

Prevention and management of  
mental health conditions in

# Zimbabwe

The case for investment



**PREVENTION AND MANAGEMENT OF MENTAL HEALTH CONDITIONS IN ZIMBABWE**  
THE CASE FOR INVESTMENT

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## ABBREVIATIONS AND ACRONYMS

<b>GDP</b>	gross domestic product
<b>mhGAP</b>	Mental Health Gap Action Programme
<b>MOHCC</b>	Ministry of Health and Child Care
<b>PWLE</b>	Parks and Wildlife Estate
<b>ROI</b>	return on investment
<b>SA</b>	sensitivity analysis
<b>SDG</b>	Sustainable Development Goal
<b>SEL</b>	social–emotional learning
<b>TB</b>	tuberculosis
<b>UNICEF</b>	United Nations Children’s Fund

## FOREWORD

The Zimbabwe Mental Health Investment Case primary goal is to achieve Universal Health Coverage for Mental Health, advance mental health policies, advocacy and protection of human rights, and scale up quality interventions and services for individuals with mental health conditions.

The MHIC starts with asking why it makes sense to invest in the mental health of the Zimbabwean population. It provides not only the economic rationale for doing so but also other arguments, including those for public health, protection of human rights, equal access and efficiency.

Furthermore, MHIC seeks to ascertain what interventions and services should receive more investment. There is substantial evidence for guiding appropriate allocation of resources towards interventions, services and models of care that are effective, affordable, evidence based and feasible in various settings, including not only health care settings but also schools, workplaces and communities.

The methods provide an overview of how to make an investment case, covering the principles and practice of analysing the return on investment (ROI) and their application to the mental health sector. The questions answered by an ROI analysis are simple: Are the benefits of an investment of resources greater than the costs incurred and, if so, by how much? In practice, essential data and analytical decisions are required to arrive at an answer, including the costs and benefits to be included, the time-frame to be used and the specific policy question to be addressed.

A decision to increase investment and innovation in mental health services is determined by many considerations other than cost or value for money, including the sociocultural context, the feasibility of implementation and the extent to which health inequality or the needs of underserved and vulnerable populations are effectively addressed. Consideration should also be given to how different financing modalities and mechanisms could bridge gaps in mental health services equitably and sustainably.

Wide ranging consultations were conducted through seminars and interviews of multi-sectoral stakeholders with the scope of establishing mental health political/economic drivers, main challenges, institutional arrangements, governance policies, priority actions, human rights in mental health, funding systems/models, socio-political engagements, main mental health stakeholders/actors/coordinators and institutional policy frameworks.

A MHIC consolidated and validated report was generated thereafter through a meticulous and consultative process with international best-guidance from United Nations Inter-Agency Task Force on NCDs, United Nations Development Programme (UNDP) and World Health Organization (WHO).

The MHC report will be used by all the available levels in the health system and prospective investors across the Zimbabwe corporate fraternity. The report will pave way for guided investment in mental health services and provide an opportunity for all mental health service users to receive quality care direct to their various needs at whatever stage they may be on.

I thank you.

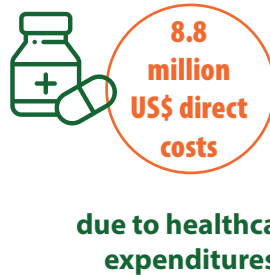
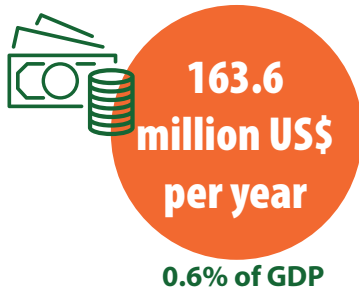
Air Commodore (DR) J. Chimedza  
Permanent Secretary for Ministry of Health and Child Care  
July 2022

# Zimbabwe

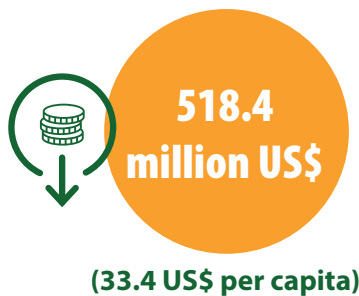


The case for investment in mental health

## CURRENT BURDEN OF MENTAL HEALTH CONDITIONS



## INVESTMENT REQUIRED OVER 20 YEARS



Investment required for selected clinical packages and population-based preventive interventions over a 20-year period

ANXIETY DISORDERS	DEPRESSION	PSYCHOSIS	BIPOLAR DISORDER	EPILEPSY
<b>72.6</b> million US\$	<b>85.2</b> million US\$	<b>40.9</b> million US\$	<b>109.5</b> million US\$	<b>20.8</b> million US\$
<b>ALCOHOL USE DISORDER</b>	<b>PESTICIDE BAN</b>	<b>UNIVERSAL SCHOOL-BASED INTERVENTIONS</b>		
<b>124.5</b> million US\$	<b>9.5</b> million US\$	<b>55.4</b> million US\$		

## RETURN ON INVESTMENT OVER 20 YEARS



	ROI	Healthy life-years gained	Total productivity gained
Anxiety disorders	2.7	89 051	268.3 million US\$
Depression	3.3	192 398	531.2 million US\$
Psychosis	1.8	39 700	115.3 million US\$
Bipolar disorder	0.7*	26 428	75.2 million US\$
Epilepsy	11.6	91 517	261.5 million US\$
Alcohol use disorder	1.4*	41 356	176.9 million US\$
Pesticide ban	14.4	37 734	145.4 million US\$
Universal school-based interventions	0.6	47 987	88.6 million US\$

\*Benefit-cost ratio



## EXECUTIVE SUMMARY

Mental, neurological and substance use conditions pose a significant challenge in Zimbabwe, and conditions such as depression, anxiety, psychosis, bipolar disorder, epilepsy and alcohol use disorder are major causes of morbidity and mortality. This presents a double challenge to Zimbabwe: human suffering and an emerging public health burden with significant social and economic losses. These challenges include a financial burden on the health system and lost workforce productivity due to premature death, missed days of work (absenteeism) and impaired job performance (presenteeism).

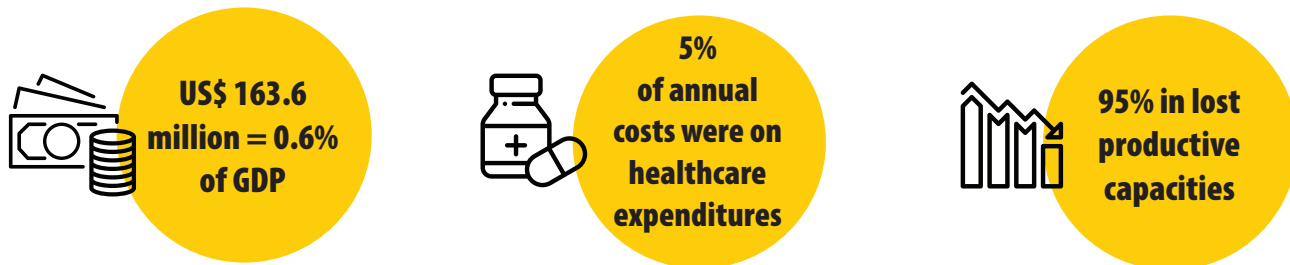
This report provides evidence for the long-term economic, health and social benefits of investing in mental health in Zimbabwe. First, it provides an assessment of the current mental health situation in the country, including challenges and opportunities for development of the mental health system. Secondly, it presents economic evidence of the attributable, avertable burden associated with a number of leading mental, neurological and substance use conditions. Intervention costs, health gains and economic benefits were estimated for clinical interventions for six leading mental health conditions (depression, anxiety, psychosis, bipolar disorder, epilepsy and alcohol use disorder) and two population-based interventions (a pesticide ban and a universal school-based socio-emotional learning intervention).

Photo: © UNDP



## Main findings

### *The cost of mental health conditions*



Mental health conditions are highly prevalent among young adults in Zimbabwe, and the numbers may be generally underestimated in the published literature. The main mental health conditions must be placed in the complex context of social and environmental determinants, including poverty, political and economic instability and natural disasters in Zimbabwe. While Zimbabwe has a stand-alone national mental health policy, the legislation should be updated and brought into line with human rights standards. Mental health is currently grossly underfunded in Zimbabwe; however, efforts to include mental health in the National Community Health Strategy provide funding opportunities and a framework for better integration into primary health care services.

The economic analysis revealed that the cost of mental health conditions to the Zimbabwean economy was US\$ 163.6 million in 2021, equivalent to 0.6% of the gross domestic product (GDP). Just 5% of those annual costs were on expenditure for mental health, while the vast majority (95%) was the cost due to lost workforce productivity through premature death, disability or reduced productivity. The large productivity losses indicate that current levels of investment in mental health care do not meet the needs of the population. Furthermore, the losses suggest that many sectors could benefit from investment in mental health and that multisectoral and whole-of-society engagement are necessary.

### *Why invest in interventions*

By acting now, Zimbabwe could reduce the burden of mental health conditions. The findings of the investment case demonstrate that investing in evidence-based, cost-effective mental health interventions would, from now until 2041, provide both health and economic benefits.

**Save over  
11 000 lives**

By investing in mental health now, Zimbabwe could save more than 11 000 lives and gain over 500 000 healthy life years in the next 20 years by reducing the incidence, duration or severity of leading mental health conditions. This would result in a drastically reduced burden on the community and the economy.

**Provide  
economic  
benefits**

By investing in mental health now, Zimbabwe could gain economic benefits of US\$ 175 million in the next 10 years and US\$ 689 million in the next 20 years. The productivity gains that Zimbabwe could make from investing in mental health interventions exceeds the cost of the intervention packages. Most of the interventions modelled would have a favourable benefit–cost ratio, and clinical interventions for depression and for epilepsy and a population-based intervention of a pesticide ban would have high returns on investment (ROIs). When the social value of health is included with the productivity gains, all but one of the interventions modelled produced a positive ROI. While the interventions modelled for bipolar disorder resulted in a lower ROI, these too are essential to support health and human rights objectives in Zimbabwe.

## Recommendations

The results of the investment case demonstrate that Zimbabwe could reduce the socioeconomic consequences of mental health conditions by investing in a set of evidence-based intervention packages for leading mental health conditions. The investment would significantly improve the quality of life for people with mental health conditions, lengthen life expectancy and reduce economic losses for the country. Recommendations for actions by the Government of Zimbabwe to achieve these tangible benefits include:

- 1 Strengthen leadership and governance for mental health.
- 2 Increase community awareness of mental health conditions, and encourage multi-sector engagement to increase education and awareness of mental health.
- 3 Increase the capacity of the health system and the health-care workforce to provide high-quality mental health interventions, and integrate mental health care into primary health care and the provision of community services.
- 4 Invest in the evidence-based, cost-effective clinical and population-based mental health interventions modelled in the investment case.
- 5 Invest in health information systems and technology for collecting data on mental health and research.
- 6 Ensure that support for mental health in emergencies is built into Zimbabwe's mental health system and services.

All the recommendations suggested in this report are aligned with those of the WHO Special Initiative for Mental Health for Zimbabwe.

## INTRODUCTION

Mental health and well-being are essential for individuals to lead fulfilling lives, to realize their full potential and to participate productively in their communities. Although there has been increasing acknowledgement of the important role of mental health in achieving national and global development goals, there has been little investment in mental health in almost all parts of the world.

Mental, neurological and substance use conditions, including depression, anxiety, psychosis, bipolar disorder, epilepsy and alcohol use disorders, are highly prevalent worldwide. WHO has estimated that mental and neurological conditions account for 28% of the non-fatal disease burden in the world and for 10% of the overall disease burden (1). The COVID-19 pandemic has only exacerbated the situation, leading to a significant increase in the prevalence of some of the most common mental health conditions (i.e., anxiety and depression) worldwide (2). Most mental health conditions are treatable; however, the challenge in many parts of the world is lack of access to affordable, high-quality mental health services. Mental health promotion and prevention are also largely neglected.

Mental health conditions do not only cause individual human suffering but also have negative economic impacts at household, country and global levels. These include the financial burden on the health system and reduced productivity resulting from missed days of work (absenteeism), working at reduced capacity (presenteeism) and premature death.

In addition to the health and economic consequences, mental, neurological and substance use conditions have important social implications. For example, alcohol use disorders may be related to violence and accidents, those affected by mental conditions may drop out of education or may underperform, and family members – especially girls and women – may lose opportunities because they

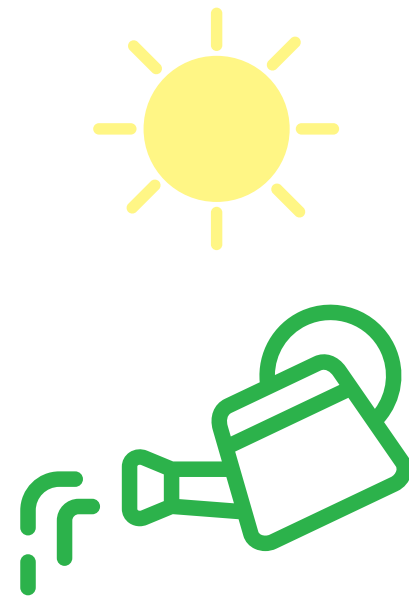


have to take on the role of carer. In addition, there is considerable stigmatization and discrimination against people with mental health conditions (3).

More than 80% of people who have mental health conditions live in low- and middle-income countries (4). In these settings, there is frequently little or no access to affordable, high-quality mental health services, and mental health systems are often weak, with low ratios of mental health workers to population, poor governance and insufficient government expenditure, with other systemic challenges (4). In such settings, the negative health and socioeconomic impacts of mental health conditions are a major hindrance to the development agenda.

Strengthening policy and increasing investment in mental health have benefits for both public health and sustainable development, particularly in low- and middle-income countries where the burden is high and systems under-resourced. Investment in evidence-informed mental health interventions could improve overall health and quality of life and increase life expectancy. In addition, such investments will contribute to achievement of a number of the Sustainable Development Goals (SDGs), including target 3.4 (“by 2030 to reduce by one third premature mortality from noncommunicable diseases through prevention and treatment and promote mental health and well-being”), SDG 1 (poverty reduction), SDGs 4 (education), 5 (gender equality), 8 (employment and economic growth), 10 (equality), 11 (safe cities), 16 (reducing violence) and 17 (partnership, capacity-

**Strengthening policy and increasing investment in mental health have benefits for both public health and sustainable development, particularly in low- and middle-income countries where the burden is high and systems under-resourced.**



building and domestic resource mobilization). Improving mental health is critical to the SDG vision of a just, inclusive, equitable society. The importance of promoting mental health and addressing the social and economic challenges posed by mental health conditions was highlighted during the High-level Meeting of the United Nations General Assembly on the Prevention and Control of Noncommunicable Diseases in 2018 and emphasized in WHO’s Thirteenth General Programme of Work (2019–2023). Similarly, UNDP’s new Strategic Plan for 2022–2025 highlights the Organization’s commitment to working with partners to strengthen health systems, including equitable access to mental health care services.

As part of broader work to accelerate progress on SDG target 3.4, to promote mental health and well-being, and SDG target 3.8 to achieve universal health coverage, the United Nations Inter-Agency Task Force on the Prevention and Control of Non-communicable Diseases, WHO and UNDP, in partnership with ministries of health, are conducting a series of national investment cases for mental health. These studies examine the costs of mental health conditions, not only to human health but also to health and social systems and national economies, and generate economic evidence on the benefits of scaled-up action. Zimbabwe is one of the countries that requested support to develop a mental health investment case. This exercise complements work being undertaken in Zimbabwe through WHO’s Special Initiative for Mental Health.

This report presents the case for investing in mental health in Zimbabwe. It is divided into four sections. **Section 1** outlines the mental health situation in Zimbabwe and the current and planned responses by the Government. **Section 2** describes the methods and tools used in the economic analyses. **Section 3** presents the results, including total costs and the expected health and economic benefits (such as healthy life years gained, mortality averted and productivity gained) of implementing clinical and population-based preventive mental health interventions. **Section 4** draws conclusions from these findings and provides recommendations for the Government of Zimbabwe for strengthening and scaling up cost-effective preventive and clinical interventions for mental health conditions.

SITUATION ANALYSIS	METHODS	RESULTS	CONCLUSION
Presents the mental health situation in Zimbabwe and the current and planned responses by the Government.	Describes the methods and tools used in the economic analysis.	Presents the results, including total costs, and the expected health and economic benefits.	Outlines the conclusions to be drawn from these findings and provides recommendations for the Government of Zimbabwe.

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# 1. SITUATION ANALYSIS

## 1.1 Country overview

The Republic of Zimbabwe is a landlocked country that has been affected by a number of political and socioeconomic challenges (5). Zimbabwe is in southern Africa, with Zambia and Botswana to the north, Namibia to the west, South Africa to the south and Mozambique to the east. Its population is 14.86 million (2020) (5). The capital city is Harare, which has a population of 1.6 million. Mental health issues have not been at a top priority because of crises such as food shortages, Cyclone Idai, the COVID-19 pandemic and the HIV/AIDS pandemic, which have taken precedence (5). According to the 2021 World Bank report (6), however, the Zimbabwean economy has been recovering, mainly because of high agricultural production, better use of capacity in industry and stabilization of prices and exchange rates.

## 1.2 Mental health situation

Mental health conditions are becoming major causes of morbidity and mortality in Zimbabwe. Anxiety disorders affect 2.8% of the population and account for 4.0% of total years lived with disability (7). Data in the literature on the prevalence of depressive disorders varies. According to WHO, depressive disorders affect 4.0% of the total Zimbabwean population; however, a growing body of evidence suggests that the prevalence may be higher (7). Chibanda et al. (8) found rates of depression as high as 60% in primary care settings, although the rates may be inflated because of the health profile of the population sampled. Major depressive disorder moved from 15th to 11th place (37% increase) as a disease that increased global disability-adjusted life years between 1990 and 2010 (9), as the global disease burden has continued to shift from communicable to noncommunicable diseases and from premature death to years lived with disability.

In Zimbabwe, admitted patients typically present with schizophrenia, substance-induced psychosis, bipolar affective disorder (mania), epilepsy or the psychiatric complications of HIV. In psychiatric outpatient clinics and private practice, depression, substance dependence and anxiety disorders are frequently diagnosed (5). The population prevalence of substance abuse disorders is 2%, with higher rates of substance use among young than older adults. The drugs and substances that are commonly abused in Zimbabwe are marijuana and alcohol (10). Among patients admitted to two referral psychiatric units in Harare, 38% were found to have an alcohol use disorder and 34% a drug use disorder; illicit alcohol and cough syrups were some of the most commonly used substances (11).

According to WHO, the prevalence of alcohol use disorders and alcohol dependence disorders in Zimbabwe is 6.4% and 2.2%, respectively (12). These rates are higher than the overall rates for the WHO Africa Region, which are between 3.7% and 1.3%.

Suicide accounts for 1.8% of all deaths, with higher rates among men than women and an even higher rate in the elderly (84.4 per 100 000) (13). A release from the Zimbabwe Republic police in 2020 indicated that, between 2015 and 2019, 2058 men and 505 females died by suicide. The rate of attempted suicide, however, is higher among women than men (14). Common reasons cited for suicide were a history of traumatic experience, marital conflict and financial difficulties. Few data are available on the most common means of suicide used in Zimbabwe; however, global research shows that ingestion of pesticides, hanging and firearms are the most common methods in low- and middle-income countries (13). Ideally, patients who have attempted suicide are treated in a medical ward and are referred to a psychologist or psychiatrist before discharge. This is not always the case, however, because of an inadequate mental health workforce.

Photo: © WHO



## 1.3 Social and environmental determinants of mental health

Natural disasters, including those due to climate change, political and economic instability, poverty, stigmatization and gender-based violence can all impact mental health in individuals and populations. In 2019, the rate at the national poverty line for Zimbabwe was 38.3 % (15).

The COVID-19 pandemic has exacerbated this situation. In 2020, almost 500 000 households had at least one member who had lost their job, causing many to fall into poverty (16). Poverty increases the risk of mental health conditions and can be both a causal factor and a consequence (17). Job insecurity is associated with suboptimal mental health, and unemployment is associated with an increased risk of depression (18). Drug and substance abuse is a growing problem in Zimbabwe, and COVID-19 pandemic-related unemployment and reduced opportunities disproportionately affect the poor, further increasing drug abuse (19). An additional concern is the young age at which alcohol and substance use can begin, with stress and lack of social support reported by university students as reasons for beginning to use drugs and alcohol (20).

Zimbabwe is vulnerable to a range of disasters and has experienced floods, cyclones, tropical storms and droughts, which affect the most vulnerable rural regions in particular (21). Exposure to disasters is associated with a number of adverse mental health consequences, including post-traumatic stress disorder, substance use disorder and other psychological symptoms (22). The effects of natural disasters and extreme weather are far-reaching. Natural disasters can result in distress reactions, increased health risk behaviour such as increased alcohol and tobacco use, and exacerbation or development of psychiatric conditions (23). Children are at particularly high risk; research suggests that experiencing a natural disaster by the age of 5 years significantly increases the risk of developing mental health and substance abuse disorders as an adult, and natural disasters can also negatively affect parenting behaviour (23). Disrupted health-care service delivery is common in the aftermath of a disaster, which can also exacerbate mental health conditions, with lack of services for people with existing mental health conditions and significant delays for new cases emerging after the disaster (24).

Zimbabwe also continues to fight the HIV epidemic. Despite significant progress in containing the spread of the disease since the late 1990s, the prevalence of HIV in Zimbabwe remains higher than the regional average for sub-Saharan Africa. UNAIDS estimated that nearly 12% of Zimbabweans aged 15–49 are living with HIV (25). A link has been observed between HIV and depression, as nearly one third of people living with HIV in sub-Saharan Africa are also depressed (26). This suggests that the prevalence of depression is nearly three times higher among people living with HIV than in the general population (27). There is also evidence that the relation between depression and HIV is bidirectional: Not only do people living with HIV have a higher risk of depression (due, e.g., to poor quality of life, other diseases, disability, unemployment and other factors that may affect HIV-positive patients), but depression can be a risk factor for HIV, as it frequently co-occurs with other HIV risk factors such as alcohol and other substance use and intimate partner violence

(26, 27). Furthermore, depression affects health-care-seeking behaviour, including adherence to treatment, and therefore poses additional risks to people living with HIV (28). As Zimbabwe has a high prevalence of HIV, more attention should be paid to psychiatric conditions such as depression in this population.

Mental health conditions are still highly stigmatized in Zimbabwe, including by health professionals (29). Individuals with mental health conditions may be stigmatized due to lack of awareness about mental health and misconceptions about the causes of mental illness, such as blaming the individual or evil spirits (29). Stigmatization can have a negative impact on help-seeking behaviour, community and family support, adherence to treatment and recovery for people with mental health conditions (30).

In Zimbabwe, one in three women aged 15–49 has experienced physical violence and about one in four have experienced sexual violence after the age of 15 (31). As in many other countries, the number of cases of gender-based violence has increased in Zimbabwe during the COVID-19 pandemic; nongovernmental organizations have reported a 44% increase in physical violence and an 80% increase in emotional violence. Violence by an intimate partner is the most common form of violence against women in Zimbabwe (32). Women who experience this form of violence are more likely to experience depressive and anxiety symptoms, post-traumatic stress disorder and suicidal thoughts (33).

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## 1.4 Mental health governance, policy and legislation

The Constitution of Zimbabwe (2013) states that health is a right for citizens and permanent residents, including the right to access basic health care services (also for chronic illness) and emergency medical treatment (34). Mental health is specifically governed by the 1996 Mental Health Act, which: “Consolidate(s) and amend(s) the law relating to the care, detention and after-care of persons who are mentally disordered or intellectually handicapped, whether for the purposes of treatment or otherwise” (35). The Mental Health Act provides for legal certification of patients to be admitted as inpatients for treatment of mental health conditions.

For 30 years, mental health services in Zimbabwe were provided according to the 1984 Mental Health Action Plan. This was replaced by the National Mental Health Strategic Plan 2014–2018, followed by the Zimbabwe Mental Health Strategic Plan 2019–2023. Both strategic plans are guided by the 2007 National Mental Health Policy (36). The mission of Policy is: “To provide for all Zimbabweans, a comprehensive, coordinated, quality mental health service that is integrated into the general medical health system with the aim of improving the mental health of the nation” (36). The eight principles of the Policy by which the current strategic plan is guided are: 1) mental health as a fundamental human right, 2) provision of the highest possible quality of care, 3) professionalism and ethical service provision, 4) decentralization of services, 5) multidisciplinary approaches, 6) multisectoral approaches to mental health care, 7) community involvement and 8) collaboration with local and international partners (36).

The current Mental Health Strategic Plan (2019–2023) has five objectives:

- Improve the quality of patient care and service delivery, including the development of standard operating procedures and high-quality care protocols, infrastructure improvement and medication supply.
- Improve awareness about mental health and community empowerment.
- Conduct research, and ensure data management.
- Review legislation (specifically the 1996 Mental Health Act).
- Strengthen the mental health workforce.

The Strategic Plan emphasizes the importance of primary and community mental health care, decentralized services and a review of mental health legislation in Zimbabwe to align it with international standards of care and protection of human rights. Published by the MOHCC, the Mental Health Strategic Plan 2019–2023 was drafted in consultation with 30 stakeholders and experts, including provincial representatives, academics, international organizations and patient advocates (36).

The aim of the Zimbabwe National Drug Master Plan is to improve mental health (and physical well-being) specifically by addressing drug and alcohol use (37). Based on the three aims of reducing the demand, supply and harm of both illicit and licit substances, the plan takes a collaborative

approach to addressing the issues in line with international human rights standards with multiple sectors and stakeholders to increase awareness of the issues and strong advocacy for decentralized community rehabilitation centres.

The National Community Health Strategy (2020–2025) outlines ways in which community care will be instrumental in working towards and achieving universal health coverage and the SDGs in Zimbabwe (38). The Strategy consists of preventive, promotive, basic curative and rehabilitative interventions, including mental health interventions, throughout the life-course (39, 40). Mental health interventions are proposed specifically in reproductive health (including post-partum care), for adolescents aged 10–14 years, people aged  $\geq 15$  years and geriatric age groups; interventions are also proposed for certain categories of the population (40). The aim of the Strategy is to increase national coverage from 53% to 80% with interventions that “educate, support, and follow up common mental health illness, depression, anxiety, substance abuse and post-traumatic stress disorder using peer counselling and mental health support groups such as the Friendship Bench model”. The strategy of working with and through community engagement and village health workers is considered essential to meeting the targets (38, 41).

## 1.5 Mental health service provision and access

The Zimbabwean health system is governed by two frameworks: the Constitution and the National Economic Plan. The National Economic Plan guides the National Health Policy and the National Health Strategy, both of which provide overarching guidance for the health sector (34). Each year, the MOHCC uses a results-based management system to develop operational plans to meet the objectives outlined in the National Health Policy and National Health Strategy (34). The plans provide guidance and initiatives in addition to the specific mental health plans outlined in the previous section. The current National Health Strategy (2021–2025) outlines three strategic interventions to prioritize mental health: mental health in youth services, in the development of a national noncommunicable disease strategy (with mental health as a priority) and a dedicated strategic plan to “promote access to affordable mental health and allied services, reducing dependence on institutional-based care” (42).

In 2020, the first report of the Portfolio Committee on Health and Child Care was presented to the Zimbabwean Parliament on the status of provision of mental health services in Zimbabwe (43). The report concludes with recommendations for the Government to provide financial support for service provision and psychiatric infrastructure and to verify that the two forensic psychiatric units in Zimbabwe follow standards of best practice and provide timely mental health boards.

Within the MOHCC, the Department of Mental Health provides general oversight of mental health care in Zimbabwe, with promotion, prevention, curative care and rehabilitation, including for substance use. The Department of Mental Health consists of three staff members: a Deputy Director, a Programme Manager and an Executive Assistant for the Mental Health Review Tribunal (44). Within the Department of Mental Health, 10 provincial mental health coordinators oversee

mental health activities and programme implementation in provinces and coordinate with district mental health nurses, supervised by the District Nursing Officer (44). The district mental health nurses are not sufficiently established or funded.

Health care services in Zimbabwe are operated by public, non-profit, religious or mission organizations and by the private sector (34). The majority of the population accesses health care in public facilities (34). Health care facilities in Zimbabwe are organized in a hierarchical manner. Ideally, patients enter the system at primary care level and are referred up to district, provincial and central hospitals according to the level of care required. In 1984, a programme was initiated to decentralize health care to provinces and districts, with mental health services to be included at every health-care level. Only two mental health units were established in provincial hospitals, however, with none in district hospitals or primary health care clinics as planned.

Currently, there are two psychiatric hospitals, two psychiatric inpatient units and seven outpatient mental health facilities, with two forensic units in Zimbabwe (44). The country has 18 psychiatrists (0.1 per 100 000 population), six psychologists serving the public hospitals (0.04 per 100 000) and 917 specialist psychiatric nurses (6.5 per 100 000) (44). Although the number of specialist psychiatric nurses is relatively high, many do not work in the Government mental health sector, with a “brain drain” of these specialized workers to both other health specialties in the country and to other countries for greater remuneration and recognition. The very few psychologists in the public sector in Zimbabwe all work in the two psychiatric hospitals.<sup>1</sup> Although training programmes for psychologists have restarted, having been closed for the past 10 years, the Government has not been hiring them. In addition, there is no Government support to psychology interns during training, and they work with no monetary remuneration, unlike other health cadres such as medical doctors and nurses in training.<sup>1</sup> This compromises the ideal holistic, multidisciplinary approach to mental health.

Mental health care in Zimbabwe is concentrated in inpatient facilities. With over 11 mental health beds per 100 000 population, Zimbabwe has many more inpatient beds for mental health than the African average (2 per 100 000 population) (44–46). With care concentrated in inpatient facilities, there are more long-stay patients in the two facilities outside of Harare.

Stigmatization of mental health patients is seen at many levels in Zimbabwe, from lack of understanding of these diseases in the community to lack of recognition at governance level. This may contribute to a reluctance to seek treatment and strong reliance on inpatient care. For instance, inaccurate perceptions of the severity of mental illness on a person’s ability to participate in normal community and family life lead to the expectation that people with mental, neurological and substance abuse conditions should always be treated as inpatients.

According to the Mental Health Act, psychotropic medications (antipsychotics, antidepressants and mood stabilizers) should be provided free of charge to patients in public mental health and

<sup>1</sup> Position paper on integration of mental health services within Zimbabwean public institutions. Health Practitioners Council of Zimbabwe; 2021. Personal communication, 27 September 2021.





Photo: © UNDP

primary care facilities, including tertiary psychiatric hospitals and units, forensic units, provincial hospitals, district hospitals and local clinics. Psychiatric medications are, however, in short supply, and their availability for mental health patients is problematic. Many tertiary, provincial and forensic units have 1–3 months of stocks of medications, primarily first-generation antipsychotics and minimal anti-depressants and mood stabilizers, with frequent stockouts (36). Patients can access psychotropic medications in the private sector but must pay for them, making this option unaffordable for many. Most mental health patients and caregivers cannot afford medications because of lack of opportunities to work.

## 1.6 Mental health and the justice system

Zimbabwe has two forensic psychiatric units: the Chikurubi and Mlondolozhi “special Institutions”, which are run by the Ministry of Justice’s Correction and Prison Services Branch (36). These special institutions are for people with mental health conditions who are in contact with the law. The Minister of Health and Child Care and the Minister of Justice declare that these facilities can be used for the detention of forensic patients when no hospital or other location is available, as per the Mental Health Act of 1996 (35, 47). The forensic institutions play a significant role in mental health in Zimbabwe because of the large numbers of people in the two units (844 people in a holding capacity of 630, as of 31 March 2022), many for extended periods.

When an offender with a mental health condition enters the judicial system, a mental assessment can be ordered by a magistrate, judge or other judicial officer involved in the case (48). Concern about the time for initial assessments and delays in communication between the courts and the institutions, which include paperwork indicating treatment plans, is reported to be delaying and fragmenting care (48). Following treatment in a special institution, a Special Board reports to the Mental Health Tribunal for review and to determine discharge of a patient (48). Insufficient medical reports and delayed tribunal hearings for release are cited as significantly prolonging discharge (48, 49).

Concern about prolonged stays in special institutions due to procedural delays is compounded by concern about long-term stays of individuals charged with minor offences due to their mental health. Minor offences can be considered petty crimes, for which the legislation allows a patient to be released into the custody of family and to obtain mental health treatment as a civilian. The families must provide an affidavit that they are willing to care for the patient, which may be lengthy due to procedural delays and inadequate resources such as personnel and transport (48). Many patients, however, have no family support for such release and consequently remain in the special institutions for a long time. Stigmatization, traditional beliefs about mental illness and geographical distance from their families contribute to long stays in special institutions. With the procedural delays, these factors increase the load on the already under-resourced judicial system, a risk of continued violations of human rights and the criminalization of mental health patients who could be leading productive lives with community support (36, 48, 49).

Once a patient is discharged from a special institution, there is little follow-up available in the community, such as community mental health services or access to medication (48). Inadequate preparation of forensic patients for reintegration into the community and continuing stigmatization of patients in the community regarding both their mental health and their criminal activity may limit the continuity of care and result in recidivism (48). A study on recidivism in Zimbabwe found that 33% of the re-offenders interviewed had neurological conditions such as a history of head trauma or epilepsy (50).

Forensic mental health patients in special institutions in Zimbabwe are under the care of prison guards, who have limited access to trained mental health professionals. It is difficult to hire skilled nurses at these facilities because of their governance structure.

## 1.7 Financing

Mental health services in Zimbabwe are critically limited by financial constraints. The funding allocated for mental health amounts to just 0.42% of the total Zimbabwean health budget, with public spending on mental health equivalent to US\$ 0.13 per capita per year (45). In 2018, the total health budget for Zimbabwe was US\$ 996 million, with 58.5% from domestic sources and the remainder from external sources. Domestic general Government health expenditure amounted to 2.75% and 2.78% of the GDP in 2010 and 2018, respectively (51). The current Mental Health Strategic Plan notes expected difficulties in implementation due to lack of financing in the mental health sector, stating: "To implement this plan effectively, there is an urgent need for public funding and partnership with private and non-governmental organisations" (36).

Mental health appears to be a low priority for domestic health budget allocation. It is likely that lack of awareness, stigmatization and the view that other health issues are more urgent or more important for policy-makers to address contribute to the low level of financial support. The MOHCC proposed dedicated levies from alcohol sales and telecommunications air-time in Zimbabwe to increase funding for mental health, but these proposals have yet to be acted upon (36).

In 2015, over 80% of funding to the Zimbabwean health sector from external donors was earmarked for specific health issues (HIV/AIDS, tuberculosis (TB), malaria, child and maternal health) (34). Earmarked funding is a recognized issue; the current National Health Financing Policy calls for non-earmarked external funding to improve the overall health system (34). Mental health received 0.5% of all domestic public and external financing for health in 2016, or just under US\$ 5 million, as per the Health Interventions Prioritization Tool (52). Health sector resource mapping in 2018 indicated that the Government contribution to mental health amounted to US\$ 100 000 in 2017 (53).

Under-financing of mental health in Zimbabwe has resulted in lack of resources to pay mental health workers. This directly impacts patient care, as staff training and research are limited, and data collection and reporting are hindered by lack of vehicles, computers and wi-fi access. Additionally, international funding goes predominantly to other health concerns, which may contribute to the brain drain of specialized mental health workers, who are attracted to public service programmes or projects that provide better resources and remuneration.

Zimbabwe launched its first National Health Financing Strategy in 2017 with the overarching goal of achieving universal health coverage (54). The strategy notes challenges in Zimbabwe's health financing, including low and unpredictable Government budget allocations, the majority of the health budget going towards wages, unpredictable revenue from local authorities and external donors, poor stewardship of external funding that may not be aligned with country priorities and strong reliance on user fees, with out-of-pocket expenditure leading to catastrophic payments. Proposed interventions to reform health financing in Zimbabwe centre on raising revenue, increasing efficiency and Government resources and improving budget execution.

The main report on costing of the Zimbabwe National Health Strategy 2016–2020 proposed scaling up nine essential programmes, with noncommunicable diseases and mental health as priorities (55). It was estimated that US\$ 530.04 million would be required to fully implement the proposed mental health programme between 2015 and 2020. In an analysis of allocative efficiency in 2021, the World Bank found that one of the interventions that would optimize the 2016 health budget in Zimbabwe to achieve better health outcomes was increased spending on psychological and antidepressant therapy (52). They noted that just US\$ 1.6 million was expended in 2016 on such therapy and recommended an increase to US\$ 8.0 million to reduce the number of disability-adjusted life years associated with mental health conditions.

The interventions outlined in the Community Health Strategy for mental health are included in the programme for noncommunicable diseases. This area is expected to receive 0.2% of all programmatic costing each year between 2020 and 2025 (39, 41).

## 1.8 Multisectoral coordination

The MOHCC collaborates with various sectors, funders, non-profit organizations and other health programmes to achieve mental health objectives. The current Mental Health Strategic Plan notes the importance of working with private and non-profit organizations to fulfil the Ministry's plans for mental health in Zimbabwe. International organizations such as Médecins Sans Frontières and the President's Emergency Plan for AIDS Relief present in Zimbabwe provide opportunities for working with mental health services. Médecins Sans Frontières has collaborated with the Government of Zimbabwe to improve mental health care, provided resources such as food and blankets for forensic psychiatric units and staff training in the Harare Hospital Psychiatric Unit (36, 48). They have also contributed to infrastructure, notably supporting construction of a new outpatient facility and training of a community psychiatric outreach team.

The Government is collaborating with WHO in its Special Initiative for Mental Health to strengthen and transform the mental health system to realize the rights of people living with mental health conditions and to improve access to mental health services substantially (56). The initiative includes outcomes and outputs for seven priorities: governance and leadership; health financing; mental health service organization; human resources for mental health; research and health information management; community engagement; and mental health and psychosocial support in emergencies. Each priority has measurable indicators and activities to achieve the stated outcomes, and timelines are set for action and evaluation, resulting in a road map for improving mental health in Zimbabwe between 2020 and 2024. The activities in the Initiative, which is being implemented in partnership between Zimbabwe's MOHCC and WHO, address the many challenges to mental health service provision in Zimbabwe. It emphasizes expansion of mental health services through primary health care, integrating treatment for drug and alcohol abuse throughout the health system, establishing rehabilitative programmes for offenders with mental health conditions, improving mental health curricula and internship opportunities for training staff, working with people with lived experiences to improve community services and improving

support by communities and their families for individuals living with mental health conditions (56).

Zimbabwe has implemented the WHO Mental Health Gap Action Programme (mhGAP) to increase mental health care in non-specialist health settings and promote decentralization of mental health services. Training to date has included non-specialist health workers, and the programme is used to increase the skills of registered general nurses. mhGAP will feature in scaling up access to mental health services in Zimbabwe as part of the WHO Special Initiative, with plans to use Friendship Bench services as an mhGAP-recommended treatment option.

The Friendship Bench is a low-cost psychological intervention provided by trained village and community health workers to address common mental health conditions (36, 57). Supported financially by Grand Challenges Canada, the intervention was introduced in all 70 primary health care clinics in the City of Harare. The Friendship Bench has been adopted as a MOHCC programme and is listed as a recommended intervention in the current community health package; however, the noncommunicable diseases and mental health programme received only 0.2% of community health funding between 2020 and 2025 (36, 38), limiting the capacity of the MOHCC to maintain the Friendship Bench programme in clinics and to extend it further.

The Zimbabwe School Health Policy (2017) includes components that could be used to provide education, support services, a safe environment and health promotion for mental health (36). The MOHCC plans to work with the Ministry of Primary and Secondary Education and the Ministry of Higher Education to develop a curriculum for mental health awareness in the future.

UNICEF is advocating globally for promoting mental health among young people, with Zimbabwe identified as a priority for action. Integration of mental health into the UNICEF programmes currently operating in Zimbabwe, such as early childhood development and community health worker training, could be extended.

Mental health care could be integrated into care for co-morbid conditions, including infectious diseases such as HIV and TB. Integrated care can yield reciprocal benefits: mental health care improves adherence to HIV and TB treatments, and integration with HIV and TB treatment programmes could provide the staff necessary to support people living with mental health conditions, while extending access to mental health care to people living with HIV and TB.

In current funding requests to the Global Fund, Zimbabwe has included mental health in their HIV, TB and COVID-19 plans (58, 59). The 2020–2022 funding request from Zimbabwe to the Global Fund identified opportunities to integrate mental health care (and also care for cervical cancer and disability) with HIV care (60). The request included provisions for training health professionals in mental health, training community health workers in screening people who may have mental health problems and strengthening peer psychosocial support for young people (60). Acknowledging that lack of psychosocial support is a barrier to initiation of anti-retroviral treatment, the funding request also included mental health services and psychosocial counselling

as part of the minimum comprehensive HIV prevention package for men who have sex with men, with a target of 90% to be reached with the package by 2023 (60). Inclusion of mental health in funding from large donors such as the Global Fund will provide an additional opportunity to improve financial resources for mental health with reciprocal benefits among disease services. Integration is also recognized by local organizations, such as Africaid, a community organization that provides HIV care to children and adolescents and trains peer supporters to screen for common mental health conditions and suicidal ideation. Inclusion of mental health in peer support for adolescents living with HIV is increasingly recognized as a means for improving general well-being and adherence to treatment (61).

Maternal and early childhood conditions, such as stunting, are also related to mental health during the life-course. Under- or malnourished children who have not had adequate psychosocial support and stimulation (mother and infant) are at significantly greater risk of mental health conditions later in life (62). Similarly, infants and children whose primary caregivers have mental health conditions (e.g., pre- or post-partum depression) are also at risk for mental health conditions (63), putting children at risk of mental health problems in adulthood. All these intersections in the wider health systems provide opportunities for integration to improve outcomes in both physical and mental health conditions.

## 1.9 The response to COVID-19 and mental health

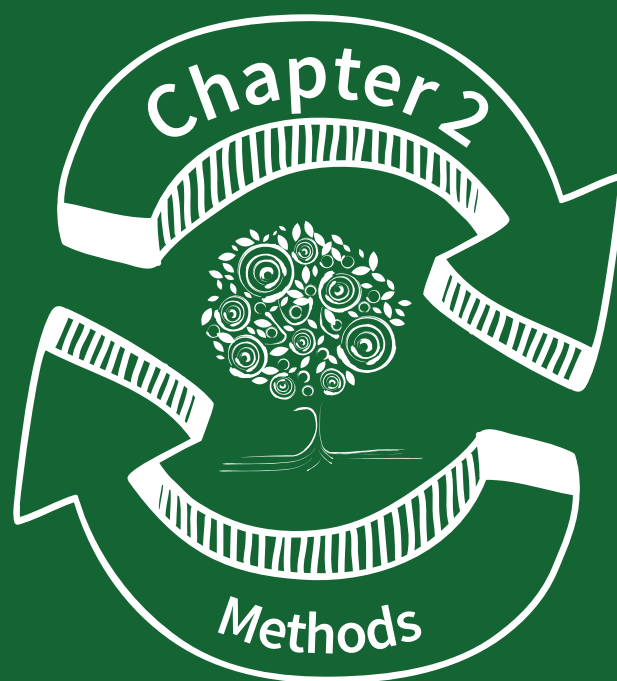
The United Nations Immediate Socio-economic Response to COVID-19 in Zimbabwe is designed to support the country in responding to and recovering from the ongoing pandemic. Priorities in the framework include mental health and psychosocial support for children and survivors of gender-based violence, psychosocial awareness to assist in strengthening social cohesion and providing psychosocial support for health-care workers and front-line responders (64). Other collaborators include the United Nations Population Fund, which is providing psychosocial support as a main component of their gender-based violence response programme (31). The MOHCC has also implemented an integrated Mental Health and Psychosocial Support programme in response to COVID-19 in all 10 provinces, including training over 2500 health-care workers in mental health and psychosocial services.

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## 2. METHODS

### 2.1 Estimating the economic consequences of mental health conditions

A model was developed to estimate the current economic burden attributable to both the direct and indirect costs of six mental health conditions and suicide in Zimbabwe. Population data were obtained by age and sex for the period 2021–2041 from ZimStat and the United Nations Department of Economic and Social Affairs World Population Prospects study. The OneHealth tool (**Box 1**) was used to model prevalence and mortality rates by age and sex for six mental health conditions: depression, anxiety, psychosis, bipolar disorder, epilepsy and alcohol use disorder. The model enabled estimation of the projected prevalence and mortality associated with each condition between 2021 and 2041, while holding current rates constant.<sup>2</sup> These projections were summarized as the total number of prevalent cases and deaths occurring in the entire population and in the working-age population (aged 15–64 years).

#### Box 1. OneHealth tool and its mental health module

The OneHealth tool is software designed for national strategic health planning in low- and middle-income countries. Development of the tool is overseen by a group consisting of experts from United Nations agencies and development institutions.

A mental health module was devised as part of the tool for estimating the costs and health impacts of mental health services and interventions at population level. The module allows estimation of the number of people living with mental health conditions in a country and linkage of the epidemiology of mental health conditions to national life tables for estimation of the numbers of cases averted and healthy life-years gained over time at population level.

The direct and indirect economic burden of mental health conditions and suicide in Zimbabwe was estimated with the following approach.

The direct economic burden of mental health conditions and suicide in Zimbabwe comprises all health-care expenditure for the management and care of people living with a mental health condition. An estimate of total health expenditure for mental health was derived with data from the Zimbabwe National Health Accounts for 2018 on total health expenditure (converted to 2021 prices) and a World Bank report (52) on the proportion of total health expenditure assigned to mental health programmes in Zimbabwe. The resulting estimate excluded non-health care costs such as transport, waiting times and informal care.

<sup>2</sup> The model estimated growth in prevalence and mortality due to population growth only – not growth in disease rates.

The indirect economic burden of mental health conditions and suicide in Zimbabwe is the lost productivity resulting from impaired mental health. Lost productivity can be the result of: absenteeism, when people take off days from work because of a mental health condition; presenteeism, when job performance is impaired due to a mental health condition; and premature death, which encompasses the lost productivity of people who die due to a mental health condition. The steps involved in estimating the indirect economic burden are described below.

- 1 ESTIMATION OF TOTAL EMPLOYED LABOUR FORCE**

First, the annual value (in terms of economic output) of each full-time worker in Zimbabwe was calculated from the GDP per employed person, defined as the country's GDP (US\$ 25.7 billion in 2021) divided by its total employed labour force. Local data on the total labour force aged  $\geq 15$  years, the unemployment rate and the labour force participation rate were used to determine the total employed labour force.
- 2 ESTIMATION OF REDUCTION IN WORKER PRODUCTIVITY DUE TO MENTAL HEALTH CONDITIONS**

Secondly, data were obtained to quantify the reduction in worker productivity due to each mental health condition. As in a previous global study of ROI (65), rates from the World Mental Health Surveys were used to describe: the reduction in labour force participation due to each of the six mental health conditions; the reduction in full-time hours worked due to mental health-related absenteeism; and the reduction in productivity due to mental health-related presenteeism.
- 3 ESTIMATION OF NUMBER OF WORKERS WITH MENTAL HEALTH CONDITIONS**

Thirdly, the number of Zimbabwean workers with a mental health condition during 2021 was estimated after adjustment for labour force participation, unemployment and mortality. This involved taking the total number of people aged 15–64 years with a mental health condition and then subtracting those who were not participating in the labour force (e.g., still at school), were unemployed, could not participate in the labour force because of their mental health condition or were no longer alive.
- 4 CALCULATING ECONOMIC LOSSES**

Finally, the economic losses attributable to absenteeism, presenteeism and premature death among workers with a mental health condition were calculated by taking the reductions in productivity quantified for each mental health condition, applying these to the total number of Zimbabwean workers with a mental health condition and then multiplying the result by the GDP per employed person. This calculation resulted in the total indirect economic burden of mental health conditions in Zimbabwe.

## 2.2 Calculating the costs and health effects of scaling up clinical and population-based intervention packages

Two broad categories of interventions were examined as part of the economic analysis: clinical interventions and population-based interventions. The first category of interventions were **clinical interventions**, comprising a range of evidence-based packages (i.e., collections of related interventions) for the identification and management of mental health conditions. The packages were derived from the WHO mhGAP intervention guide. Examples of clinical interventions in the guide include: “basic psychosocial support”, which comprises psychoeducation, stress reduction, social support and promotion of functioning in daily activities and community life; and “psychological treatment”, which comprises evidence-based, structured psychological treatments such as cognitive behavioural therapy and interpersonal psychotherapy. The Friendship Bench programme developed in Zimbabwe is an evidence-based (brief) psychological intervention, or treatment, the basis of which is problem-solving therapy for common mental disorders, including depression and anxiety (66).

The second category were **population-based interventions** to prevent the onset of mental health conditions and/or deaths by suicide in the broader population. They included a regulatory ban on highly hazardous pesticides in order to restrict access to a common method for suicide in low- and middle-income countries, and universal social–emotional learning (SEL) programmes to increase the psychological resilience of adolescent students and, in turn, reduce the risk of mental health problems later in life.

The OneHealth tool was used to estimate the costs of the selected clinical interventions for each of the six mental health conditions (depression, anxiety, psychosis, bipolar disorder, epilepsy and alcohol use disorder). Custom-built Excel® models were then used to estimate the costs associated with two population-based mental health interventions: a nationwide regulatory ban on highly hazardous pesticides to prevent suicide and universal delivery of SEL programmes to adolescents in schools to prevent depression, anxiety and suicide. Each intervention modelled in the OneHealth tool and the custom-built Excel® models was based on assumptions made by WHO experts about the quantity of resource items required for implementation and enforcement at national level. In line with the methodological guidance for mental health investment cases (67), the main categories of resource cost were:

- **inpatient care:** people with mental health conditions who require hospitalization (e.g., 5% of moderate–severe cases of depression, for an average stay of 14 days);
- **outpatient and primary care:** for most cases, who require regular outpatient visits (e.g., from four visits per case per year for basic psychosocial support or pharmacological management to monthly or bi-monthly visits for moderate–severe cases receiving psychological treatment);

- **medication:** essential psychotropic medications that include anti-psychotics, antidepressants and anti-epileptics; and
- **programme costs and shared health system resources:** including programme management, administration, training and supervision.

The unit costs for each resource were obtained from local sources (e.g., the Zimbabwe MOHCC, the National Household Survey performed by ZimStat (68) and the WHO-CHOICE database (69, 70)). Interventions were assumed to be delivered in a mix of community and facility mental health care. To estimate the health impact of these interventions, a population-based model was used in the OneHealth tool to calculate the number of healthy years of life lived by the population at current and target levels of coverage (**Table 1**). Healthy life years comprise both expected changes in life expectancy (e.g., as a result of a decrease in the case fatality rate after introduction of a pesticide ban) and non-fatal health outcomes (e.g., reduced incidence or duration of depressive episodes after treatment). Default effect sizes for the modelled interventions were taken from WHO's cost-effectiveness work programme and are summarized in Table 1.

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**Table 1. Interventions considered in the mental health investment case**

Intervention	Baseline coverage (2021) (%)	Target coverage (2041) (%)	Health impacts assessed
<b>Anxiety disorders</b> <i>(Service delivery: Primary health care)</i>			
<b>Basic psychosocial support for mild cases</b>	5	30	Improved functioning or level of disability (7–12%) and rate of remission (36–42%) among people with anxiety disorder aged ≥ 15 years after adjustment for non-adherence (30–40%) <sup>a</sup>
<b>Basic psychosocial support plus anti-depressant medication for moderate–severe cases</b>	10	40	
<b>Psychological treatment plus anti-depressant medication for moderate–severe cases</b>	5	30	
<b>Depression</b> <i>(Service delivery: Primary health care)</i>			
<b>Basic psychosocial support for mild cases</b>	5	30	Improved functioning or reduced level of disability (4–9%) and rate of remission (15–25%) among people aged > 15 years with depression, after adjustment for non-adherence (30–40%) <sup>b</sup>
<b>Basic psychosocial support plus anti-depressant medication for first episode of moderate–severe depression</b>	10	40	
<b>Psychological treatment plus anti-depressant medication for first episode of moderate–severe depression</b>	5	30	
<b>Psychological treatment plus anti-depressant medication for recurrent episodic moderate–severe depression</b>	5	30	
<b>Psychological treatment plus anti-depressant medication for recurrent moderate–severe depression for maintenance</b>	1	30	As above, plus reduced incidence of recurrent episodes (28%), after adjustment for non-adherence (30%)
<b>Psychosis</b> <i>(Service delivery: Secondary health care)</i>			
<b>Basic psychosocial support plus anti-psychotic medication</b>	20	60	Improved functioning or reduced level of disability among people aged ≥ 15 years with psychosis (21–35% after adjustment for adherence) <sup>c</sup>
<b>Psychological treatment plus anti-psychotic medication</b>	5	30	
<b>Bipolar disorder</b> <i>(Service delivery: Secondary health care)</i>			
<b>Basic psychosocial support plus mood-stabilizing medication</b>	20	50	Improved functioning or reduced level of disability among people aged ≥ 15 years with bipolar disorder (22–29%, after adjustment for adherence) <sup>d</sup>
<b>Psychological treatment plus mood-stabilizing medication</b>	5	20	
<b>Epilepsy</b> <i>(Service delivery: Primary health care)</i>			

Intervention	Baseline coverage (2021) (%)	Target coverage (2041) (%)	Health impacts assessed
<b>Basic psychosocial support plus antiseizure medication</b>	40	90	Improved functioning or reduced level of disability (47%) and rate of remission (60%) among people aged $\geq 1$ year with epilepsy, after adjustment for non-adherence (30%) <sup>e</sup>
<b>Alcohol use disorder</b> <i>(Service delivery: Secondary health care)</i>			
<b>Identification and assessment of new cases</b>	20	40	Improved rate of remission (10–15%) among people aged $\geq 15$ year, after adjustment for non-adherence (50%) <sup>f</sup>
<b>Brief interventions and follow-up</b>	20	40	
<b>Management of alcohol withdrawal</b>	20	40	
<b>Prevention of relapse (12 sessions of cognitive behavioural therapy)</b>	20	40	
<b>Population-based mental health interventions</b>			
<b>Nationwide regulatory ban on highly hazardous pesticides to prevent suicide</b>	5	100	A reduction in relative risk for pesticide-related suicide (35%), subsequently linked to overall suicide and mortality in the population <sup>g</sup>
<b>Universal school-based SEL intervention to prevent depression, anxiety and suicide in adolescents aged 12–17 years</b>	5	100	A reduction in relative risk for depression and anxiety (16%) and for suicide (5.8%) among adolescents attending school <sup>h</sup>

- a Details of treatment impacts in reference 65.  
b Details of treatment impacts are provided in references 65 and 71.  
c Details of the model and its parameters are provided in reference 72.  
d Details of the model and its parameters are provided in reference 73.  
e Details of the model and its parameters are provided in reference 74.  
f Details of the model and its parameters are provided in reference 75.  
g Details of the model and its parameters are provided in reference 76.  
h Details of the model that was developed and populated are provided in a background paper prepared and presented by Dr Yong Yi Lee and others at an expert consultation held at WHO headquarters on 20–21 August 2019, and which is being submitted for publication in a peer-reviewed academic journal.

SEL interventions are summarized in **Box 2**.

### **Box 2. School-based social–emotional learning (SEL) interventions**

The onset of depression and suicide increases rapidly during adolescence (10–19 years). Prevention of depression and suicide during these crucial developmental stages could result in substantial health gains during the life-course of an individual. School-based SEL interventions to prevent depression and/or suicide typically involve a trained facilitator (e.g., a teacher, health professional or lay worker) who delivers a series of modules to teach psychotherapeutic strategies to improve overall well-being and/or reduce the risk of poorer mental health outcomes. Evidence has been published that school-based SEL interventions targeting adolescents are effective in reducing the incidence of depression and/or suicide (74–76). Schools are increasingly being recognized as important platforms for population delivery of preventive mental health interventions to young people (80, 81). School psychological interventions are typically delivered to all students, regardless of their risk profile.

## **2.3 Analysis of return on investment**

An Excel® model was developed by WHO to perform the ROI analysis. The model produces estimates of the economic gains that accrue from investing in a range of cost-effective mental health interventions previously identified by WHO. The in-scope clinical and population-based interventions are listed in Table 1. Estimates were made of how each mental health intervention would improve national productivity, measured in terms of GDP. For all interventions except those for psychosis, bipolar disorder and epilepsy, restored productivity was estimated with a direct method for explicit calculation of increased productivity attributable to: increased labour force participation through avoided mortality and illness, reductions in absenteeism and reductions in presenteeism. An “imputed method” was used to quantify the productivity gains attributable to interventions for psychosis, bipolar disorder and epilepsy indirectly. This method was necessary because of data limitations that obviated application of the direct method for these three conditions.

With the direct method for estimating restored productivity, the economic value of increases in the healthy labour force due to avoided mortality was calculated by taking the total number of deaths avoided, adjusting this number to account for those who participate in the labour force and are currently employed and then multiplying by the net present value of foregone GDP per capita over the model time horizon of 20 years. The economic value of increases in the healthy labour force due to avoided cases of illness was calculated by taking the total number of prevalent cases averted, applying the same employment-related adjustments as above, multiplying by the annual GDP per employed person and then further multiplying by 5% (i.e., the increase in labour force participation by those with a mental health condition who receive treatment). The 5% increase in labour force participation was based on the findings of a previous global study of ROI,



in which 5% restored productivity was applied after mental health treatment (69). The economic value of reducing absenteeism and presenteeism was estimated in a similar manner, except that multiplication by 5% represented the decrease in absenteeism and presenteeism among those with a mental health condition who received treatment. The 5% reductions in absenteeism and presenteeism were based on findings from the previous global study, in which 5% restored productivity was applied after mental health treatment (65).

Productivity gains resulting from each mental health intervention except those for psychosis, bipolar disorder and epilepsy were calculated by the direct method as the sum of the productivity gains attributable to increased labour force participation (by avoided mortality and illness) and reduced absenteeism and presenteeism. In the case of the SEL intervention for adolescents, only productivity gains due to increased labour force participation could be estimated. Productivity gains due to reduced absenteeism and presenteeism were not estimated for the school intervention, as they are not relevant to people of non-working age. Moreover, there is currently no established method for determining how impacts on educational attainment during adolescence (which can be improved by preventing mental ill health) translate into better earning potential later in life.

The “imputed method” was used to estimate restored productivity resulting from treatment of psychosis, bipolar disorder and epilepsy. A Lancet commission on investing in health determined that the value of a healthy life year gained is approximately 1.5 times GDP per capita (82, 83). Two thirds of this value (1.0 times GDP per capita) is attributable to the instrumental value of improved health – i.e., increased productivity in the workplace. Conversely, one third (0.5 times GDP per capita) is attributable to the intrinsic value of health – i.e., the social value of health as an end in itself. For the current analysis, productivity gains due to treatment of psychosis, bipolar disorder and epilepsy were estimated by taking the total healthy life years gained by an intervention, multiplying this by the GDP per capita for Zimbabwe and further multiplying by a factor of 1.0 (i.e., quantifying the productivity-related instrumental value of health as a multiple of GDP per capita). Two base case scenarios were examined for the ROI analysis. In the first, we analysed the impact only of productivity gains as the main economic benefit (i.e., the instrumental value of health), while in the second we quantified the joint impact of productivity gains and the social value of health (i.e., the instrumental and intrinsic value of health). Both the direct and imputed methods for estimating restored productivity allow quantification of productivity gains (the instrumental value) attributable to improvements in health. The additional impact of the social value of health as a measure of economic gain was estimated by multiplying each healthy life year gained by 0.5 times GDP per capita and then adding this to the total productivity gains estimated by either the direct or the imputed method.

In a sensitivity analysis, separate assessments were made to determine how the base case results might change under different assumptions. The first sensitivity analysis tested the impact of applying the imputed method rather than the direct method to evaluate the productivity gains produced by interventions for anxiety disorders, depression and alcohol use disorder. The second sensitivity analysis tested the impact of reducing the instrumental economic value assigned to 1 year of healthy life by 50% when applying the imputed method to interventions for psychosis, bipolar disorder and epilepsy. This would reduce the productivity gains attributable to one healthy life year gained to 0.5 times GDP per capita instead of 1.0 times GDP per capita.

The concept of healthy life years gained is explained in **Box 3**.

### Box 3. Healthy life years gained

“Healthy life years gained” (equivalent to disability-adjusted life years averted) is commonly used in the global health literature as a summary measure of population health. National life tables are used to compute healthy life years, which reflect the combined time spent by the population in a state of health with a known degree (or absence) of disability. A disability weight ranging from 0 (denoting death) to 1 (denoting perfect health) is used to adjust the time spent in a particular health state. For example, if a person lives with disease X for 10 years and the disability weight for disease X is 0.4, the total healthy life years gained for that person is 4 (10 multiplied by 0.4).

The ROI for each intervention was calculated by comparing the productivity gains resulting from the intervention (measured as an increase in GDP) with the total costs of setting up and implementing the intervention. Projected costs and projected productivity gains were estimated by the net present value approach when applying a 3% annual discount rate. Future impacts on health, productivity and future intervention costs were discounted to their present value to account for the time value of money, whereby a unit of money obtained in the future is worth less than the same unit of money obtained in the present. The ROI resulting from each intervention was presented in terms of two alternative metrics: (1) the benefit-to-cost ratio, defined as the present value of total health and/or productivity gains divided by the present value of total intervention costs; and (2) the ROI ratio, defined as the present value of total health and/or productivity gains minus the present value of total intervention costs, divided by the present value of total intervention costs (71).

The formulae used to calculate the benefit-to-cost ratio for the two base case scenarios are presented in equations 1a and 1b (where PV denotes “present value”). The formulae used to calculate the ROI ratio for the two base case scenarios are presented in equations 2a and 2b.

**Eq. 1a**

$$\text{Benefit-to-cost ratio (productivity only)} = \frac{\text{PV of productivity gains}}{\text{PV of intervention costs}}$$

**Eq. 1b**

$$\text{Benefit-to-cost ratio (productivity + social)} = \frac{\text{PV of productivity gains} + \text{PV of social value}}{\text{PV of intervention costs}}$$

**Eq. 2a**

$$\text{ROI ratio (productivity only)} = \frac{(\text{PV of productivity gains} - \text{PV of intervention costs})}{\text{PV of intervention costs}}$$

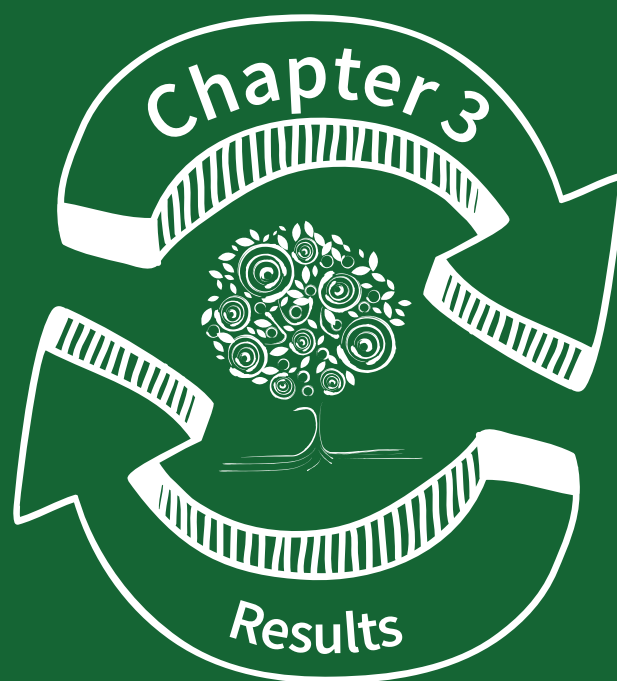
**Eq. 2b**

$$\text{ROI ratio (productivity + social)} = \frac{((\text{PV of productivity gains} + \text{PV of social value}) - \text{PV of intervention costs})}{\text{PV of intervention costs}}$$

Photo: © WHO







## 3. RESULTS

This section describes the economic burden of mental health conditions and suicide; summarizes the components of the ROI analysis (including health impacts, economic gains and total costs); and discusses the benefit–cost ratio and ROI for each intervention package.

### 3.1 Economic burden

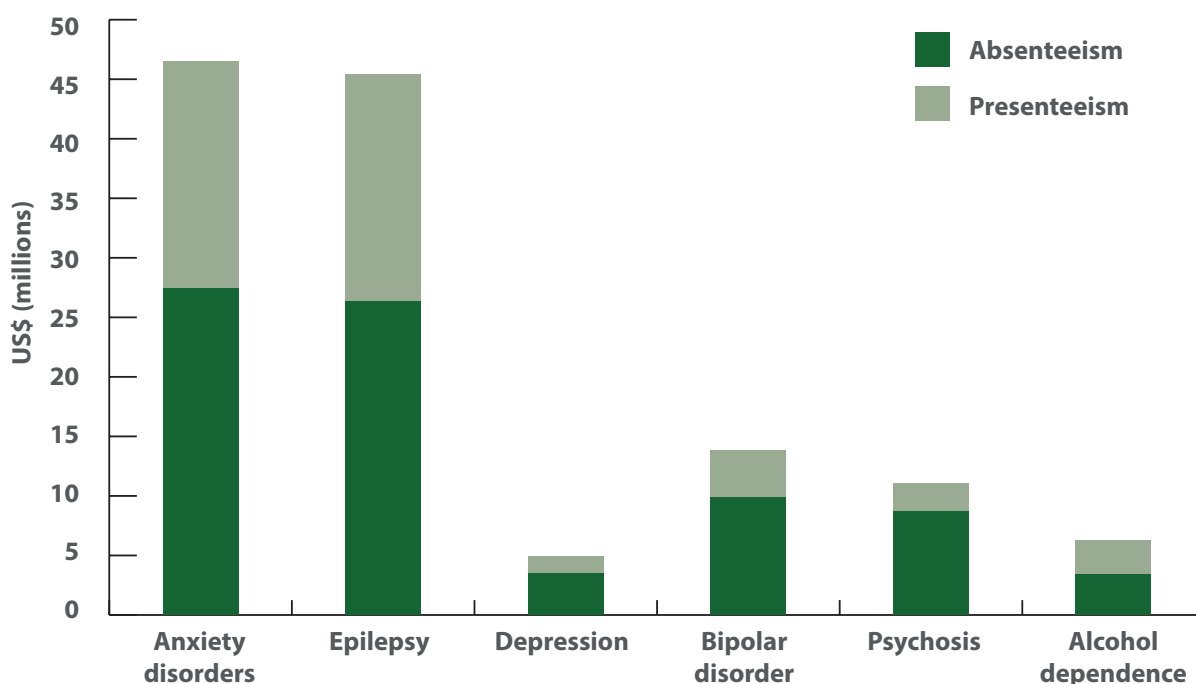
#### *Direct costs*

The total health expenditure for mental health in Zimbabwe in 2021 was US\$ 8.8 million from the following sources of financing: the Government, private corporations, households and international funders. Total health expenditures could not be disaggregated by mental health condition.

#### *Indirect costs*

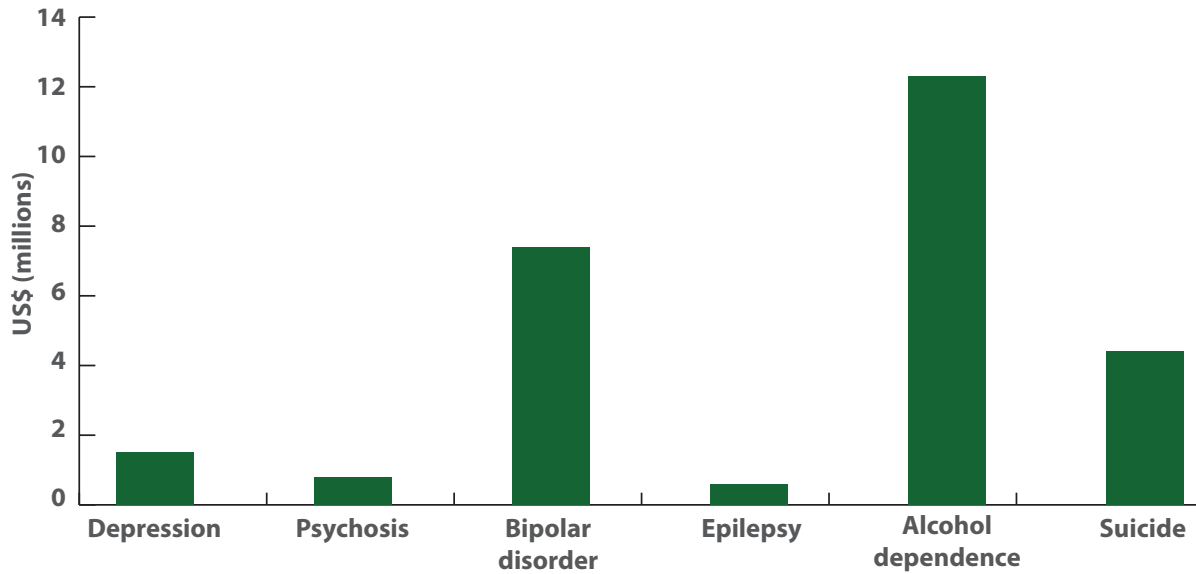
The indirect economic losses due to mental health conditions and suicide were estimated as the sum of losses due to absenteeism, presenteeism and premature death. The total combined cost of absenteeism and presenteeism in Zimbabwe is presented in **Fig. 1**. The total number of working days absent was estimated to be 2.3 million for absenteeism and 1.4 million for presenteeism, which resulted in a total cost of US\$ 127.7 million in 2021. The absenteeism and presenteeism costs were highest for anxiety disorders. Although anxiety is associated with fewer days off work than depression for the average individual, the estimated prevalence of anxiety in Zimbabwe was higher than that for depression.

**Fig. 1. Costs of absenteeism and presenteeism for mental health conditions (2021 US\$, millions)**



The total cost of premature death due to mental health conditions was estimated to be US\$ 27.1 million in 2021 (Fig. 2).

**Fig. 2. Costs of premature death for mental health conditions (2021 US\$, millions)**



Bipolar disorder and alcohol use disorder are the costliest mental health conditions in terms of premature death, because of the high estimated excess mortality for these two conditions in the Global Burden of Disease study, which is the source of the epidemiological data in the OneHealth tool (e.g., six times more estimated deaths in the population than due to depression or psychosis). High mortality among cases of alcohol use disorder was due to various causes, from cancers to injuries (e.g., traffic accidents and falls). Anxiety disorders do not lead to death but, as described above, are associated with a high economic burden due to absenteeism and presenteeism. It should be noted that the data do not account for known co-morbid conditions, such as common co-morbid alcohol use disorder with major depressive, bipolar and anxiety disorders (84), which could influence mortality.

## Total economic costs

**Table 2** shows the total direct and indirect costs of mental health conditions and suicide in Zimbabwe. The indirect economic losses are much higher than the direct losses. Total expenditure on health care for mental health conditions was US\$ 8.8 million, and the losses to the economy due to absenteeism, presenteeism and premature death amounted to US\$ 154.8 million.

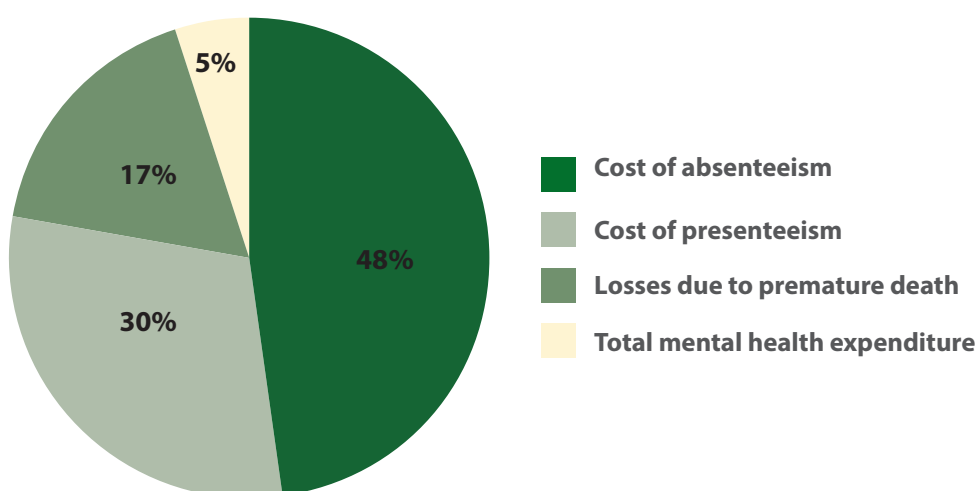
**Table 2. Economic burden of mental health conditions in Zimbabwe (2021 US\$, millions)**

Item	Total costs (2019 US\$, millions)
<b>Direct costs</b>	
Health care	8.8
Total direct costs	8.8
<b>Indirect costs</b>	
Absenteeism	79.1
Presenteeism	48.6
Premature deaths	27.1
Total indirect costs	154.8
<b>Total</b>	<b>163.6</b>

The total economic burden of the selected mental health conditions and suicide on the Zimbabwean economy in 2021 was estimated to be US\$ 163.6 million, equivalent to 0.6% of the GDP in 2021.

**Fig. 3.** shows the structure of the economic burden of mental health conditions in Zimbabwe in 2021. Total health care expenditure represented only 5% of all mental health-related costs – a minor proportion of the overall economic burden.

**Fig. 3. Structure of the economic burden of mental health conditions in Zimbabwe**





## 3.2 Costs of intervention

The costs of the interventions were estimated for 2021–2041. **Table 3** shows the absolute costs during each of the first 5 years of this period plus the net present value of the 10-year and 20-year total costs. **Table 4** shows the corresponding per capita costs.

**Table 3. Estimated absolute costs of interventions (US\$, millions), 2021–2041**

Intervention package <sup>a</sup>	2021	2022	2023	2024	2025	Total for 10 years <sup>b</sup>	Total for 20 years <sup>b</sup>
<b>Clinical interventions</b>							
Anxiety disorders	1.5	1.8	2.2	2.6	3.0	30.2	72.6
Depression	1.3	1.8	2.3	2.8	3.3	33.8	85.2
Psychosis	1.1	1.2	1.4	1.5	1.7	17.2	40.9
Bipolar disorder	3.2	3.6	4.0	4.4	4.8	47.6	109.5
Epilepsy	0.5	0.6	0.7	0.8	0.9	8.9	20.8
Alcohol use disorder	5.3	5.7	6.1	6.5	6.8	64.5	124.5
<b>Population-based interventions</b>							
Pesticide ban	3.0	0.7	0.7	0.7	0.7	9.5	9.5
Universal school-based SEL intervention	0.7	0.7	1.3	1.3	1.3	26.6	55.4
<b>Total</b>	<b>16.6</b>	<b>16.1</b>	<b>18.7</b>	<b>20.6</b>	<b>22.5</b>	<b>238.3</b>	<b>518.4</b>

a Mental health intervention packages for clinical interventions include multiple intervention approaches (e.g., basic psychosocial support, psychological treatment and medications) in primary and secondary health care.

b Totals are presented as a net present value, discounted at a 3% annual rate.

**Table 4. Estimated per capita costs of interventions (US\$), 2021–2041**

Intervention package <sup>a</sup>	2021	2022	2023	2024	2025	Total for 10 years <sup>b</sup>	Total for 20 years <sup>b</sup>
<b>Clinical interventions</b>							
<b>Anxiety disorders</b>	0.10	0.12	0.14	0.17	0.19	2.0	4.7
<b>Depression</b>	0.08	0.11	0.15	0.18	0.21	2.2	5.5
<b>Psychosis</b>	0.07	0.08	0.09	0.10	0.11	1.1	2.6
<b>Bipolar disorder</b>	0.21	0.23	0.26	0.28	0.31	3.1	7.1
<b>Epilepsy</b>	0.03	0.04	0.05	0.05	0.06	0.6	1.3
<b>Alcohol use disorder</b>	0.35	0.37	0.39	0.42	0.44	4.2	8.0
<b>Population-based interventions</b>							
<b>Pesticide ban</b>	0.19	0.05	0.05	0.05	0.04	0.6	0.6
<b>Universal school-based SEL intervention</b>	0.04	0.05	0.08	0.08	0.08	1.7	3.6
<b>Total</b>	<b>1.07</b>	<b>1.05</b>	<b>1.21</b>	<b>1.33</b>	<b>1.44</b>	<b>15.5</b>	<b>33.4</b>

a Mental health intervention packages for clinical interventions include multiple intervention approaches (e.g., basic psychosocial support, psychological treatment and medications) in primary and secondary health care.

b Totals are presented as a net present value, discounted at a 3% annual rate.

Clinical interventions for alcohol use disorder and bipolar disorder incurred the largest estimated costs because of the amount of care and support required for these conditions. Implementation of the entire package of clinical interventions (excluding population-based interventions) would cost US\$ 202.2 million (or US\$ 13.1 per capita) over the 10-year scaling-up period and US\$453.5 million (or US\$ 29.3 per capita) over the 20-year scaling-up period.

The total costs for the two population-based mental health interventions (pesticide ban and universal school-based SEL intervention) were among the lowest of all intervention packages. Altogether, they would cost US\$ 36.1 million (or US\$ 2.3 per capita) over 10 years and US\$ 64.9 million (or US\$ 4.2 per capita) over 20 years.

### 3.3 Health impacts

All the interventions significantly increase the total number of healthy life years gained (absolute results presented in **Table 5**). As described in Box 4, healthy life years gained is a measure of the additional years of healthy life provided by an intervention after adjustment for disease-related health states by applying disability weights. The greatest impacts were those of interventions for depression (42 866 healthy life years gained over 10 years), the universal school-based SEL intervention (18 632), followed by clinical interventions for epilepsy (17 021) and anxiety (16 465).

**Table 5. Estimated absolute health impacts**

Intervention package <sup>a</sup>	Total healthy life-years gained		Prevalent cases averted		Total deaths avoided	
	20 years	10 years	20 years	10 years	20 years	10 years
<b>Clinical interventions</b>						
<b>Anxiety disorders</b>	16 465	89 051	70 183	434 459	0	0
<b>Depression</b>	42 866	192 398	132 992	593 812	280	1 324
<b>Psychosis</b>	8 998	39 700	n/a	n/a	n/a	n/a
<b>Bipolar disorder</b>	4 719	26 428	n/a	n/a	812	3 275
<b>Epilepsy</b>	17 021	91 517	11 730	86 419	68	588
<b>Alcohol use disorder</b>	6 773	41 356	18 884	95 608	540	3 029
<b>Population-based interventions</b>						
<b>Pesticide ban</b>	11 672	37 734	n/a	n/a	725	2 523
<b>Universal school-based SEL intervention</b>	18 632	47 987	56 366 <sup>b</sup>	147 098 <sup>b</sup>	187 <sup>c</sup>	472 <sup>c</sup>
<b>Total</b>	<b>127 146</b>	<b>566 171</b>	<b>290 155</b>	<b>1 357 396</b>	<b>2612</b>	<b>11 211</b>

n/a, not applicable

- a Mental health intervention packages for clinical interventions include multiple approaches (e.g., basic psychosocial support, psychological treatment and medications) in primary and secondary health care.
- b Prevalent cases of depression or anxiety
- c Deaths due to suicides attributable to depression

Certain interventions also reduce mortality as a direct result (pesticide ban, school-based SEL interventions) or because of a reduced prevalence of conditions associated with an excess rate of mortality (depression, alcohol use disorder).

Bipolar disorder and psychosis are less common conditions than, for instance, depression and anxiety. They are, however, severe mental health conditions that often result in substantial suffering and human rights abuses, and they usually persist throughout the life of an affected individual.

The main benefit of treatment is a reduction in the severity of symptoms and improvement in a person's daily functioning. This is reflected as a reduction in the disability weight of these two mental health conditions. Hence, the primary impact on healthy life years gained is due to reductions in the disability weight for these conditions and not reductions in the number of prevalent cases or deaths.

### 3.4 Productivity gains

The total net present value of productivity gains generated by the mental health intervention packages are presented in **Table 6** (and categorized by the method used to estimate restored productivity). When the direct method was used for estimating restored productivity, reduced mortality had an important impact on productivity due to increased labour force participation (with productivity gains worth US\$ 55.7 million over 10 years), followed by avoided cases of illness, reduced presenteeism and reduced absenteeism (US\$ 74.8 million altogether). When the implicit method was used, productivity gains were seen with treatment of psychosis (US\$ 12.9 million), bipolar disorder (US\$ 6.7 million) and epilepsy (US\$ 24.3 million). The mental health packages resulted in a net present value of US\$ 174.8 million in productivity gains over 10 years, which would accrue to US\$ 689.3 million over 20 years.

**Table 6. Estimated productivity gains provided by the mental health intervention packages (US\$, millions), 2021–2041**

Method used to estimate restored productivity	Total productivity gains <sup>a</sup>	
	10 years	20 years
<b>Direct method <sup>a</sup></b>		
Increased labour force participation due to avoided mortality	55.7	196.3
Increased labour force participation due to avoided cases of illness	24.9	102.9
Reduction in absenteeism	24.9	102.9
Reduction in presenteeism	24.9	102.9
<b>Implicit method <sup>b</sup></b>		
Productivity gains for psychosis	13.0	47.0
Productivity gains for bipolar disorder	6.8	30.7
Productivity gains for epilepsy	24.4	106.5
<b>Total</b>	<b>174.8</b>	<b>689.3</b>

a Totals are presented as a net present value, discounted at a 3% annual rate.

b The direct method for estimating restored productivity was applied to the mental health intervention packages for anxiety disorders, depression, alcohol use disorders, the pesticide ban and universal school-based SEL. Restored productivity is presented here by the type of productivity gain generated (i.e., increased labour force participation due to avoided mortality or illness and reductions in absenteeism or presenteeism). Restored productivity is presented by mental health intervention package in Table 7.

c The implicit method for estimating restored productivity was applied to the mental health packages for psychosis, bipolar disorder and epilepsy.

## 3.5 Return on investment

**Table 7** demonstrates that the majority of the mental health intervention packages produce a benefit–cost ratio > 1.0 over 20 years. This signifies that these intervention packages provide a positive ROI, such that total productivity gains exceed the total costs. For some interventions, the ratio is lower, largely because of higher intervention costs (e.g., alcohol use disorder, bipolar disorder) or methodological limitations to quantification of long-term productivity outcomes (i.e., universal school-based SEL).

**Table 7. Costs, benefits (productivity gains only) and benefit–cost ratios at 10 and 20 years, by intervention package (2021 US\$, million)**

Intervention package <sup>a</sup>	Total costs <sup>b</sup>		Total productivity gains <sup>b</sup>		Benefit–cost ratio (productivity gains only)		Return on investment ratio (productivity gains only)	
	10 years	20 years	10 years	20 years	10 years	20 years	10 years	20 years
<b>Anxiety disorders</b>	30.2	72.6	23.4	117.6	0.8	1.6	-0.2	0.6
<b>Depression</b>	33.8	85.2	54.8	200.6	1.6	2.4	0.6	1.4
<b>Psychosis</b>	17.2	40.9	13.0	47.0	0.8	1.1	-0.2	0.1
<b>Bipolar disorder <sup>c</sup></b>	47.6	109.5	6.8	30.7	0.1	0.3	-0.9	-0.7
<b>Epilepsy</b>	8.9	20.8	24.4	106.5	2.7	5.1	1.7	4.1
<b>Alcohol use disorder</b>	64.5	124.5	24.8	107.6	0.4	0.9	-0.6	-0.1
<b>Pesticide ban</b>	9.5	9.5	27.1	78.4	2.9	8.3	1.9	7.3
<b>Universal school-based SEL intervention <sup>d</sup></b>	26.6	55.4	0.43	0.93	0.02	0.02	-1.0	-1.0
<b>Total</b>	<b>238.3</b>	<b>518.3</b>	<b>174.8</b>	<b>689.3</b>				

a Mental health intervention packages for clinical interventions include multiple intervention approaches (e.g., basic psychosocial support, psychological treatment and medications) in primary and secondary health care.

b Totals are presented as net present value, discounted at a 3% annual rate.

c The ROI for the bipolar disorder intervention package was lower than that for other intervention packages, as treatment largely reduces the disability weight for this disorder, rather than prevalence or mortality. Additionally, this intervention package has less potential to increase labour force participation. It should be emphasized that there may be strong non-economic reasons for choosing to invest in an intervention package with a low ROI, such as to protect human rights or respect the rule of rescue.

d These results exclude productivity gains among students due to methodological limitations in estimating future productivity gains among students with improved mental health.

The pesticide ban intervention had the highest benefit–cost ratio: for US\$ 1 invested in the package of these interventions, the expected return is US\$ 2.9 over 10 years and US\$ 8.3 over 20 years. This is followed by the package of epilepsy interventions, which provides a benefit–cost ratio of US\$ 2.7 over 10 years and US\$ 5.1 over 20 years. Over 10 years, the intervention packages for anxiety disorders, psychosis, bipolar disorder, alcohol use disorder and the universal school-based SEL intervention were found to have negative ROI ratios (or, alternatively, benefit–cost ratios < 1.0). This indicates that these intervention packages did not provide a positive ROI as total costs exceeded total productivity gains over 10 years. Over the longer, 20-year period, however, the intervention packages for anxiety disorders and psychosis would generate positive ROIs.

**Table 8** shows the impact of incorporating the social value of health in addition to productivity gains when calculating the benefit–cost ratio (the social value of health is the intrinsic value of improving health as an end in itself, estimated to be 1 healthy life year gained multiplied by 0.5 times GDP per capita).

The benefit–cost ratios for the intervention packages for epilepsy and the pesticide ban increase substantially. More favourable benefit–cost ratios are also observed for anxiety disorders, depression, psychosis and universal school-based SEL interventions. These interventions produce US\$ 1.9 (anxiety disorders), 4.3 (depression), 1.9 (psychosis) and 1.5 (universal school-based SEL intervention) of economic benefit for every US\$ 1 spent over 10 years. Over 20 years, these intervention packages would produce US\$ 3.7 (anxiety disorders), 6.2 (depression), 2.8 (psychosis) and 1.6 (universal school-based SEL intervention) of economic benefit for every US\$ 1 spent.

Inclusion of the social value of health and quantification of health as an economic outcome in its own right strengthens the case for investing in interventions for psychosis, a pesticide ban and universal school-based SEL. This is especially true for the universal school-based SEL intervention, given that the economic value of productivity gains (i.e., restored productivity) among students aged 12–17 years is negligible when compared with the economic value of the resulting health gains (i.e., social value of health).

**Table 8. Costs, benefits (productivity gains plus social value of health) and benefit–cost ratios at 10 and 20 years, by intervention package (2021 US\$, million)**

Intervention package <sup>a</sup>	Total costs <sup>b</sup>		Total productivity gains plus social value of health <sup>b</sup>		Benefit–cost ratio (productivity gains plus social value of health)		Return on investment ratio (productivity gains plus social value of health)	
	10 years	20 years	10 years	20 years	10 years	20 years	10 years	20 years
<b>Anxiety disorders</b>	30.2	72.6	57.7	268.3	1.9	3.7	0.9	2.7
<b>Depression</b>	33.8	85.2	144.7	531.2	4.3	6.2	3.3	5.2
<b>Psychosis</b>	17.2	40.9	31.9	115.3	1.9	2.8	0.9	1.8
<b>Bipolar disorder <sup>c</sup></b>	47.6	109.5	16.6	75.2	0.3	0.7	-0.7	-0.3
<b>Epilepsy</b>	8.9	20.8	59.9	261.5	6.7	12.6	5.7	11.6
<b>Alcohol use disorder</b>	64.5	124.5	38.9	176.9	0.6	1.4	-0.4	0.4
<b>Pesticide ban</b>	9.5	9.5	51.5	145.4	5.4	15.4	4.4	14.4
<b>Universal school-based SEL intervention <sup>d</sup></b>	26.6	55.4	40.0	88.6	1.5	1.6	0.5	0.6
<b>Total</b>	<b>238.3</b>	<b>518.3</b>	<b>441.3</b>	<b>1662.5</b>				

- a Mental health intervention packages for clinical interventions include multiple intervention approaches (e.g., basic psychosocial support, psychological treatment and medications) in primary and secondary health care.
- b Totals are presented as a net present value, discounted at a 3% annual rate.
- c The ROI for the bipolar disorder intervention package was lower than those for other intervention packages, as treatment largely reduces the disability weight for this disorder, rather than prevalence or mortality. Additionally, this intervention package has less potential to increase labour force participation. It should be emphasized that there may be strong non-economic reasons for choosing to invest in an intervention package with a low ROI, such as to protect human rights or respect the rule of rescue.
- d These results exclude productivity gains among students due to methodological limitations for estimating future productivity gains among students with improved mental health.

Despite its low ROI, the intervention package for bipolar disorder is critical to ensure that Zimbabwe has the services necessary to meet human rights objectives and the Agenda 2040 pledge to leave no one behind. This condition is usually highly disconcerting and disruptive to both the individuals experiencing it and to their families and communities. The ROI for the bipolar disorder intervention package was lower than that of other mental health interventions because treatment mainly reduces the disability weight of this disorder, rather than prevalence or mortality. Furthermore, this treatment option has less potential to increase labour force participation. The clinical intervention package for epilepsy has the best value for money for maximizing productivity gains, as it results in the highest ROI over 10 and 20 years.

The ROIs of the two population-based mental health interventions are underestimated for the following reasons. In the case of a regulatory ban on highly hazardous pesticides, productivity gains are due only to reductions in premature mortality (valued over the course of the model timeframe).

It is unclear how much pesticides contribute to cases of suicide in Zimbabwe and use of this means of suicide by gender. Nonetheless, it is anticipated this will be high in rural counties of Zimbabwe, where there is greater access to highly hazardous pesticides. In addition, the method used to cost the intervention might overestimate the costs, as these do not account for existing pesticide regulations. As Zimbabwe already has a system for banning and regulating hazardous pesticides, the marginal cost of banning an additional pesticide would be fairly low.

Similarly, the only productivity gains that were valued for the universal school-based SEL intervention for adolescents were those due to reductions in premature mortality. There is presently no method for calculating the net present value of future gains in productivity or employment due to better educational outcomes among adolescents when they reach adulthood.

The results of the sensitivity analysis are presented in **Table 9**. The one-way sensitivity analysis with application of the imputed value of 1.0 times GDP per capita to each healthy life year gained when estimating productivity gains across all mental health conditions (i.e., SA1) showed a substantial change for alcohol use disorder (overall benefit–cost ratio decreased by 34%) but not for depression or anxiety. Another sensitivity analysis was conducted to examine the effect of halving the instrumental value of a healthy life year to 0.5 times GDP per capita (i.e., SA2). This reduced the overall benefit–cost ratios for the intervention packages for psychosis, bipolar disorder and epilepsy by 20%. Overall, the results of the two sensitivity analyses demonstrate that the results of the base case analysis were largely robust to changes in important methodological assumptions.



**Table 9. Percentage change in benefit–cost ratios at 20 years for each sensitivity analysis scenario relative to the base case (2021 US\$)**

Intervention package <sup>a</sup>	Benefit–cost ratio (productivity gains only)			Benefit–cost ratio (productivity gains plus social value of health)		
	Base case	SA1 <sup>b</sup>	SA2 <sup>c</sup>	Base case	SA1 <sup>b</sup>	SA2 <sup>c</sup>
<b>Anxiety disorders</b>	1.6	-12%	n/a	3.7	-5%	n/a
<b>Depression</b>	2.4	+13%	n/a	6.2	+5%	n/a
<b>Psychosis</b>	1.1	n/a	-50%	2.8	n/a	-20%
<b>Bipolar disorder</b>	0.3	n/a	-50%	0.7	n/a	-20%
<b>Epilepsy</b>	5.1	n/a	-50%	12.6	n/a	-20%
<b>Alcohol use disorder</b>	0.9	-56%	n/a	1.4	-34%	n/a
<b>Pesticide ban</b>	8.3	n/a	n/a	15.4	n/a	n/a
<b>Universal school- based SEL intervention <sup>d</sup></b>	0.02	n/a	n/a	1.6	n/a	n/a

n/a, not applicable

- a Mental health intervention packages for clinical interventions include multiple intervention approaches (e.g., basic psychosocial support, psychological treatment and medications) in primary and secondary health care.
- b Sensitivity analysis SA1 involves use of the imputed method to estimate restored productivity resulting from interventions for anxiety disorders, depression and alcohol use disorder.
- c Sensitivity analysis SA2 involves a 50% reduction in the instrumental economic value assigned to 1 year of healthy life (i.e., 0.5 times GDP per capita) when applying the imputed method.
- d These results exclude productivity gains among students due to methodological limitations in estimating future productivity gains for students with improved mental health.

In summary, the economic analysis showed that the cost of mental health conditions to the Zimbabwean economy was US\$ 163.6 million in 2021, equivalent to 0.6% of the GDP. Just 5% of the annual costs were for health-care expenditure for mental health, the vast majority (95%) being due to lost workforce productivity due to premature death, disability and reduced productivity. These large productivity losses indicate that current levels of investment in mental health care are not meeting the needs of the population.

The findings of the investment case demonstrate that investing in evidence-based, cost-effective mental health interventions would, between now and 2041, have both health and economic benefits. By investing in mental health now, Zimbabwe can save more than 11 000 lives and gain over 500 000 healthy life years in the next 20 years by reducing the incidence, duration or severity of leading mental health conditions.

By investing in mental health now, Zimbabwe can gain US\$ 441 million in economic and social benefits over the next 10 years and a total of US\$ 1.7 billion in economic and social benefits in the next 20 years. The productivity gains that Zimbabwe can make from investing in mental health interventions exceed the cost of the intervention packages (in total, US\$ 238 million over 10 years and US\$ 518 million over 20 years). Most of the modelled interventions have a favourable benefit–cost ratio, clinical interventions for depression and epilepsy and the population-based intervention of a pesticide ban having high ROIs. When the social value of health is included with productivity gains, all but one intervention modelled had a positive ROI.





## 4. CONCLUSIONS AND RECOMMENDATIONS FOR POLICY AND PRACTICE

This report describes analyses of Zimbabwe's mental health system and provides evidence for the long-term economic, health and social benefits of investing in treatment and care for mental health conditions. The situational analysis identified responses within the Zimbabwean health system for mental health, including current aims, challenges and opportunities for improving access to services and ensuring the rights of individuals with mental health conditions. Zimbabwe, as elsewhere in the world, is seeing an increase in mental health conditions. The context of Zimbabwe, such as poverty (and extreme poverty), shortages of resources, drought, climate-related events, inflation, the social climate and economic decline, is a contributing risk factor for mental health conditions.

The report shows that investment in mental health is important not only from a health perspective, but also as an investment in the future of the country, including the economy. For most conditions and interventions analysed in this investment case, the returns outweigh the financial outlay. Investments must be carefully planned to meet local and international standards of good practice and the quality of care.

The health system in Zimbabwe is governed by many frameworks, including the Constitution and the Mental Health Act of 1996. Recent health strategies for addressing the challenges include improving community health services and increasing primary mental health care to decentralize services. Mental health services in Zimbabwe are, however, critically limited by financial constraints, both in domestic budgets and from external donors. This has led to fewer human resources for mental health and lack of availability of psychiatric medications.

Opportunities for multisectoral collaboration to improve mental health include awareness about mental health in children and living conditions in forensic facilities. The WHO Special Initiative for Mental Health has contributed significantly by outlining priorities for improving access to mental health services and realizing the rights of people living with these conditions. The recommendations below are aligned with the Special Initiative for Mental Health in Zimbabwe (2019–2023) and are linked to specific outcomes, with impact indicators and timelines. As the recommendations are numerous, the Government is encouraged to prioritize those that are most actionable and feasible.

Zimbabwe could consider implementing the following actions to convert mental health investment into improved policy and practice.

## **1** Strengthen leadership and governance for mental health. *Complementary to Special Initiative for Mental Health for Zimbabwe outcome 1.*

- Strengthen the position of mental health within the MOHCC and from the Ministry to provincial and district levels, including establishment of positions that are not yet substantial and advocacy for treasury concurrency for mental health posts.
- **Update mental health legislation and strengthen policy implementation.** The 25-year-old 1996 Mental Health Act should be updated to reflect current best practices in order to advance mental health care in Zimbabwe. The Act should be strengthened to further promote human rights and protection for all patients with mental or neurological conditions and to prioritize integration of mental health care into primary health services. Notably, a revised Mental Health Act should be aligned with recent human rights standards, such as the Convention on the Rights of Persons with Disabilities (2007) (85). The Government should also consider policies to address rehabilitation of people with alcohol and substance disorders. Implementation of the updated legislature must be supported with sufficient funding and human resources to implement Zimbabwe's current and future mental health strategic plans.
- **Improve Government awareness of mental health.** A whole-of-government approach, including the MOHCC, the Parliamentary Portfolio Committee for Health, the Ministry of Finance, the Ministry of Primary and Secondary Education, the Ministry of Local Government, Public Works and National Housing, the Ministry of Public Service, Labour and Social Welfare and the Ministry of Justice, should be used to provide information to ministers and staff on mental health. By increasing understanding about the implications of mental health for the community and the economy, awareness, treatment and prevention of mental health conditions could be better prioritized and funded.
- **People with lived experience** have an essential role in leadership, in gaining support and in improving legislation and care for mental health in Zimbabwe. Their experiences should be heard and learnt from at every level of decision-making. People with lived experience should be given a formal role in policy development and implementation, such as having a seat on a national mental health coordination committee.
- **Review the care of forensic mental health patients,** and consider transferring care management from the prison services to the health system. Legislative review of the Mental Health Act should also consider pathways for recovery and rehabilitation of forensic inpatients.

2

**Increase community awareness of mental health conditions, and encourage multisectoral engagement to increase education and awareness of mental health.**

*Complementary to Special Initiative for Mental Health for Zimbabwe outcome 6.*

- **Prioritize awareness and advocacy for mental health in the community as an integral method to reduce stigmatization and discrimination.**
- **Early mental health education, awareness and intervention for children and young people** should be prioritized in collaboration with the Ministry of Primary and Secondary Education. By building and strengthening existing components in the Zimbabwe School Health Policy related to mental health and extending mental health education to parents of schoolchildren, community awareness and acceptance should improve towards protecting the next generation. The Ministry of Higher Education should be involved in mental health awareness campaigns for older students. Children not in school should also be considered. Educational programmes may be funded by the Government with international organizations such as UNICEF.
- **Collaboration with civil society organizations, including those of people with lived experience, should be prioritized in developing community mental health education campaigns.** One example could be to highlight “local champions”, such as people with mental health conditions who are living fulfilling lives. Such interaction (across all age groups) would further decrease stigmatization and discrimination. This approach has been successful in raising awareness about HIV.
- **Consider collaboration with the media to portray accurate, factual, positive narratives of people with mental health conditions** to improve social understanding and acceptance and treatment seeking.
- **Approach mental health promotion and prevention with a multisectoral, life-course method,** with locally relevant information campaigns, including prevention of substance use, promotion of economic opportunities for people with mental health conditions and community involvement.

3

**Increase the capacity of the health system and the health-care workforce to provide high-quality mental health interventions, and integrate mental health care into primary health care with provision of community services.** *Complementary to Special Initiative for Mental Health for Zimbabwe outcomes 3 and 4.*

- **Financial and administrative support for decentralization of mental health services** is urgent for reaching populations outside the major cities. A key mechanism would be to maintain Government-funded provincial **mental health coordinators** for coordination among districts, provinces and the central Department of Mental Health. These coordinators are essential for providing high-quality mental health care in Zimbabwe, as they increase access to services by ensuring adequate planning and budget allocations for services and providing appropriate referral from the community through to tertiary levels of care.
- **Prioritize deinstitutionalization of mental health care.** Increase funding for and shift policy towards providing services outside of psychiatric hospitals. Substance abuse rehabilitation, services for discharged forensic patients and allied health services are critical for a shift towards primary care and community care for people with mental health conditions.
- **Prioritize the integration of mental health services into primary health care.** Increase funding for mental health in primary health care and district services to ensure effective management of patients in the community. Such a shift will ensure sustainable treatment options in line with international standards of care and significantly increase access to mental health care.
- **Improve Zimbabwe's compliance and alignment with international human rights instruments** (e.g., the Convention on the Rights of Persons with Disabilities (2007) (89)) by deinstitutionalizing mental health services and integrating them into primary health care.
- **Ensure that mental health medicines are available and affordable at all levels of care and that this is reflected in the Zimbabwe List of Essential Drugs,** including third-generation antipsychotic medications.
- **Link mental health interventions throughout the life-span with the National Community Health Strategy.** The strategy provides a framework for community involvement, which will aid in deinstitutionalization of mental health services

and increase community awareness. Training for village health workers under the National Community Health Strategy could be incorporated into mental health training through the mhGAP community toolkit and could be extended further to include mhGAP-recommended, evidence-based interventions (e.g., problem-solving therapy, the foundation for the Friendship Bench). These training approaches would enable village health workers to identify, refer and offer front-line psychosocial support to individuals who may need mental health care. By integration with the National Community Health Strategy, funding for mental health could be aligned with community health, providing opportunities for the Government, external donors, the private sector and even communities themselves to contribute financially and prioritize implementation.

- **The MOHCC should prioritize investment in the Friendship Bench** to maintain existing services and to extend the programme to other primary health care clinics, in conjunction with the National Community Health Strategy.
- **Increase health system capacity for mental health interventions by integration with programmes for co-morbid conditions.** There is reciprocal benefit between improving mental health and adherence in treatment programmes for infectious diseases such as TB and HIV. Leveraging existing health responses and funding to include mental health services would improve overall health outcomes and increase access to mental health care. Integration of health programmes would also improve coordination between the Government and other sectors present in Zimbabwe and use funding previously allocated to infectious diseases, such as grants from the Global Fund. Integration of mental health with other conditions, such as in early childhood, would further increase access to mental health services and open funding through collaboration with UNICEF and other organizations.
- **Staff remuneration** must be sufficient at all levels of care (community, district, province and central) to recruit and retain trained mental health specialists. Sufficient recognition and remuneration will reduce the brain drain of the mental health workforce (such as mental health nurses who work in infectious diseases) and also attract medical staff to the specialty.
- **Training of a specialist mental health workforce**, including psychologists, psychiatrists, psychiatric nurses, clinical social workers and occupational therapists, should be well funded, and they should be encouraged through paid internships, job opportunities and professional recognition. A standardized curriculum, registration and defined career pathways would contribute to workforce recruitment and retention.



- **Increase mental health training in general medical and nursing education** to ensure better knowledge of mental health so that they can identify, refer and care for mental health patients in primary health. The WHO mhGAP programme is used in Zimbabwe to train non-mental health specialist health-care workers.
- **Inpatient care for mental health patients in Zimbabwe's general hospitals should be improved to ensure high-quality care and patients' human rights.** Better infrastructure and training of staff in WHO QualityRights in psychiatric inpatient facilities should complement the deinstitutionalization of mental health services and ensure that inpatient facilities effectively serve the needs of people with acute mental health conditions.

## **4 Invest in the evidence-based, cost-effective clinical and population-based mental health interventions modelled in the investment case.**

- **All the packages modelled in the investment case showed significant health benefits.** Clinical intervention packages for anxiety disorders, depression, psychosis and epilepsy and the population-based packages for a pesticide ban and universal school-based SEL interventions returned favourable cost–benefit ratios for both productivity gains and social value of health. Programmes should be developed and implementation increased for each of the prioritized mental disorders at all levels of the health system, with an emphasis on primary care. Multisectoral programmes should be introduced for school mental health projects with the Ministry of Education and to reduce the availability of pesticides with the Ministry of Agriculture.
- Although bipolar disorder and alcohol use disorders had the lowest cost–benefit ratios of the packages modelled in the investment case (because of the high costs of implementation due to requirements for extensive care and support), there are compelling reasons for implementing these interventions: to support the human rights of those with mental health conditions and to address growing substance abuse among young adults and the general population.

5

**Invest in health information systems and technology for collection of data on mental conditions and research.** *Complementary to Special Initiative for Mental Health for Zimbabwe outcome 5.*

- **Investment in mental health in Zimbabwe must include funding for information management and data collection systems for all cadres working in the mental health system.** To improve epidemiological studies, patient record-keeping and mental health research, the mental health workforce must be sufficiently supplied with technological resources such as computers, tablets and wi-fi connections and with modes of transport. Sufficient provision of resources will allow regular reporting and monitoring of the evolution of programmes, contribute to reducing the brain drain of mental health specialists and motivate the broader mental health workforce. Accurate data reporting is useful for advocating for increased Government budgeting for mental health.
- **Highlight mental health research undertaken in Zimbabwe,** and improve research capacity through study grants, better data collection and collaboration among academia, the Government and implementing actors.

6

**Ensure that support for mental health in emergencies is built into Zimbabwe's mental health system and services.** *Complementary to Special Initiative for Mental Health for Zimbabwe outcome 7.*

- Ensure that national plans aligned with international guidelines and tools prepare mental health services to respond to and recover from humanitarian crises, including COVID-19.

## ESTIMATED HEALTH IMPACT

ALL INTERVENTION PACKAGES	10 years	20 years
LIVES SAVED	2 612	11 211
HEALTHY LIFE-YEARS GAINED	127 146	566 171

## PRODUCTIVITY GAINS AND SOCIAL VALUE OF HEALTH

MENTAL HEALTH PACKAGE	Total cost OVER 10 YEARS (us\$)	Total cost OVER 20 YEARS (us\$)	ROI FOR EVERY US\$ INVESTED OVER 10 YEARS	ROI FOR EVERY US\$ INVESTED OVER 20 YEARS
ANXIETY DISORDER	30.2 million	72.6 million	0.9	2.7
DEPRESSION	33.8 million	85.2 million	3.3	5.2
PSYCHOSIS	17.2 million	40.9 million	0.9	1.8
BIPOLAR DISORDER	47.6 million	109.5 million	-0.7	-0.3
EPILEPSY	8.9 million	20.8 million	5.7	11.6
ALCOHOL USE DISORDER	64.5 million	124.5 million	-0.4	0.4
PESTICIDE BAN	9.5 million	9.5 million	4.4	14.4
UNIVERSAL SCHOOL-BASED SEL INTERVENTIONS	26.6 million	55.4 million	0.5	0.6

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