Comprehensive Review of Academic Partnerships

Submitted to Public Health Institute by the Consortium of Universities for Global Health

Winter 2020

The Sustaining Technical and Analytic Resources (STAR) project, funded by the United States Agency for International Development (USAID, undertook this comprehensive review to inform STAR's Collaboration Laboratory, a one-year grants program to study academic partnerships between US-Based and LMIC based institutions, and better understand what makes them successful and mutually beneficial. During the first year of the STAR project, the Academic Partnerships team conducted this thorough and comprehensive review in order to inform STAR's overall understanding of formalized academic partnerships as well as partnerships with NGOs and the public and private sectors. More specifically, this review set out to understand why partnerships emerge, what has worked well within partnerships and what has not, as well as measurable criteria to rate the strength and impact of these partnerships. The review found several key ingredients for successful partnerships, including the mutually shared and documented goals, solid governance structure, clear and effective communication, and a robust monitoring and evaluation plan, all of which were embedded in the implementation of STAR's Collaboration Laboratory.

TABLE OF CONTENTS

ACRONYM LIST

AMPATH	Academic Model Providing Access to Healthcare
AP	Academic Partnerships
CAT	Capacity Assessment Toolkit
CUGH	Consortium of Universities for Global Health
GOR	Government of Rwanda
HIC	High-Income Country
HR	Human Resources
HRH	Rwanda Human Resources for Health
HRSA	Health Resources and Services Administration
IUSM	Indiana University School of Medicine
LMIC	Low- and Middle-Income Country(ies)
M&E	Monitoring and Evaluation
MEPI	Medical Education Partnership Initiative (MEPI)
MOH	Ministry(ies) of Health
MOU	Memorandum of Understanding
NIH	National Institutes of Health
NGO	Non-governmental Organization
PAT	Partnership Assessment Toolkit
PEPFAR	The U.S. President's Emergency Plan for AIDS Relief
PHI	Public Health Institute
PY	Project Year
RfA	Request for Applications
SADC	Southern African Development Community
STAR	Sustaining Technical and Analytic Resources
THET	Tropical Health and Education Trust
USAID	United States Agency for International Development
USG	U.S. Government
WHO	World Health Organization

EXECUTIVE SUMMARY

Overview

The Sustaining Technical and Analytic Resources (STAR) project, funded by the United States Agency for International Development (USAID), aims to promote mutually beneficial and equitable academic partnerships in both low-and-middle-income countries (LMICs) and the U.S. Through its initiatives, STAR will showcase new and innovative ways for academic institutions and other organizations to strategically and effectively learn, build capacity, and share knowledge to address global health challenges.

USAID understands that academic partnerships are vital to enhancing research and education in the global health field. Incorporating both high-income countries (HICs) and LMIC academic institutions into the Agency's work would also strengthen efforts towards achieving its goals and objectives. There is acknowledgement of the value that successful partnerships can achieve. For example, one study highlighted the impact of successful partnerships: "Partnership brings together multiple stakeholders based on common goals and shared intentions to produce an effect greater than the sum of their individual effects" (Matenga, Zulu, Corbin, & Mweemba, 2019, p. 2).

By determining the components of successful, global academic partnerships, i.e., the tools and processes to strengthen and support them, and by testing various partnership conditions, STAR's Academic Partnerships (AP) team aims to influence change within the global health development community by improving the quality of academic partnerships. A second AP team goal is to systemically build the capacity of LMIC-based academic institutions, so they can tap into the development space, including enhancing their ability to access U.S. Government (USG) funding. The AP team has initially adopted a systems approach to capacity building and is examining it through nine separate but interdependent capacity building components, which form a four-tiered hierarchy of needs (Potter & Brough, 2004):

1. Structures, systems, and roles
2. Staff and facilities
3. Skills
4. Tools

STAR is approaching human capacity building holistically, as it believes institutions must have the structures, systems, staff and facilities, skills, tools, and resources in place that will allow them to streamline their jobs and develop a higher level of global health knowledge. While capacity building was not the main focus of this comprehensive review, STAR will explore capacity building further in future work as it is often referenced in discussions about partnerships.

There are fundamental challenges in creating and sustaining partnerships. For example, one article succinctly summarized, "...partnerships produce the perpetual state of being in a bind as actors attempt to reconcile competing agendas and objectives" (Herrick & Brooks, 2018, p. 521). Another emphasized, "...challenges include power inequities, communication barriers, diverging research priorities, as well as a lack of capacity-building for southern partners" (Matenga et al., 2019, p. 2). STAR aims to understand and learn how to address the inequities in relationships between institutions in the U.S. and LMICs, particularly with respect to issues of access to training and technology, research dissemination, implementation, and sources of new funding and collaborators.

Purpose

The main purpose of this review is to inform STAR's overall understanding regarding what information currently exists about formalized academic partnerships, focusing on four distinct types of partnerships:

1. U.S.-based academic institution partnered with an LMIC academic institution
2. LMIC academic institution partnered with another LMIC academic institution
3. Academic institution (can be anywhere in the world) partnered with a professional association or a non-governmental organization (NGO) (can be local or international)
4. Academic institution (can be anywhere in the world) partnered with the private or public sector

STAR examined partnerships that had either Memorandums of Understanding (MOUs) or formal contracts to define and sustain the relationship; informal collaborations were not included. Additionally, the focus was only on pairings, and not partnerships involving more than two parties.

Generating this knowledge about partnerships to create a baseline understanding, the review was undertaken to primarily influence STAR's work going forward, most specifically, STAR's Collaboration Laboratory. The Collaboration Laboratory includes experiments where two academic institutions will partner to achieve a specific goal which will allow STAR the opportunity to further document partnerships' successes and challenges and test the validity of some of these findings. This review will also inform the development of STAR tools and guidelines, such as a Partnership Assessment Toolkit (PAT) and a Capacity Assessment Toolkit (CAT), which will be used as measures of evaluation and progress in the Collaboration Laboratory.

Research Questions

In order to tease out key elements from the literature, across all four types, that are necessary to create bi-directional, i.e., mutually beneficial and equitable, partnerships, STAR staff developed four main research questions. The questions were crafted to align with the goals and objectives of STAR's academic partnership efforts:

1. What are the reasons for partnerships to emerge, i.e., the catalyst?
2. What has worked (i.e., key ingredients)? What partnership strategies are best suited for creating, maintaining, and developing knowledge sharing systems in capacity building, education, and research across the global health landscape?
3. What are three to five measurable criteria that can be used to score/rate a partnership's impact and strength?
4. What has not worked? What gaps have been revealed? Are there programmatic or systemic inhibitors or challenges to developing strong partnerships with LMICs? And if so, are there ways to reduce those?

Methodology

To guide STAR's AP team's work for Project Year One (PY1), the Consortium of Universities for Global Health (CUGH) leveraged its network and formed a STAR Committee. The Committee is composed of 24 individuals, all of whom are experts in their fields and affiliated with institutions from around the

world. CUGH selected the members, who also serve on various CUGH committees and subcommittees, to ensure a broad geographic representation and technical expertise. For their efforts, they agreed to provide half of their work pro bono as they were committed to STAR's mission and then received a modest stipend for the remaining portion.

For the review, committee members were divided into four working groups and each was assigned to one of the four partnership types under exploration. Based on a desire to conduct a comprehensive but recent understanding of existing literature, the review was limited to partnerships dating back 10 years. Both published and grey literature were found by searching PubMed, Web of Science, POPLINE, Google Scholar, and Google search engine. Search terms included various keyword references to academic partnerships in different geographic areas, and articles were included in the review if they met the inclusion criteria. (For specific terms, see the Methodology in Annex 1.)

The search was divided among the STAR Committee members by a search database source. The members reviewed article abstracts and executive summaries and synthesized their findings based on the four research questions. Then, four leads from the STAR Committee, selected by CUGH based on their acumen, reviewed relevant articles of interest more deeply, focusing on those that contained information pertinent to the key research questions.

Main Findings

Overall, across all the partnership types, there were many more similarities than differences that emerged as answers to the research questions. **Key reasons for partnerships** to emerge include:

- They are often formed to **address a particular issue or crisis**
- **Personal relationships**, and a track record of previous interactions, are a driving reason for partnerships to form in the first place and are crucial to sustaining them

The review underscored several **key ingredients for successful partnerships:**

- A comprehensive and detailed official document or **Memo of Understanding (MOU)** created in the beginning of the partnership. This document, addressing key issues at the onset, is an important contributor to perceived success.
- **Clear roles and responsibilities**. This includes an agreed-upon governance structure and documented, clear leadership buy-in from all partners.
- **Effective communication and continual engagement** as described in the MOU and reported in real time. This factor reflects the importance of open communication and trust, by encouraging partners to discuss potential areas in need of improvement. The MOU should also include conflict resolution procedures.
- Documented and behaviorally observed **commitment to shared goals**
- Attention to the **bidirectionality of the relationship**, especially addressing power and resource differentials up front and as they occur
- **Flexibility.** Because of inevitable staff changes and shifting priorities, it is important to continually monitor the partnership and recalibrate, when necessary. The need for flexibility in some way contradicts the need for clear and documented procedures, however both are needed.
- **Long-term commitment** to the partnership–financial, political, and personnel
- **Mutual respect and trust** in key and secondary staff in the partnership
- **Robust monitoring and evaluation (M&E) plans**
- **Community involvement** is key to sustainability of results

- **Early successes** are helpful in sustaining a partnership, so there is value in going slow and perhaps starting with smaller projects.
- Building a partnership, without considering the importance of tackling **capacity building efforts**, is not recommended.

Conversely, the review identified a series of common partnership challenges reflected in the key findings. Two examples include overcoming power dynamics and funding obstacles. Tackling both of these issues head-on at the formative stages were also cited as crucial factors in the most successful partnerships. Finally, the review identified a series of specific criteria that could be used to both assess partnership strength, as well as rate the success of partnership achievements; this content will be incorporated into STAR partnership assessments.

Summary of Findings

This comprehensive review highlights several clear and general findings for those just beginning a partnership or for those that are well-established. There are also several initial lessons for how donors can consider making collaborative efforts more equitable at the partnership design stage.

Most importantly, the review's findings produced some clear, direct applications for STAR's academic partnerships work and lessons learned. Below is a summary of findings regarding how STAR can best utilize this information moving forward.

- The key ingredients for academic partnerships identified in the review should be incorporated into all dimensions of STAR's AP work moving forward. This will allow STAR to test, reframe, and redefine what successful academic partnerships entail.
- For its initial four Collaboration Laboratory experiments, STAR should incorporate lessons learned from the review into the Request for Applications' (RfA's) language. This will encourage mutually beneficial partners to apply.
- Through its evolving partnership work, STAR continues to learn and find the best ways to better integrate academic institutions into the business of global health. In doing so, using implementation science or interventions that have proven to be effective, may be a good middle ground to bridge the divide between the world of academia and development. This approach could facilitate the integration of science and practice, while supporting longer-term development goals, such as improving health outcomes in LMICs.

INTRODUCTION

One of STAR's project's primary goals is to develop a better understanding about how to create respectful and mutually beneficial partnerships that will strengthen and contribute to better global health practice by actively sharing data and information. In particular, academic institutions in both the U.S. globally can share knowledge and resources toward the development of stronger global health programs and outcomes, thus contributing to and underscoring USAID's Journey to Self-Reliance.

The first step for STAR's foundational academic partnerships work was to better understand what information currently exists about formalized bi-directional partnerships with academic institutions. To gain this understanding, STAR undertook a comprehensive review of both peer-reviewed and gray literature from the past 10 years. Four distinct types of formalized academic institutional partnerships, including those between a U.S. and low- and middle-income country (LMIC) institution, LMIC to LMIC institution, an academic institution partnered with a professional association or non-governmental organization (NGO), and an academic institution partnered with the private or public sector, were explored.

There were four guiding research questions to understand: (1) why partnerships emerge; (2) criteria to rate them; (3) what has worked well; and (4) what has not. This review provides a methods section describing how the review was conducted, followed by the results of the four partnership types, corresponding to each of the four research questions. Tables summarizing key successful ingredients, as well as challenges, are included for all four types. The discussion section interprets the results across all four partnership types, highlighting similarities and differences. Following the discussion is a brief section on limitations of the review. Last is a conclusion that synthesizes the main findings and identifies how STAR can apply these ideas to its immediate and future work.

METHODS

In order to conduct the review and provide the needed technical expertise, STAR leveraged the Consortium of Universities for Global Health's (CUGH's) network of global health academic institutions. CUGH assembled a committee, called the STAR Committee, composed of 24 individuals – most of whom are academicians – who also serve on CUGH's other committees and subcommittees. (See Annex 2 for a complete list of STAR Committee members.). The STAR Committee members represent various institutions from around the world bringing technical, research, and regional experience, including direct engagement in partnerships similar to those being explored in this review.

The STAR Committee members were divided into four working groups to explore existing literature about each of the partnerships. Every member was assigned to investigate a different source of information to avoid overlap and all members had a defined set of search terms to use for their investigations. The sources of literature consulted included PubMed, Web of Science, POPLINE, Google Scholar, and Google search engine. Gray literature, such as conference papers and reports from the World Health Organization (WHO), governments, nongovernmental organizations (NGOs), and think tanks, was included to ensure partnerships excluded from peer-reviewed literature, especially those involving LMIC institutions, would not be missed. (See the Methodology in Annex 1 for further details.)

Although this comprehensive review is not meant to be a systematic literature review, specific inclusion criteria were utilized. From December 2018 to early January 2019, the STAR Committee reviewed English language publications dating from December 2008-December 2018, examining partnerships that: (a) had been in existence for at least 12 months; and (b) aimed to meet a common goal. After

reviewing abstracts and executive summaries, each of the four working groups produced a completed data extraction sheet (see Annex 3)to record the number of search results from each source that met the inclusion criteria, and to summarize key characteristics in line with the four research questions. This approach allowed for consistency and comparisons of findings.

Results from these initial reviews were discussed during facilitated virtual meetings focusing on measurable criteria to score/rate partnership impact and strength. These discussions were integral in informing and shaping the results section.

A lead for each working group was selected to synthesize the research findings and closely examine the full text of the selected articles. The leads then drafted summary responses to the four research questions. These synopses are incorporated in the results section. Each lead was then assigned one of the four research questions, who conducted the analysis and then synthesized the salient points. Finally, STAR staff interpreted the findings to develop the recommendations.

RESULTS

The results are presented below by partnership type.

I. U.S.-LMIC

Catalyst for the Partnership

The impetus for the partnerships described in the 70 articles reviewed by this Working Group fell into two categories: those **driven by institutions** (with varying degrees of influence by funding agency agendas), and those that grew out of **relationships between individual faculty members**. This is consistent with conclusions that have been drawn by a recent review of child health-focused global partnerships.[1]

The funder-driven partnerships captured in this review were supported by the Medical Education Partnership Initiative (MEPI), a program launched in 2010 by The U.S. President's Emergency Plan for AIDS Relief (PEPFAR), National Institutes of Health (NIH), and the Health Resources and Services Administration (HRSA). The purpose was to build capacity in selected African countries to empower local health care workers to lead caring efforts for individuals living with HIV/AIDS and develop locally relevant prevention strategies. This review included three MEPI partnerships (Kaddumukasa et al., 2014; Hakim et al., 2018; Noormahomed et al., 2017) that shared five common goals.[2] Some of the key innovations were related to the degree of control afforded to the LMIC institutions–the African

---

[1] Steenhoff, A.P. et al., 2017: "Many partnerships are purposive, targeting a specific medical skill set needed in an LMIC [low-and middle-income countries], such as the development of a national antiretroviral program funded by the President's Emergency Plan for AIDS Relief or teaching the initial steps of neonatal resuscitation through Helping Babies Breathe. Key drivers include LMIC national health priorities coupled with matching strengths of a HIC institution and available funding. Other partnerships are more opportunistic and develop from personal relationships between individuals in LMIC and HICs. The agendas of major funders such as the President's Emergency Plan for AIDS Relief or the UK's Department for International Development are strong initiators, drivers, sustainers, and modifiers of GCH partnerships. Partnerships evolve in response to LMIC needs, HIC areas of interest and to funding opportunities."

[2] Noormahomed EV et al., 2017: Five key MEPI goals: (1) strengthening training and research to enhance the capacity and quality of physicians trained; (2) developing a critical mass of African researchers to address the most pressing health problems in their own countries; (3) retaining health workers where they are most needed; (4) developing communities of practice to strengthen partnerships to address common areas of interest; and (5) achieving sustainable institutional development to ensure that MEPI accomplishments will continue beyond the initial budget period.

institutions led the agenda, chose the U.S. partner institutions, managed the grants, and were the direct recipients of the grants.

Although it did not strictly meet the inclusion criteria (between only two institutions), an additional institution-driven model was the Rwanda Human Resources for Health (HRH) Program, a seven-year health professional training program led by the Government of Rwanda (GOR), in partnership with 22 U.S. academic institutions, and funded by PEPFAR and the Global Fund to Fight AIDS, Tuberculosis and Malaria. This project was conceived of and administered by the GOR to address the Rwandan health workforce shortage and strengthen the capacity of academic institutions in Rwanda.

Partnerships that grew out of individual faculty relationships ranged in size and scope encompassing either research goals, educational goals, or both, and consistently demonstrated an evolution toward building capacity (Paniagua-Avila et al., 2017; Rabin et al., 2016; Inksater et al., 2011; Mercer et al., 2018; Ormond et al., 2018). Perhaps the longest-running example is AMPATH, a partnership between Indiana University School of Medicine (IUSM), Moi University, and Moi Teaching and Referral Hospital in Kenya. This relationship began in 1990 when Moi University needed expatriate faculty teachers and partners to complement a limited number of Kenyan faculty; at the same time, faculty from IUSM were seeking to collaborate with a medical school in sub-Saharan Africa (Einterz et al., 2007). Although this partnership met STAR's inclusion criteria at the outset, this relationship has grown to now support the public-sector healthcare system in Kenya, with a major focus on scaling up HIV care in western Kenya and evolving to a focus on general health-system strengthening (Mercer et al., 2018).

Key Ingredients for Success

Below is a summary table of key ingredients or suggestions for successful U.S.-LMIC partnerships from the literature:

Key Ingredients[3]
Bi-directional academic exchange/mutually beneficial exchanges (Kaddumukasa et al., 2014; Rabin et al., 2016; Paniagua-Avila et al., 2017)
University-to-university connections allow for continuity within politically unstable environments and functional scalability as academic centers include multidisciplinary groups of students and faculty (Paniagua-Avila et al., 2017)

---

[3] Semali, L.M. et al., 2013: In a report, *Educational Partnerships with Foreign Institutions for Increasing the Quality of International Education in the United States*, Wiley and Root (2003) outlined partnership expectations implied in international conversations and guidelines, suggesting the road map for successful partnerships between the U.S. and other powerful nations with colleges, technical institutes, and universities in Africa as well as to relationships of individual research scholars with their foreign colleagues and study abroad programs. The expectations assumed that partners would commit to some principles such as: (1) Work with a deepened understanding of each other; (2) Be clear about goals of the partnership; (3) Commit internal funding to the partnership, not only grant funds; (4) Build for the long-term; (5) Seek broad support from both relevant faculty and administrative leaders; (6) Make decisions collaboratively; (7) Operate with written agreements; (8) Have transparency on allocating all funding and other resources; (9) Address openly the problems of inequality of resources between the partners; (10) Have transparency on all issues of power and decision-making; (11) Be constant in the goals of the partnership. (See Wiley & Root, 2003, Appendix A: Guidelines of Best Practices for Partnerships.) The principles were a work in progress but represented a consensus of a considerable number of scholars in the U.S. and Africa (p. 4).

Shared leadership model with administrative support at both partner sites; local leadership promotes local ownership (Rabin et al., 2016; Paniagua-Avila et al., 2017)
Continual evaluation of the partnership[4] (Van der Veken et al., 2017)
LMIC investigators develop **research aims that best address their goals** in their countries and institutions (Noormahomed et al., 2017)
Development of **offshoot, externally funded projects** will drive partnership sustainability (Noormahomed et al., 2017)
Recognizing the power differential between partners in LMICs versus the U.S. is a necessary step toward achieving a relationship that respects dual autonomies and promotes equitable collaborations (Paniagua-Avila et al., 2017)
Financial support for program development and long-term sustainability from international/local and public/private sources; also need commitment of internal resources and funding at both institutions and transparency with resource allocation (Steenhoff et al., 2017; Semali et al., 2013)
Solidify the relationship with **written agreements** (Semali, Baker, & Freer, 2013)
Collaborative, transparent decision-making (Semali et al., 2013)

Measurable Criteria to Score/Rate a Partnership's Impact and Strength

Key themes of U.S.-LMIC partnerships that could be used to measure the impact and strength of an academic global health partnership included:

1. Are the **goals** of the partnership being met? Measurability is dependent on the partners establishing goals, as well as periodically re-evaluating those goals and having the flexibility to modify them as new needs arise. Another common thread was the stipulation that all goals be developed under the umbrella of maintaining a *mutually beneficial exchange* (Panaigua-Avila et al., 2017). Additionally, the ability to evaluate goals requires a monitoring and evaluation (M&E) plan. Given that these are academic partnerships where the faculty have scholarship requirements/needs, the amount of shared work being disseminated is a concrete measure (out of many potential measures) of their progress. There is growing recognition that academic capacity building includes balancing authorship credit (between LMIC and U.S. scholars) on scholarship that relates to shared work (Van der Veken, Belaid, Delvaux, & De Brouwere, 2017).

2. Are both partners satisfied with the quality and modes of **communication**? Several articles mentioned the critical role that communication technology (e.g., videoconferencing, phone calls, emails) has played in supporting global academic partnerships (Nartker et al., 2010; Kaddumukasa et al., 2014). One specific role is the ability to use technology to facilitate real-

---

[4] Van der Veken et al., 2017: "Did the coaching, capacity building and opportunities for exchange in the network constitute a return on the investment that the members have made?"

time decision-making (either routine or when challenges arise and to ensure that exchanges are open, high-quality, and culturally sensitive.[5]

3. Is there a clear **leadership structure** and has it functioned appropriately when tested? A recurrent theme was the importance of clear and bilateral leadership structures, as well as the involvement of established leadership from the partner institutions (as the key to initiating and sustaining change). Leadership structure can support or develop templates or protocols to guide partnership activities and facilitate conflict resolution (Kaddumukasa et al., 2014).

4. Do both partners feel that the relationship operates in an **ethical**, **mutually respectful**, and **equitable** manner? This criterion focuses on how partners relate to each other. A set of guidelines that was published in 2010[6] set forth a framework for ethical global health training partnerships. The tenets and ethical principles that have been proposed–*humility, introspection, solidarity,* and *social justice*–to guide interactions between trainees (Pinto & Upshur, 2009) and partners (Rabin, Mayanja-Kizza, & Rastegar, 2016) can serve as useful touchstones.[7]

Of note, the term *equity* recently began to appear in the global health literature – this further refines the concept of mutual benefit/respect, supporting the idea that one-to-one resource exchanges are not enough, and that the LMIC partner may need more resource input from the U.S. partner for the relationship to be deemed *equitable*.

Obstacles to Success/Gaps

Below is a summary table about what has not worked well in U.S.-LMIC partnerships according to the literature:

Key Challenges
"**Cultural, linguistic, and social differences** between collaborators pose critical challenges to the success of research partnerships between institutions. Similarly, **differences in political histories** of countries will inevitably impact ethical reflection." Cultural differences include work habits/culture/incentives/scholarship requirements. (Meslin et al., 2013; Semali et al., 2013)
"**Higher stake challenges** that may affect the whole health system in a LMIC (frequently LMIC institutions navigate a complex web of multiple partners), which can cause fragmentation of health systems, duplicative processes, and difficulties with absorbing resources and implementing programs." (Steenhoff et al., 2017, p. 4)

---

[5] Meslin, E.M. et al., 2013: "A true partnership is a fluid process that requires ongoing discussion of cultural similarities and differences, institutional commitment to mutual problem-solving, and a concerted effort by collaborators to understand each other as the partnership matures."

[6] Referring to consensus guidelines developed by the Working Group on Ethics Guidelines for Global Health Training [WEIGHT], that were developed through literature review and discussion amongst a group of international leaders in academic global health and ethics (Crump, J.A. et al., 2010).

[7] One article reported on the efforts of the AMPATH collaboration to develop a joint understanding between partners for conducting research that was sensitive to local values and consistent with accepted principles of research ethics at both institutions (Meslin, E.M. et al., 2013).

Having **too few LMIC-trained health care professionals and faculty to implement partnership goals** will cause increased reliance on U.S. partners. Also, **changes in leadership** or **lack of continuity of partners** may also involve LMIC workforce migration. (Noormahomed et al., 2017; Steenhoff et al., 2017)

Issues causing **limited LMIC workforce effectiveness**: low local academic salaries result in loss of talent to the private sector, limited exposure to cultures of research and accountability, differing financial requirements from granting agencies and local LMIC institutions (Noormahomed et al., 2017)

Limited means of effective communication (Van der Veken et al., 2017; Steenhoff et al., 2017)

LMIC partner financial and faculty time constraints (partners may not be as supportive as they need to be). Also, **poor infrastructure** at some LMIC institutions is an inhibitor. (Van der Veken et al., 2017; Semali et al., 2013)

Need to obtain **external funding** to provide long-term support, but dependency on external funding and material resources from U.S. institutions can reinforce historical colonialist attitudes and lead to inertia/lack of follow-up. (Taché et al., 2008; Semali et al., 2013)

Risk aversion of administrators/leadership in the U.S. with respect to activities in LMICs (Steenhoff et al., 2017)

II. LMIC-LMIC

Catalyst for the Partnership

This Working Group reviewed 99 articles. Several partnerships were sparked by a desire to increase the visibility and impact of LMIC-based science and medical research and to facilitate knowledge translation activities (Boshoff, 2010; du Toit, 2017). Several catalysts cited as driving forces for these partnerships included the **importance of sensitivity to the issues in the region**, the **cost-effective use of limited resources**, and the **desire to slow the diaspora or brain drain of talented researchers from LMICs to high-income countries** (HICs) (Boshoff, 2010; Ivers et al., 2010; du Toit et al., 2017). LMIC-LMIC partnerships, also cited as South-South collaborations, also challenge the colonial legacy and allow Southern partners to set their own agenda (du Toit, Couper, Peersman & De Maeseneer, 2017).

Strong South-South partnerships can provide greater power for combined negotiations with Northern partners, thus offering potential for more equitable relationships. However, Boshoff (2010) argues that there are inequities within the Sub-Saharan African context where South Africa, for example, has more resources and capacity for research that other nations lack. This has created a situation where Northern partners are more likely to partner with South Africa, and where South Africa can become a powerful partner in a South-South collaboration.

Kapoor's (2011) research suggests that some South-South partnerships stem from shared challenges and a desire to lessen dependence on the North. His participants argued that a "South-South collaboration allowed for a more appropriate level of technology than collaboration with Northern countries that often included the use of less applicable, more expensive, and highly technical technologies" (p. 104).

This **commonality of context, needs, and resources was a key factor for building partnerships** addressing a particular health challenge, including the need for health technology assessment (MacQuilkan et al., 2018), or a shared health condition or problem (Ivers et al., 2012; Namuyonga et al., 2018; Olapade-Olaopa, 2014; Stefan et al., 2012). Engagement between LMIC countries with shared health priorities (and similar challenges in addressing those priorities) offers opportunities for capacity building and sharing of resources. Case studies regarding the Ebola outbreak in West Africa in 2015 highlight how crises or a shared challenge can mobilize resources from other Southern partners in response, efficiently addressing local needs (Olu, Ovberedjo, & Muhongerwa, 2017). In another example of shared needs, an interest in health-system-strengthening challenges in Mozambique and Uganda facilitated collaboration through which "[i]mmediate outcomes were the reinforcement of Mozambique's capacity for performing field ultrasound, creation of a network of three African countries, and the initiation of other projects on cardiovascular risk factors in young populations" (Namuyonga et al., 2018, p. 263).

Twinning projects typically occur between Northern and Southern partners. However, one example of twinning between two LMICs was a project addressing the difficulties of children in Namibia going to Cape Town, South Africa, for treatment of cardiac conditions. Several advantages of teaching and training in geographically close institutions were evident in this example. First, similarities existed in the prevalence of various diseases and in access to technology and drugs. The relatively short travel distances between institutions allowed for a series of shorter training events, with fewer disturbances to the trainees' work and family life. Finally, the program provided clinical and research opportunities for students or fellows from South Africa or other countries (Stefan, Shalongo, & Ribeiro, 2012). Muir (2017) noted that it was not that South-South partnerships were prioritized because of dissatisfaction with Northern partnerships; rather, they emerge for positive reasons. The LMIC-LMIC relationships, which meets the emerging best practices criteria, have natural and significant benefits, as noted in the Namibia example.

Key Ingredients for Success

"*For this type of collaboration, it is important that agendas and development plans primarily remain under the remit of the South-South partners, to prevent the engagement becoming a pseudo North-South relationship"* (MacQuilkan et al., 2018, p. 8).

Below is a summary table about key ingredients or suggestions for successful LMIC-LMIC partnerships from the literature:

Key Ingredients
Funding • Shared equitably and/or control of funds and research agenda given to LMIC partners • Measures to ensure that inequalities between South-South collaborators are acknowledged and mitigated (Boshoff, 2010; Direko & Davhana-Maselesele, 2017; Olapade-Olaopa et al., 2014; UNOSSC ND, UNOSSC, 2018; Ivers et al., 2010)
Communication • Establishing strong processes for clear communication • Fostering incentives for better communication (Milford et al., 2017; Direko & Davhana-Maselesele, 2017)

Communities of Practice
Defined as efforts to strengthen health education through "technical working groups, principal investigator site visit exchanges, an annual symposium, a MEPI journal supplement, the MEPI Web site, newsletters, and webinars."[8] • With similar health care needs that might not be relevant to non-LMICs, South-South partnerships can share expertise and resources to address common problems, thus increasing capacity • Promote opportunities for scientific and cultural exchange • Trade missions and entrepreneurial exchanges to foster collaboration; increase support for research collaboration and prioritize capacity building collaborations (Olapade-Olaopa et al., 2014; Kapoor, 2011)
Mitigating Power and Resource Differentials • Shared publications, access to data sets; shared decision-making in the objectives and program development (Boshoff, 2010; du Toit et al., 2017; Milford et al., 2017; de Paula Fonseca et al., 2018; MacQuilkan et al., 2018; Olu et al., 2017)
Exploit Similarities • Utilize neighboring LMIC because of shared context and similar challenges • Find a "southern solution," utilizing shared knowledge and technical skills (de Paula Fonseca et al., 2018; Namuyonga et al., 2018; Stefan et al., 2012; Ivers et al., 2012; UNOSSC, 2018)
Partner Commitment • Champions and commitment to the partnership is important for all types, but this seems imperative for LMIC-LMIC ones where resources and support might be harder to maintain (Direko & Davhana-Maselesele, 2017; Stefan et al., 2012)
Clear Roles and Objectives • Clarify which partner is responsible for what (Direko & Davhana-Maselesele, 2017)

Measurable Criteria to Score/Rate a Partnership's Impact and Strength

The reviewed articles on LMIC-LMIC partnerships largely did not mention metrics to measure them, nor M&E methods. However, a few points emerged that are worth noting.

- Kapoor cited the importance of a **clear policy framework** to guide the partner collaboration (2011), which should be embedded into the MOU. This type of formal agreement that offers a longer-term commitment between partners, and which should also provide clear guidelines on the operational aspects of the partnership, is an important measure.
- **Evidence of co-created objectives and an agenda** driven by LMIC partners, with clear M&E elements in place, is also key. From the beginning of the partnership, clear and measurable goals should be set.
- The **concept of reciprocity/authenticity** is also valuable, particularly to compensate for power differentials. One example of how this can occur is through data sharing. Two articles

---

[8] Frehywot et al., 2014, p. 45.

mentioned the importance of shared access to data and resources, leading to clear co-authorship of papers (Boshoff, 2010; Olapade-Olaopa, 2014).

- **Sustainability of the partnership**, whether in terms of longevity or sustaining a particular program, capacity, or strength achieved as a result of the partnership, is an important criterion. While the actual relationship might not continue beyond a specific period, the impact or evidence of change should be documented (Namuyonga, Lwabi, Omagino, Yacoub, & Mocumbi, 2018).
- Another important criterion to consider is **local involvement**. Some articles viewed evidence of collaboration with local ministries of health (MOHs) (du Toit, 2017; Kapoor, 2011) or the acknowledgement, involvement, and use of local experts as key (Ivers et al., 2012).

Obstacles to Success/Gaps

Below is a summary table about what has not worked well in LMIC-LMIC partnerships according to the literature:

Key Challenges
Cultural/Language Barriers • In Southern African Development Community (SADC) countries there are Anglophone, Francophone, and Lusophone countries • These differences can lead to fragmented, weaker institutions   (Mouton (2008 – in Boshoff); Olu et al., 2017; Stefan et al., 2012; Kapoor, 2011)
Poor Coordination (Olu et al., 2017, Nowgu, 2016)
Capacity Strengthening Not Addressed • Institutions serve as career-building opportunities for individuals rather than building strong scientific inquiry (provides descriptions and explanations based on evidence), to strengthen institutions; instead, scientific institutions are often "fragile, fragmented and constantly under-resourced" • Building partnerships without attending to the need for stronger institutions is a recipe for failure • (Boshoff, 2010, p. 501)
Financial Support • If financial support is lacking, as well as the required infrastructure, this can have a negative impact   (Kapoor, 2011; Olu et al., 2017)
Weak Framework • Without a strong policy framework to support the partnership, collaboration is challenging • Lack of agreement with relevant governments is also a constraint   (Kapoor, 2011; Olu et al., 2017)

Lack of Previous Authorship
- The culture of the scientific research and publication domain remains largely driven by Northern institutions and processes. Lack of resources and true collaboration in manuscript preparation and research limits the ability of South-South partnerships to flourish
- Limited resources (time, financial, human resources [HR], connectivity), as well as developed research skills also a factor hindering research collaborations
(Boshoff, 2012; Van der Veken et al., 2017)

III. NGO/Association

Catalyst for the Partnership

Of the 32 sources that met the inclusion criteria for this partnership type, the most common reasons for partnering was addressing a specific issue or challenge, primarily in the field of global health. There were three themes that emerged that acted as catalysts:

1. **Disaster Response**
   One galvanizing force to create partnerships with an NGO is in response to a humanitarian crisis. One example was from the Haiti earthquake in January 2010, which led to a rapid mobilization of medical teams to respond, some with NGOs that did not have prior experience in the region (McCunn, 2010).

2. **Research**
   Research to leverage institutions' funds for greater impact. One example is the National Oceanographic Partnership Program that was established to address ocean-related challenges (Keylon, 2015).

3. **Address Gaps/Needs**
   Partnerships are formed to fill gaps or meet needs. Recent examples include the disproportionate cancer-related deaths in LMICs due to inadequate prioritization and allocation of resources (Nwogu, 2016), and to understand obstacles to achieving universal health coverage in remote rural areas of Rwanda due largely to the inadequate supply of health workers (Binagwaho, 2017). Similarly, Campbell and Baernholdt cite a partnership between an academic institution in the U.S. that partnered with a local NGO in South Africa to develop training sessions to respond to a lack of palliative-care knowledge among health care providers in rural areas (2016).

Key Ingredients for Success

Below is a summary table about key ingredients or suggestions for successful NGO/Association partnerships from the literature:

Key Ingredients
Trust • This is key for the partners themselves • Practitioners and politicians also need to trust the researchers at the planning stages (Olivier et al., 2016; Eriksson, 2014)
Transparency (Olivier, Hunt, & Ridde, 2016)
Mutual Respect • Ensures sustainability (Olivier, 2016; Henderson, 2013)
Shared Vision/Objectives • Perceived benefits of the partnership outweigh organizational differences • Equal partnership in the design phase between organizations (Olivier, 2016; Henderson, 2013; Ouma, 2013)
Mitigating Conflict (Henderson, 2013)
Neutral Interpersonal Space • Enables the partnership to be created (Henderson, 2013)
Community Involvement *Defined as local residents, could be leaders and non-leaders, who are impacted by the partnership work.* • Incorporated into identifying the problem, planning project/intervention, data collection, interpreting, and disseminating results (Goldberg-Freeman, Kass, Gielen, Tracey, & Bates-Hopkins, 2010)
Creative Financing • These models are a key component to supporting positive change through partnerships (Nowgu, 2016)

Measurable Criteria to Score/Rate a Partnership's Impact and Strength

Very few resources on this partnership type detailed or even mentioned evaluation criteria. However, the Working Group identified that the Fair-Trade Learning Rubric (Hartman & Blache-Cohen, 2014) would be useful to score or rate a partnership, regardless whether it is with an NGO or professional association. Five overarching criteria pulled from this document, which are particularly relevant, are listed below:

1. **Common Purposes**: Agreement upon long-term mutuality of goals and aspirations.

2. **Host Community Program Leadership:** Community members have clear teaching, leadership roles; Community-driven research initiatives are co-owned, including fair authorship rights.

3. **Rights of the Most Vulnerable:** Most vulnerable populations in the community have been identified; Appropriate training and safeguards are in place to ensure their rights and well-being.

4. **Host Community Program Participation:** Community age-peers have financially embedded opportunities to participate (where applicable, in an accredited way) in programming.

5. **Theory of Change (Community & Students):** Reasons for partnership - in terms of community and student outcomes - are understood and embraced by multiple and diverse stakeholders.

Obstacles to Success/Gaps

Below is a summary table about what has not worked well in NGO/Association partnerships according to the literature:

Key Challenges
Roles • Misunderstanding of roles; limitations (Zimmerman, 2016)
Differing Priorities • Can lead to disputes/problems (Zimmerman, 2016)
Contextual Pressures • If there are already tenuous connections that are holding the partnership together between otherwise-competitive organizations, this may lead to a dissolution of the partnership (Henderson, 2013)
Lack Key Ingredients for Success • The absence of trust, mutual respect, shared vision/objectives often leads to gaps or ineffective/dysfunctional partnerships (Boland, Kamikawa, Inouye, Latimer, & Marshall, 2010)

IV. Private/Public

Catalyst for the Partnership

The STAR Committee reviewed 92 articles and determined that academic institutions partner with public and/or private sector entities to advance global health, education, and service delivery. Most of the collaborations identified include academic-public sector, such as northern academic institutions and government health bodies, especially MOHs in various countries. Few academic-private collaborations existed, which primarily focused on developing innovative solutions and strengthening student capacity to work in industry and real-world scenarios. The reasons/catalysts for partnerships to emerge can be roughly divided into the following themes:

1. **Health care delivery/clinical practice**
   Several articles identified health service delivery needs in resource-scarce settings, such as African countries, as an impetus for partnership between academia and the public sector. Most academic institutions tend to partner with public bodies outside or within a country to improve delivery of care, enhance service, and raise population health (Arenella et al., 2010; Claassen et al., 2017; Harper et al., 2016; Steiner et al., 2016). Similarly, academic-private partnerships were more inclined toward facilitating students' or clinicians' engagement in leadership and information technology, fostering innovative approaches to health care, and lowering health care costs (Cairns et al., 2017; Didion et al., 2013; Howard & Williams, 2017). The partnerships aimed at improving health care indicators from mental health in Massachusetts, U.S. (Caplan et al., 2013) to clinical pharmacy services for HIV-infected people (Pastakia, Schellhase, & Jakait, 2009) to cardiovascular health in a national public hospital in Kenya (Binanay et al., 2015), and targeted the elderly (Neal et al., 2017), veterans (Harper et al., 2016), prisoners (Reeves, Brewer, DeBilio, Kosseff, & Dickert, 2014), and women (*AWARENESS Project Peru Country Report 2002–2007*, 2008).

2. **Research**
   Connecting academic institutions and public health departments improves public health workforce capacity, and ultimately, improves community health (Hamilton et al., 2014; Smith et al., 2014; Turner et al., 2014). Bilateral research support forms the basis for research partnerships (Birkhead et al., 2014; Ormond et al., 2018; Soni et al., 2017). Some partnerships were also formed with the specific aim of creating an information repository (Clark et al., 2013), forming a consortium (Pesco-Koplowitz et al., 2018), operating a national registry (Chiang et al., 2015), or conducting a participatory process (Erwin, Meschke, Ehrlich, & Moran, 2017) to support research and development.

3. **Capacity building/training/curricula**
   A critical shortage of health professionals in low-resource settings, coupled with inadequate expertise in disease management, led academic institutions to partner with public agencies. Academic-practice partnerships equip clinicians and nurses to lead change and prepare them for career advancement (Beal et al., 2012; Didion et al., 2013; Harper et al., 2016; Howard & Williams, 2017). Partnerships could be led by the establishment of an undergraduate degree (Wollin & Fairweather, 2012) or a residency program to improve clinical care (Khambaty, Ayas, & Mezghebe, 2010), professional/trainee exchange, structured mentorship and development programs (Hamilton et al., 2014; Soni et al., 2017), the development of a fellowship program, curricula development (Arenella et al., 2010; Neal et al., 2017; Schier et al., 2010), and fostering professional development and achieving global health equity (Cancedda et al., 2014; Citrin et al., 2017).

4. **Program development/scale-up/evaluation**
   Some partnerships are formed to develop programs, scale-up, or evaluate existing programs. These programmatic partnerships support projects in planning, evaluation, and policy development. Different projects have varying objectives, which could range from design and assessment of a treatment program (Caplan et al., 2013), hospital preparedness (Courtney et al., 2009), mitigation planning (Griffith, Kay Carpender, Crouch, & Quiram, 2014), and reconstruction (Takamura et al., 2016) to evaluation of youth-friendly health services (Health Policy Project, 2015), and a capacity strengthening intervention for a local facility (MEASURE Evaluation, Health Policy Project, 2015).

The themes included above are not exclusive. Many partnerships were found to involve multi-pronged approaches, including two or more themes; for instance, research, clinical practice, and education as a tripartite mission (Mercer et al., 2018; Steiner et al., 2016).

Key Ingredients for Success

Below is a summary table about key ingredients or suggestions for successful private/public partnerships from the literature:

Key Ingredients
Prior Relationship • Significant history of working together and carrying out projects before considering formal partnership (Citrin et al., 2017; Harper et al., 2016, 2015; Turner et al., 2014)
Pre-Partnership Preparation • Before a formal agreement is signed, a detailed preparatory phase is key to work on relationship building, communication, trust, commitment, clarify leadership roles, align culture and values (Binanay et al., 2015; Dacso et al., 2013; Didion et al., 2013; Hamilton et al., 2014; Harper et al., 2015; Howard & Williams, 2017; Neal et al., 2017; Soni et al., 2017)
Memorandum of Understanding • Multi-component MOU, including logic model to remain focused on the core mission and goals and also for planning, implementation, and evaluation activities (Harper et al., 2016, 2015; Smith et al., 2014; Steiner et al., 2016; Turner et al., 2014)
Governance • A robust governance structure to facilitate fiduciary activities, joint decision-making, and communication, such as establishment of a council, or management committee, and working groups, involving members from both partners (Birkhead et al., 2014; Cairns et al., 2017; Hamilton et al., 2014)

Shared Vision/Goals

- Common understanding of the vision and alignment of strategy and actions; engagement of stakeholders at all levels (not just at the senior leadership level)
- Creation of shared position or liaison agreeable to both partners to facilitate integration of activities (common in academic-practice partnerships)
  (Binanay et al., 2015; Citrin et al., 2017; Didion et al., 2013; Hamilton et al., 2014; Harper et al., 2016, 2015; Howard & Williams, 2017; Smith et al., 2014; Turner et al., 2014)

Equitable Power

- Resources and opportunities equally shared between partners; effective negotiation processes
  (Alliance & Global Health Alliance, 2000; Citrin et al., 2017; Miranda, Castro-Ávila, & Salicrup, 2018)

Leadership

- Effective and collaborative (investment of time, resources, and energy by leaders of both partners)
  (Hakim et al., 2018; Harper et al., 2016, 2015; Smith et al., 2014)

Widespread Involvement/Consultation

- Includes all relevant departments, leaders, local politicians, and stakeholders at all levels; support and willingness of partnering body for joint actions
  (AWARENESS Project Peru Country Report 2002–2007, 2008; Binanay et al., 2015; Dacso et al., 2013; Hakim et al., 2018)

Community Involvement

- Leverage the power of grassroot level engagement, such as community groups, during program implementation
  (Alliance & Global Health Alliance, 2000; Claassen et al., 2017; Mercer et al., 2018)

Commitment

- Long-term commitment of both partners and leaders
  (Mercer et al., 2018; Pastakia et al., 2009; Soni et al., 2017; Steiner et al., 2016; Wollin & Fairweather, 2012)

Communication

- Regular contact (calls, in-person meetings); clear and effective communication systems and strategies
  (Binanay et al., 2015; Didion et al., 2013; Harper et al., 2016, 2015; Jose et al., 2017; Mercer et al., 2018)

Respect

- Recognition of relationships at all levels; valuing each partner's mission, roles, priorities, and perspectives
  (Harper et al., 2016, 2015; Jose et al., 2017; Mercer et al., 2018; Steiner et al., 2016)

Flexibility
• Embrace change; adaptive; continuously refining the "rules of engagement" as partnership evolves (Binanay et al., 2015; Citrin et al., 2017; Dacso et al., 2013; Hamilton et al., 2014; Jose et al., 2017; Steiner et al., 2016)
Funding
• Diverse funding sources for sustainability, which comes from the institutions themselves, as well as from third parties, e.g., research grants (Citrin et al., 2017; Steiner et al., 2016)
Monitoring & Evaluation (M&E)
• Reflection and analysis of ongoing improvements through annual reporting, effective metrics, and evaluation tools; prospective M&E of the program (Citrin et al., 2017; Hamilton et al., 2014; Harper et al., 2016, 2015; Howard & Williams, 2017; MEASURE Evaluation, Health Policy Project, 2015)

Measurable Criteria to Score/Rate a Partnership's Impact and Strength

Some studies have used different frameworks, for example, the Tropical Health and Education Trust (THET) Principles of Partnership framework (Citrin et al., 2017) or The VicHealth Partnership Analysis Tools (Jose et al., 2017), to assess the quality and effectiveness of partnerships. However, most of the studies reported changes in programmatic outcomes, including change in health indicators; impact on capacity building (Stuart-Shor et al., 2017) through qualitative and quantitative assessment, such as faculty or student surveys; and key informant interviews with important stakeholders (Hakim et al., 2018; Nankumbi et al., 2011). Some measurable criteria that emerged from the literature, which can be used to rate/score a partnership's impact and strength, are:

1. **Programmatic outcomes**
   Partnership success largely depends on whether the partnership objectives are achieved. This could be measured by the number and significance of jointly authored grant submissions and publications, the number of people trained, or new treatments discovered as a result of the partnership (Hamilton et al., 2014; Harper et al., 2016; Steiner et al., 2016; Turner et al., 2014), improvement in quality and access to health care (Khambaty et al., 2010; Reeves et al., 2014), number of faculty development training/workshops, growth in enrollment (Claassen et al., 2017; Hakim et al., 2018), number of students/faculty exchanges, satisfaction rating of stakeholders (Neal et al., 2017; Schier et al., 2010), and several other educational, clinical, and program outcome measures (Harper et al., 2016; Harper, Selleck, Eagerton, & Froelich, 2015).

2. **Sustainability**
   Equitable resource sharing and contribution of each partner in terms of fiscal, human, and time resources is critical for sustainability of the partnership. It is important to regularly monitor the revenue and costs and have bilateral efforts to fund generations to sustain the partnership financially (Harper et al., 2016). One approach to contain costs when partnering with a government body is to form a cost-based agreement (Reeves et al., 2014). A partnership's strength can also be assessed by measuring the duration of engagement both before and after formal agreement. Most successful partnerships have a history of working

together for several years before they enter into a formalized relationship (Harper et al., 2015; Mercer et al., 2018).

3. **Communication**

Regular communication is vital to build trust and for the partnership to thrive. This can be analyzed by assessing the frequency of meetings, number of active committees and task forces, and reporting of activities. Establishing regular meeting schedules and clear communication systems and strategies creates an environment of continual engagement and helps to address challenges more effectively (*AWARENESS Project Peru Country Report 2002–2007*, 2008; Didion et al., 2013; Jose et al., 2017; Mercer et al., 2018).

4. **Presence of clear logic model**

Logic models guide the objectives of the partnership and help partners to focus on common mission and values (Harper et al., 2015; Sherr et al., 2013; Steenhoff et al., 2017). These models reflect and document "if this, then that" guidelines that participants can use to communicate and make decisions. It is therefore crucial to have a clear logic model stipulated in the partnership agreement. This also helps in the planning, implementation, and evaluation of programs at later stages.

Obstacles to Success/Gaps

Below is a summary table from the literature about what has not worked well in private/public partnerships:

Key Challenges
Funding • Difficulty garnering necessary financial support; funding/fiscal constraints to sustain partnership (Dacso et al., 2013; Harper et al., 2016, 2015; House et al., 2014; Jose et al., 2017; Maddalena & Fleet, 2015; Miranda et al., 2018)
LMIC-Specific Constraints • Adverse political and financial situation of LMICs, including changes in customs policies and procedures; recruitment procedures; and partners' lack of awareness about international processes and regulations (Jose et al., 2017; Khambaty et al., 2010; Neal et al., 2017; Somsekhar et al., 2012)
HR • Regular employee turnover, thus requiring extra time and efforts to re-establish relationship, trust, and commitment (Hamilton et al., 2014; Howard & Williams, 2017; Neal et al., 2017)

Time Constraints

- Additional responsibilities for faculty and leaders leading to time constraints for partnership activities; inadequate communication across departments, institutions, between partners, and with donors
(Hakim et al., 2018; Hamilton et al., 2014; Neal et al., 2017; Somsekhar et al., 2012; Soni et al., 2017)

Integration Issues

- Difficulty integrating roles and responsibilities of the partnership, which can conflict with other program components
(Dacso et al., 2013; Mercer et al., 2018)

Local Government Issues

- LMICs often find it challenging to negotiate with the central MOH due to lack of MOH commitment
(*AWARENESS Project Peru Country Report 2002–2007*, 2008)

Imbalances

- Mismatch between partners in terms of organizational policies, funding mechanisms
(Srihari et al., 2009)

Misalignment of Goals

- Lack of shared understanding for goals; lack of transparency of partnership agenda
(Wollin & Fairweather, 2012; Alliance & Global Health Alliance, 2000; Olivier et al., 2016; Steenhoff et al., 2017)

Logistical Obstacles (Citrin et al., 2017; Dacso et al., 2013)

Differences

- Cultural, geographic; scientific and ethical guidelines can pose challenges and lead to delays without effective communication/coordination
(Howard & Williams, 2017; Miranda et al., 2018; Somsekhar et al., 2012)

Evaluation

- Difficulty evaluating the intangible aspects of partnership; unavailability of public data
(Citrin et al., 2017; Howard & Williams, 2017; Results for Development Institute, 2014)

Lack of Commitment

- Driven by differing interests of staff and partnership program
(Birkhead et al., 2014)

LIMITATIONS OF THIS REVIEW

The review grounded and framed STAR's understanding about why partnerships emerge, criteria to rate them, what has worked well, and what has not. This is all crucial to the project's understanding and support of the formation of academic partnerships.

However, there were some limitations with the review, which should be noted. Committee members discovered that the publications they reviewed often highlighted positive partnership findings, thus providing evidence for one of the key research questions, but did not always address what did not work well for partnerships. This information, as well as insights into partnership scoring/rating criteria, could often be inferred from the articles; however, for future reviews, the search terms should be adjusted to try to more directly capture these issues.

Some source types yielded better information about partnerships than others. For example, searching within WHO and government reports did not produce many relevant results for the NGO/Association partnership type. In addition, conference papers were often not open access and could not be searched. Therefore, it is possible that additional key factors about partnerships exist that were not captured in this review.

The review only focused on pairings; however, many of the searches yielded information on partnerships involving multiple partners. There are potentially numerous valuable insights that could be gleaned had those been included. For instance, one of the gold standards of U.S.-LMIC academic institutional partnerships is the Academic Model Providing Access to Healthcare (AMPATH), which started as a collaboration between Indiana University and Moi University, and is referenced below, but over the last three decades has grown to include a number of other U.S. partners. Another example is the Rwanda Human Resources for Health (HRH) Project, which is a collaboration between the GoR, its medical school, and 22 U.S.-based institutions. Also, it appears that frequently there can be a "Triangular Collaboration (North-South-South)," where a Northern partner provides funding and/or other support to facilitate the partnering of Southern institutions (MacQuilkan et al., 2018, p. 8).

The review did not include non-formalized collaborations or voluntary partnerships, so there may be additional insights that could be pertinent but were not captured. In addition, because the search terms focused on formalized partnership types and not assessments of global health partnerships as a whole, there is a possibility that additional guidance documents were not reviewed that may have been useful for STAR's academic partnership work. An example is UK-based THET's "steps in a quality improvement cycle of partnership evaluation, planning, and implementation" (Steenhoff et al., 2017. p. 8) and THET's eight principles of health partnerships. In addition, most of the literature focused on bringing to light the existence of different partnership types rather than getting at the "process" involved in creating and sustaining them.

There were some minor deviations from the methodology that are important to note. First, the methodology stated that all search results, even those meeting the inclusion criteria, would be listed in the data extraction sheets. However, given the large number of search results produced, only those that appeared to match the inclusion criteria were included. Second, EndNote was not used for referencing purposes because not all Committee members had access, and the data extraction sheets served this purpose. Lastly, the Committee members strived to conduct consistent and thorough searches for each source and across all partnership types, but there may be some minor gaps, especially in the area of gray literature.

DISCUSSION

Interpreting Results

Research Question #1:

What are the reasons for partnerships to emerge, i.e., the catalyst?

In synthesizing the results of the four partnership types, two levels of partnership catalyst were noted:
1. Those reasons that are specific to **who** the partners were
2. Those reasons that are specific to the partners' **goals** for the relationship

The descriptions of the **who**-related partnership reasons were most evident around LMIC academic institution partnerships with other LMIC institutions or, less commonly, partnerships with U.S. academic institutions. Specific examples of this category of reasons included those that emerged in relation to:

1. ***Power dynamics*** (e.g., a South-South partnership due to a desire to increase the visibility and impact of LMIC science and medical research [Boshoff, 2010; du Toit et al., 2017], to challenge the colonial legacy and allow Southern partners to set their own agenda [du Toit et al., 2017], and to increase leverage/power when negotiating with Northern partners)
2. ***Cost effectiveness*** of the partnership (e.g. "South-South collaboration allowed for a more appropriate level of technology" [Kapoor, 2011, p. 104], and shorter travel distances for shared events were less disruptive to faculty or trainee lives [Stefan, et al. 2012])
3. ***Individual faculty relationships*** *at partner institutions* (although the initial goals of these partnerships may have varied, all evolved toward a focus on capacity building [Paniagua-Avila et al., 2017; Rabin, et al., 2016; Inksater et al., 2011; Mercer et al., 2018; Ormond et al., 2018])
4. ***Institutional relationships that were catalyzed by funding opportunities*** (e.g., MEPI partnerships [Kaddumukasa et al., 2014; Hakim et al., 2018; Noormahomed et al., 2017]).

In future studies, it would be helpful to examine the criteria that catalyze the choice of partners of academic institutions with either professional associations, NGOs, or the private or public sectors in general.

Across all four types of relationships, however, the literature yielded much more information about the **goal**-related reasons for partnership development. Although these categories are not mutually exclusive, the descriptions in the literature noted examples of partnerships that developed to address:

1. A ***shared health challenge*** (e.g., Ebola outbreak response [Olu et al., 2017] or high HIV rates [Ivers et al., 2012])
2. A ***health crisis*** for which one partner has an enhanced capacity for response (McCunn, 2010)
3. To limit *brain drain* [Boshoff, 2010; Ivers et al., 2010; du Toit et al., 2017].
4. An ***area of clinical need*** (e.g., cancer-related death disparities in a LMIC [Nwogu, 2016], an inadequate supply of health care workers [Binagwaho, 2017; Khambaty et al., 2010; House et al., 2014], or gaps in cardiovascular care in a public hospital in Kenya [Binanay et al., 2015])
5. To ***leverage funds for scientific research*** (e.g., [Keylon, 2015; Hamilton et al., 2014; Smith et al., 2014; Turner et al., 2014])
6. For the purpose of ***program development or scale-up*** (e.g., [Courtney et al., 2009; Campbell & Baernholdt, 2016])

7. For the purpose of ***health professional non-clinical capacity building***, i.e., strengthening health systems not directly related to patient care (e.g., [Beal et al., 2012; Arenella et al., 2010; Neal et al., 2017; Schier et al., 2010; Cholewka et al., 2012; Claassen et al., 2017; Dacso et al., 2013; Maddalena & Fleet, 2015; Nankumbi et al., 2011; and van Staden, 2018]).

Research Question #2:

What has worked (key ingredients) or suggestions? What partnership strategies are best suited for creating, maintaining, and developing knowledge sharing systems in capacity building, education, and research across the global health landscape?

Some common ingredients emerged, such as mutual benefit, respect, shared vision/goals, and collaborative actions. Common understanding of the partnership vision and objectives, clarity of the roles and responsibilities, stakeholder engagement from both parties at all levels, shared leadership, support of staff at both partner sites, and joint partner activities help partnerships to align strategies and actions to achieve goals (Henderson, 2013; Binanay et al., 2015; Rabin et al., 2016; Citrin et al., 2017; Direko & Davhana-Maselesele, 2017; Hakim et al., 2018). While academic-academic partnerships, especially the educational/curricula development collaborations, recognize mutually beneficial and bi-directional scientific and cultural exchange of faculties and students as one of the key elements to foster learning (Wollin & Fairweather, 2012; Olapade-Olaopa et al., 2014; Rabin et al., 2016; Paniagua-Avila et al., 2017), research partnerships often focus on shared publications and access to datasets (Boshoff, 2010; de Paula Fonseca et al., 2018). However, administrative support from public health authorities at all levels and involvement of the local community is crucial for effective implementation of collaborative global health programs (Goldberg-Freeman et al., 2010; Binanay et al., 2015; Paniagua-Avila et al., 2017).

Having strategies in place to mitigate the power differential allows for partners to have equitable access to resources and opportunities. Extensive involvement of LMIC partners and prioritization of population needs over the needs of partners is also important in partnerships that aim to improve health outcomes in LMICs (Pastakia et al., 2009; Noormahomed et al., 2017).

South-South partnerships can share knowledge and technical skills to address common health challenges, including capacity building, and thus develop a 'southern solution' (Stefan et al., 2012; Olapade-Olaopa et al., 2014; de Paula Fonseca et al., 2018; Namuyonga et al., 2018). While long-term commitment from both partners and leaders is essential in all partnership types, this seems imperative for LMIC-LMIC partnerships, where resources and support are harder to maintain (Stefan et al., 2012; Direko & Davhana-Maselesele, 2017).

Before signing a formal agreement, a detailed and well-thought-out preparatory phase can help build trust and align values and culture of both partners, while also recognizing each partner's mission, roles, priorities, and perspectives (Dacso et al., 2013; Binanay et al., 2015; Harper et al., 2016, 2015; Olivier et al., 2016; Citrin et al., 2017). In addition, taking time to set the vision and providing a "bilateral commitment of time, personnel, and financial resources as the basis for collaboration" is extremely important (Binanay et al., 2015, p. 2552).

A robust partnership governance structure, as identified in some academic-public/private partnerships, helps to facilitate fiduciary activities, joint decision-making, and clear communication, through establishment of a council, or management committee, and working groups, involving members from both partners (Birkhead et al., 2014; Hamilton et al., 2014; Cairns et al., 2017). Effective communication tools and strategies, preferably face-to-face meetings, are important to share global

health knowledge and expertise between partners, resolve conflict, and for shared and transparent decision-making (Semali et al., 2013; Citrin et al., 2017; Jose et al., 2017; Milford et al. 2017; Mercer et al., 2018).

Continual and routine monitoring and evaluation is necessary to keep it on track (Hamilton et al., 2014; Citrin et al., 2017; Van der Veken et al., 2017). Through a commitment to joint learning, "[h]ealth partnerships' stakeholders monitor, evaluate, and reflect on their activities and results, articulating lessons learned, and sharing knowledge with others" (Citrin et al., 2017, p. 5).

Creation of innovative financing models, such as development of offshoot, externally funded projects, investment in infrastructure establishment (such as research centers or departments), strengthening local capacity for sustainability, and a search for diverse funding sources allow partnerships to thrive longer (Semali et al., 2013; Nowgu, 2016; Steiner et al., 2016; Citrin et al., 2017; Noormahomed et al., 2017; Steenhoff et al., 2017). Other notable elements included flexibility of the partnership, efficient and structured organizational work-flow to minimize integration costs, and leveraging private sector expertise in strategic planning and change management in the case of academic-private partnerships (Birkhead et al., 2014; Binanay et al., 2015; Citrin et al., 2017; Mercer et al., 2018).

The focus of the research question was to identify factors that are most critical for partnership development, and ones that are best suited to promote robust knowledge sharing systems. Based on the findings, it is clear that no one element is more important than another; the crux is to maintain an environment based on mutuality and equity. Incorporating these elements into partnership development and maintaining them may help a partnership to become effective and successful.

Research Question #3:

What are three to five measurable criteria that can be used to score/rate a partnership's impact and strength?

The review and working group discussions highlighted several tools and resources that offer frameworks, including measurable criteria, to score or rate a partnership's impact and strength. These are:

1. THET Principles of Partnership framework (Citrin et al., 2017)
2. The VicHealth Partnership Analysis Tools (Jose et al., 2017)
3. Guidelines offering a framework for global health training partnerships (Pinto & Upshur, 2009; Rabin et al., 2016)
4. The Fair Trade Learning Rubric (Hartman & Blache-Cohen, 2014)

In order to rate the success of a partnership or evaluate it at various mid-points, all four working groups concluded that measurable criteria were central/foundational. Several working group members noted that often these are best assessed through qualitative methods, including key informant interviews and focus groups. While some criteria may be more pertinent to some partnership types – for example, those focusing on research – most are universal with respect to partnerships with NGOs, the private sector, or solely between academic institutions.

At the start of a partnership, the co-creation of objectives and the agenda (also described as common purposes), and host community program leadership and participation, are essential for a strong partnership to develop. A clear policy framework should be embedded in the MOU, with mutually agreed-upon terms and a detailed description of outcomes and methods undertaken to compensate for

power differentials (Kapoor, 2011; Boshoff, 2010; Olapade-Olaopa et al., 2014). MOUs should specify clear bilateral leadership structures, as well as templates and protocols to facilitate and guide program activities (Kaddumukasa et al., 2014).

To measure previously agreed-upon programmatic outcomes, partners may look to the number of people trained, new treatments discovered as a result of the partnership, research that is jointly authored (Hamilton et al., 2014; Harper et al., 2016; Steiner et al., 2916; Turner et al., 2014), or other measurable criteria related to the goals of the partnership.

Sustainability emerged as an essential criterion across various working groups, emphasizing equitable sharing of resources (e.g., time, human, fiscal) and partner contributions, with ongoing monitoring and joint efforts to seek financial stability over the long-term (Harper et al., 2016). Cost-based agreements may be useful (Reeves et al., 2014), as well as working together for a sustained period of time prior to partnering formally (Harper et al., 2015; Mercer et al., 2018). Sustainability does not necessarily refer only to the longevity of a partnership; it can also refer to the impact or evidence of change achieved (Namuyonga et al. 2018).

Communication was another key criterion, an essential component for thriving partnerships based on trust. Assessing the effectiveness of communication can be done through establishing clear meeting schedules and communication systems that allow for continual or regular information-sharing among partners. Various technological resources can be used such as computer, mobile, and web-based applications, as well as videoconferencing, when in-person opportunities are not possible. Both partners must be satisfied with the quality and methods of communication, as well as cultural sensitivity, openness, and quality of communications (Nartker et al., 201).

Research Question #4:

What has not worked and what gaps have been revealed? Are there programmatic or systemic inhibitors or challenges to developing strong partnerships with LMICs? And if so, are there ways to reduce those?

Systemic and program challenges were identified in all forms of partnerships, with the most common challenge being funding. Many partnerships depend on funding coming from U.S. partners, which can reinforce power differentials (Steenhoff et al., 2017). Finding the necessary funding to sustain a partnership long enough to attain its goals is also a challenge (Dacso et al., 2013; Harper et al., 2016, 2015; House et al., 2014; Jose et al., 2017; Maddalena & Fleet, 2015; Miranda et al., 2018). The funding issue, in turn, also relates to problems of long-term sustainability.

Cultural, political, social, and linguistic differences were identified as challenges (Meslin et al., 2013; Semali et al., 2013; Howard & Williams, 2017; Miranda et al., 2018; Somsekhar et al., 2012; Mouton, 2008 [in Boshoff]; Olu et al., 2017; Stefan et al., 2012; Kapoor, 2011). Contextual differences posed challenges to goal setting and communication. There can be a lack of clarity around roles and priorities or a lack of trust (Zimmerman 2016; Wollin & Fairweather, 2012; Alliance & Global Health Alliance, 2000; Olivier et al., 2016; Steenhoff et al., 2017).

Another systemic issue identified is that some LMICs have developed dependencies in which their health systems might be built on a complex network of multiple partnerships. This results in potential duplication of services, confusion about responsibility, varying priorities, and competition among players (Steenhoff et al., 2017). Weak policy frameworks (Kapoor, 2011; Olu et al., 2017) and poor communication (Van der Veken et al., 2017; Steenhoff et al., 2017) can create challenges for effective partnership building. Communication and stronger oversight by health systems in LMICs could make a

difference, but many LMIC governments and health ministries are not able to provide this. Connected to this is the lack of people with the necessary skills, poor staff remuneration, or a high turnover of staff (Boshoff, 2010; Noormahomed et al., 2017; Steenhoff et al., 2017; Hamilton et al., 2014; Howard & Williams, 2017; Neal et al., 2017; Van der Veken et al., 2017; Semali et al., 2013). There is a need to understand and respect the time constraints of potential partners in LMICs and the need for capacity building efforts to happen in tandem.

Another structural or systemic inhibitor can be a failure to attend to capacity building as part of the partnership. Partnerships can sometimes be seen as opportunities for individual career building rather than longer-term institutional strengthening. As noted above, skills and commitment are required to sustain a working relationship, and partnerships that do not build capacity within an LMIC will lose momentum or fail to produce meaningful change (Boshoff, 2010). Attending to the building of capacity in research, publication, and laboratory facilities ensures that long-term impact and fairness are assured. Competition between partners can also lead to failure of a partnership (Henderson, 2013).

CONCLUSION

The STAR team – including PHI academic partnership's staff and Consortium of Universities for Global Health members, primarily academicians – reviewed more than 100 documents, examining four different types of academic partnerships (HIC-LMIC, LMIC-LMIC, NGO-Association, Private-Public). The intent was to gather what had been learned previously about obstacles and conditions for successful partnerships, regardless of the partnership's purpose. One overarching lesson from the review is that, regardless of the work of the partnership, paying attention to how groups work together can either make or break the success of the team.

The STAR team found consistent patterns in the content of all partnership categories regarding what is required for success and the likely challenges that can emerge. In general, findings include the following significant best practices list for successful partnerships:

- A comprehensive and detailed official document or **Memo of Understanding (MOU)** created in the beginning of the partnership. This document, addressing key issues at the onset, is an important contributor to perceived success.
- **Clear roles and responsibilities**. This includes an agreed-upon governance structure and documented, clear leadership buy-in from all partners.
- **Effective communication and continual engagement** as described in the MOU and reported in real time. This factor reflects the importance of open communication and trust, by encouraging partners to discuss potential areas in need of improvement. The MOU should also include conflict resolution procedures.
- Documented and behaviorally observed **commitment to shared goals**
- Attention to the **bidirectionality of the relationship**, especially addressing power and resource differentials up front and as they occur
- **Flexibility.** Because of inevitable staff changes and shifting priorities, it is important to continually monitor the partnership and recalibrate, when necessary. The need for flexibility in some way contradicts the need for clear and documented procedures, however both are needed.
- **Long-term commitment** to the partnership–financial, political, and personnel
- **Mutual respect and trust** in key and secondary staff in the partnership
- **Robust M&E plans**

- **Community involvement** is key to sustainability of results
- **Early successes** are helpful in sustaining a partnership, so there is value in going slow and perhaps starting with smaller projects.
- Building a partnership, without considering the importance of tackling **capacity building efforts**, is not recommended.

International development will benefit from strong partnerships and collaborations that address health challenges. By harnessing the power of academic institutions through partnerships, the global health sector can make the latest knowledge more understandable and accessible – so geography, resources, and organizational capacity do not stand in the way of building great programs. By finding compatible points of entry, and by advocating for and demonstrating to academic institutional key aspects of successful partnerships, both HIC and LMIC academia will be of greater service to global health.

Furthermore, through its evolving partnership work, STAR will continue to learn and identify the best ways to bridge the divide between the world of academia and development.

REFERENCES FROM THE COMPREHENSIVE REVIEW

Alliance, T., & Global Health Alliance. (2000). The role of the private sector in promoting economic growth and reducing poverty in the Indo-Pacific region Submission 59. *Development Policy Centre, Crawford School of Public Policy: The Australian National University*, *1*(212), 13–15.

Arenella, C., Yox, S., Eckstein, D. S., & Ousley, A. (2010). Expanding the reach of a cancer palliative care curriculum through web-based dissemination: A public-private collaboration. In *Journal of Cancer Education* (Vol. 25, pp. 418–421). DOI: 10.1007/s13187-010-0066-1

AWARENESS Project Peru Country Report 2002–2007. (2008). Washington, DC.

Beal, J. A., Alt-White, A., Erickson, J., Everett, L. Q., Fleshner, I., Karshmer, J., … Gale, S. (2012). Academic Practice Partnerships: A National Dialogue. *Journal of Professional Nursing*, *28*(6), 327–332. DOI: 10.1016/j.profnurs.2012.09.001

Binagwaho, A. (2017). University of Global Health Equity's Contribution to the Reduction of Education and Health Services Rationing. *International Journal of Health Policy and Management, 6*(8-1), 427-429. DOI: 10.15171/IJHPM.2017.56)

Binanay, C. A., Akwanalo, C. O., Aruasa, W., Barasa, F. A., Corey, G. R., Crowe, S., … Bloomfield, G. S. (2015). Building Sustainable Capacity for Cardiovascular Care at a Public Hospital in Western Kenya. *Journal of the American College of Cardiology*, *66*(22), 2550–2560. DOI: 10.1016/j.jacc.2015.09.086

Birkhead, G. S., Eidson, M., Dewar, D., Nasca, P., Morse, D. L., & Shah, N. R. (2014). Integrating public health education in a public health practice setting: The experience of the school of public health, University at Albany and the New York State Department of Health. *Journal of Public Health Management and Practice*. DOI: 10.1097/PHH.0b013e31829a4d73

Boland, M. G, Kamikawa, C., Inouye, J., Latimer, R., & Marshall, S. (2010). Partnership to Build Research Capacity. *Nursing Economics* 28(5). https://nursing.hawaii.edu/wp-content/uploads/sites/www.nursing.hawaii.edu/files/image/documents/Partnership-to-Build-Research-Capacity.pdf

Boshoff, Nelus. (2010). South-South research collaboration of countries in the Southern African Development Community (SADC) *Scientometrics* 84, 481–503. DOI: 10.1007/s11192-009-0120-0

Cairns, C. B., Bollinger, K., & Garcia, J. G. N. (2017). A Transformative Approach to Academic Medicine: The Partnership between the University of Arizona and Banner Health. *Academic Medicine*. DOI: 10.1097/ACM.0000000000001345

Campbell, C. & Marianne Baernholdt. (2016). Community Health Workers' Palliative Care Learning Needs and Training: Results from a Partnership between a US University and a Rural Community Organization in Mpumalanga Province, South Africa. *Journal of Health Care for the Poor and Underserved, 27*(2), 440-9. DOI: 10.1353/hpu.2016.0078

Cancedda, C., Farmer, P. E., Kyamanywa, P., Riviello, R., Rhatigan, J., Wagner, C. M., … Binagwaho, A. (2014). Enhancing formal educational and in-service training programs in rural Rwanda: A partnership among the public sector, a nongovernmental organization, and academia. *Academic

Medicine, *89*(8), 1117–1124. DOI: 10.1097/ACM.0000000000000376

Caplan, B., Zimmet, S. V., Meyer, E. C., Friedman-Yakoobian, M., Monteleone, T., Jude Leung, Y., … Seidman, L. J. (2013). Prevention and Recovery in Early Psychosis (PREP®): Building a public-academic partnership program in Massachusetts, United States. *Asian Journal of Psychiatry*, *6*(2), 171–177. DOI: 10.1016/j.ajp.2012.10.009

Chiang, C. J., You, S. L., Chen, C. J., Yang, Y. W., Lo, W. C., & Lai, M. S. (2015). Quality assessment and improvement of nationwide cancer registration system in Taiwan: A review. *Japanese Journal of Clinical Oncology*, *45*(3), 291–296. DOI: 10.1093/jjco/hyu211

Cholewka, P., Harkins, J., Hoelper, S., Schrieber, J., Daniel, R. E., & Kaur, J. (2012). Using a private-public partnership to supplement healthcare information technology in nursing education. *Nursing Informatics: Proceedings of the 11th International Congress on Nursing Informatics*.

Citrin, D., Mehanni, S., Acharya, B., Wong, L., Nirola, I., Sherchan, R., … Maru, D. (2017). Power, potential, and pitfalls in global health academic partnerships: review and reflections on an approach in Nepal. *Global Health Action*, *10*(1), 1367161. DOI: 10.1080/16549716.2017.1367161

Claassen, C. W., Hachaambwa, L., Phiri, D., Watson, D. C., Patel, D., Bositis, C. M., … Sheneberger, R. (2017). The arc of human immunodeficiency virus capacity development: Insights from a decade of partnership for medical education in Zambia. *American Journal of Tropical Medicine and Hygiene*. DOI: 10.4269/ajtmh.16-0666

Clark, K., Vendt, B., Smith, K., Freymann, J., Kirby, J., Koppel, P., … Prior, F. (2013). The cancer imaging archive (TCIA): Maintaining and operating a public information repository. *Journal of Digital Imaging*, *26*(6), 1045–1057. DOI: 10.1007/s10278-013-9622-7

Courtney, B., Toner, E., Waldhorn, R., Franco, C., Rambhia, K., Norwood, A., … O'Toole, T. (2009). Healthcare Coalitions: The New Foundation for National Healthcare Preparedness and Response for Catastrophic Health Emergencies. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, *7*(2), 153–163. DOI: 10.1089/bsp.2009.0020

Dacso, M., Chandra, A., & Friedman, H. (2013). Adopting an ethical approach to global health training: the evolution of the Botswana - University of Pennsylvania partnership. *Academic Medicine : Journal of the Association of American Medical Colleges*, *88*(11), 1646–1650. DOI: 10.1097/ACM.0b013e3182a7f5f4

Didion, J., Kozy, M. A., Koffel, C., & Oneail, K. (2013). Academic/Clinical Partnership and Collaboration in Quality and Safety Education for Nurses Education. *Journal of Professional Nursing*. DOI: 10.1016/j.profnurs.2012.12.004

Direko, K. K, Davhana-Maselesele, M. (2017). A model of collaboration between nursing education institutions in the North West Province of South Africa. *Curationis,* 40(1), a1670. DOI: 10.4102/curationis.v40i1.1670

Eriksson, C. (2014). Academic practice-policy partnerships for health promotion research: Experiences from three research programs. *Scandinavian journal of public health, 42*(15 Suppl), 88-95. DOI: 10.1177/1403494814556926

Erwin, P. C., Meschke, L. L., Ehrlich, S. F., & Moran, J. W. (2017). A Population Health Driver Diagram to Address Neonatal Abstinence Syndrome. *Journal of Public Health Management and Practice*,

23(6), e21–e24. DOI: 10.1097/PHH.0000000000000533

Goldberg-Freeman, A. Kass, N. Gielen, A. Tracey, P. Bates-Hopkins, B. (2010). Faculty Beliefs, Perceptions, and Level of Community Involvement in Their Research: A Survey at One Urban Academic Institution. *Journal of Empirical Research on Human Research Ethics, 5*(4), 65-76. DOI: 10.1525/jer.2010.5.4.65

Griffith, J. M., Kay Carpender, S., Crouch, J. A., & Quiram, B. J. (2014). A Public Health Hazard Mitigation Planning Process. *Journal of Public Health Management and Practice*, *20*(SUPPL. 5), S69–S75. DOI: 10.1097/PHH.0000000000000064

Hakim, J. G., Chidzonga, M. M., Borok, M. Z., Nathoo, K. J., Matenga, J., Havranek, E., Campbell, T. B. (2018). Medical Education Partnership Initiative (MEPI) in Zimbabwe: Outcomes and Challenges. *Global Health: Science and Practice*, *6*(1), 82–92. DOI: 10.9745/GHSP-D-17-00052

Hamilton, C. B., Buchanan, M. L., Grubaugh, J. H., & Erwin, P. C. (2014). Forming an academic health department: A case example. *Journal of Public Health Management and Practice*, *20*(3), 304–309. DOI: 10.1097/PHH.0b013e31829b5405

Harper, D. C., Moore, R. L., Cleveland, C., Miltner, R. S., Froelich, K., McGuinness, T., ... Selleck, C. S. (2016). Transforming veterans health care through academic-practice partnerships. *Nursing Outlook*, *64*(5), 424–430. DOI: 10.1016/j.outlook.2016.05.001

Harper, D. C., Selleck, C. S., Eagerton, G., & Froelich, K. (2015). Partnership to Improve Quality Care for Veterans: The VA Nursing Academy. *Journal of Professional Nursing*, *31*(1), 57–63. DOI: 10.1016/j.profnurs.2014.06.004

Health Policy Project, F. G. (2015). *Youth-Friendly Health Services in Malawi: Young People's Sexual Experiences*

Henderson, S. (2013). Partnership Functioning: A Case in Point Between Government, Nongovernment, and a University in Australia. *Progress in Community Health Partnerships: research, education and action, 7*(4), 385-393. DOI: 10.1353/cpr.2013.0049

House, P. J., Hartfield, K., Nicola, B., & Bogan, S. L. (2014). The University of Washington's community-oriented public health practice program and public health-Seattle & King County partnership. *Journal of Public Health Management and Practice*, *20*(3), 285–289. DOI: 10.1097/PHH.0000000000000054

Howard, P. B., & Williams, T. E. (2017). An Academic–Practice Partnership to Advance DNP Education and Practice. *Journal of Professional Nursing*, *33*(2), 86–94. DOI: 10.1016/j.profnurs.2016.08.010

Inksater K et al. (2011) Report Evaluation of 30 Years of Research Cooperation between Sweden and Nicaragua. Sida GLOBAL. Retrieved from https://www.sida.se/contentassets/32fc5393645a4ca7a0b5f9568eee6abf/report-evaluation-of-30-years-of-research-cooperation-between-sweden-and-nicaragua_3166.pdf

Ivers, L., Mukherjee, J., Leandre, F., Rigodon, J. Cullen, & K., Furin, J. (2010) South–south collaboration in scale-up of HIV care: building human capacity for care AIDS. 24(Suppl 1), S73–S78.

Jose, K., Venn, A., Jarman, L., Seal, J., Teale, B., Scott, J., & Sanderson, K. (2017). Partnering Healthy@Work: An Australian university-government partnership facilitating policy-relevant research. *Health Promotion International*, *32*(6), 964–976. DOI: 10.1093/heapro/daw033

Kaddumukasa, M., Katabira, E. Salata, RA, Costa, MA, Ddumba, E., Furlan, A. ... Sajatovic, M. (2014) Global medical education partnerships to expand specialty expertise: a case report on building neurology clinical and research capacity. *Human Resources for Health,* 12(75). DOI: 10.1186/1478-4491-12-75

Kapoor, K. (2011) Paving the Silk Road: Sub-Saharan Africa's Collaboration with China and India in Health Biotechnology. Thesis. University of Toronto. Retrieved from URL https://tspace.library.utoronto.ca/bitstream/1807/31272/5/Kapoor_Kapil_A_201111_MSc_thesis.pdf

Khambaty, F. M., Ayas, H. M., & Mezghebe, H. M. (2010). Surgery in the Horn of Africa: A 1-year experience of an American-sponsored surgical residency in Eritrea. *Archives of Surgery*, *145*(8), 749–752. DOI: 10.1001/archsurg.2010.125

Keylon, R. (2015). The National Oceanographic Partnership Program: Successes in Partnerships. *Marine Technology Society Journal, 48*(2), 211-216. DOI: 10.4031/MTSJ.49.2.7

MacQuilkan, K., Baker, P., Downey, L., Ruiz, F., Chalkidou, K., Prinja, S, ... Hofman, K. (2018). Strengthening health technology assessment systems in the global south: a comparative analysis of the HTA journeys of China, India and South Africa. *Glob Health Action,* 11(1). DOI: 10.1080/16549716.2018.1527556

Maddalena, V., & Fleet, L. (2015). Developing a physician management & leadership program (Pmlp) in Newfoundland and Labrador. *Leadership in Health Services*, *28*(1), 35–42. DOI: 10.1108/LHS-02-2014-0012

McCunn, M. (2010). An Organized, Comprehensive, and Security-Enabled Strategic Response to the Haiti Earthquake: A Description of Pre-Deployment Readiness Preparation and Preliminary Experience from an Academic Anesthesiology Department with No Preexisting International Disaster Response Program. *Anesthesia and Analgesia,* 111(6), 1438-44. DOI: 10.1213/ANE.0b013e3181f42fd3

MEASURE Evaluation, Health Policy Project, S. P. (2015). *Sample Monitoring and Evaluation of Scale-up Strategy for a Gender-Integrated Health Governance Project.*

Mercer, T., Gardner, A., Andama, B., Chesoli, C., Christoffersen-Deb, A., Dick, J., ... Laktabai, J. (2018). Leveraging the power of partnerships: spreading the vision for a population health care delivery model in western Kenya. *Globalization and Health*, *14*(1), 44. DOI: 10.1186/s12992-018-0366-5

Meslin, E., Were, E. & Ayuku, D. (2013) Taking Stock of the Ethical Foundations of International Health Research: Pragmatic Lessons from the IU–Moi Academic Research Ethics Partnership. *Journal of General Internal Medicine,* 28(Suppl 3): S639-S645.

Milford, C., Kriel, Y., Njau, I., Nkole, T., Gichangi, P., Cordero, J., … UPTAKE Project Team. (2017). Teamwork in Qualitative Research: Descriptions of a Multicountry Team Approach. *International Journal of Qualitative Methods,* 16, 1–10. DOI: 10.1177/1609406917727189

Miranda, J. J., Castro-Ávila, A. C., & Salicrup, L. A. (2018). Advancing health through research partnerships in Latin America. *BMJ (Online)*. DOI: 10.1136/bmj.k2690

Muir, J. (2017). Exploring Factors Associated with the Prioritization of South-to-South Partnerships by International Global Health Institutions in the Southern Hemisphere. Thesis. University of Washington. Retrieved from URL https://digital.lib.washington.edu/researchworks/bitstream/handle/1773/40570/Muir_washington_0250O_17791.pdf?sequence=1&isAllowed=y

Namuyonga, J., Lwabi, P.S., Omagino, J., Yacoub, M., & Mocumbi, A.O. (2018). Feasibility of south-south collaboration in Africa: the Uganda-Mozambique perspective. *Cardiovascular Journal of* Africa, 29(4). DOI: 10.5830/CVJA-2018-030

Nankumbi, J., Groves, S., Leontsini, E., Kyegombe, N., Coutinho, A., & Manabe, Y. (2011). The impact on nurses and nurse managers of introducing PEPFAR clinical services in urban government clinics in Uganda. *BMC International Health and Human Rights*, 11 Suppl 1(SUPPL. 1), S8. DOI: 10.1186/1472-698X-11-S1-S8

Nartker, A.J., Stevens, L., Shumays, A., Kalowela, M., Kisimbo, D., Potter, K. (2010). Increasing health worker capacity through distance learning: a comprehensive review of programmes in Tanzania. *Human Resources for Health*, 8(30). DOI: 10.1186/1478-4491-8-30.

Neal, M. B., Cannon, M., DeLaTorre, A., Bolkan, C. R., Wernher, I., Nolan, E., … Brown Wilson, K. (2017). Addressing the needs of Nicaraguan older adults living on the edge: A university–community partnership in international service-learning. *Gerontology and Geriatrics Education*, 38(1), 119–138. DOI: 10.1080/02701960.2016.1259161

Noormahomed, E.V., Carrilho, C., Ismail, M., Noormahomed, S., Nguenha, A., Benson, C. …Schooley, R. (2017). The Medical Education Partnership Initiative (MEPI), a collaborative paradigm for institutional and human resources capacity building between high- and low- and middle-income countries: the Mozambique experience. *Global Health Action,* 10(1). DOI: 10.1080/16549716.2017.1272879

Nwogu, C. (2016). Role of Private Enterprise in Cancer Control in Low to Middle Income Countries. *Journal of Cancer Epidemiology*. DOI: 10.1155/2016/7121527

Olapade-Olaopa, E.O., Baird, S., Kiguli-Malwadde, E., Kolars, J.C. (2014). Growing Partnerships: Leveraging the Power of Collaboration Through the Medical Education Partnership Initiative. *Academic Medicine,* 89(8), S19-S23. DOI: 10.1097/ACM.0000000000000345

Olivier, C., Hunt, M. & Ridde, V. (2016). NGO-researcher partnerships in global health research: benefits, challenges, and approaches that promote success. *Development in Practice*, 26(4), 444-455. DOI: 10.1080/09614524.2016.1164122

Olu, O., Petu, A., Ovberedjo, M., & Muhongerwa, D. (2017). South-South cooperation as a mechanism to strengthen public health services in Africa: experiences, challenges and a call for concerted action. *The Pan African Medical Journal*, 28(40).
DOI: 10.11604/pamj.2017.28.40.12201

Ormond, D. R., Kahamba, J., Lillehei, K. O., & Rutabasibwa, N. (2018). Overcoming barriers to neurosurgical training in Tanzania: international exchange, curriculum development, and novel methods of resource utilization and subspecialty development. *Neurosurgical Focus*, *45*(4), E6.
DOI: 10.3171/2018.7.FOCUS18239

Ouma, B. (2013). Views from the global south: exploring how student volunteers from the global north can achieve sustainable impact in global health. *Globalization and Health, 9* (1), 32. DOI: 10.1186/1744-8603-9-32

Paniagua-Avila, M.A., Messenger, E., Nelson, C., Calgua, E., Barg, F., Bream, K. ... Branas, C. (2017). The Guatemala-Penn Partners: An Innovative Inter-Institutional Model for Scientific Capacity Building, Healthcare Education, and Public Health. *Frontiers in Public Health,* 10(5), 70. DOI: 10.3389/fpubh.2017.00070.

Pastakia, S. D., Schellhase, E. M., & Jakait, B. (2009). Collaborative partnership for clinical pharmacy services in Kenya. *American Journal of Health-System Pharmacy*, *66*(15), 1386–1390. DOI: 10.2146/ajhp080483

de Paula Fonseca, B., Albuqerque, P.C., Noyons, E. & Zicker, F. (2018). South-south collaboration on HIV/AIDS prevention and treatment research: when birds of a feather rarely flock together. *Globalization and Health,* 14(25). DOI: 10.1186/s12992-018-0341-1

Pesco-Koplowitz, L., Gintant, G., Ward, R., Heon, D., Saulnier, M., & Heilbraun, J. (2018). Drug-induced cardiac abnormalities in premature infants and neonates. *American Heart Journal.* DOI: 10.1016/j.ahj.2017.07.014

Rabin, T.L., Mayanja-Kizz, H., Rastegar, A. (2016). Medical Education Capacity-Building Partnerships for Health Care Systems Development. *AMA Journal of Ethics,* 18(7), 710-717. DOI: 10.1001/journalofethics.2016.18.7.medu2-1607.

Reeves, R., Brewer, A., DeBilio, L., Kosseff, C., & Dickert, J. (2014). Benefits of a Department of Corrections Partnership With a Health Sciences University: New Jersey's Experience. *Journal of Correctional Health Care*, *20*(2), 145–153. DOI: 10.1177/1078345813518635

Results for Development Institute. (2014). *Linking Think Tank Performance, Decisions, and Context.* Washington, DC.

Schier, J. G., Rubin, C., Schwartz, M. D., Thomas, J. D., Geller, R. J., Morgan, B. W., ... Frumkin, H. (2010). Public Health Partnerships in Medical Toxicology Education and Practice. *American Journal of Preventive Medicine.* DOI: 10.1016/j.amepre.2010.02.006

Semali, L.M., Baker, R. & Freer, R. (2013). Multi-Institutional Partnerships for Higher Education in Africa: A Case Study of Assumptions of International Academic Collaboration. *International Journal of Higher Education,* 2(2), 53-66. DOI: 10.5430/ijhe.v2n2p53

Sherr, K., Cuembelo, F., Michel, C., Gimbel, S., Micek, M., Kariaganis, M., … Gloyd, S. (2013). Strengthening integrated primary health care in Sofala, Mozambique. *BMC Health Services Research*, *13*(Suppl 2), S4. DOI: 10.1186/1472-6963-13-S2-S4

Smith, L. U., Waddell, L., Kyle, J., & Hand, G. A. (2014). Building a sustainable academic health department: The South Carolina model. *Journal of Public Health Management and Practice*, *20*(3). DOI: 10.1097/PHH.0b013e3182a2d9c2

Somsekhar, H., Prabhakaran, D., Tandon, N., Rousselle, R., Fisher, S., & Stein, A. D. (2012). Review of multinational human subjects research: experience from the PHFI-Emory Center of Excellence partnership. *Indian Journal of Medical Ethics*, *9*(4), 255–258. DOI: 10.20529/IJME.2012.086

Soni, A., Fahey, N., Jaffe, A., Raithatha, S., Raithatha, N., Prabhakaran, A., … Nimbalkar, S. M. (2017). RAHI–SATHI Indo-U.S. Collaboration: The Evolution of a Trainee-Led Twinning Model in Global Health Into a Multidisciplinary Collaborative Program. *Global Health: Science and Practice*, *5*(1), 152–163. DOI: 10.9745/GHSP-D-16-00190

Srihari, V. H., Breitborde, N. J. K., Pollard, J., Tek, C., Hyman, L., Frisman, L. K., … Woods, S. W. (2009). Public-Academic Partnerships: Early Intervention for Psychotic Disorders in a Community Mental Health Center. *Psychiatric Services*, *60*(11), 1426–1428. DOI: 10.1176/ps.2009.60.11.1426

Steenhoff, A. P., Crouse, H. L., Lukolyo, H., Larson, C. P., Howard, C., Mazhani, L., … Batra, M. (2017). Partnerships for Global Child Health. *Pediatrics*. DOI: 10.1542/peds.2016-3823

Steiner, J. L., Anez-Nava, L., Baranoski, M., Cole, R., Davidson, L., Delphin-Rittmon, M., … Jacobs, S. C. (2016). The Connecticut Mental Health Center: Celebrating 50 Years of a Successful Partnership Between the State and Yale University. *Psychiatric Services*, *67*(12), 1286–1289. DOI: 10.1176/appi.ps.201600373

Stefan, D.C., Shalongo, S. & Ribeiro, R. (2012). Twinning in paediatric oncology – an African experience. *The South African Medical Journal,* 102(1), 28-29.

Stuart-Shor, E. M., Cunningham, E., Foradori, L., Hutchinson, E., Makwero, M., Smith, J., … Kerry, V. B. (2017). The Global Health Service Partnership: An Academic–Clinical Partnership to Build Nursing and Medical Capacity in Africa. *Frontiers in Public Health*, 5, 174. DOI: 10.3389/fpubh.2017.00174

Taché S, Kaaya, E., Omer, S., Mkony, C.A., Lyamuya, E., Pallangyo, K., … Macfarlane, S.B. (2008). University partnership to address the shortage of healthcare professionals in Africa. *Global Public Health*, 3(2), 137-148. DOI: 10.1080/17441690701766486

Takamura, N., Taira, Y., Yoshida, K., Nakashima-Hashiguchi, K., Orita, M., & Yamashita, S. (2016). Communicating radiation risk to the population of Fukushima. *Radiation Protection Dosimetry*, *171*(1), 23–26. DOI: 10.1093/rpd/ncw184

Du Toit, L., Couper, I., Peersman, W., De Maeseneer, J. (2017). South-South Cooperation in health professional education: A literature review. *African Journal of Health Professions Education*, 9(1). DOI: 10.7196/AJHPE.2017.v9i1.541

Turner, N. C., Chen, H. T., Harvey, D., Smith, J., & Redding, K. C. (2014). A liaison-based academic health department in Georgia: A partnership for improving community health. *Journal of Public*

Health Management and Practice, *20*(3). DOI: 10.1097/PHH.0b013e3182980c85

United Nations Office for South-South Cooperation, (UNOSSC) Retrieved from URL
https://www.unsouthsouth.org/about/about-sstc/

United Nations Office for South-South Cooperation, (UNOSSC) (2018). Retrieved from URL
https://www.unsouthsouth.org/2018/09/12/good-practices-in-south-south-and-triangular-cooperation-for-sustainable-development-vol-2-2018/

van Staden, D. (2018). Decentralised clinical training in optometry: a developmental strategy for eye
health in KwaZulu Natal? *Primary Health Care Research & Development*, 1–4. DOI:
10.1017/S1463423618000397

Van der Veken, K., Belaid, L., Delvaux, T., & De Brouwere, V. (2017) Research capacity building
through North-South-South networking: towards true partnership? An exploratory study of a
network for scientific support in the field of sexual and reproductive health. *Health Research
Policy and Systems,* 15(39). DOI: 10.1186/s12961-017-0202-z

Wollin, J. A., & Fairweather, C. T. (2012). Nursing education: A case study of a Bachelor of Science
Nursing programme in Abu Dhabi, United Arab Emirates. *Journal of Nursing Management*,
20(1), 20–27. DOI: 10.1111/j.1365-2834.2011.01298.x

Zimmerman, C. (2016). Rigged or rigorous? Partnerships for research and evaluation of
complex social problems: Lessons from the field of violence against women and girls. *Journal of
Public Health Policy, 37*(1), 95-109. DOI: 10.1057/s41271-016-0006-3)

Not from the review but referenced

Corbin, J., & Mittelmark, M. (2008). Partnership lessons from the Global Programme for Health
Promotion Effectiveness: a case study. *Health Promotion International*, 23(4), 365–371.
DOI: 10.1093/heapro/dan029

Crump, J. A., Sugarman, J., & Working Group on Ethics Guidelines for Global Health Training.
(2010). Ethics and best practice guidelines for training experiences in global health. *American
Journal of Tropical Medicine and Hygiene,* 83(6), 1178-1182. DOI: 10.4269/ajtmh.2010.10-0527

Einterz, R. M., Kimaiyo, S., Mengech, H. N., Khwa-Otsyula, B. O., Esamai, F., Quigley, F., &

Mamlin, J.J. (2007). Responding to the HIV Pandemic: The Power of an Academic Medical
Partnership. *Academic Medicine,* 82(8), 812-818. DOI: 10.1097/ACM.0b013e3180cc29f1

Frehywot, S., Mullan, F., Vovides, Y., Korhumel, K., Chale, S. B., Infanzon, A., ... Omaswa, F.
(2014). Building communities of practice: MEPI creates a commons. *Academic
Medicine*, 89(8 Suppl), 45-9. DOI: 10.1097/ACM.0000000000000349

Glass R.I., Katz, F., Puderbaugh, A., & Kilmarx, P. (2018). What has the MEPI Program Taught
Us? *Annals of Global Health*, 84(1): 4-6. DOI: 10.29024/aogh.3

Hartman, E. Paris, C., & Blache-Cohen, B. (2014). Fair Trade Learning: Ethical standards for
community-engaged international volunteer tourism. *Tourism and Hospitality Research, 14* (1-2), 108-111. DOI: 10.1177/1467358414529443

Herrick, C. & Brooks, A. (2018). The Binds of Global Health Partnership: Working out Working Together in Sierra Leone. *Medical Anthropology Quarterly*, 32(4), 520–538. DOI: 10.1111/maq.12462

Matenga, T.F., Zulu, J.M., Corbin, J.H., & Mweemba, O. (2019). Contemporary issues in north–south health research partnerships: perspectives of health research stakeholders in Zambia. *Health Research Policy and Systems,* 17(7), DOI: 10.1186/s12961-018-0409-7

Pinto, A.D. & Upshur, R.E. (2009) Global Health Ethics for Students. *Developing World Bioethics*, 9(1), 1-10. DOI: 10.1111/j.1471-8847.2007.00209.x

Potter, C. & Brough, R. (2004). Systemic capacity building: a hierarchy of needs. *Health Policy and Planning*, 19(5). DOI: 10.1093/heapol/czh038.

ANNEX 1: METHODOLOGY FOR LITERATURE REVIEW ON PARTNERSHIP MODELS

STAR aims to promote mutually beneficial and equitable partnerships that showcase new and innovative ways for academic institutions and partners to strategically and effectively learn and share knowledge. In order to accomplish this task, a Literature Review will be conducted, utilizing the expertise of CUGH's STAR Committee, to create a baseline for this work and to understand what information currently exists about formalized bi-directional partnerships with academic institutions, i.e., ones where there are either Memorandums of Understanding (MOUs) or formal contracts, which sustain the pairing. Collaborations or more informal or voluntary partnerships will not be included. In addition, at this time, only pairings are being explored and not partnerships involving more than two parties.

This will not be a systematic literature review given the short turnaround timeframe, but elements of inclusion are listed below to provide consistency among working groups. The methodology outlined below will be clearly detailed in STAR's final product to USAID. The only flexibility in deviating from this plan is for each working group to decide for themselves how the sources of literature will be allocated among members for review.

WHAT TYPES OF FORMALIZED PARTERNSHIPS ARE BEING EXPLORED?

The CUGH STAR Committee will be split into four different working groups to explore what literature, both peer-reviewed and grey literature, exists about four different types of partnerships:
1) U.S.-based academic institution partnered with a LMIC academic institution
2) LMIC academic institution partnered with another LMIC academic institution
3) Academic institution (can be anywhere in the world) partnered with a professional association or a non-governmental organization (the NGO can be local or international)
4) Academic institution (can be anywhere in the world) partnered with the private or public sectors

WHAT ARE THE RESEARCH QUESTIONS GUIDING THE LITERATURE REVIEW?

1. What was the catalyst for the partnership? What partnership strategies are best suited for creating, maintaining, and developing knowledge sharing systems in capacity building, education, and research across the global health landscape?
2. What has worked (key ingredients) or suggestions? What does it mean to support successful academic partnerships (nuts and bolts)?
3. What are three to five measurable criteria that can be used to score/rate a partnership's impact and strength?
4. What hasn't worked/reveal gaps?

Are there programmatic or systemic inhibitors or challenges to developing strong partnerships with LMICs? And if so, are there ways to reduce those?

SEARCH TERMS:

Each working group will conduct a specific search based on one of four partnership types. The search terms are listed below for each partnership type. The first two search terms are the same, given the similarities of the partnership types, but the working group members will conduct the searches and then differentiate, accordingly:

Partnership type: U.S.-based academic institution partnered with a LMIC academic institution

"academic institution" or "academia" or "academic" or "higher education" or "university" AND "partnership" or "partner" or "collaborator" or "collaborations" or "agreement" or "MOU" or "MOA" or "contract" AND "LMIC" OR "international" or "global" or "MENA" or "Africa" or "developing country" AND "research" or "capacity building" or "program" or "teaching" or "education" or "faculty exchange" or "fellowships" or "placements"

Partnership type: LMIC academic institution partnered with another LMIC academic institution

"academic institution" or "academia" or "academic" or "higher education" or "university" AND "partnership" or "partner" or "collaborator" or "collaborations" or "agreement" or "MOU" or "MOA" or "contract" AND "LMIC" OR "international or "global" or "MENA" or "Africa" or "developing country" AND "research" or "capacity building" or "program" or "teaching" or "education" or "faculty exchange" or "fellowships" or "placements"

Partnership type: Academic institution (can be anywhere in the world) partnered with a professional association or a non-governmental organization (NGO)

"academic institution" or "academia" or "academic" or "higher education" or "university" AND "partnership" or "partner" or "collaborator" or "collaborations" or "agreement" or "MOU" or "MOA" or "contract" AND "association"

"academic institution" or "academia" or "academic" or "higher education" or "university" AND "partnership" or "partner" or "collaborator" or "collaborations" or "agreement" or "MOU" or "MOA" or "contract" AND "NGO"

Partnership type: Academic institution (can be anywhere in the world) partnered with the private or public sectors

"academic institution" or "academia" or "academic" or "higher education" or "university" AND "partnership" or "partner" or "collaborator" or "collaborations" or "agreement" or "MOU" or "MOA" or "contract" AND "private sector" or "private" or "corporate" or "foundation" or "corporate social responsibility (CSR)"

"academic institution" or "academia" or "academic" or "higher education" or "university" AND "partnership" or "partner" or "collaborator" or "collaborations" or "agreement" or "MOU" or "MOA" or "contract" AND "public sector" or "public" or "public private partnership" or "Government" or "state" or "parastatal"

LITERATURE CRITERIA INCLUSION:

- Written in English.
- Publications (either peer-reviewed or grey literature) from organizations and/or individuals that cite a formal partnership with an academic institution and another organization will be included. (The actual MOU or formalized contract does not need

to be cited in the literature, but the formal nature of the partnership needs to be inferred.)

- If there is no literature on the partnership, even if a committee member has first-hand experience working on it, that partnership will not be included in the Literature Review. However, this experience can be used in part to answer research question #2.
- A partnership needs to have been in existence for at least 12 months.
- Only partnerships that plan to meet a common goal through the exchange and that expand both organizations' knowledge base are being explored. For example, the Literature Review will not include a program where there is only a faculty exchange of
one individual being sent to a different institution. However, the partnerships that will be included can be varied and focus solely on research, clinical experiences, curriculum development, joint training programs, and/or a combination, if there is a clear collective strategy.
- Publications no more than 10 years old.

SOURCES OF INFORMATION:

- Electronic databases: PubMed, Web of Science, POPLINE (www.popline.org), Google Scholar, and Google search engine
- Grey Literature: Conference Papers Index (CSA), WHO, government reports, NGO publications, think tanks

REVIEWING SEARCH RESULTS:

- Each member of a working group will conduct a search based on a different source. For example, if there are six working group members, one can review PubMed results, one Web of Science, one Google Scholar, one Google search engine, and then two will split grey literature results.
- Once the search has been conducted, to ensure an even balance among working groups, the Academic Partnerships Coordinator can limit the number of publications to be included in the review, if necessary.

POPULATING STANDARD DATA EXTRACTION SHEET:

- Each member will fill out a working group data extraction sheet (see Annex 3) to record the number of search results from each source. For our data purposes, each member will need to list all search results for each source, even those not meeting our inclusion criteria. (These findings can be cited later in the final report.) If there are duplications in the search results by source, the templates will pick up on them. (This way members can conduct their own search results, and the work can be expedited.) Each working group will have its own Google data extraction sheet.
- For literature that matches our criteria, each member will summarize basic characteristics of all the included studies (based initially solely on the abstracts; for grey literature, executive summaries can be utilized), which allow for consistency and comparisons across working group types. (This will also help keep track of the gaps in the literature findings.) However, those publications that are worth a closer review will be noted in the data extraction sheet, so they can be read in their entirety later.
- In addition, for referencing purposes and to share their libraries, the working group members will use EndNote.

DELIVERABLE AND DUE DATE:
1) **BY JANUARY 4, 2019, 5:00 P.M. (EST), AT THE LATEST (EARLIER SUBMISSIONS ENCOURAGED)**
   - Each committee member will have populated a data extraction sheet based on one source of information search results.

2) **BY JANUARY 15, 2019, 5:00 P.M. (EST)**
   - Each working group will have had a chance to review each of the member's template inputs and will have had a call or email exchange to agree on the "best" model that represents the selected partnership type. If there is not one "best" model, elements from different ones can be pulled together.
   - In this same discussion, the working group will come to a consensus for an answer to question #2.

3) **BY JANUARY 31, 2019, 5:00 P.M. (EST)**
   - The lead for each working group will submit a summary document highlighting the results of the "best" model.
     - In no more than 500 words, answer question #1 about the selected "best" model. In addition, it will also include a brief summary of the findings from the working group based on other partnerships, highlighting similarities, differences about the impetus for partnerships. (Please include referenced literature.)
     - In no more than 500 words, answer question #2. This should be informed by the literature but can also be based off personal experience if the partnership is unpublished. (Please include referenced literature.)
     - In no more than 500 words, answer question #3, summarizing key ingredients for successful partnerships. This can be put in the form of a table, pulling from the information collected in the data extraction sheet about this question. (Please include referenced literature.)
     - In no more than 500 words, summarize the findings of the working group to answer question #4, highlighting similarities, differences about what has not worked for partnerships. The challenges noted can be translated into lessons learned and recommendation for future partnerships. This can also be put in the form of a table, pulling from the information collected in the data extraction sheet about this question. (Please include referenced literature.)

CONSOLIDATED REPORT:
- The Academic Partnerships Coordinator will review and track each monthly deliverable and will coordinate necessary working group calls.
- The Academic Partnerships Coordinator will synthesize the January 31 deliverables from the four working group members into a final document to answer the four research questions about the four partnership types.
- One selected member from each working group will review the first draft of the document, which will be completed by February 20, 2019.
- Final document due to PHI by March 29, 2019.

ANNEX 2: LIST OF COMMITTEE MEMBERS

1. Jill Allison, MD, Memorial University of Newfoundland
2. Mireille Aramati, MPH, Tufts University
3. Uttam Bajwa, PhD, MA, University of Toronto School of Public Health
4. Rachel Bensman, MD, University of Cincinnati College of Medicine/Cincinnati Children's Hospital Medical Center
5. Suraj Bhattarai, MD, DTM&H, MSc, London School of Hygiene & Tropical Medicine
6. Sohaila Cheema, MBBS, MPH, CPH, Weill Cornell Medicine-Qatar
7. Grace Chen, MD, MHS, Johns Hopkins University
8. William Cherniak, MD, MPH, University of Toronto & Bridge to Health
9. Denishia Clark, MPH, Stanford University
10. Matthew Dacso, MSc, MD, University of Texas Medical Branch
11. Andrew Dykens, MD, University of Illinois at Chicago
12. Javier Escobar, MD, Rutgers University
13. Erica Frank, MD, MPH, FACPM, NextGenU.org & University of British Columbia
14. Caleb Joel, MD, Kilimanjaro Christian Medical University College
15. Carol Susan Lang, DScN, MSc, RN, George Washington University School of Nursing
16. Nanyombi Lubimbi, MSN, RN, University of Illinois at Chicago
17. Teresa Eduarda Machai, Eng, MBA, Manhica Health Research Center, Mozambique
18. Jennifer Makin, MD, MPH, Magee Women's Hospital of University of Pittsburgh Medical Center
19. Marilyne Menassa, MSc, AUB Global Health Institute
20. Shahla Namak, MD, Wake Forest School of Medicine
21. Tracy Rabin, MD, MS, Yale University School of Medicine
22. Sudhir Kumar Satpathy, MBBS, MD, MSc, School of Public Health, KIIT University, Bhubaneswar, India
23. Kiran Thapa, MPH, University of Georgia
24. Robin Young, MBA, Child Family Health International

ANNEX 3: STANDARD DATA EXTRACTION SHEET

Below is the list of elements that will be included in the standard data extraction sheet for each working group:

- Title of publication
- Author(s) of publication
- Year of Publication
- Web link to publication, if available
- Search source (If grey lit, note)
- Partnership type, e.g., research, curriculum, etc.
- Location of Partners and specify institution type
- Meets **all inclusion criteria** for Literature Review (yes/no)
- Existence of MOU or formal contract is referenced in abstract/executive summary (yes/no)
- In abstract, reason for partnership **catalyst** mentioned (enter brief one-line description)
- In abstract, mentions **rating criteria** for partnerships (enter brief one-line description)
- In abstract, mentions **key ingredients** for successful partnerships (enter brief description)
- In abstract, mentions what **hasn't worked or gaps** for successful partnerships (enter brief description)
- Based on abstract, other **key findings** or partnership outcomes worth noting
- Do you believe this partnership is worth a **closer review**, i.e. to read entire document? (yes/no)
- Inputted by working group member (insert name)