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ANALYSIS OF EVIDENCE MAP FOR HEALTH SYSTEMS EVIDENCE BASE

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EXECUTIVE SUMMARY

A Health Systems Evidence Base (HSEB) and Evidence Heat Map have been developed through a systematic, multi-step process of evidence sourcing, focusing on ***review*** articles covering various components of the national ***health system***. Key steps used to construct the HSEB and Heat Map included: the development of a policy narrative and framework through an in-depth review of key global and national health system policy material; development of inclusion and exclusion criteria; implementation of a search strategy to generate 72 sets of review articles and over 52,000 non-unique records; filtering of articles based on target countries and regions; de-duplication and screening of articles to ensure relevance to the inclusion criteria; and a final stage of inclusion and data extraction in which a final set of 1695 articles was classified according to the policy framework interventions and outcomes.

The main finding from the Evidence Heat Map is a high-frequency of articles in four clusters, namely: (1) Delivery models' impact on the quality of and access to care; (2) Impact of roles, structure and training of the health workforce on the effectiveness of treatment; (3) Self-reflection on the practice of health systems research, knowledge translation and M&E; (4) Impact of health communication and education on adherence to and utilisation of care.

Additional medium and lower frequency clusters of review articles were identified in a range of other interventions and outcomes. There is a relatively low level of research in high-interest policy domains relevant to South Africa, such as financing of healthcare, which points to a potential need for additional research in this (and other) areas.

A key lesson and recommendation for the way forward with the HSEB and mapping is to enhance the value and relevance of the evidence base by improving parsimony of classification and to conduct a critical appraisal of review articles as part of potential synthesis activity.

1 BACKGROUND

Whilst the problems in South Africa's wider health system are complex, there is a substantial body of evidence that already exists, and can be drawn on to inform possible practice improvements as well as identify research gaps. This evidence is dispersed across a variety of domains including formal research, government outputs practitioner knowledge and even citizen experiences. Within the formal research community of universities, research councils and various healthcare NGOs and agencies, research findings are not easily shared and debated to provide credible inputs to policy processes. The need for sharing goes further, with calls for wider and deeper engagement on available evidence by involving a more diverse mix of knowledge producers and policy actors.

An additional problem is that this evidence is packaged in forms that are not easily accessible or usable by policy actors. This is further complicated by the fact that very often parliamentary policy committees, policy advisors, government policy units and programme managers are not sufficiently aware of, or well-resourced and capacitated to be able to identify (1) research material and findings related to implementation of existing policies to assess the impact of current programmes, (2) research material and findings from other contexts which could inform the design of alternative approaches, and (3) research gaps which need to be filled. At the same time, the research community as knowledge producers does not receive the necessary signals on evidence needs for policy, which leads to low relevance of research, limited uptake and, ultimately, low impact on health system outcomes.

To support the development and implementation of key health systems policies and programmes in South Africa, such as the National Health Insurance (NHI), this project maps existing evidence in this field to "illustrate clearly the current size and nature of the evidence base" as defined in the 2016 DPME Departmental Guidance Note[1]. Importantly, this means that the project *does not* seek to summarise the evidence or provide policy recommendations based on evidence findings, but rather to visually represent the availability and nature of evidence as a form of evidence synthesis.

The project has sought to deliver on four main outputs:

1. The first main output of the project is a Health System Evidence Base (HSEB) in which meta-data and key findings on over one thousand five hundred pieces of review evidence have been captured into a spreadsheet-based database. This database has been analysed to provide insights into the availability of different types of review evidence for different health systems interventions and outcomes.

[1] See p.3 in DPME and University of Johannesburg. (2016). Policy Relevant Evidence Maps: A Departmental Guidance Note. Pretoria: Republic of South Africa.

2. The second output of the project is for the spreadsheet-based data to be imported to the DPME's Evidence Mapping tool, to allow for interactive browsing of the underlying review articles.
3. The third output is this analysis of the evidence map to identify knowledge gaps related to policy interventions and outcomes, as an input to a wider health systems research agenda.
4. The fourth output is engaged policy actors, researchers and publics on the HSEB mapping and analysis.

2 DEFINITIONS

The definitions below provide a background to the interventions and outcomes contained in the policy narrative and framework.

2.1 Outcomes

Health system and outcomes: This DPME project draws on the WHO definition of a health system and associated outcomes from 2007 (emphasis added): 'A health system consists of all organizations, people and actions whose primary intent is to promote, restore or maintain health. *This includes efforts to influence determinants of health as well as more direct health-improving activities. A health system is therefore more than the pyramid of publicly owned facilities that deliver personal health services*. It includes, for example, a mother caring for a sick child at home; private providers; behaviour change programmes; vector-control campaigns; health insurance organizations; occupational health and safety legislation. It includes inter-sectoral action by health staff, for example, encouraging the ministry of education to promote female education, a well-known determinant of better health.'[2] In this definition, the providers of services in the wider *health* system may include schools (with oversight from the Department of Basic Education) and social assistance programmes (with oversight from the Department of Social Development), and would seek certain outcomes related to health that a Department of Health may not be directly responsible for. Importantly, a system view looks not only at the activity of multiple components, but also at the relationships between them and the various inputs and enablers or disablers of effective functioning of the system. The overall health system goals or outcomes defined by the WHO are: '(1) ***improving health and health equity***, in ways that are (2) ***responsive****, (3)* ***financially fair***, and make the best, or most (4) ***efficient***, use of available resources.'[3]

Healthcare system and outcomes: The health*care* system is a subset of the wider health system and focuses on those components related more directly to the delivery of promotive,

[2] WHO. 2007. p.2
[3] Ibid. Emphasis and numbering added.

preventative, curative, rehabilitative and palliative *care* services discussed below. The providers of these healthcare services would typically include general practitioners, specialists, nurses, pharmacists, allied health professionals (e.g. therapists, dieticians, optometrist, etc.), care givers based at clinics, hospitals and private practices as well as community health workers. Almost all of these functions - supported by relevant finance, infrastructure and management functions – and associated healthcare outcomes would fall under the responsibility of a national or provincial Department of Health. The ultimate healthcare system outcomes are the same as those introduced in the definition above, although the means to achieving these goals are slightly narrower.

Quality: In terms of the Donabedian model used in South African policy discussions noted below, quality is addressed both as an intervention (structure and process) as well as an outcome. As an outcome, the WHO identifies four main elements: [4]

- **Effective**: is the extent to which a specific intervention, procedure, regimen or service, is appropriate or relevant to the clinical needs, given the best current evidence, and whether it produces the intended result.[5]
- **Safe**: is concerned with preventing, avoiding and ameliorating unintentional adverse outcomes or injuries for patients as a result of the health care itself.[6] It seeks to address areas of risk such as hygiene practices or use of medicine.
- **Responsive/ person or patient-centred**: Responsiveness is used synonymously with patient-centredness, and is concerned with people's non-health and non-financial experience of healthcare.[7] It focuses on elements such as dignity, confidentiality, choice of provider[8] *as well as* continuity of care across providers and institutions.[9] Responsiveness can therefore be measured by gauging user or patient 'satisfaction' with the service they have received.[10] In certain health system frameworks, responsiveness is a sub-category of quality[11], whilst in others responsiveness is a final outcome or goal.[12] In this project, responsiveness is included as a sub-category of quality.

[4] WHO. 2010. Monitoring the building blocks of health systems: a handbook of indicators and their measurement strategies. See p.3, but also various international and South African quality guidelines and discussion documents referred to in the narrative below.
[5] WHO. Health Systems Strengthening Glossary. https://www.who.int/healthsystems/hss_glossary/en/index4.html
[6] OECD. 2006. Health Care Quality Indicators Project Conceptual Framework Paper
[7] OECD. 2006
[8] WHO. 2000. WHO Strategy on Measuring Responsiveness
[9] OECD. 2006
[10] WHO. 2010. p.90
[11] See OECD HCQI project focus in WHO. 2018
[12] WHO. 2007. Strengthening Health Systems to Improve Health Outcomes: WHO's Framework for Action.

- **Timely**: has a clinical element (length of time from admission to treatment) and a patient-centredness element (patient's perception of their ability to get an appointment for care as quickly as they wanted).[13]
- **Adherence/ utilisation**: For the purposes of the HSEB, a fifth outcome was included under quality indicating adherence, utilisation or uptake (such as by patients, to medication or a series of treatments; and by providers, to guidelines and protocols). Utilisation in particular may be seen as a component of effectiveness,[14] however, for this evidence mapping process the large volume of material speaking explicitly to utilisation and adherence justified separating it out as a standalone term.

Equity: can be operationalised in two ways: (1) horizontal equity which refers to ensuring that all people - regardless of race, gender or income – receive similar care for similar need; and 2) vertical equity which refers to those with unequal needs receiving different or unequal care. Overall, it is about ensuring fair treatment based on the needs of beneficiary populations.

Coverage: needs to be understood in terms of multiple dimensions that include; which populations are covered (population coverage), range of services (service coverage) and services accessible without financial barriers (financial coverage). The term 'coverage' has different emphases in different countries. In some countries there is a stronger emphasis on 'broadening the package' of services available to citizens. In other countries more emphasis is placed on extending access to excluded groups.[15] For this project, universal health coverage (UHC) aims to achieve:

- **Access:** is mainly concerned with the physical availability of services for all population groups with no financial barriers, especially at a primary care level. For the WHO 'accessibility' is defined as: 'Services are directly and permanently accessible with no undue barriers of cost, language, culture, or geography. Health services are close to the people, with a routine point of entry to the service network at primary care level'.[16]
- **Services:** expanding the basket of services to meet the healthcare needs of all population groups. The ultimate aim is to avail comprehensive services to all.
- **Financial:** health system financing aims to **raise sufficient funds** in ways that people can **access the services** they need **without risk of financial catastrophe** from having to pay for them.[17]

[13] OECD. 2006.
[14] For example, see Cinaroglu, S. and Baser, O. 2018. Understanding the relationship between effectiveness and outcome indicators to improve quality in healthcare. Total Quality Management & Business Excellence, 29(11-12), 1294-1311.
[15] WHO. 2007. p.4
[16] WHO. 2010. p.3
[17] WHO. 2007. p.21

For this evidence mapping we approach equity and universal coverage as linked outcomes, as the concern is for fairness and justice in access to services and, ultimately, health outcomes.

Efficiency: In general, two forms of efficiency are considered in relation to health systems outcomes. ***Technical efficiency*** is concerned with how healthcare resources are being used to get the best value-for-money. It is concerned with the relationship between resource inputs, intermediate outputs and final health outcomes. It is about answering the questions: can we get the same output/outcomes with less resource endowment or proportional more from investing additional resources. ***Allocative efficiency*** is concerned with the broader trade-offs across the system, when deciding which interventions or services (and combinations) will have the largest impact on priority outcomes. Efficiency is also associated with accountability in this definition by the WHO: 'Health services are ***well managed*** so as to achieve the core elements described above with a ***minimum wastage*** of resources. Managers are allocated the necessary authority to achieve planned objectives and held ***accountable for overall performance and results*****.** Assessment includes appropriate mechanisms for the participation of the target population and civil society'.[18] For this evidence mapping process, accountability is separated out as a specific outcome of interest, given the high importance attached to this goal in local policy discussions.

Capability: As an outcome, capability is concerned with improvements (or decline) in the skills and competence of the health workforce involved with care management and practice; as well as the broader network of providers (including community-based health workers) involved in shaping health outcomes. It includes aspects related to technical competence as well as cultural competence; in being able to assess, treat and communicate with clients.[19]

Accountability: Accountability is often associated with improved leadership and governance in the health system, and may be an intervention *and* an outcome (as with quality above)[20]. For the WHO, accountability is concerned with management of relationships between a wide variety of stakeholders in health; from internal management-staff interactions to wider societal interactions involving service providers, NGOs, individuals and citizens (such as through local clinic committees). Ultimately, accountability involves: delegation of responsibility for providing services, allocation of resources to perform tasks, and monitoring and managing performance.[21]

For this evidence mapping we view capability and accountability as a linked outcome, given that the main concern is for ensuring providers involved in shaping health outcomes has the

[18] WHO. 2010. p.3
[19] OECD. 2006.
[20] See South African policy documents discussed in sections below.
[21] WHO. 2010. p.86

necessary ability, resources, support and oversight to perform their roles. At the same time, we separate the narrower, internal capabilities and accountability of the health workforce to management and peers, from the wider accountability of healthcare providers, management and policy actors to (and support from) society and communities.

Health outcomes (equity and level): Is concerned with the impact of the health system on the overall disease burden, morbidity and mortality of a population. There has been an expansion in the measurement of indicators related to morbidity and quality of life (disease and discomfort).[22] Equity of health outcomes looks at differences in health outcomes for different population groups or geographies.

2.2 Interventions

Promotive, preventative, curative, rehabilitative and palliative (PPCRP) services and outcomes: Within the health system there are various individuals and organisations providing specific PPCRP services. Whilst there is some overlap, PPCRP services (and their providers) are mainly concerned with improvement in the health of individuals or a population, rather than the operation of the system. These interventions and outcomes are only included in the evidence mapping process to the extent that it relates to system operation and no explicit intervention category is created for these activities.

Service delivery: Service delivery in the context of health systems discussions is mainly concerned about the mechanisms of provision, but also encouraging adoption, of healthcare services (although broader aspects related to the health system may be involved). The WHO definition in this case is: “The service delivery building block is concerned with how inputs and services are organized and managed, to ensure access, quality, safety and continuity of care across health conditions, across different locations and over time.”[23] This includes ***raising demand for services*** through social engagement, ***packaging integrated services*** based on population needs, ***organising the network of (public and private) providers*** to enable integration/ continuity of services for users without duplication, designing ***management*** models including appropriate levels of decentralisation, and ensuring availability of ***infrastructure and logistics*** around health facilities. As part of service delivery we include explicit initiatives aimed at ***quality and safety improvement/ assurance*** such as the development and adoption of treatment protocols and clinical management schedules; supportive supervision, performance assessment, training and continuing education for the health workforce; and procedures for registration, licensing and inspection of facilities, processes and practices.[24]

[22] WHO. 2018. Health system performance assessment in the WHO European Region: which domains and indicators have been used by Member States for its measurement. WHO Health Evidence Network Synthesis Report 55.
[23] WHO. 2007. p.14
[24] WHO. 2007. p.16

Health workforce: This includes those involved in providing PPCRP services to users, as well as those involved in health management and governance, in both the public and private sector. A key action related to the health workforce is the ***long-term policy development and planning***, taking into account changing demographics and disease burden, socio-economic events and political changes (locally and internationally); as well as changing skills needed for using health-related technologies; amongst others. Incorporated under this is the important role played by ***multi-sector health workforce governance structures*** (such as professional councils) in collecting workforce information, coordinating certification and training, and shaping plans. Additional issues including ***training and skills development,*** which looks at education and mentoring but also professional registration and skills standards; the ***roles and structure*** in which the workforce is arranged, such as through task-shifting, multi-disciplinary teams and with community health workers; how to ***recruit and remunerate*** healthcare workers including retention plans and managing im/emigration, and how workforce ***motivation and health*** may be enhanced. Norms, standards and data related to the health workforce are incorporated under HR policy and planning as well as training and skills development. Explicit intervention categories were also identified for ***performance management*** which includes supervision, and for initiatives that aim to increase ***cultural sensitivity and awareness***, such as through language courses.

Information: This is concerned with the information systems used ***to support integrated service delivery*** (continuity), enabled by, for example, secure and reliable sharing of patient records. It also relates to the data gathered about how the system is functioning or operating, as well as the outputs and outcomes; and finally impact ***to enable decision-making*** related to care management (increasingly through self-care), in facility management and policymaking. In addition to the almost-daily collection of data on facility and health workforce activity; there are also regular surveys with users on facilities and service to understand responsiveness; as well as tracking of health system safety and quality, usually in terms of treatment outcomes; and finally longer term and larger scale monitoring and surveillance programmes to track to track changes in health outcomes in the population. Key issues to be addressed include, amongst others, availability of information infrastructure and system support skills, data governance and standards including information privacy, and the skills and motivation to use information (and associated research/ insights) as a part of decision-making.

Medical products, vaccines, and technologies: This is category of interventions is mainly concerned with ensuring the availability of medicine, vaccines, technologies and related commodities across the healthcare system. This includes ensuring ‘quality, safety, efficacy and cost-effectiveness, and their scientifically sound and cost-effective use’. The key actions identified by the WHO include:

- ‘National policies, standards, guidelines and regulations that support policy;

- Information on prices, international trade agreements and capacity to set and negotiate prices;
- Reliable manufacturing practices and quality assessment of priority products;
- Procurement, supply, storage and distribution systems that minimize leakage and other waste;
- Support for rational use of essential medicines, commodities and equipment, through guidelines, strategies to assure adherence, reduce resistance, maximize patient safety and training.'[25]

Of additional interest in this category is the research, development and manufacturing of products and related concerns such as around intellectual property, trials and approval processes, supporting research and manufacturing infrastructure and skills. Finally, we are concerned with how health technology assessments are performed and used as part of decision-making about the introduction of new health products (and practices).

Financing and financial management: As noted above, health system financing aims to raise sufficient funds in ways that people can use needed services without risk of financial catastrophe from having to pay for them. The key mechanisms for achieving this include: 'the (1) collection of revenues – from households, companies or external agencies; the (2) pooling of pre-paid revenues in ways that allow risks to be shared – including decisions on benefit coverage and entitlement; and (3) purchasing, or the process by which interventions are selected and services are paid for or providers are paid.'[26] Mechanisms for ***funding and risk pooling*** are therefore of particular interest, especially in South Africa where there is an unequal allocation of healthcare resources; so too is evidence related to strategic or effective purchasing and ***procurement*** methods which can improve the efficiency and effectiveness of healthcare delivery. There are a number of complementary and enabling actions such as improving ***financial management*** and contracting skills within the public service to reduce wastage, which is closely associated with accountability and efficiency as noted above. In addition, a significant category of interventions relates to financial ***subsidies and protection for the vulnerable***, such as through vouchers, free and subsidised services, as well as more targeted incentives for adherence to treatment regimes.

Leadership and governance: Is one of the WHO's key health system building blocks, and is concerned with health sector policies; harmonization and alignment; oversight and regulation.[27] The South African Lancet National Commission's[28] definition of a High Quality Health System views effective leadership and governance as critical to a more accountable

[25] WHO. 2007. p.20
[26] WHO. 2007. p.21. Emphasis and numbering added.
[27] Ibid. p.14
[28] South African Lancet National Commission. 2018. Confronting the Right to Ethical and Accountable Quality Healthcare in South Africa: Lancet National Commission Consensus Report.

and high quality health system. Similarly, the 'Presidential Health Summit' Compact[29] aims to strengthen governance and leadership to improve oversight, accountability and health system performance at all levels. For this evidence mapping project, these aspirations reflect the desire for a broad sector ***vision supported by feasible policies and plans***, that is aligned internally but also to international commitments. Moreover, policies and governance interventions need to consider relationships and ***linkages with other sector departments*** as well as mechanisms that can support sustainable ***partnerships with the private and civil society sectors.*** Part of the leadership and governance building block relates to broad ***oversight and regulation*** of providers active in the healthcare sector, and ***performance management*** of various spheres of policy and provider actors. Of increasing interest is the ***decision-making approach*** used in the development of policies and plans, including the authenticity of community consultations and the use of evidence and data, as well as mechanisms for ***ensuring integrity and preventing corruption***.

[29] Presidential Health Summit. 2018. Strengthening the South African health system towards an integrated and unified health system. Pretoria: Republic of South Africa.

3 PROCESS FOR DEVELOPING HSEB AND EVIDENCE MAP

The full project plan for development of the HSEB is outlined in the updated scope of work and SLA. A summary of the key steps followed is outlined in the figure below. Overall, adjustments were made to timing and type of evidence collected to ensure that relevant and useful insights were provided into the health systems evidence field, whilst ensuring that project activities were feasible and achievable within the available time. Two adjustments are important to note:

- **Inclusion:** As outlined in more detail during later sections, due to the high volume of research on health systems globally, a decision was made to focus the evidence base and map on review-type (e.g. systematic and scoping reviews) research articles formally published and available on public databases (e.g. Scopus, EBSCO). As a result, primary studies and grey literature were not included in the final search process.
- **Appraisal:** Again, due to the high volume of research material a decision was made to not conduct full critical appraisal of articles. Instead, the filtering process involved screening of abstracts and full-text articles based on inclusion and exclusion criteria. In addition, during data extraction, the research articles were classified according to the type of review (e.g. systematic review or literature review) which the project team sees as providing a proxy – although tentative - indication of the article quality.

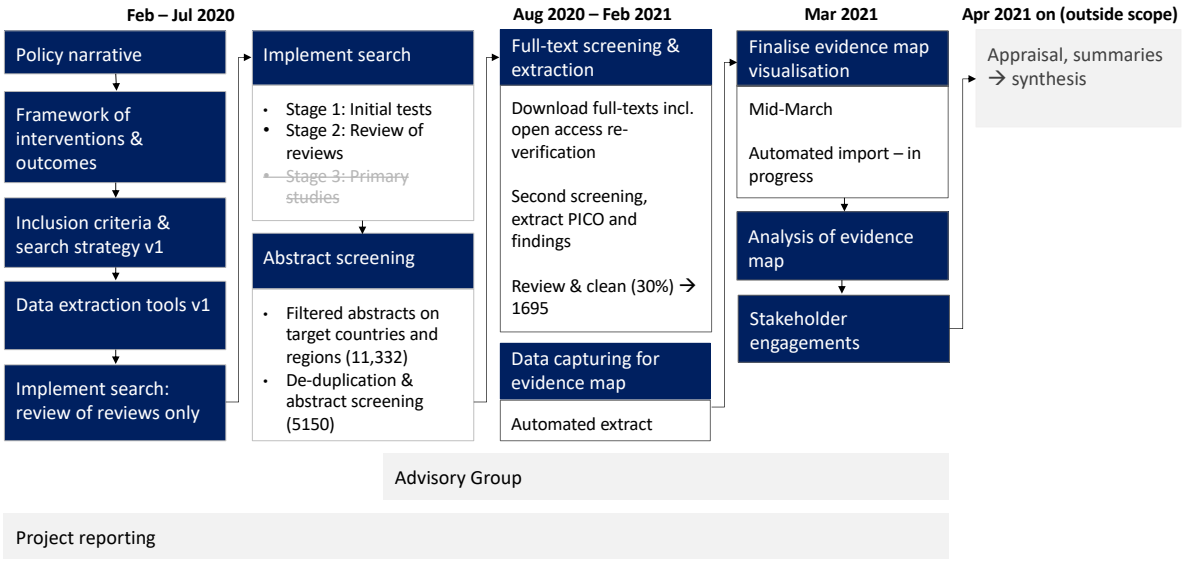

Figure 1 Project stages

4 POLICY NARRATIVE AND FRAMEWORK

South Africa has made significant progress in achieving significant health outcomes since 1994. However, a number of challenges persist, and the country is now at a critical juncture in its health policy cycle. Given the experience of past national health crises and current COVID-19 pandemic, health systems are put to a test to perform at its maximum. With constant pressure to improve the quality of healthcare services in all parts of the country, to address the burden of disease and to respond effectively to emerging health crises; much of the current policy attention is now on the implementation of National Health Insurance (NHI) as a funding mechanism for delivering universal health coverage (UHC) to all South Africans.

The imminence of NHI has led to a new level of interest in how the healthcare 'system' is functioning; including, amongst others, how it is financed, how services are provided, and the governance of these activities. At the same time, there has been increasing recognition by practitioners, researchers, the World Health Organisation (WHO) and most other countries of the interconnection between various health services, enablers and outcomes; as well as between broader social and economic services and outcomes. As a result, a systems perspective has become a prominent feature of policy, research and interventions in this field.

4.1 International Health System Perspective

Since the WHO's 'Framework for Action' was published in 2007,[30] the concept of health system 'building blocks' and outcomes has become a key organising framework for many countries' health policy and planning activities. The framework identifies a series of interventions (Building Blocks) which drive a number of intermediate outcomes (Access, Coverage, Quality, Safety) and a set of Overall Goals/Outcomes. These interventions and (intermediate and final) outcomes provide a useful template for understanding how policy actions and goals in South Africa relate to international thinking.

[30] WHO. 2007.

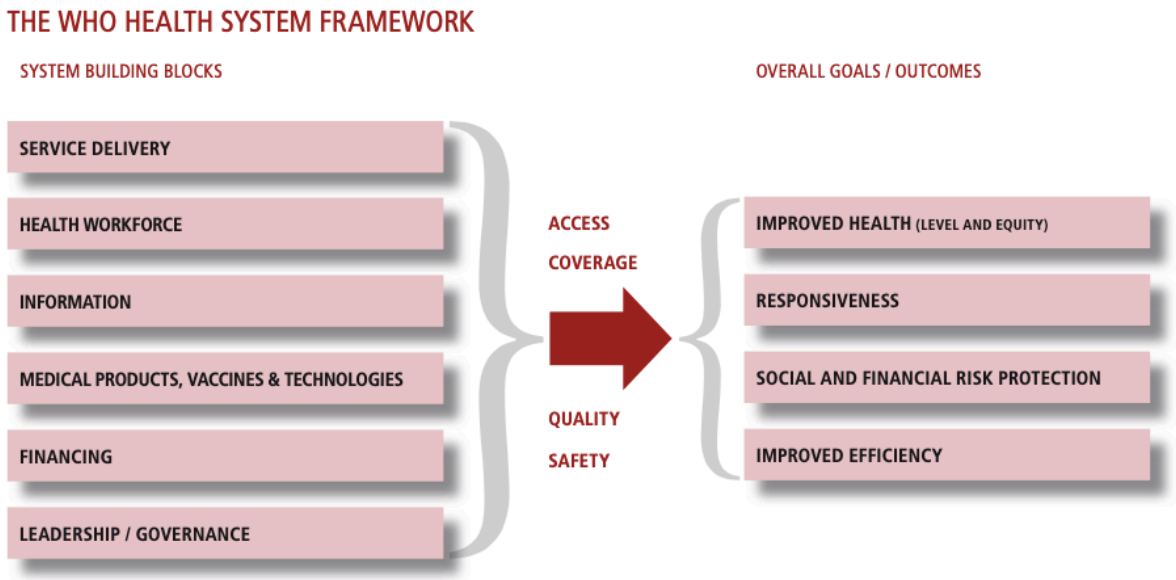

Figure 2: WHO Health System Building Blocks and Outcomes

The WHO then lists priorities by building block[31] which point to possible interventions:

1. **Service delivery:** packages; delivery models; infrastructure; management; safety & quality; demand for care
2. **Health workforce:** national workforce policies and investment plans; advocacy; norms, standards and data
3. **Information:** facility and population based information & surveillance systems; global standards, tools
4. **Medical products, vaccines & technologies:** norms, standards, policies; reliable procurement; equitable access; quality
5. **Financing:** national health financing policies; tools and data on health expenditures; costing
6. **Leadership and governance:** health sector policies; harmonization and alignment; oversight and regulation

Several variations and updates to the WHO framework have been developed independently or as extensions of the building blocks. For example, a 2019 paper[32] draws on a review of literature and international consultations (including in South Africa) to propose an 'expanded' framework, summarised in the figure below. This framework incorporates a more explicit reference to community health interventions and outcomes. A similar framework developed for an evidence mapping on primary health care highlights community engagement aspects,

[31] Ibid. p.14
[32] Sacks E., Morrow M., Story W.T., et al. 2019. Beyond the building blocks: integrating community roles into health systems frameworks to achieve health for all. BMJ Global Health.

closely linked to social accountability and transparency, which aligns with the narrative of South African health policy below.[33]

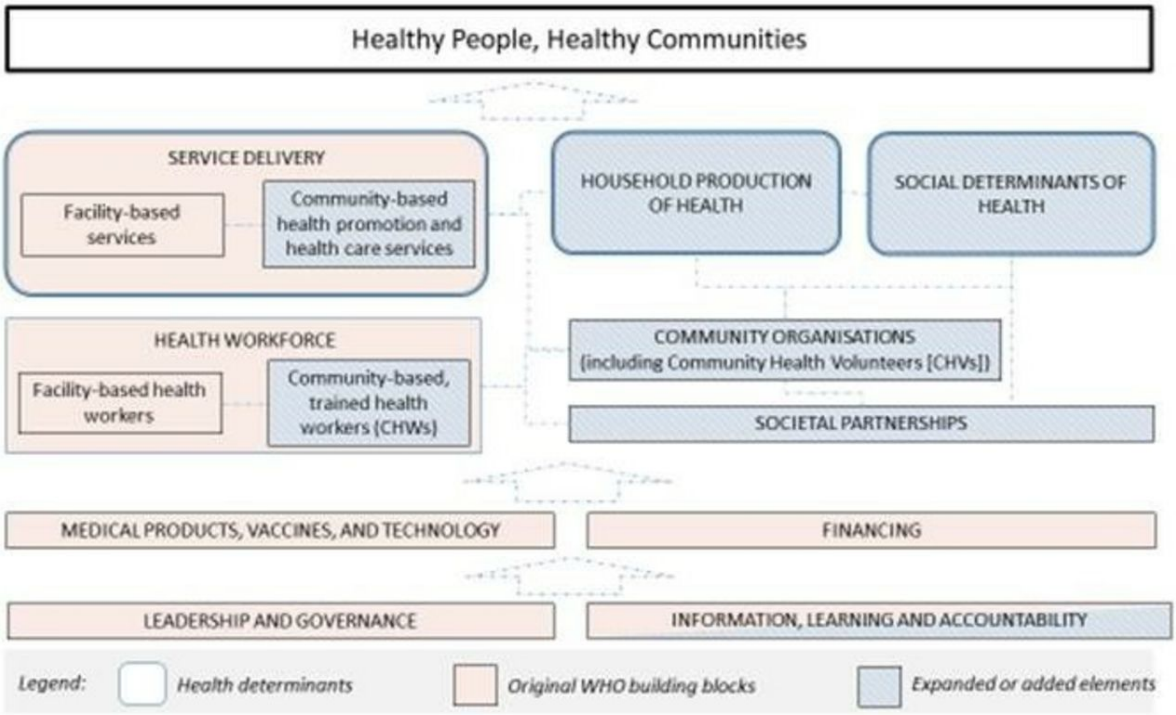

Figure 3: 'Beyond the building blocks' expanded framework[34]

In addition to these high-level perspectives on health system components, a large number of commentaries, guidelines and frameworks have been developed by the WHO and other global health system stakeholders which provide more detailed insights into a system-based approach to health governance. Three key perspectives are noted below which are relevant to understanding potential interventions, outcomes, relationships and evidence types that may be included in an evidence mapping process.

(1) Operationalising systems thinking: To operationalise systems thinking as part of health programme decision-making, policy actors may follow a series of steps; from convening stakeholders, and developing and updating a design to planning an evaluating approach.[35] By adopting these steps, those involved in designing an intervention may take into account the more complex network of dependencies shaping health outcomes, as summarised in the before and after graphics of the figure below. This perspective is

[33] Rahman, et al. 2019. Identifying gaps in primary health care policy and governance in Low and Middle Income Countries: Protocol for an evidence gap map. BMJ Open.
[34] Ibid.
[35] WHO. 2009. Systems thinking for health systems strengthening.

important for developing an evidence mapping framework in that it highlights process and relationships between interventions as an area of research which should be reflected in the analysis.

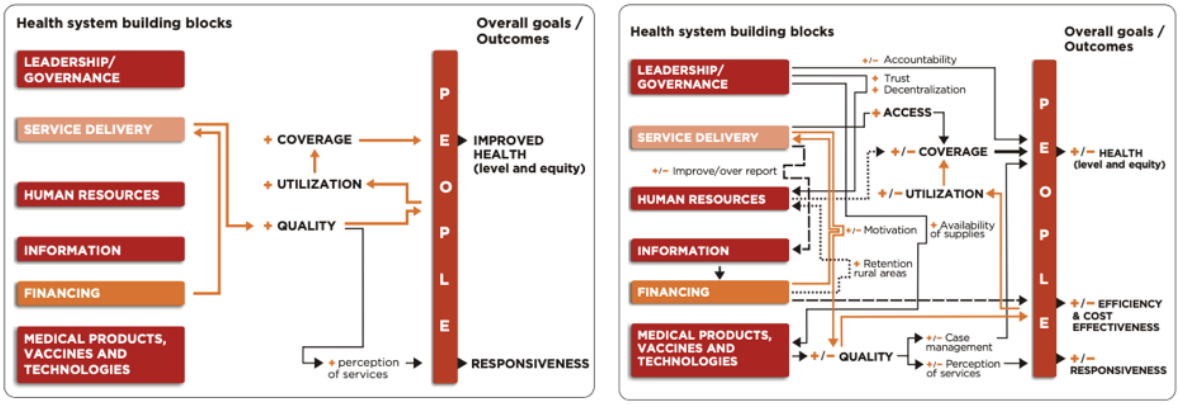

Figure 4: Before (left) applying systems thinking and after (right) applying systems thinking to 'Pay-for-Performance' programme design[36]

(3) Monitoring health systems: Monitoring and evaluation (M&E) is a key action in health systems strengthening. In the figure below, a framework for M&E 'shows how health inputs and processes (e.g. health workforce and infrastructure) are reflected in outputs (e.g. interventions and available services) that in turn are reflected in outcomes (e.g. coverage) and impact (morbidity and mortality)'. [37] Importantly the framework suggests how elements or 'building blocks', outputs and outcomes of the system are related, and what evidence (and data) may be used to evaluate them.

[36] Ibid. p.53 and p.60
[37] WHO. 2010.

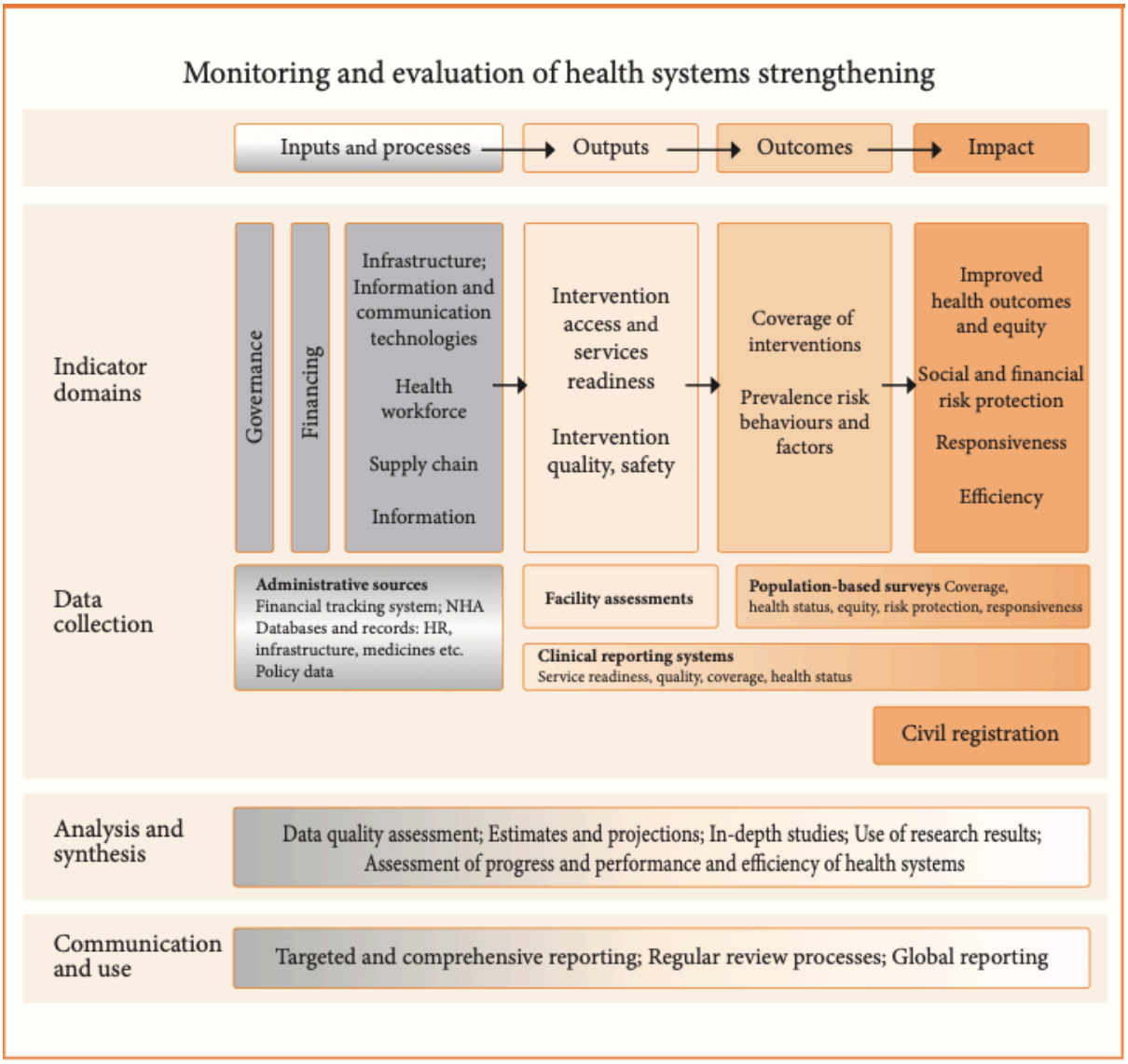

Figure 5: Monitoring and evaluation of health systems strengthening[38]

Later guidelines on health systems M&E place the various elements at different stages of the 'value chain'. For example, the WHO's Global Reference List of 100 Core Health Indicators lists the majority of 'health system'-related indicators as inputs and outputs, although an additional category - '**Financial risk protection' -** is listed under impact indicators.

[38] Ibid. p.viii

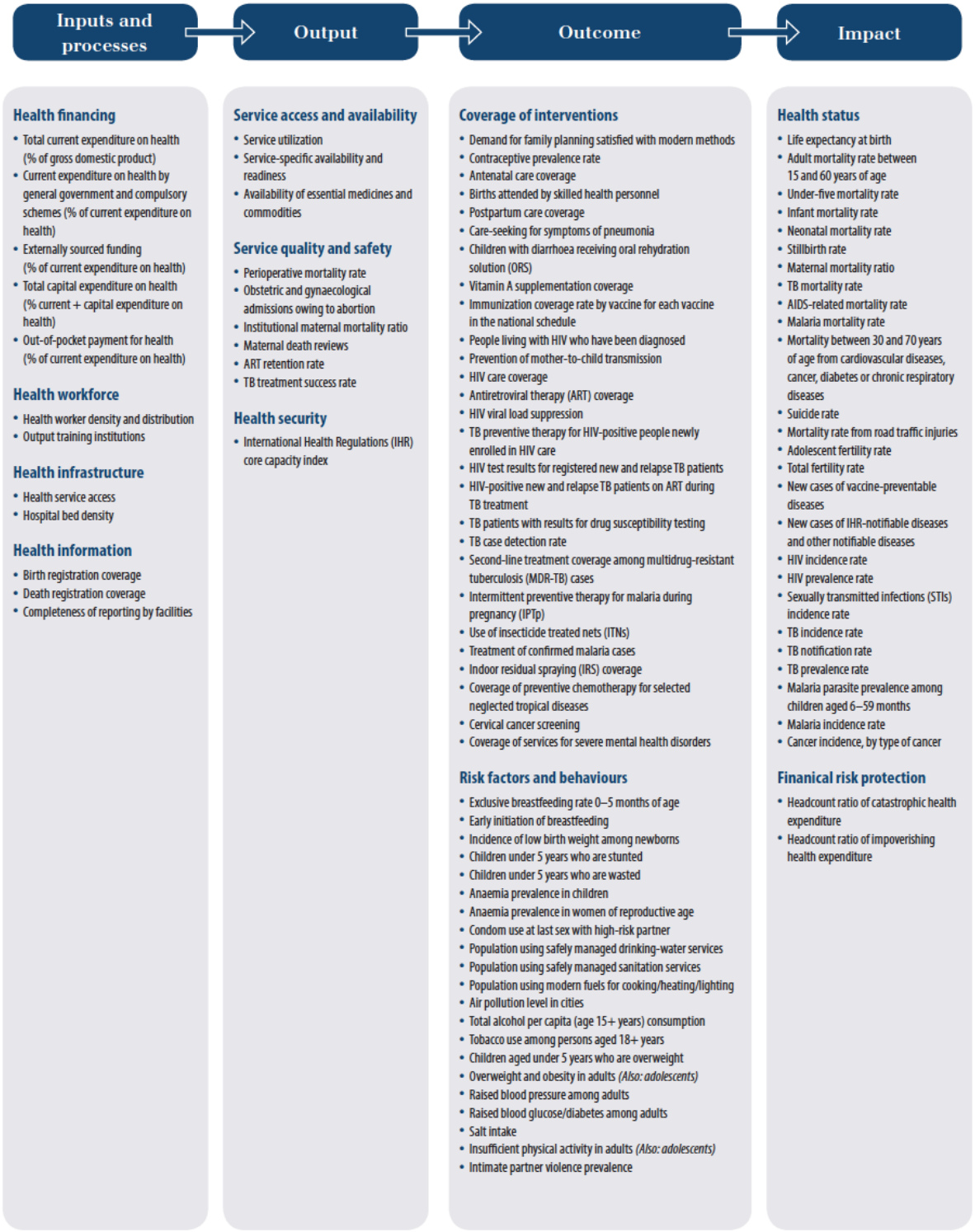

Figure 6: 100 Core Health Indicators by results chain[39]

[39] WHO. 2015. Global Reference List of 100 Core Health Indicators. p.20

The OECD has developed similar frameworks for health and healthcare system performance measurement which are useful for identifying and understanding health system outcomes.[40] As has the European Commission, including relatively recent work on a Joint Assessment Framework in the Area of Health by the Social Protection Committee.[41] Of potential relevance to South Africa is an influential paper and framework synthesising approaches to health systems performance assessment in developing countries which is more explicit about equity components.

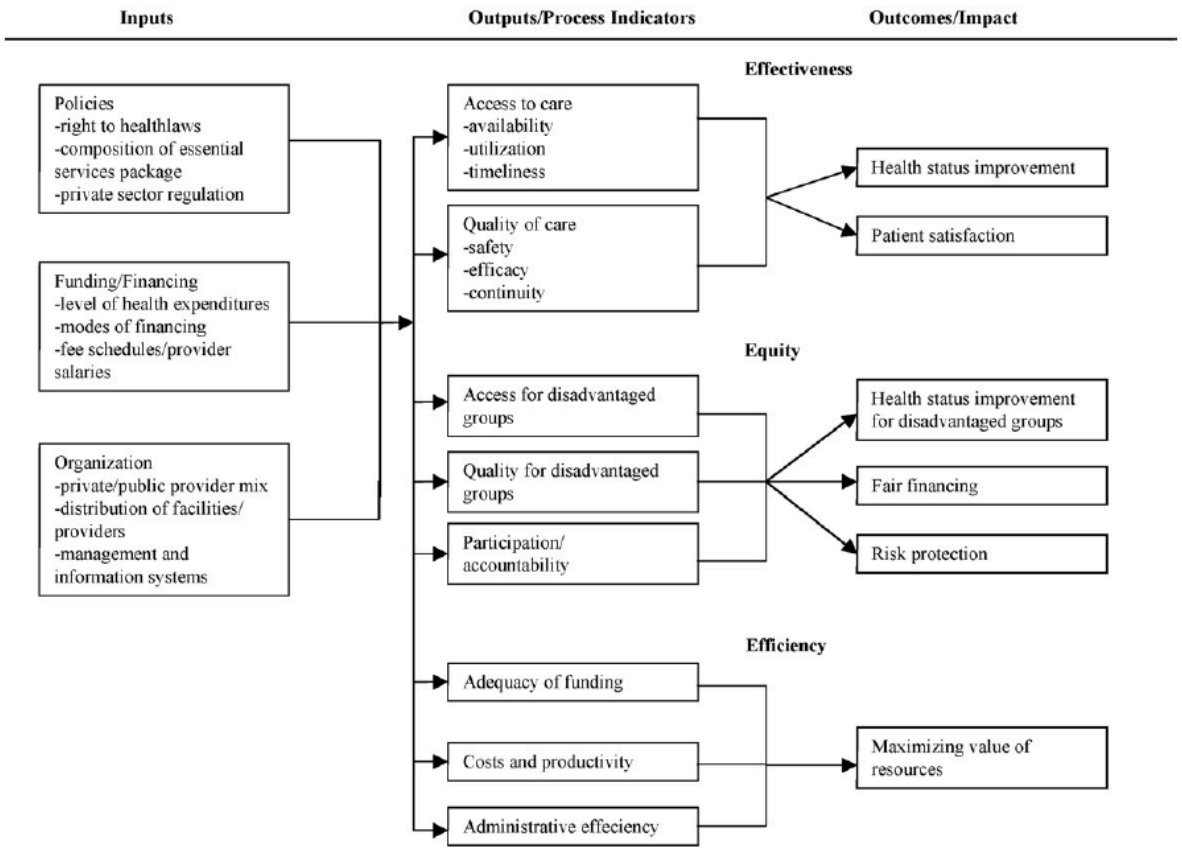

Figure 7: Framework for health systems performance measures[42]

In South Africa, researchers and policy actors in the NDoH collaborated to develop the framework below, which is anchored in a desire to improve the *quality of care*, whilst drawing on the WHO building blocks and a life course perspective for a holistic approach.[43] The

[40] OECD. 2000.
[41] See https://ec.europa.eu/social/main.jsp?catId=758
[42] Kruk, M. and Freedman, L. 2008. Assessing health system performance in developing countries: A review of the literature. Health Policy.
[43] Begg et al. 2018. Development of a National Strategic Framework for a High-Quality Health System in South Africa. In *South African Health Review*. Durban: Health Systems Trust

anticipated health system outcomes and impact reflect similar concerns identified earlier; from safe, timely and effective healthcare services to equitable access and an efficient system.

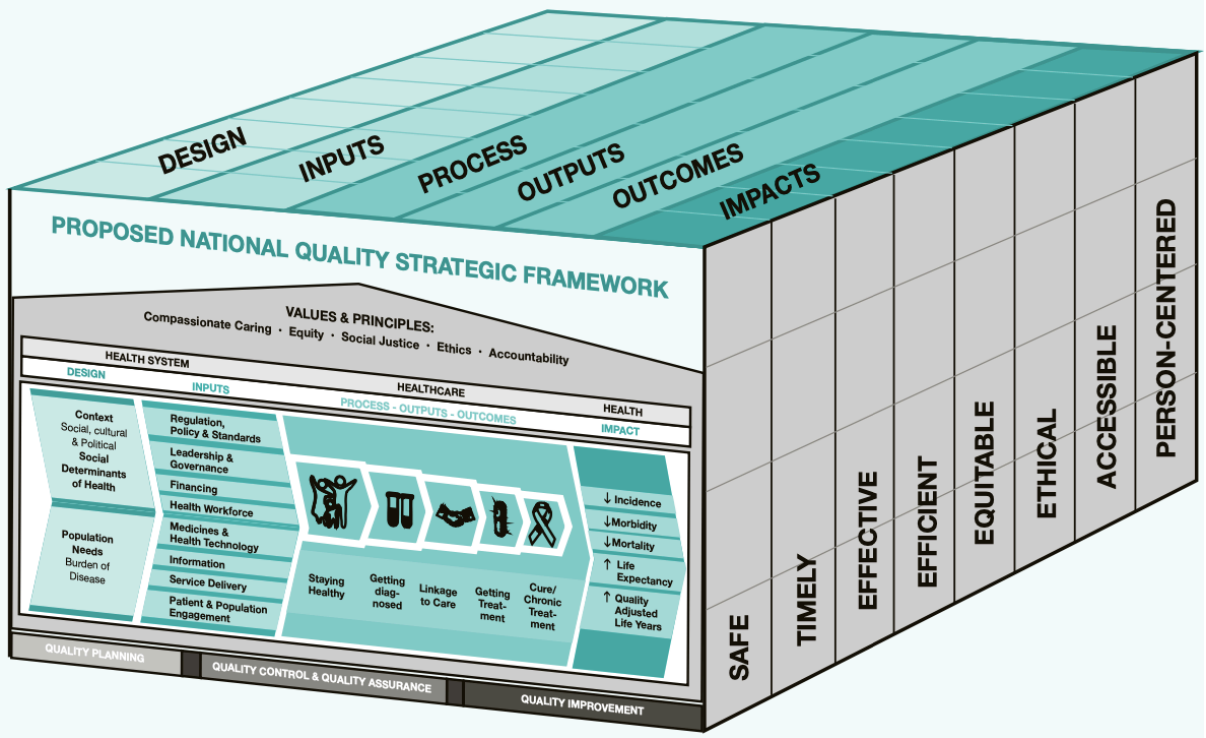

Figure 8: Proposed National Strategic Framework for a high-quality health system with a metrics matrix, South Africa, 2018

The South African Lancet National Commission's[44] definition of a High Quality Health System identifies similar outcomes, including; **addressing South Africa's disease burden** through a functioning health system; **accountable** – through effective leadership and governance; **people-centred** – through strengthened patient and community participation; **responsive** – through timely, respectful and safe care; **adaptive** – through information and evidence-informed decision-making; committed to equitable allocation and distribution of resources; effective in the delivery of quality care; **collaborative** – in seeking to address social determinants of health.

(2) Researching health policy and systems: Importantly for an evidence mapping process we need to consider what forms of health systems research are valid. An influential commentary on health policy and systems research (HSPR) recommends looking at health systems from a more diverse set of perspectives[45], including:

[44] South African Lancet National Commission. 2018.
[45] WHO. 2012. Health policy and systems research: a methodology reader. Gilson, L. (ed.)

- **Levels**: from macro-level national and global to meso and micro-level district and local. System roles at *national level* include, for example, "balancing policies, strategies, resource allocation and health worker reward systems in line with overall system goals" or "interactions with other national agencies that influence health as well as international agencies and processes". At *local level* system roles may include “coordination among local actors; management of health services, activities and health workers”.
- **Knowledge paradigms** (see figure below): is concerned with how different researchers, knowledge producers and custodians (as well as policy actors and users of health services) measure, understand or experience the system. These perspectives are important for defining and qualifying the scope of evidence included in the mapping process.

Knowledge paradigm	Positivism	Critical Realism	Relativism (interpretivism / social constructionism)
Types of questions addressed	Is the policy or intervention (cost)-effective?	What works for whom under which conditions?	How do actors experience and understand different types of interventions or policies? What are the social processes, including power relations, influencing actors' understandings and experiences?

Figure 9: Extract from table on ‘Key elements of knowledge paradigms as applied in HPSR[46]

In the South African context, an HSEB would need to recognise research covering different and intersecting levels or spheres of governance (along with different roles); as well as, amongst others, the role that community-based actors and indigenous knowledge plays in the wider health system.

In addition to these system-level perspectives, key global stakeholders in health systems governance have developed commentaries on the implementation of specific components. For example, **under the ‘Information’ building block**, the WHO has proposed a framework covering six key elements of a country health information system: resources (incl. legislative and planning frameworks, personnel, financing, technology, coordinating mechanisms); indicators and targets for health determinants, inputs/ outcomes and status; data sources and standards; data management; information products (evidence to inform action); dissemination and use.[47]

[46] Ibid. p.35
[47] WHO. 2008. Framework and Standards for Country Health Information Systems.

To support the development of a research agenda and identification of research gaps, the HSEB will need to be cognisant of international practices and guidelines related to health systems strengthening, which means that the current formulation of a narrative and framework should take into consideration broader dimensions beyond national perspectives. It is also clear from the review of the above material that the WHO and other international stakeholders anticipate that countries will develop their own approach to health system governance. Key aspects of the South African perspective on health systems strengthening are reviewed below.

4.2 South African Health System Perspective

4.2.1 Wider Health System

The importance of a system perspective on health outcomes is highlighted in the lead quote of Chapter 10 of the National Development Plan (NDP):

> *'Health policy was once thought to be about little more than the provision and funding of medical care: the social determinants of health were discussed only among academics. This is now changing. While medical care can prolong survival and improve prognosis after some serious diseases, more important for the health of the population as a whole are the social and economic conditions that make people ill and in need of medical care in the first place. Nevertheless, universal access to medical care is clearly one of the social determinants of health.'*[48]

The Chapter defines a series of nine targets - five of which are related to promotive, preventative, curative or rehabilitative outcomes – and another four which are related more to system outcomes. There is no initial target related to social determinants affecting health, but this is raised under challenges and critical actions. The four, plus one, system targets are summarised below:

- Complete **health systems reforms**/ Strengthen national health system
- **Primary health care** teams provide care to families and communities
- **Universal health care coverage**/ Implement the NHI Scheme
- Fill posts with skilled, committed and competent individuals/ Build **human resources**
- Address **social determinants affecting health and disease**/ Address social determinants of health

[48] NDP. 2012. *Chapter 10: Promoting Health*. The Presidency. Pretoria: Republic of South Africa. quoting Wilkinson, R. G. and Marmot, M. 2003. *Social Determinants of Health: The Solid Facts*. World Health Organisation.

Prior to the NDP, and subsequently, a number of additional health and healthcare system policies have been developed by the South African government. These policy milestones are summarised in the Figure below.

For the development of the HSEB and evidence map, the focus of analysis for development the policy narrative and framework was on the items highlighted in dark blue. Future development of the narrative and expansion or refinement of the narrative and framework may look at material highlighted in light blue (short term) and grey (medium term).

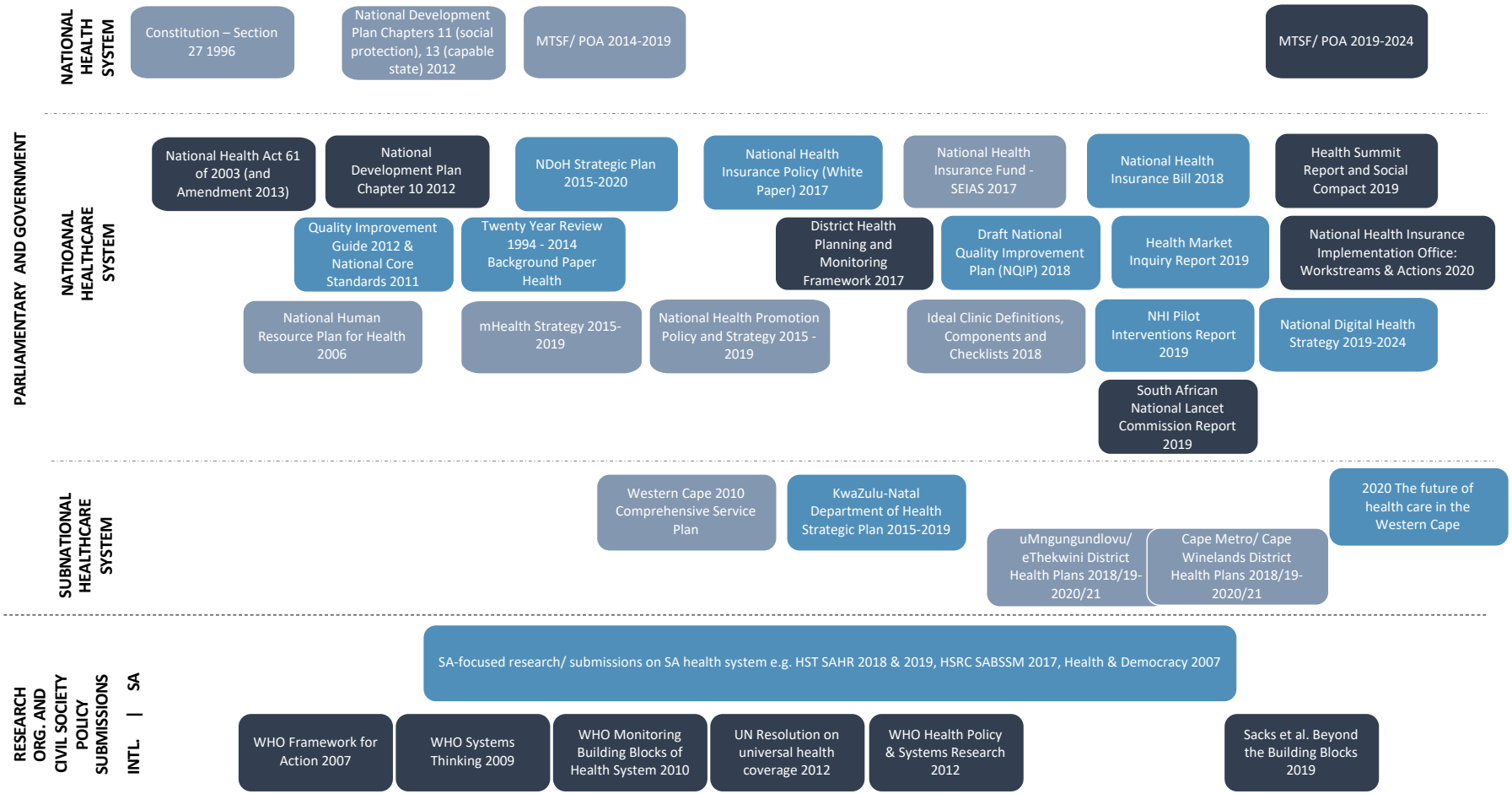

Figure 10: Health system policy map (2003 - 2020) (Dark blue: analysed, Blue: future analysis (short term), Grey: future analysis (medium term))

The current administration and its Executive Authority, which started a new five-year term in 2019, has sought to establish stronger partnerships with the private sector and non-governmental entities through a series of summits and 'social compacts'. The 'Presidential Health Summit' of 2018 concluded with a report and a Compact aimed at 'Strengthening the South African health system towards an integrated and unified health system'.[49] In this Compact, a diversity of private and public sector entities have made a series of commitments to certain interventions and outcomes. Importantly, the report recognises that,

> *'Health outcomes are poor, and health expenditure is high due to focus on hospital- based curative services rather than addressing the health determinants such as environmental determinants of health. Interventions require collaboration with other sectors to manage the key social determinants of health. The interventions include addressing health aspects in other sectoral policies or what is known as 'Health in All Policies'*.'[50]

The compact is positioned alongside two other key actions to expand access to quality healthcare, as outlined by the Minister of Health:

> *'As we move to implement National Health Insurance (NHI), we need a fully functional quality health system.* ***This Compact, coupled with the National Quality Improvement Plan and the NHI Implementation Office****, will take us very far in our effort to make quality health care a reality for all South Africans'*[51]

The compact breaks down the response into nine pillars (with specific sub-interventions and accountable entities):

1. Augment **Human Resources for Health (HRH)**
2. Ensure improved **access to essential medicines, vaccines and medical products** through better management of supply chains, equipment and machinery.
3. Execute the **infrastructure plan** to ensure adequate, appropriately distributed and well-maintained health facilities.
4. **Engage the private sector** in improving the access, coverage and quality of health services
5. Improve the **quality, safety and quantity of health services** provided with a focus on primary health care
6. Improve the **efficiency of public sector financial management systems and processes**

[49] Presidential Health Summit. 2018.
[50] Ibid. p.24
[51] Ibid. p.3 – emphasis added

7. Strengthen the **governance and leadership** to improve oversight, accountability and health system performance at all levels
8. Engage and **empower the community** to ensure adequate and appropriate community-based care.
9. Develop an **information system** that will guide the health system policies, strategies and investments.

The final Medium Term Strategic Framework (MTSF)[52] for the new administration focuses on a more limited number of elements including:

- Improve **quality of services**, by implementing the National Quality Improvement Plan (NQIP) as well as the Ideal Clinic Realisation and Maintenance Programme, and to reduce the scale of medico-legal claims.
- Implement the **Human Resources for Health (HRH)** plan, including filling critical vacant posts, establishing provincial nursing colleges, and integrating community health workers (CHWs) into the public health system.
- Address **health infrastructure needs including for information infrastructure**
- Create a legal framework for, and implement, the **NHI Bill.**
- It also notes the importance of a social-determinants of health perspective, and calls for **greater collaboration with other sector departments**.

4.2.2 National Healthcare System

As may be expected, the NDP, health compact and MTSF assign the large majority of responsibility for health-related interventions and outcomes to the National and Provincial Departments of Health (for which healthcare is a concurrent function), the district-level *healthcare* delivery system, and a regulated private healthcare sector. The roles and responsibilities of different healthcare entities were first substantially re-defined post-1994 in the White Paper and National Health Act[53] and associated amendments. Whilst focused on healthcare components, the Act adopts a holistic perspective on health by:

- Placing a responsibility on the Minister (as the 'cabinet member responsible for **health**') to, amongst others, 'promote the **inclusion of health services in the socio-economic development plan** of the Republic' and 'determine the policies and measures necessary to protect, promote, improve and **maintain the health and well-being of the population**'
- Seeking to '**regulate national health** and to provide **uniformity in respect of health services** across the nation by – (a) **establishing a national health system** which – (i) **encompasses public and private providers of health services**; and (ii) **provides in an equitable manner** the population of the Republic with the best

[52] Medium Term Strategic Framework (MTSF) 2019-2024. Pretoria: Republic of South Africa.
[53] National Health Act 61 of 2003. Republic of South Africa.

possible health services that available resources can afford…'. A large proportion of the Act is concerned with defining the **responsibilities of different spheres of government (national, provincial, district and municipal), human resource planning and the associated health governance structures and relationships**.

- Providing for the establishment of clinic and **'community health centre committees'** and recognising and regulating the provision of health services through 'non-health establishments' such as schools and initiation schools.
- Defining **research objectives and governance structures,** closely linked to a **'comprehensive national health information system'** which spans all spheres of government and public and private sectors.
- Defining **standards compliance** requirement and procedures for Office of Standards Compliance, including inspections.
- Defining **powers of the Minister** to issue regulations and establish relevant committees related to healthcare services, but also to any items prescribed by the Act (which would likely include broader health promotion items noted above).

National and provincial departments of health are required to develop five-year Strategic Plans supported by Annual Performance Plans (APP), with the current National Department of Health (NDoH) Strategic Plan coming to an end in 2020.[54] The NDoH Strategic Plan prioritises the following key items related to health system functioning:

- Improve the **'readiness'/ quality of health facilities** in preparation for NHI, including implementing relevant standards.
- **Develop the NHI towards UHC**
- Improve **financial management including better supply chain management**.
- Re-engineer or improve **primary health care**, including through stronger district-based management, expanding ward-based community outreach, and involving schools in public health activities.

In the figure below, the more detailed NDoH Strategic Goals are mapped to the NDP Goals.

[54] NDoH. 2015. Strategic Plan 2015/16-2019/20. Pretoria: Republic of South Africa.

NDP Goals 2030	NDP Priorities 2030	NDoH Strategic Goals 2014- 2019
Average male and female life expectancy at birth increased to 70 years	a. Address the social determinants that affect health and diseases d. Prevent and reduce the disease burden and promote health	Prevent disease and reduce its burden, and promote health through a multi stakeholder National Health Commission
Tuberculosis (TB) prevention and cure progressively improved;		
Maternal, infant and child mortality reduced		
Prevalence of Non-Communicable Diseases reduced		
Injury, accidents and violence reduced by 50% from 2010 levels		
Health systems reforms completed	b. Strengthen the health system	Improve health facility planning by implementing norms and standards;
		Improve financial management by improving capacity, contract management, revenue collection and supply chain management reforms;
	c. Improve health information systems	Develop an efficient health management information system for improved decision making;
	h. Improve quality by using evidence	Improve the quality of care by setting and monitoring national norms and standards, improving system for user feedback, increasing safety in health care, and by improving clinical governance
Primary health care teams deployed to provide care to families and communities		Re-engineer primary healthcare by: increasing the number of ward based outreach teams, contracting general practitioners, and district specialist teams; and expanding school health services;
Universal health coverage achieved	e. Financing universal healthcare coverage	Make progress towards universal health coverage through the development of the National Health Insurance scheme, and improve the readiness of health facilities for its implementation;
Posts filled with skilled, committed and competent individuals	f. Improve human resources in the health sector g. Review management positions and appointments and strengthen accountability mechanisms	Improve human resources for health by ensuring appropriate appointments, adequate training and accountability measures.

Figure 11: Alignment between NDP Goals, Priorities and NDoH Strategic Goals[55]

As noted above, the anticipated National Quality Improvement Plan (NQIP) is a key component of healthcare reform in South Africa, and a 2018 draft NQIP outlines a process for increasing compliance with key standards, such as the National Core Standards for Health Establishments in South Africa[56], Quality Improvement Guide[57] and Ideal Clinic framework.[58] The Core Standards align broadly with the WHO building blocks, and are broken down into seven domains and six priorities.

[55] Ibid. p.22
[56] NDoH. 2011. National Core Standards for Health Establishments in South Africa. Abridged Version. rPretoria: Republic of South Africa.
[57] NDoH. 2012. Quality Improvement Guide. Pretoria: Republic of South Africa.
[58] NDoH. 2018. Ideal Clinic Definitions, Components and Checklists. Pretoria: Republic of South Africa.

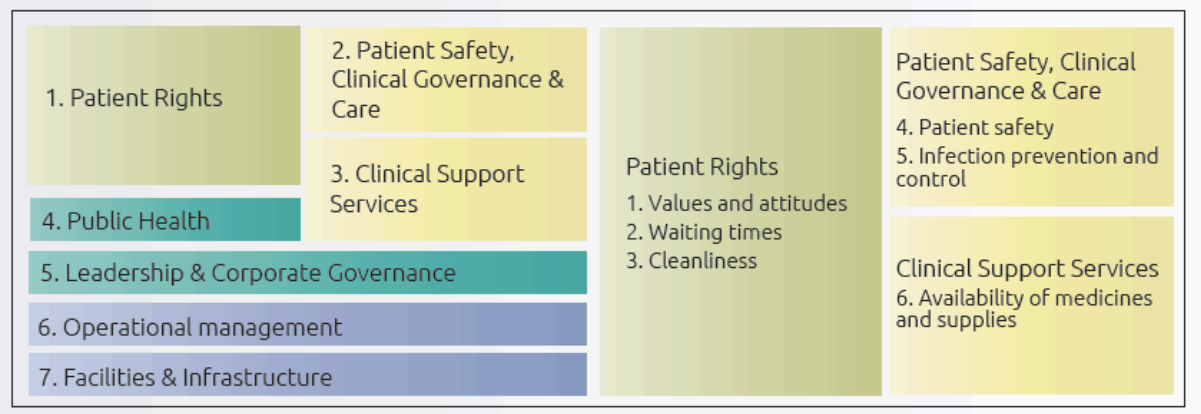

Figure 12: National Core Standards – seven domains and six priorities[59]

4.2.3 National Health Insurance towards Universal Health Coverage

The current national health policy focus is on implementing National Health Insurance (NHI) with a view to addressing the 'high degree of fragmentation in funding [which] undermines efforts towards improved efficiency in the management of available resources, reinforces inequality in their distribution, and prevents the provision of financial risk protection'. The fragmented funding structure ultimately limits citizens' rights to 'health care services' and social security,[60] and affects South Africa's commitment to the values of equity and solidarity as a signatory to the UN Resolution on universal health coverage.[61] [62] The NHI Policy/ White Paper[63] and associated National Health Insurance Bill[64] are therefore aimed at 'moving South Africa towards universal health coverage (UHC) through the implementation of National Health Insurance (NHI) and establishment of a unified health system.' [65]To a large degree the Policy and Bill seek to address financial aspects of the health system:

- ensure **financial protection** from the costs of health care for citizens;
- **pool public revenue and create a single framework for strategic purchasing** of health services, medicines, goods and related products;
- promote **sustainable, equitable, appropriate, efficient and effective public funding** for the purchasing of services, medicines, goods and related products;

[59] NDoH. 2012. Quality Improvement Guide p.6
[60] Section 27 (1)(a) and (1)(c) of Constitution of the Republic of South Africa. Act 108 of 1996.
[61] United Nations, General Assembly. 2012. Final resolution (A/67/L.36): Global health and foreign policy.
[62] Socio-Economic Impact Assessment System (SEIAS). DPME. 2017. Initial Impact Assessment: National Health Insurance Fund. Pretoria: Republic of South Africa.
[63] NDoH. 2017. National Health Insurance Policy: Towards Universal Health Coverage. Pretoria: Republic of South Africa.
[64] National Health Insurance Bill. B-11 – 2019. Republic of South Africa.
[65] National Health Insurance Policy p.1

- ensure **continuity and portability of financing and services** across the Republic (levels and sectors);
- all whilst **providing access to quality health care services**.

The NHI implementation was defined by a 2015 regulation[66] as being guided by six workstreams:

(a) Prepare for the establishment of the NHI Fund;
(b) Design and Implementation of NHI Health Care Service Benefits;
(c) Prepare for the purchaser-provider split and accreditation of providers;
(d) The role of medical schemes in an NHI environment;
(e) Complete NHI Policy paper for public release; and
(f) Strengthening the District Health System.

Policy imperatives are required to be translated into effective strategies and plans for successful implementation. Setting the framework for Evidence Mapping aims to capture relevant implementation evidence to measure progress (or lack thereof) of interventions against their outcomes when synthesizing and reporting on the evidence. Whilst focusing on financing aspects, it is clear that NHI policy and implementation has implications for how the wider health system operates due to changes in how the allocation of funding and procurement of services will be managed.

4.2.4 Subnational Healthcare System (SA District Health System)

Significantly, the NDP, Compact, MTSF, Health Act and NQIP note that the backbone of healthcare service delivery is through the district-level system. The majority of funding for public health services is decentralized via the nine Provincial departments of health to district-level health services.

Provincial departments of health are required to develop five-year strategic plans, which take into account Provincial governments' concurrent role and regional differences; whilst providing a framework for district-level action. For example, the KwaZulu-Natal strategic plan up to 2019 notes that the Province 'carries the largest burden of HIV and related infections in South Africa'.[67] The plan's strategic goals include:

(a) **Strengthen Health System Effectiveness**: including long term planning, improving financial management and PFMA compliance, improving SCM, improving information systems, accelerating 're-engineering' of primary health care (PHC) with ward-based outreach, implementing the ideal clinic plans, improving hospital efficiencies,

[66] NDoH. 2015. Terms of Reference for the National Health Insurance Work Streams
[67] KwaZulu-Natal Department of Health. 2015. Strategic Plan 2015-2019. p.26

improving emergency service efficiencies and 'strengthen health system effectiveness'.

(b) Reduce the Burden of Disease: focuses on improvements in health outcomes, such as reduction in mortality rate. For the purposes of this HSEB, these outcomes are not considered directly, but will emerge in what evidence is available at local levels.

(c) **Universal Health Coverage**: aims to ensure 'all people' receive the 'full spectrum' of health services, from promotion to palliative care. The focus is on ensuring infrastructure availability.

(d) **Strengthen Human Resources for Health**: including long term plan, community-based training, bursaries and training for specific skills.

(e) **Improved Quality of Health Care:** focuses on improved patient experiences at public health facilities and compliance with standards related to stock availability amongst others.

At a more local level, district-level health plans (DHPs) are three-year rolling annual plans (i.e. updated on an annual basis), which align with national and provincial Medium Term Expenditure Framework (MTEF) timing and budget allocation. In 2017, the NDoH developed a framework to guide the development of District Health Plans (DHPs), to inform District Operational and Implementation Plans (DOPs/ DIPs).[68] This framework outlines a series of steps to develop the DHPs including setting goals, diagnosing current coverage and quality, defining interventions and allocating resources – by addressing three related elements:

(a) **Clinical**: What clinical interventions do we need?

(b) **Community**: What community interventions do we need?

(c) **Systems**: What management processes and systems do we need? [69]

Effective planning instruments used at all spheres of government demonstrates that district plans must be aligned to provincial and National, but at the same time, National plans must be able to monitor sector progress in addressing locally relevant socio-economic realities. Outcomes and interventions reflect this type of alignment and thus need to be inclusive. For the purposes of this HSEB evidence mapping, we are directly concerned with (b) and (c), and only indirectly concerned with (a), where it relates to and influences the functioning of health systems.

[68] NDoH. 2017. District Health Planning and Monitoring Framework. Pretoria: Republic of South Africa.

[69] Ibid. p.17

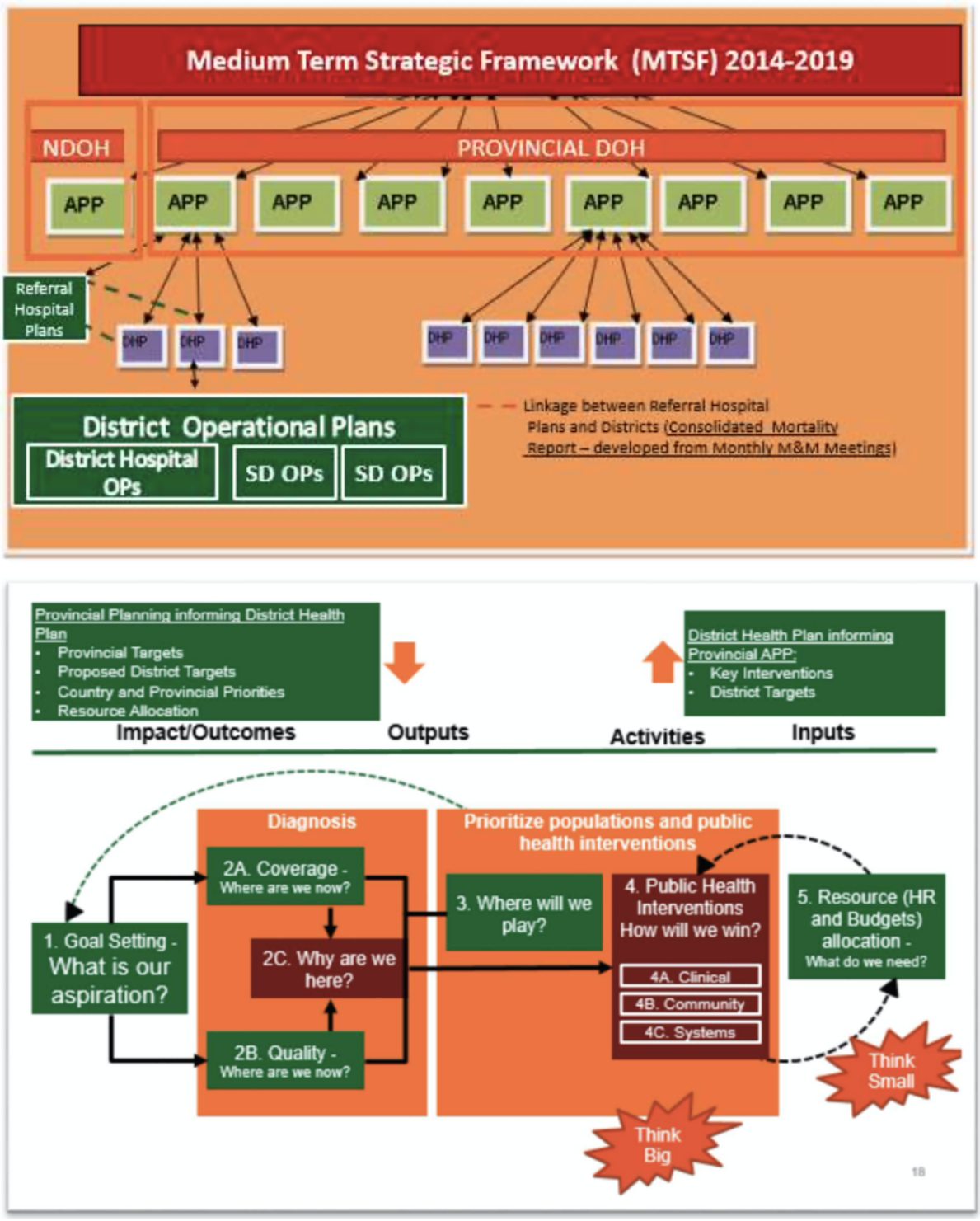

Figure 13: District Planning Alignment (DHP and DOP with Provincial APP) and DHP Framework

4.2.5 COVID-19 and the South African Health System

The need for health systems to enable an effective response to COVID-19, as well as the impact of COVID-19 on how health systems function during a crisis of this kind and into the future, suggest the need for explicit recognition of its impact in the type of evidence collected. Whilst this was not explicitly addressed during the core project, the following interventions and outcomes may need to be added or elevated as part of updates to the map and possible synthesis:

- Physical isolation, virtual interaction and care provision
- Access to services and medicine
- Non-pharmaceutical interventions and related health promotion initiatives
- Disease surveillance including cross-border collaboration/ information sharing

4.3 Updated Framework of Interventions and Outcomes

An updated framework of interventions and outcomes has been developed based on the draft framework, incorporating feedback from the search process and fields used in data collection (in black text), along with dominant classifications used in the 'Other' free text descriptions during article classification (in dark blue text).

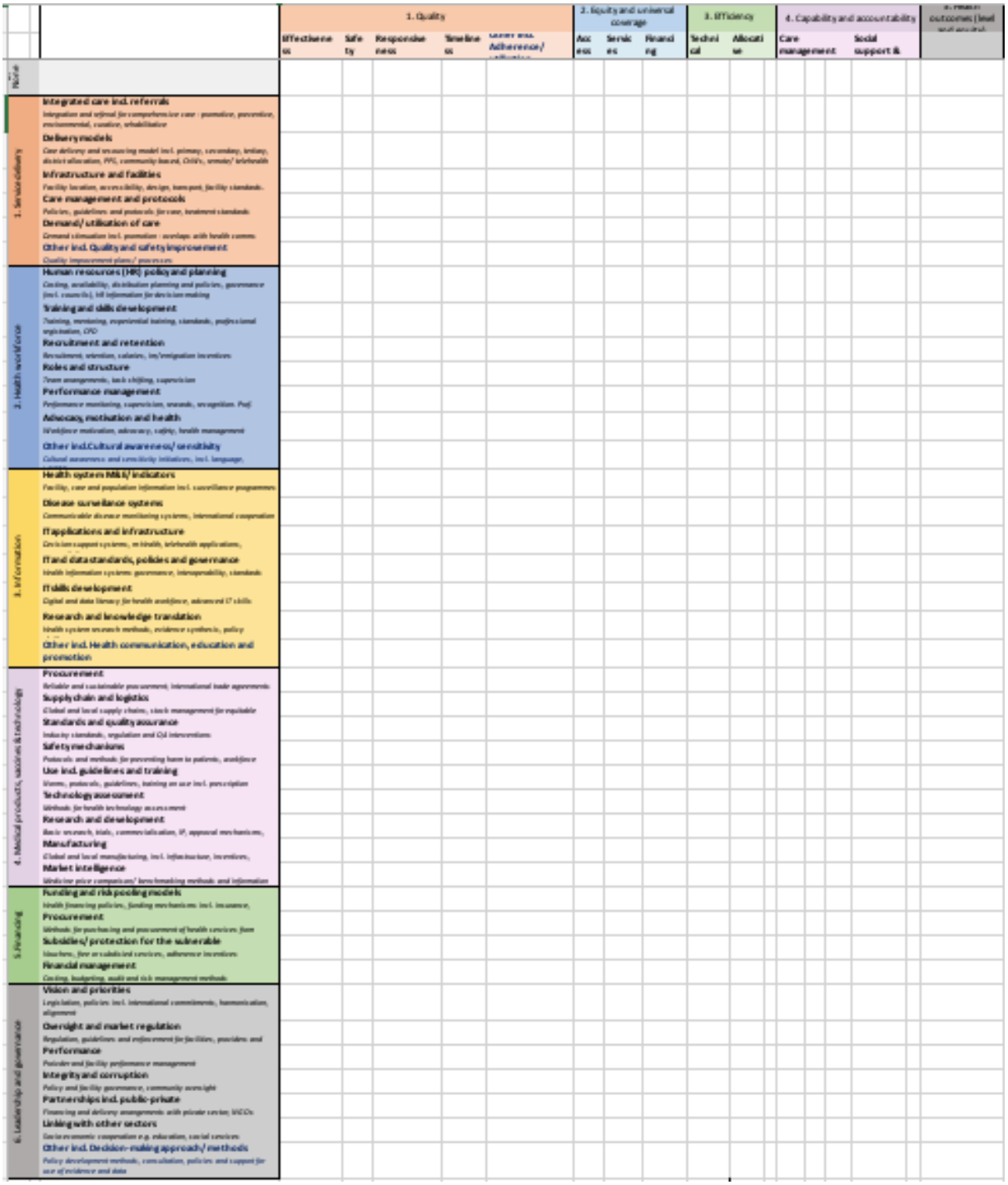

Figure 14 Full Evidence Map Framework

1. Quality					2. Equity and universal coverage			3. Efficiency		4. Capability and accountability		5. Health outcomes (level and equity)
Effectiveness	Safety	Responsiveness	Timeliness	Other incl. Adherence/ utilisation	Access	Services	Financing	Technical	Allocative	Care management & practice	Social support & accountability	

Figure 15 Evidence Map Framework Outcomes

1. Service delivery	**Integrated care incl. referrals** *Integration and referral for comprehensive care - promotive, preventive, environmental, curative, rehabilitative* **Delivery models** *Care delivery and resourcing model incl. primary, secondary, tertiary, district allocation, PPS, community-based, CHWs, remote/ telehealth* **Infrastructure and facilities** *Facility location, accessibility, design, transport, facility standards.* **Care management and protocols** *Policies, guidelines and protocols for care, treatment standards* **Demand/ utilisation of care** *Demand stimuation incl. promotion - overlaps with health comms below* **Other incl. Quality and safety improvement** *Quality improvement plans/ processes*
2. Health workforce	**Human resources (HR) policy and planning** *Costing, availability, distribution planning and policies, governance (incl. councils), HR information for decision-making* **Training and skills development** *Training, mentoring, experiential training, standards, professional registration, CPD* **Recruitment and retention** *Recruitment, retention, salaries, im/emigration incentives* **Roles and structure** *Team arrangements, task shifting, supervision* **Performance management** *Performance monitoring, supervision, rewards, recognition. Prof. registration.* **Advocacy, motivation and health** *Workforce motivation, advocacy, safety, health management* **Other incl.Cultural awareness/ sensitivity** *Cultural awareness and sensitivity initiatives, incl. language, LGBTQ+*

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3. Information	**Health system M&E/ indicators** *Facility, care and population information incl. surveillance programmes* **Disease surveilance systems** *Communicable disease monitoring systems, international cooperation* **IT applications and infrastructure** *Decision-support systems, m-Health, telehealth applications, connectivity* **IT and data standards, policies and governance** *Health information systems governance, interoperability, standards* **IT skills development** *Digital and data literacy for health workforce, advanced IT skills* **Research and knowledge translation** *Health system research methods, evidence synthesis, policy platforms* **Other incl. Health communication, education and promotion** *Behavioural comms interventions, methods and tools (ICT and non-ICT)*
4. Medical products, vaccines & technology	**Procurement** *Reliable and sustainable procurement, international trade agreements* **Supply chain and logistics** *Global and local supply chains, stock management for equitable access* **Standards and quality assurance** *Industry standards, regulation and QA interventions* **Safety mechanisms** *Protocols and methods for preventing harm to patients, workforce* **Use incl. guidelines and training** *Norms, protocols, guidelines, training on use incl. prescription* **Technology assessment** *Methods for health technology assessment* **Research and development** *Basic research, trials, commecialisation, IP, approval mechanisms, skills* **Manufacturing** *Global and local manufacturing, incl. infrastructure, incentives, material* **Market intelligence** *Medicine price comparison/ benchmarking methods and information*

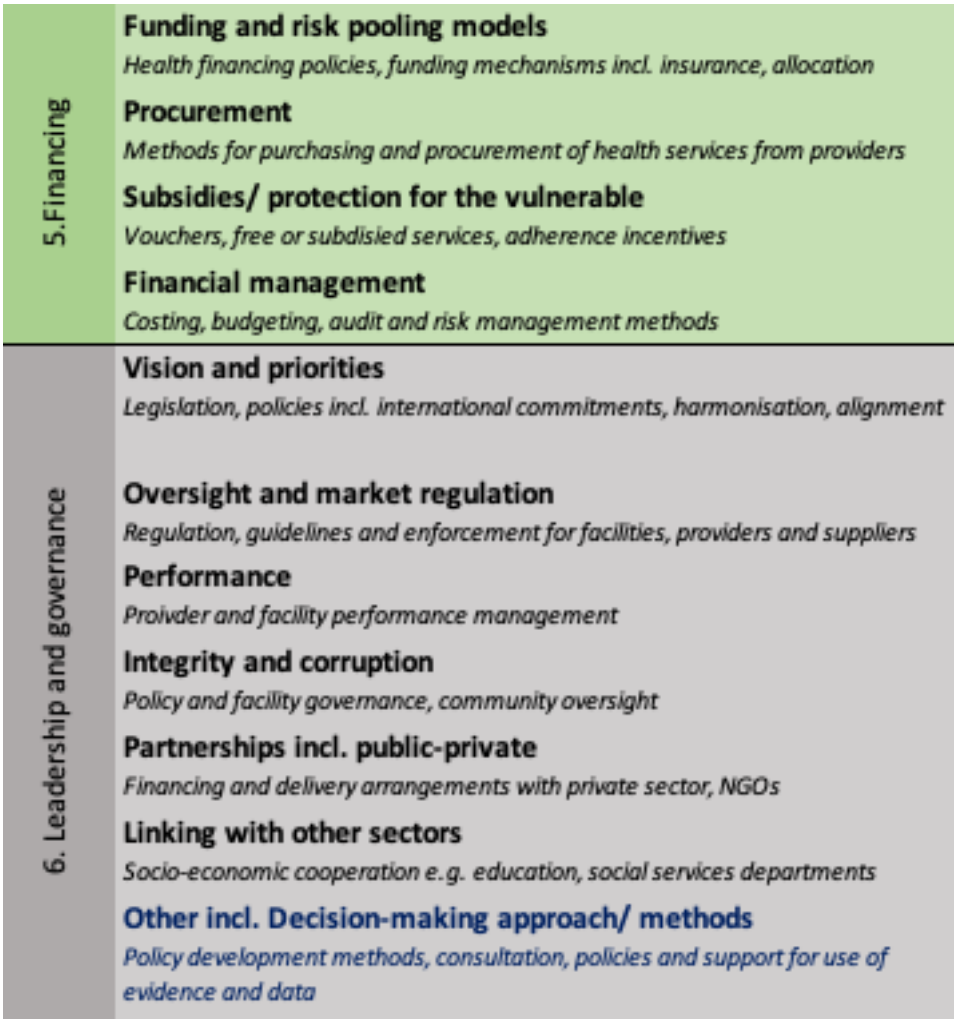


Figure 16 Evidence Map Framework Interventions

5 CONSTRUCTING THE HEALTH SYSTEMS EVIDENCE BASE AND MAP

The health systems evidence base and evidence map generated through this project focus on review-type articles (e.g. systematic reviews, meta-analysis, scoping reviews) related to health systems components in developing countries and selected benchmark developed countries. The following sub-sections explain the broad scope of evidence and inclusion and exclusion criteria, the evidence sourcing approach, and, finally, the PRISMA stages by which the final evidence base and map were created.

5.1 Scope of Evidence and Inclusion/ Exclusion Criteria

As outlined in the figure below, the focus of the project is on evidence related to interventions and outcomes in the South African healthcare system (largely shaped by policies and practices in the National and Provincial Departments of Health and the district healthcare system); whilst recognising that this intersects with interventions in the wider health system which speak more to the social determinants of health and associated stakeholders (such as social assistance programmes to improve living conditions, with oversight from the Department of Social Development).[70]

As this project aims to provide a forward-looking perspective on potential research needs, it seeks to map the availability of evidence related to health interventions and outcomes related to South Africa, but also from an international perspective by including material from selected comparative regions and countries.

Following initial testing of the search strategy it was decided that, due to the high volume of research in the global health systems field, the inclusion/ exclusion criteria (see Annexure A) and search approach (see Annexure B) would be narrowed to focus on review-type evidence only from selected developing and developed countries based on socio-economic and health policy similarities or relevance. The included evidence types are outlined in the table below.

[70] See above for more detailed definitions of ‘health’ and ‘healthcare’ systems

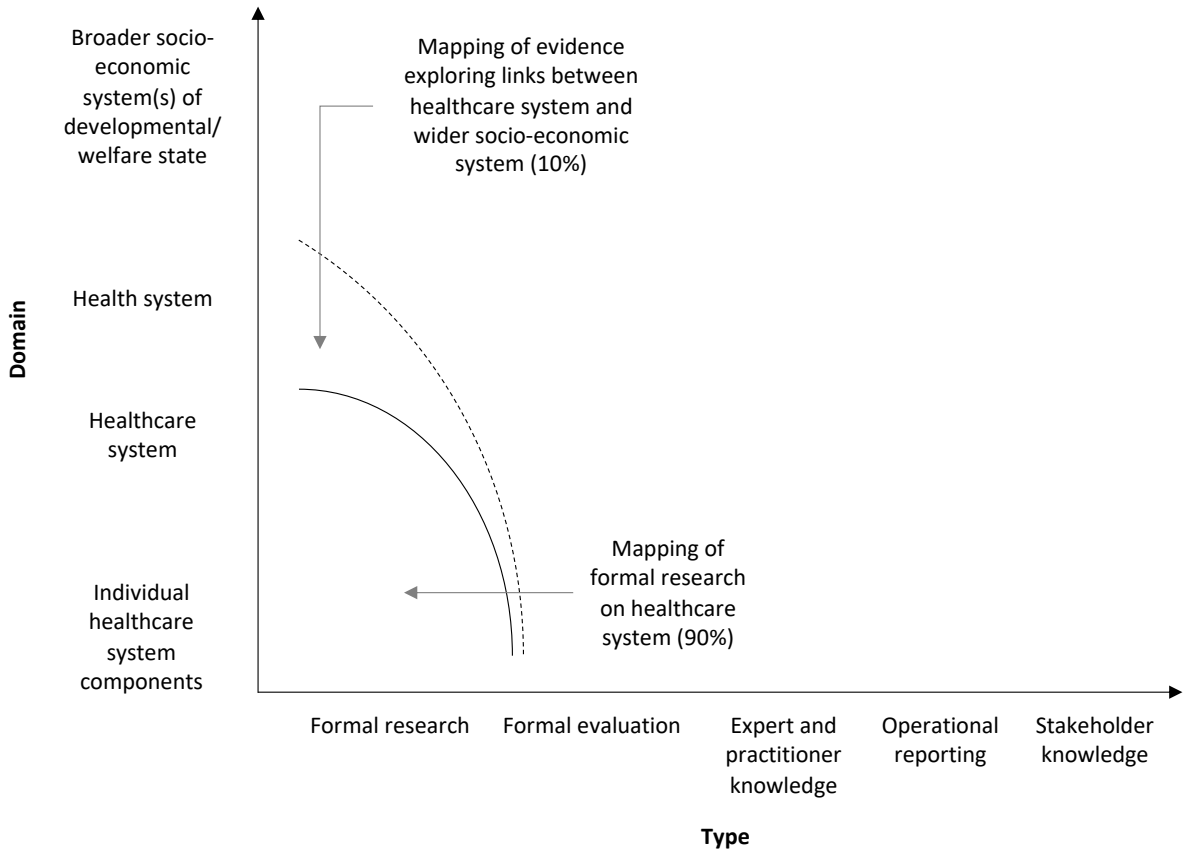


Figure 17 Scope of evidence

Table 1 Review evidence types and definitions

Review of reviews	Systematically and transparently* collect and review findings from a set of review articles of different types listed below.
Scoping review	Systematically and transparently collect research material to develop a broad understanding of the interventions, outcomes and associated research in a field. Is not concerned with the relationship between specific interventions and outcomes, although it may speak to some of them.
Evidence gap map	Systematically and transparently collect research material to develop a mapping of what research exists according to specific interventions and outcomes.
Systematic review with meta-analysis	Systematically and transparently collect research material, covering all literature within specified boundaries. Meta-analysis is limited to a quantitative synthesis of findings to understand relationship between intervention and outcome. Meta-analysis may also form part of an integrative review together with a narrative synthesis of qualitative studies.

Systematic review without meta-analysis	Systematically and transparently collect research material and conduct a narrative synthesis of qualitative and quantitative findings.
Meta-analysis (without systematic review)	Transparently but purposively select certain research material (e.g. country general household surveys) to conduct quantitative meta-analysis.
Rapid review and evidence summaries	Transparently but purposively select certain research material relevant to a topic. Implemented in a short time.
Literature review	Purposive and relatively opaque (i.e. process and inclusion/ exclusion criteria not reported) collection of research material for narrative synthesis related to a topic of interest.

*E.g. using PRISMA and explicit inclusion and exclusion criteria.

5.2 Search Approach

The search strategy is outlined in a detailed document, but summarised at a high level in Annexure B. For each intervention and outcome an initial set of search terms and strings was generated. These strings were then used to identify between 5 and 10 seed or 'pearl' articles sourced from one of three reputed sources of health systems review articles (i.e. Cochrane Library Reviews, MEDLINE systematic reviews, McMaster Health Systems Evidence Systematic Reviews). The terms used in the abstracts from these seed articles were then used to expand and refine the initial search strings. These final search strings were then formatted according to the syntax rules for each global 'public research database' listed in Annexure B as well as SA-specific and WHO and other databases. A search was run, and abstract-title records downloaded to a reference manager, Zotero.

5.3 PRISMA

The project used a modified PRISMA Flow Diagram[71] which provides guidance on how to manage the identification, exclusion and appraisal of articles through a systematic review or similar systematic synthesis process (such as the creation of an evidence map) (See Annexure C). In summary:

- 18 search strings were run on 4 public research databases, generating 72 sets of article records. In addition, reduced searches were run on WHO, OECD and UN databases, and review articles were manually retrieved from 3ie, Campbell Collaboration, EPPI Centre. The total number of non-unique article records was 52605.

[71] http://www.prisma-statement.org/PRISMAStatement/FlowDiagram

- The database of article records was filtered using inclusion countries, regions and categories which reduced the number of article records to 11332.
- Duplicate records were removed from the database reducing the number of article records to 5150.
- Titles and abstracts were screened for inclusion using the inclusion criteria in Annexure B, which reduced the number of article records to 2481.
- Full-text articles were downloaded. 221 articles were not available for download, so 2260 articles were retrieved.
- Full-text articles were screened during the extraction process, and 565 were excluded, meaning that a final total of 1695 articles were included in the evidence base and map.
- The eligibility or critical appraisal stage of the PRISMA Flow Diagram was not completed for the included articles, and will need to be done should material be included in a synthesis process.

Note 1: Due to the nature of the filtering process, which focused on title and abstract terms, much of the WHO and evidence database content would have been excluded, and so there is a need to return to these databases as indicated in Annexure B, along with potential grey literature sources also noted.

Note 2: For the abstract and full-text screening steps, the inclusion and exclusion decision is not always clear depending on how clearly the method is described, mixed-method approaches, geographical coverage and uncertain relevance to health systems. The screening team intentionally erred on the side of inclusion using the 'Core+' category of inclusion criteria in Annexure A. This bias was aimed at ensuring potentially relevant but relatively limited amount of South Africa and developing country material was not excluded from the evidence map, for which critical appraisal will still need to be conducted.

5.4 Data Extraction and Import into HSEB Spreadsheet and HSEB Evidence Map

Once full-text articles had been downloaded, a data extraction tool PDF (Annexure D) was used to identify and record identifier meta data (e.g. title, authors, DOI) from each article. At the same time a classification of each article was recorded for, amongst others, (1) the review type or 'method' (e.g. systematic review with meta-analysis), (2) the author affiliation (e.g. university or public research organisation), (3) the intervention category and sub-categories that the article speaks to (e.g. Service delivery → Infrastructure and facilities), and (4) the outcome category and sub-category that the article speaks to (e.g. Quality → Effectiveness). This data was then imported from the 1695 data extraction tool PDFs into an HSEB Spreadsheet from which we are able to develop an HSEB Evidence Heat Map. The data from the HSEB spreadsheet can then also be imported into the DPME Evidence Mapping tool to create an interactive HSEB Evidence Map which allows for access to individual records and articles.

6 ANALYSIS OF EVIDENCE MAP

Based on the data that is now contained in the HSEB Spreadsheet, it has been possible to create an HSEB Evidence Heat Map. This Heat Map is created by running a count on the number of times an intervention or outcome is selected for an article record in the HSEB Spreadsheet. Please refer to the updated definitions section of this document for an explanation of the various interventions and outcomes.

In each cell of the HSEB Evidence Heat Map the number of articles classified for the relevant intervention or outcome is indicated:

- **Dark red cells:** Where there are a large number of articles, the cell colour is dark red (e.g. there are over 200 articles that investigate the relationship between the *Delivery models* intervention and the *Effectiveness* outcome). Note that an intervention count may be reflected in multiple outcomes so summing the row counts will not reflect the intervention proportion accurately, although it does give a sense of popularity.
- **Light red cells:** Where there are few articles, the cell colour is light red or white (e.g. there are less than 10 articles that investigate the relationship between *Recruitment and retention* of health workforce intervention and the *Technical* efficiency outcome)
- **Intervention only cells:** Some article only investigate the characteristics or performance of an intervention, without considering the relationships to an outcomes. These articles are classified under the Intervention only column (e.g. the *Research and knowledge translation methods* intervention has over 170 articles that investigate how research and translation activities are being performed).
- **Outcome only cells:** Similarly, some articles only investigate an outcome, without considering whether there are any interventions that influence the outcome. These articles are classified under the Outcome only row. (e.g. the *Level* outcome under Health outcomes has over 90 articles that only consider the mortality or morbidity of a population, or the prevalence of disease).

By looking at the count and colour of the cells we are able to assess the relative availability of evidence in each intervention or outcome. This is discussed in the following sub-sections.

6.1 HSEB Evidence Heat Map

For the discussion of the Heat Map we look at individual cells, but also clustering of adjacent cells, to get a sense of the availability of research that is closely related to each other from a policy perspective.

6.1.1 High Frequency Clusters (110+)

Delivery model's impact on quality, access, care practice and health outcomes

Under Service delivery, the *Delivery model* sub-category is the intervention with the highest frequency of articles. This intervention is typically concerned with how health service delivery is structure and, for developing countries especially, there is a strong interest in community-based approaches, such as home-based care, involving community-health workers, or expanding the role of clinics and pharmacies in primary health care. In addition, more care is being provided through technology-mediated platforms, such as telehealth.

- Quality – ***Effectiveness***: Many articles look at how changes to the delivery model result in improved treatment outcomes and reduced visits or stays in clinic and hospital environments. See Annexure E for an example article for this cluster.
- Quality - ***Adherence/ utilization****:* A large number of articles investigate how changes to the delivery model increase adherence to treatment a treatment regime, such as completing a series of TB follow-up visits, or improved utilisation of available health services. For example, community-linked services may be more accessible and seen as more friendly or accommodating of language differences and therefore result in higher utilisation.
- Equity and universal coverage – ***Access****:* Many articles are also concerned with whether the delivery model increase the accessibility of services, such as reduced travel distance for accessing maternal care. This outcome overlaps significantly with *Adherence/ utilisation*.
- Capability and accountability - ***Care management and practice****:* As can be seen, changes to the delivery model often involve changes in roles for pharmacists or nurses, and is therefore closely associated with changes in care management and practice as an outcome such as practitioners and providers' sense of empowerment and effectiveness (as a positive outcome) or work overload and feeling of inadequacy (as a negative outcome).
- Health outcomes – ***Level***: The *Effectiveness* of treatments is closely linked to health *Level* of the population of interest, and it is therefore associated with the *Delivery model*. The same link between *Effectiveness* and *Level* is evident in most other interventions.

The delivery model intervention is closely associated with *Integrated care incl. referrals* as a more specific description of how delivery activities are combined.

Roles, structure, training and skills development impact on effectiveness and care practice

The Health workforce as intervention category benefits from a large amount of research. Two closely linked rows of the Health Evidence Heat Map are of particular importance:

- Health workforce – ***Roles and structure***: The changing (often expanding) roles and responsibility of certain members of the workforce, especially nurses, community health workers and pharmacists, is widely researched in many countries. So too is the structure of workforce teams (e.g. multi-disciplinary) and issues such as team leadership and supervision. A number of reviews look at how changing roles and organisational structures influence the *Effectiveness* of care as outcome; and, as expected, *Care management and practice*, such as how practitioners interpret their role, and their sense of skill and effectiveness. Community-based roles are of particular interest in relation to a more decentralised *Delivery model* as intervention and the potential for expanding *Access* to services as an outcome.
- Health workforce – ***Training and skills development***: How education and training of the health workforce is implemented and its impact on *Care management and practice* is a major area of research, along with the link to *Effectiveness* of treatment.

See Annexure E for an example article for this cluster.

Research and knowledge translation practices, and M&E

A large body of research work considers how health systems research is done, and how it is adopted (or not adopted) by policy actors as part of public health decision-making processes.

Importantly, many reviews are aim to identify research gaps (topics and method) in a specific field and are likely to contribute a large portion of these types of articles.

These objectives are reflected in the number of articles looking at *Research and knowledge translation* as an intervention only, i.e. without considering a potential impact on one of the listed outcomes. The spectrum of articles included in the *Research and knowledge translation* intervention is broad and ranges from more typical academic qualitative and quantitative research studies, to more closely policy-linked health technology assessments (HTA) and monitoring and evaluation (M&E) practices – although there are separate categories for these in the data collection tool and evidence map, there does tend to be significant overlap with *Health systems M&E/ indicators* and *Technology assessment* interventions only both showing a high count of articles.

The review articles in this cluster often compare a series of studies to 'industry' standards and benchmarks for how research (and reviews) should be performed and associated quality. Examples of these standards include Grading of Recommendations Assessment, Development and Evaluation (GRADE)[72] for systematic reviews or the NICE guidelines for HTAs[73]. See Annexure E for an example article for this cluster, including a review of M&E tools assessed in other studies and a traditional research gap analysis. These articles may also look at how researchers have communicated their research findings to the wider public or how they have engaged with policy actors, such as through the development of policy briefs or via institutionalised policy platforms. As a result, there is a likely link between the articles in this intervention and a relatively small but not insignificant number of articles in the *Decision-making approach/ methods* intervention under *Leadership and governance*.

Additional filtering and review may be needed to isolate articles that have been classified in this intervention because they include a research gap analysis (which most review articles do) from those that are explicitly focused on research and knowledge translation methods.

Health communication and demand/ utilisation of care impact on effectiveness and adherence/ utilisation*

*In the data extraction process for this project, there was some overlap in how health education, promotion and/ or communication was classified as an intervention. For some evidence extractors, *Demand/ utilisation of care* was selected under *Service delivery* given that this intervention is concerned with how demand for care is stimulated or encouraged Demand/ utilisation stimulation overlaps with communication but also other mechanisms such as *Subsidies/ protection for the vulnerable* under which incentives for adherence may be included. For other evidence extractors, the *Other* category was selected under *Information* and noted as *Health communication, education and promotion* (as a new consolidated term in the updated policy framework). For this reason, it is seen as appropriate to consider both of these interventions together as a high frequency cluster (110+) as they have effectively become one intervention, although additional, detailed analysis may be performed to better isolate possible differences.

For these two interventions there is significant interest in their impact on *Adherence/ utilisation* as a start. How public health messaging is constructed and delivered is seen as critical for prevention of both communicable and non-communicable diseases, with a large amount of work from the African continent and other developing countries looking at HIV/ AIDS behaviour-related communication; but also how reluctance to consult a physician or start treatment may be overcome by changing perceptions and stigmas related to various diseases and conditions. Ultimately, in the case of positive diagnosis, treatment

[72] https://www.gradeworkinggroup.org/
[73] https://www.nice.org.uk/process/pmg19/chapter/acknowledgements

Effectiveness (and *Health outcomes*) depends on patient adherence with a regime of clinic or hospital visits and medicine use, such as for TB, and so much of the research also explores this issue. See Annexure E for an example article for this cluster.

6.1.2 Medium-High Frequency Clusters (70 – 110)

IT applications impact on adherence/ utilisation and effectiveness – as well as care management and practice

The large number of review articles exploring the impact of *IT applications and infrastructure* on several outcomes is closely associated with *Health communication, education and promotion* and *Demand/ utilisation of care,* largely due to interest in m-Health and the Internet as a way for delivering public health messaging. And so, *IT applications and infrastructure* is linked to similar outcomes of *Adherence/ utilisation* and *Effectiveness* (and *Health outcomes*). See Annexure E for an example article for this cluster.

However, there is another significant association for *IT applications and infrastructure* with *Care management and practice*, largely because of interest in the impact of IT on how care is performed (such as through remote consultation via tele or m-Health applications) and how management and clinical decisions are being made (such as through the use of data and decision-support systems).

Care management and protocols impact on effectiveness and care practice

How care is managed and done is a major issue, and involves a number of related topics such as the development and use of treatment guidelines, as well as medicine (e.g. prescribing practices) and technology. As a result, for this intervention there are likely to be links to the intervention on *Use incl. guidelines and training* under *Medical products, vaccines and technology*. As may be expected there is a strong associated with *Care management and practice* as an outcome, and also with treatment *Effectiveness*. See Annexure E for an example article for this cluster.

Moreover, as noted above, there is strong interest in how *IT applications and infrastructure* influence *Care management and practice*, which has some overlap with *Care management and protocols* as an intervention. As there is growth in IT-related research, is it likely there will be continued interest in how this affects care activities as both intervention and outcome.

From a mapping perspective, the classification of review articles into this category is very often as a secondary or tertiary intervention component. For example, m-Health interventions typically involve some changes to care practices and management, and hence articles are classified in this intervention together with the primary intervention which would be *IT applications and infrastructure.*

Care management and practice as outcome

A substantial number of review articles looked at *Care management and practice* as an outcome only. This finding is a result of the widespread and ongoing interest in changing or expanding roles (such as of nurses and community health workers), skill levels, supervision and performance management arrangements, emigration, motivation levels, poor health and safety risks for the workforce itself - a common concern for South Africa. There is also interest in emerging issues such as whether immigrants are finding that care is sufficiently culturally sensitive, including being able to address language and gender differences; an important research issue in some of the developed countries included in the data extraction. See Annexure E for an example article for this cluster.

Access and utilisation as outcome

For developing country research, *Access* to and *Adherence/ utilisation* of healthcare services is a major concern as an outcome only. A large number of studies investigate the availability of basic services for different (often marginalised) population groups, and these studies may also explore specific barriers to access such as transport distances and costs to the nearest health facility. For some groups there are more specific nuances that review articles look to diagnose, such as for maternal care, where men's attitudes may have an influence on women being able to access care. See Annexure E for an example article for this cluster.

Health outcomes

Finally, there the Evidence Heat Map shows a large number of articles looking at Health outcomes. Typically, these studies are considering the prevalence of a certain disease or condition globally or in a specific region. During the screening and data extraction there was some uncertainty about whether these types of studies were relevant to the mapping process. As far as possible, the screening sought to include only articles that had some relevance to how the health system would need to operate and possible changes that could be needed going forward. For example, significant disparities in health outcomes for certain population groups or regions can help inform the design of targeted interventions; so too for the emergence of new disease categories. Due to the broad nature of this outcome, the search and screening process may need additional clarification about the objective of this outcome going forward, along with a more in-depth review and updates to the search, collection and data extraction steps. See Annexure E for an example article for this cluster.

6.1.3 Medium-Low Frequency Clusters (30-80, selected clusters only)

Financing impact on access, financial equity, utilisation and effectiveness

Although relatively low in terms of article count, there is a substantial clustering of articles in the *Financing* interventions category related to *Funding and risk pooling models*, *Subsidies/ protection for the vulnerable* and *Procurement*. All three of these have strong association with *Access, Adherence/ utilisation, Effectiveness, Health outcome levels* and *Financing* from an equity and coverage perspective.

These three interventions confirm what the WHO sees as the main components or activities of financing introduced in the earlier definitions as '(1) collection of revenues – from households, companies or external agencies; the (2) pooling of pre-paid revenues in ways that allow risks to be shared – including decisions on benefit coverage and entitlement; and (3) purchasing, or the process by which interventions are selected and services are paid for or providers are paid.'[74] In this Evidence Map, though, there is a more explicit interest in mechanisms for subsidising and protecting vulnerable groups from financial shocks associated with care (or not being able to access care due to financial limitations). Specifically, the *Subsidies/ protection for the vulnerable* intervention includes material related to targeted vouchers or subsidies to access health services, as well as broader social protection mechanisms such as 'conditional cash transfers' which may be used for a broader spectrum of activities which ultimately impact health outcomes. See Annexure E for an example article for this cluster.

Clearly there is a strong interest in whether financing arrangements ensure more people can access care (*Access*), whether they stay on care (*Adherence/ utilisation*) which ultimately leads to effective treatment and improved outcomes.

Procurement and the purchasing of services is mainly concerned with the models by which providers are contracted and reimbursed. There has been emerging interest in performance-based contracting and payment (such as pay-for-performance) as well as the mechanics of public-private partnerships, with a likely dual classification of *Procurement* articles with the *Performance* and *Partnerships incl. public-private* interventions under *Leadership and governance*. Procurement is also closely linked to remuneration of practitioners, and therefore has likely links to *Performance management* as intervention under *Health workforce* as well as *Care management and practice* as outcome.

[74] WHO. 2007. p.21. Emphasis and numbering added.

Use and safety of medical products, vaccines and technology

Another smaller but also significant clustering takes place around the use and safety of medical products, vaccines and technology. Specifically, interventions related to *Safety mechanisms* and *Use incl. guidelines and training* are associated with *Effectiveness* and *Safety* under *Quality,* as expected. Here, much of the concern is with potential adverse effects from incorrect use of medication, as well limited effectiveness due to incorrect prescribing practices and associated anti-microbial resistance (AMR).

There is a particularly strong association between guidelines and *Adherence/ utilisation*. The reason for this is the concern, again in relation to diseases such as TB, for how medication is prescribed or administered and adherence by patients. See Annexure E for an example article for this cluster.

Infrastructure and facilities access and effectiveness

For *Infrastructure and facilities* classification, there is some uncertainty about what is included or excluded from this intervention, and a possibility of over-classification. For example, an intervention related to the integration of care between clinic and hospital may be seen as a 'facility'-based intervention.

Nonetheless, as noted earlier, a relatively strong concern for developing countries relates to the *Access* to physical healthcare *Infrastructure and facilities*, usually because of long distances to the nearest clinic or hospital. Part of this concern is an interest in how patients are being transported between facilities as part of referral processes. Another important relationship related to facilities is the impact on *Care management and practice* – probably as it relates to the working environment for healthcare providers - as well as on the *Effectiveness* of treatment, probably through improved Access noted above (by having a facility located more closely to patients), but possibly also via improved working conditions for the workforce.

As noted earlier, additional focus is needed on COVID-related themes and it is likely that more attention is going to be paid to whether facility design supports social distancing and workforce safety and health as example outcomes.

Decision-making approach/ methods

Under Leadership and governance, a significant amount of work emerged around the *Decision-making approach/ methods* used by policy actors and healthcare managers. The review articles in this area have some association with the *Research and knowledge translation* intervention, as part of a broader interest in the role of evidence-informed decision-making, but also broader topics such as consultation with communities and the

health workforce. There appears to be a number of articles concerned with the approach as an intervention only, whilst the other strong association is with *Care management and practice* as an outcome – which would be expected given that both the intervention and outcome are concerned with management methods.

6.1.4 Low Frequency Clusters (less than 30, selected clusters only)

Medical products, medicine and vaccine supply

Ensuring the availability of medical products and vaccines through *Supply chain and logistics*, *Procurement*, *Research and development* and *Manufacturing* interventions seems to have received a relatively small amount attention from review articles. Whilst medical product and vaccine availability issues have been an ongoing concern for South Africa and many developing countries, the recent public and policy attention related to COVID-19 protective equipment as well as vaccines is likely to increase the amount of research and reviews in this area.

Note: don't need subtract-1 for headers if equation is "include" or "Off". Formula		Quality					Equity and universal coverage				Efficiency			Capability and accountability			Health outcomes	
Total included records	1685	Effective-ness	Safety	Responsive-ness	Timeli-ness	Other incl. Adherence/ utilisation	Access	Services	Financing	Other	Technical	Allocative	Other	Care management and practice	Social support and accountability	Other	Level	Equity
2260	Intervention/ outcome only	22	24	19	22	38	77	30	32	12	10	5	0	84	39	15	93	30
Service delivery																		
Integrated care incl. referrals	29	90	18	31	23	58	64	31	14	0	49	23	0	79	33	4	74	13
Delivery models incl. communities, decentralisation	45	223	48	77	54	165	152	72	32	8	86	36	1	157	91	10	175	30
Infrastructure and facilities	16	44	16	15	15	28	43	19	11	3	21	10	0	41	12	3	45	6
Care mgmt. & protocols	28	104	33	35	26	56	39	25	5	1	44	13	0	103	27	2	73	8
Demand/ utilisation of care (overlap with Health communication below)	12	89	28	34	15	100	61	29	14	1	31	12	0	49	42	1	69	14
Other incl. Quality and safety improvement	18	33	12	8	8	20	20	8	5	4	12	9	0	24	14	7	35	3
Health workforce																		
HR policy and planning	19	12	3	6	7	7	7	2	0	1	5	7	0	32	7	2	8	2
Training and skills development	83	110	35	39	24	62	65	34	11	3	47	19	0	198	46	11	83	15
Recruitment and retention	13	28	6	13	11	20	22	13	10	2	9	7	0	47	21	2	18	6
Roles and structure	45	138	33	40	37	78	73	38	14	3	66	29	1	153	50	10	94	14
Performance management	16	44	12	21	15	23	25	17	9	2	20	7	0	75	21	3	23	4
Advocacy, motivation and health	24	31	9	20	8	16	26	15	2	3	11	3	0	58	25	3	17	6
Other incl. Cultural awareness/ sensitivity	23	40	12	19	8	23	30	9	2	3	10	4	0	47	17	7	26	9
Information																		
Health systems M&E/ indicators	85	38	15	10	15	21	22	8	5	1	11	6	0	47	15	3	34	5
Disease surveillance systems	16	8	2	0	6	5	10	3	0	0	2	2	0	12	1	2	9	0
IT applications and infrastructure	48	96	24	38	35	87	44	24	6	5	52	16	0	90	28	9	88	5
IT & data standards, policies and governance	31	6	3	8	6	6	8	1	0	0	3	1	0	16	5	1	3	1
IT skills	9	4	2	3	3	1	3	0	0	0	3	0	0	9	2	0	3	1
Research and knowledge translation methods	173	20	8	6	4	11	14	4	5	1	6	5	0	43	12	7	18	9
Other incl. Health communication, education and promotion	35	66	18	21	16	60	48	16	11	11	24	7	0	44	19	11	74	7

Note: don't need subtract-1 for headers if saving = 'Include' or ='Off'. Formula		Quality					Equity and universal coverage				Efficiency			Capability and accountability			Health outcomes	
Total included records	1695	Effective-ness	Safety	Responsive-ness	Timeli-ness	Other incl. Adherence/ utilisation	Access	Services	Financing	Other	Technical	Allocative	Other	Care management and practice	Social support and accountability	Other	Level	Equity
Total records 2260	Intervention/ outcome only	22	24	19	22	38	77	30	32	12	10	5	0	84	39	15	93	30
Medical products, vaccines & technology																		
Procurement	8	10	6	3	1	9	13	8	14	2	15	7	0	14	5	0	10	3
Supply chain and logistics	13	12	7	5	5	15	17	8	11	2	9	4	0	13	2	1	14	1
Standards and quality assurance	10	13	10	1	1	9	10	7	5	1	5	0	0	15	4	0	7	1
Safety mechanisms	19	23	40	8	4	17	10	10	5	0	8	2	0	35	6	1	19	2
Use incl. guidelines and training	23	64	44	9	14	60	26	14	10	3	31	9	0	55	9	1	54	2
Technology assessment	42	11	5	3	2	2	5	2	2	0	3	0	0	14	6	2	8	1
Research and development	25	5	4	0	0	4	8	4	3	1	3	1	0	9	6	3	5	1
Manufacturing	2	3	2	0	0	0	6	2	5	1	4	1	0	4	1	0	3	1
Market intelligence	1	0	0	0	0	1	2	1	3	0	3	0	0	2	0	0	1	1
Other	17	11	5	5	3	8	7	1	3	3	4	2	0	6	1	1	8	2
Financing																		
Funding and risk pooling models	12	23	2	10	7	21	30	7	26	3	10	9	0	17	4	2	24	12
Procurement	8	34	12	13	9	22	27	13	24	2	24	10	1	31	10	0	23	7
Subsidies/ protection for the vulnerable	8	43	7	13	6	51	47	15	42	6	21	13	0	22	9	1	42	15
Financial management	7	7	0	3	2	4	6	4	7	0	5	5	0	7	3	0	3	2
Other	7	6	4	3	2	1	13	6	9	7	3	3	1	3	1	0	6	3
Leadership and governance																		
Vision & priorities	13	13	2	5	4	6	11	6	1	0	3	6	0	18	5	0	9	4
Oversight and market regulation	13	7	10	2	2	6	7	5	10	1	5	2	0	20	7	2	7	2
Performance	15	33	8	9	8	14	17	11	9	0	12	5	0	25	9	0	19	6
Integrity and corruption	3	5	1	2	2	1	3	1	3	0	3	2	0	11	7	0	3	2
Partnerships incl. public-private	12	25	10	11	10	18	30	13	12	2	13	8	1	32	11	1	23	7
Linking with other sectors	5	1	1	0	1	3	2	1	0	0	2	2	0	6	3	0	3	1
Other incl. Decision-making approach/ methods	48	21	8	9	6	17	17	2	9	1	12	6	1	44	15	2	13	3

Figure 18 Evidence map - heat map (most articles belong to more than one intervention and/ or outcome)

6.2 HSEB Evidence Types and Sources

As noted earlier in the report, evidence type and source information was captured during the extraction process. Analysing the evidence type data, we can see that the large majority of articles sourced were 'Systematic review without meta-analysis'. These types of evidence typically involve a narrative synthesis of findings as quantitative data from articles cannot be pooled for meta-analysis. This finding does suggest that whilst there is a substantial amount of research, the impact of interventions on outcomes may not be easily compared across studies due to differences in methodology or context. It is also important to note that a substantial number of literature review articles were included at the fuzzy inclusion boundary discussed earlier.

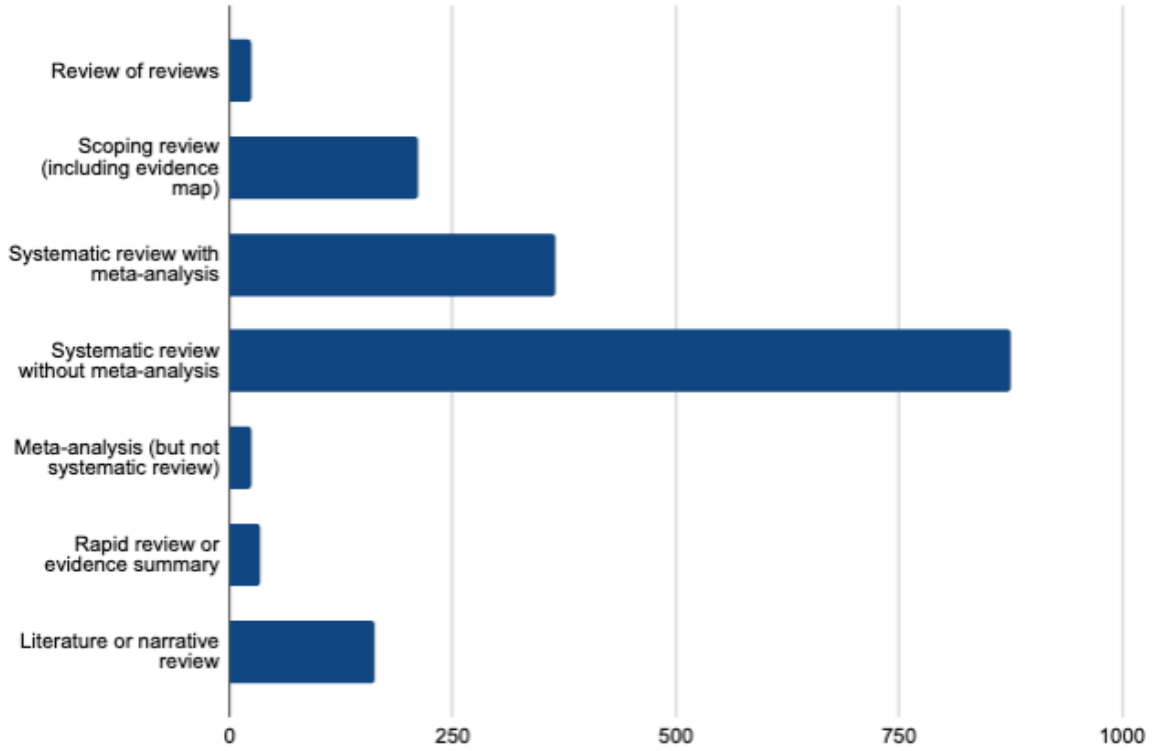


Figure 19 Number of articles by evidence type (some articles may belong to more than one evidence type)

The data on evidence source has not been reviewed in detail so should be read with more caution than that on evidence types. Nonetheless, we see an expected dominance of 'University or public research organisation' as article contributor.

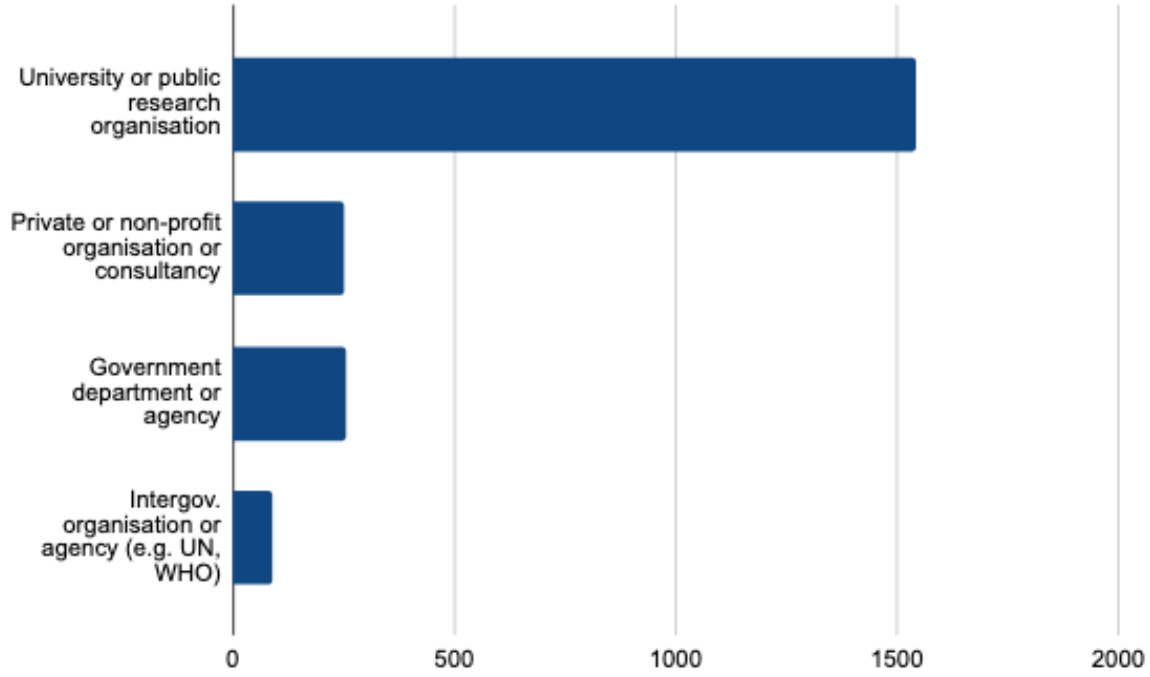


Figure 20 Number of articles by evidence source (many articles have more than one source)

7 LESSONS AND RECOMMENDATIONS

Based on the HSEB project, a number of lessons and recommendations have been identified:

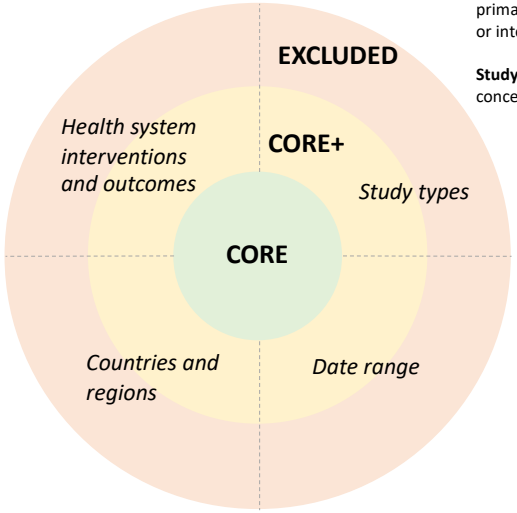
1. **Evidence clusters and gaps:** The map analysis has highlighted clusters of review evidence in certain areas, such as service delivery models and the health workforce, as well as relatively low numbers of review articles in areas that are important to the current South African and COVID-19 policy context, such as financing, procurement and the manufacturing of pharmaceuticals. Further investigation may be needed into the availability of primary studies in these gaps to assess the extent and quality of research.
2. **Quality of articles and critical appraisal:** The Evidence Base that has been developed is a broad collection of research with a relatively large count of articles in each intervention and/or outcome when compared to other Evidence Maps – even for health systems research. This count is largely because of the relatively inclusive classification approach, discussed in the next bullet point, as well as the lack of critical appraisal. As a result, we may expect the number of articles to reduce significantly once critical appraisal is conducted.
3. **Parsimony of the Evidence Map:** During data extraction, articles were often classified into multiple interventions and outcomes of varying importance. For example, an intervention looking at the impact on m-Health on treatment adherence may also make reference to changes in care management practice as a secondary or tertiary outcome. As a result, Evidence Map users may find that the relevance of articles is not always clear, especially when they speak to (and have been classified according to) a variety of secondary and tertiary interventions and outcomes. As this project did not proceed to a critical appraisal stage, refining the classification may be an activity that can be performed when appraisal takes place.
4. **Social determinants of health:** A decision was made to exclude interventions that focused on the social determinants of health. Nonetheless, many review articles, such as those that explore community-based interventions or broader social protection financing instruments, inherently touch on social determinants of health. Going forward, the relationship with, and relevance of, this broader body of work will need to be reflected on more carefully.

ANNEXURE A: INCLUSION AND EXCLUSION CRITERIA

Health system inclusion - CORE:
Interventions: Leadership and governance | Health workforce (i.e. human resources) | Health financing | Medical products, vaccines and technology (incl. pharmaceuticals and med-tech research, approval, procurement, supply and use/ safety) | Service Delivery (incl. facilities, delivery models with community health workers/ PPPs, quality) | Information (incl. research, information technology, communication/ health promotion)
Outcomes: Quality (incl. timeliness, effectiveness, responsiveness, safety) | Equity and universal coverage (incl. access and financial risk protection) | Efficiency (incl. allocative and technical efficiency) | Capability and accountability (incl. skilled workforce, performance accountability, integrity) | Health outcomes (incl. mortality, morbidity, quality of life, NCDs)

Health system inclusion – CORE+: CORE | socio-economic determinants of health related to health system functioning | condition or treatment-specific interventions and outcomes with system relevance

Health system inclusion – EXCLUDED: socio-economic determinants of health related to health outcomes | condition or treatment-specific interventions and outcomes with limited/ no system relevance



Study type inclusion - CORE: systematic review with/ without meta-analysis | scoping review | evidence gap map | meta-analysis | rapid evidence assessment | research synthesis

Study type inclusion – CORE+: CORE | SA-oriented comprehensive literature reviews | primary studies incorporating systematic or comprehensive literature review | expert or inter-governmental forum reviews and reports

Study type inclusion – EXCLUDED: primary studies | policy analysis | theoretical or conceptual discussions | opinion pieces | blogs and news articles

Country and region inclusion (Abstract) - CORE: South Africa| Nigeria| Egypt| Algeria| Morocco| Kenya| Angola |Ethiopia |Ghana |Tanzania |Congo|Zambia|Zimbabwe|Rwanda|Uganda|Brazil|Russia|India|China|Thailand|Taiwan|Canada|Sweden|United Kingdom|UK|Britain|France|Chile|Mexico|Costa Rica|Cuba|SADC|Southern Africa|ECOWAS|West Africa|East Africa|BRIC|South-East Asia|ASEAN|Central America|South America|Latin America|Sahara|Africa|LMIC|middle income|middle-income|developing count*|Gauteng|Western Cape|Eastern Cape|Mpumalanga|Limpopo|KwaZulu Natal|Free State|North West Province|Northwest Province|North-West Province|KwaZulu-Natal|Kwa Zulu Natal|KZN

Country and region inclusion (Abstract) – CORE+: CORE | Additional countries in CORE category classifications e.g. Pakistan = developing country

Country and region inclusion (Abstract) - EXCLUDED: Studies of migrants from developing countries in excluded countries

Date range inclusion - CORE: 01/01/2000 – 01/06/2020

Date range inclusion – CORE+: CORE

Date range inclusion – EXCLUDED: Other dates

Figure 21 Inclusion and exclusion criteria

ANNEXURE B: EVIDENCE SOURCING APPROACH

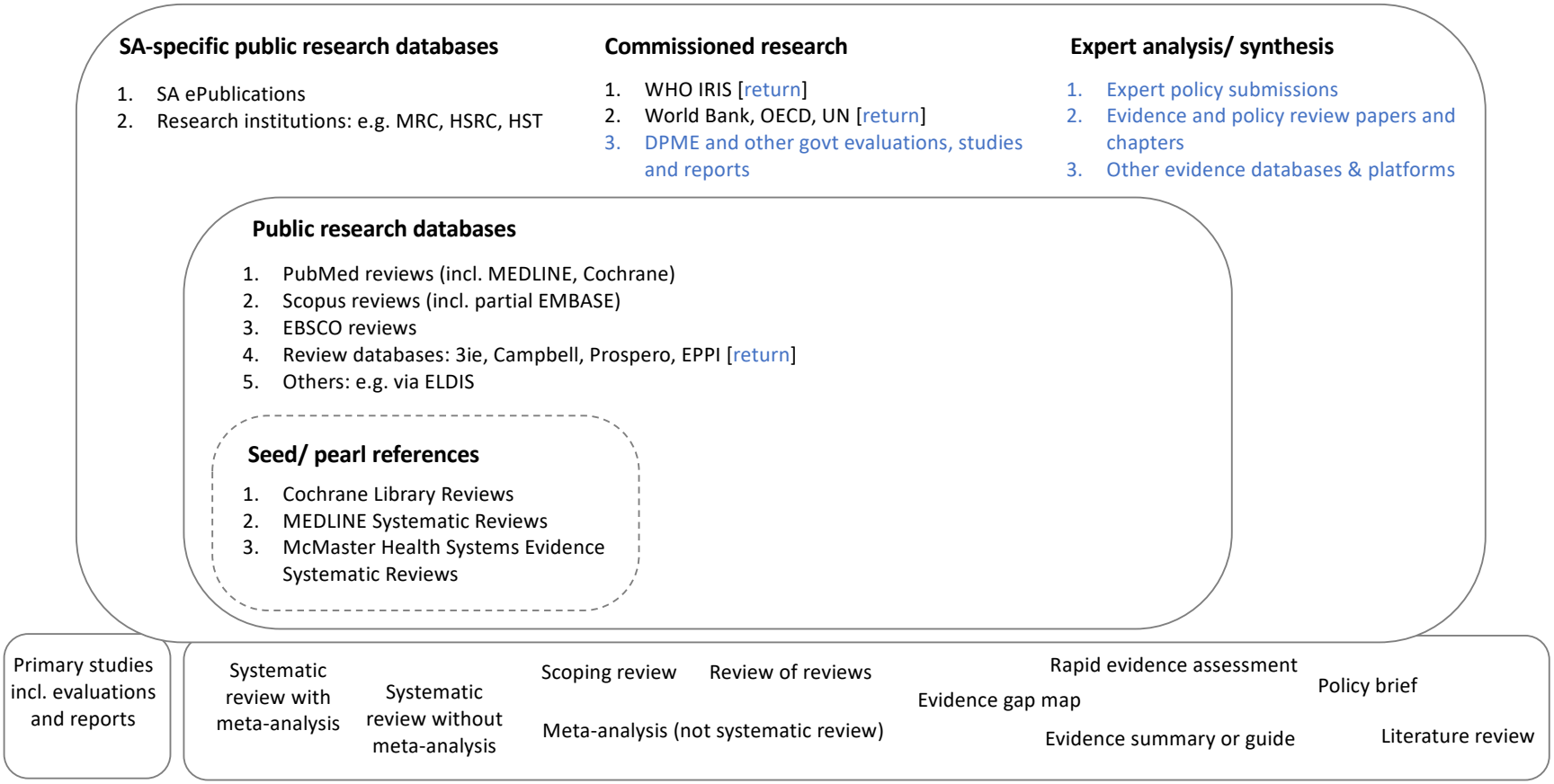


Figure 22 Evidence sourcing approach

ANNEXURE C: PRISMA FLOW DIAGRAM

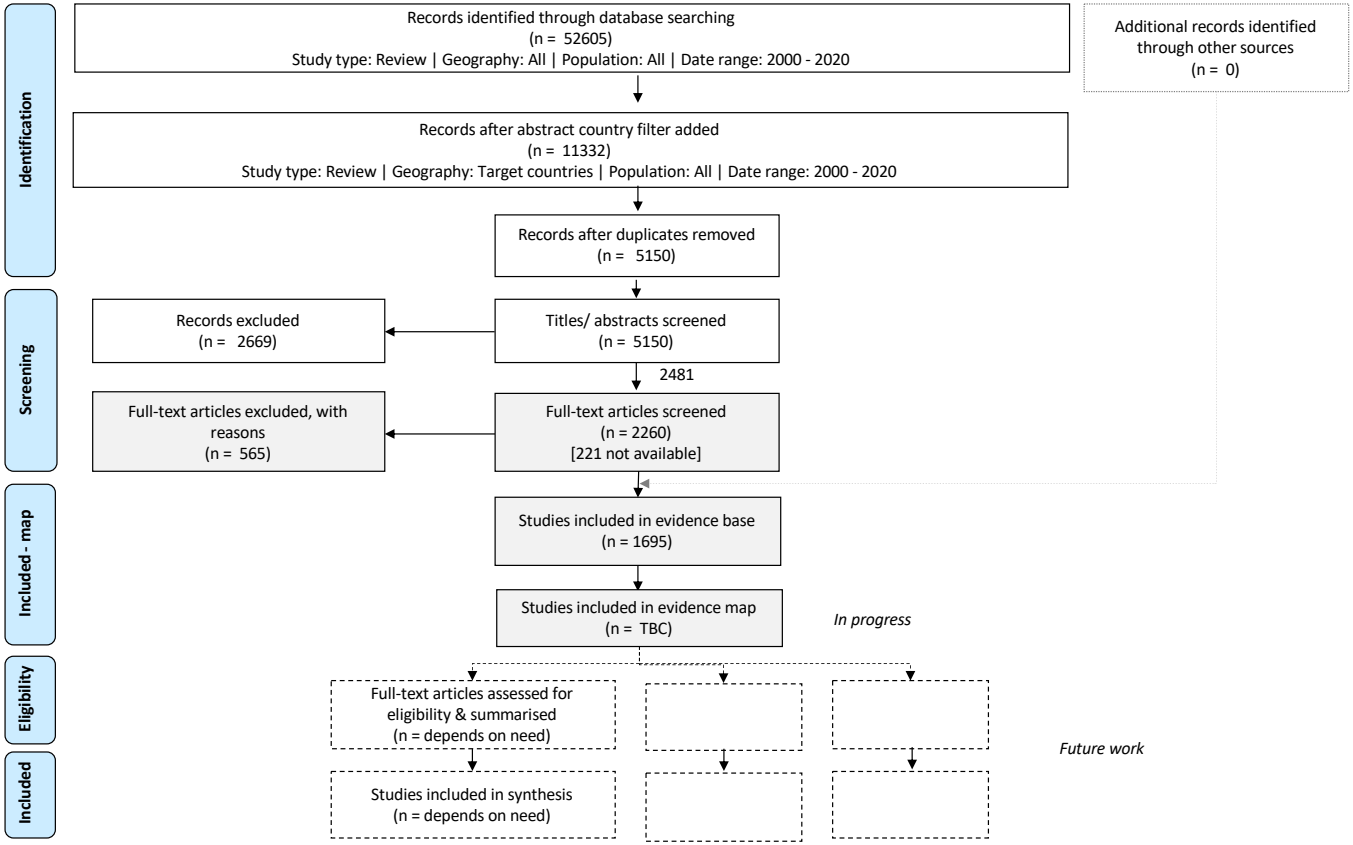


Figure 23 PRISMA Flow Diagram

ANNEXURE D: DATA EXTRACTION TOOL – SAMPLE PAGES

DATA EXTRACTION TOOL - DPME HSEB

Welcome to the data extraction tool for the DPME HSEB project. This tool includes four sections. Researchers must complete all four sections.

SECTION 1: ADMINISTRATIVE INFORMATION - Extraction and evidence meta-data
SECTION 2: INCLUSION - Check to make sure evidence fulfils our inclusion criteria
SECTION 3: EXTRACTION OF PICO DATA - Select PICO categories the evidence belongs to
SECTION 4: EXTRACTION OF FINDINGS DATA - Copy and paste key findings into this document

SECTION 1: ADMINISTRATIVE INFORMATION

1.1 EXTRACTION INFORMATION

Person(s) extracting

Date of extraction

08 | 12 | 2020

Day Month Year

Person(s) reviewing extraction

Date of review

Day Month Year

Extraction unique ID (column A)

1.2 EVIDENCE INFORMATION

Study title

Author(s)

Publication year

Publication source/ journal name

DOI (or URL if DOI not available)

Method - Research synthesis/ secondary study

Select an evidence method on this page. For mixed-method studies you may select multiple boxes. A review may form part of a primary study.

- ☐ Review of reviews
- ☐ Scoping review (including evidence map)
- ☐ Systematic review with meta-analysis
- ☐ Systematic review without meta-analysis
- ☐ Meta-analyses (but not systematic review)
- ☐ Rapid review or evidence summary
- ☐ Literature or narrative review
- ☐ _____

Method - Primary study - Quantitative

- ☐ Experimental e.g. RCT
- ☐ Impact evaluation
- ☐ Survey
- ☐ Econometric
- ☐ _____

Method - Primary study - Qualitative (e.g. case study, interviews)

- ☐ Case study
- ☐ Historical/ genealogical
- ☐ Policy content analysis
- ☐ _____

Method - Other

- ☐ Design science and modeling (e.g. simulation)
- ☐ Theoretical discussion or synthesis
- ☐ Opinion piece
- ☐ Media article
- ☐ _____

3.3.2 Interventions

If the study is only a design, modeling or assessment of a health system intervention itself then you will only select one or more of these items (and not select any Outcomes from the next section)

Service delivery

- ☐ Integrated care incl. referrals
- ☐ Delivery models incl. communities, decentralisation
- ☐ Infrastructure and facilities
- ☐ Care mgmt. & protocols
- ☐ Demand/ utilisation of care
- ☐ _____

Workforce

- ☐ HR policy & planning
- ☐ Training
- ☐ Recruitment and remuneration
- ☐ Roles and structure
- ☐ Performance management
- ☐ Advocacy, motivation and health
- ☐ _____

Information

- ☐ Health system M&E/ indicators
- ☐ Disease surveillance systems
- ☐ IT applications & infrastructure
- ☐ IT & data standards, policies and governance
- ☐ IT skills
- ☐ Research and knowledge translation methods
- ☐ _____

Medical products, vaccines, technology

- ☐ Procurement
- ☐ Supply chain and logistics
- ☐ Standards and quality assurance
- ☐ Safety mechanisms
- ☐ Use incl. guidelines and training
- ☐ Technology assessment
- ☐ Research and development
- ☐ Manufacturing
- ☐ Market intelligence
- ☐ _____

Financing

- ☐ Funding and risk pooling models
- ☐ Procurement
- ☐ Subsidies/ protection for vulnerable
- ☐ Financial management
- ☐ _____

Leadership & governance

- ☐ Vision & priorities
- ☐ Oversight and market regulation
- ☐ Performance
- ☐ Integrity and corruption
- ☐ Partnerships incl. public-private
- ☐ Linking with other sectors
- ☐ _____

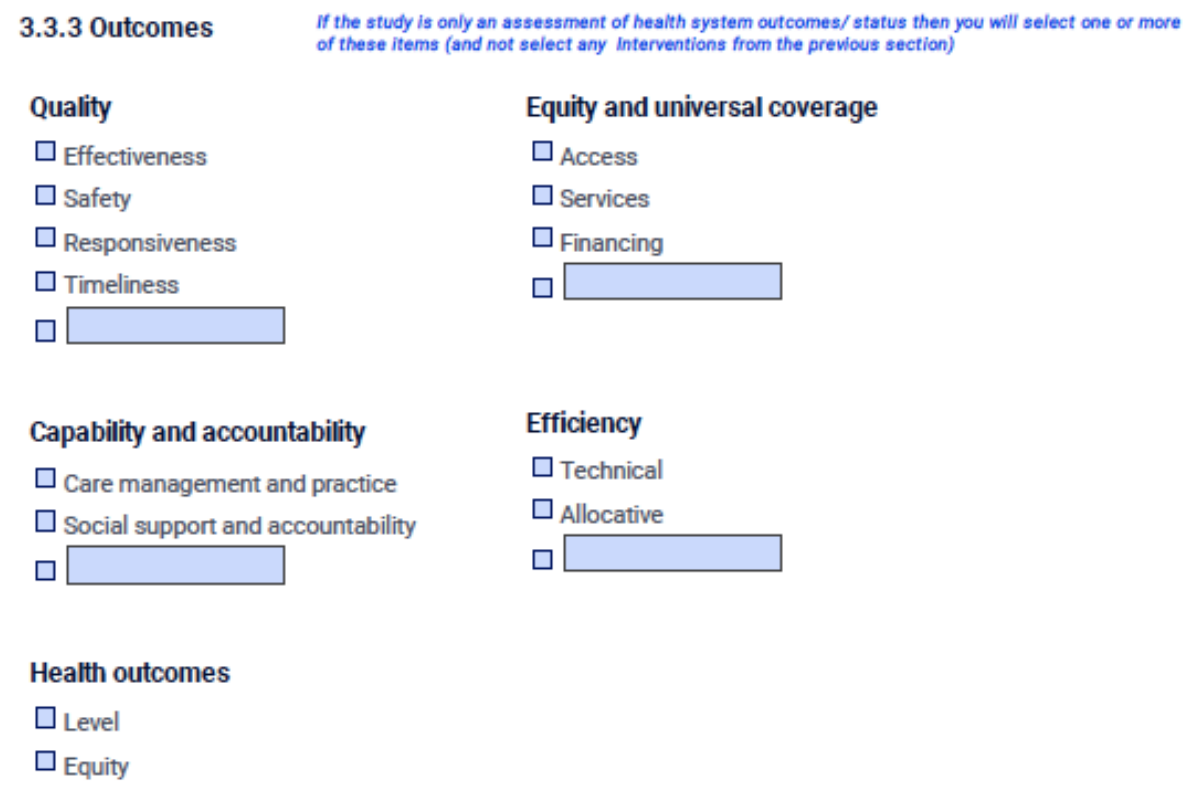


Figure 24 Selected pages from data extraction tool

ANNEXURE E: SAMPLE ARTICLE FRONT PAGES FROM CLUSTERS

Delivery Model and Effectiveness

https://pubmed.ncbi.nlm.nih.gov/21813923/

Community Based Newborn Care: *A Systematic Review and Meta-analysis of Evidence*: UNICEF-PHFI Series on Newborn and Child Health, India

SIDDHARTHA GOGIA, *SIDDARTH RAMJI, $PIYUSH GUPTA, #TARUN GERA, $DHEERAJ SHAH, **JOSEPH L MATHEW, $$PAVITRA MOHAN AND ##RAJMOHAN PANDA

*From Department of Pediatrics, Max Hospital, Gurgaon, Haryana; *Department of Pediatrics, Maulana Azad Medical College, Delhi; $Department of Pediatrics, University College of Medical Sciences, New Delhi; #Department of Pediatrics, Fortis Hospital, Shalimar Bagh, New Delhi; **Advanced Pediatrics Centre, PGIMER, Chandigarh 160012; $$UNICEF India, New Delhi, and ##Public Health Foundation of India (PHFI), New Delhi; India.*

Correspondence to: Dr Siddhartha Gogia, Department of Pediatrics, Max Hospital, Gurgaon, Haryana, India. gogiasiddhartha@gmail.com

Background: The neonatal mortality rate (NMR) in India has remained virtually unchanged in the last 5 years. To achieve the Millennium Development Goal (MDG) 4 on child mortality (two thirds reduction from 1990 to 2015), it is essential to reduce NMR. A systematic review of the evidence on community-based intervention packages to reduce NMR is essential for advocacy and action to reach MDG-4.

Objective: To assess the effect of community based neonatal care by community health workers (CHWs) on NMR in resource-limited settings.

Design: Systematic review and meta-analysis of controlled trials.

Data sources: Electronic databases and hand search of reviews, and abstracts and proceedings of conferences.

Results: A total of 13 controlled trials involving about 192000 births were included in this systematic review. Community based neonatal care by CHWs was associated with reduced neonatal mortality in resource-limited settings [RR=0.73 (0.65 to 0.83); *P*<0.0001]. The identified studies were a heterogeneous mix with respect to the extent and quality of community based neonatal care provided and the characteristics of the CHWs delivering the intervention. There was no consistent effect of training duration of the health workers, type of intervention (home visitation versus community participatory action and learning), number of home visits done by CHWs, and provision of only preventive versus both preventive and therapeutic care. Limited data suggests that the ideal time for the first postnatal visit is the first two days of life. The interventions are highly effective when baseline NMR is above 50/1000 live births [RR=0.64(0.54 to 0.77)]. The interventions show a significant decrease in efficacy as the NMR drops below 50/1000 live births [RR=0.85 (0.73 to 0.99)], however is still substantial. NMR gains from home visitation approach are going to materialize only in the presence of high program coverage of 50% or more.

Conclusion: A significant decrease in NMR is possible by providing community based neonatal care in areas with high NMR by community health workers with a modest training duration and ensuring high program coverage with home visitation on the first two days of life.

Keywords: *Action, Advocacy, Newborn, Child health, Community, Systematic reviews.*

https://pubmed.ncbi.nlm.nih.gov/32321610/

The effectiveness and cost-effectiveness of integrating mental health services in primary care in low- and middle-income countries: systematic review

Leonardo Cubillos,[1,2] Sophia M. Bartels,[1] William C. Torrey,[1,2,3] John Naslund,[4] José Miguel Uribe-Restrepo,[5] Chelsea Gaviola,[1] Sergio Castro Díaz,[6] Deepak T. John,[1] Makeda J. Williams,[7] Magda Cepeda,[6] Carlos Gómez-Restrepo,[5,6] Lisa A. Marsch[1,2,3]

BJPsych Bulletin (2021) **45**, 40–52, doi:10.1192/bjb.2020.35

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First received 11 Nov 2019, final revision 11 Mar 2020, accepted 14 Mar 2020

Aims and method This systematic review examines the effectiveness and cost-effectiveness of behavioural health integration into primary healthcare in the management of depression and unhealthy alcohol use in low- and middle-income countries. Following PRISMA guidelines, this review included research that studied patients aged ≥18 years with unhealthy alcohol use and/or depression of any clinical severity. An exploration of the models of integration was used to characterise a typology of behavioural health integration specific for low- and middle-income countries.

Results Fifty-eight articles met inclusion criteria. Studies evidenced increased effectiveness of integrated care over treatment as usual for both conditions. The economic evaluations found increased direct health costs but cost-effective estimates. The included studies used six distinct behavioural health integration models.

Clinical implications Behavioural health integration may yield improved health outcomes, although it may require additional resources. The proposed typology can assist decision-makers to advance the implementation of integrated models.

Keywords Mental health integration; depression; alcohol use; primary care; provision of services.

Roles, Structure, Training, Skills Development and Effectiveness

https://pubmed.ncbi.nlm.nih.gov/31670215/

The role of community-based nursing interventions in improving outcomes for individuals with cardiovascular disease: A systematic review

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ARTICLE INFO

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Cardiovascular diseases
Community health nursing
Home health nursing
Systematic review

ABSTRACT

Objective: To examine the role of community-based nursing interventions in improving outcomes for community-dwelling individuals with cardiovascular disease.
Design: A systematic review and narrative synthesis.
Data sources: Seven electronic databases (MEDLINE, CINAHL, Global Health, LILACS, Africa-Wide Information, IMEMR and WPRIM) were searched from inception to 16 March 2018 without language restrictions.
Review methods: We included studies evaluating the outcomes of interventions led by, or primarily delivered by, nurses for individuals with cardiovascular disease in community settings. Study selection, data extraction and risk of bias assessments were performed by at least two independent reviewers.
Results: Twenty-eight studies met the inclusion criteria and were included in this review. Community-based nursing interventions improved outcomes in four key areas: (1) self-care, (2) health, (3) healthcare utilisation, and (4) quality of care. Significant improvements were reported in patients' knowledge and ability to self-manage, severity of disease, functional status, quality of life, risk of death, hospital readmission days, emergency department visits, healthcare costs and satisfaction with care. Facilitators to intervention effectiveness included the use of an individualised approach, multidisciplinary approach, specially trained nurses, family involvement and the home setting. Conversely, barriers to intervention success included limitations in nurses' time and skills, ineffective interdisciplinary collaboration and insufficient intervention intensity.
Conclusions: The overall evidence is positive regarding the role of community-based nursing interventions in improving outcomes for individuals with cardiovascular disease. However, this review highlights the need for more robust research establishing definitive relationships between different types of interventions and outcomes as well as evaluating the cost-effectiveness of these interventions to aid the development of sustainable policy solutions.

https://pubmed.ncbi.nlm.nih.gov/22546595/

Factors supporting good partnership working between generalist and specialist palliative care services:

a systematic review

Abstract

Background
The care that most people receive at the end of their lives is provided not by specialist palliative care professionals but by generalists such as GPs, district nurses and others who have not undertaken specialist training in palliative care. A key focus of recent UK policy is improving partnership working across the spectrum of palliative care provision. However there is little evidence to suggest factors which support collaborative working between specialist and generalist palliative care providers

Aim
To explore factors that support partnership working between specialist and generalist palliative care providers.

Design
Systematic review.

Method
A systematic review of studies relating to partnership working between specialist and generalist palliative care providers was undertaken. Six electronic databases were searched for papers published up until January 2011.

Results
Of the 159 articles initially identified, 22 papers met the criteria for inclusion. Factors supporting good partnership working included: good communication between providers; clear definition of roles and responsibilities; opportunities for shared learning and education; appropriate and timely access to specialist palliative care services; and coordinated care.

Conclusion
Multiple examples exist of good partnership working between specialist and generalist providers; however, there is little consistency regarding how models of collaborative working are developed, and which models are most effective. Little is known about the direct impact of collaborative working on patient outcomes. Further research is required to gain the direct perspectives of health professionals and patients regarding collaborative working in palliative care, and to develop appropriate and cost-effective models for partnership working.

Keywords
collaborative working; generalist palliative care; partnership working; specialist palliative care.

INTRODUCTION

The need to increase the numbers of health professionals involved in palliative and end-of-life care has become a priority of palliative care policies across the developed world. Ageing nations and expanding populations mean annual numbers of deaths are predicted to rise by as much as 17 per cent over coming years.[1] In the UK, the recent palliative care funding review has estimated that, currently, up to 457 000 people need access to a palliative care, but around 92 000 people are not being reached.[2] In the UK in 2009, there were 507 specialist palliative care inpatient services, whose remit is to care for patients who require continuous or high levels of support;[3] however, the care that most people receive at the end of their lives is provided not by specialists but by generalists, such as GPs, district nurses, nursing home staff, hospital staff, and others who have not undertaken specialist palliative care training.[4]

Generalist palliative care provision has seen limited research attention to date. There is no consensus regarding the definition of the term 'generalist' in the context of palliative care,[4] and people have reported differing understandings of the purpose and scope of generalist palliative care;[5,6] in spite of this, international health policy has sought to place the generalist at the heart of palliative care provision.[7,8] In the UK, recent policy has highlighted the importance of training and education for generalist providers if they are to provide effective palliative care.[9] However, difficulties incorporating palliative care into a generalist workload have been reported, as has defining the role of palliative care outside the specialist setting.[10,11] A recent study by Gott *et al* reported significant challenges in generalist working in England and New Zealand. Difficulties with defining the nature and limits of generalist palliative care, as well as negotiating partnership working were reported; these reveal a significant gap between palliative care provision as enshrined in policy and the reality reported by frontline staff.[6]

A key focus of UK policy is improving communication, partnership working, and multidisciplinary involvement across the spectrum of palliative care provision.[9] Although good communication and improved partnership working between specialist and generalist providers have been identified as facilitators for optimum palliative care provision,[12] there is little evidence to suggest which factors support these working relationships. In addition, partnerships have costs in terms of negotiating, developing and maintaining working relationships, and translating these into successful outcomes.[13]

The current economic climate makes significant expansion of palliative care services unlikely, yet policymakers have highlighted a commitment to ensuring high-quality palliative care for all.[7,9] As such, identifying factors that support effective partnership working between generalist and

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https://pubmed.ncbi.nlm.nih.gov/30068356/

The effect of human resource management on performance in hospitals in Sub-Saharan Africa: a systematic literature review

Philipos Petros Gile[1,2*], Martina Buljac-Samardzic[2] and Joris Van De Klundert[2,3]

Abstract

Hospitals in Sub-Saharan Africa (SSA) face major workforce challenges while having to deal with extraordinary high burdens of disease. The effectiveness of human resource management (HRM) is therefore of particular interest for these SSA hospitals. While, in general, the relationship between HRM and hospital performance is extensively investigated, most of the underlying empirical evidence is from western countries and may have limited validity in SSA. Evidence on this relationship for SSA hospitals is scarce and scattered. We present a systematic review of empirical studies investigating the relationship between HRM and performance in SSA hospitals.

Following the PRISMA protocol, searching in seven databases (i.e., Embase, MEDLINE, Web of Science, Cochrane, PubMed, CINAHL, Google Scholar) yielded 2252 hits and a total of 111 included studies that represent 19 out of 48 SSA countries. From a HRM perspective, most studies researched HRM bundles that combined practices from motivation-enhancing, skills-enhancing, and empowerment-enhancing domains. Motivation-enhancing practices were most frequently researched, followed by skills-enhancing practices and empowerment-enhancing practices. Few studies focused on single HRM practices (instead of bundles). Training and education were the most researched single practices, followed by task shifting. From a performance perspective, our review reveals that employee outcomes and organizational outcomes are frequently researched, whereas team outcomes and patient outcomes are significantly less researched. Most studies report HRM interventions to have positively impacted performance in one way or another. As researchers have studied a wide variety of (bundled) interventions and outcomes, our analysis does not allow to present a structured set of effective one-to-one relationships between specific HRM interventions and performance measures. Instead, we find that specific outcome improvements can be accomplished by different HRM interventions and conversely that similar HRM interventions are reported to affect different outcome measures.

In view of the high burden of disease, our review identified remarkable little evidence on the relationship between HRM and patient outcomes. Moreover, the presented evidence often fails to provide contextual characteristics which are likely to induce variety in the performance effects of HRM interventions. Coordinated research efforts to advance the evidence base are called for.

Keywords: Systematic review, HRM, SSA, Hospital, Performance, Outcomes, Health workforce

Research and Knowledge Translation Practices and M&E

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4421835/

Monitoring the ability to deliver care in low- and middle-income countries: a systematic review of health facility assessment tools

Jason W Nickerson,[1,2]* Orvill Adams,[3] Amir Attaran,[4,5] Janet Hatcher-Roberts[6] and Peter Tugwell[7]

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Accepted 25 April 2014

Introduction Health facilities assessments are an essential instrument for health system strengthening in low- and middle-income countries. These assessments are used to conduct health facility censuses to assess the capacity of the health system to deliver health care and to identify gaps in the coverage of health services. Despite the valuable role of these assessments, there are currently no minimum standards or frameworks for these tools.

Methods We used a structured keyword search of the MEDLINE, EMBASE and HealthStar databases and searched the websites of the World Health Organization, the World Bank and the International Health Facilities Assessment Network to locate all available health facilities assessment tools intended for use in low- and middle-income countries. We parsed the various assessment tools to identify similarities between them, which we catalogued into a framework comprising 41 assessment domains.

Results We identified 10 health facility assessment tools meeting our inclusion criteria, all of which were included in our analysis. We found substantial variation in the comprehensiveness of the included tools, with the assessments containing indicators in 13 to 33 (median: 25.5) of the 41 assessment domains included in our framework. None of the tools collected data on all 41 of the assessment domains we identified.

Conclusions Not only do a large number of health facility assessment tools exist, but the data they collect and methods they employ are very different. This certainly limits the comparability of the data between different countries' health systems and probably creates blind spots that impede efforts to strengthen those systems. Agreement is needed on the essential elements of health facility assessments to guide the development of specific indicators and for refining existing instruments.

Keywords Health system, health facilities, methodologies, health services accessibility, health care surveys

https://pubmed.ncbi.nlm.nih.gov/31023255/

Policy, evidence and practice for post-birth care plans: a scoping review

Susan Crowther*, Emma MacIver and Annie Lau

Abstract

Background: Postnatal care continually attracts less attention than other parts of the childbirth year. Many regions consistently report poor maternal satisfaction with care in the post-birth period. Despite policy recommending post-birth planning be part of maternity services there remains a paucity of empirical evidence and reported experience using post-birth care plans. There is a need to report on post-birth care plans, identify policy and guideline recommendations and gaps in the current empirical research, as well as experiences creating and using post-birth care plans.

Methods: This scoping review accessed empirical literature and government and professional documents from 2005 to present day to build a picture of current understanding of policy imperatives and existent published empirical evidence. The review was informed by the Arksey and O'Malley approach employing five stages.

Results: The review revealed that post-birth care planning is promoted extensively in health policy and there is emergent evidence for its implementation. Yet there is a paucity of practice examples and only one evaluation in the UK. The review identified four overarching themes: 'Positioning of post-birth care planning in policy; 'Content and approach'; 'Personalised care and relational continuity'; Feasibility and acceptability in practice'.

Conclusions: Empirical evidence supports post-birth care planning, but evidence is limited leaving many unanswered questions. Health care policy reflects evidence and recommends implementation of post-birth care plans, however, there remains a paucity of information in relation to post-birth care planning experience and implementation in practice. Women need consistent information and advice and value personalised care. Models of care that facilitate these needs are focused on relational continuity and lead to greater satisfaction. It remains unclear if a combination of post-birth care planning and continuity of carer interventions would improve post-birth outcomes and satisfaction. Gaps in research knowledge and practice experience are identified and implications for practice and further research suggested.

Keywords: Post-birth, Postnatal, Care plans, Continuity, Personalised care

Health Communication and Impact on Adherence/ Utilisation

https://pubmed.ncbi.nlm.nih.gov/19956160/

Promoting colorectal cancer screening: a systematic review and meta-analysis of randomised controlled trials of interventions to increase uptake

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ABSTRACT

Colorectal cancer (CRC) represents a global public health concern. CRC screening is associated with significant reductions in CRC incidence and mortality, however, uptake is suboptimal. This systematic review and meta-analysis of randomised controlled trials explored the effectiveness of interventions designed to increase screening uptake, plus the impact of various moderators. Data from 102 studies including 1.94 million participants were analysed. Results showed significant benefit of all interventions combined (OR, 1.49, 95% CI: 1.43, 1.56, $p < 0.001$). The effects were similar in studies using objective versus self-reported uptake measures and lower in studies judged to be at high risk of bias. Moderator analyses indicated significant effects for aspects of behaviour (effects lower for studies on non-endoscopic procedures), and intervention (effects higher for studies conducted in community settings, in healthcare systems that are not free, and that use reminders, health-professional providers, paper materials supplemented with in-person or phone contact, but avoid remote contact). Interventions that included behaviour change techniques targeting social support (unspecified or practical), instructions or demonstration of the behaviour, and that added objects to the environment produced stronger effects. The way in which findings can inform interventions to improve CRC screening uptake is discussed.

ARTICLE HISTORY
Received 13 October 2019
Accepted 9 April 2020

KEYWORDS
Meta-analysis; colorectal cancer; screening uptake; health interventions; behaviour change techniques

IT Applications Impact on Adherence/ Utilisation

https://pubmed.ncbi.nlm.nih.gov/28978495/

Using Mobile Phones to Improve Vaccination Uptake in 21 Low- and Middle-Income Countries: Systematic Review

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Abstract

Background: The benefits of vaccination have been comprehensively proven; however, disparities in coverage persist because of poor health system management, limited resources, and parental knowledge and attitudes. Evidence suggests that health interventions that engage local parties in communication strategies improve vaccination uptake. As mobile technology is widely used to improve health communication, mobile health (mHealth) interventions might be used to increase coverage.

Objective: The aim of this study was to conduct a systematic review of the available literature on the use of mHealth to improve vaccination in low- and middle-income countries with large numbers of unvaccinated children.

Methods: In February 2017, MEDLINE (Medical Literature Analysis and Retrieval System Online), Scopus, and Web of Science, as well as three health organization websites—Communication Initiative Network, TechNet-21, and PATH—were searched to identify mHealth intervention studies on vaccination uptake in 21 countries.

Results: Ten peer-reviewed studies and 11 studies from white or gray literature were included. Nine took place in India, three in Pakistan, two each in Malawi and Nigeria, and one each in Bangladesh, Zambia, Zimbabwe, and Kenya. Ten peer-reviewed studies and 7 white or gray studies demonstrated improved vaccination uptake after interventions, including appointment reminders, mobile phone apps, and prerecorded messages.

Conclusions: Although the potential for mHealth interventions to improve vaccination coverage seems clear, the evidence for such interventions is not. The dearth of studies in countries facing the greatest barriers to immunization impedes the prospects for evidence-based policy and practice in these settings.

Care Management and Protocols Impact on Effectiveness and Care Practice

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Women's Access and Provider Practices for the Case Management of Malaria during Pregnancy: A Systematic Review and Meta-Analysis

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Abstract

Background: WHO recommends prompt diagnosis and quinine plus clindamycin for treatment of uncomplicated malaria in the first trimester and artemisinin-based combination therapies in subsequent trimesters. We undertook a systematic review of women's access to and healthcare provider adherence to WHO case management policy for malaria in pregnant women.

Methods and Findings: We searched the Malaria in Pregnancy Library, the Global Health Database, and the International Network for the Rational Use of Drugs Bibliography from 1 January 2006 to 3 April 2014, without language restriction. Data were appraised for quality and content. Frequencies of women's and healthcare providers' practices were explored using narrative synthesis and random effect meta-analysis. Barriers to women's access and providers' adherence to policy were explored by content analysis using NVivo. Determinants of women's access and providers' case management practices were extracted and compared across studies. We did not perform a meta-ethnography. Thirty-seven studies were included, conducted in Africa (30), Asia (4), Yemen (1), and Brazil (2). One- to three-quarters of women reported malaria episodes during pregnancy, of whom treatment was sought by >85%. Barriers to access among women included poor knowledge of drug safety, prohibitive costs, and self-treatment practices, used by 5%–40% of women. Determinants of women's treatment-seeking behaviour were education and previous experience of miscarriage and antenatal care. Healthcare provider reliance on clinical diagnosis and poor adherence to treatment policy, especially in first versus other trimesters (28%, 95% CI 14%–47%, versus 72%, 95% CI 39%–91%, $p=0.02$), was consistently reported. Prescribing practices were driven by concerns over side effects and drug safety, patient preference, drug availability, and cost. Determinants of provider practices were access to training and facility type (public versus private). Findings were limited by the availability, quality, scope, and methodological inconsistencies of the included studies.

Conclusions: A systematic assessment of the extent of substandard case management practices of malaria in pregnancy is required, as well as quality improvement interventions that reach all providers administering antimalarial drugs in the community. Pregnant women need access to information on which anti-malarial drugs are safe to use at different stages of pregnancy.

Please see later in the article for the Editors' Summary.

Care Management and Practice as Outcome

The impact of sharps injuries on student nurses: a systematic review

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ABSTRACT

Aims and objectives: The purpose of this review was to discover the impact of sharps injuries in the student nurse population. Background: much is known and reported about sharps injuries in registered nurses, but there has been a lack of published evidence regarding sharps injuries within the student nurse population. Method: A systematic review of nursing, health and psychology databases was conducted. The limits set were publications between 1980 and 2014 in the English language. Studies were identified then, following a rigorous critical and quality appraisal with validated tools, were selected for the systematic review. Results: A total of 40 articles met the inclusion criteria, reporting studies conducted in 18 countries. Psychological and physical impacts of sharps injuries in student nurses were reported, such as fear, anxiety and depression, although these impacts were not quantified using a validated instrument. Conclusion: The impact of sharps injuries can be severe, both psychological and physical. This systematic review shows that further research is needed into this, especially in under-researched areas such as the UK, to establish the impact of sharps injuries within this population. Further research would also aid the education and prevention of this harmful problem. The review also emphasises the psychological issues relating to sharps injuries, the impact these can have on individuals and the support and counselling that student nurses require after injury. Relevance to practice: These findings highlight the potential psychological issues that can result from sharps injuries in this population

Key words: Student nurse ■ Sharps injury ■ Needlestick injury ■ Risk ■ Safety ■ Inoculation ■ injury

Sharp devices, or sharps, are items capable of piercing the skin and include needles, surgical instruments, lancets, scalpels and glass (Hersey and Martin, 1994; Bandolier, 2003; World Health Organization, 2003). Sharps injuries are one of the main categories of accidents experienced by healthcare staff, and have been described as an 'important public health concern' (Pathak et al, 2012: 639).

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Sharps injuries are not a recent phenomenon. During the 1990s, warnings were made about hazards and risks of sharps injuries (Yassi and McGill, 1991), with Albertoni et al (1992: 541) arguing that occupational exposure to infectious agents had been a significant concern 'for some time'. In today's diverse healthcare environments, most employees run the risk of accidental exposure to blood and bloodborne pathogens.

More than 20 bloodborne pathogens can be transmitted through percutaneous injuries (Collins and Kennedy, 1987; Morgan, 2000). More recently, this estimation was increased to at least 60 pathogens (Tarantola et al, 2006). The three most common bloodborne pathogens that can be transmitted via percutaneous injuries to healthcare workers are: the human immunodeficiency virus (HIV); the hepatitis B virus (HBV); and the hepatitis C virus (HCV) (Jayanth et al, 2009).

Every sharps injury has potentially severe consequences for the staff member, causing 'distress' and 'physical damage' at the very least (Watterson, 2004). Reis et al (2004a) described how students exposed to biological hazards experience not only the fear of acquiring potential infections such as HIV, HBV and HCV, but also had feelings of 'insecurity' and 'low self-esteem'. This is echoed by Gupta et al (2008), who found that sharps injuries can have an effect on healthcare workers' quality of life, and can cause great apprehension, angst and fear for themselves, their family and their colleagues, as well as feelings of shame and low self-confidence (Gonzalez-Medina and Le, 2011).

Sharps injuries have other effects, including the direct cost, for example post-exposure medical treatment and resources, as well as indirect costs, such as disability, missed work days and absenteeism (Sharma et al, 2010; Bassil, 2012). There is also an economic impact on the individual (Trueman et al, 2008).

In relation to student nurses, the prevalence rates of sharps injuries range from 3% (n=6) (Li et al, 2008) to 100% (n=100) (Trivedi et al, 2013). Undergraduate healthcare students often handle piercing/cutting devices while training, which exposes them to the risk of acquiring infections (Gir et al, 2008). They are at a high risk of exposure to bloodborne pathogens when they become involved in patient investigations and treatments during their clinical placements (Hussain et al, 2012). By their very nature of being students, they are less experienced (Karadag, 2010; Reis et al, 2004b) in the clinical setting and less skilful (Cheung et al, 2010) when handling needles and sharps, which exposes them to potential injury.

Other possible reasons put forward to explain the increased risk of sharps injury student nurses are insufficient attention to

Access and Utilisation as Outcome

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Access barriers to obstetric care at health facilities in sub-Saharan Africa—a systematic review

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Abstract

Background: Since 2000, the United Nations' Millennium Development Goals, which included a goal to improve maternal health by the end of 2015, has facilitated significant reductions in maternal morbidity and mortality worldwide. However, despite more focused efforts made especially by low- and middle-income countries, targets were largely unmet in sub-Saharan Africa, where women are plagued by many challenges in seeking obstetric care. The aim of this review was to synthesise literature on barriers to obstetric care at health institutions in sub-Saharan Africa.

Methods: This review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist. PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Scopus databases were electronically searched to identify studies on barriers to health facility-based obstetric care in sub-Saharan Africa, in English, and dated between 2000 and 2015. Combinations of search terms 'obstetric care', 'access', 'barriers', 'developing countries' and 'sub-Saharan Africa' were used to locate articles. Quantitative, qualitative and mixed-methods studies were considered. A narrative synthesis approach was employed to synthesise the evidence and explore relationships between included studies.

Results: One hundred and sixty articles met the inclusion criteria. Currently, obstetric care access is hindered by several demand- and supply-side barriers. The principal demand-side barriers identified were limited household resources/income, non-availability of means of transportation, indirect transport costs, a lack of information on health care services/providers, issues related to stigma and women's self-esteem/assertiveness, a lack of birth preparation, cultural beliefs/practices and ignorance about required obstetric health services. On the supply-side, the most significant barriers were cost of services, physical distance between health facilities and service users' residence, long waiting times at health facilities, poor staff knowledge and skills, poor referral practices and poor staff interpersonal relationships.

Conclusion: Despite similarities in obstetric care barriers across sub-Saharan Africa, country-specific strategies are required to tackle the challenges mentioned. Governments need to develop strategies to improve healthcare systems and overall socioeconomic status of women, in order to tackle supply- and demand-side access barriers to obstetric care. It is also important that strategies adopted are supported by research evidence appropriate for local conditions. Finally, more research is needed, particularly, with regard to supply-side interventions that may improve the obstetric care experience of pregnant women.

Systematic review registration: PROSPERO 2014 CRD42014015549

Keywords: Obstetric care, Maternity care, Access, Barriers, Facility-based deliveries, Maternal deaths, Institutional maternal mortality, Sub-Saharan Africa, Developing countries, Systematic review

Health Outcomes

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Distribution of depressive disorders in the elderly

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ABSTRACT

Background: The community-based mental health studies have revealed that the point prevalence of depressive disorders in the elderly population of the world varies between 10% and 20% depending on cultural situations. **Objective:** To determine the median prevalence rates of depressive disorders in the elderly population of India and various other countries in the world. **Materials and Methods:** A retrospective study based on meta-analysis of various study reports. **Setting:** Community-based mental health surveys on geriatric depressive disorders conducted in the continents of Asia, Europe, Australia, North America, and South America. **Study Period:** All the studies that constituted the sample were conducted between 1955 and 2005. Sample Size: After applying the inclusion and exclusion criteria on published and indexed articles, 74 original research studies that surveyed a total of 4,87,275 elderly individuals in the age group of 60 years and above, residing in various parts of the world were included for the final analysis. **Inclusion Criteria:** The researchers had included only community-based cross-sectional surveys and some prospective studies that had not excluded depression on baseline. These studies were conducted on homogenous community of elderly population in the world, who were selected by simple random sampling technique. **Exclusion Criteria:** All the unpublished reports and unavailable or unanalyzed or inaccessible articles from the internet were excluded from the study. **Statistical Analysis:** The median prevalence rate and its corresponding interquartile range (IQR), Chi-square test, and Chi-square for Linear Trend were applied. A *P* value < 0.05 was considered as statistically significant. **Results and Conclusion:** The median prevalence rate of depressive disorders in the world for the elderly population was determined to be 10.3% [IQR = (4.7%–16.0%)]. The median prevalence rate of depression among the elderly Indian population was determined to be 21.9% [IQR = (11.6%–31.1%)]. Although there was a significant decrease trend in world prevalence of geriatric depression, it was significantly higher among Indians in recent years than the rest of the world.

Key words: Depressive disorders, elderly, interquartile range, median, prevalence

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Financing Impact on Effectiveness and Health Outcomes

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The impact of user fees on access to health services in low- and middle-income countries

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ABSTRACT

Background

Following an international push for financing reforms, many low- and middle-income countries introduced user fees to raise additional revenue for health systems. User fees are charges levied at the point of use and are supposed to help reduce 'frivolous' consumption of health services, increase quality of services available and, as a result, increase utilisation of services.

Objectives

To assess the effectiveness of introducing, removing or changing user fees to improve access to care in low-and middle-income countries

Search methods

We searched 25 international databases, including the Cochrane Effective Practice and Organisation of Care (EPOC) Group's Trials Register, CENTRAL, MEDLINE and EMBASE. We also searched the websites and online resources of international agencies, organisations and universities to find relevant grey literature. We conducted the original searches between November 2005 and April 2006 and the updated search in CENTRAL (DVD-ROM 2011, Issue 1); MEDLINE In-Process & Other Non-Indexed Citations, Ovid (January 25, 2011); MEDLINE, Ovid (1948 to January Week 2 2011); EMBASE, Ovid (1980 to 2011 Week 03) and EconLit, CSA Illumina (1969 - present) on the 26th of January 2011.

Selection criteria

We included randomised controlled trials, interrupted time-series studies and controlled before-and-after studies that reported an objective measure of at least one of the following outcomes: healthcare utilisation, health expenditures, or health outcomes.

Data collection and analysis

We re-analysed studies with longitudinal data. We computed price elasticities of demand for health services in controlled before-and-after studies as a standardised measure. Due to the diversity of contexts and outcome measures, we did not perform meta-analysis. Instead, we undertook a narrative summary of evidence.

Main results

We included 16 studies out of the 243 identified. Most of the included studies showed methodological weaknesses that hamper the strength and reliability of their findings. When fees were introduced or increased, we found the use of health services decreased significantly in most studies. Two studies found increases in health service use when quality improvements were introduced at the same time as user fees. However, these studies have a high risk of bias. We found no evidence of effects on health outcomes or health expenditure.

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The impact of conditional cash transfers on child health in low- and middle-income countries: a systematic review

Ebenezer Owusu-Addo · Ruth Cross

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Abstract

Objectives The review aimed to assess the effectiveness of conditional cash transfers (CCTs) in improving child health in low- and middle-income countries.

Methods Seven electronic databases were searched for papers: MEDLINE, EMBASE, PubMed, PsychINFO, BIOSIS Previews, Academic Search Complete, and CSA Sociological Abstracts. The included studies comprised of randomised controlled trials and controlled before-and-after studies evaluating the impact of CCTs on child health. Due to the substantial heterogeneity of the studies, a narrative synthesis was conducted on the extracted data.

Results Sixteen studies predominantly from Latin American countries met the inclusion criteria. The outcomes reported by the studies in relation to CCTs' effectiveness in improving child health were reduction in morbidity risk, improvement in nutritional outcomes, health services utilisation, and immunisation coverage.

Conclusions The review suggests that to a large extent, CCTs are effective in improving child health by addressing child health determinants such as access to health care, child and maternal nutrition, morbidity risk, immunisation coverage, and household poverty in developing countries particularly middle-income countries. Of importance to both policy and practice, it appears that CCTs require effective functioning of health care systems to effectively promote child health.

Keywords Conditional cash transfers · Child health · Low- and middle-income countries · Programme theory · Systematic review

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Introduction

Child health remains a major public health concern in developing countries in contemporary times (UNICEF 2009). In 2008, the median level of child mortality stood at 109 deaths per 1,000 live births in developing countries as compared with 5 per 1,000 in developed countries (World Health Organisation 2010). Aside being a key indicator of economic development, child health has a close association with educational attainments, future health outcomes, and employment opportunities (Case et al. 2005; Marmot Review Report 2010). Child health has thus attracted the attention of the international community as a number of vertical programmes (health programmes which focus on a specific demographic population, disease, or health issue, e.g. vitamin A supplementation, exclusive breastfeeding, and immunisation) are currently being implemented to help improve child health in line with the Millennium Development Goal (MDG) 4 (Ellis and Allen 2006).

It is undeniable that vertical programmes that are disease-focused and largely reflect the biomedical approach to child health promotion continue to make significant contributions to child health in terms of reducing childhood mortality in developing countries (Claeson and Waldman 2000). However, there is a growing consensus that a more holistic approach is to employ horizontal programmes that

Use and Safety of Medical Products, Vaccines and Technology

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4562676/

Packaging interventions to increase medication adherence: systematic review and meta-analysis

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Abstract

Objective—Inadequate medication adherence is a widespread problem that contributes to increase chronic disease complications and health care expenditures. Packaging interventions using pill boxes and blister packs have been widely recommended to address the medication adherence issue. This meta-analysis review determined the overall effect of packaging interventions on medication adherence and health outcomes. In addition, we tested whether effects vary depending on intervention, sample, and design characteristics.

Research design and methods—Extensive literature search strategies included examination of 13 computerized databases and 19 research registries, hand searches of 57 journal, and author and ancestry searches. Eligible studies included either pill-boxes or blister packaging interventions to increase medication adherence. Primary study characteristics and outcomes were reliably coded. Random-effects analyses were used to calculate overall effect sizes and conduct moderator analyses.

Results—Data were synthesized across 22,858 subjects from 52 reports. The overall mean weighted standardized difference effect size for two-group comparisons was 0.593 (favoring treatment over control), which is consistent with the mean of 71% adherence for treatment subjects compared to 63% among control subjects. We found using moderator analyses that