

# The Kathmandu Declaration on Global CVD/Hypertension Research and Implementation Science



## A Framework to Advance Implementation Research for Cardiovascular and Other Noncommunicable Diseases in Low- and Middle-Income Countries

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Recognizing that noncommunicable diseases (NCDs) present a serious challenge to individuals, families, and communities worldwide and are responsible for 71% of all deaths worldwide and 120 million premature deaths by 2025 [1], we welcome the vision and leadership of countries in building the momentum at the highest levels of government to address NCD globally as well as locally with the goal to implement effective national responses for prevention and control. We recognize their common agenda to accelerate response to address NCD for the health and well-being of present and future generations. We recognize affected communities, including people living with NCD, and public interest groups for what they are: key stakeholders and assets to reducing the global burden of NCD, who remain our most innovative and most

essential resource that can help fuel progress toward reducing the burden of NCD globally [2]. We recognize the need for developing and implementing national NCD policies and welcome the opportunity to partner with civil society organizations to generate national and subnational data on the burden of disease; cost, feasibility, and acceptability of appropriate prevention and management strategies; the cost of inaction; and the urgent need for sustainable solutions [2]. We also recognize the need for greater investment in NCD responses and engagement with the public and private sector to mobilize efforts and resources, as well as to build the capacity required for prevention and control [2].

We reaffirm our commitment to forging a path forward through partnerships and meaningful engagement with individuals, communities, public interest groups, and governments to conduct innovative research that will generate the impact necessary to reduce avoidable and premature death and illness from NCD for all patients and people. Recognizing that most research on NCD has focused heavily on the implementation phase, we welcome more emphasis on the pre-implementation phases of evidence-based NCD research (exploration and/or adoption phases) and the post-implementation phases (maintenance and/or sustainability phases) [3] given their potential to foster the greatest public health impact. We welcome the deliberate use of targeted implementation

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strategies to engage in “scaling-out” or testing, improving, and sustaining evidence-based interventions as they are delivered in a novel context distinct from, but closely related to previous contexts [4]. We welcome the practice of systematic innovation to NCD research or efforts to create purposeful, focused change that will generate sustainable impact globally. We also welcome a lean thinking approach to NCD research, one that routinely outlines what is needed, when it is needed, and in the amount needed, so as to enable policy makers and other key stakeholders to implement sustainable evidence-based strategies that ultimately reduce mortality and prevent avoidable illness from NCD [5].

## BACKGROUND

Cardiovascular diseases (CVD), principally ischemic heart disease and stroke, remain the leading cause of global mortality, causing an estimated 17.8 million deaths, which is nearly one-third of all global deaths in 2017 [6]. Collectively, CVD and other NCD are responsible for 71% of global deaths and are projected to cause 120 million premature deaths by 2025 [7]. The World Health Organization has estimated that 85% of premature deaths from NCD and nearly two-thirds of all NCD deaths occur in low- and middle-income countries (LMIC) where they adversely affect sustainable development, economic prosperity, and overall health [8]. Importantly, this huge NCD burden contrasts sharply with the marked scarcity of implementation research capacity in LMIC to test and implement sustainable strategies for the prevention, treatment, and control of NCD [9].

Implementation science refers to “the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services” [10]. As a field that promotes the integration of research findings and evidence-based best practices within health care systems and their specific contexts, implementation science offers effective strategies and frameworks to address the burden of NCD in LMIC.

To address the serious disconnect between NCD burden and implementation research capacity, investigators attending the recent second bi-annual National Heart, Lung, and Blood Institute T4 Translation Research Capacity Building Initiative in Low Income Countries/Hypertension Outcomes for T4 Research within Lower Middle-Income Countries Consortium Steering Committee meeting on September 9, 2018, in Kathmandu, Nepal, resolved to articulate the Kathmandu Declaration on Global Health Research. Mindful of current global strategies to combat NCD and recognizing the dramatic gains achievable through implementation research and scaling-up and spread of proven-effective-buy interventions, the declaration calls on a diverse set of strategic change agents for action to accelerate

implementation research capacity building to inform the prevention and control of NCD in LMIC.

## CONTEXTUAL REVIEW AND POTENTIAL NEXT STEPS

As noted with the progress made in child and/or maternal deaths and with combating the human immunodeficiency virus epidemic, there is an urgent need for organized and strategic investment in research capacity in LMIC to effectively tackle NCD. Several potentially soluble factors stand in the way of bringing to fruition an organized and well-resourced fight against NCD. Whereas data from the Global Burden of Disease study have clearly documented the pervasive growth of NCD in LMIC in threatening the health and economies of these countries, there remains much work to be done with private and public funding in support of building research capacity for NCD in LMIC. NCD overwhelmingly constitute the biggest and growing health burdens in LMIC, and yet donor support for global NCD is minuscule in comparison to that for communicable diseases, maternal and child health, and other traditional health concerns in these countries.

There also exists a narrative among influential global researchers that to tackle NCD in LMIC new research is less important than to implement, programmatically or through policy, evidence and interventions acquired from research in high-income countries. This line of argument ignores the fact that disease patterns and phenotypic presentations may be different in LMIC, additional risk factors than those known to high-income countries may exist, and that interventions need to be developed and evaluated in the context of LMIC settings. There is also the notion that rather than de novo investment in NCD, LMIC should leverage the infrastructure and resources dedicated via programs such as the President’s Emergency Plan for AIDS Relief (PEPFAR), Global Fund, Directly Observed Treatment Short-course (DOTS), and so on. Given practical resource constraints, such strategies should be encouraged, however, additional investment is also required to not only evaluate effective strategies to leverage existing infrastructure but to also build new infrastructure where necessary. At the same time, governments of LMIC, while acknowledging NCD as a major threat, often lack the resources to tackle them or lack the technical expertise to build the required research capacity.

## Making progress in research capacity for NCD in LMIC

To make progress in LMIC in research capacity for NCD, there needs to be consequential commitment from the various players (research funding agencies, national and local governments, national and global philanthropy, multilateral organizations) to increase funding for NCD to meet the burden, and metrics to progress such increase needs to be agreed upon.

A powerful financial mechanism of international commitment for research capacity to fight NCD in LMIC is urgently required. A global fund for NCD can propel progress similar to how such an approach drove global collaboration against tuberculosis, malaria, and the human immunodeficiency virus. National governments of high-income countries can work with international philanthropies and with industry via public-private partnerships to create such a fund, which should be managed independent of the funders and driven by science rather than political priorities. Nongovernmental organizations and the academic community can play a major role in championing for the creation of such a global fund for NCD and also for guiding its priorities for action.

LMIC governments should consider forming regional alliances to build research capacity for NCD and develop efficient and strategic global partnerships with high-income academic centers to promote research capacity building in LMIC.

### Research capacity building against NCD in LMIC

Research capacity building against NCD in LMIC should target the following priorities: 1) Strengthening surveys and longitudinal cohort infrastructure and data along with biobanks in LMIC so that the burdens can be accurately described and monitored, and research into local patterns, phenotypes, and risk factors can be efficiently undertaken. 2) Implementation sciences and methodology to support research to translate proven interventions into practice and policy in a sustainable manner. 3) Development of world-class workforce (investigators, data coordination and analysis staff, field workers) to support research in NCD in LMIC. Global academic collaboration has a major role to play in achieving this.

### THE KATHMANDU DECLARATION

We know how to prevent the vast majority of deaths and improve health with the interventions currently present in this world. But, poor implementation remains a major bottleneck for positive, sustainable impact on population health. As noted in [Table 1](#), we acknowledge that there remain major gap areas that must be addressed to effectively tackle the burden of NCD. Understanding these key points of consideration, we acknowledge the following gaps and offer recommendations for strategic change agents (i.e., research funding agencies, national and local governments, quasigovernmental organizations, nongovernmental organizations, academic health centers, public-private partnerships, national and global philanthropists, and affected communities) to consider as potential next steps.

Recognizing the gap in the research skills in implementation science, we urge academic institutions to take the following steps: 1) Add implementation science core competencies to their (public health) degree programs to build a cadre of future scientists trained in implementation

science. 2) Prioritize training of early implementation and prevention science investigators to build future research leaders in LMIC and the United States. 3) Develop and harbor sustainable platforms for conducting implementation and prevention science research. 4) Create and promote networks that will enhance and catalyze multidisciplinary linkages to address complex global health problems.

Recognizing the gap in evidence on implementing strategies and scale-up, we urge researchers to take the following steps: 1) Develop and test methods to assess effectiveness, impact, and cost-effectiveness of implementing strategies. 2) Develop and test strategies to partnerships and stakeholder engagement in the local setting. 3) Develop and test strategies to scale-up proven health interventions. 4) Partner with policy makers, implementing bodies, beneficiaries, and financing institutions in planning and conduction of all implementation and prevention science research projects.

Recognizing the gap in research to practice and policy, we urge implementing bodies (government and nongovernment) to take the following steps: 1) Interact and partner with researchers to uptake evidence into practice. 2) Apply frameworks during the implementation to evaluate the processes, short-term outcomes, long-term impacts, and cost-effectiveness of health interventions. 3) Document and disseminate best practices and lessons learned during the implementation of health interventions. 4) Build organizational capacity in partnerships, stakeholder engagement, and scientific evaluations.

Recognizing the gap in resources to promote and practice implementation science and prevention, we urge funding agencies to implement the following steps: 1) Invest in mentored training programs for early career investigators in LMIC and in the United States. 2) Invest in institutions as sustainable platforms for research in LMIC. 3) Create a synergistic resource pool to promote implementation science research in collaboration with multiple funding agencies. 4) Encourage researchers to use hybrid designs and report implementation outcomes in effectiveness trials.

Recognizing the 17-year delay in turning scientific evidence into routine clinical care [11], the resulting low-quality care delivered and associated excess morbidity and mortality in LMIC [12], and the dramatic gains achievable through scaling-up and spread of best-buy interventions [13, 14], we call on the following: 1) All funders of biomedical research to stimulate and accelerate research to identify strategies for scale-up and spread of proven-effective interventions in LMIC. 2) Public-private partnerships to prioritize implementation research in low- and middle-income countries for the identification of strategies for active dissemination, scale-up, scale-out, and spread of best-buy interventions. 3) National and local governments to promote and support participatory research initiatives aimed at improving scaling-up strategies in the local context. 4) Academic health institutions to

**TABLE 1.** Major gap areas

|  |  |
|--|--|
| Training opportunities                             | Undergraduate, graduate, and post-graduate levels<br>Early stage investigators<br>Established investigators  |
| Research career development                        | Tenure-track faculty and promotion<br>Academic faculty appointment   |
| Institutional capacity for implementation research | Research infrastructure<br>Critical mass of multidisciplinary expertise<br>Mentorship  |
| Critical skills for implementation research        | Stakeholder engagement<br>Biostatistics and analytics<br>Adaptive trial design<br>Data management and security<br>Systems analytics<br>Resilience analytics<br>Research ethics |
| Research funding opportunities                     | Funding agency-solicited research<br>Investigator-initiated research<br>Challenge grants   |
| Applied implementation research                    | Health policy<br>Sustainability<br>Scale-up<br>Context analysis<br>Health economics<br>Informatics   |

build on current skills and resources available to create and sustain successful multidisciplinary teams to further implementation research on innovative approaches for scale-up and spread proven effective interventions.

Recognizing that numerous promising initiatives fail to sustain to a point where their full long-term benefits can be reached, that initiatives that fail to sustain are extremely wasteful of human and monetary investments, and that there are negative consequences in terms of real impact of these interventions on population health, we call on the following: 1) National and local governments to make the sustainability of proven cost-effective interventions a prominent policy priority. 2) Research funding agencies to ensure relevance of formally addressing sustainability of interventions tested in implementation research. 3) Public-private partnerships to prioritize implementation research in LMIC for testing innovative approaches to improve the sustainability of relevant interventions. 4) Academic health institutions to promote research to identify strategies for rigorously evaluating the sustainability of proven-effective interventions in LMIC.

Recognizing that meaningful, effective community engagement is essential for implementation research, we call on the following: 1) Academic health institutions to conduct research to identify strategies and create the best tools for improving community engagement all throughout

implementation research projects in LMIC. 2) Civil society and community-based organizations to get involved in implementation projects in their communities from the very beginning so as to actively contribute with their voices, perceived needs, and potential solutions.

Recognizing that the sustainability of implementation research projects cannot take place without collaborations with essential stakeholders (including communities, program leaders, and policymakers), we call on the following: 1) Research funding agencies to proactively fund studies assessing the role of community health workers in chronic disease prevention and management. 2) National and local governments to promote community health workers to bridge the divide between persons affected by chronic diseases and suboptimal health systems. 3) Nongovernmental agencies to recognize the cross-cutting impact of chronic diseases in the well-being of humanity and promote “health in all.” 4) Academic health centers to constitute advisory bodies with representatives from all levels of government engaged and actively investigate the effectiveness of community health workers in connecting populations with evidence-based disease prevention and management strategies. 5) Policy makers and program leaders to be included in implementation research projects to promote alignment with overall program goals and national and/or regional programs.

Recognizing that those actually doing the implementation play a vital role in making implementation research projects feasible and sustainable within health care systems in LMIC, we urge researchers and academic institutions to actively engage health care providers, local staff, and health administrators early in the project development phase in order to build research capacity and adapt implementation strategies with an aim on sustainability.

## SUMMARY

Current global reports draw critical attention to the disproportionate strain of CVD and other NCD in LMIC. Tantamount to the growing burden of CVD is the lack of evidence-based, implementation research capacity-building strategies within LMIC. Consequently, we are cognizant of the role and responsibility of strategic change agents in responding to the challenge of NCD such as CVD. To meet this growing challenge of NCD in LMIC, we have proposed with this declaration probable implementation research-building strategies for the prevention, treatment, and control of NCD such as CVD. It is our intent and hope that this declaration will provide a “stepping stone” for strategic change agents (i.e., allied institutions, communities, and individuals) to work collaboratively to make the necessary advancements to reducing the burden of NCD in LMIC. Furthermore, we place emphasis on and encourage the use of implementation research capacity building in LMIC to address the burden of NCD.

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