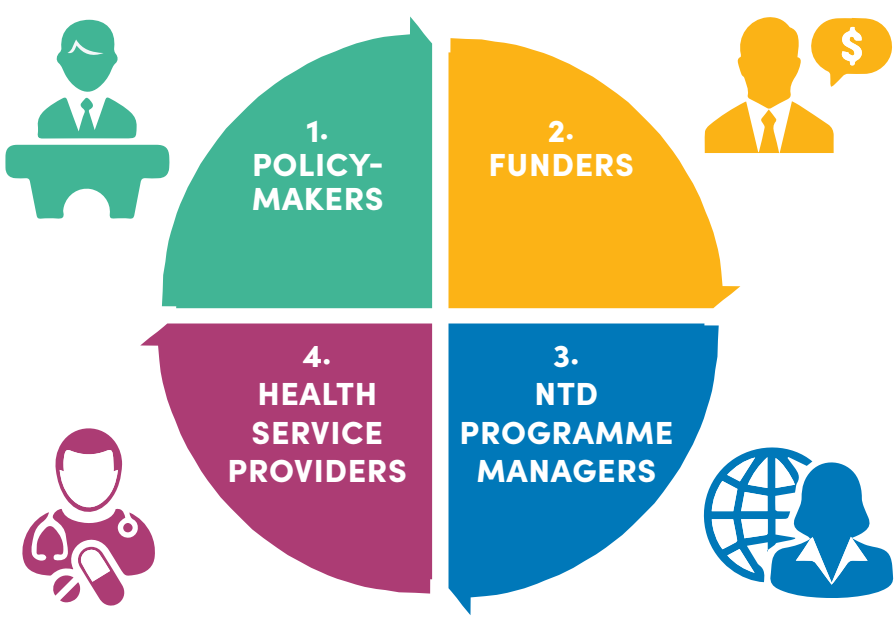
Lessons from integrating mental health into primary health care in South Africa and Uganda (*40*)

Treatment for mental health conditions in low- and middle-income countries at district level can be increased with a collaborative, multi-sectoral, community task-shifting, self-help approach to integrating mental health into primary health care. A minimum number of mental health specialists are required to supervise non-specialists and to provide specialized referral treatment services.

Actions for integrated care of neglected tropical diseases and mental health

Various stakeholder groups can take concrete action to ensure that people with NTDs and mental health conditions live healthier and longer lives. Cross-sectoral collaboration focused on ensuring the integration and continuity of physical and mental health care is essential for a person-centred approach to providing care for people with NTDs. This requires policy-makers, funders, programme managers and health service providers to work in a coordinated way with people living with NTDs and mental health conditions and their families (**Fig. 5**). The priorities for increasing capacity to coordinate and integrate actions among sectors and diseases are specified for each group.

FIG. 5.
Cross-sectoral, integrated approach with four stakeholder groups



World Health Organization

1 POLICY-MAKERS

Actions for policy-makers

1. **Develop policies to ensure collaboration between mental health services and NTD programmes in primary health care facilities and communities.**
2. **Strengthen mental health programmes and improve access to cost-effective mental health care.**
3. **Increase investment in integrated mental health, NTD and stigma reduction programmes.**
4. **Strengthen national capacity to sustain implementation of efficient, integrated NTD control programmes with well-trained, supervised health care providers and managers.**
5. **Collect, measure and evaluate data disaggregated by disability**

Mental, neurological and substance use disorders along with NTDs, are defined as a priority in the SDGs agreed upon by UN Member States. Governments initiate and lead implementation of national NTD elimination strategies, which should include mental health. Policy-makers in affected countries should lead action to reduce the burden of mental health conditions for the benefit of citizens, national health systems and the economy. An effective way of addressing mental health conditions in people living with NTDs is to strengthen cross-sectoral collaboration and ensure coordinated, integrated action in primary health care and in communities. The mental health sector should provide technical guidance and capacity-building, and implementation of evidence-based programmes to reduce stigma and discrimination should be prioritized. A number of approaches are applicable, depending on national capacity.

1. **Develop policies to strengthen collaboration and ensure integration between mental health services and NTD programmes in primary health care facilities and communities.**

   - Integrate mental health services into NTD programmes by reinforced collaboration in primary health care and community approaches.
   - (Re)design policies and plans to address the mental health needs of people living with NTDs and their carers at all stages of life, with a focus on eliminating discrimination and recovery through care and rehabilitation.
   - Establish multi-sectoral partnerships and working groups to identify synergies and opportunities for integrated care, prevention and management.
   - Involve and support groups of people with NTDs and mental health conditions.
   - Regulate the availability of alcohol and tobacco, reduce demand through taxation and pricing mechanisms, enforce countermeasures to drink–driving and enforce bans on alcohol advertising, sponsorship and promotion.
   - Ensure that health policies, plans and laws are consistent with international human rights standards and conventions (such as the Convention on the Rights of Persons with Disabilities) and the SDGs.

2. **Strengthen mental health programmes and improve access to cost-effective mental health care.**

   - Strengthen mental health programmes and services by allocating a greater proportion of the national health budget to mental health.
   - Allocate budget lines to establish additional mental health services in regions with low or no services (community, primary and specialist care).
   - Establish platforms for collaboration and mechanisms for effective referral to mental and neurological speciality services.
   - Integrate mental health interventions and stigma reduction into community care.
   - Take multisectoral action within and beyond the health sector to ensure equitable access to mental health care. Consider extending financial protection for the poorest, most vulnerable members of society to ensure mental health parity.
   - Ensure a regular supply of essential psychotropic medicines, and make them available throughout the health system, including for provision by non-specialist health workers.

3. **Increase investment in integrated mental health, NTD and stigma reduction programmes.**
   - Seek and use development funding to build an integrated NTD and mental health care system.
   - Make national budget allocations for the treatment of people with NTDs and mental health conditions. Evaluate and choose an appropriate set of evidence-based interventions for scaled-up investment and implementation.
   - Invest in evidence-based programmes to reduce stigma and discrimination through social contact with people with these conditions and contextualized education and information to stimulate demand and help-seeking.
   - Invest in research on the barriers to use of evidence-based interventions for people with NTDs and mental health conditions, the impact of those interventions and the elements of multi-component interventions that have a beneficial effect.

4. **Strengthen national capacity to sustain implementation of efficient, integrated NTD control programmes with well-trained, supervised health care providers and managers.**
   - Invest in training and capacity-building of staff who provide mental health care in coordination with NTD programmes.
   - Train specialist and non-specialist NTD and mental health staff to integrate mental health care and stigma reduction interventions into integrated services.
   - Develop integrated care pathways, and train health care staff in managing and responding to integrated information.
   - Include screening, early identification and treatment of alcohol and drug use disorders in primary health care.

5. **Collect, measure and evaluate data disaggregated by disability.**
   - Establish routine collection of data disaggregated by age, gender and disability (impairment and diagnosis).
   - Measure and evaluate disaggregated data by age, gender, disability and income group to ensure inclusion of all people.

Eliminating NTDs as a public health problem: the example of lymphatic filariasis

In 2000, WHO launched the Global Programme to Eliminate Lymphatic Filariasis. This and other global initiatives to control onchocerciasis have led to important international advances in the provision of care for people with filarial infections. A significant achievement is use of the care component of the programme; many countries have extended the recommended basic package of care to include mental health interventions and rehabilitation. In this more holistic approach, both the physical and the mental health needs of people with lymphatic filariasis are addressed, including the well-being of families and a focus on the needs of carers, whose lives are often significantly affected.

Endorsement by WHO of elimination of lymphatic filariasis transmission is a substantial achievement for countries. To attain "elimination status as a public health problem" from WHO, countries provide an "elimination dossier" that describes in detail how the country has responded to the requirement of the Global Programme to provide care. The documents include a description of the actions taken to address not only the physical aspects of lymphoedema and hydrocoele (e.g. adequate washing, treatment of acute filarial attacks and surgery for hydrocoeles), but also interventions to address mental health needs and support rehabilitation of people with lymphatic filariasis.

World Health Organization

2 FUNDERS

Actions for funders

1. **Include mental health in NTD programme funding.**
2. **Invest in training and capacity-building of service providers.**
3. **Invest in evidence-based programmes to reduce stigma and discrimination as an integral part of NTD programming.**
4. **Promote collection, measurement and evaluation of disaggregated data.**
5. **Invest in research on NTDs, mental health and stigma.**

Funders should recognize that inclusion of mental health in NTD programming can improve health outcomes and improve efficiency and returns on investments. They should also recognize that comprehensive well-being is a global priority, as stated in the SDGs, and that the inclusion and empowerment of people living with NTDs and mental health conditions and reduction of stigma and discrimination are essential for sustainable action. Funders should therefore strengthen investment into mental health programmes that address the needs of people living with NTDs and also support well-being and stigma reduction in NTD programmes. Several progressive organizations are already focusing on NTD-related stigma and the mental health and well-being of affected people.

1. **Include mental health in NTD programme funding.**
   - Invest in mental health and psychosocial well-being in NTD programme planning.
   - Invest in mental health programmes that address the mental health needs of people living with NTDs.
   - Invest in NTD programmes that recognize the importance of mental health and well-being as a priority for affected people and for improving the outcomes of programmes.
   - Invest in NTD programmes that integrate effective, evidence-based treatment and prevention for substance use disorders.
   - Invest in programmes to reduce the common determinants of mental ill health and NTDs, such as poverty and other social adversities.

2. **Invest in training and capacity-building of service providers.**
   - Allocate budgets for training and capacity-building in integrated mental health and NTD programmes to ensure that they are successful and sustainable.
   - Allocate budgets for cross-sectoral cooperation and technical guidance and support by mental health and neurological specialists in integrated mental health and NTD programmes.

3. **Invest in evidence-based programmes to reduce stigma and discrimination as an integral part of NTD programming.**
   - Allocate budgets for activities aimed at reduction of stigma and discrimination in NTD programming.
   - Invest in evidence-based interventions to reduce stigma and discrimination through social contact and contextualized education and information, with adaptation to the local context.
   - Increase investment in programmes to increase help-seeking and treatment coverage and to increase social participation and inclusion.

4. **Promote collection, measurement and evaluation of disaggregated data.**
   - Invest in programmes to collect, measure and analyse data disaggregated by disability (impairment and diagnosis).
   - Establish requirements for programmes to routinely collect, measure and analyse data disaggregated by age, gender, disability and income to ensure coverage of people who might be neglected.

5. **Invest in research on NTDs, mental health and stigma.**
   - Invest in research on the barriers to use of evidence-based interventions for people with NTDs and mental, neurological and substance use disorders.
   - Invest in research on the impact of interventions and the specific elements of multi-component interventions that have a beneficial effect.

Integration and scaling-up of a care package – the Endpoint Consortium (*41*)

The "Excellence in disability prevention integrated across NTDs" (Endpoint) Consortium was established in 2017 by the United Kingdom National Institute for Health Research unit on NTDs. The aim of the project is to integrate foot care and psychosocial care for people with NTDs that cause lymphoedema (lymphatic filariasis, podoconiosis and leprosy) into a holistic care package embedded in routine services in selected districts in Ethiopia. Implementation research is used to document integration in "real time" in order to identify the factors that influence integration, the nature of the diseases and their perception in the target communities, the nature of the intervention, the policy-makers involved and their interrelationships, the characteristics of the health system and wider social, political, economic, cultural and technological factors. Local researchers, policy-makers and practitioners are involved to build capacity in implementation research in Ethiopia. The findings are used by the Ministry of Health to provide integrated foot care and psychosocial support for people with lymphoedema. The results are being evaluated for further research, policy and action in similar low-income settings.

QATAR

World Health Organization

3 NEGLECTED TROPICAL DISEASE PROGRAMME MANAGERS

Actions for neglected tropical disease programme managers

1. **Collaborate with mental health programmes in addressing mental health conditions associated with NTDs.**
2. **Integrate disease programmes, emphasizing their common determinants and impacts.**
3. **Integrate mental health into NTD programmes, primary care or community activities, with a focus on prevention.**
4. **Provide mental health pharmaceuticals in mass drug administration (MDA) programmes.**
5. **Include evidence-based psychological care for people with chronic NTDs.**
6. **Use culturally sensitive tools for measuring psychological conditions that are practical for widescale administration by non-specialists.**
7. **Include capacity-building and training to reduce stigma and discrimination and to change community attitudes and behaviour.**
8. **Promote peer support by people living with NTDs and mental health conditions.**

National and district NTD programme managers have a crucial role in integrating and implementing mental health into NTD programmes. NTD programmes vary in their approach to the control, elimination or eradication of specific NTDs; however, most programmes rely on common basic infrastructures that could be adapted for integration of mental and physical care. Continuous involvement of and support by mental health programmes and experts is essential for technical guidance, supervision and capacity-building. Working together in partnerships or via existing platforms is strongly recommended to ensure the most effective outcomes for people with mental health conditions and NTDs. For instance, existing NTD platforms (e.g. MDA) could be used to increase access to mental health

care. A first essential step is for NTD and mental health programme managers to plan how best to address mental health conditions associated with NTDs.

1. **Collaborate with mental health programmes in addressing mental health conditions associated with NTDs.**
   - Collaborate with mental health programme managers in planning for mental health conditions associated with NTDs and establishing efficient referral systems.
   - Establish partnerships for continuing collaboration, support and training.
   - Explore use of existing NTD platforms (e.g. MDA) to increase access to mental health care for people with NTDs.

2. **Integrate disease programmes, emphasizing their common determinants and impacts.**
   - Design programmes for NTDs, other physical diseases and mental, neurological and substance use disorders.
   - Use a destigmatizing approach, emphasizing the common determinants and impacts of both NTDs and mental health conditions.
   - Integrate care and referral pathways.
   - Collaborate with mental health programmes in development and planning.

3. **Integrate mental health into NTD programmes, primary care or community activities, with a focus on prevention.**
   - Integrate mental health into NTD programmes, primary care and community activities.
   - Involve people with mental health conditions and NTDs in planning their care, provide self-management support and promote and adopt a recovery approach to care and rehabilitation.
   - Use a stepped approach, with more resources for people at highest risk of significant psychological impact.
   - Include supervision and capacity-building in mental health for staff through mental health programmes.
   - Include screening and early identification of alcohol and substance use disorders in primary health care. Screening instruments such as AUDIT (*42*) and ASSIST (*43*) can be used to structure and facilitate identification of substance use and substance use disorders.
   - Establish efficient referrals to mental health and neurology specialists for severe conditions.

4. Provide mental health medication in MDA programmes.

- Identify people with disabilities and mental health consequences of NTDs in MDA programmes. Employ non-specialist, trained health volunteers within MDA programmes to identify people with mental health conditions.
- Include registration and psychological screening to improve adherence and MDA coverage.

5. Include evidence-based psychological care for people with chronic NTDs.

- Focus on people with chronic NTDs, who are at the highest risk of mental health conditions, at all levels.
- Focus on people with chronic consequences of NTDs in programming.
- Include brief treatment interventions for alcohol and substance use disorders in primary health care.

6. Use culturally sensitive tools that are practical for widescale use by non-specialists for measuring psychological conditions.

- Adapt psychological care and measurement culturally.
- Include support and guidance by mental health specialists.
- Include the tools in NTD programmes for widescale administration by non-specialists in the community.

7. Include capacity-building and training to reduce stigma and discrimination and to change community attitudes and behaviour.

- Establish continuous support and training by mental health specialists.
- Train staff in reducing stigma and discrimination, to change community attitudes and behaviour.
- Provide training in mental health prevention and management for people with NTDs, include capacity-building and training to reduce stigma, and support them as agents for social contact and education.

8. Promote peer support by people living with NTDs and mental health conditions.

- Add peer support as an effective and cost-effective element of NTD programmes.
- Encourage and support people with NTDs and mental health conditions to provide peer support.
- Focus on recovery and rehabilitation in community settings.
- Collaborate with peer-support workers in mental health programmes.

Grassroots integration: "Sitting with others" – mental health self-help groups in northern Ghana (*44*)

Participation in self-help groups decreases use of inpatient facilities, improves the social functioning of people with mental health conditions and decreases the burden on caregivers. In low-income countries, self-help groups have become an important component of mental health programmes operated by nongovernmental organizations. A qualitative study was conducted in northern Ghana of 18 self-help groups, with five local nongovernmental organizations, community mental health nurses, administrators in the Ghana Health Services and staff of BasicNeeds Ghana. Self-help groups provide social, financial and practical support to people with mental health conditions and to their caregivers. The groups also appeared to foster better acceptance of people with mental health conditions by their families and communities. Membership in self-help groups appeared to be associated with more consistent treatment and better outcomes for people with mental health conditions and their carers. It was concluded that self-help groups could be key components of community mental health programmes in low-resource settings. Longitudinal qualitative and quantitative evaluations should be conducted of the effect of self-help groups on clinical, social and economic outcomes of people with mental health conditions and their caregivers.

World Health Organization

4 HEALTH SERVICE PROVIDERS

Actions for health service providers

1. **Improve the knowledge and attitudes of staff to mental health, and particularly change stigmatizing and discriminating behaviour towards people with NTDs.**
2. **Assess people with NTDs for mental, neurological and substance use disorders.**
3. **Deliver basic, evidence-based psychological interventions and treatment, and refer to specialists when necessary.**
4. **Use culturally sensitive tools to measure psychological conditions that are practical for widescale administration by non-specialists.**
5. **Use a community approach to advocate for and empower affected individuals, their families and communities.**

Health service providers can use integrated psychosocial, pharmacological and educational approaches to address the mental health burden associated with NTDs. Providers may include specialists such as doctors and mental health nurses in primary, secondary and tertiary health care as well as non-specialists such as community health workers. Non-health professionals in the community also support provision of these services. Collaboration with mental health and neurology specialists is helpful, and training and capacity-building are essential. Health providers should disseminate knowledge about mental health conditions and be trained in basic interventions. They should have positive attitudes towards people who have NTDs and mental health conditions.

Front-line staff should have regular support from mental health specialists. Delivery of mental health interventions may depend on what facilities for training and supervision are available. Evidence-based methods should be used throughout practice to change discriminating and stigmatizing behaviour through social contact.

1. **Improve the knowledge and attitudes of staff to mental health, and particularly change stigmatizing and discriminating behaviour towards people with NTDs.**
   - With mental health specialists, provide basic training to health staff, (pre-service and in-service), in mental health conditions and stigma, including those related to NTDs.
   - Provide training in early recognition, assessment and brief psychological and psychosocial interventions and pharmacological treatment for mental, neurological and substance use disorders, with support by mental health and neurology specialists.
   - Staff should use evidence-based methods to change discriminating and stigmatizing behaviour, through social contact and contextualized education.

2. **Assess people with NTDs for mental, neurological and substance use disorders.**
   - Routinely assess people living with the consequences of NTDs, in particular those with chronic conditions, for mental, neurological and substance use disorders.
   - Include mental health screening in routine assessment.
   - Identify and screen people with NTDs for alcohol and drug use disorders in primary health care. Screening instruments such as AUDIT (*42*) and ASSIST (*43*) can be used to structure and facilitate identification of substance use and substance use disorders.

3. **Deliver basic, evidence-based psychological interventions and treatment, and refer people to specialists when necessary.**
   - Deliver psychosocial interventions to people with NTDs and their carers, including psychoeducation, reducing stress and strengthening social support and promoting functioning in daily activities and community life.
   - Deliver brief psychological interventions and treatment for common mental disorders (e.g. depression and anxiety), such as cognitive behaviour therapy or problem-solving when adequate facilities for training and supervision are available.
   - Deliver brief psychological and psychosocial interventions and treatment for alcohol use disorders in primary health care, including pharmacological interventions.
   - Ensure the availability and delivery of essential psychotropic medicines and adequate follow-up at all levels of the health system.
   - Obtain training, support and regular supervision in psychological interventions from mental health specialists.
   - Refer severe cases to mental health and neurology specialists.

4. **Use culturally sensitive tools that are practical for widescale administration by non-specialists to measure psychological conditions.**
   - Train staff in cultural adaption for successful psychological care and measurement, with support from mental health specialists.
   - Use measurement tools that are practical for widescale administration by non-specialists in the community.
   - Provide specific training for non-specialist community health workers.

5. **Use a community approach to advocate for and empower affected individuals, their families and communities.**
   - Strengthen and empower people with NTDs and mental health conditions and enable them to advocate.
   - Engage them in developing the programme.
   - Use community approaches and reach out to people directly to provide support.
   - Coordinate with mental health programmes.
   - Support information, education and communication to reduce discriminatory and stigmatizing attitudes and behaviour in the families and communities of affected people and also in the general population.

Coping with stigma by group counselling of people affected by leprosy (*45*)

A pilot study of group counselling for people affected by leprosy in Nepal showed that counselling can help affected people to cope with the physical and psychological effects of the disease. Groups of five to seven adults and children of the same sex met for 2-h sessions for 5 weeks. Participants were first assessed psychologically to determine that they recognized that their low self-esteem was due to stigma or rejection by their families or that they were despondent but not clinically depressed. The participants were encouraged to recount their painful experiences to the other members of the group, which formed bonds, so that they could comfort each other. The participants learned to forgive people who hurt them and were prepared to cope with stigma when they returned home.

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Annexes

Annex 1. Neglected tropical diseases currently addressed by WHO

Buruli ulcer: A debilitating mycobacterial skin infection that causes severe destruction of the skin, bone and soft tissues.

Chagas disease: A life-threatening parasitic illness transmitted to humans through contact with vector insects (triatomine bugs), ingestion of contaminated food, infected blood transfusions, congenital transmission, organ transplantation or laboratory accidents.

Chikungunya: A viral disease caused by an alphavirus of the family Togaviridae, transmitted to people through bites of female mosquitoes. Causes sudden onset of fever and joint pain, muscle pain, headache, rash and leukopenia; joint pain can may persist for months or years.

Dengue fever: A mosquito-borne viral disease that causes flu-like illness that may develop into severe disease with lethal complications.

Dracunculiasis (Guinea-worm disease): A nematode infection transmitted exclusively through drinking-water contaminated with parasite-infected water fleas.

Echinococcosis: Infection caused by the larval stages of tapeworms transmitted by ingestion of eggs commonly shed in faeces of dogs and wild animals; they form pathogenic cysts in humans.

Foodborne trematodiases: Infections acquired by consuming fish, vegetables and crustaceans contaminated with larval parasites; clonorchiasis, opisthorchiasis, paragonimiasis and fascioliasis are the main diseases.

Human African trypanosomiasis (sleeping sickness): A parasitic infection spread by the bites of tsetse flies, which is almost 100% fatal without prompt diagnosis and treatment to prevent the parasites invading the central nervous system.

Leishmaniasis: Disease caused by protozoan parasites and transmitted through the bites of infected female sandflies. In its most severe (visceral) form, it attacks the internal organs, and, in its most prevalent (cutaneous) form, it causes skin lesions, disfiguring scars and disability. Mucosal leishmaniasis often has destructive sequelae in addition to disfiguring and disabling lesions.

Leprosy (Hansen disease): A slowly progressing disease due to infection with a mycobacterial complex, mainly of the skin, peripheral nerves, mucosa of the upper respiratory tract and eyes.

Lymphatic filariasis (elephantiasis): Parasitic infection transmitted by mosquitoes, which causes abnormal enlargement of limbs and genitals due to inhabiting and reproduction of adult worms in the lymphatic system.

Mycetoma, chromoblastomycosis and other deep mycoses:

- **Mycetoma**: A chronic, progressively destructive inflammatory skin disease, which usually affects the lower limbs. Infection is thought to be caused by inoculation, through a thorn prick or skin damage, of fungi or bacteria into the subcutaneous tissue.
- **Chromoblastomycosis and other deep mycoses**: Chronic fungal infections of the skin and subcutaneous tissue caused by a group of fungi. The lesions are clinically polymorphic; the most frequent are nodular, verrucous and tumoral. Deep mycoses also include widely distributed fungal infections such as sporotrichiosis and paracoccidiodomycosis.

Onchocerciasis (river blindness): A disease caused by a helminth parasite and transmitted by the bite of infected blackflies. The adult worm produces larvae that cause severe itching and tissue damage, which eventually leads to visual impairment and permanent blindness.

Rabies: A preventable viral disease transmitted to humans through the bites of infected dogs or other mammals. It is invariably fatal once symptoms develop.

Scabies and other ectoparasitic infestations: Parasitic infestations caused by microscopic mites, which burrow into the skin and lay eggs, eventually triggering a host immune response that leads to intense itching and rash.

Schistosomiasis (snail fever or bilharzia): An acute and chronic disease caused by parasitic worms. People become infected when larval forms of the parasite released by freshwater snails penetrate the skin during contact with infested water. It manifests in urinary and intestinal forms. Main symptoms include abdominal pain, blood in urine, diarrhoea and bloody diarrhoea.

Snakebite envenoming: Injection of toxins following the bite of a venomous snake. They can cause paralysis that may prevent breathing, bleeding disorders that can lead to a fatal haemorrhage, irreversible kidney failure and tissue damage that can cause permanent disability and limb amputation.

Soil-transmitted helminthiases (intestinal worms): Nematode infections transmitted through soil contaminated by human faeces, which cause anaemia, vitamin A deficiency, stunted growth, malnutrition, intestinal obstruction and impaired development.

Taeniasis and neurocysticercosis:

- **Taeniasis**: An infection caused by adult tapeworms in human intestines.
- **Cysticercosis**: Results when humans ingest tapeworm eggs that develop as larvae in various tissues. Larvae can infect the brain and are the most common cause of seizures in some communities.

Trachoma: A blinding disease caused by ocular *Chlamydia trachomatis* infection, which is transmitted from eye to eye within infectious eye and nasal discharges via fingers, fomites and particular species of flies.

Yaws (endemic treponematosis): A chronic bacterial infection that affects mainly the skin and bone.

Annex 2. Practical guidelines and manuals

The guidelines and manuals listed below may be consulted for guidance in integrating feasible, evidence-based interventions into broader NTD work in non-specialized health care settings.

- AUDIT: the alcohol use disorders identification test. Guidelines for use in primary care. Second edition. Geneva: World Health Organization; 2001
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