Health Policy and Systems Research for Health System Strengthening and Pandemic Preparedness: Challenges, Innovations and Opportunities

AUTHORS

Lisa Parvin, MS, School of Population and Public Health, University of British Columbia
Daniela Valdés, MSc, Economics (UCL), Global Healthcare Delivery Specialist (Harvard). Medsin; National Health Service United Kingdom
Catherine Sinfield, PhD, MPH Candidate, Icahn School of Medicine at Mount Sinai
Ani Gururaj, A.B. (Student), Washington University in St. Louis
Shameer Kunnathpeedikayil, MPH, BSN, State Health System Resource Centre-Kerala, India
Stephanie Collier, MD, MPH, Partners in Health, Department of Global Health and Social Medicine, Harvard Medical School

Authors’ Background: We are a dynamic group of individuals working towards ensuring equitable access to quality healthcare in resource-limited settings through better use of health policy and system research. We come from different countries that include Bangladesh, India, USA, UK and Colombia, and we have diverse disciplinary backgrounds that include medicine, global health, economics and nursing.

Note: The authors’ opinions in this essay are personal and in no way reflective of their affiliated institutions.

Abstract: The recent Ebola crisis in West Africa revealed the devastating consequences of weak and unprepared national health systems. It also highlighted a lack of timely and well-coordinated financial and technical support from international aid agencies and global health communities. This essay will provide suggestions for how Health Policy and Systems Research (HPSR) can promote the development of resilient health systems in the context of pandemic management and preparedness in three sections. First, we present the pivotal nature of HPSR in strengthening health systems with a focus on improved pandemic preparedness, which could lead to the achievement of global goals of the 2030 Agenda for Sustainable Development and its associated healthcare outcomes. We then present a number of strategies and innovative approaches to ensure the greater uptake of HPSR through: 1) strengthening local /regional research capacity 2) engaging the decision-maker/implementer as lead researchers 3) using alternative platforms and champions for implementation and 4) improving accountability of HPSR through outcome development. Finally, we discuss opportunities to strengthen the Alliance for Health Policy & Systems Research (AHPSR) including: 1) development of a framework to guide priority setting for HPSR at a global scale 2) creation of an international fund that would channel resources to strengthen HPSR, and 3) increasing methodological dialogue to develop standards for incorporating evidence. The Alliance has the unique opportunity to bring pandemic preparedness to the forefront of the HPSR agenda in order to utilize resources more efficiently to help the world prepare for the next pandemic.

Corresponding Author: Lisa Parvin, lp327@georgetown.edu
SUBMISSION FOR THE ESSAY COMPETITION ON THE FUTURE OF HEALTH POLICY AND SYSTEMS RESEARCH

ANNOUNCED BY ALLIANCE FOR HEALTH POLICY & SYSTEMS RESEARCH

SUBMISSION DATE: January 31, 2017
Contents

Introduction.......................................................................................................................... 4

I. The role of Health Policy and Systems Research in strengthening health systems for pandemic preparedness .............................................................................................................. 5

II. Bringing research to the ground - strategies for greater stakeholder uptake .................. 6

   Strategy 1: Strengthening Local/Regional Research Capacity............................................. 6

   Strategy 2: Getting the questions right - decision-makers as lead researchers................. 7

   Strategy 3: Taking the "R" out of HPSR: the role of alternative platforms and champions for implementation ............................................................................................................. 7

   Strategy 4: Linking research to results - improving accountability of HPSR through outcome development ........................................................................................................... 8

III. Strengthening the Alliance through prioritisation, funding and methodological dialogue ..... 9

   Opportunity 1. A framework to guide priority setting.......................................................... 9

   Opportunity 2. Increased funding .......................................................................................... 10

   Opportunity 3. Increased methodological dialogue ............................................................... 11

Conclusion ............................................................................................................................ 12

References ............................................................................................................................ 13
**Introduction**

Pandemics, or disease outbreaks at a global scale, are threats to global security and can cause trillions of dollars in losses internationally (Beaubien, 2016). Population growth, globalization, climate change, and increased human interactions internationally are expanding the scope of highly infectious diseases. The 2014 Ebola crisis in West Africa is evidence of the devastating impact of pandemics on already weakened health systems and how the global health system is unprepared to deal with such disasters. It revealed how under-resourced and unprepared health systems can contribute to the worldwide spread of a highly contagious disease that results in inevitable deaths.

Identifying a lack of infrastructure or the slow international response as causes behind the spread of Ebola (Sands, et al., 2016) follows the last three decades of reductionist approaches to a complex problem. Health Policy and Systems Research (HPSR) allows us to acknowledge that a nation’s health systems infrastructure and its resilience is to some extent predetermined by a country’s history and related social factors. Context is key when implementing approaches for the management of infectious diseases. Ultimately, cycles of poverty and disease have made poor countries, such as those in West Africa, or Haiti in the Caribbean, vulnerable to pandemics. They will continue to remain vulnerable unless the regions’ health systems are strengthened. Health policy and systems research is urgently needed to allow us to learn and identify patterns for the management of infectious diseases in an economic, rigorous manner that incorporates the complexity of the problems we face.

Considering the wide confusion with operational and implementation research, we would like the reader to consider Remme et al. (2010) for a working definition of HPSR. "Health systems research addresses health system and policy questions that are not disease-specific but concern systems problems that have repercussions on the performance of the health system as a whole".

As outlined above, epidemic outbreaks are a unique test for an entire health system, and as such, HPSR, is a crucial tool in developing context-specific health system strengthening against pandemics, while at the same time providing possible routes of adaptation and adoption (Remme et al., 2010).

This essay will provide suggestions for HPSR’s contribution to the development of resilient health systems in the context of pandemic management and preparedness. We present our key messages in three sections:

I. The role of Health Policy and Systems Research in strengthening health systems for pandemic preparedness
II. Bringing research to the ground - strategies for greater stakeholder uptake
III. Opportunities to strengthen the Alliance through research prioritization, funding, and methodological dialogue for pandemics
1. The role of Health Policy and Systems Research in strengthening health systems for pandemic preparedness

Interventions targeting individual elements of a health system in isolation, rather than addressing systemic problems, contributed to the failure to fulfill the Millennium Development Goals (Travis et al., 2004). For the achievement of the 2030 Agenda for Sustainable Development Goals and its associated healthcare outcomes, health system researchers, policymakers and key stakeholders need to focus the agenda on health care systems strengthening, particularly in the context of pandemic preparedness. In this section we highlight how HPSR is pivotal for health system strengthening and improved emergency preparedness in the context of achieving the Sustainable Development Goals.

In the aftermath of the Ebola crisis, the Commission on a Global Health Risk Framework was initiated in 2015 under the leadership of the U.S. National Academy of Medicine. Drawing lessons from previous outbreaks and pandemics such as HIV-AIDS and Ebola, the Commission presented twenty-six recommendations. These included strengthening national public health as the foundation of a health system and as a first line of defense, as well as strengthening WHO’s leadership role in the development of global and regional systems for outbreak preparedness, alert, and response. The Global Health Risk Commission’s report argued for investing in pandemic preparedness and mitigation plans. However, the uncertain nature and timing of future outbreaks makes investment in pandemic preparedness and mitigation compete with a country’s immediate health priorities (Sands et al., 2016). Against this background, it is difficult to understand how countries could prioritise HPSR focused on pandemic preparedness, as they might not identify the potential contributions of pandemic preparedness itself. This lack of awareness on the importance of HPSR is exacerbated by expert advice on the matter following the Ebola epidemic. It is a source of concern that none of the four Global Commissions in the Wake of Ebola (Gostin et al., 2016) made recommendations on securing funding for HPSR in the context of emergency preparedness and response.

In our view, the greatest challenge for the Alliance and research community is to position HPSR as an enabler to achieve the required health system resilience as well as the Commission recommendations. While there is consensus that strong and resilient national public health systems are crucial for the achievement of the 2030 goals and also for the identification, prevention, and containment of outbreaks, the link of HPSR as an enabler is less known. We provide some examples of initiatives and research below in the context of the Commission’s recommendations to highlight the pivotal nature of HPSR in strengthening health systems.

- In order to have strong and resilient national public health systems, the Commission recommends to assess national public health capabilities and to hold governments accountable for their performances. It also emphasizes having specific strategies for war zones or failure states where the local government has failed to maintain basic public health systems. HPSR is suitably placed to assess national public health capabilities and can suggest specific strategies to war zones or failure states by providing comparative analysis across different health systems.

- HPSR can provide suitable evidence for policy development on the appropriateness of particular diagnostic, preventive, and curative tools for the fight against infectious diseases. This can facilitate the implementation of the tools developed through the
Pandemic Product Development Committee suggested by the Commission (Sands et al., 2016).

- As the Commission’s report emphasizes the importance of WHO’s role as an effective leader in pandemic preparedness and in future responses, the Alliance can be an effective leader in the establishment of a suitable agenda for HPSR to underpin this effort.
- Further, these research efforts can contribute to community engagement, which is suggested as an important strategy to strengthen public health capabilities in fragile systems.
- Given its multidisciplinary nature, HPSR is well placed to incorporate all aspects of the ‘One Health’ concept that includes health care for humans, animals and the environment (One health initiative, 2017), critical in the case of epidemic outbreaks and zoonoses. In the context of the ‘One Health’ concept, we expect a branch of HPSR to further develop to address this concept and the wider field of ‘Planetary Health’ (as suggested by the recent release of the Lancet Magazine).

The above examples are reflective of the promise of HPSR in health system strengthening in the context of pandemic preparedness. The next section builds upon the challenge of bringing HPSR closer to the ground to the wider population, policy-makers and health professionals where is most needed.

II. Bringing research to the ground - strategies for greater stakeholder uptake

One of the Alliance’s strategic objectives is to support institutional capacity for the conduct and uptake of HPSR (WHO, 2016). HPSR is a practical science, and it is concerned with bridging the gap between research and policy. Improving health systems requires the use of the best available research evidence to guide decision-making and priority setting. It has been argued that policymakers' low utilization of HPSR arises from a lack of understanding of research concepts, probably due to the fact that the field of HPSR is in its relative infancy (Mirzoev et al., 2014).

In this section we argue that developing local capacity to carry out HPSR, getting the questions right with improved collaboration with decision-makers, using wider communication platforms and linking research to results, can lead to improved implementation of HPSR by relevant actors and stakeholders for pandemic preparedness.

**Strategy 1: Strengthening Local/Regional Research Capacity**

To ensure the greater use of HPSR by relevant actors and stakeholders, Low and Middle-Income Countries (LMICs) need the capacity to carry out HPSR to develop and evaluate their own health system-strengthening strategies. Developing regional and national capacity, communication and implementation for HPSR is critical for local actor and stakeholder engagement. As pandemics are more likely to originate in LMICs (Jennings, 2011), a shift toward research in LMICs must take place. The experience of systematic review centers in LMICs can then be used to inform priority setting. As argued in the introduction section, the history and culture of a country must be evaluated when outlining a research framework, and this is best done through cross-institutional collaboration with institutions and local researchers located in LMICs. It will be
important for locals to take the lead on research within their country and hence increase local capacity. Collaboration with non-English speaking countries is especially important, as they are not sufficiently represented in HPSR (Hasnida et al., 2017).

Extending the findings of the team from the Institute of Tropical Medicine (ITM), Antwerp (Dekoster et al., 2011) and an approach developed by the Consortium for Health Policy and Systems Analysis in Africa (CHEPSAA) (2011–2015), we would also like to highlight the importance of identifying suitable capacity/competency requirements and the ‘gap’ between the required capacity and what presently exits (Lê et al, 2014) for infectious diseases. Identifying this capacity ‘gap’ (desired competencies and skills) is important for the HPSR as a field, given its multidisciplinary nature. We also argue there should be strategic support development of a skilled cadre of health services and policy researchers and decision makers. For example, Evolving Voices for Global Health (EV4GH) an innovative multi-partner training program, where participants receive face-to-face training and virtual training components. The program is aimed at emerging health policy and systems researchers, decision-makers and other health system professionals particularly in LMICs. We believe there should be a focused effort for pandemics and infectious disease control in LMICs with multidisciplinary capacity across the career continuum from initial training through mid-career to advanced leadership training.

**Strategy 2: Getting the questions right - decision-makers as lead researchers**

When questions originate from practitioners and people working at the grass roots level of healthcare rather than from academia, research outcomes are more likely to be rooted in practice. We propose extending implementation research frameworks such as those identified in the intervention entitled Improving Programme Implementation through Embedded Research (iPIER).

The iPIER approach utilizes the decision-maker/implementer in the position of principal investigator and leader of a research project (Tran, 2015). It follows a methodology to facilitate the use of implementation research as an embedded component of existing health programs/policies. It allows local implementers, such as policy-makers, district health officers, program managers, and front-line health workers to work at the centre of the research process with the aim of facilitating improvements in health program implementation. The iPIER approach allows decision-makers to transform learning within practice in an iterative and systematic framework by identifying barriers, facilitators, and elements for scalability (Tran, 2015).

**Strategy 3: Taking the "R" out of HPSR: the role of alternative platforms and champions for implementation**

We propose taking the ‘R’ out of HPSR by the use of alternative platforms to reach mass audiences. As we will also refer in section III below, Massive Open Online Courses (MOOC) and the use of non-research oriented platforms (tweets, podcasts, news, LinkedIn, blogs) are fundamental in this aim. Social media have been identified as having considerable potential for this purpose, yet they are still sparingly adopted as a communication resource for academic research (Collins et al., 2016). Lina Duque at the Harvard Business Review (2016) outlines a
series of strategies for researchers to get more out of social media, such as creating targeted profiles, engaging in meaningful, thoughtful discussions with audiences and making social engagement a habit. These suggestions highlight how easily these tools can be implemented and its great potential. In the context of MOOC, these need to be developed when establishing HPSR initiatives, including staff and organizational capacity developments and course development in HPSR (Protsiv et al., 2016; Mirzoev et al., 2014). MOOC as a learning tool should be aligned with the identified gaps in competencies outlined in strategy 1 above.

Once LMICs are committed to advancing the vision, strategic directions, and research priorities, there can be a network of locally designated champions (Lê et al., 2014; WHO, 2012) to support the diffusion and implementation of the HPSR agenda. More proactive use of a number of traditional communication channels and tools linking researchers to other researchers, as well as linking researchers to academics and the press (WHO, 2012; Benyon et al., 2012) should be encouraged. We propose champions to focus on advocacy.

Advocacy has been used as the most important means of strengthening linkages. The media and private consulting firms can be used as means for engaging policymakers and practitioners to increase influence and funding streams for research (Hanney et al., 2011). Champions can facilitate the translation of research into policy through:

- The creation of networks of practitioners and researchers that can support suitable question development (as outlined in strategy 2).
- The creation of cross-organisational implementation groups where funding agencies, health charities, and researchers collaborate with policy and decision makers across different government levels.
- Aiming to educate the wider public by appreciating the role of the press in highlighting important issues related to health policy and health systems.

We also wish to note that part of the role of the Champions will be that of finding 'multipliers', or other champions at different levels. As such, their links with strong national community health worker programs could be a useful strategy for further research implementation, leading to improved surveillance and early detection of infectious diseases at the community level, particularly among the rural and hard-to-reach populations. Community health workers would be able to educate and mobilize the local population and to build trusted relationships between communities and health systems (Perry et al., 2016).

**Strategy 4: Linking research to results - improving accountability of HPSR through outcome development**

The WHO (2012) outlines that the need of greater accountability between both researchers and decision makers. We propose to drive transparency and accountability to the development of new metrics that capture the true value and impact of HPSR and its investments, as it would be beneficial to build further evidence on the usefulness of HPSR.

Strategies that develop smart analytics and timely access to data including novel methods, tools, and analytics for health system performance measurement and evaluation would allow for continuous improvement and the best use of resources. This would also aid in providing a
consensus for a research vision for pandemic preparedness in LMICs. Researchers would refine the vision, focus the strategic direction on supporting a HPSR community that is equipped with the skills to tackle emerging and future health system challenges, and identify research priorities for collaborative investment. It will be necessary to streamline and reframe research priorities in line with vulnerabilities within LMICs to pandemics. This could be achieved through investment in targeted priority areas, as well as investment in training and research infrastructure.

To summarize, this section has outlined a number of strategies aimed at bringing research to the ground. We believe that HPSR needs to reposition itself as a useful tool primarily at the local level. Through strengthening local and regional research capacity, through closer links with policy makers, the wider public (using champions and social media), as well as improved accountability. Section III below considers the pivotal role of the Alliance in enabling these strategies, through adequate higher level steer in terms of priorities and methodology, but crucially, through channeling much needed funding into local research capacity.

### III. Strengthening the Alliance through prioritisation, funding and methodological dialogue

The Alliance has emerged as a leader in highlighting the importance of health policy and systems research in achieving global health goals. Its accomplishments include the launch of WHO’s first strategy on health policy and systems research, leading a platform for implementation research within WHO, and making significant contributions to global health symposia on health systems research (WHO, 2016). One of the Alliance’s strategic objectives is to support institutional capacity for the conduct and uptake of health policy and systems research (WHO, 2016). In line with this objective, the Alliance may strengthen its position and role in advancing health systems research through an enhanced focus on pandemic preparation. In this section we propose opportunities to strengthen the Alliance through prioritisation, funding, and methodological dialogue to implement the strategic vision outlined in section 2.

As will be shown in this section, opportunities for the Alliance include consulting and developing a framework to guide priority setting for health policy and systems research at a global scale, to lead the creation of an international fund that would channel resources to strengthen health systems research, and to increase methodological dialogue to develop standards for incorporating evidence.

#### Opportunity 1. A framework to guide priority setting

The Alliance may advance the field by consulting and developing a framework to guide priority setting for health policy and systems research. At present there is no published framework to guide priority setting for health policy and systems research synthesis (Langlois et al., 2015). We propose for the Alliance to seize this opportunity to engage stakeholders and policy makers to add pandemic preparation to the health systems research agenda. With the establishment of a framework to guide priority setting, pandemic preparedness can be discussed in the context of prioritization of health systems strengthening. Placing the needs of disadvantaged and vulnerable populations at the center of the policy agenda is also central to the SDGs (Sachs, 2012). We therefore propose for health policy and systems research to place greater emphasis on marginalized populations, as they are disproportionately affected by priority setting during disease outbreaks.
Improving health systems requires the use of the best available research evidence to guide decision-making and priority setting. The best available evidence typically comes from systematic reviews (Bosch-Capblanch X et al., 2012). As pandemics are more likely to originate in low-and middle-income countries (Jennings, 2011), a shift toward research in LMICs must take place. The experience of systematic review centres in LMICs can then be used to inform priority setting. To date the Alliance has supported systematic review centres in Bangladesh, Chile, China, Lebanon, South Africa, and Uganda (Langlois et al., 2015). As a next step, the Alliance may also further their collaboration with the Evidence-Informed Policy Network (EVIPNet) and Task Force on Developing Health Systems Guidance (WHO).

Primary health care and the broader community should be at the frontline of a pandemic response. As such, the Alliance has the opportunity to advance health systems research through increasing the evidence base for people-centered services in LMICs. The history and culture of a country must be evaluated when outlining research framework, and this is best done through cross-institutional collaboration with institutions located in LMICs. It will be important for locals to take the lead on research within their country to build local capacity. Collaboration with non-English speaking countries is especially important, as they are not sufficiently represented in health policy and systems research (Hasnida et al., 2017).

**Opportunity 2. Increased funding**

As outlined by Langlois et al. (2015), the Advisory Group on Health Systems Research Synthesis noted that there is limited capacity and financial sustainability of groups in LMIC that undertake systematic reviews in HPSR. In the context of Global Health crisis or outbreaks, Nhan Tran (2016) from the Alliance for Health Policy and Research has flagged that it is important to use limited resources wisely, and in particular, to align the resources with the needs of the field. In response to this, we propose to position the Alliance as a key stakeholder to create an International Fund that would channel resources to strengthen health systems research in LMICs, particularly aimed at improving emergency preparedness and response. As highlighted in section 1, HPSR is aware of the idiosyncrasies and needs of particular health systems/countries and as such seek the development of demand-driven and locally-led research projects. This alignment with local needs and wider priority framework set out by the Alliance would ensure more funds are allocated to research led by LMICs practitioners, and channeled through the respective countries.

Diagramme 1 below outlines the suggested flow of funds for the International Fund. We propose the Alliance will need to engage actively with research funders as to channel some resources to this fund. The International Fund can encourage co-investment from national governments to make sure research is aligned with the priorities of LMICs and to ensure research is translated into stronger health systems for outbreak preparedness. Further, as outlined in the Vancouver Statement for the Fourth Global Symposium on Health Systems Research (2016), the International Fund should seek to link with donors as to embed research and analysis in the programmes funded by allowing LMICs to fund back donors and research institutions in the development of research projects. The Advisory group highlights that linking with research institutions is fundamental in the quest to increase capacity. We expect this to increase access to specialized resources (such as information scientist support and statistical tools) at local centres.
Through the numerous points of added value of the Alliance (as highlighted in its strategy document (WHO, 2016), we expect the following outcomes to be achieved through the creation of the International Fund.

- Increase the overall amount of funds allocated to research
- Increase the local ownership of funds allocated to research
- Help build a research community beyond English-speaking countries
- Increase effectiveness and efficiency of investments in development

**Opportunity 3. Increased methodological dialogue**

The Alliance has already made a considerable investment in methodological development, with the production of the HPSR Methodology Reader (Gilson, 2012), as well as significant contributions to three global symposia on health systems research (WHO, 2016).

As a relatively recent, trans-disciplinary field of research, HPSR is still developing its own emerging standards for creating, evaluating, and utilizing knowledge (Sheikh et al., 2014). Given its trans-disciplinary nature, the researchers might tend to judge themselves by the standards used in biomedical research, clinical research or traditional public health research (WHO, 2012). Further, as the field develops, certain areas emerge as particularly lacking standards, such those related to incorporating evidence from quasi-experimental studies (Langlois et al., 2015).

The field also has particular gaps in elements directly related to pandemic management. Shoman et al. (2017) found that 'information and research' was the second most pressing element (after the shortage of health workforce) in the control of the Ebola outbreak. Four of the selected 13 studies reviewed highlighted considerable gaps in areas related to health surveys, health system, resource tracking, capacity for analysis, synthesis, and data validation (Shoman et al., 2017). While epidemiological and surveillance systems have been strengthened since then (Shoman et al., 2017) in the Ebola-stricken countries, adequate evaluation of the best practice will be necessary for all LMICs.
The Alliance is aware of its role in filling these information and knowledge gaps (WHO, 2016), and recognizes the dialogic elements of the science (Sheikh, et al., 2014) by highlighting the importance of greater dialogue and collaboration across global and country-level actors (WHO, 2016). However, we wish to draw attention to the implementation of these dialogues. Considering in the case of the Ebola outbreak women were the main caregivers (Gostin et al., 2016), there needs to be an element of proactive inclusion of vulnerable populations as well as a distinct gender element when approaching these dialogues.

From a methodological standpoint, we would invite the Alliance to provide leadership in the methodological dialogue by:

- Creating a special chapter or separate HPSR methodology reader for emergency preparedness and resilience.
- Creating the tools and templates for the development of localised, massive open online courses based on the HPSR Methodology Reader, which would be at the basis of internationally accredited professional degrees.
- Reaching consensus in a series of standards/certifications for internationally accredited professional degrees.
- Creating a pool of accredited HPSR professionals.
- Engaging with NGOs, countries, donors and other organisations to disseminate the standards.

**Conclusion**

The devastating consequences of the Ebola crisis in West Africa shed light on the importance of strengthening national health systems through pandemic preparedness. Strong leadership is imperative. In addition, it is a global responsibility to ensure the receipt of timely financial and technical support from the international community. Systems and trained personnel working at the community level must detect outbreaks early, and they are responsible for the prevention and containment of infectious diseases. By promoting HPSR through an enhanced focus on pandemic preparation, the Alliance may strengthen its position and role in the global health community. Strategies such as strengthening local research capacity, using alternative platforms to reach mass audiences, choosing decision-makers as lead researchers, and improving accountability of HPSR through outcome development can ensure the greater use of HPSR by relevant actors.

Future opportunities for the Alliance include consulting and developing a framework to guide priority setting for HPSR at a global scale with a focus on pandemic preparedness in marginalized communities. Additionally, the Alliance may lead the creation of an international fund that would channel resources to strengthen health systems research by increasing the overall amount and local ownership allocated to research, particularly in non-English speaking countries. The Alliance can provide leadership in the methodological dialogue by creating a special chapter or separate HPSR methodology reader for emergency preparedness and resilience, creating tools and templates for Massive Open Online Courses, and creating a pool of accredited HPSR professionals. The Alliance has the unique opportunity to bring pandemic preparedness to the forefront of the HPSR agenda and to improve the utilization of limited resources to help the world prepare for the next pandemic.
References

24. Tran, N. T. "Improving programme implementation through embedded implementation research (ipier)." Tropical Medicine & International Health 20 (2015): 122.