Making the Investment Case for Mental Health:
A WHO / UNDP Methodological Guidance Note

10 May 2019
# Contents

Overview

1. Introduction:
   1.1. Why invest in mental health?  
   1.2. What to invest in mental health?  

2. Making a national investment case for mental health  
   2.1. Investment case framework  
   2.2. Planning and implementing an investment case study  
   2.3. Analytical methods, data requirements and outputs  
   2.4. Analytical tools  

3. Financing the investment case for mental health  

References and further reading  

Annexes:  
   1. MNS health conditions and interventions in the OneHealth Tool  
   2. Worked example: project level  
   3. Worked example: national level  

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview</td>
<td>1</td>
</tr>
<tr>
<td>1. Introduction:</td>
<td></td>
</tr>
<tr>
<td>1.1. Why invest in mental health?</td>
<td>2</td>
</tr>
<tr>
<td>1.2. What to invest in mental health?</td>
<td>4</td>
</tr>
<tr>
<td>2. Making a national investment case for mental health</td>
<td>7</td>
</tr>
<tr>
<td>2.1. Investment case framework</td>
<td>7</td>
</tr>
<tr>
<td>2.2. Planning and implementing an investment case study</td>
<td>9</td>
</tr>
<tr>
<td>2.3. Analytical methods, data requirements and outputs</td>
<td>11</td>
</tr>
<tr>
<td>2.4. Analytical tools</td>
<td>17</td>
</tr>
<tr>
<td>3. Financing the investment case for mental health</td>
<td>19</td>
</tr>
<tr>
<td>References and further reading</td>
<td>23</td>
</tr>
<tr>
<td>Annexes:</td>
<td></td>
</tr>
<tr>
<td>1. MNS health conditions and interventions in the OneHealth Tool</td>
<td>25</td>
</tr>
<tr>
<td>2. Worked example: project level</td>
<td>27</td>
</tr>
<tr>
<td>3. Worked example: national level</td>
<td>30</td>
</tr>
</tbody>
</table>
Overview

This WHO / UNDP methodological guidance note has been prepared in order to provide a structured approach to generating national mental health investment cases. The note complements the 2019 Guidance Note for NCD Investment Cases jointly produced by WHO and UNDP.

The guidance note starts with the question of why it makes sense to invest in the mental health of populations and does not restrict itself to consideration of the economic rationale alone. Rather, it lays out a series of arguments for investing in mental health, including those based on public health, human rights protection, equality of access and efficiency.

A second initial question relates to the nature of interventions and services that should be the basis for greater investment. Substantial evidence now exists to guide the appropriate allocation of resources towards interventions, services and models of care that are known to be effective, affordable and feasible to implement across a range of delivery platforms. Mental health in the humanitarian context is one such delivery platform but requires a range of separate considerations to the mainstream development context, and thus falls outside the scope of this guide.

The guidance then describes the principles and practice of return on investment (ROI) analysis, with particular reference to its application to mental health. The concept behind any ROI analysis is deceptively simple: are the benefits associated with an investment of resources greater than the costs incurred, and if so, by how much? In practice, several essential data inputs and analytical decisions are needed to arrive at such an answer, including what costs and benefits to include, what time frame to use and, most importantly, what is the specific policy question to be addressed. This guidance note considers each of these practical considerations in turn, illustrating them with examples from the field of global mental health.

It is important to note that the end decision to scale-up investment and innovation in mental health service development will be 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 inequalities or underserved/vulnerable populations are effectively addressed. Such considerations should be held via an open, explicit and consultative process that seeks to secure a fair but also efficient allocation of resources. In addition, consideration needs to be given to the scope of different financing modalities and mechanisms to bridge the service gap for mental health conditions in an equitable and sustainable manner.

1. **Introduction**

1.1. **Why invest in mental health?**

Mental health is an indispensable part of health and has been defined by WHO as "a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to contribute to her or his community" (WHO, 2004). Mental illness, on the other hand, refers to suffering, disability or morbidity due to mental, neurological and substance-use disorders, which can arise due to the biological and psychological make-up of individuals as well as adverse social conditions and environmental factors. “Investing in mental health” relates both to the promotion and protection of mental health and to the prevention and treatment of mental ill-health. Good mental health is put at risk by a range of factors including biological characteristics, social or economic circumstances, cultural norms with respect to gender roles and the broader environment in which individuals find themselves (Lund et al, 2018). Exposure to these risk factors or stressors can lead to a range of mental health problems. Increased exposure to these adverse determinants of mental health as well as the ageing of populations in many parts of the world has resulted in a 30% rise in the global prevalence of mental health conditions since 1990.

Psychosis, depression, dementia, alcohol dependence and other mental, neurological and substance use (MNS) health conditions constitute a sub-group of noncommunicable diseases (NCDs) that together impose heavy public health consequences in all regions of the world. According to latest WHO Global Health Estimates for 2016 (WHO, 2018), these conditions accounted for 28% of non-fatal disease burden (years lived with disability) and 10% of total disease burden (disability-adjusted life years). Even these alarming statistics do not fully capture the fatal toll of these health conditions, since their predominant contribution to the 788,000 suicide deaths in the world in 2016 is accounted for separately as a cause of injury. It also needs to be emphasized that persons with severe mental health conditions have a two to three times higher average mortality compared to the general population, which translates to a reduction in life expectancy of 10-20 years; these premature deaths are most commonly due to physical health conditions and NCD risk factors, which are often not recognised, addressed or treated.

A further concern for global public health and development is that mental health problems during childhood and adolescence are on the rise, emerging as prominent causes of morbidity and mortality. Worldwide, 10-20% of children and adolescents experience mental health problems, as a result of which MNS conditions are the leading cause of disability in young people in all regions. If untreated, these conditions severely influence children’s development, their educational attainments and their potential to live fulfilling and productive lives. Investing in early mental health promotion and prevention of risk factors associated with mental health conditions is therefore key.

The economic implications of diminished or foregone mental health are enormous. A study conducted for the World Economic Forum estimated that projected global economic losses attributable to MNS health conditions over the period 2011-2030 amount to US$ 16 trillion, while a WHO-led study estimated that common mental disorders alone cost the global economy US$ 1 trillion per year (Bloom et al, 2011; Chisholm et al, 2016a).

In response to the large and growing public health challenge posed by mental health and related health conditions, WHO developed and is now implementing its Comprehensive Mental Health Action Plan.
2013-2020 (WHO, 2013). Furthermore, the intrinsic value of good mental health, the wide-ranging consequences of MNS health conditions and the multi-sectoral nature of a comprehensive approach to its formation, preservation and restoration, are among the key reasons for the inclusion of mental health and well-being in the Sustainable Development Goals (SDG) agenda. A major implication of target 3.4 of the SDGs for mental health policy and practice is the renewed emphasis on implementing a strong public health approach that addresses the known determinants of mental health as well as the needs of those already affected by mental health conditions and psychosocial disabilities. Mental health is also closely related to attainment of several other SDGs including poverty reduction (SDG 1), the achievement of gender equality (SDG 5), sustainable economic growth and decent work for all (SDG 8) and reduction of inequality within and between countries (SDG 10) (Lund et al, 2018).

The political declaration arising from the third High-level Meeting of the UN General Assembly on the Prevention and Control of Non-communicable Diseases, (NCDs) held in September 2018, provides the most recent, explicit and prominent articulation of national governments’ desire and commitment to formally link and include mental health within the NCD agenda. By definition, MNS health conditions are non-communicable diseases but had not been prioritised for particular attention in earlier political declarations such as the one arising from the high-level meeting on NCDs in 2011. Member States have now not only established greater parity between mental health conditions and other NCDs but also provided new opportunities for a more holistic, collaborative and person-centred response to NCD prevention and management.

In a report entitled *Investing in mental health: evidence for action*, WHO (2013) set out four criteria against which public health investments are commonly made: the protection of human rights, including the right to health; the current and future (health and economic) burden of disease; the avertable burden of disease (resulting from the provision of cost-effective services); and the reduction of social inequalities, including access to essential health services. Application of these criteria to mental health revealed that a robust investment case can be made, whether on the grounds of enhancing individual and population health and well-being, reducing social inequalities, protecting human rights, or improving economic efficiency (see Box 1 below).

**Box 1  Reasons to invest in mental health**

<table>
<thead>
<tr>
<th><strong>Human rights protection</strong></th>
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<tr>
<td>• Individuals with mental health problems (together with their families) are commonly subjected to stigma, discrimination and victimization.</td>
</tr>
<tr>
<td>• Well-formulated and properly enforced policies and laws that are oriented to human rights, including in the provision of services, prevent abuse and protect rights.</td>
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<table>
<thead>
<tr>
<th><strong>Public health and economic burden</strong></th>
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<tbody>
<tr>
<td>• MNS health conditions account for nine out of the 20 leading causes of years lived with disability worldwide (more than a quarter of all measured disability) and 10% of the global burden of disease (which includes deaths as well as disability).</td>
</tr>
<tr>
<td>• Left unaddressed, lost economic output due to these health conditions will increase significantly from the already enormous levels. Recent economic analyses estimate that the annual global impact of common mental health conditions in terms of lost economic output amounts to US$ 1 trillion.</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Cost and cost-effectiveness</strong></th>
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</thead>
<tbody>
<tr>
<td>• Feasible, affordable and cost-effective measures are available for preventing and treating mental, neurological and substance-use health conditions.</td>
</tr>
</tbody>
</table>
An integrated package of cost-effective care and prevention can be delivered in community-based settings of low- and middle-income countries for US$ 3–4 per capita.

**Equitable access and financial protection**

- Most persons with mental ill-health do not have adequate access to the essential mental health care they need; those who do use the services end up paying much of the bill.
- Integration of mental health care into publicly-funded primary care and task-sharing with non-specialist health-care providers are appropriate and viable strategies for enhancing access.

Globally speaking, however, current investments in mental health are extremely meagre. WHO mental health ATLAS data show that many low- and middle-income countries allocate less than 2% – or even 1% – of their health budget to the treatment and prevention of mental health conditions (WHO, 2015). Most of the funds that are made available by governments are specifically directed to the operational costs of specialized but increasingly outdated mental hospitals (that are commonly associated with isolation, human rights violations and poor health outcomes). Such an allocation of resources inevitably curbs the development of more equitable and cost-effective community-based services. From the donor perspective, the situation is no better; a mere 0.1% of development assistance for health goes towards mental health promotion, protection and care (Lu, Li and Patel, 2018). Aside from – but closely linked to – the paucity and misallocation of financial and human resources for mental health, other barriers to service access and availability include weak mental health system governance and leadership, which is characterized by poor communication and collaboration between health, social and other service providers.

As a result of the low level of current investment in public mental health, there is a vast gap between the need for treatment and its availability, especially in low- and middle-income countries. This large treatment gap does not just affect the health and well-being of persons with mental health conditions and their families; it also has inevitable consequences for employers and governments, as a result of diminished productivity at work, reduced rates of labour participation, foregone tax receipts and increased welfare payments. The consequences of not investing in mental health are manifold and include:

- low rates of public awareness or understanding about the causes and impacts of better or worse mental health, resulting in stigma and discrimination against people suffering from mental health conditions;
- unrealized opportunities for nurturing and protecting the cognitive, emotional and social capacities as well as the educational outcomes of children and adolescents;
- low rates of detection, diagnosis, treatment and care for persons suffering from mental health conditions; and
- high costs to businesses and national economies because of diminished productivity.

In summary, the public health and socioeconomic burden of mental health conditions is high and increasing, while the current coverage of essential mental health care services and interventions remains inadequate, both in terms of access for those in need and in terms of financial protection or benefit inclusion. Accordingly, efforts to scale up community-based public mental health services can be expected to contribute strongly to the objective of greater equality in access because more people in need will be served and with less reliance on direct out-of-pocket spending. Such scale-up of mental
health services can contribute importantly towards national plans to move towards the realization of universal health coverage (UHC) for their populations.

1.2. What to invest in mental health?

With the increasing policy attention and interest in mental health as a major challenge for public health and sustainable development, there is a need to provide Member States with clear guidance over what mental health promotion and protection strategies to invest in, which requires information on the following key parameters:

- **effectiveness** / health impact of interventions;
- **cost-effectiveness** of interventions;
- **cost of scaling-up** prioritised interventions;
- **return on investment** in terms of improved health and productivity.

As set out in Table 1, progress has been made over the last decade in generating this economic evidence at the global level for mental health, using validated and standardised methodologies developed by WHO and its partners.
There exists now a body of evidence demonstrating not only the efficacy of mental health interventions but also their cost-effectiveness, affordability and feasibility. This information is available at the global level – i.e. for countries at different income levels – for alcohol use (as a risk factor for disease), epilepsy, depression, anxiety, bipolar disorder and psychosis (WHO, 2012; Chisholm and Saxena, 2012; Patel et al, 2016).

A range of effective measures also exists for prevention of suicide, prevention and treatment of mental health conditions in children and adolescents, prevention and treatment of dementia, and treatment of substance-use disorders. However, there remain some gaps in the evidence base, especially effectiveness evidence derived from low- and middle-income countries and cost-effectiveness data for these interventions and conditions. Accordingly, there is an ongoing need to update the evidence base, specifically for areas for which cost and cost-effectiveness information remains scarce or lacking at the international level, including: suicide prevention strategies (e.g. pesticide ban); school-based promotion and prevention (e.g. health literacy and life skills programmes); parenting and child development programmes (e.g. caregiver skills training); psychological treatment for childhood mental health conditions; dementia caregiver support; and opioid substitution therapy.

A summary of interventions considered as ‘best practices’ is shown in Table 2, grouped by the level of the health or welfare system at which they can be appropriately delivered. Best practice interventions

<table>
<thead>
<tr>
<th>Table 1 Overview of the existing clinical and economic evidence base for global mental health</th>
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</thead>
<tbody>
<tr>
<td><strong>1. Effectiveness</strong>&lt;br&gt;Systematic review of efficacy and effectiveness of interventions for management of MNS health conditions</td>
</tr>
<tr>
<td><strong>2. Cost-effectiveness</strong>&lt;br&gt;Estimation of the economic costs, health impacts and cost-effectiveness of psychosocial and pharmacological interventions for priority mental health conditions identified in the mhGAP-intervention guide, including psychosis, depression, epilepsy and alcohol use disorders (including pricing policies and marketing / availability restriction).</td>
</tr>
<tr>
<td><strong>3. Cost of scaling-up</strong>&lt;br&gt;Estimation of what it will cost in financial terms to scale up coverage of evidence-based and cost-effective interventions over time (in US$ or local currency units).</td>
</tr>
<tr>
<td><strong>4. Return on investment</strong>&lt;br&gt;Estimation of the monetary value of health impacts (healthy life years gained) and economic outcomes (productivity gains) of scaled-up investment, subsequently related back to costs of intervention to give a rate of return on investments made.</td>
</tr>
</tbody>
</table>
were identified on the basis of evidence for their effectiveness and contextual acceptability and scalability in low-income and middle-income countries, plus evidence of their cost-effectiveness, at least in high-income countries (Patel et al, 2016). Many but not all of these interventions have been subjected to WHO CHOICE cost-effectiveness analysis, as indicated by bold typeface.

Table 2 Priority interventions identified in the Disease Control Priorities Volume on MNS disorders
(Source: Patel et al, 2016)

<table>
<thead>
<tr>
<th>Delivery platform</th>
<th>Interventions</th>
</tr>
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</table>
| Population-wide   | • Policy and legislative measures to control the availability and demand for alcohol (e.g., increases in excise taxes on alcohol, advertising bans)  
• Legislative measures to control the sale and distribution of means of suicide (e.g., pesticides) |
| Community          | • Health literacy and life-skills training in schools to build social & emotional competencies  
• Parenting interventions to promote early child development |
| Health care        | • Psychological treatment for mood, anxiety, ADHD, and disruptive behaviour among children  
• Diagnosis and management of depression and anxiety  
• Continuing care of schizophrenia and bipolar disorder  
• Self-managed treatment of migraine  
• Diagnosis and management of epilepsy  
• Interventions to support caregivers of patients with dementia  
• Screening and brief interventions for alcohol use disorders  
• Opioid substitution therapy for opioid dependence |

Note: Interventions in **bold** and *italics* are those for which WHO-CHOICE cost-effectiveness analyses are complete or ongoing, respectively.

Comparative analysis of value or efficiency matters because decision-makers of all kinds, but particularly those in the public sector, face constraints on spending. Even the richest countries with the most extensive welfare state, who spend a third or more of the country’s income or wealth on operating activities of government, need to be able to justify where the money goes. There are of course many criteria that will influence an allocative decision – including equity, sustainability and so on – and some criteria might carry more weight than others, but value for money is certainly a key consideration for most decision-makers (and in fact equitable allocations cannot be achieved if resources are not being used efficiently). Therefore, the more that this kind of economic evidence is generated, alongside other evidence of effectiveness or impact, the more likely that an appropriate decision can be made about the value of and returns to investment in mental health. Whether that investment decision is made or not by national authorities or external donors will itself depend on the strength of evidence, the magnitude of the return, and the availability of funds in the face of fiscal constraints or competing demands, as well as political support or expediency.
2. Making a national investment case for mental health

Over and above the generation of cost-effectiveness information – which is a key input into the identification and specification of ‘best buys’ for mental health – there is also a need to set out a standard method for carrying out investment case analyses for mental health promotion, care and protection, which is in line with other existing investment case methods. This is the objective of the present methodological guidance. At its core, return on investment (ROI) analysis provides a convenient and comparable measure of the efficiency of one or more investment choices, expressed in terms of the expected flow of benefits resulting from an investment of resources. In that sense, it is similar in intent to other measures of efficiency that have been extensively used in the health sector, notably cost-effectiveness analysis (CEA). But whereas CEA typically measures only health-related benefits and expresses these in a natural unit such as lives saved or symptoms reduced, ROI extend beyond health benefits alone and expresses all of the benefits in monetary terms. Expressing both the costs and the full range of benefits of an innovation or intervention in the same units (money) has the distinct advantage of making investment decisions very straightforward, namely that if the benefits are larger than the costs then it is a sound investment. The extent to which benefits exceed the costs is also readily computed and communicated, either as a ratio or as a percentage. A simple way of interpreting an ROI ratio is to think “for every 1 dollar invested, there are X dollars’ worth of benefits”. This enables investors, such as ministries of finance, to easily compare different investment choices and the returns that they generate at different points in time (short-term, long-term), not only within the health sector but also beyond it.

2.1. Investment case framework

The economic and social benefits of better mental health include both its intrinsic value (improved wellbeing) and also its instrumental value, in terms of being able to form and maintain relationships, to study, work or pursue leisure interests, and to make decisions in everyday life. Assessment of these benefits – and relating them back to investment costs to establish the rate of return – can be achieved by estimating current and future levels of mental ill-health as well as effective intervention coverage in a population, and then determining the economic impacts of improved mental health outcomes, particularly rates of labour participation and productivity. Using established methods, it is also possible to monetize the intrinsic value of improved mental health, although these benefits fall outside the realm of the real (measured) economy. Furthermore, there are several theoretical and practical issues associated with these methods that need to be considered prior to their application. For example, determination of people’s willingness-to-pay for an improved state of health can overlap with people’s ability-to-pay (i.e., richer people may skew the valuations because they are able to pay more than poorer people).

A taxonomy of different types or categories of cost or benefit is shown below in Table 3. The cost of a mental health intervention is the sum of all resources used up in developing and providing it to the target population in need. It is important to note that these consumed resources are now no longer available for other purposes; this is the notion of opportunity cost that is central to economic analysis. The investment could lead to several possible benefits: first and foremost, it can lead to an improvement in the health and/or functional status of the target population (health impact); secondly, it might also lead to beneficiaries of the intervention being able to go back to work or school, work more
productively or improve their financial situation (financial impact); finally, it can lead to benefits for others, such as reductions in care-giving time spent by family members or friends (social impact).

Table 3  Economic costs and benefits of mental health intervention

<table>
<thead>
<tr>
<th>COSTS</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development and provision of mental health interventions</td>
<td>↑ Health (mental, physical)</td>
</tr>
<tr>
<td>(↓ opportunity to invest elsewhere)</td>
<td>↑ Functioning</td>
</tr>
<tr>
<td>(↑ consumption in future by those benefiting from effective intervention)</td>
<td>↑ Participation (work/school)</td>
</tr>
<tr>
<td></td>
<td>↓ Informal caregiving</td>
</tr>
<tr>
<td></td>
<td>↓ Health and welfare service needs</td>
</tr>
<tr>
<td></td>
<td>↑ Savings / investment by households</td>
</tr>
</tbody>
</table>

Additionally, consideration must be given to whether these different costs and benefits are market-traded or non-market-traded. For market-traded service or intervention inputs and outcomes, market prices can be used for valuation whereas for non-market-traded inputs and outcomes, non-market estimates of prices are needed. This information is expressed visually in Table 4; the four cells constitute the basic structure of an accounting framework for an investment case analysis. Non-market-valued benefits are restricted to health ones (non-market-valued inputs are usually ignored). The estimates of prices (shadow prices) for non-market-valued benefits come from a variety of estimation techniques (discussed below).

Table 4: Generic table of accounts for a typical investment case in health

<table>
<thead>
<tr>
<th>Costs (Prices x Quantities)</th>
<th>Benefits (Prices x Quantities)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market-valued costs and benefits</td>
<td>• Human resources costs</td>
</tr>
<tr>
<td></td>
<td>• Equipment and machines costs</td>
</tr>
<tr>
<td></td>
<td>• Medicines and consumables costs</td>
</tr>
<tr>
<td></td>
<td>• Facilities costs</td>
</tr>
<tr>
<td></td>
<td>• Other market-traded costs</td>
</tr>
<tr>
<td></td>
<td>• Productivity or labour-market benefits</td>
</tr>
<tr>
<td>Non-market-valued costs and benefits</td>
<td>(null)</td>
</tr>
<tr>
<td></td>
<td>• Increased years of life benefits</td>
</tr>
<tr>
<td></td>
<td>• Increased health-related quality of life benefits</td>
</tr>
</tbody>
</table>

The proposed approach to estimating the impacts of or returns on investing in mental health can be illustrated with reference to the treatment of so-called ‘common mental disorders’ such as depression, which is summarized by the conceptual framework shown in Figure 1. This identifies the different potential pathways through which the health, economic and social ramifications of common mental health conditions – and their treatment – might be felt. The direct impact of treatment is on the affected person’s health through a decrease in morbidity and mortality (purple shading). Treatment can also benefit others (for example the cognitive development of children of mothers treated successfully
for perinatal depression). These health impacts of treatment can in turn result in enhanced welfare and social functioning of affected individuals and their households (in green), and a greater ability to be in work or productive at work (in blue), which in turn has a potential influence on future levels of household or aggregate investment and savings. Finally, mental health care and treatment can reduce health care costs relate to physical aspects of a person’s health, especially for those living with comorbid conditions like diabetes, heart disease or HIV.

The feasibility of accurately attaching economic values to each of these potential pathways will depend on the scope of analysis, the availability of data and the extent of measurement effort; this is discussed further in the section below.

**Figure 1** Analytical framework for identifying potential impacts of mental health investment

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2.2. **Planning and managing an investment case study**

Prior to carrying out a return on investment analysis, it is important to assess and determine the feasibility of measuring potential costs and benefits for the population of interest and translating into economic impact. Certain conditions may prove harder to model or establish economic returns for than others. For example, while there is an established evidence base that depression can lead to productivity losses in the working age population that are amenable to being restored through effective intervention, equivalent data for the economic benefits of intervention on younger or older age groups – such as improved educational attainment and earning potential, or enhanced social participation and
inclusion – may be harder to identify or quantify. Data domains that need to be calculated and ultimately transformed into ROI summary metrics include:

1. **Intervention and service costs (the investment):** the monetized value of the resources used to develop, implement and maintain the set of interventions or services of interest. This covers not just the costs of the interventions themselves (e.g. the use / uptake of an adapted or newly developed psychosocial intervention) but also the broader costs of scaling-up and overseeing the implementation of these intervention in the local population. Several guides have been produced that provide detailed information on the identification, measurement and valuation of costs (e.g. WHO, 2003; Drummond et al, 2005); key components of cost measurement are outlined further below.

2. **Intervention benefits (the returns):** the monetized value of improvements in health and productivity flowing from the uptake or use of the intervention(s). This includes: a) improvements in health and functioning scores (which can be expressed as a monetary amount, for example by converting into a summary measure of population health (healthy life years gained) and then attaching an economic value or ‘price’ to each healthy life year gained); and b) improvements in labour participation and productivity (which can be assessed with reference to local rates of employment and the income generated per worker).

While country-specific data is preferable, empirical evidence can be limited in some national settings and it may be necessary to use regional or global values. In the absence of data for key model components, a judgement must be made about the extent to which it is appropriate to incorporate these global values. For example, it may be deemed acceptable to rely on findings from an international meta-analysis concerning the expected effect size for pharmacological or psychological treatment of depression or psychosis, but it would be hard to base estimates of the local cost of an intervention in an African setting on a study undertaken in a very different context (such as a high-income, European country). Similarly, relying on international evidence for the effect of interventions on days out of role or work is likely to represent a limitation; it will be preferable to base estimation of these impacts on locally collected data, although currently there remains a paucity of such data in most low- and middle-income countries.

In terms of the practical management and oversight of an ROI study, **Table 5** provides a series of structured steps that can be followed to better identify the time and resource needs for such an exercise.

### Table 5 Steps in developing a mental health investment case

<table>
<thead>
<tr>
<th>Description</th>
<th>Outcomes</th>
<th>Timescale</th>
</tr>
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</table>
| MoH approaches UNIATF to begin formal arrangements on specific investment case activities & outcomes | • Agreement reached on desired and feasible outcomes  
• Default investment case methodology adapted to the country case  
• Preferences of the country are clearly outlined  
• Contents for the mission’s terms of reference agreed by involved UN agencies and country officials | Two weeks |
| Data requirements checklist sent to MoH and shared throughout government | • Terms of reference finalized  
• Data requirements checklist divided into subsections which are passed on to relevant ministerial departments to check if data will be available  
• MoH reviews checklist ahead of data collection to identify sources, availability and gaps | Two weeks |
2.3. Analytical methods, data requirement and outputs

A return on investment analysis comprises two components: the cost of program implementation and the monetary value of subsequent benefits. ROI analysis is typically performed for total cost and benefits of an intervention or package of care over a defined scale-up time period as compared to a counterfactual of no intervention scale-up. Because the flow of costs and benefits change from year to year, the return on investment will vary over the period of investment; for example, initial programme costs might be high in relation to realized benefits in the early years of scale-up but become comparatively lower as benefits accumulate. Estimated costs and economic benefits over time are used to calculate the ROI through the following formula:

\[
\text{Return on Investment} = (\text{Increased Wellbeing} + \text{Production} + \text{Income}) – \text{Intervention Costs}
\]
**Intervention Costs**

The ROI quantifies the net benefits gained from every dollar invested at an aggregate level and can be most simply conveyed in terms of a ratio (i.e. every additional dollar spent yields x dollars in benefits). A related and commonly used metric used in ROI analysis is the benefit-cost ratio, which simply expresses the relationship between total benefits and costs; it is given by the following formula:

\[
\text{Benefit-cost ratio} = \frac{(\text{Increased Wellbeing} + \text{Production} + \text{Income})}{\text{Intervention Costs}}
\]

The methods of a ROI analysis largely overlap with an economic evaluation of a health care technology, for which there already exist several guides and publications (e.g. WHO, 2003; Drummond et al, 2005); the main difference is that ROI takes it a step further and attaches a monetary value to health effects and consistently includes productivity losses. Since it is not practicable to provide a detailed account of all elements of an economic evaluation, the focus here is on key input parameters, assumptions and metrics used in ROI analysis. Readers of this guidance are therefore either expected to possess prior knowledge of economic evaluation in health care or are encouraged to become familiar with its principles and practice by reference to existing guides and textbooks.

To carry out an ROI analysis, there is a requirement to make projections of estimated costs and benefits over a defined period of time for the target population of interest. Analytical tools and models have been developed and are available to generate year-on-year estimates of intervention costs and benefits for the target population, as described in more detail below. Key input parameters for such models cover demographic, epidemiological, effectiveness and economic domains, and include:

- population (of the country, region or target group);
- prevalence, incidence and mortality rates (of the disease or risk factor in question);
- coverage (the proportion of population in need that is exposed to or receiving the intervention);
- resource quantities (needed to implement the intervention) and prices or unit costs (for each resource item or entity; e.g. salaries, drug prices);
- effects or benefits of the intervention (on health, social, economic or other outcomes of interest).

Below, an overview of key issues and steps is provided, first for the inputs or investment side of the ROI equation (intervention and service costs), then for the outputs of that investment (effects and benefits). This is followed by a description of how these different parameters can be entered or used in a pre-existing tool called OneHealth that has been developed by several UN agencies for the purposes of strategic planning and costing in the health sector.

**Intervention and service costs**

In basic terms, total costs in a given year for a mental health intervention or service can be arrived at by multiplying resource utilization needs by their respective unit costs to arrive at cost per beneficiary or treated case, which is then multiplied by the total number of beneficiaries or cases expected to receive a particular intervention.

The estimation of service utilization at the level of the individual service user enables the generation of detailed information on the consumption of a wide range of resources. An initial stage in the recording of resource utilization data is the identification of relevant components of potential service receipt by users, such as contacts with primary care physicians and other health workers, community-based private or voluntary sector providers and hospital inpatient and outpatient care (both psychiatric and general).
Services to include will differ with respect to the scope, objectives and setting of the analysis, as well as the particular needs of the client group(s). For example, users with more severe or enduring mental disorder, such as persons with a diagnosis of schizophrenia, often need a wider range of service supports (e.g. day care services and residential care) compared to people with common mental health conditions such as depression and anxiety. In situations where new resource use estimates are needed, a common and convenient source and means of data collection is via an interviewer-administered service receipt schedule, which can be administered as part of a service evaluation or research study. It is also important to ensure that data is collected on the socio-demographic and socio-economic characteristics of the individuals, including lost opportunities to work, be educated or otherwise build human capital. Key categories of resource use include:

- **Inpatient care**: A proportion of persons affected by mental health conditions may need to be admitted to hospital (e.g. 5% of moderate-severe cases of depression, for an average length of stay of 14 days);
- **Outpatient and primary care**: regular outpatient visits are needed for most cases (e.g. ranging from 4 per case per year for basic psychosocial treatment or pharmacological management, up to monthly or bi-monthly visits for moderate-severe case receiving intensive psychosocial treatment);
- **Medication**: Essential psychotropic medications include anti-psychotics, anti-depressants and anti-epileptic drugs; average daily doses and duration of drug treatment need to be specified for cases indicated for this form of treatment.
- **Programme costs and shared health system resources**: these include programme management and administration, as well as training and supervision. Estimates are sometime expressed as an on-cost to the direct health care costs estimated above. Estimation of costs at this programmatic level would also be relevant for health promotion or prevention strategies targeted at specific groups, such as life-skills training programmes delivered in schools, or at whole populations, such as a mental health information and awareness campaign.

For each item of resource utilization, a unit cost estimate is required, such as a cost per inpatient day, or cost per contact with a primary care worker. It will be necessary to compute these estimates using a range of data sources, including national/local government statistics, health authority figures and specific facility or organization revenue accounts. The main categories of service operational costs that need to be quantified are:

- **Salaries / wages of staff** employed in the direct care and management of service users. Salary costs can be obtained from local or national pay scales. The ideal salary value to use is a weighted average of all grades on a pay scale. Supplementary (fringe) benefits, bonuses and allowances should be included. Employer contributions to local/national taxes, pension or health insurance schemes, plus other benefits and entitlements, should also be included, and can often be calculated as a percentage add-on to the salary/wage.

- **Facility operating costs** where the service is provided (cleaning, catering, consumables, water, electricity etc.). This covers the costs associated with running the establishment, for example a rural health centre. This can be worked out by dividing on a pro rata basis the total running costs of the establishment (excluding capital costs or rent) by the total number of ‘full-time equivalent’ staff. For government facilities, these costs can usually be obtained from the finance or planning departments of local or federal government.
• **Overhead and capital costs** relating to the service. Costs associated with service management and administration, such as finance and personnel functions, are often difficult to identify with accuracy, and it may only be possible to establish a percentage add-on to known revenue (operating) costs. Similarly for the capital costs of the facility where the service is provided (land, buildings etc.), the (opportunity) cost of capital should be calculated as the annuity which will deplete the lump sum value over the lifetime of the capital, but it may be possible (and simpler) to obtain a best estimate of the proportionate on-cost that can be added to personnel and operating costs.

Where possible, country-specific unit costs for each aspect of intervention should be calculated locally. In the absence of locally available data, country-specific unit costs of inpatient and outpatient care from the WHO-CHOICE database can be consulted and used ([https://www.who.int/choice/cost-effectiveness/inputs/health_service/en/](https://www.who.int/choice/cost-effectiveness/inputs/health_service/en/)). Information on treatment costs can also be obtained from validated, multilateral agency sources, previous cost-effectiveness studies, resource need profiles garnered from existing treatment guidelines, and costing tools. Costing and price information specific to the OneHealth Tool (OHT) is described further below.

**Intervention effectiveness**

The average health impact of mental health interventions, as measured in clinical trials and other research studies or summarized in meta-analytic literature, can be expressed in terms of the standardized mean difference or effect size for primary measures of outcome, such as incidence, remission or case-fatality; to calculate the standardized mean difference between two groups, subtract the mean of one group from the other (M1 – M2) and divide the result by the standard deviation (SD) of the population from which the groups were sampled. Observed positive changes in the rate of functioning or remission can also be expressed as a proportionate improvement. Since effect size estimates from trials usually relate to the efficacy of an intervention (as opposed to their real-world effectiveness), it is often necessary to modify them to take into account partial response, the lag time between onset of the disorder and treatment, plus expected levels of non-adherence in treated populations.

Health impact estimates have been estimated in this way for several MNS health conditions and interventions that are covered in the WHO’s mental health gap action programme (mhGAP) Intervention Guide (WHO, 2010). **Annex 2** summarizes effect sizes for selected MNS health conditions and interventions, based on earlier WHO-CHOICE analyses conducted for these conditions (see Chisholm et al, 2016b for details). For assessing ‘real-world’ conditions in which these interventions are or would be implemented, important modifiers of efficacy, notably the degree of adherence to treatment in the target population, were taken into account.

**Population-level health benefits**

In order to estimate or project the health impact of intervention at the population level, it is necessary to extrapolate results and use a population model. Key input parameters for such an analysis are i) total target population; ii) prevalence of mental disorder; iii) effect of intervention (on prevalence or average level of disability associated with the mental disorder); iv) current and target level of intervention coverage. Tools are available for calculating population-level health impacts, such as the OneHealth Tool (see below).
Since most of the health effects of mental health interventions relate to improvements in morbidity or disability (as opposed to saving lives), a suitable metric for summarizing these health effects at the population level is healthy life years gained (equivalent to disability-adjusted life years averted, where one DALY can be thought of as one lost year of healthy life). Healthy life years can be computed with reference to country-specific life tables, and reflect the combined time spent by the population in a particular state of health with a known degree (or free) of disability. Disability levels or weights are available for all major conditions from the Global Burden of Disease study (Salomon et al, 2012). Implementation or scale-up of an effective intervention in the population is modelled to reduce the time spent in a disabling state, either by reducing prevalence (e.g. by decreasing the number of new cases or by increasing the rate of remission), or by improving the level of functioning of people with the condition in question. For example, depression treatment mainly has the effect of reducing the duration of an episode (equivalent to increasing the remission rate, while a key effect of managing psychosis with anti-psychotic drugs and psychosocial treatment is to control symptoms and enhance functioning).

**Economic benefits**

The economic and social benefits of better mental health include both its intrinsic value (improved wellbeing) and its instrumental value (ability to study, work or carry out usual activities). For ROI analysis of mental health interventions and services, the direct economic benefits attributable to both improved work productivity within the economy and the intrinsic value of improved mental health on individuals’ quality of life should be included. A further direct potential benefit of successfully treating mental health conditions is a decrease in overall health care costs (because of reduced need for expensive inpatient care, for example).

Assessment of the value of these benefits can be accomplished by first estimating the population in need in each country, then determining the health effects of scaled-up coverage of effective intervention, and finally calculating the economic impacts of improved mental health outcomes in terms of enhanced labor participation and productivity. Impaired productivity needs to be assessed both with respect to time taken off work due to illness (absenteeism) and also of impaired job productivity due to illness while an individual is in the workplace (presenteeism). Lost work days can be linked to the prevailing rates of labour participation in the working age population (15-65 years) and average income per worker to estimate the aggregate effect on the local economy. Panel 1 describes the approach taken in a global ROI study to estimate production losses and gains for depression.

**Panel 1 Productivity losses and labour force impacts of depression treatment**

*Production losses:* Based on findings from the World Mental Health Survey across a range of low-, middle- and high-income countries, adults with depression have 34-36 days out of role and 44-58 further ‘partial’ days out of role; compared to adults without depression, persons with depression had 4-15 more days fully out of role and 11-24 more partial days out of role (Alonso et al, 2011; Bruffaerts et al, 2012).

*Return to work:* Few studies have assessed the extent to which effective depression treatments get people back into work, and where measured, estimates are subject to local factors such as prevailing levels of unemployment in the economy. Two studies undertaken in the US reported a 6% increase in employment retention among depressed patients whose care was monitored and managed closely, while a further study of patients in primary care found that, at six months, employment rates were 52.5% for patients with no care versus 72.2% for patients with care (Wang et al, 2007; Wells et al, 2000; Woo et al, 2011;). A 5% restored ability to work as a result of treatment was adopted for base case analysis.
Labour force productivity: A small number of treatment trials undertaken in the USA, Korea and India have estimated the impact of intervention on productivity loss. The decrease in absenteeism observed in these studies was close to one day per month (Rost et al, 2004; Rollman et al, 2005; Wang et al, 2007; Woo et al, 2011; Buttorff et al, 2013). Only two studies reported the findings for presenteeism separately from days lost due to absenteeism (Woo et al, 2011; Buttorff et al, 2013). Expressed as a proportion of total working days per year (220 days), and allowing for both the onset of effect as well as the time lag between improved health and return to work, a 5% increase in working days through reduced absenteeism, and a 5% increase through reduced presenteeism was used in the base case.

Independent of the instrumental value of improved mental health on labour force outcomes, being alive and healthy is also considered valuable itself. The overall value of a life year can be broken down into its economic (instrumental) and health (intrinsic) elements. Following the Lancet Commission on Investing in health (Jamison et al, 2013; Stenberg et al, 2014), which put the value of a healthy life year at 1.5 times GDP per capita, the proposed approach is to attribute two-thirds of that derived value to the instrumental component (which are measured directly via the labour force outcomes described above), leaving the remaining one-third for the intrinsic benefits of health (equivalent to 0.5 times per capita income).

Benefit to cost ratios and the return on investment

The key outputs of an ROI model are year-on-year estimates of:

- the total costs of intervention or service scale-up (the investment),
- increased healthy life years gained as a result of treatment (health return),
- the value associated with better health (the value of health returns), and
- enhanced levels of productivity (economic return).

It is conventional to discount the stream of costs incurred and benefits obtained over the scale-up period, to give a Present Value (PV). The proposed default discount rate is 3%, around which sensitivity analysis using other rates could be undertaken. Table 7 provides an example of the summary output of an ROI analysis carried out at the global level for scaled-up depression treatment in 36 large economies across the world (Chisholm et al, 2016). The results show that for the total assessed population of these countries (5.7 billion people), the present value of scaled-up treatment over the period 2016-2030 is expected to reach US$ 91 billion but produce US$ 230 billion in restored productivity and a further US$ 258 billion in terms of the intrinsic value of improved health. Accordingly, the ratio of total estimated benefits (US$ 488 billion) to cost (US$ 91 billion) is 5.3. The summary measure of the return on investment – how much one gets back for every dollar put in – takes account of the investment amount, so produces a lower value than the benefit to cost ratio ((US$ 488 billion - US$ 91 billion) / US$ 91 billion = 4.4).

Table 7 Costs and benefits of scaled up treatment of depression treatment (2016-30)

<table>
<thead>
<tr>
<th>Costs and benefits of scaled up treatment (2016-30)</th>
<th>All countries (N=36)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population of countries analysed (millions, 2013)</td>
<td>5,751</td>
</tr>
<tr>
<td>Total investment (PV, US$ million)</td>
<td>91,522</td>
</tr>
</tbody>
</table>

16
### Table 1: Economic and Health Impact Analysis

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average annual investment (PV, US$ per capita)</td>
<td>1.50</td>
</tr>
<tr>
<td>Health returns (healthy life years gained [HLY])</td>
<td>36,908,711</td>
</tr>
<tr>
<td>Economic returns (PV, US$ million)</td>
<td>229,744</td>
</tr>
<tr>
<td>Value of health returns (PV, US$ million) (HLY * GDP per capita * 0.5)</td>
<td>257,694</td>
</tr>
<tr>
<td>Benefit cost ratio (economic returns)</td>
<td>2.5</td>
</tr>
<tr>
<td>Benefit cost ratio (economic and value of health returns)</td>
<td>5.3</td>
</tr>
<tr>
<td>Return on investment (economic returns)</td>
<td>1.5</td>
</tr>
<tr>
<td>Return on investment (economic and value of health returns)</td>
<td>4.4</td>
</tr>
</tbody>
</table>

(Source: Chisholm et al, 2016)

#### 2.4. Analytical tools

For estimation of population-level health service costs and effects, WHO and other UN agencies have developed the **OneHealth Tool (OHT)**, which is software tool designed and developed to inform sector-wide national strategic health planning and costing ([http://www.who.int/choice/onehealthtool](http://www.who.int/choice/onehealthtool)). This tool provides planners with a single framework for health impact analysis as well as costing, budgeting and financing of strategies for all major diseases and health system components. While many tools take a narrow disease-specific approach, the OHT attempts to link strategic objectives and targets of disease control and prevention programmes to the required investments in health systems. The OHT was developed under the guidance of the UN Interagency Working Group on Costing (IAWG-Costing). The first official version of the OHT was released in May 2012; OHT has to date been implemented in more than 35 countries.

As part of the overall development of OHT, and within the context of a mental health system strengthening study, a mental health module has been developed for estimating the population-level costs and health impacts of services and interventions (Chisholm et al, 2017). It is free to download and use. Mental health conditions that are currently programmed into OHT include psychosis, bipolar disorder, depression, anxiety, epilepsy and alcohol use disorders. Work is currently under-way to incorporate the prevention of self-harm and suicide as well as mental health promotion and prevention for children and adolescents. A complete list of interventions is available at [Appendix 1](#).

The mental health module provides an accessible tool for executing several steps of a ROI analysis:

- Firstly, it can be used to generate the estimated number of persons with mental health conditions residing in a specified target population (such as a province or the whole country). By default, population and disease prevalence estimates are based on UN population projections and the latest Global Burden of Disease study estimates, respectively, but can be replaced with country-specific estimates if available;
- Secondly, the resources and costs associated with the scaled-up implementation of mental health interventions and services can be estimated through the multiplication of expected resource use by the unit cost of those services and then by the targeted population for the intervention or service;
- Thirdly, OHT links the epidemiology of mental disorder (prevalence, incidence, remission, excess mortality and disability weight) to country-specific life tables, so that cases averted and healthy life years gained over time as a result of intervention can be estimated at the population level. An
The illustration of cumulative healthy life years gained over time at the global level following scaled-up depression treatment is shown in Figure 2.

User manuals have been developed for the use of OHT overall, as well as for the NCD module and mental health module; they are available at: https://www.avenirhealth.org/software-onehealth. The MNS module manual provides detailed information and guidance about how population-level costs and health impacts are derived and generated.

Although much of the data required for a national mental health investment case can be generated from OHT, it does not (yet) contain all required variables or produce an automated set of ROI metrics and results. As a temporary measure, therefore, synthesis and analysis can be accomplished using spreadsheet software that has been developed for this purpose.

**Figure 2**  
Projected health impact of scaled-up depression treatment

(Source: Chisholm et al, 2016)
3. Financing the investment case for mental health

Estimation of the benefits and costs of scaled-up treatment for mental health conditions as part of a national investment case analyses to support mental health service scale-up and development provides relevant information in support of greater investment in the future. However, it does not specify the sources of financing for increased investment. Scaled-up implementation of evidence-based treatment and prevention can be expected to place new resource demands on health and welfare systems through enhanced administration and governance arrangements, additional human resources, upgraded infrastructure, increased access to medicines and strengthened surveillance systems. Financing the budgetary implications of these extra claims on the health system is therefore a pressing policy concern for countries desiring to move towards universal health coverage for their populations, in a manner that includes MNS health conditions.

The often high and potentially catastrophic cost to households of securing the health services and goods they need is the fundamental concern underlying the drive towards universal health coverage (UHC). Direct, out-of-pocket payments represent a regressive form of health financing - they penalize those least able to afford care - and are an obvious channel through which impoverishment may occur or deepen. Pre-payment mechanisms such as national or social insurance represent a more equitable mechanism for safeguarding at-risk populations from the adverse financial consequences of mental health conditions. Accordingly, ongoing efforts to move towards UHC are focused not only on improving service access and coverage but also on increasing the proportion of the population covered by some form of financial protection, and the proportion of total costs covered by some form of prepayment, such as an insurance premium.

Within the context of a mental health system strengthening project and informed by frameworks developed for other disease priorities in the health sector – such as HIV – a stepped approach to informing and evaluating country-level financing needs in the area of mental health has been proposed (Chisholm et al, 2019). Key domains of this sustainable financing framework that extend beyond those already covered by an ROI analysis include:

1) Assessment of the mental health and general health system;

2) Assessment of the current and projected macro-fiscal situation;

3) Assessment and selection of appropriate financing mechanisms.

Assessment of the mental health and general health system

The second step is to undertake a health system assessment. A suitable structure for carrying out this assessment exercise is available in the form of WHO's health systems framework, which includes six functions or ‘building blocks’ for health system strengthening (WHO, 2010): governance; health workforce; financing; service delivery; essential health technologies; and information systems.

Application of this framework to the national mental health situation can address a range of relevant contextual investment issues and questions, as set out below in Table 8. Responses to these questions can be informed both by available quantitative indicators – relating to workforce availability and spending levels, for example – and by qualitative feedback from interviews or discussions with senior
health policy experts in the country. One of the key elements of this health system assessment relates to current financing arrangements, both in terms of determining overall amounts flowing to NCDs, but also in terms of ascertaining the relative contribution of households, governments and NGOs towards the costs of care and prevention. Such information is available through National Health Accounts reporting (available in-country or via http://www.who.int/health-accounts), although does not go down to the level of specific diseases or conditions.

Table 8 National mental health system assessment domains

<table>
<thead>
<tr>
<th>Health system function</th>
<th>Health system assessment questions</th>
</tr>
</thead>
</table>
| Governance             | • What is the level of policy commitment to mental health?  
                          | • Is there an explicit national mental health policy and action plan?  
                          | • If so, what are its key features and objectives, and over what period is it to be implemented?  
                          | • To what extent has an inter-sectoral, multi-stakeholder approach to its development been pursued?  
                          | • To what extent has the mental health action plan been implemented already at sub-national level?  
                          | • Is there an authority with lead responsibility for implementing, monitoring and evaluating the mental health action plan? |
| Financing              | • What is the current level of total health spending in the country?  
                          | • What proportion of health spending is paid by government?  
                          | • What proportion of total health spending is directed to mental health?  
                          | • What health insurance or other financial protection arrangements are in place? What if any exemptions measures exist for the poor?  
                          | • What mental health conditions are covered by financial protection measures? |
| Health workforce       | • What is the current availability of mental health specialist workers?  
                          | • What is the current availability of non-specialist workers? What role do they play in mental health care?  
                          | • What training programmes for non-specialist workers are in place for building capacity in mental health care?  
                          | • What measures are in place to enhance worker performance and retention (e.g. supervision, performance-related pay)? |
| Essential health technologies | • What is the process for selecting essential medicines (for mental health conditions)?  
                              | • What measures are in place to control the price and rational prescribing of medicines?  
                              | • What is the volume and price of the most commonly used medicines for mental health conditions?  
                              | • What proportion of the population in need do not have physical or financial access to essential medicines? |
| Information systems    | • Is patient-level data on service uptake and outcomes for mental health available through routine health information systems?  
                          | • What health system indicators for mental health are routinely reported? |
| Service                | • How are health services organised? What services and interventions for |
1. **Assessment of the current and projected macro-fiscal situation**

The third step involves building up an understanding of the broader macro-fiscal context within which scale-up plans and activities is to take place. A country that is experiencing and expecting a prolonged period of economic growth, with manageable levels of indebtedness and a robust tax collection system, is likely to have a very different set of policy options compared to a country with a stagnant economy and/or one with a high level of indebtedness and reliance on external development assistance. In other words, the former country can be expected to have less constraints on public spending and therefore more ‘fiscal space’ to expand services for NCD control and prevention.

- Critical measures of economic performance and progress include current and projected output (total and per capita GDP), levels of borrowing and debt (as a percentage of GDP) and inflation (year-on-year change in consumer price levels). Employment and capital investment rates represents further important measures given the place of labour and capital in determining overall levels of economic activity. Measures of poverty and income inequality provide important complementary information on the distribution of national wealth.

- Key fiscal measures include overall levels of government revenue and expenditure, including the running deficit (again as a percentage of GDP). The percentage of total government expenditures allocated to health provides a broad measure of the priority given to this sector in relation to others.

Such measures of economic performance and fiscal activity are regularly collected and compiled by the World Bank and International Monetary Fund; data can be extracted and synthesised into a country profile that shows latest estimates and also (historical and projected) trends over time.

2. **Identification and selection of financing mechanisms**

Based on the preceding steps, an informed discussion about the most appropriate and feasible mechanisms for meeting the budgetary and other resource needs of scaled-up mental health promotion, prevention and care can take place. That is, a process of selection that is based on: a) a good understanding of the current and projected threat to public health and economic growth posed by mental health conditions; b) up-to-date knowledge about how well positioned the existing health system is to address and counter this threat (in terms of service delivery, financing and other critical functions); c) awareness of the wider macroeconomic context within which health and other sectoral development would need to take place; and d) a clearly articulated resource needs plan that identifies the level of additional investment required to meet nationally agreed mental health goals and targets.

The main modes of health financing can be categorised into domestic financing, bilateral/multilateral funding, and other more innovative forms of financing. The pursuit of any of these modes of financing will be influenced by a number of considerations, including:

1. The amount of investment needed
2. The level of political will to raise new resources for health
3. The amount of fiscal space for raising new resources for health
4. Eligibility for bilateral/multilateral funding
5. Availability of bilateral/multilateral funding
6. Readiness / willingness to enter into innovative types of financing

Such considerations are likely to be made in the context of the broader international dialogue on financing for development, in particular the renewed emphasis on domestic financing through strengthened revenue collection efforts (United Nations, 2015). For many low- and middle-income countries, therefore, a first question will be to what extent domestic financing represents a feasible and sufficient instrument for financing mental health promotion, prevention and care as part of a package of measures to be paid for from enhanced revenue generation. For lower-income countries eligible for Official Development Assistance, a second question might be to what extent external funding might complement domestically generated resources to catalyse mental health service development or system strengthening (and if so, from which source?). In countries where domestic and/or external funding mechanisms are expected to fall short of requirements or pose a risk to fiscal stability, a further question relates to the potential role that market-based financing options present a suitable and feasible approach to generating and providing funds for outcomes-based scale-up of mental health care services.
References and further reading


### Annex 1a. Mental, neurological, and substance use conditions and treatment interventions in OneHealth Tool

<table>
<thead>
<tr>
<th>Condition</th>
<th>Target population</th>
<th>Targeted age group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anxiety disorders</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic psychosocial treatment for mild cases</td>
<td>55% of persons with anxiety disorders 15+ yrs</td>
<td>15+years</td>
</tr>
<tr>
<td>Basic psychosocial treatment and anti-depressant medication for moderate-severe cases</td>
<td>45% of persons with anxiety disorders 15+ yrs</td>
<td>15+years</td>
</tr>
<tr>
<td>Intensive psychosocial treatment and anti-depressant medication for moderate-severe cases</td>
<td>45% of persons with anxiety disorders 15+ yrs</td>
<td>15+years</td>
</tr>
<tr>
<td><strong>Depression</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic psychosocial treatment for mild cases</td>
<td>40% of persons with depression, 15+ yrs</td>
<td>15+years</td>
</tr>
<tr>
<td>Basic psychosocial treatment and anti-depressant medication of first episode moderate-severe cases</td>
<td>60% * 30% of persons with depression, 15+ yrs</td>
<td>15+years</td>
</tr>
<tr>
<td>Intensive psychosocial treatment and anti-depressant medication of first episode moderate-severe cases</td>
<td>60% * 30% of persons with depression, 15+ yrs</td>
<td>15+years</td>
</tr>
<tr>
<td>Intensive psychosocial treatment and anti-depressant medication of recurrent moderate-severe cases on an episodic basis</td>
<td>60% * 70% of persons with depression, 15+ yrs</td>
<td>15+years</td>
</tr>
<tr>
<td>Intensive psychosocial treatment and anti-depressant medication of recurrent moderate-severe cases on a maintenance basis</td>
<td>60% * 70% of persons with depression, 15+ yrs</td>
<td>15+years</td>
</tr>
<tr>
<td><strong>Psychosis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic psychosocial support and anti-psychotic medication</td>
<td>Persons with psychosis, 15+ yrs</td>
<td>15+years</td>
</tr>
<tr>
<td>Intensive psychosocial support and anti-psychotic medication</td>
<td>Persons with psychosis, 15+ yrs</td>
<td>15+years</td>
</tr>
<tr>
<td><strong>Bipolar disorder</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic psychosocial treatment plus mood-stabilizing medication</td>
<td>Persons with bipolar disorder, 15+ yrs</td>
<td>15+years</td>
</tr>
<tr>
<td>Intensive psychosocial intervention plus mood-stabilizing medication</td>
<td>Persons with bipolar disorder, 15+ yrs</td>
<td>15+years</td>
</tr>
<tr>
<td><strong>Epilepsy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic psychosocial treatment plus anti-epileptic medication</td>
<td>Persons with epilepsy, 1+ yrs</td>
<td>1+ years</td>
</tr>
<tr>
<td><strong>Alcohol use/dependence</strong></td>
<td></td>
<td></td>
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<tr>
<td>Brief interventions for identified cases of alcohol use/dependence</td>
<td>Persons with alcohol use disorder, 15+ yrs</td>
<td>15+years</td>
</tr>
</tbody>
</table>
## Annex 1b. Mental, neurological, and substance use conditions and treatment interventions in OneHealth Tool: effect sizes

<table>
<thead>
<tr>
<th>Anxiety disorders</th>
<th>Intervention efficacy</th>
<th>Adherence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Incidence</td>
<td>Remission</td>
</tr>
<tr>
<td>Basic psychosocial treatment for mild cases</td>
<td>0%</td>
<td>60.0%</td>
</tr>
<tr>
<td>Basic psychosocial treatment and anti-depressant medication for moderate-severe cases</td>
<td>0%</td>
<td>60.0%</td>
</tr>
<tr>
<td>Intensive psychosocial treatment and anti-depressant medication for moderate-severe cases</td>
<td>0%</td>
<td>60.0%</td>
</tr>
</tbody>
</table>

**Depression**

<table>
<thead>
<tr>
<th>Depression</th>
<th>Intervention efficacy</th>
<th>Adherence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic psychosocial treatment for mild cases</td>
<td>0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Basic psychosocial treatment and anti-depressant medication of first episode moderate-severe cases</td>
<td>0%</td>
<td>35.0%</td>
</tr>
<tr>
<td>Intensive psychosocial treatment and anti-depressant medication of first episode moderate-severe cases</td>
<td>0%</td>
<td>35.0%</td>
</tr>
<tr>
<td>Intensive psychosocial treatment and anti-depressant medication of recurrent moderate-severe cases on an episodic basis</td>
<td>0%</td>
<td>35.0%</td>
</tr>
<tr>
<td>Intensive psychosocial treatment and anti-depressant medication of recurrent moderate-severe cases on a maintenance basis</td>
<td>40.0%</td>
<td>35.0%</td>
</tr>
</tbody>
</table>

**Psychosis**

<table>
<thead>
<tr>
<th>Psychosis</th>
<th>Intervention efficacy</th>
<th>Adherence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic psychosocial support and anti-psychotic medication</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Intensive psychosocial support and anti-psychotic medication</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Bipolar disorder**

<table>
<thead>
<tr>
<th>Bipolar disorder</th>
<th>Intervention efficacy</th>
<th>Adherence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic psychosocial treatment plus mood-stabilizing medication</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Intensive psychosocial intervention plus mood-stabilizing medication</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Epilepsy**

<table>
<thead>
<tr>
<th>Epilepsy</th>
<th>Intervention efficacy</th>
<th>Adherence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic psychosocial treatment plus anti-epileptic medication</td>
<td>0%</td>
<td>60.0%</td>
</tr>
</tbody>
</table>

**Alcohol use/dependence**

<table>
<thead>
<tr>
<th>Alcohol use/dependence</th>
<th>Intervention efficacy</th>
<th>Adherence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief interventions for identified cases of alcohol use/dependence</td>
<td>0%</td>
<td>15.0%</td>
</tr>
</tbody>
</table>
Annex 2: Worked example 1 (PROJECT LEVEL): the Friendship Bench; Zimbabwe

Scope

<table>
<thead>
<tr>
<th>Project Name:</th>
<th>The Friendship Bench</th>
</tr>
</thead>
</table>

The Friendship Bench study involved a cluster randomized controlled trial of a brief psychological intervention for common mental health conditions delivered by lay health workers in 24 health clinics in Harare, Zimbabwe. The return on investment analysis used the impact of this initial program implementation and estimated the additional benefits of expanding the intervention to 76 health clinics in the cities of Harare, Gweru, and Chitungwiza, covering a population of 2 million in 2016 (other key project characteristics can be found below in the Box). Important parameter values include:

- Scale-up period (2016-2020): 5 years
- Population (Harare, Gweru, Chitungwiza): 2 million
- Cases in 2016: depression: 88,000 (prevalence: 4.2%); anxiety: 77,000 (prevalence: 3.7%)
- Intervention coverage:
  - Current coverage (based on the 24 health clinics currently participating in Harare): depression – 3.1% of all cases; anxiety – 2.1% of all cases
  - Target coverage (based on 76 health centers participating in 3 cities with a recruitment rate of 4 depression and 3 anxiety cases per week): depression – 14.9%; anxiety – 10.7%

Investment Required

The estimated cost of scaling up the Friendship Bench Intervention to the aforementioned population (of two million inhabitants), expressed as the Present Value of the total expenditure required over the scaling-up period 2016-2020 (i.e. the cumulative cost over 5 years of steady scale-up, but discounted at a rate of 3%) amounts to US$ 1.5 million for depression and anxiety. These costs relate to incremental treatment coverage in the population over and above ‘business as usual’ (i.e. current levels of) coverage. By standardizing for population size, it becomes apparent that the cost is actually quite low; for depression and anxiety treatment, the average annual cost over 5 years of scaled-up investment is US$ 0.14 per head of population in Harare, Gweru, and Chitungwiza.

Health Impact

Across the three sites included in intervention scale-up, a modest decrease in the estimated prevalence of depression and anxiety is observed as a result of treated cases recovering from illness more quickly; over the next 5 years, this gradual decline in prevalence translates into 24,000 averted cases (20,000 less depression and 4,000 less anxiety disorder cases). Weighting these averted prevalent cases by the average level of improved functioning (or reduced disability) provides a measure of healthy life.
For depression and anxiety combined, the cumulative number of healthy life years gained over 5 years is 9,000 (8,000 depression; 1,000 anxiety).

**Social and Economic Benefits**

Scale-up of the Friendship Bench intervention from 2016 – 2020 is projected to avert US$ 12.2 million in lost productivity due to anxiety and depression. The zeebag income generation component of the project – via which beneficiaries are supported to make and sell bags from recycled plastic – accounted for 14% of this total, at US$ 1.7 million; the remaining economic gains derive from return to work and enhanced productivity while at work. The monetized value of improvements in health is estimated to be US$ 4 million. Accordingly, the total value of benefits flowing from improved health and productivity for the entire period of scale-up, discounted at 3% to give a Present Value, is US$ 16.3 million (US$ 14 million for depression and US$ 2.3 million for anxiety).
Return on investment

By summing the discounted costs and benefits, a summary measure of the relationship between the benefits of scaled-up treatment and the associated costs of investment can be derived. Restricting assessment solely to the zeebag income-generation (no other health or economic benefits included), the rate of return is below 1 ([additional income of $1.7 million - investment of $1.5 million] / investment of $1.5 million = 0.1). Including productivity gains and income generation in the calculation led to a ROI ratio of 7.0. Extending the benefit-cost analysis to also include the estimated value of health returns increases the estimated return on investment to 9.6; that is, for every US$ 1 invested in the Friendship Bench, up to $10 will be returned in terms of improved health, productivity and income generation.
Scaling up treatment for depression, anxiety and psychosis in Jamaica: A return on investment analysis

Prepared for the
Ministry of Health of Jamaica and the
United Nations Development Program
By RTI International
Executive Summary

Mental health conditions impose a high economic burden, since individuals who suffer from mental illness are more likely to exit the labor force, miss days of work (absenteeism) or work at a reduced capacity while at work (presenteeism). In Jamaica, the burden of mental illness is considerable and is predicted to lead to 2.76 billion USD of lost economic output from 2015-2030, higher than all NCD conditions except cardiovascular disease.

With timely and effective treatment, individuals suffering from mental illness can regain full health. Unfortunately, access to mental health services remains low in Jamaica, with insufficient resources allocated to scale up treatment for mental illness. In this report we conduct an analysis to estimate the expected return on investment (ROI) over a 15-year period from scaling up interventions targeting depression, anxiety, and psychosis in Jamaica.

Interventions were selected in conjunction with the Jamaican MOH and are part of the World Health Organization’s (WHO) mental health Gap Action Program (mhGAP); an effort to address the treatment gap for mental health conditions. For depression and anxiety, we examined basic psychosocial interventions designed to address psychosocial stressors, coupled with pharmacological treatment. For psychosis, we examined pharmacological treatment combined with either basic psychosocial treatment focused on education and societal rehabilitation or intensive psychosocial treatment involving therapy for social skills and family relations.

We use the WHO Inter-UN OneHealth Tool (OHT) and the WHO mhGAP costing tool to estimate the medical costs associated with these interventions and use estimates from the Jamaica Task Force on Mental Health and Homelessness report to account for program and health system costs that support the delivery of interventions. Further, we use the OneHealth Tool to calculate the expected health gains from scaling up psychosocial and pharmacological treatment for depression, anxiety and psychosis. We find that in Jamaica scaling up psychosocial interventions and pharmacological treatment for depression, anxiety and psychosis will:

- **Improve health.** In terms of health impact, scaled-up treatment for depression, anxiety and psychosis restores 75,883 healthy life years to the Jamaican population. For depression and anxiety, scaled up treatment increases healthy life by 51,328 and 22,671 respectively over the scale-up period by reducing disability states and increasing remission rates. For psychosis, an extra 1,884 healthy life years are realized from reduced disability states alone.

- **Provide total benefits (60 billion JMD) that significantly outweigh the costs (15.9 billion JMD).** Health gains from scaled-up treatment for depression, anxiety and psychosis lead to large economic productivity gains (A present value of 38.9 billion JMD) and social benefits (A net present value of 21.1 billion JMD). These benefits significantly outweigh the medical (14.2 billion JMD) and intervention package implementation costs (1.7 billion JMD) associated with scaling up treatment.

- **Have a high return on investment.** Comparing the economic + social benefit from scaling up treatment for depression, anxiety and psychosis to the cost of implementation, anxiety interventions have the highest return on investment: for every Jamaican dollar invested in clinical treatments for anxiety, one can expect to see 5.5 JMD dollars in return. The depression treatment package has the next highest ROI (5.2), followed by the psychosis treatment package (1.1).
Though mental illness poses a significant health and economic burden, our results show that Jamaica can significantly reduce the burden of mental illness by investing in interventions designed to improve mental health.

**Introduction**

Mental health conditions impose a high economic burden, since individuals who suffer from mental illness are more likely to exit the labor force, miss days of work (absenteeism) or work at a reduced capacity while at work (presenteeism) [1, 2]. In Jamaica, the burden of mental illness is considerable and is predicted to lead to 2.76 billion USD of lost economic output from 2015-2030, higher than all NCD conditions except cardiovascular disease [3].

Over time, in Jamaica, there has also been a rise in the number of individuals seeking treatment for mental illness. In 2013 and 2014, for example, there were approximately 90,000 visits to public health facilities for mental health treatment [4]. Visits increased by about 20% per year in the following two years, with nearly 108,000 visits in 2015 and 132,000 in 2016 [4, 5]. These numbers may represent as little as half of the actual need for treatment, as the treatment gap for mental health conditions in the Caribbean region range from 37.4% (non-affective psychoses) to 64.0% (bipolar disorder) [6]. Despite rising numbers of patients, the mental health workforce in Jamaica remains thin, with just one psychiatrist per 2,217 patients nationally, compared to the recommended ratio of one psychiatrist per 1,000 patients [5].

In recognition of unmet need and the imperative to improve mental health treatment, a 24-member Jamaican task force on mental health and homelessness was formed in 2016 to address resource challenges. Separately, in coordination with Jamaica’s Ministry of Health, the Pan American Health Organization (PAHO), WHO, and the United Nations Development Programme (UNDP) began developing a mental health investment case in Jamaica. The investment case in Jamaica is part of a series of investment cases designed to strengthen member states’ capacity to generate and use economic evidence to scale and improve treatments for noncommunicable diseases (NCDs) and mental illness.

The investment case examines the economic costs and benefits of scaling up treatment for 1) depression, 2) anxiety, and 3) psychosis, which together accounted for 93 percent of all mental health related visits to public health centers in 2016 [5]. In an effort to fortify momentum behind strengthening community mental health services and promoting mental well-being in Jamaica, this investment case:

1. Evaluates the costs of scaling up select mental health clinical interventions to reduce the burden of mental illness.
2. Assesses the health and economic benefits of investments to treat mental illness,
3. Establishes priorities for resource allocation within the framework of the country’s Mental Health Strategy, and
4. Creates an evidence base from which to advocate for increased funding from internal and external stakeholders for increased scale-up of services.

We use the WHO Inter-UN OneHealth Tool [7, 8], along with the mhGAP costing tool [9], both developed by UN partners, to cost clinical interventions, and to project the health benefits expected from their implementation. We then estimate the total economic and social value of these health benefits (see methods section for details). Benefit-cost ratios (return on investments) are reported separately for each intervention package (depression, anxiety and psychosis).
Situation Analysis – Background on Mental Health in Jamaica

Depression and Anxiety

Depression and anxiety are serious and often debilitating mental health concerns for affected individuals. Depression, a persistent mood disorder that results in feelings of dejection, can pervade daily life, affecting basic activities such as eating and sleep, and even ideate suicidal thoughts [10]. Anxiety disorders, which involve a persistent state of worry or fear, similarly manifest in everyday activities, causing fatigue and sometimes hurting academic or professional performance [11].

In Jamaica, the 2017 global burden of disease database shows that depression and anxiety disorders are among the most common mental health concerns facing the population. Around 3% of Jamaicans have a depressive disorder and 4.1% have an anxiety disorder [12]. Women are at a disproportionate risk for both health conditions, as 3.7% have depression and 4.3% have anxiety, compared to just 2.3% of men for each disorder. Local studies have also indicated that depression is a large problem in Jamaica. The 2007-8 Jamaica Health and Lifestyle survey found that 20% of respondents aged 15-74 reported symptoms of depression within the past month [13].

Depression and anxiety manifest in markedly different age groups. Jamaicans ages 60 and above are considerably more likely to have depression than younger Jamaicans (5.2% among Jamaicans aged 60-74 and 5% in ages 75+). In contrast, anxiety is most common among 35-59-year-olds (5.5%) who suffer from anxiety disorders at notably higher rates than other age groups [12].

Psychosis

Psychosis is a mental health condition that manifests in hallucinations, erratic social behavior, and delusions, all of which may occur during ‘psychotic episodes’ when an individual’s perception of reality is disrupted. Health conditions such as schizophrenia, bipolar disorder, and severe depression or anxiety can cause psychosis, and substance abuse or general medical conditions such as Alzheimer’s can also catalyze psychotic episodes [14]. The incidence of psychosis in Jamaica has been estimated at 2.09 per 10,000 people [15], and psychosis and schizophrenia together account for 80% of mental illness related public clinic visits nationwide [5].

Psychosis places an inordinate burden on the physiological and social components of individuals’ lives. In a comparison of bipolar and schizophrenic patients, schizophrenic patients were less likely to have marketable job skills and the disorder was associated with lower educational attainment [16]. In a social context, research suggests that psychosis such as schizophrenia are stigmatized [17], a problem further compounded by the fact that many Jamaicans with psychotic disorders also have substance abuse.

### Depression
- Three percent of Jamaicans suffer from depression
- Approximately four percent of Jamaicans suffer from anxiety
- Women have higher rates of depression and anxiety than men

### Anxiety
- Most new cases of anxiety disorders appear in 20-34-year-old and 35-59-year-old Jamaicans (0.71% and 0.68%, respectively).
- Anxiety is common among working-age Jamaicans 35 to 59 (5.5% within this age group suffer from anxiety).
problems [18]. Psychosis can also lead to increased risk for other health problems—those with schizophrenia and other severe mental disorders have been found to die 10 to 20 years earlier than the general population, mostly due to cardiovascular disease and other physical preventable illness [19]. However, the costs of psychosis do not fall exclusively on the mentally ill. Caregivers for schizophrenic patients, for example, have a considerable burden, especially when patients cannot care for themselves [20].

WHO mhGAP: Selected mental health interventions

The WHO Mental Health Gap Action Program (mhGAP) is an initiative by the World Health Organization to reduce the global treatment gap in mental, neurological, and substance use (MNS) health conditions [21]. To meet this goal, the mhGAP provides a framework for scaling up care for MNS health conditions.

The mhGAP Intervention guide for mental, neurological and substance use health conditions in non-specialized health settings (mhGAP-IG) is a technical tool for implementation of the mhGAP. It provides the full range of recommendations to facilitate high quality care for mental, neurological, and substance abuse health conditions by non-specialized health-care providers [22]. In this investment case, we modeled clinical interventions—selected in consultation with Jamaica’s Ministry of Health—from the mhGAP-IG that treat depression, anxiety, and psychosis (Table 1: Depression and anxiety interventions included in the investment case analysis).

Depression and Anxiety

Table 1: Depression and anxiety interventions included in the investment case analysis

<table>
<thead>
<tr>
<th>Mental Health Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
</tr>
<tr>
<td><strong>Mild cases:</strong></td>
</tr>
<tr>
<td>• Basic psychosocial interventions</td>
</tr>
<tr>
<td><strong>Moderate-severe cases: First Episode:</strong></td>
</tr>
<tr>
<td>• Basic psychosocial interventions and anti-depressant medication</td>
</tr>
<tr>
<td>• Intensive psychosocial interventions and anti-depressant medication</td>
</tr>
<tr>
<td><strong>Moderate-severe cases: Recurrent Episode:</strong></td>
</tr>
<tr>
<td>• Intensive psychosocial interventions and anti-depressant medication on an episodic basis</td>
</tr>
<tr>
<td>• Intensive psychosocial interventions and anti-depressant medication on a maintenance basis</td>
</tr>
<tr>
<td>Anxiety</td>
</tr>
<tr>
<td><strong>Cases not accompanied by depression:</strong></td>
</tr>
</tbody>
</table>

The mhGAP-IG advocates for differential treatment of depressive patients based on severity of symptoms. Because multifaceted treatment is recommended for patients with moderate-severe depression, we analyzed the 5 treatment combinations to the left for patients with mild depression, first episode moderate-severe depression, and recurrent moderate-severe depression.
• Basic psychosocial interventions for anxiety

Cases accompanied by moderate-severe depression:
• Basic psychosocial interventions and anti-depressant medication for anxiety
• Intensive psychosocial interventions and anti-depressant medication for anxiety

According to the mhGAP-IG, psychosocial interventions are the first-line treatments for depression and other significant emotional complaints such as anxiety. These treatments can be categorized as either basic or intensive. Basic psychosocial interventions can be carried out by non-specialized health-care providers with little extra training, while intensive psychosocial interventions require many hours of training and take multiple hours to implement, usually over weeks or months.

Basic psychosocial interventions for depression and anxiety include teaching patients and caregivers about mental illness, addressing psychosocial stressors, reactivating social networks, designing structured physical activity programs, and offering regular follow-up. Recommended intensive psychosocial interventions for anxiety and depression include behavioral activation, relaxation training, problem-solving treatment, interpersonal therapy, and cognitive behavioral therapy.

For individuals with moderate to severe depression or anxiety that is accompanied by depression, the initiation of antidepressant medication may be necessary. The mhGAP-IG recommends selecting an antidepressant from the National or WHO Formulary such as fluoxetine, a selective serotonin reuptake inhibitor (SSRI), or amitriptyline, a tricyclic antidepressant (TCA). Patients on antidepressant medication should be monitored regularly for side effects, poor adherence, and inadequate or no response. The mhGAP-IG does not recommend pharmacological treatment for patients with mild depression or patients with anxiety that have no depressive or other priority symptoms.

For patients with recurrent depressive episodes, therapy continues either on an episodic or a maintenance basis. Episodic therapy treats acute symptoms as they appear, while maintenance therapy is continued after the treatment of acute symptoms to reduce the risk of relapse [23].

Psychosis
The mhGAP-IG recommends both psychosocial interventions and anti-psychotic medication for all patients with psychosis, though pharmacological treatment can eventually be discontinued if symptoms are controlled or the patient is in remission. As with depressive and anxiety, basic psychosocial interventions for psychosis can be carried out by non-specialized health-care personnel with little extra training, while intensive psychosocial interventions require advanced training and takes many hours to implement. Basic psychosocial interventions for psychosis in the mhGAP-IG are focused on educating patients and their caregivers about psychosis and its treatment, facilitating rehabilitation into the community, and requiring regular follow-up. Intensive psychosocial interventions, on the hand, includes all basic psychosocial interventions plus family therapy and social skills therapy.
**Table 2: Psychosis interventions included in the investment case analysis**

<table>
<thead>
<tr>
<th>Psychosis Interventions</th>
<th>We analyzed two treatment combinations for psychosis. The mhGAP-IG recommends that all patients with psychosis are treated with antipsychotic medication.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic psychosocial interventions and anti-psychotic medication</td>
<td></td>
</tr>
<tr>
<td>Intensive psychosocial interventions and anti-psychotic medication</td>
<td></td>
</tr>
</tbody>
</table>

Recommended antipsychotic medications include haloperidol, chlorpromazine, and fluphenazine, among others. It is important to ensure regular follow-up with psychotic patients to assess symptoms, side effects, adherence to medication, and in some cases routine laboratory monitoring.

**Current coverage and target coverage: Scale-up of treatment rates over 15 years**

In Jamaica, coverage rates for individuals with mental health conditions are low (see Table 3). Under-resourced community mental health services (CMHS), low-levels of training among general health practitioners, and stigma around mental health may all play a role in low screening, diagnosis, and treatment rates [5, 24]. Based on estimates provided by Jamaica Ministry of Health officials, we show below the percent of individuals with a given condition who are currently receiving treatment, as well as Ministry of Health target coverage goals over 15 years (See technical appendix for further details).

**Table 3: Scale up in coverage rates of selected mental health interventions**

<table>
<thead>
<tr>
<th>Package</th>
<th>Current Coverage (2018)</th>
<th>Target Coverage (2033)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Depression</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic psychosocial treatment</td>
<td>15%</td>
<td>50%</td>
</tr>
<tr>
<td>Basic psychosocial treatment and anti-depressant medication for first episode moderate-severe cases</td>
<td>30%</td>
<td>65%</td>
</tr>
<tr>
<td>Intensive psychosocial treatment and anti-depressant medication for first episode moderate-severe cases</td>
<td>50%</td>
<td>80%</td>
</tr>
<tr>
<td>Intensive psychosocial treatment and anti-depressant medication of recurrent moderate-severe cases on a maintenance basis</td>
<td>53%</td>
<td>80%</td>
</tr>
<tr>
<td>Intensive psychosocial treatment and anti-depressant medication for first episode moderate-severe cases</td>
<td>55%</td>
<td>80%</td>
</tr>
<tr>
<td><strong>Anxiety</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic psychosocial treatment for anxiety</td>
<td>11%</td>
<td>50%</td>
</tr>
</tbody>
</table>
### Basic Psychosocial Treatment and Anti-depressant Medication for Anxiety

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th>Coverage Level 1</th>
<th>Coverage Level 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic psychosocial treatment and anti-depressant medication for anxiety</td>
<td>26%</td>
<td>65%</td>
</tr>
<tr>
<td>Intensive psychosocial treatment and anti-depressant medication for anxiety</td>
<td>46%</td>
<td>80%</td>
</tr>
</tbody>
</table>

### Jamaica Task Force Recommendations

Reaching target coverage goals will require concerted effort on multiple fronts. In 2017, the Jamaica Task Force on Mental Health and Homelessness proposed a series of recommendations to increase coverage levels [25], which are detailed below. Each of these recommendations are included within our economic analysis as costs required to scale up treatment levels.

**Recommendations:** The Task Force proposed further integrating mental health services into primary care by expanding mental health training of health professionals (e.g., psychiatric nurse aides, and community and social workers). Currently, in the public sector, two-thirds of doctors in the Kingston and St. Andrews parishes feel that “they are not adequately trained to deal with depression and less than 20 percent routinely screen patients with chronic illnesses for depression” [26, p. 1] . Many individuals with depression and anxiety are never diagnosed or treated, and psychosocial support is generally only available in public sector facilities [27].

The Task Force also recommended a concerted health promotion campaign aimed at stigma reduction. Stigmas around mental illness can prevent individuals from accessing services or seeking assistance from family or friends to help cope with and treat psychological problems [28]. In Jamaica, data from a 2006 national survey on mental health indicates existing stigmas around mental health [29]. Among 1,306 people who were surveyed, 64.9 percent of respondents said they seek to avoid mentally ill persons, and only 26.7 percent said that they felt comfortable with mentally ill persons. Focus group discussions with Jamaicans reveal the complexity of Jamaicans’ attitudes about—and feelings for—those suffering from mental illness [30]. The most commonly expressed feeling was “fear”; however, many individuals also expressed compassion, sympathy, and love.

Arthur et al. (2010), write that Jamaicans tend to organize mental illness into three distinct categories that correspond closely to medical terminology for mental health conditions: considering some people healthy, others “mentally ill” (e.g., those who suffer from phobias, anxiety, or mild to moderate depression), and others as “mad” (e.g., schizophrenics, bi-polar, major depressive disorder) [30]. Similarly, there is a perception that being treated at a health center constitutes help and the possibility of recovery, whereas treatment at formal mental health institutions signals that a person is severely, and perhaps irrevocably, ill [31].

While stigma around mental health in Jamaica is often said to be pronounced, there is evidence that Jamaicans’ perceptions of help-seeking are neither more positive nor less positive than that of other global populations [32]. Still, in practice, one study identified that adolescents experiencing mental illness perceive that seeking assistance from informal sources (e.g. family, friends) or formal sources (medical doctors, psychiatrists) would only be somewhat helpful [32].
Finally, the Task Force recommended more direct outreach to underserved and non-adherent populations through expansion of the number of ‘assertive outreach teams’. The teams provide emergency psychiatric response, home visitsations, and direct transportation to health facilities for those with moderate and severe forms of mental illness, helping to reach those most in need and ensure they receive treatment.

Methodological steps in the investment case analysis

Estimating medical costs
Within the Jamaica Mental Health Investment Case, we estimate the cost of scaling up coverage of selected interventions detailed in Table 1 and Table 2. Patients with mild, moderate, or severe forms of a given mental health disorder receive varying forms of treatment, which are described above in the ‘WHO mhGAP: Selected Mental Health Interventions’ section. Specific treatment assumptions for each intervention are found in the attached Technical Appendix.

The total cost of providing treatment is a function of the resources used to treat patients (e.g., pharmaceutical drugs and diagnostics), as well as the cost of outpatient visits or inpatient stays required as part of the regimen. The quantity of resources used is multiplied by the unit cost of the resource, and then by the additional number of patients who receive treatment in order to arrive at the total cost of scaling up coverage rates in the population.

The costs of pharmaceutical drugs are sourced from the Jamaica National Health Fund [33]. Per WHO CHOICE methodology, an additional cost, equivalent to 13 percent of the medicine’s value, is added to account for the supply chain cost to import and distribute the medications throughout Jamaica [34]. The average costs of an outpatient visit or inpatient stay are derived from the 2010 WHO CHOICE study [35]. Outpatient and inpatient costs are modified—according to mhGAP Costing Tool assumptions—in order to estimate the cost of providing specialized mental health services, such as individual or group therapy. Specific costs and assumptions can be found in the Technical Appendix.

Estimating package implementation costs
In addition to the medical costs associated with treatment, we account for program and health system costs that support the delivery of interventions, and their uptake by individuals with mental illness (see Task Force Recommendations section).

Within this category we include the cost of: 1) training a mental health workforce; 2) Operating five ‘assertive outreach teams’ that provide emergency response, home visits, and transportation to health facilities for mental health patients; 3) promoting awareness and knowledge of mental health through public education and a social media campaign, and; 4) program management and administration cost for the MOH Mental Health and Substance Abuse Unit (including human resources, supplies and equipment, and surveys).

The costs of numbers 1-3 were adapted from cost and resource-intensity estimates within the Proposal for Implementation of Recommendations from the Task Force on Mental Health and Homeless, and from personal conversations with the MOH Mental Health and Substance Abuse Unit. The costs of program management and administration were extrapolated from assumptions within the WHO mhGAP

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1 Outpatient visits may include visits to primary care providers for medication monitoring or psychosocial support (e.g., group or individual counseling)
2 The Task Force on Mental Health and Homelessness proposed the establishment of five ‘Assertive Outreach Teams’
Costing Tool. The specific inputs for each of the above cost-categories, as well as the values used to allocate costs across health conditions, are found in the Technical Appendix.

**Estimating health gains in the investment case analysis**

The One Health Tool is a freely-available software program produced by the WHO and other UN agencies. The OHT has been used by UN-agency actors and others to create published analyses of the benefits and financial return from implementing health interventions [36, 37].

OHT is customizable, meaning users can input data that reflects a country’s health services and local costs. The tool also allows users to define intervention parameters (e.g., drugs prescribed, the number of outpatient and inpatient visits etc.), their unit cost, the current coverage levels of interventions and the prevalence and incidence rates of diseases and risk factors.

To estimate health gains, OHT calculates the depression, anxiety and psychosis episodes that would occur in the population without scaling up any of the clinical interventions identified in the mhGAP intervention guide (No scale-up scenario). It then calculates episodes of depression, anxiety and psychosis that will occur with a scale up (scale-up scenario). The health gains from the investment case analysis are calculated as the reduction in the prevalence of mental illness\(^4\), healthy life years gained, and lives saved from scaling up clinical interventions identified in the mhGAP intervention guide.

**Monetization of the economic and social value of health gains**

We monetize both the economic and social value of health gains from scaling up treatment for depression, anxiety and psychosis. The economic value of health benefits captures improvement in labor force outcomes while the social value of health gains captures the monetary value of being alive and healthy to form and maintain relationships, to pursue leisure interests and to make decisions in every life. To monetize the social value of health gains for the depression, anxiety and psychosis treatment package we rely on the formula developed by Stenberg and colleagues which is given by: healthy life years gained from scaling up treatment interventions × 0.5 × per person income [36].

**Depression and anxiety**

To estimate the economic value of health gains derived from scaling up treatment for depression and anxiety, we estimate the discounted value of future earnings from improved labor outcomes that result from saving lives, missing fewer days at work (absenteeism), reducing impaired activity while at work (presenteeism) and increased labor participation.

Specifically, productivity gains from averted absenteeism and presenteeism due to mental health interventions were calculated as: the number of averted cases × the fraction who would now be in a position to engage in the labor force × the fraction that are likely to find employment × GDP per worker × increase in hours worked from averted presenteeism/absenteeism.\(^5\) [38-40] (details are provided in the technical appendix).

Productivity gains from lives saved, on the other hand, are calculated as lives saved due to the intervention × the fraction of individuals who would engage in the labor force × the fraction that are likely to find employment × expected worker productivity (GDP per worker) [36]. To value the increase in labor participation from improved functioning we assume, as in Chisolm 2016, that 5% of individuals that experience remission because of treatment scale up will participate in the labor force [36]. For

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\(^4\) Reduction in the prevalence of mental illness is derived from remission of mental illness. Healthy life years gained, on the other hand are derived from both remission and improved functioning as a result of treatment.

\(^5\) Increases in hours worked were obtained from the literature.
these individuals, productivity gains are calculated by calculating the fraction that are likely to find employment from Jamaica’s employment rate × expected worker productivity (GDP per worker).

**Psychosis**

The approach to estimate the economic value of health gains from scaling up treatment for psychosis was different than the method used for depression and anxiety. In particular, since there is currently no consensus on the impact of psychosis on mortality, presenteeism, absenteeism, and employment we estimate the economic value of health gains solely from healthy life years gained. Stenberg and colleagues estimate that the economic and social value of a 1-year increase in life expectancy globally is 1.6 times per person national income [41]. Approximately 1.1 can be attributed to the economic value of an extra healthy life year and 0.5 to the social value of an extra healthy life year. In this investment case we rely on these estimates to calculate the economic value of health gains using the formula: healthy life years gained × 1.1 × per person income.

**Return on investment**

Return on investment (ROI) analysis measures the financial gain from an investment relative to its costs. For the mental health investment case, we calculated the ratio of the total benefits (economic and social value of health gains) from scaling up treatment for depression, anxiety and psychosis to its costs (medical and package implementation). An ROI greater than one indicates that the financial gains from scaling up treatment for depression, psychosis and anxiety exceed its costs.

**Results**

**Health benefits**

*Table 4* shows results for two key health outcomes: Cases averted (reduced prevalence) and healthy life years gained. Over 15 years, scaling up treatment for mental illness expected to improve functioning (or reduce disability) for depression, anxiety and psychosis patients and to also increase remission rates for patients with depression and anxiety. For depression and anxiety patients, improvements in functioning and remission are expected to increase healthy life years by 51,328 and 22,671 respectively; reducing the prevalence of depression and anxiety cases by 120,259 and 108,968 cases respectively from 2018 to 2033 (15-year period). For psychosis patients, the cumulative number of healthy life-years gained over the 15-year period from improved functioning alone is 1,884.

*Table 4: Estimated health benefits over a 15-year time horizon, by intervention package*

<table>
<thead>
<tr>
<th>Intervention package</th>
<th>Healthy life years gained</th>
<th>Cases Averted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>51,328</td>
<td>120,259</td>
</tr>
<tr>
<td>Anxiety</td>
<td>22,671</td>
<td>108,968</td>
</tr>
<tr>
<td>Psychosis</td>
<td>1,884</td>
<td>-</td>
</tr>
</tbody>
</table>
Economic + social value of health gains
The net present value of economic and social gains from improved health are provided below in Figure 1. Placing an economic value on the health benefits produces a present value of 38.9 billion JMD; 21.5 from the depression package, 16.4 from the anxiety package and 1.1 from the psychosis package. Adding the social value of health gains to economic productivity yields a present value of 60 billion JMD; 35.8 from the depression package, 22.6 from the anxiety package and 1.6 from the psychosis package.

*Figure 1: Economic + social value of health gains*

For depression and anxiety, Figure 2 provides a breakdown of the present value of the total gains (economic + social gains) from scaled up treatment. Of the 58.4 billion JMD expected from scaling up treatment for depression and anxiety, 3.1 billion JMD is from mortality averted, 15.2 billion JMD is from reduced presenteeism, 7.6 billion JMD from reduced absenteeism, 11.9 billion JMD from restored employment and 20.6 billion JMD are from the social value of health gains.
**Figure 2:** Breakdown of the present value of the total gains from scaled up depression and anxiety treatment.

For psychosis, **Figure 3** below provides a breakdown of the present value of the total gains from scaled up treatment. Of the 2.6 billion JMD expected from scaled up psychosis treatment, 1.1 billion JMD are economic productivity gains\(^6\) and 1.6 billion JMD are from the social value of health gains.

**Figure 3:** Breakdown of the net present value of the total gains from scaled up psychosis treatment.

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\(^6\)We are unable to breakdown the economic gains for scaling up psychosis treatment any further. As explained in the methods section there is currently no consensus on the impact of psychosis on mortality, presenteeism, absenteeism, and employment.
Return on Investment

Comparing the costs and benefits of each intervention package, we find that scaling up treatment for all three intervention packages—1) depression 2) anxiety, and 3) psychosis—have a ROI greater than 1 over the 5 years and 15-year period.

In the first 5 years, the depression treatment package has the highest economic + social value (3.90 billion JMD; ROI of 3.97), followed by anxiety (1.49 billion JMD; ROI of 3.35) and psychosis (0.22 billion JMD; ROI of 0.90).

*total is the sum of economic productivity gains and the intrinsic value of health gains.

Table 5: ROI of the mental illness intervention packages over 5 years

<table>
<thead>
<tr>
<th>Packages</th>
<th>ROI</th>
<th>Economic productivity gains (Billion JMD)</th>
<th>Economic productivity gains + Intrinsic benefits (Billion JMD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Package implementation costs</td>
<td>ROI</td>
</tr>
<tr>
<td>All packages</td>
<td>1.5</td>
<td>3.43</td>
<td>2.29</td>
</tr>
</tbody>
</table>

44
Over 15 years, the depression treatment package still has the highest economic + social value (35.8 billion JMD), followed by anxiety (22.6 billion JMD) and psychosis (1.6 billion JMD). However, when one compares total benefits (economic + social) to the cost of implementation, anxiety interventions have the highest return on investment: for every Jamaican dollar invested in clinical treatment for anxiety, one can expect to see 5.5 JMD dollars in return. The depression treatment package has the next highest ROI (5.2), followed by the psychosis treatment package (1.1).

Table 6: Return on investment of the mental illness intervention packages over 15 years

<table>
<thead>
<tr>
<th>Packages</th>
<th>ROI</th>
<th>Total Benefits (Billion JMD)</th>
<th>Medical costs (Billion JMD)</th>
<th>Package implementation costs</th>
<th>ROI</th>
<th>Total Benefits (Billion JMD)</th>
<th>Medical costs (Billion JMD)</th>
<th>Package implementation costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>All packages</td>
<td>2.7</td>
<td>38.9</td>
<td>14.2</td>
<td>1.7</td>
<td>4.2</td>
<td>60.0</td>
<td>14.2</td>
<td>1.7</td>
</tr>
<tr>
<td>Depression</td>
<td>3.1</td>
<td>21.5</td>
<td>6.9</td>
<td>-</td>
<td>5.2</td>
<td>35.8</td>
<td>6.9</td>
<td>-</td>
</tr>
<tr>
<td>Anxiety</td>
<td>4.0</td>
<td>16.4</td>
<td>4.1</td>
<td>-</td>
<td>5.5</td>
<td>22.6</td>
<td>4.1</td>
<td>-</td>
</tr>
<tr>
<td>Psychosis</td>
<td>0.7</td>
<td>1.1</td>
<td>1.5</td>
<td>-</td>
<td>1.1</td>
<td>1.6</td>
<td>1.5</td>
<td>-</td>
</tr>
</tbody>
</table>

The mental illness interventions as a package over the 5 and 15-year period, recoup their investment costs when economic benefits are considered (ROI for all packages are 1.5 in 5 years and 2.7 in 15 years) and when the social value of health gains are also included (ROI for all packages are 2.4 in 5 years and 4.2 in 15 years).

Figure 4 below illustrates the cumulative benefits and costs of all the mental illness intervention packages over the 15-year period. In 2033, total benefits from all the intervention packages are 60 billion JMD while the investment costs are 14.2 billion JMD. The figure shows that the combined policy
packages are excellent investments in the long-run because the gap between total benefits (economic + social) and costs (medical + implementation) are increasing over time.

**Figure 4:** Cumulative benefits and cost of all mental illness intervention packages over 15-years

The observation that cumulative benefits are increasing relative to costs yields an ROI that is growing year over year (**Figure 5**).

**Figure 5:** ROI on investment in mental illness intervention packages over 15-years
Conclusion

What we learned from the Institutional Context Analysis

Mental health in Jamaica is of high and growing concern. Jamaica is striving to transition from a hospital focus to a community-based response, which will support those with persistent issues to avoid mental hospitals and homelessness and increase productivity.

Funding for mental health services is a significant challenge. Due to resource deficiencies, there are no organizational structure for community health posts, nor are there posts for social workers or psychiatrists. Instead, there is over-reliance on contract jobs provided through regional authorities, which results in the defection of highly skilled, qualified personnel to more secure opportunities. Resource constraints also limit vehicle and bus provision for mental health services.

The country is ripe for a significant push, with a national mental health policy and strategic plan being prepared for cabinet approval. To secure additional resources for and attention to mental health, it is important to show the significant economic burden that mental health imposes on the Jamaican economy and to emphasize that unaddressed mental health burdens become chronic, more severe, and costlier.

Conclusion

In consultation with Jamaica’s Ministry of health, the Jamaica mental health investment case estimated the return on investment (ROI) from implementing select interventions from the WHO mhGAP intervention guide. Scaling up psychosocial interventions, and pharmacological treatment for depression, anxiety and psychosis is projected to:

- **Improve health.** In terms of health impact, scaled-up treatment for depression, anxiety and psychosis restores 75,883 healthy life years to the Jamaican population. For depression and anxiety, scaled up treatment increases healthy life years by 51,328 and 22,671 respectively over the scale-up period by reducing disability states and increasing remission rates. For psychosis, an extra 1,884 healthy life years are realized from reduced disability states alone.
• **Provide total benefits (60 billion JMD) that significantly outweigh the costs (15.9 billion JMD).** Health gains from scaled-up treatment for depression, anxiety and psychosis lead to large economic productivity gains (A present value of 38.9 billion JMD) and social benefits (A present value of 21.1 billion JMD). These benefits significantly outweigh the medical (14.2 billion JMD) and intervention package implementation costs (1.7 billion JMD) associated with scaling up treatment.

• **Have a high return on investment.** Comparing the economic + social benefit from scaling up treatment for depression, anxiety and psychosis to the cost of implementation, anxiety interventions have the highest return on investment: for every Jamaican dollar invested in clinical treatments for anxiety, one can expect to see 5.5 JMD dollars in return. The depression treatment package has the next highest ROI (5.2), followed by the psychosis treatment package (1.1).

Though mental illness poses a significant health and economic burden, our results shows that Jamaica can significantly reduce the burden of mental illness by investing in interventions designed to improve mental health.

**References**


