Key Findings & Recommendations

The multi-disciplinary capacity development (MUDI) project has generated robust evidence about what works for fostering cross-disciplinary global health research and in what contexts. MUDI was hosted within the International Multidisciplinary Programme to Address Lung Health and TB in Africa programme (IMPALA). MUDI studied the cross-disciplinary working strategies, approaches and actions of the IMPALA programme, using data provided by researchers, non-research members and collaborators in Ghana, Cameroon, Malawi, South Africa, Tanzania, Uganda, Kenya, Ethiopia, Nigeria, Sudan and the United Kingdom. In this final MUDI bulletin, we present the key messages and recommendations with examples of good practice in cross-disciplinary research from members of IMPALA whom we thank for their cooperation and participation.
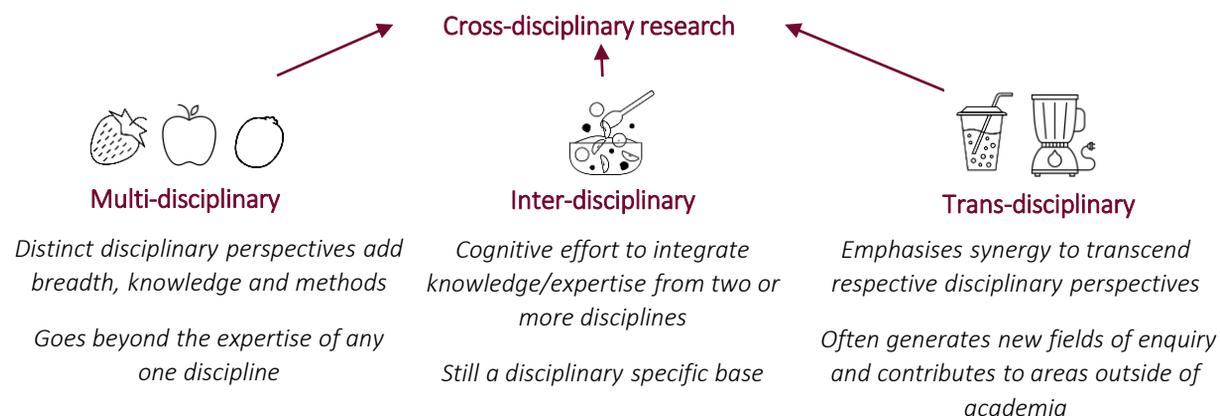
Key Messages

- The cross-disciplinary aspects of research programmes need to be actively managed.

- Pre-agreed indicators should be used to plan and track cross-disciplinary research.

- Fostering equitable cross-disciplinary research and managing tensions takes time and explicit, continuous discussions.

Key Recommendations

- Manage and track cross-disciplinary activities separately from primary research activities.

- Review progress in research planning, implementation and management against pre-agreed indicators, and troubleshoot accordingly.

- Allocate more time and funds for the active management of cross-disciplinary working in research planning than for mono-disciplinary projects.

Defining cross-disciplinary research

Throughout the project, MUDI used the term 'cross-disciplinary research' to cover multi-, inter-, and trans-disciplinary research. Cross-disciplinary research combines, and may integrate, methods and theories drawn from **two or more disciplines**. Its *richness* comes from the **number** of research disciplines involved, the **diversity** of research disciplines, the **creativity** and **novelty** of the combination of research disciplines and the level of disciplinary **integration** achieved.

Cross-disciplinary research

Multi-disciplinary

Distinct disciplinary perspectives add breadth, knowledge and methods

Goes beyond the expertise of any one discipline

Inter-disciplinary

Cognitive effort to integrate knowledge/expertise from two or more disciplines

Still a disciplinary specific base

Trans-disciplinary

Emphasises synergy to transcend respective disciplinary perspectives

Often generates new fields of enquiry and contributes to areas outside of academia

Key findings from the multi-disciplinary capacity development research project

Strategies and actions that have fostered cross-disciplinary research in IMPALA

MUDI adapted a three-component framework (i.e., planning, implementation and management) to collect and analyse multi-source and multi-perspective data on the IMPALA programme in real-time. For each component, MUDI has identified strategies and actions that fostered cross-disciplinary research.

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Planning phase  ⟷  Implementation phase
         ↖        ↗
      Leadership &
      management
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During the planning phase
- A shared understanding of the research question
- Shared reasons for using cross-disciplinary approaches
- Shared vision and goals
- A shared understanding of specific research questions and activities at the project levels
- Relevant disciplines and collaborators identified
- Cross-disciplinary orientation, and discussing and clarifying between disciplines

During the implementation phase
- A shared understanding of roles and responsibilities
- Reconciling individual expectations while navigating different contexts
- Team learning

Leadership and management throughout the programme
- Communication planning and implementation
- Nurturing trust and an environment of psychological safety
- Addressing disciplinary hierarchies through the management structure
- Handling disciplinary differences and managing emotions
- Developing research networks
- Strengthening capacity

Recommendations for conducting cross-disciplinary research in global health

Based on the MUDI findings, the adapted framework and our knowledge and review of the literature, we developed recommendations to improve the effectiveness of cross-disciplinary processes from the outset.

During the planning phase
- Allocate adequate time to develop a shared vision and goals, including
  - co-design of programme goals;
  - aligning individuals' expectations and projects' aims with the programme-level goals;
  - involving all partners in proposal development, maintaining flexibility, considering individual interests and disciplines;
  - justifying and communicating the cross-disciplinary approaches to be adopted and reflecting cross-disciplinary processes in an action plan;
  - developing and communicating a shared understanding of the roles, responsibilities and potential contribution of disciplines and partners.

- Negotiate disciplinary boundaries when necessary.

- Assess and strengthen the capacity of everyone involved in the programme in how to do cross-disciplinary research; enable them all to have equitable involvement in decision making.

During the implementation phase
- Jointly develop and pre-agree approaches for working across disciplines, including for communication, data access and management, publication policy and credit allocation.
- Track the implementation of cross-disciplinary processes with pre-agreed indicators; have formal mechanisms to review progress and to respond accordingly.

During programme leadership and management
- Rotate the Chairs for programme management meetings to ensure visible leadership for all disciplines; have a clear process for handover and preparation between meetings.
- Define and agree transparent programme-level mechanisms for strategic decision making.
- Develop a programme-level leadership and management plan to deliver the cross-disciplinary outputs and outcomes, including regular review of tracking indicators.
- Agree roles and responsibilities, and accountabilities; communicate these clearly to all programme members, explain that every role is important in cross-disciplinary research (i.e. not just researchers).
- Support an open culture of raising concerns; put mechanisms in place for requesting support and responding to requests.
- Establish mechanisms for early identification of tensions, and for reflecting on and flexibly resolving differences and conflicts.
- Provide opportunities for joint learning and knowledge exchange across disciplinary boundaries especially regarding methods and approaches (e.g., monthly knowledge exchange meetings).
- Identify a platform for joint sharing and updating of documents.

Examples from MUDI project

Through an end-of-project survey the MUDI project explored how members of the IMPALA programme learnt about their cross-disciplinary research experiences, and how they had adapted and embraced cross-disciplinary research.

Creating and developing networks

"*Our team developed a multidisciplinary research project on epigenetics of mycobacterium tuberculosis which involves immonologist, clinicians, virologist , epidemiologist, biostatisticians, social science graduate*"

"*Through IMPALA, and the investigators / affiliated I have grown my network. This is evidenced by inclusion on grant applications and analyses that may have only one member of IMPALA in common, but a number of new (to me) collaborators.*"

Changing perspectives

"*I now think that to the extent possible, studies on health issues, especially interventions, should be multidisciplinary. The multidisciplinary evidence generated provides a higher chance of uptake on the interventions because then most stakeholders will be able to appreciate the effectiveness of the interventions and implications of impact from different perspectives*"

"*Through engagement with researchers and others from other disciplines, I've modified the way I can think about structuring my research questions.*"

"*I have definitely been influenced by the social sciences and health economics in my thinking about public health challenges in my field and how to solve them. My IMPALA work exposed the role of other determinants of health and their importance in designing interventions.*"

Advocating for cross-disciplinary research

"*I've long thought that researchers need to work with other researchers from different backgrounds. Especially clinicians understanding health economics, and economists understanding that clinical decision-making is often not black and white.*"

Researcher Profile: Dr Yan Ding

Dr Yan Ding led the MUDI project within IMPALA. She is a public health scientist with over seven years' experience across multiple areas of global health research. With a background in Health Economics and Public Health, her recent research has focussed on policy implementation and community health systems strengthening, with particular interests in health research systems, health financing and capacity strengthening. Yan received her PhD. from the University of Heidelberg (Germany), which focused on an economic evaluation of an add-on syndromic surveillance system for the early detection of outbreaks in China.

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The Centre for Capacity Research specialises in the science of research capacity strengthening – a process of individual and institutional development leading to higher levels of skills and greater ability to perform useful research. The Centre is a global leader in advancing evidence-informed capacity strengthening practice in low- and middle-income countries, through:

- Conducting high quality, implementation focused capacity strengthening research

- Fostering a global community of capacity strengthening scientists with equitable low- and middle-income country participation

- Sharing learning and advocating for evidence-informed capacity strengthening practice

The Centre for Capacity Research retains a broad interest in capacity strengthening initiatives of all types within a low- and middle-income country contexts, including in laboratory strengthening.

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Acknowledgements

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