



Time to confront the global health crisis hidden in plain sight: why traumatic brain injury belongs on the global health agenda

*Global Coalition for TBI as a Notifiable and Chronic Condition**



Traumatic brain injury (TBI) is a growing global public health crisis that affects people in all regions of the world and across all age groups, with varied aetiology. Importantly, most of the TBI global disease burden affects those located in low-income and middle-income countries, where access to timely, safe, and quality care is more challenging. Improving care for TBI requires the synergistic efforts of multiple professional groups by coordinating prevention strategies, pre-hospital systems, emergency and acute care treatment, and support for chronic disease consequences. In 2022, WHO's Intersectoral Global Action Plan on Epilepsy and Other Neurological Disorders focused new attention on neurological conditions, offering an opportunity for TBI advocates to use this framework to improve the care of TBI for all. In this Viewpoint, we highlight how strengthening TBI care requires addressing all phases of the care continuum, from coordinating surveillance efforts to develop targeted prevention strategies, to upscaling pre-hospital referral pathways and acute care infrastructure. Furthermore, the large chronic burden of TBI needs to be recognised globally, where rehabilitation and long-term support need to be expanded and adequately resourced.

Introduction

Traumatic brain injury (TBI) remains one of the most pervasive and neglected public health challenges worldwide.^{1,2} TBI is defined as an immediate and often complex disruption of neurological, vascular, and metabolic functions, an acute or chronic alteration in brain function, which is the direct or indirect result of an external force. TBI requires multidisciplinary and sustained intervention and differs considerably from other neurological conditions in terms of its pathophysiology, clinical management, and long-term outcomes. Despite causing an estimated 69 million new injuries annually, TBI has yet to receive commensurate attention in global health policy, financing, or surveillance frameworks.^{1,3} The consequences of TBI extend beyond the acute episode. For many people with moderate or severe TBI, and some with recurrent or inadequately managed mild TBI, the injury triggers lifelong cognitive, emotional, and neurological sequelae that often lead to permanent disability, reduced workforce participation, and socioeconomic strain on individuals, families, and national health systems.⁴⁻⁶

The burden of TBI is both global and inequitable. Low-income and middle-income countries (LMICs) account for nearly 90% of cases, driven by rising rates of road traffic injuries, violence, conflict-related trauma, and occupational hazards.² In high-income settings, TBI from falls, sports, intimate partner violence, and workplace injuries constitutes a heavy but often underestimated toll.^{2,7} Globally, failure to formally recognise TBI as a chronic non-communicable condition has led to profound gaps in care, rehabilitation access, surveillance, and long-term system planning.^{6,8,9}

With the adoption of WHO's Intersectoral Global Action Plan on Epilepsy and Other Neurological Disorders (IGAP) in 2022, an unprecedented policy window opened to integrate TBI into the global

non-communicable disease (NCD) and brain health agenda.¹⁰⁻¹³ TBI can be understood as a neurological quadrangle of surveillance, prevention, acute care, and rehabilitation, supported by a core component encompassing financing, workforce, and cross-sectoral coordination.¹¹ This Viewpoint outlines the scientific, economic, and policy case for global action. Here we propose a practical, evidence-based roadmap to guide WHO member states to close decades-long gaps in recognition, data, services, and financing for TBI.

The global and chronic burden of TBI

Annually, an estimated 69 million individuals worldwide sustain a TBI, making it the leading cause of death and disability in people younger than 40 years and exceeding the combined global burden of HIV, tuberculosis, and malaria.^{1,3} Yet, TBI remains largely absent from international health policy and financing frameworks. WHO and most of its member states have yet to formally classify TBI as a chronic condition or to integrate it into surveillance systems. This failure has allowed TBI to remain systematically marginalised in global health planning.

89% of TBI cases occur in LMICs, where the incidence is rising sharply.² Even in high-income settings, TBIs caused by falls, sport-related concussions, intimate partner violence, and occupational injuries remain widely under-reported.^{7,14}

TBI is not simply acute, but can trigger a prolonged cascade of physical, cognitive, behavioural, and metabolic complications.^{5,6} TBI's long-term sequelae include impaired executive function, emotional dysregulation, depression, substance use disorders, sleep disturbances, hormonal dysregulation, cardiovascular complications, and elevated risks for dementia and neurodegenerative diseases.^{5,6} Many individuals with a single, non-complex mild TBI recover well; however, more than 50% with

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See Online for appendix

moderate or severe TBI show effects that evolve with time, placing TBI within the global NCD burden.⁵

The intergenerational and systemic consequences of TBI

The consequences of TBI have effects beyond the injured individual.⁶ Globally, but disproportionately more in LMICs, family members frequently serve as unpaid caregivers, managing complex physical and emotional symptoms of TBI without adequate resources or training. Marital strain, parental distress, lost household income, and disrupted child development are common.⁸ The economic, educational, and emotional toll extends across generations.

Crucially, TBI remains poorly understood across most sectors. Insurance providers routinely underestimate recovery timelines and deny essential long-term financial support. Educational systems do not recognise cognitive and behavioural impacts, leaving students and teachers without appropriate accommodation. Disability programmes terminate support prematurely, failing to reflect the chronic trajectory of TBI. Although most of this chronic trajectory is because of moderate-to-severe TBI, there is scarce but growing evidence that even after mild TBI, individuals can have long-term consequences. Limited employment and vocational rehabilitation services force many survivors into permanent workforce exclusion.⁹ Justice systems misinterpret the consequences of TBI on behavioural and impulse control, contributing to elevated incarceration rates.¹⁵ Housing and homelessness services rarely screen for TBI as a contributor to unstable housing, increasing homelessness rates among people who have had a TBI.^{7,8} Collectively, these gaps reveal systemic failures across health, education, employment, justice, housing, and social welfare sectors that compound the lifelong burden of TBI.

Prevention: essential, but insufficient on its own

Prevention is indispensable in any comprehensive response to TBI.^{11,16} Policy interventions to reduce road traffic injuries, enforce helmet and seatbelt use, implement violence prevention initiatives, promote workplace safety, and regulate high-risk sports activities have demonstrably reduced TBI cases in multiple countries.^{16,17} However, these interventions have not been implemented systematically, equitably, or at scale. Examples showing the deleterious effect of limited adoption or enforcement of prevention measures still exist, restricting their effect and underscoring the need for stronger policy commitment.^{16,18}

Even the most successful prevention strategies cannot eliminate the whole TBI burden. Millions each year will continue to sustain TBI due to preventable accidents, armed conflict, falls, and other causes. Many people with TBI will require access to lifelong care systems, rehabilitation, and social support that extend beyond acute injury management.¹¹

Effective prevention policies need to be complemented by strong TBI care systems. Without deliberate investment in chronic care models, rehabilitation infrastructure, workforce training, and cross-sector coordination, people with TBI are left to navigate complex, uncoordinated, often inaccessible systems that cannot meet their needs across the lifespan.¹⁹

We cannot manage what we do not measure: inadequate surveillance

TBI surveillance remains crucially underdeveloped across most countries, fundamentally limiting national capacity to measure incidence, outcomes, and resource needs.^{17,20,21} Globally, few countries maintain comprehensive, centralised TBI registries that track patients beyond acute hospitalisation.^{20,21} Where trauma registries exist, most lack longitudinal follow-up to capture delayed consequences that often emerge months or years after injury.^{2,22}

Existing surveillance systems are biased towards hospital-based care, whereas individuals with mild TBI are frequently managed in primary care, emergency departments, sports medicine or physiotherapy facilities, or school-based settings. These cases are seldom captured in hospital registries or national datasets and remain under-represented in burden estimates.^{2,17,20}

In LMICs, many health information systems do not distinguish TBI from broader injury categories, obscuring true incidence and underestimating the chronic disability burden. Without standardised, expansive surveillance systems that include non-hospital care and long-term outcomes, health ministries are unable to accurately quantify national prevalence, model future health-care demands, or track long-term socioeconomic costs of TBI.^{17,23} Closing this surveillance gap is a prerequisite for evidence-based policy design, financing allocation, and national system planning.

Acute TBI care: under pressure and showing geographical disparities

The TBI burden is most acute in LMICs where health-care infrastructure is least equipped to address this issue.^{4,24,25} In Pakistan, for example, road traffic injuries and falls represent the leading causes of neurotrauma, yet access to trauma care, rehabilitation, and long-term follow-up remains restricted to major urban centres.²⁴ In sub-Saharan Africa, the convergence of road injuries, interpersonal violence, and conflict-related trauma drives a disproportionate TBI burden, compounded by shortages of neurosurgical, critical care, rehabilitation capacity, and social safety nets.^{2,25}

In many LMICs, pre-hospital systems (eg, emergency medical services and first responder and ambulance services with or without trained paramedics or medical personnel; pre-hospital systems organise care that is provided to patients before they arrive at a hospital) are underdeveloped or absent, with delayed transport, limited early resuscitation, and fragmented trauma

networks.^{19,25} In better-resourced settings, acute care pathways can be poorly coordinated, hindering the ability to minimise secondary brain injury and smooth transitions into community care.^{4,19} Strengthening acute TBI care, including pre-hospital care, aligns with broader investments in trauma systems, universal health coverage, and emergency preparedness, yielding benefits that extend beyond TBI.

In conflict zones globally, blast injuries, penetrating head trauma, and repeated mild TBI contribute to complex neurotrauma patterns that can overwhelm fragile or damaged health systems. There is recent research evidence suggesting that the number and severity of TBI increases in conflict zones, and conflict disrupts access to diagnostics, essential equipment, and expertise for emergency care.^{26,27} Specifically, blast injuries could have stronger links to chronic neuropsychological consequences.²⁸ Also, children are particularly at risk with a review showing that head injuries were the most common injury in war zones.²⁹ Without targeted global investment, LMICs face compounding cycles of untreated neurotrauma, primarily among children and young adults, leading to escalating disability, economic stagnation, and intergenerational health inequities.^{2,24}

Rehabilitation services: limited, when available

Access to rehabilitation after TBI remains severely constrained worldwide.³⁰ According to WHO estimates, up to 60% of individuals with moderate-to-severe TBI in LMICs receive no formal rehabilitation. In some regions of sub-Saharan Africa and south Asia, the rehabilitation coverage gap exceeds 80%, leaving most survivors entirely unsupported once discharged from hospital.³¹

In high-income countries, access remains variable depending on insurance coverage, geographical location, and workforce shortages. Globally, rehabilitation workforce capacity—including psychiatrists, physiotherapists, occupational therapists, speech-language pathologists, neuropsychologists, and vocational rehabilitation specialists—falls short of demand, particularly for long-term, community-based care models essential for people with TBI.^{30,31}

Without investment in scalable rehabilitation infrastructure and workforce, TBI continues to drive escalating disability, unemployment, poverty, and caregiver burden across economies. Embedding TBI rehabilitation within broader disability initiatives and IGAP implementation plans aligns with a concurrent *Lancet Neurology* effort to convene a Commission on neurorehabilitation,³² and is essential to addressing this lifelong burden.

The growing global economic burden of TBI

The economic cost of TBI is profound and largely unmeasured in most global health financing discussions. Between 2015 and 2030, TBI is projected to cost LMICs alone more than US\$1.1 trillion in lost

productivity, lost wages, disability, premature mortality, and diminished human capital.³³ This estimate underrepresents the full economic consequences, given the scarce data available.

In high-income countries, this burden is similarly escalating. Canada's 2023 report, *Traumatic Brain Injury: a Lifelong Condition*, showed that failures to recognise and manage TBI as a chronic disease directly led to higher long-term health-care expenditures, lost workforce participation, increased demand for disability services, and a growing strain on public health care and social safety nets.³⁴ Evidence from social determinants of health research indicates that individuals in lower socioeconomic strata, including those in precarious labour sectors and with restricted long-term care access, are at higher risk of TBI and worse outcomes, further entrenching health and income inequities.^{8,33–35}

Despite this increasing burden, few countries have undertaken comprehensive cost-of-illness or cost-effectiveness analyses for TBI across the life course, reinforcing the perception that investment in TBI is discretionary rather than essential. Generating and using rigorous economic evidence is crucial to positioning TBI appropriately within global and national health financing debates.

The policy window is open: integrating TBI into the brain health agenda

While TBI has remained invisible in global policy for decades, an unprecedented opportunity for action has now emerged. In 2022, WHO member states unanimously adopted the IGAP, creating an actionable framework to address neurological conditions as part of global NCD and brain health priorities.^{10–13} TBI is included in the IGAP's scope, representing a long overdue policy alignment that acknowledges the chronic nature of TBI and its intersection with global health, disability, and equity agendas.^{12,13}

The IGAP framework establishes clear targets for improving access to care, rehabilitation, and long-term management of neurological disorders, but these commitments require specific, coordinated action to address the scale and complexity of TBI. Positioning TBI within the neurological quadrangle of surveillance, prevention, acute care, and rehabilitation provides a structured basis for national strategies aligned with the IGAP, Rehabilitation 2030, and the broader brain health agenda.^{11,30}

Building upon this foundation, the Global Coalition for TBI proposes an evidence-based policy framework for national and international adoption. The Coalition's recommendations are designed to leverage the IGAP platform and create sustainable structural change. The Coalition emphasise that recognition of TBI as a chronic condition is both feasible and urgently needed, and that the scientific evidence supporting such recognition is well established.^{5,6,9,33}

The Peshawar Recommendations: a global blueprint for reform

In 2019, an international consortium of clinicians, scientists, policy makers, and lived-experience advocates produced The Peshawar Recommendations—a comprehensive policy blueprint to guide national and international TBI reform.²⁴ Structured around WHO's Health System Building Blocks framework, these recommendations provide a practical and scalable pathway for member states to implement comprehensive TBI care and prevention systems.

Key recommendations are organised along the domains of surveillance and data collection,^{20–23} prevention,^{16,18} and pre-hospital and acute trauma care,^{4,19,24,25} rehabilitation access and services,^{30,31} and core health system (ie, workforce development,^{4,9,19,30} and community reintegration).^{8,9,34} These recommendations, summarised in the figure, provide a policy and clinical roadmap for countries at every income level to systematically address

the whole TBI trajectory. The recommendations can be mapped to the neurological quadrangle and implemented via coordinated cross-sectoral and interdisciplinary efforts.

The time for global action is now

The opportunity to bring TBI onto the global health agenda is both urgent and actionable. The Global Coalition for TBI, representing hundreds of organisations spanning clinical leaders, researchers, policy makers, people with lived experience, and member states, has coalesced behind a unified call for change.

The goal is to adopt a resolution that formally recognises TBI as a notifiable and chronic condition requiring sustained, coordinated international action. To achieve this goal, the Coalition is working with member states' Ministries of Health to sponsor such a resolution at the next World Health Assembly (WHA) in 2027, an essential step to discuss and vote on its adoption.

Successful adoption would (1) formally classify TBI as a chronic non-communicable condition under the WHO's mandate; (2) integrate TBI into WHO's global and national notifiable disease reporting and surveillance systems; (3) mandate full inclusion of TBI within IGAP implementation and global NCD tracking frameworks; (4) catalyse system-wide health reforms across acute trauma care, rehabilitation, primary care, mental health, and long-term disability services; and (5) establish formal accountability for cross-sectoral partnerships that address the legal, economic, educational, employment, and social consequences of TBI.

Importantly, passage of the WHA resolution would unlock mechanisms that extend far beyond symbolic recognition. TBI would become formally embedded within the WHO's global NCD, disability, neurological, and rehabilitation action plans.

This resolution would initiate regular reporting requirements for member states, open pathways for WHO technical assistance, guide bilateral and multilateral development funding towards TBI capacity-building, and elevate TBI within disability targets under the UN Sustainable Development Goals, creating enduring incentives for Ministries of Health to coordinate intersectoral national TBI strategies.

The WHA resolution represents a rare moment where science, policy, and lived experience converge. The policy infrastructure now exists, and an international consensus is emerging with a determined focus. What remains is the political resolve to seize this moment and correct decades of systemic neglect.

A defining test for global health leadership

The global health community can no longer afford to operate with fragmented action or institutional inertia. The scientific evidence that TBI is a major, often chronic, contributor to global disability is unequivocal.^{4–6,34} The economic costs are escalating³³ and the human toll—for individuals, families, and societies—grows each year.

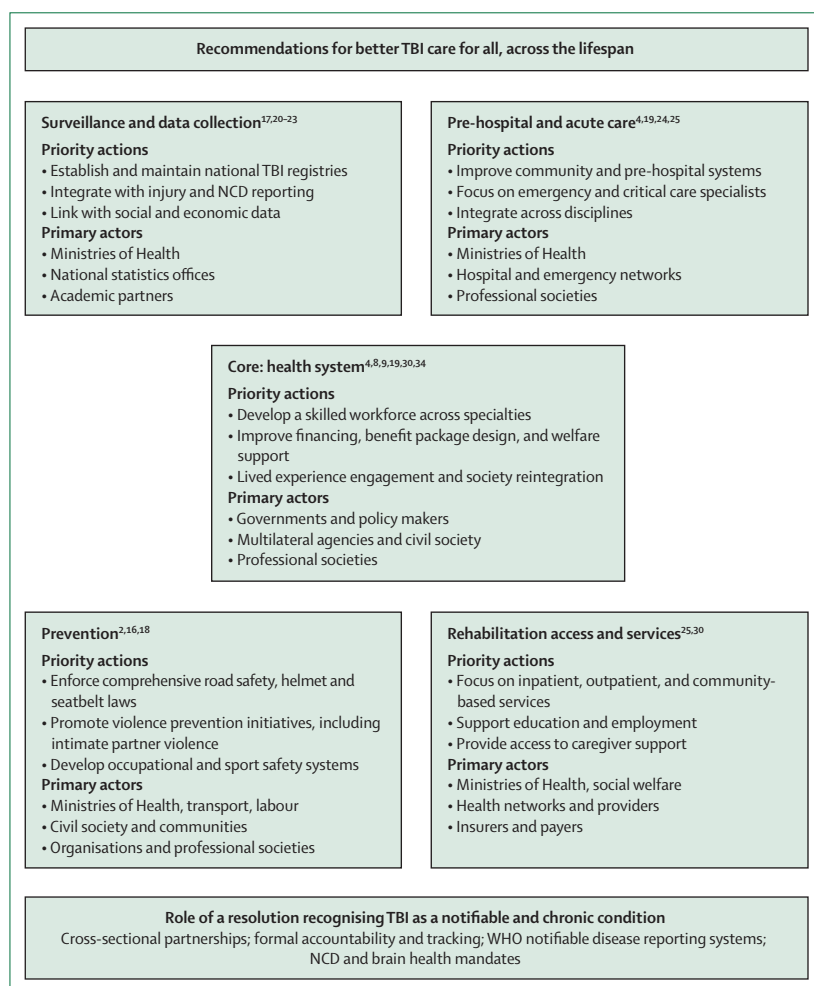


Figure: Recommendations for improving TBI care

Infographic summarising recommendations for improving TBI care for all, indicating key actions and actors, and the role of a resolution on TBI in spearheading these recommendations. NCD=non-communicable disease.

TBI=traumatic brain injury.

Recognising TBI as a lifelong condition demands coordinated global policy leadership, which includes aligning health, education, employment, disability, justice, and social welfare systems to address the complex and enduring needs of people with TBI collectively.

A massive public health gap has existed in plain sight for decades: uncounted, unseen, and inadequately addressed. TBI is no longer invisible; the evidence is before us, and with it, the opportunity—and a global responsibility—to act.

Contributors

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Declaration of interests

We declare no competing interests.

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