Structuring research funding schemes to promote global health equity:

An exploration of current practice in health systems research

Abstract: International research is an essential means of reducing health disparities between and within countries and should do so as a matter of global justice. Research funders from high-income countries have an obligation of justice to support health research in low and middle-income countries (LMICs) that furthers such objectives. This paper investigates how their current funding schemes are designed to incentivise *health systems research* in LMICs that promotes health equity. Semi-structured in-depth interviews were performed with 16 grants officers working for 11 funders and organisations that support health systems research: the Alliance for Health Policy and Systems Research, Comic Relief, Doris Duke Foundation, European Commission, International Development Research Centre, Norwegian Agency for Development Cooperation, Research Council of Norway, Rockefeller Foundation, UK Department of International Development, UK Medical Research Council, and Wellcome Trust. Thematic analysis of the data demonstrates their funding schemes promote health systems research with (up to) five key features that advance health equity: being conducted with worst-off populations, focusing on research topics that advance equitable health systems, having LMIC ownership of the research agenda, strengthening LMIC research capacity, and having an impact on health disparities. The different types of incentives that encouraged proposed projects to have these features are identified and classified by their strength (strong, moderate, weak). It is suggested that research funders ought to create and maintain funding schemes with *strong* incentives for the features identified above in order to more effectively help reduce global health disparities.

Key Words: research ethics; health equity; global health; financing; health systems research;

low and middle-income countries

INTRODUCTION

In recognition of the growing global context of research and existence of persistent health disparities, the scope of research ethics has expanded to focus on linking health research to reduced inequities in health and research capacity. Taking this agenda forward, scholarship has argued that international research should be conducted to promote health equity as a matter of global justice.¹ Theories of justice from political philosophy establish obligations for parties in high-income countries to improve the health of parties in low and middle-income countries (LMICs), with priority going to worst-off individuals. The work of Henry Shue, Jennifer Prah Ruger, and Thomas Pogge provide grounds for the claim that externally-funded health research in LMICs should be performed to help reduce the health shortfalls of worst-off individuals through the conduct of collaborative research and research capacity strengthening.²

Notably, *research funders* and researchers are identified as having respective obligations of justice to support and conduct health research in LMICs that contributes to the reduction of health disparities between and within countries.³ Thus far, there has been little exploration of funders' role in supporting such research. It is unclear whether and how they design their funding schemes to incentivise *equity-oriented* health research in LMICs and ultimately

¹ S.R. Benatar and P.A. Singer. Responsibilities in International Research: A New Look Revisited. *J Med Ethics* 2010; 36: 194–197; S.R. Benatar and P.A. Singer. A New Look at International Research Ethics. *BMJ* 2000; 321: 824–826; A.J. London. Justice and the Human Development Approach to International Research. *Hastings Cent Rep* 2005; 35(1): 24– 37; C.B. Ijsselmuiden et al. Evolving Values in Ethics and Global Health Research. *Global Public Health* 2010; 5: 154–163.

² AUTHOR-1

³ London, *op. cit.* note 1; AUTHOR-2; AUTHOR-3

invest in it. This topic is particularly important to investigate because, while much attention can be focused on researchers' role in generating knowledge to improve health care and systems for the worst-off, they operate within a larger structural context where funders set the rules for resource allocation to health research. The capacity of researchers to uphold their obligation of justice is fundamentally impacted by whether or not research funders uphold theirs.

As a first step to explore whether and how research funders support health research that promotes health equity, this paper focuses on current funding schemes for *health systems research*⁴ in LMICs. Health systems research (HSR) aims to generate new knowledge that will improve the performance of health systems.⁵ Such research may assess health system performance, explore the causes of poor performance, and/or develop and evaluate interventions to improve health system functioning. For example, interventions might consist of novel delivery methods for existing health services, output-based payment mechanisms to boost staff productivity at health facilities, or community-based health insurance schemes.⁶

⁴ The choice to focus on HSR funding schemes reflects that HSR has been repeatedly identified as an indispensable means of reducing global health disparities. Significant knowledge deficits exist regarding what health system barriers are hindering the delivery and affordability of health services and what strategies are required for overcoming them, particularly for disadvantaged populations in LMICs. HSR has the potential to address these deficits and help improve health systems for such populations. It is, therefore, important to determine whether and how funding schemes are designed to incentivise equity-oriented HSR.

⁵ WHO. 2009. Scaling Up Research and Learning for Health Systems: Now is the Time. Report of a High Level Task Force (presented and endorsed at the Global Ministerial Forum on Research for Health 2008), Bamako, Mali. Available at: http://www.who.int/rpc/publications/scaling_up_research/en/index.html [Accessed 16 Sept 2013].

⁶ A.A. Hyder et al. Ethical Review of Health Systems Research in Low and Middle Income Countries: A Conceptual Exploration. *Am J Bioeth* 2014; 14(2): 28–37.

The paper aims to identify how HSR funding schemes are designed to contribute to better health systems for the worst-off. It examined the largest HSR funding schemes of 11 funders and organisations that support HSR. First, the main characteristics of the selected funding schemes are described in order to construct a picture of the HSR funding landscape and to demonstrate the range of funding opportunities for HSR in LMICs that supplied the data for this study. The paper then shows that these schemes are designed to promote HSR with (up to) five key features that advance health equity. The different types of incentives that encouraged proposed projects to have these features are detailed. Finally, initial suggestions are made as to how HSR funders might best design their grant schemes to support the field's goal of improving health systems for members of disadvantaged populations. These recommendations can also inform the practice of funders of other types of health research in LMICs.

METHODS

Semi-structured in-depth interviews were performed with 16 grants officers working for 11 funders and organisations that support HSR in LMICs in regards to their largest HSR funding scheme (Table 1). These funders and organisations were selected because senior researchers in the [removed for blinded peer-review purposes] identified them as the main organisations supporting HSR in LMICs.⁷ Interviewees were selected based on their role as grants officers

⁷ These 11 funders and organisations do not encompass *all* funders that invest in HSR in LMICs. Funders that primarily support HSR as a component of their overall health programming activities such as USAID and World

for their organisation's largest HSR funding scheme. They were identified through the authors' professional networks, their organisation's website, and through snowball sampling. (All funding schemes' names and details were publically available via their websites at the time of the study.) In total, 10 women and six men were interviewed about *nine* HSR funding schemes. This reflects the fact that two schemes are supported by more than one funder/organisation. The 11 funders and organisations listed in Table 1 support nine HSR funding schemes between them.

In-depth interviews were conducted according to the technique of thick description,⁸ which meant that a series of open-ended questions were used to gain interviewees' perspectives on the following topics in relation to their HSR funding scheme: the scheme's objectives and selection criteria, its desired research questions and populations, research capacity strengthening, and influencing policy and practice (Supplementary File 1). The selection of these topics was informed by conceptual work from bioethics that contends three aspects of externally-funded health research in LMICs—selection of research populations and questions, research capacity development, and post-study benefits—can connect the enterprise with the ideals of global health equity.⁹

[INSERT TABLE 1]

Bank were not interviewed because they usually do not have grant schemes to which general applicants can apply for research funding.

⁸ C. Geertz. 1973. *Thick Description: Toward an Interpretative Theory of Culture. The Interpretation of Cultures: Selected Essays*. New York: Basic Books.

⁹ AUTHOR-4; AUTHOR-3, *op. cit.* note 3.

Interviews were transcribed verbatim and analysed thematically in the following five phases: initial coding framework creation, coding, inter-coder agreement assessment, coding framework modification, and final coding of entire dataset.¹⁰ The categories and sub-categories comprising the coding framework were derived inductively and deductively, relying on existing work that details the features of HSR that are necessary to advance health equity¹¹ and the content of transcripts (i.e. HSR features identified to advance health equity by interviewees). Categories included the five features of HSR that link such research to the reduction of global health disparities. Another main category was ‘incentives’. Thus, interview data was coded by both the equity-oriented features of HSR and the types of incentives applied in order to generate a picture of how different schemes promoted each feature.

This study was partially supported by the [removed for blinded peer-review purposed], which is funded through the UK Department of International Development (DFID). The authors are members of [removed for blinded peer-review purposed]; their role is primarily to conduct ethics research relevant to the consortium. While their indirect relationship with DFID is acknowledged, the authors do not believe it is of the kind to raise concerns about the validity of study findings. DFID played no role in the study design or analysis of the data.

Ethical approval for the study was obtained from the [removed for blinded peer-review purposes] Institutional Review Board; the free and informed consent of all participants was

¹⁰ D.J. Hruschka et al. Reliability in Coding Open-ended Data: Lessons Learned from HIV Behavioral Research. *Field Methods* 2004; 16(3): 307–331; J.L. Campbell et al. Coding In-depth Semistructured Interviews: Problems of Unitization and Intercoder Reliability and Agreement. *Sociological Methods & Research* 2013; 42(3): 294–320.

¹¹ AUTHOR-3, *op. cit.* note 3.

obtained. As part of the consent process, interviewees were informed that their names would not be used and that they would not be identifiable in any publications or presentations resulting from the study. This was to protect them against any risks associated with revealing potentially negative information about their employers.

RESULTS

The results of this study are presented in two parts. First, characteristics of the nine HSR funding schemes are detailed. Second, the five aspects of HSR projects that these schemes incentivise to advance health equity are described. To illustrate each feature, examples from different funding schemes are used. Where schemes are not used as an example, it does not imply that they did not incentivise the particular feature. Third, pathways of reinforcement and trade-off between the features are identified.

HSR funding scheme characteristics

The nine HSR grant schemes' funders spanned four categories—philanthropic foundations, bilateral aid agencies, multilaterals, and national research bodies—and represented four countries and one continent (UK, USA, Canada, Norway, and Europe). Three main types of HSR funding schemes were identified: HSR-specific, HSR within a broader research grant scheme, and HSR as part of a service delivery program (Table 2). HSR-specific schemes are defined as research funding schemes dedicated to HSR alone. The second category refers to research funding schemes that support multiple types of research that include but are not limited to HSR. Finally, there are funding schemes that support a combination of health

service delivery programs and HSR; both a research and health program component are often required as part of these grants.

Typically, funding schemes supported HSR *projects* for 3-5 years. The modality of funding was generally through an (open) call for proposals (Table 2). Selection criteria commonly included traditional research criteria like relevance of the research question to the topic of a particular call, quality of the research methods and design, feasibility, and potential impact of research outputs. However, schemes often utilised additional selection criteria, with some assessing for the conduct of research capacity development and/or partnership or consultation with LMIC citizens (Table 2). Selection criteria could be weighted relative to one another. For example, one scheme adopted primary and secondary selection criteria. If the three primary criteria (importance of research theme, quality of research methods, track record) were not met, a proposed grant would not be considered further. For another scheme, quality of proposals and potential for impact of findings on health systems were the primary decision-making criteria.¹²

Eligible applicants differed amongst schemes, with four schemes requiring lead (or primary) applicants be from high-income countries, two schemes requiring they be from LMICs, and the remaining schemes permitting applicants from both. Some schemes restricted or prioritised the LMICs in which funded projects could be conducted while others did not. Most schemes did not award grants frequently, with four being either one-off schemes or awarding grants every five or more years.

¹² Joint HSR Initiative Committee. 2014. *Committee Report*. Available at:

<http://www.mrc.ac.uk/documents/pdf/joint-hsr-initiative-committee-notes> [Accessed 8 Mar 2016].

[INSERT TABLE 2]

Supporting HSR projects and programs with features that promote health equity

Funding schemes established incentives for applicants' HSR projects and programs to exhibit (up to) five key features that advance health equity. Each feature and the incentives used to promote proposed HSR projects and programs having them are described below. Strong incentives consisted of having funding principles, explicit requirements, statements in funding calls, selection criteria, and/or budget allocation requirements for particular features. The incentivised features were not optional for applicants and had to be adhered to in order for their proposals to be considered. Moderate incentives entailed funders having expectations and/or encouraging projects to exhibit certain features. Although the incentivised features were optional, it was considered favourable to have them by funders. Weak incentives constituted funders viewing specific features positively, permitting proposals to include them, and/or making financial support available for them. Again the incentivised features were optional, but proposals were not more likely to get funded by having the features. Although the use of these incentives, especially weak ones, did not necessarily reflect intentional or purposeful design by funders, their existence, nonetheless, promoted HSR projects having features that advance health equity.

Worst-off research populations

HSR funding schemes incentivised research that will address between and within countries health inequalities by *requiring* a focus on worst-off host countries and 'underserved' or 'marginalised' populations within them.

Host countries

Funding schemes targeted research to worst-off countries by placing restrictions on where they fund the conduct of HSR programs and projects. Two main approaches were described: requiring proposed HSR to be carried out in countries that are *worst-off in terms of health* or *worst-off in terms of poverty*. Where funding schemes adopted the former approach, one funder's strategy documents stated 'the majority of funding will be in countries where the under-five mortality rate is above 80 per 1000 live births and/or where the maternal mortality rate is above 300 per 100,000'.¹³ Another funder put out an open call for projects in eleven target countries, which were selected because they had weak health systems and were failing to meet the health-related Millennium Development Goals but were otherwise economically stable. For a scheme that adopted a poverty-based conception of worst-off, interviewees reported that focal countries were largely low-income, with many of them fragile and post-conflict countries. The scheme also supported HSR in middle-income countries with high income inequality because 'the poorest are increasingly being found in the highly unequal middle income countries.'

Within host countries

Six of the HSR funding schemes had grantmaking principles or requirements for applicants' research to focus on 'vulnerable', 'marginalised', or 'underserved' groups or communities within host countries. As an example, a funding principle of one scheme was that 'priority will be given to research that benefits the most vulnerable populations'.¹⁴ Typically, schemes

¹³ Comic Relief. 2013. *International Grant Strategy*. London: Comic Relief.

¹⁴ UK Medical Research Council. 2016. *Health Systems Research Initiative Call 1*. Available at: <http://www.mrc.ac.uk/funding/browse/health-systems-research-initiative-call-1> [Accessed 8 Mar 2016].

left it up to applicants to define how their research population constituted an underserved community or a marginalised group. However, interviewees reported such communities and groups were often characterised by poverty, lagging health outcomes relative to the rest of the host country, and/or having the least access to high-quality health services. According to one interviewee, the latter two criteria are ‘probably the minimum of what we’d look at to show that the population is vulnerable or marginalised.’

Research topics that advance equitable health systems

Nearly all HSR funding schemes established incentives for proposed projects and programs to focus on improving access to health services, with multiple schemes further demanding these improvements benefit the poorest or marginalised groups most. For example, helping eradicate poverty was ‘the most important aspect of research’ commissioned through one scheme and served as a primary selection criteria.¹⁵ For HSR applicants, the requirement meant their research programs should focus on how access to and quality of health services could be improved for the poorest within LMICs.

Multiple schemes further called for HSR to focus on primary health care and/or the ‘root causes’ of unequal access for vulnerable groups, with an interviewee affirming:

quite a lot of resources, international, bilateral, and national resources, often flow into secondary and tertiary level care, and it’s the primary level care that we feel is often ignored, and often is where the most marginalised people would access health services.

¹⁵ Department of International Development. 2008. *Research Programme Consortia Terms of Reference*.

London: DFID.

So with our focus on the most marginalised people we feel that focusing those resources on primary healthcare is the right level.

Applied incentives included requiring, prioritising, or making the majority of funding available to HSR that addressed primary health care uptake and quality. Funding schemes also required or expected HSR projects to investigate the social determinants of inequalities in access or, as described by one interviewee, ‘the hard stuff of development, the real structural issues.’ For instance, if a project were looking at access to emergency obstetric services, it should go ‘upstream’ to causes such as violence against women, women’s lack of economic empowerment, and/or the relationships women have within their household and communities.

LMIC ownership of the research agenda

LMIC ownership of the research agenda was considered a key means of ensuring projects and programs’ relevance to host countries’ health needs and priorities. HSR funding schemes employed two main strategies to promote LMIC ownership: imposing restrictions on eligible applicants and calling for demand-driven research. The former supported greater ownership by LMIC researchers while the latter supported greater ownership by LMIC citizens (e.g. policymakers, providers, civil society). It could be used to specifically incentivise involving disadvantaged groups in HSR. Doing so has been purported as essential to identifying research questions that will help improve access to health services for these groups’ members and reduce within-country health disparities.¹⁶

LMIC researchers

¹⁶ AUTHOR-3, *op. cit.* note 3.

To promote LMIC researchers' driving the HSR agenda in their countries *and* equity in health research resource allocation, certain HSR funding schemes limited eligible applicants to LMIC institutions (Table 2). Other funding schemes had particular stipulations where applicants were from high-income countries that 'speak to the equity issue': *partnership requirements* and *leadership requirements*. For instance, one scheme required that three or more of the requisite four to six partners be from LMICs, and another scheme required lead applicants from the UK to partner with an African organisation.

Beyond partnership, certain funding schemes called for a leadership structure that gave voice to LMIC partners. One such scheme required that 'if the [principal investigator] is based in the UK, there must be clear partnership with, and scientific leadership from, co-investigators based in the countries where the project will take place'.¹⁷ Scientific leadership from LMIC co-investigators meant that 'they can't just be named as token people; it has to be clear that they are actually fully involved in developing the research ideas.' This was assessed in the grant application, where applicants were asked to describe the leadership role of LMIC co-investigators. To facilitate LMIC researchers 'directly participating' in the design of bids, another funder asked applicants to first submit an expression of interest and, for a proportion of those expressions of interest, would then fund all partners to come together to develop the final proposal.

LMIC citizens

Multiple HSR funding schemes had funding principles or selection criteria calling for the conduct of 'demand-driven' research. Demand-driven research was defined by interviewees as: 'asking questions that suit [LMIC citizens] needs', being 'relevant and wanted by the

¹⁷ UK Medical Research Council, *op. cit.* note 14.

people actually working in the area [under study]’, and/or ‘having a relationship with the people who are taking decisions on the ground, who are influential in that country, you’re not just parachuting in research just because somebody thinks it’s a good idea.’ These definitions speak to HSR that generates evidence and/or develops interventions that are needed *and* wanted for use by LMIC citizens.

Ideally, the needs and wants of LMIC citizens are the same. However, there was recognition that, in certain circumstances, research addressing a ‘great need’ should be supported even if demand was low. This is important from an equity perspective because there may often be little demand for research with groups whose vulnerability relates to stigma or oppression. According to an interviewee, ‘if you think about some of the unmet need for family planning and the need to access safe abortion, which is not necessarily easily demanded from countries where these things are stigmatising. So we have to take the context into account as well.’ Where demand was low due to unfair social norms or unequal power structures, applicants could make a case for research being necessary if it addressed a substantial problem.

In terms of whose demands should drive HSR, when asked, interviewees across seven HSR funding schemes stated that they required, expected, or positively viewed the specific involvement of *policymakers*. Beyond policymakers, there was no ‘formula’ involved in determining whose demands should be sought and taken into consideration; it was very context specific. They could include health care providers, civil society organisations, patient groups, women’s groups, or community groups.

To generate the strong linkages necessary for demand-driven research, HSR funding schemes promoted engagement of LMIC citizens in research question selection and/or design. For

example, one funder wanted ‘to see a greater ownership and greater participation by decision makers or implementers’ in the work it supported. It and other HSR funders, therefore, often required or expected applicants to show evidence in their grant proposals as to what engagement had been done or was planned and how it had or would influence the research question and/or design. Multiple schemes supported planning grants or planning phases for researchers to engage with LMIC citizens in order to develop subsequent grant applications or to inform projects’ design respectively.

Schemes incentivised engagement as *collaboration and partnership* and/or as *consultation*. Collaboration and partnership meant that decision-making was shared, to some extent, by researchers and LMIC citizens. For example, one scheme required proposals to have a co-principal investigator from an African government partner who spent 40% of his/her time on the project. Whatever intervention was being tested ‘the government partners are in agreement, it’s aligned and it meets the needs the government has defined.’ This scheme further required the partnership be ‘*genuine and long-term*’, which meant that applicants:

had to explain how they came together and what work they’ve done and the projects that were selected. In the end, they had long-standing, you know, twenty-plus years of working together in country, and really working hand in hand with government, not just flying in, flying out. A lot of the leaders lived in the countries. Even the US partners.

Consultation meant that researchers obtained input from LMIC citizens but were ultimately responsible for determining the research question and design. Thus, LMIC citizens’ ownership of the research agenda was greater where partnership with at least one LMIC actor was required. Both consultation and partnership could be undertaken for a single project. For

example, a research team could partner with district health officials and consult with women's groups and community health workers to identify their research questions.

Involving disadvantaged groups

Very few HSR funding schemes made engaging with vulnerable and disadvantaged groups a requirement. We, therefore, draw attention to a funding scheme that employed 'consulting and engaging others' as a key grantmaking principle.¹⁸ To facilitate researchers meeting this requirement, the funder invested in planning phases for consultations to take place. Ideally, these consultations helped determine what problem projects would address and/or, at a minimum, how study interventions were designed. According to an interviewee:

that's quite an important part of our application and assessment processes to understand not only why are these the most marginalised groups but how have they been consulted, how has the project been designed around their needs and what's their voice in the project as well? So it's very much focusing on marginalised people but making sure that their voices are part of the project design as well.

The funder was unlikely to invest in projects where it saw limited consultation with disadvantaged groups.

Research capacity strengthening

All schemes supported research capacity strengthening but varied in their emphasis on it, identifying capacity development as a main objective, a secondary objective, the focus of

¹⁸ Comic Relief, *op. cit.* note 13.

particular calls under the scheme, or a component of good research practice.¹⁹ Research capacity strengthening has the potential to make LMICs able to generate their own evidence on the effectiveness of health interventions, services, and systems, which is essential if they are to improve their populations' health without external assistance. An aim of global justice is for LMICs to become capable of ensuring their populations' health (as well as other dimensions of their well-being) in their own right.²⁰

General conduct of research capacity development during proposed projects was most strongly incentivised where schemes included it in their selection criteria, budget requirements, monitoring and evaluation indicators, and/or grants management and oversight. The schemes' research capacity strengthening targets included individuals (senior researchers, junior researchers, research users), research teams, research institutions, and research systems (Table 3). Certain funding schemes focused on individual capacity development whereas others sought a balance between individual and institutional capacity development or had a primary focus on institutional capacity development. According to one interviewee:

if you do individual capacity building the person moves on, goes elsewhere and doesn't enrich the institution in which they're working. So we're much more interested in building a legacy in an institution or a country and so want to make sure there are systems in place in institutions to retain and attract young enthusiastic researchers.

Notably, some schemes aimed to develop *sustainable* research capacity, defined as creating a '*critical mass*' of researchers, decision-makers, practitioners, and research institutions, with

¹⁹ Where HSR funding schemes did not support a significant amount of research capacity strengthening, funders might instead support capacity development through other grant schemes. These capacity development schemes were generally not specific for HSR but permitted the submission of HSR capacity development projects.

²⁰ AUTHOR-5; J.P. Ruger. Global Health Justice. *Public Health Ethics* 2009; 2(3): 261-275.

networks connecting them, that can work together to obtain funding and conduct research without external assistance.

Specific strategies for building HSR capacity were identified, with the most commonly reported as incentivised being completion of masters, doctoral, or post-doctoral programs; training; and learning by doing (Table 3). The most common type of incentive employed was the availability of financial resources (if requested) to support a particular strategy (Table 3). Typically, the selection of specific research capacity development strategies was left up to applicants.

[INSERT TABLE 3]

A key consideration raised by one interviewee in relation to junior LMIC researchers' capacity development was *where* they undertook their postgraduate programs, querying: 'are these all being snatched by the institutions in the North, or are we actually seeing individuals going to African or Asian institutions which may be more appropriate for the needs of these groups?' If every junior LMIC researcher who was going for a Masters or a PhD had to go to a high-income country institution, it raised the question of whether or not that was the best course available for them. Consideration of gender equity when selecting junior researchers to support during HSR projects was also noted as important.

For more senior researchers, learning by doing and devolving responsibility were identified as key and interrelated strategies for building their independence. The former facilitated their gaining experience and networks that would enable them to 'stand on their own feet.' Devolving responsibility meant that there was a visible change in the balance of

responsibilities over the course of joint projects or programs. Where LMIC partners had very little capacity at the start of a collaboration, they might eventually be expected to take over the day-to-day implementation of research in their country from high-income country partners. Where LMIC partners had fairly good capacity from the outset:

[t]here should be a principal investigator in each country and the principal investigator should be taking responsibility for the work that's going on in that country...What we expect to see is an increase in confidence in partners to be able to do their own research and not need Northern partners to write proposals for them.

Beyond individuals, strengthening the capacity of research *teams* (i.e. 9-10 individuals at the same institution) was also discussed as essential to developing a critical mass of researchers. According to one interviewee:

if you provide the training only through a one-stop workshop for people who aren't connected it's essentially lost because you expect people to go back into pretty siloed departments and try and transform and do something different and it's very difficult.

It was noted this was a longer term strategy that required a number of years to successfully accomplish.

At the institutional level, building *both* management and technical capacity was identified as necessary to strengthen independent research capacity. Towards developing a critical mass of institutions, another strategy was developing networks between institutions with strong and weak HSR capacity so the former could help and support the latter.

Most HSR funding schemes did not finance systems level capacity development, which, for project-based schemes, was not atypical. However, where they did so, interviewees noted that

support could be targeted in ways that promoted *equity in research capacity* amongst LMICs or within regions. For example, by directing support for strengthening national health research priority-setting capacity to fragile, post-conflict countries in Africa.

Having an impact on health disparities

HSR funding schemes demonstrated a commitment to either dissemination or research uptake, with the majority falling into the latter category. Dissemination emphasised informing and increasing various parties' awareness of research findings²¹ whereas research uptake entailed purposefully promoting the use of research results in order to foment changes in policy and practice that address health disparities. Multiple schemes also had an explicit emphasis on sustainability and creating *lasting* change in LMICs.

Research uptake: Creating change

Where funding schemes had a research uptake objective, it commonly consisted of an aim to change policy, practice, and agendas at the sub-national, national, and/or global levels. These schemes broadly incentivised research uptake (through funding principles, selection criteria, grants management and oversight) as well as a number of specific strategies to promote research uptake achievements by funded projects (Table 4). The most common strategies

²¹ Where funding schemes had a dissemination objective, dissemination was understood to target parties within and outside the research sector. This, in itself, was noted to constitute a shift in practice from previous years. For example, under one funder's former scheme, requirements for dissemination were limited to publishing in academic journals and presenting at conferences. However, under its new scheme, applicants are asked to provide a communication strategy for reaching non-scientific audiences. Their dissemination efforts should reach the users of research (e.g. policymakers, the public) at the national and/or subnational level in host countries and parties in funding countries (e.g. funders, general public).

were embedding research in practice, engagement of LMIC citizens, dissemination to LMIC citizens, and having a research uptake plan. The incentives provided for strategies were often stronger than simply offering financial support for their conduct (Table 4), though variation did exist amongst schemes.

[INSERT TABLE 4]

Over half of the funding schemes supported research that was integrated into the operations of existing health programs and systems.²² According to an interviewee, embedding research in practice reflected growing recognition that, rather than having two separate streams (research and practice) that then need a translational process to bridge them, making research part of the health system strongly promotes its findings being used. By requiring this type of research, funding schemes incentivised the conduct of ‘research as the intervention to change’, with interviewees from two funders emphasising that the sought after change was for marginalised and disadvantaged groups:

if you’ve got the most marginalised people at the heart of who you’re trying to create the systemic change for, you can have a real impact on reducing health disparities. So an example we have from one of our grants at the moment in [Kenya], they have looked at supporting private not-for-profit health centres in two urban slums in Nairobi where currently no public health service system is available. So by making that systemic change within the urban slums that’s going to have a big impact on reducing health disparities for some of the poorest women living in those slums in the long term.

²² Only certain funders supported both research and health service delivery program components through their grant schemes. HSR-specific and research-specific funding schemes only supported the HSR component (Table 2).

This example highlighted that the selection of worst-off research populations within host countries was key to generating changes in policy and practice that benefited them. Performing ‘*action research*’ *focused on disadvantaged groups*, thus, constitutes a research uptake strategy that advances health equity.

Engagement for the purpose of promoting evidence-based change in policy and practice was frequently incentivised by HSR funding schemes. This meant engaging LMIC citizens who could ‘use evidence to maximal effect’ from the outset of research projects/programs until their end.²³ These actors had the power to make changes to policy and practice, including the ability to address different ‘bottlenecks’ standing in the way of doing so. Depending on the particular context, they might work at the national or sub-national level and could include ministry or district health officials, donors, civil society organisations, and/or NGOs.

Processes identified for engaging LMIC citizens to promote research uptake included stakeholder mapping, collaboration, consultation, dissemination, and advocacy.¹⁹ Stakeholder mapping was employed to learn how policy on a given research topic was made in the host country and what relevant policy processes were ongoing that the project might seek to inform. It also encompassed identifying who the various stakeholders were who participated in these processes, determining their level of influence, and assessing whether they were likely to be supportive or unsupportive of the research.²⁴ Once key stakeholders had been identified, they could be engaged through consultation or collaboration from the outset of the research. Dissemination typically occurred towards the end of a research project/program and

²³ Department of International Development. 2013. *Research Uptake: A Guide for DFID-funded Research Programmes*. London: DFID.

²⁴ Ibid.

entailed making specific LMIC citizens aware of research findings and what they needed to do differently based on the evidence. Finally, researchers could advocate for specific changes to policy and practice.²⁵ While advocacy was permissible, lobbying typically was not and an interviewee affirmed that the line between the two could often be difficult to navigate.

Multiple schemes required or permitted the hiring of individuals to coordinate research uptake tasks for projects. Yet there was some disagreement amongst interviewees regarding whether research uptake should be made separate from the role of researcher. Certain funding schemes clearly incentivised a division of roles whereas others took a more nuanced or opposing position. One interviewee contended that separating the roles ‘doesn’t give you, we know from what we’ve seen, the best research uptake.’

Sustainability: Creating lasting change

Consideration of sustainability was broadly incentivised by certain HSR funding schemes through their funding principles, selection criteria, and grants management and oversight. As an example, one funder had the following grant making principle: ‘making lasting change’, which meant changes to policy and practice that addressed health disparities were sustained once the research ended. A number of specific strategies to promote sustainability were incentivised by the HSR funding schemes (Table 5).

[INSERT TABLE 5]

Multiple schemes required or expected researchers to not simply engage but *partner* with LMIC citizens in host countries who were (or could become capable) of implementing

²⁵ Ibid.

proposed interventions post-study were they proven successful. Researchers needed to have ‘the right people around the table who would have a role to play if [the intervention] is found to be good.’ Interviewees emphasised that partnering with government (ministries of health, district health officials, and/or other ministries) was often key to sustainability and, therefore, required or expected it of grantees. Bringing in *multiple* types of LMIC citizens was also identified as essential to ensuring sustainability. For example, interventions that train community health workers to use mobile phones to perform certain tasks were unlikely to be supported by one funder if they only focused on building community health workers’ capacity. To make the intervention sustainable:

you have to bring in the district health people who manage that, their health workers. You need the HR [human resources] people on the national level because it may mean changes in job descriptions. You probably need the training school then because it might mean new skills that people need in their training. You probably need finance -- you're going to need to hire more people because there's a maximum that one person can do... And many researchers don't go that far; they'll just say ‘No, we'll find a clinic, we'll train the community people out of that clinic.’ But [on its own] that's not the right group... to sustainably change the system.

Financial sustainability was promoted by requiring cost-effectiveness analyses of interventions and expecting the devolution of financial responsibility for their implementation to LMIC citizens. Devolving financial responsibility meant that by the third or fourth year of a five-year project, LMIC partners were taking over some of the intervention implementation costs from the research funder. A costing exercise requirement entailed not only performing the exercise but also having project money and capacity (i.e. a health economist on the research team) to undertake it. Where an intervention showed an impact on population health,

researchers could then have a conversation with ministries of health and finance in host countries to advocate for continued implementation based on intervention cost-effectiveness.

Finally, interviewees' comments were suggestive of different parties' roles in ensuring sustainability. Research funders and researchers were primarily cast in the role of 'facilitators' of lasting change. They were not meant to be responsible for post-study implementation of successful interventions. Instead, that was the role of LMIC citizens, who had ideally been partnered with during the research. The financing of these interventions' implementation post-study was the purview of either external donors or host country governments. Certain funders, therefore, took on a role facilitating connections between research teams and other donors. They invited donors and LMIC governments to visit project sites and made individual visits to them to present the research they funded.

Reinforcement and trade-offs

A positive or reinforcing relationship was identified to exist between promoting LMIC ownership and having an (lasting) impact on policy and practice. There is also a positive relationship between the different mechanisms for promoting LMIC ownership. For instance, LMIC researchers' leadership of projects could facilitate engagement with LMIC citizens because 'they have a much better chance of actually knowing who the right people in the community are to speak to and how to reach out to those people.'

However, a potential trade-off exists between selecting equity-oriented research questions and getting research findings into policy and practice. Research funders' current approach to research uptake emphasises engaging policymakers and influential stakeholders with the

power to effect change. This may lead to a lack of engagement with disadvantaged groups in host countries, which, in turn, may give rise to research questions that are less reflective of these groups' needs. Policymakers, particularly at the national level which is often far removed from communities, may lack a strong understanding of the health systems problems that affect the worst-off within their countries. The trade-off draws attention to the larger question of *whose demands should be driving HSR: disadvantaged groups or policymakers?* The former may promote the selection of equity-oriented research questions while the latter may promote research findings being used in policy and practice. Further exploration of this trade-off is needed.

CONCLUSION

Research funders have established grant schemes that incentivise HSR projects with multiple features that advance health equity: being conducted with worst-off countries and populations within them; focusing on topics that advance equitable health systems; being (co)led by LMIC institutions and researchers; collaborating and/or consulting with policymakers and disadvantaged groups within LMICs; making a contribution to developing a critical mass of health systems researchers and institutions in LMICs; and promoting lasting changes to health systems that benefit disadvantaged populations. The funding schemes examined incentivised many or a subset of these features using a range of incentives of varying strength. Thus, schemes ranged from strongly incentivising multiple features to moderately incentivising fewer features.

Beyond incentives, future research can usefully explore whether HSR funders actually invest in projects with the five features that promote health equity and, if so, whether having requirements for such features means they are achieved by funded projects or programs. Although funding schemes may aim to put LMIC citizens in the driver's seat and create sustained change, this may not eventuate in practice. Future research can investigate how funders' *management* of funded projects and programs can help advance health equity and what ethical challenges are inherent in doing so.

The study described in this paper had several limitations. First, data on each funding scheme were drawn from a relatively small sample of interviewees; only one to three grants officers per scheme agreed to be interviewed. This, in part, reflects the fact that HSR funding schemes generally do not have numerous grants officers. In at least three cases, the one or two people interviewed for this study comprised the entirety of grants officers for the particular scheme. Second, by focusing interviews on single funding schemes, the study does not capture how research funders promote equity-oriented HSR as a whole (i.e. through all their funding schemes supporting HSR or capacity development). Interviews focused on funders' main or largest HSR funding scheme. At most, interviewees were asked to name any additional HSR or research capacity development schemes that their organisation supported. Third, by focusing interviews on three topics—research populations and questions, research capacity development, and influencing policy and practice—it is possible that interviewees' answers were limited to these areas. To mitigate this possibility from eventuating, at the end of interviews, participants were asked to describe any *additional ways* their funding scheme was designed to promote health equity that they hadn't already discussed. Additionally, interview guides were revised during the data collection phase to incorporate questions on new themes

(beyond the three topics) that were identified by interviewees such as LMIC ownership of research questions.

Despite these limitations, the study constitutes one of the first explorations of whether and how funders support health research that helps reduce health disparities. This initial investigation provides key insights into an underexplored area. Its findings can inform research funders on how they might design their grant schemes to more effectively promote health equity. It is suggested that research funders ought to create and maintain grant schemes with *strong* incentives for the features identified in this paper. This entails having grantmaking principles and/or selection criteria with robust weights. Box 1 provides examples that have been employed by different HSR funding schemes. The authors hope that these findings and recommendations can inform the design of new funding schemes and refine the design of existing schemes for HSR and other types of health research in LMICs.

Box 1: Examples of grantmaking principles and selection criteria from HSR funding schemes that promote equity-oriented HSR

- Priority populations principle—Priority will be given to research that benefits the most vulnerable populations
- Presence of local leadership
- Consulting and engaging others principle, particularly marginalised groups
- Equity principle—research addresses the root causes of unequal access to primary health services
- Use of rigorous methodologies that include equity analysis (e.g. disaggregation by gender, power, race, caste, class)

- Quality of capacity building framework, including realistic and achievable plans for developing southern-led research and for devolving viable aspects of research responsibility to southern partners during the life of the project/program, where the project/program has a northern lead
- Contributing to building a critical mass of LMIC researchers and institutions
- Building effective organisations and their leadership
- Making lasting change principle
- Quality of communication capacity, plans for getting research into use, and proposed methodologies, including demonstration of engagement with policy makers and civil society
- Informing and influencing policy, practice, and agendas to strengthen equitable health systems
- Potential for impact principle (i.e. demonstrating the research is needed, interventions are cost-effective and sustainable, and links to and buy-in of people who will take intervention up if proven effective have been secured)

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Title:

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Date:

2018-06-01

Citation:

Pratt, B. & Hyder, A. A. (2018). Designing research funding schemes to promote global health equity: An exploration of current practice in health systems research. *DEVELOPING WORLD BIOETHICS*, 18 (2), pp.76-90. <https://doi.org/10.1111/dewb.12136>.

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