

EMBEDDED HEALTH POLICY AND SYSTEMS RESEARCH: WITHIN THE SYSTEM, FOR THE SYSTEM, USED BY THE SYSTEM

This brief is intended as a practical aid for people involved in the growing discussions about ‘embedded health policy and systems research’ (EHPSR), especially in low- and middle-income country contexts (LMICs). EHPSR is not a new topic or activity – but it has gained international interest as a result of the focus on health systems strengthening, and the acknowledged need to strengthen local learning systems, to improve knowledge translation, and to strengthen capacity within local health systems for evidence-based decision making. The Sustainable Development Goals (SDGs) highlight the importance of increasing support for local health research – and strengthening research that has direct local relevance, as well as research that can itself support health system strengthening and UHC.

There are varied interpretations and applications of EHPSR, but the literature overwhelmingly agrees that the benefits of undertaking HPSR in an embedded way (within the system, for the system, by the system), far outweighs the possible costs and challenges.

Main messages:

- EHPSR has great potential and value in and to LMIC health systems.
- EHPSR can (and should) have a health system strengthening effect.
- EHPSR should be a core, routine function of every well-functioning health system – supporting the development of a ‘learning system’.
- There are varied interpretations of EHPSR (e.g., between EHPSR as an institutional macro-level arrangement, and as a research approach). As the field and practice is still emerging, a single confining definition should not yet be applied.
- Existing empirical examples of EHPSR in LMICs demonstrate that a learning system develops over time through the establishment of multiple interlinked EHPSR activities (this is preferable to stand-alone, short-term EHPSR projects).
- LMICs have limited capacity for EHPSR – but global partnerships bring particular challenges to EHPSR that need to be managed.
- Best-practice examples show that funders’ attitudes toward EHPSR (and toward research and implementation generally) play a key role in its success. Funders can create an enabling environment by making EHPSR a grant condition and by understanding the demands and intent of EHPSR.
- Building local capacity for EHPSR, and normalization of EHPSR within LMIC health systems requires resource development, allocation and advocacy – preferably over longer planning cycles.
- EHPSR effects need to be measured against appropriate indicators.
- The benefits of EHPSR far outweigh the inherent challenges.

Technical Brief March 2018



Alliance for
Health Policy and
Systems Research



World Health
Organization

“...embedding of research in real world policy, practice and implementation is needed to strengthen health systems worldwide”
(Ghaffar *et al.* 2017)

This brief summarises the publication:

Olivier J, Whyte E, Gilson L. 2017. *Embedded Health Policy and Systems Research: A Rapid Scoping Review. Report for the Alliance for Health Policy and Systems Research*

This scoping review was conducted in 2017 to understand better the current body of literature on embedded research and comparable approaches to identify areas of consensus and gaps for further research, as well as to inform those engaged in an embedded approach within HPSR.

The review included systematised searches of databases, institutional repositories, and key HPSR journals as well as a web-based crowd-sourcing survey. Further materials such as abstract books from the 2010-2016 Health Systems Global Symposium were also analysed. Searched grey and peer-reviewed literature was in English, with a focus on publications from the last twenty years and LMICs.

The length of this brief means that the complexities in relation to embedded HPSR are not fully unpacked here – neither is the full range of resources available to the embedded researcher. References are provided for interested readers who want to explore the subject in more depth.

TOP 20 ON EMBEDDED HPSR 1 to 10

1. Blanchet K, James P. 2012. How to do (or not to do)...a social network analysis in health systems research
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7. Koon AD et al. 2013. Embedding health policy and systems research into decision-making processes in low-and middle-income countries
8. Langlois EV et al. 2017. Embedding research in health policy and systems in the Americas
9. Lehmann U, Gilson L. 2014. Action learning for health system governance: the reward and challenge of co-production
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The context for EHPSR

This brief is intended as a practical aid for people involved in discussions about 'embedded health policy and systems research', especially in LMICs. The brief aims to demonstrate the importance of clarity about EHPSR as it relates to LMICs, and demonstrate how EHPSR is of growing importance to practitioners, policy-makers, funders and researchers alike.

There has been a rapid growth of enthusiasm about the benefits of EHPSR over the last decade. For example, there has been a major growth in publications mentioning it; more discussion about it at the biannual *Health System Global Symposia*; and more HPSR funding calls that require EHPSR. Key institutions have called for more and better EHPSR in LMICs, for example:

- The WHO's *Changing mindsets* report called for the prioritization of embedding research into health systems. It argues that when embedding happens, researchers and decision-makers are linked, and the need for evidence-informed policy is understood by decision-makers.¹
- The WHO's 2013 World Health Report (*Research for universal health coverage*) concurred that a priority for research is the translation of research into policy and practice, for which their primary recommendation is to embed research within policy-making processes in order to facilitate the dialogue between science and practice.²
- The Alliance for Health Policy and Systems Research (AHPSR) has led a program of work prioritizing embedded HPSR since around 2012 – for example, supporting the development of a portfolio of over 50 implementation-focused EHPSR projects in LMICs.³⁻⁵
- Health system intervention- and research-funding institutions have encouraged EHPSR by imposing requirements on grants (e.g., requiring local implementation partners be Principle Investigators); including UNICEF, PAHO, USAID, the World Bank, GAVI, the Rockefeller Foundation, and the Doris Dukes Charitable Foundation.^{4,6}

However, there is not yet a robust community of EHPSR practice:

- Interpretations of EHPSR are varied and theoretical frameworks are not yet fully developed.
- There is existing work on EHPSR in high-income countries that is not being translated into LMIC settings.^{7,8}
- There is a vast relevant literature in other fields that is not being drawn into EHPSR: (e.g., multiple resources in anthropology, ethnography, environmental sciences, development studies, education and professional development, political studies, psychology, sociology, action research, evaluation, and implementation science).⁹
- Key issues such as 'knowledge translation' cut across all these fields, but have not been synthesized into an EHPSR framing.

Primary reasons for embedding HPSR in LMICs

There are multiple benefits to EHPSR, and urgency for developing EHPSR capacity in LMICs. Benefits shown in the literature are:^{4-8,10-27}

- EHPSR leads to the identification of 'substantively relevant' real-world health systems research questions, addressing relevant HS issues. EHPSR is contextually and socially relevant research – relevant to the health system, 'worth doing', and more likely to lead to actionable results.

- EHPSR closes the research/evidence to practice/action/policy gap by increasing ownership, legitimacy, and improved research translation – thereby promoting the systematic uptake of research findings and evidence-based strategies into routine systems functioning (implementation and policy).
- EHPSR supports the development of a learning system by building cultures of evidence, and sustainable practices of evidence utilisation and feedback within the system, including evidence-based decision-making.
- EHPSR can support improved HS responsiveness: this is linked to other principles, but EHPSR can support the health system in its quest to become more responsive to community needs (so not only focused on decision-maker needs and perspectives, but this requires ‘speaking truth to power’).
- EHPSR can be considered a more ‘trustworthy’ form of HPS research: as a research approach, when done well, EHPSR should result in more rigorous research (e.g., providing better access to more in-depth, insider/tacit knowledge, better access to information, fewer barriers, and closer observation of routine HS functioning).

EHPSR framings: shaped by ‘where’ it is embedded in the system

The review showed that while many felt it was important, EHPSR remains poorly developed – with varied conceptualisations from different sectors/groups. The primary difference between these interpretations is the focus and location of the EHPSR in the system.

“Multiple definitions and related models and concepts of embedded research exist, such as the coproduction and integration of knowledge, which hinder the understanding and diffusion of this approach.” (AHPSR 2017)

EHPSR as a process for ensuring uptake of research/evidence into decision-making to close the research/evidence to policy/practice gap (with a focus on national macro-level decision-makers)

This is a dominant framing of EHPSR, which foregrounds health systems decision-makers as the primary focus, enactors, and recipients of EHPSR research activities and outputs (usually macro-level national decision-makers).^{5,15,28} In this framing, EHPSR seeks to close the gaps and cultural differences between researchers and practitioners, policy-makers, and decision-makers – gaps that are barriers to the proper utilization of HPS research. The strategy here is that HPS research can be more influential/impactful if it is positioned better within practice/policy settings (closer to decision-makers). A primary solution in this framing is the *embedding of research organizations or ‘evidence-advisory institutions’ closer to decision-makers* (e.g., usually improving physical proximity of research organizations to national-level Ministries of Health), arguing that more embedded institutions are more trusted, have greater access to information flows and resources, and are more influential to effect change.

^{5,14,29,30}

“[EHPSR is] research conducted in partnership with policymakers and implementers, integrated in different health system settings and that takes into account context-specific factors can ensure greater relevance in policy priority-setting and decision-making.” (Ghaffar *et al.* 2017)

TOP 20 ON EMBEDDED HPSR Eleven to twenty

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18. Vindrola-Padros C et al. 2017. The role of embedded research in quality improvement: a narrative review
19. WHO. 2012. Changing mindsets: strategy on health policy and systems research
20. Wolfenden L et al. 2017. Embedding researchers in health service organizations improves research translation and health service performance

(alphabetical listing – see reference list for more)

Another focus is the *localization and country-ownership of research (geopolitical embeddedness)*,³¹ which usually means ensuring that decision-makers from MOH are co-investigators in research projects and improved alignment of research with national research agendas. A common confounding factor is that in the LMIC countries where local ownership would be most effective, *the capacity for research and research-evidence engagement is the most limited*,^{19,32} resulting in calls for initiatives to build local LMIC HPSR capacity, and *North/South-South capacity development networks*. Many argue that, pragmatically, HIC researchers and institutions will continue to be the ones being 'embedded' in LMIC health systems for some time (especially in fragile states), and that different 'rules of engagement' are necessary for such EHPSR, especially given the continued challenges in foreign research partnership power dynamics – which can be inhibitive of EHPSR.^{19,31-34}

EHPSR as primarily informing implementation (of health system strengthening interventions) at a meso level

“Embedded research aims to shine a light on implementation barriers and associated health systems failures, by engaging actors working within health care systems to conduct rigorous scientific inquiry.”
(Tran *et al.* 2017)

Linked to the above, a specific interpretation of EHPSR focuses on embedding HPSR into *implementation* – either routine implementation, or the implementation of health system strengthening interventions (some are calling this 'embedded implementation research'^{6,17}). The focus of this framing of EHPSR is on closing the *research-evidence to implementation* gap which, it is argued, requires an intimate understanding of the health system, intervention and context – and therefore requires main input from local/insider implementers (ideally is conducted by locals/insiders). Research, evidence, and evaluation need to be *embedded in routine/continuous implementation cycles*, so that they can inform practice/policy. This has design implications. Embedded implementation research should be structured to accompany HSS interventions from early in the intervention.^{11,35-37} *Embedded evaluative HPSR* is a particularly important area for further development, especially how embedded evaluation interacts with routine (information) systems and functioning. There is also increased interest in *integration, uptake, diffusion and normalization of innovation* and health systems change – focusing on the embedding of good implementation practice (such as evidence-based decision-making) into routine systems functioning.^{27,30,38,39}

EHPSR promoted as an important approach for the development of a 'learning system'

“Embedding health systems research as a core function of health systems.”
(Hoffman *et al.* 2012)

Work on learning organizations⁴⁰⁻⁴³ has been transferred to health systems – with EHPSR being seen as an approach to support the development of 'learning system'. The focus of this interpretation is on capacity-building within local LMIC systems, for HPS research, and for research utilization (e.g., evidence-based decision-making). For example, a study of Turkish hospitals describe a model of continuous learning activities – an 'embedded system of collective efforts'.⁴⁴ Other examples describe networks of HPSR capacity-development that have been established in LMICs – not linked to a specific project, but rather as an intervention in and of itself. This interpretation posits that EHPSR is likely to be an HSS intervention in its own right⁴⁵ – however, this is still poorly developed or assessed. Further HPSR is required, in particular evaluative research, which more seriously assesses the 'impact' of EHPSR on a health system.

EHPSR framed as a research method/approach – a practice of individuals embedded in the health system

There is varied literature on 'embedded individuals' – and it is framed within the understanding that health systems are socially constructed and socially embedded.^{13,22} From this perspective, EHPSR is primarily focused on the micro level (on individuals within the system) and empirical examples describe an array of embedded 'researchers' including local leaders, intermediaries, knowledge brokers, and change agents.^{8,13,22,46,47} In this framing, 'research' is rarely formal academic research – and embedded researchers are mainly characterised by their positionality – as 'insiders' to the health system. The types of individual researchers depicted in this framing can differ radically from those described in the earlier macro-institutionally focused framing. Here, embedded researchers are not likely to be in that position as a result of the positioning of a research institution close to an MoH, or because of a particular implementation plan, but instead might be a result of the complex and flexible nature of their work within the health system.^{19,31}

There is great interest in *co-production/creation* between researchers and practitioners/policy/decision-makers (when researchers work together with health system actors from the start of the research process to jointly create research that reflects real-world contexts and ensure that the knowledge generated has relevance for those involved). It is a strategy for the democratization of research process and requires the building of trust between those involved in the research.^{9,25,48-50}

EHPSR is framed as a research approach or methodology for rigorous and relevant HPSR

Much of the literature frames EHPSR as a methodological issue (an approach to ensure socially responsive and substantively relevant HPSR). It is argued that while there is a great amount of enthusiasm for encouraging and supporting EHPSR, there is very little guidance on what best practice for EHPSR looks like on a *methodological level*.⁹ It is argued that while EHPSR contains elements of action research and ethnography, it is not fully explained by either. There are many examples of robust action research and ethnography in HPSR – but the embedded nature of the research is usually implied rather than made explicit.^{28,51-56} An equal number of methodological rewards and challenges are raised (see below). An important strategy is the application of the *‘learning site’* approach: sites of on-going action learning between researchers and health system actors (e.g., the learning sites in South Africa and Kenya linked to the RESYST consortium^{21,45,57}).

EHPSR also raises particular *ethical implications and considerations*.^{19-21,42,45,57,58} For example, as researchers get

“Embedded HPS Researchers are researchers characterized by their ‘situatedness’ within a health system, the influence of their interpretation of the system around them...and the potential change they can effect (even just by asking questions)... an embedded approach is one in which researchers negotiate and conduct research from within the health system that is the object of their study (positioned as insiders), usually with the intention that their research will lead to positive health systems change.”

(Olivier *et al.* 2017)

“A ‘learning site’ is an embedded approach to HPSR, where researchers and health managers in a given setting, over a long-term relationship of continuous interactions and reflections develop specific health system governance questions, and work towards answering them together”

(Tsofa *et al.* 2017)

Core methodological benefits and challenges for EHPSR

METHODOLOGICAL BENEFITS OF EHPSR

- Social relevance and responsiveness
- More effective uptake of evidence into action/practice/policy
- More in-depth (insider) knowledge of the system and context
- Greater likelihood of identifying substantively relevant problems/ questions
- Better access to people and information
- Less likelihood of being blocked by gate-keepers
- Greater chance to observe routine functioning
- Greater likelihood of seeing tacit knowledge
- More opportunities to engage with difficult findings in safe spaces in the health system
- Greater opportunities to feed research findings more rapidly back into the system
- In a better position to make the changes within the system

METHODOLOGICAL CHALLENGES OF EHPSR

- Sometimes slow speed of EHPSR can create challenges
- Insider-researchers struggle to maintain objectivity
- Researchers might feel compelled to report more positively
- Researchers can get caught in power dynamics and local politics
- It can be difficult to evaluate one’s own intervention/program
- There are tensions in utilising observation and experiential knowledge
- Insiders can be blind to norms
- It can be hard to remain detached when an insider-research sees something ‘wrong’
- Specific ethical challenges – and embedded researchers cannot always turn to standard ethical committees for support

“Embeddedness for this study has had positive implications for learning about how health systems function over time ... However there are also challenges with this embeddedness, including the need to be careful in who one is (seen to be) aligned with in inevitably politically charged and socially unequal contexts... consent processes, these are complicated ... by the deliberate blurring between research and practice activities ...”
(Molyneux *et al.* 2016)

more embedded in health systems, the blurring of positionality raises ethical challenges, as the researcher inevitably becomes an actor in the system. Very often, ethical issues emerge after research has started, and are related to complex relationships and interactions. Standard health/human ethical review boards are not currently equipped to review EHPSR. In EHPSR, additional ethical considerations are needed, in particular how the research might negatively affect the health system. A key approach to counter such concerns is ‘*ethical mindfulness*’ in EHPSR – and how to develop this capacity within researchers.⁵⁹

A significant aspect of EHPSR is trust – building and maintaining trusting relationships, and producing trust-worthy results despite challenges.^{9,60} Measuring trust (as an indicator of EHPSR success) could be important.

More generic and descriptive uses of ‘embedded’ in HPSR

The term ‘embedded’ is also used descriptively (without a particular HPSR-relevant meaning), e.g., a nested research method such as an embedded case study (a case study within a case study); or a system embedded within a system.^{7,10,61} It is also used to describe how health systems are embedded in social/cultural/political/economic systems and contexts,^{62,63} which in turn means that values/cultures/attitudes are embedded in a health system.

Key principles for EHPSR (for individuals and institutions)

A set of ‘principles’ for EHPSR emerge (requiring further development).

EHPSR principles

- Driven by ‘substantively relevant’ research questions shaped by health system actors and decision-makers
- Socially and contextually relevant research
- Prioritises health system actors and decision-makers during all stages of research
- Foregrounds ‘genuine’ / ‘authentic’ research partnerships – involves continuous negotiation, co-creation, collaboration and trust-building between stakeholders, and is highly relational
- Aligned with local research priorities, agendas and policies
- Locally-driven, with local-ownership and legitimization
- Routinizes the utilisation of evidence/research in health system decision-making
- Positioned as insider-research (whether insider individuals or organisations), inside the health system, conducted by ‘researchers’ looking at ‘their’ system
- Foregrounds the importance of trust and relationships
- Takes a systems perspective (differs from other embedded research approaches)
- As HPSR, focuses on inequalities, and flattening of power hierarchies
- Has a health system strengthening effect
- Supports the development of a learning system

In addition to these highlighted above, the literature also suggests that it is likely that EHPSR will be *changeable, flexible and adapting; interdisciplinary and intersectional; will raise particular ethical challenges; will likely take more time; and possibly be more expensive than other rapid approaches.* Such considerations suggest that EHPSR will require quite specific capacities/competencies from those involved.

Multiple types of embedded researcher/institutions

There are many different types of embedded researchers (individuals and institutions). The diagram on page seven presents a basic typology of commonly mentioned types (insider individ-

uals⁹ and embedded institutions⁵). Embedded HPS researchers often wear multiple hats (as researchers, health workers, decision-makers, and patients), and complex staff movement, secondment and joint appointment arrangements blur institutional affiliations. Embedded institutions change in character (especially in LMICs in response to funding opportunities). This stresses the importance of taking the complexity of local health systems contexts into account when developing EHPSR plans, communities and capacity-development programs.

	Type of embeddedness	Description & some examples
↑ Individuals	Insider-researchers	Practitioners (health workers) working in the system, conducting health systems research
	Jointly appointed / affiliated staff	Jointly appointed staff working in the health system and in academia, as part of an institutional arrangement (or secondment)
	Insider student research	Health system workers also registered for study with an academic institution – usually conducting research on issues related to their work
	HPSR project researchers immersed in the system	Longer-term HPSR projects where researchers from outside institutions immerse themselves within the system for a finite period of time
	NGO/donor agency-funded research staff placed inside the system	Researchers or managers seconded to or embedded within a system for purpose or programme of work
	Research partnerships and joint programmes of work	Longer-term partnerships and arrangements either set up around a specific programme of work, or a series of different smaller projects
	Government organisations	Research units or groups initiated and supported by government, such as research units within Ministry of Health
	Advisory bodies	Working groups, panels, and technical committees advising on specific issues (often for a limited period of time).
	Research institutions	Research institutions, can be for-profit or non-profit – some have dual affiliation with government, some are independent.
	NGOs	NGOs with a research or implementation focus
↓ Institutions	Committees	Council on Health Research for Development (COHRED) in Tanzania
	Think tanks	Development Research Centre of the State Council (China)
	Technical agencies	Alliance for Health Policy and Systems Research (AHPSR)
	Academic institutions	LMIC-based institutions, and HIC institutions with longer-term engagement in LMICs
	Consortia & networks	RESYST, REBUILD, EQUINET, RINGS, COPASAH, CHEPSAA, WANEL, CHESAI, COMPCHASS
	Bi/multi-laterals & funders	UNICEF, DDCF, GAVI, AHPSR, WHO

Core competencies for the embedded HPS researcher

“Embedded HPSR is not an easy option, nor is it a tool that can be broken into clear steps. Rather, it is a complex approach requiring competencies and sensitivities for negotiation, collaboration, translation, trust-building, and reflexivity (as awareness of the context and awareness of self). Embedded research is critically important in HPSR, and we need to develop robust HPS researchers who are able to negotiate this complex world and wield this approach with confidence.”

Olivier *et al.* (2017)

“We suggest that the concept of reflexivity and the ability to think carefully about one’s positionality is important for health system researchers who need to consider how to retain autonomy in research, whilst contributing evidence for health system change. A research process informed by the notion of reflexive practice and iterative learning...”

MacGregor and Bloom (2015)

The review identifies a set of core competencies (capabilities) that embedded HPS researchers need – and would also be relevant for other stakeholders engaging in EHPSR processes. These competencies have particular implications for HPSR training, and for capacity-development interventions. (Further work is needed to assess organizational competencies and capacities required for EHPSR, especially in LMIC health systems).

Core competencies

- Systems thinking
- Reflexivity (including being able to understand one’s own positionality and power)
- A critical perspective
- Knows how to ‘behave as an insider-researcher’ within ‘their’ health system
- Has high levels of communicative capacity
- Can translate between groups, and knows how to be a ‘knowledge broker’
- Knows how to network and connect across groups and institutions
- Can speak ‘truth to power’
- Has ethical mindfulness
- Can apply standard good practice for rigorous methods being applied in the embedded approach
- Can negotiate complexity, change and uncertainty
- Conflict management
- Reputation management
- Facilitation

Suggested strategies for successful EHPSR practice

The few EHPSR examples from LMIC health systems suggest a set of key strategies for successful EHPSR implementation. These need to be developed further, but provide a foundation for EHPSR strategy.⁹

- Continuously negotiation, co-creation, collaboration and trust-building between stakeholders
- Negotiation requires the proper identification of research partners
- Ensure representative partnerships and convene a deliberative process
- Early negotiation of purpose/objectives between partners, early negotiation in problem identification and framing
- Negotiation in setting up the parameters of the partnership
- Negotiation consistently and flexibly re-iterated, focused on longer-term partnerships (negotiate time-frame together)
- Requires the careful analysis and negotiation of power
- Negotiation of info ownership and terms of co-production
- Intentionally sharing the ‘wins’, and create opportunities for HS actors
- Regular mapping processes to develop/enhance awareness of (individual/organizational) positionality within the health system
- Ensure alignment with local research agendas and priorities (recheck on a regular basis)
- Identify and leverage key champions

- Assessment – of what counts for embedded HPSR (e.g., quality of relationships, trust)
- Define the kind of evidence necessary to inform decision-making
- Consider non-traditional outputs
- The creation of ‘safe spaces’ for engagement
- Processes for ‘joint reflective practice’
- Deliberate connection of projects and conversations into webs of embedded joint-learning
- Establish space and process for addressing uncertainty
- Grant-funders can ensure local ownership by imposing requirements
- Support deliberate institution-building
- Support Southern capacity-building, and support South-South network development and communication

Conclusions

There has been a global surge of enthusiasm for the benefits of *embedded health policy and systems research* over the last decade. This Brief provides a practical aid for people involved in discussions about EHPSR, especially as it might relate to LMIC health systems.

It is important that a community of practice around EHPSR is developed, and that there is improved clarity and consensus about EHPSR within that.

The current lack of a common framing results in fragmentation and limits the dialectical progress of ideas and practices (e.g., limits the building of ideas and experiences on top of previous ideas and experiences). However, this brief demonstrates how parties have different interests in the potential of EHPSR – and it is important that one particular perspective does not capture EHPSR while it is still developing. For example, we suggest it is not necessary to decide (right away) whether the definition of EHPSR is oriented toward macro-level national decision-makers, or toward a local practitioner-researcher working to do rigorous EHPSR. All of these contribute towards EHPSR – and potentially health systems made stronger through EHPSR efforts.

It is strongly recommended that EHPSR efforts are more formally evaluated – and utilising appropriate measures that match what EHPSR is seeking to do (e.g., it might well be important to evaluate levels of trust throughout an EHPSR process). There is still very little published evidence of the ways that EHPSR can strengthen a health system – although it is generally agreed that it has the potential to do so.

The literature showed that EHPSR has the potential to generate original thinking about embedded research that extends beyond the scope of existing theory and practice. This is because of the unique nature of the field of HPSR and the particular questions being asked here. (e.g., the focus on research ethics of embedded HPSR; or of webs of interlinked embedded programs and relationships; or of hybrid insider-researchers; or of what embedded approaches look like when embedded in complex adaptive systems). All of these suggest that EHPSR has the potential to inform broader fields – on what it means to embed research in a *system*.

However, EHPSR needs time and space to grow – and the facilitated spaces and supportive and supported environments to do that.

Although we are not suggesting that all HPSR questions will be best answered through EHPSR approaches, this brief does demonstrate that EHPSR has huge potential. However, there continues to be limited capacities for and resourcing of EHPSR, especially in LMICs. There is especially limited resourcing of that type that allows for EHPSR that develops over time, building nested systems of robust and relevant evidence and trusting relationships – that then develop into routinized learning systems that are retained within the system – and ultimately strengthen LMIC health systems in the process.

“Keep up this agenda, but don’t be afraid to venture into new territory... looking at the persuasive influence of rhetoric, the interplay of value systems (sometimes at the expense of evidence), and reaching outside of the HPSR literature to provide a more sophisticated account of political process. In that respect, turning the question on its head ... might be useful...” (crowd-source survey 2017).

“Unfortunately there are far too few examples of actually embedding research into the process of health system reform” (Hoffman *et al.* 2012)

PRINCIPLE		BENEFITS*				CHALLENGES	SUGGESTED STRATEGIES
ID of HS relevant issues & questions	Closes RZA gap (GRIPP)	Develops a learning system	HS responsiveness	More trustworthiness HPSR			
'Substantively relevant' research questions shaped by health system actors and decision-makers	✓	✓		✓		<ul style="list-style-type: none"> - Timing and structure of research grant applications can prevent substantive engagement - HS decision-makers can be unfamiliar with research requirements and framing - HS decision-makers can have limited time to engage in research development - HS decision-makers can be disdainful of 'research' (anti-research culture) 	<ul style="list-style-type: none"> - Deliberative processes for joint development of issues/questions (before calls) - Early identification of properly representative research partners - Early negotiation in problem identification and framing
Embedded HPSR prioritises health system decision-makers during all stages of the research	✓	✓		✓		<ul style="list-style-type: none"> - Well-intended strategies can result in tokenistic engagement - Can be hampered by turn-over of people (personal, human resources) 	<ul style="list-style-type: none"> - Identify and leverage key champions – and maintain their involvement (assessing and matching needs) - Define the kind of evidence necessary to inform decision-making in that context
Foregrounds 'genuine' / 'authentic' research partnerships – involves continuous negotiation, co-creation, collaboration and trust-building between stakeholders	✓	✓		✓		<ul style="list-style-type: none"> - Some strategies can lead to 'figure-head' or 'initial' involvement of researchers/decision-makers (e.g. for grant purposes) - Can be hampered by turn-over of people (personal, human resources) 	<ul style="list-style-type: none"> - Negotiation in setting up the parameters of the partnership - Early negotiation of purpose/objectives between partners - Negotiation consistently and flexibly re-iterated - Negotiation focused on longer-term partnerships (and negotiate that time-frame together) - Negotiation of information ownership and terms of co-production - The careful analysis and negotiation of power - Intentionally sharing the 'wins' - Create opportunities for HS actors - Regular mapping processes to develop/enhance awareness of (individual and institutional) positionality within the system - Processes for 'joint reflective practice' - Grant-funders to ensure continued involvement of named investigators and collaborators (not only in initial application)
Is aligned with local research priorities, agendas and policies	✓		✓			<ul style="list-style-type: none"> - Competing interests and agendas (local and international) can hamper efforts - Can be hampered by changing priorities/agendas 	<ul style="list-style-type: none"> - Insert contextual and policy mapping processes (early and routinely) to ensure alignment with local research agendas/ priorities
Is locally-driven, should have local-ownership and legitimization	✓	✓				<ul style="list-style-type: none"> - Competing interests and agendas can hamper efforts - Research not properly legitimized by the local health system is unlikely to have uptake - Can be hampered by turn-over of people (personal, human resources) 	<ul style="list-style-type: none"> - Grant-funders ensure local ownership by imposing requirements - Processes for ensuring legitimization built into EHPSR activities - Support deliberate institution-building - Support Southern capacity-building - Support South-South network development and communication
Should seek to routinize the utilisation of evidence/research in health system decision-making		✓	✓			<ul style="list-style-type: none"> - Anti-evidence cultures resist change - Multiple and conflicting forms of 'evidence' - Little normalisation of learning system interventions - Poor quality evidence, and poor capacity for evidence use 	<ul style="list-style-type: none"> - Building institutional and individual capacity for HPSR/EHPSR - Building out and connecting to routine information systems - Adaptations to routine evaluation - Adapting decision-making cycles - Decision-makers capacitated to assess relevance, quality and appropriateness of evidence - Recognise different forms of 'evidence'

		BENEFITS*			CHALLENGES		SUGGESTED STRATEGIES		
PRINCIPLE	ID of HS relevant issues & questions	Closes R2A gap (GRIPP)	Develops a learning system	HS responsiveness	More trust-worthy HPSR				
Socially and contextually relevant research				✓	✓	- Complexity of overlapping systems and causal factors can cause challenges - Changes in context (during research)	- Ensuring HS actor involvement - Ensuring that research draws on existing assets/resources		
Positioned as insider-research – inside the health system, conducted by ‘researchers’ looking at ‘their’ system	✓	✓	✓		✓	- Insider-researchers struggle to maintain objectivity feel compelled to report more positively, get caught in power dynamics and local politics - Difficulties in evaluating own intervention/program - Tensions utilising observational and experiential data - Insiders can be blind to norms - Difficult to be detached when sees something ‘wrong’	- Appropriate assessment of what counts for EHPSR (eg quality of relationships, trust) - Consider non-traditional outputs, and some non-public forms - The creation of ‘safe space’ for engagement - Establish the space and process for addressing uncertainty		
Foregrounds the importance of trust and relationships					✓	- Sometimes slow speed of EHPSR - Can be more expensive (than other rapid approaches) - SHP researchers sometimes not trained in relationship-building approaches, or good practices for building trusting relationships - Conflicting research output priorities can put strain on relationships (e.g. academic ‘publish or perish’)	- Best practice requires time - Develop webs of embedded activities and relationships (individual & institutional) - Develop processes for co-creation, co-production - Develop specific capacities/competencies for EHPSR researchers: (A critical perspective; knows how to ‘behave as an insider-researcher’ within ‘their’ health system; high levels of communicative capacity; can translate between groups, and knows how to be a ‘knowledge broker’; knows how to network and connect across groups and institutions; can speak ‘truth to power’; has ethical mindfulness; can apply standard good practice for rigorous methods; can negotiate complexity, change and uncertainty; ‘conflict management’; ‘reputation management’; facilitation) - Engage with difficult findings in safe spaces - Feed research more rapidly back into the system		
Takes a systems perspective (differs from other embedded research approaches, such as clinical or services research)	✓	✓	✓			- Dominance of clinical/biomedical perspectives (among researchers and HS decision-makers) as barrier to taking a systems perspective - Systems perspective can add complexity (which can be difficult for some HS decision-makers) - Researchers and HS decision-makers can lack capacity for, or exposure to systems thinking	- Develop researcher and HS decision-maker capacity for systems thinking (and for explaining systems thinking to others) - Develop researcher/practitioner/funder capacity to explain the characteristics of EHPSR (challenges and benefits) - Development of trans/interdisciplinary teams and intersectional engagement		
As HPSR, focuses on inequalities, and flattening of power hierarchies				✓		- Power hierarchies are difficult to shift - Global research arrangements and imbalanced can result in ‘fake’ EHPSR arrangements	- Strategies for flattening practitioner-researcher power dynamics - Utilise EHPSR engagement as opportunity to address inequalities and power differences more broadly		
Has a health system strengthening effect	✓	✓	✓	✓	✓	- EHPSR raises and creates ethical challenges - The more embedded the research, the more potential to effect change – and the greater potential to do (intended or unintended) ‘damage’ to the health system - The HSS effect of EHPSR is not being measured	- Routinely assess potential effects of EHPSR on the HS - Build researcher competencies to handle routine ethical challenges (during research), and ethical mindfulness - Address new strategies for ethical review (e.g. peer review) - Develop competencies for reflexivity (including being able to understand own positionality and power) - Connect projects into webs of embedded joint-learning - Develop resourcing to conduct evaluation research – to assess the impact of EHPSR on the health system strengthening (utilising appropriate measures)		

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The production of this brief was supported by the Doris Duke Charitable Foundation.

We would also like to thank the reference group on EHPSR for their inputs and contributions.

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