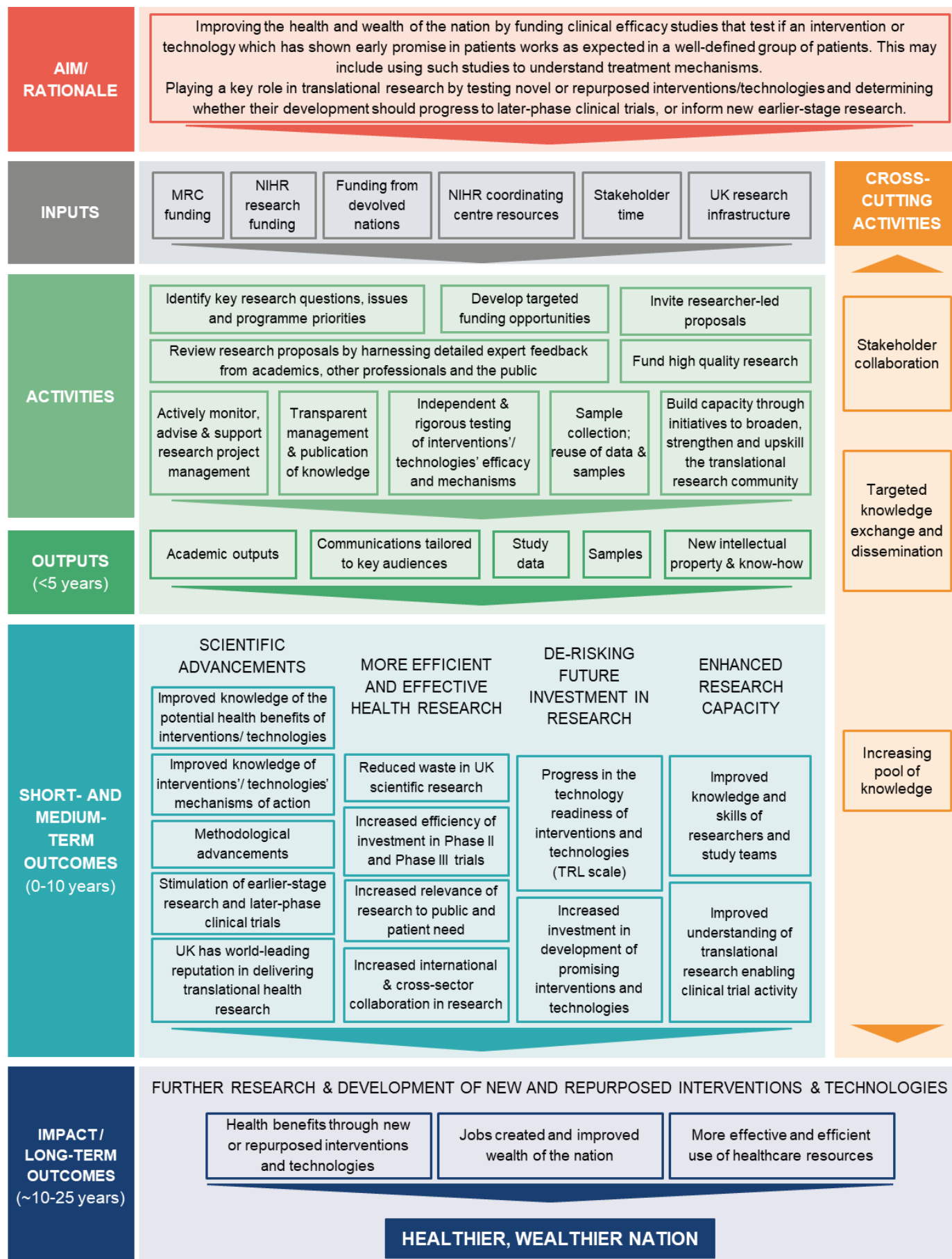


# MRC-NIHR Efficacy and Mechanism Evaluation Programme (EME) Logic Model



## **MRC-NIHR Efficacy and Mechanism Evaluation (EME) Programme Logic Model**

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February 2023

The EME Programme is a partnership between the Medical Research Council (MRC) and the National Institute for Health and Care Research (NIHR). The aim of the programme is to improve the health and wealth of the nation by funding clinical efficacy studies that test if an intervention or technology which has shown early promise in patients works as expected in a well-defined group of patients. This may include using such studies to understand treatment mechanisms. The programme plays a key role in translational research by testing novel or repurposed interventions/technologies and determining whether their development should progress to later-phase clinical trials, or inform new earlier-stage research. [More information can be found on the programme page on the NIHR website.](#)

A logic model is a graphical way to show how an activity, programme or intervention is expected to work and bring about the benefits and changes it intends to achieve. By summarising the core elements, a logic model can then be used to support programme planning, implementation and evaluation. NIHR logic models represent in a linear flow diagram the key activities, outputs, outcomes and impacts of each funding programme as a series of logical steps.

### **Inputs**

The first step outlined in the logic model focuses on 'inputs', i.e., the resources needed to undertake programme activities. The inputs for the EME Programme are:

- MRC and NIHR funding
- funding from the devolved nations
- NIHR coordinating centre resources
- stakeholder time
- the existing UK research infrastructure in terms of expertise, capacity and funding

### **Activities**

Inputs feed into activities, the second stage of the logic model. Activities are the actions that NIHR and the funded research community undertake to help achieve the programme's aims and objectives. Together, inputs and activities represent NIHR's planned work.

The initial focus for the programme is identification of key research questions, issues and programme priorities. A NIHR team develops targeted [funding opportunities](#) and activities through horizon scanning and collaboration with key stakeholders to stimulate activity or applications in an area of strategic priority. The programme also invites researcher-led proposals, which enables research into investigator-driven areas. All submitted project proposals are reviewed by harnessing detailed feedback from experts, including academics and other professional experts (for example, clinical staff and health care professionals) as well as patients, carers, service users, specific communities and/or members of the general public. A panel recommends high-quality research projects for funding according to set criteria.

Funded projects are then actively monitored by a NIHR team that supports the project by providing advice and expertise regarding, for example, risks, appropriate methodologies, stakeholder management or patient and public involvement and engagement.

NIHR support also includes guidance on the dissemination of research outputs. NIHR supports transparent research management and publication of knowledge, with information on and results of projects being openly accessible via the NIHR [website](#) and [NIHR Journals Library](#) that hosts the [NIHR EME journal](#).

Further, the EME Programme's application and funding process ensures that funded research projects test interventions/technologies independently and rigorously for efficacy, as well as mechanistic insight. The research process often includes collecting samples, for example in the form of biobanks. By funding projects that follow on from clinical studies supported by the NIHR or other funders, the programme also actively supports researchers in reusing data or samples.

The EME Programme also builds research capacity through initiatives to broaden, strengthen and upskill the translational research community. For example, the programme provides tailored funding opportunities and activities to support the development of early-career clinical trialists and to stimulate cross-sector and international collaboration.

## Outputs

The next step of the flow diagram focuses on the range of 'outputs' that result directly from the undertaken activities. For the EME Programme, these include:

- academic outputs such as articles in the [NIHR EME journal](#) and other peer-reviewed journals,
- communications tailored to key audiences (e.g. patient groups, industry, policy-makers and health-care professionals)
- study data from the testing of interventions/technologies
- samples collected as part of the research
- new intellectual property (IP) being registered as a result of the funded research

## Cross-cutting activities

Some activities that enable the intended change cut across several steps of the logic model:

- Stakeholder collaboration: the programme works closely with stakeholders such as other funders, industrial partners, patients, carers, service users, specific communities and the public to support translational research across the ecosystem
- Targeted knowledge exchange and dissemination takes place across the project lifecycle
- Activities, outputs and outcomes produced through research contribute to an increasing pool of knowledge which feeds into and influences both the identification of new questions and methods for answering those questions.

## Outcomes

Outcomes are the changes or benefits the programme intends to produce through its activities and by funding a portfolio of research. Due to the programme's position on the translational pathway and its role being to inform further research, outcomes are typically seen on a short- to medium-term.

## Scientific advancements

Research outputs document and disseminate the scientific advancements made by NIHR-funded projects. Scientific advancements include improved knowledge of the potential health benefits of interventions/ technologies and their mechanisms of action. They also include methodological advancements in the field of clinical trials and mechanistic studies. Improved knowledge can also stimulate further research. For research funded by the EME Programme, this can occur in both directions of the research and development pathway, with, for example, research teams continuing to study the tested interventions/ technologies in later-phase clinical trials or the results stimulating further earlier stage research. This all contributes to the UK's world-leading reputation in delivering translational health research.

## More efficient and effective health research

Developing sample banks and establishing the effectiveness of interventions and technologies results in more efficient and effective health research. For example, trials showing 'no effect' of the tested intervention/ technology leads to researchers switching to other approaches, which reduces waste in UK scientific research and increases the efficiency of investments in Phase II and Phase III trials. Involving patients, carers, service users, specific communities and/or members of the general public in all steps of the research process results in increased relevance of research to patient and public need. Increased international and cross-sector collaboration in research enables aligned and complementary research aims to be addressed and optimises delivery of the translational research ecosystem.

## **De-risking future investment in research**

In the medium-term, research funded by the EME programme is expected to result in the de-risking of future investment in research by establishing which interventions and technologies are effective, how they work, and progressing those that are effective for practical use as measured on the Technology Readiness Level (TRL) scale. Increased knowledge around interventions/technologies and their mechanisms of action can also enable increased investment in associated development.

## **Enhanced research capacity**

Research projects funded by the EME Programme also contribute to enhancing research capacity in the form of training and skill-building of project team members through specialist skills and career progression, for example. Working on EME-funded projects is also expected to improve understanding of and interest in translational research for both researchers and trial sites. Collectively, this is expected to result in increased trial activity, capacity and networks, which in turn contributes to international recognition of the UK's research capabilities.

## **Impacts**

Impacts, or long-term outcomes, are the anticipated broader (direct and indirect) changes or benefits for organisations, communities, systems and wider society expected to result from the programme's contribution via its activities and portfolio of funded research. These are expected to become apparent in approximately 10-25 years.

For the EME Programme, the overarching long-term benefits are further research and the development of new and repurposed interventions and technologies. These contribute to health benefits through new or repurposed interventions and technologies; improved wealth of the nation through job creation; more effective and efficient use of healthcare resources through targeted investment into promising interventions and technologies; and ultimately, to improving the health and wealth of the nation.

## Contributions and acknowledgements

The NIHR supports the principles of open research, including full and appropriate recognition of the many varied contributions to the creation of knowledge. To support this, we use the [CRediT taxonomy](#) to accurately reflect how each team member has brought their knowledge and skills to the development and delivery of this work. Those that have contributed to this work are listed alphabetically.

- Juliana Callaghan: Writing – review & editing
- Robert Gray: Conceptualization, Writing – review & editing
- Louise Jones: Conceptualization
- Adam Lockwood: Conceptualization, Project administration, Funding acquisition, Methodology, Supervision, Writing – review & editing
- Danny McAuley: Conceptualization, Writing – review & editing
- John Norrie: Conceptualization, Writing – review & editing
- Danielle Preedy: Conceptualization, Writing – review & editing
- Sarah Thomas: Conceptualization, Funding acquisition, Methodology, Supervision
- Insa Wemheuer: Project administration, Visualization, Writing – original draft, Writing – review & editing

In addition, we would specifically like to thank Rebecca Adler, Principal Consultant at NIRAS, and David Salisbury, Independent Consultant and NIRAS Associate, for facilitating the initial development of a Theory of Change for the EME Programme that formed the basis of developing the logic model presented in this document. We would also like to thank the Communications Team at the School of Healthcare Enterprise and Innovation, University of Southampton, for their advice and support in undertaking the visualisation of the model.

The Logic Model presented in this document also builds on the following document:

Rentel M C, Simpson K, Davé A, Carter S, Blake M, Franke J, *et al.* A 10-year impact assessment of the Efficacy and Mechanism Evaluation (EME) programme: an independent mixed-method evaluation study. *Efficacy Mech Eval* 2021;8(20)

## Competing interests

This work has been undertaken as part of the delivery of the National Institute for Health and Care Research (NIHR), which is funded by the Department of Health and Social Care. The EME programme is a partnership between the Medical Research Council (MRC) and the NIHR. It is funded by the MRC and the NIHR, with contributions from the CSO in Scotland, Health and Care Research Wales and the HSC R&D Division, Public Health Agency in Northern Ireland. All authors of this document have contributed to it as part of work paid for by the NIHR. No competing interests were disclosed.