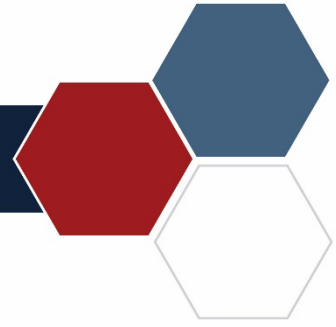# Medical Research
Future Fund

Traumatic Brain Injury Mission

Implementation Plan

Consultation Version

January 2025

Background

Traumatic brain injury (TBI) encompasses a spectrum from concussion to severe injury. Single or repeated TBI can lead to dramatic, often long-lasting, negative consequences for patients, their families and other community support networks. The TBI Mission (the Mission) aims to build the evidence base, optimise care and innovate new strategies for treatment, rehabilitation and community integration for people who have experienced TBI. The Mission aims to accelerate Australian-led TBI research to develop and deliver innovative and effective treatments that substantially and equitably optimise and improve health outcomes, in partnership with people with TBI, their families and other community support networks. The work of the Mission will make transformative improvements to the lives of people affected by TBI through:

• personalising care after TBI to achieve the best possible outcomes

• improving the lives of people with TBI by using better interventions identifying how to reduce barriers to support people to live their best possible life after TBI regardless of severity.

This plan supports the implementation of the Mission roadmap and establishes a strategic plan to address the Mission's goals within the context of the Medical Research Future Fund 10-year plan. This implementation plan should be read in the context of the Mission roadmap, which describes the Mission's scope, goals and principles.

Overview

To target activities to achieve the objectives of the Mission within the 10-year plan, the following aims and priority areas for research investment have been identified.

Aim	Priority areas for investment
1. Personalising care after TBI to achieve the best possible outcomes	**1.1** Developing personalised care for moderate to severe TBI in all care settings that is facilitated by evidence and information
	1.2 Improving care pathways and outcomes for moderate to severe TBI through predictive modelling using novel approaches to data and informatics
	1.3 Helping to ensure that patients consistently receive best-practice treatment and care for moderate to severe TBI
2. Improving the lives of people with TBI by using better interventions	**2.1** Improving acute care by identifying and implementing new treatments and care applications for TBI regardless of severity
	2.2 Improving outcomes for TBI regardless of severity through enhanced rehabilitation
	2.3 Helping to ensure that patients consistently receive best-practice treatments and care for mild TBI
3. Identifying how to reduce barriers to support people to live their best possible life after TBI regardless of severity	**3.1** Understanding the impact of community awareness on the health and psychosocial outcomes of people living with TBI regardless of severity
	3.2 Understanding long term outcomes following TBI
	3.3 Assessing the economic impact of TBI treatments and pathways

Implementation strategy

The implementation strategy has been developed to guide research investment over the life of the Mission. Investment aims to build capability and knowledge, as well as facilitate translation of advancements to clinical practice, to achieve the Mission's objectives. The implementation strategy is intended to make the research purpose and direction transparent, and provide certainty to stakeholders. It also establishes how the outcomes of each focus area will be evaluated in terms of benefit to Australian patients, which will help to clarify the intended outcome and facilitate tracking of the Mission's progress towards its objectives.

Priority areas for investment are allocated across short, medium and long-term timeframes. Priority areas are designed to integrate with each other and form parts of a cohesive whole. National collaborations will be required to ensure key inputs for individual projects are available. Integration of priority areas is designed to maximise data collection and linkage among funded projects, within and between priority areas.

Research activities will be, or contribute to, large programs of work of national strategic importance that are informed by the key priority areas outlined in this implementation plan. The research activities are expected to foster collaboration and harness resources across the system to deliver improved health outcomes for Australians.

The [MRFF Monitoring, evaluation and learning strategy](#) is an overarching framework for assessing the performance of the MRFF, focused on individual grants, grant opportunities, initiatives (e.g. the Traumatic Brain Injury Mission) and the entire program. The strategy sets out the principles and approach used to monitor and evaluate the MRFF. It outlines the need for evaluations to be independent and impartial. The strategy aims to be transparent in process and outcomes and agile to the needs of the MRFF, its consumers and stakeholders (such as the health and medical research industry). The Mission and grants funded under this initiative will be evaluated against the strategy.

Aim 1: Personalising care after TBI to achieve the best possible outcomes

Priority area 1.1 Developing personalised care for moderate to severe TBI in all care settings that is facilitated by evidence and information

Research to begin in the …	Priorities for investment (research questions and objectives)
short term (1–2 years)	Refer to Appendix A.
medium term (2–6 years)	**Objective:** Improving care for moderate to severe traumatic brain injury by optimising informatics approaches that gather nationally representative data. Common data elements are to be gathered by a competitively selected national consortium and will include social, biological, health, clinical, intervention and outcome aspects that are of value to people with lived experience of traumatic brain injury. The role of the consortium is to conduct and continue to oversee delivery of this large-scale project and ensure maximal ongoing data collection and linkage. This research should: - encompass the diversity of moderate to severe traumatic brain injury - encompass multiple geographies and demographics - conduct data collection and access that adheres to all best-practice principles. Key inputs for this project include: - approaches and outcomes from the development project (see 1.1 short term). **Outcome:** Developing a tool for personalised care for moderate to severe traumatic brain injury in all care settings that is facilitated by evidence and information **Funding:** Up to $5 million per project. One project is anticipated to be funded. **Duration:** Grant duration of up to 5 years. Up to 50 Chief Investigators.

Priority area 1.2 Improving care pathways and outcomes for moderate to severe TBI through predictive modelling using novel approaches to data and informatics

Research to begin in the …	Priorities for investment (research questions and objectives)
short term (1–2 years)	Refer to Appendix A.
long term (8–10 years)	**Objective:** Conduct implementation research to support effective national adoption and best-practice use of the prognostic and predictive approaches for moderate to severe traumatic brain injury to enable personalised care to enhance treatment and care pathways that address barriers to implementation, and assess and address inequalities among vulnerable populations including all of: • Aboriginal and Torres Strait Islander people • People affected by family, domestic and sexual violence • Older people who have falls • rural, regional and remote populations in geographically diverse areas • culturally and linguistically diverse populations Key inputs for this project include: • outcomes from the optimal informatics approach (see 1.1 medium term) and reducing inequalities (see 3.2 medium term). **Outcome:** Improving access to personalised care approaches for people with moderate to severe traumatic brain injury. **Funding:** Up to $4.23 million per project. One project is anticipated to be funded. **Duration:** Grant duration of up to 5 years. Up to 15 Chief Investigators.

Priority area 1.3 Helping to ensure that patients consistently receive best-practice treatment and care for moderate to severe TBI

Research to begin in the …	Priorities for investment (research questions and objectives)
short term (1–2 years)	Refer to Appendix A.
medium term (2–5 years)	Refer to Appendix A.

Evaluation approach and measures

- Informatics approaches developed, implemented and in ongoing use nationally that facilitate improved care outcomes for moderate to severe TBI across all population groups

- Predictive and prognostic approaches developed, implemented and in ongoing use nationally that improve treatment and care pathways for people with moderate to severe TBI

- Evidence-based clinical guidelines and protocols developed, implemented and in ongoing use nationally for moderate to severe TBI

Aim 2: Improving the lives of people with TBI by using better interventions

Priority area 2.1 Improving acute care by identifying and implementing new treatments and care applications for TBI regardless of severity

Research to begin in the …	Priorities for investment (research questions and objectives)
short term (1–2 years)	Refer to Appendix A.
medium term (2–6 years)	**Objective:** Test the efficacy and complete a process evaluation of novel treatments, clinical indicators and/or interventions for mild traumatic brain injury that improve long-term patient outcomes. This research should: • build on nationally integrated informatics approaches that facilitate personalisation of care • encompass the diversity of mild traumatic brain injury (e.g. age of acquisition, cause of traumatic brain injury, repeated traumatic brain injury) • consider confounding health conditions • encompass multiple geographies and demographics. Key inputs for this project include: • identification of novel treatments and care (see 2.3 short term) • optimal informatics approaches (see 2.3 medium term) **Outcome:** Generating approaches to improve long term outcomes for mild traumatic brain injury. **Funding:** Up to $1.5 million per project. Two projects are anticipated to be funded. **Duration:** Grant duration of up to 5 years. Up to 15 Chief Investigators.

Research to begin in the …	Priorities for investment (research questions and objectives)
long term (6–10 years)	**Objective:** Test the efficacy and complete a process evaluation of novel treatments, clinical indicators and/or interventions for moderate to severe traumatic brain injury in reducing time spent in acute care and/or improving long-term patient outcomes. This research should: • build on nationally integrated informatics approaches that facilitate personalisation of care • encompass the diversity of moderate to severe traumatic brain injury (e.g. age of acquisition, cause of traumatic brain injury, repeated traumatic brain injury) • consider confounding health conditions • encompass multiple geographies and demographics. Key inputs for this project include: • identification of novel treatments and care (see 2.1 short term) • optimal informatics approaches (see 1.1 medium term) Continue identifying novel treatments, clinical indicators and interventions for moderate to severe TBI (building on 2.1 short term). **Outcome:** Improving acute care and/or long term outcomes for moderate to severe traumatic brain injury. **Funding:** Up to $1.5 million per project. Two projects are anticipated to be funded. **Duration:** Grant duration of up to 5 years. Up to 15 Chief Investigators.

Priority area 2.2 Improving outcomes for TBI regardless of severity through enhanced rehabilitation

Research to begin in the …	Priorities for investment (research questions and objectives)
medium term (2–6 years)	**Objective:** Conduct implementation research to test the effectiveness of best-practice rehabilitation and/or care models for traumatic brain injury regardless of severity focused on personalised outcomes to meet the needs of the individual. This research should: • encompass multiple geographies and demographics • encompass the diversity of traumatic brain injury (e.g. age of acquisition, cause of traumatic brain injury, and repeated traumatic brain injury). Key inputs for this project include: • outcomes from clinical guidelines and protocols (see 2.3 short term for mild traumatic brain injury). • outcomes from clinical guidelines and protocols (see 1.3 short term for moderate to severe traumatic brain injury). **Outcome:** Generating evidence to support existing best-practice personalised rehabilitation and/or care models for traumatic brain injury. **Funding:** Up to $1.0 million per project. Two projects are anticipated to be funded. **Duration:** Grant duration of up to 2 years. Up to 15 Chief Investigators.

Research to begin in the …	Priorities for investment (research questions and objectives)
medium term (2–6 years)	**Objective:** With a focus on Priority Populations, test the efficacy of novel rehabilitation models or approaches and complete a process evaluation for mild traumatic brain injury in improving personalised long-term patient outcomes that meet the needs of the individual. This research should: • build on nationally integrated informatics approaches that facilitate personalisation of care • encompass the diversity of mild traumatic brain injury (e.g. age of acquisition, cause of traumatic brain injury, and repeated traumatic brain injury). • consider confounding health conditions • encompass multiple geographies. Key inputs for this project include: • optimal informatics approaches (see 2.3 medium term). **Outcome:** Generating novel personalised rehabilitation and/or care models for mild traumatic brain injury. **Funding:** Up to $1.5 million per project. Two projects are anticipated to be funded. **Duration:** Grant duration of up to 5 years. Up to 15 Chief Investigators.

long term (6–10 years)	**Objective:** With a focus on Priority Populations, test the efficacy of novel rehabilitation models, approaches and complete a process evaluation for moderate to severe traumatic brain injury in improving personalised long-term patient outcomes that meet the needs of the individual.
	This research should:
	• build on nationally integrated informatics approaches that facilitate personalisation of care
	• encompass the diversity of moderate to severe traumatic brain injury (e.g. age of acquisition, cause of traumatic brain injury, repeated traumatic brain injury)
	• consider confounding health conditions
	• encompasses multiple geographies.
	Key inputs for this project include:
	• identification of novel rehabilitation and/or care models and approaches (see 2.2 medium term)
	• test the efficacy of novel treatments (see 2.2 medium term)
	• optimal informatics approaches (see 1.1 medium term)
	Outcome: Generating novel personalised rehabilitation and/or care models for moderate to severe traumatic brain injury for individuals.
	Funding: Up to $1.5 million per project. Two projects are anticipated to be funded.
	Duration: Grant duration of up to 5 years. Up to 15 Chief Investigators.

Priority area 2.3 Helping to ensure that patients consistently receive best-practice treatments and care for mild TBI

Research to begin in the …	Priorities for investment (research questions and objectives)
short term (1–2 years)	Refer to Appendix A.
medium term (2–5 years)	Refer to Appendix A.
long term (6–10 years)	**Objective:** Conduct research to support effective national adoption and best practice use of clinical guidelines and protocols for mild traumatic brain injury, including integration of prognostic and predictive approaches, and assessing and addressing barriers to implementation and inequalities including in all of: - Aboriginal and Torres Strait Islander people - People affected by family, domestic and sexual violence - Older people who have falls - rural, regional and remote populations in geographically diverse areas - culturally and linguistically diverse populations Key inputs for this project include: - clinical guidelines and protocols (see 2.3 short term) - development of predictive/prognostic approaches (see 2.3 medium term) **Outcome:** Improving uptake of and access to best practice care for people with mild traumatic brain injury. **Funding:** Up to $2.0 million per project. One project is anticipated to be funded. **Duration:** Grant duration of up to 5 years. Up to 15 Chief Investigators.

Evaluation approach and measures

- New treatments and care applications for moderate to severe TBI developed, implemented and in ongoing use in acute care and rehabilitation settings

- Evidence-based clinical guidelines and protocols for mild TBI developed, implemented and in ongoing use nationally, including predictive and prognostic tools

- Reduction in average length of acute care stay for moderate to severe TBI

Aim 3: Identifying how to reduce barriers to support people to live their best possible life after TBI regardless of severity

Priority area 3.1 Understanding the impact of community awareness on the health and psychosocial outcomes of people living with TBI regardless of severity

Research to begin in the …	Priorities for investment (research questions and objectives)
short term (1–2 years)	Refer to Appendix A.

Priority area 3.2 Understanding long term outcomes following TBI

Research to begin in the …	Priorities for investment (research questions and objectives)
long term (6–10 years)	**Objective:** Conduct a prospective longitudinal study and establish a database to support identifying longer-term outcomes for people experiencing traumatic brain injury of all severity including in the context of family, domestic and sexual violence, repeated sports related concussion, and repeated mild traumatic brain injury experienced in the military nationally. This research should: • encompass all states and territories and demographics • include a broad range of consensus-derived indicators and outcomes maximise ongoing data collection and linkage. **Outcome:** Improving understanding of longer-term outcomes of traumatic brain injury to inform continuing care strategies. **Funding:** Up to $5.0 million per project. One project is anticipated to be funded. **Duration:** Grant duration of up to 5 years. Up to 50 Chief Investigators.

Priority area 3.3 Assessing the economic impact of TBI treatments and pathways

Research to begin in the …	Priorities for investment (research questions and objectives)
long term (6–10 years)	**Objective:** Quantify the economic impact of moderate to severe traumatic brain injury in Australia. The approaches may: • include the health, productivity, opportunity costs, out of pocket treatment and rehabilitation expenses associated with living with TBI, and for family members and support network • cover the entire trajectory of people's rehabilitation, recovery and adaptation, from injury and beyond • encompass all regions of all states and territories and demographics Key inputs for this project include: • optimal informatics approaches (see 1.1 medium term). **Outcome:** Quantification of the costs of moderate to severe traumatic brain injury in Australia. **Funding:** Up to $0.5 million per project. Three projects are anticipated to be funded. **Duration:** Grant duration of up to 2 years. Up to 15 Chief Investigators.

Evaluation approach and measures

- Inequalities in access to TBI treatment and care for mild and moderate to severe TBI, measured and reduced over time

- Establishment and maintenance of a longer-term data base for people experiencing repeated mild TBI including in the context of family, domestic and sexual violence, repeated sports related concussion, and repeated mild TBI experienced in the military, to support ongoing data collection and research

- Quantify the cost of moderate to severe TBI treatments and pathways in Australia

Opportunities to use additional investment and other research to support the priority areas include, but are not limited to, the following

- Engagement with Connectivity – Traumatic Brain Injury Australia, National Disability Insurance Agency, motor accident insurance commissions, and the Advanced Health Research and Translation Centres

- Connectivity will support and enhance the outcomes of the TBI Mission by increasing implementation and translation of TBI Mission research findings. Connectivity is a not-for-profit company limited by guarantee, and governance is separate from the TBI Mission. Communication to facilitate the dual purpose and prevent duplication will be achieved through individuals with joint membership of Executive bodies for Connectivity and the TBI Mission

- Other MRFF initiatives and Australian Government initiatives, such as:
  - National Critical Research Infrastructure Strategy
  - National Health and Medical Research Council
  - Australian Research Council
  - Australian Commission on Safety and Quality in Health Care

- Private and philanthropic funding opportunities

- International collaborations to:
  - enhance data analytics, especially for artificial intelligence
  - support development of guidelines and protocols
  - enhance research to test the efficacy of novel treatments and care applications
  - enhance research to assess the impact of TBI awareness on outcomes
  - support investigation of variations in treatment and care, and their underlying causes

Activities required to support the research and facilitate long-term implementation include, but are not limited to, the following

- Existing literature and research activities

- Collaborative, interdisciplinary network of all stakeholders, including established consumer representative groups, to:
  - identify research needs
  - develop research capability in a coordinated way
  - co-design research with people with lived experience of TBI.

- National multidisciplinary clinical and care networks to support trials and share expertise

- Data analytics capability, such as data linkage and artificial intelligence

- Ethical and data governance frameworks to support the design, development and implementation of:

- health informatics approaches
- predictive or prognostic approaches.

- Recruitment and support for early and mid-career researchers to conduct TBI-related research in line with TBI Mission objectives

- Training to support:
  - clinicians and other carers to adopt guidelines and protocols
  - acute care clinicians to adopt novel treatments and care applications
  - rehabilitation workers to adopt new approaches.

- Collaboration with organisations that have developed national strategies for a population with similar needs (e.g. Cerebral Palsy Australia) or that provide support to similar populations (e.g. Australasian Rehabilitation Outcomes Centre)