

## Review

# Strengthening primary health care in the COVID-19 era: a review of best practices to inform health system responses in low- and middle-income countries

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## Abstract

Amid massive health system disruption induced by the coronavirus disease 2019 (COVID-19) pandemic, the need to maintain and improve essential health services is greater than ever. This situation underscores the importance of the primary health care (PHC) revitalization agenda articulated in the 2018 Astana Declaration.

The objective was to synthesize what was already known about strengthening PHC in low- and middle-income countries *prior* to COVID-19.

We conducted a secondary analysis of eleven reviews and seven evidence gap maps published by the Primary Health Care Research Consortium in 2019. The 2020 World Health Organization *Operational framework for primary health care* was used to synthesize key learnings and determine areas of best practice.

A total of 238 articles that described beneficial outcomes were analysed (17 descriptive studies, 71 programme evaluations, 90 experimental intervention studies and 60 literature reviews). Successful PHC strengthening initiatives required substantial reform across all four of the framework's strategic levers – political commitment and leadership, governance and policy, funding and allocation of resources, and engagement of communities and other stakeholders. Importantly, strategic reforms must be accompanied by operational reforms; the strongest evidence of improvements in access, coverage and quality related to service delivery models that promote integrated services, workforce strengthening and use of digital technologies.

Strengthening PHC is a “hard grind” challenge involving multiple and disparate actors often taking years or even decades to implement successful reforms. Despite major health system adaptation during the pandemic, change is unlikely to be lasting if underlying factors that foster health system robustness are not addressed.

**Keywords:** best practices, COVID-19, health systems strengthening, operational framework, primary health care

## Background

The 2018 Astana Declaration affirmed primary health care (PHC) as vital to attaining the Sustainable Development Goals. The 2019

United Nations Political Declaration on Universal Health Coverage further highlighted the central role of PHC in achieving such lofty aims.<sup>1,2</sup> The strategic confluence of these complementary global health agendas in the context of the coronavirus disease 2019

(COVID-19) pandemic has revitalized the focus on PHC as a central pillar for health systems strengthening.

As attention shifts to “building back better”,<sup>3</sup> we are at a defining moment in which to reaffirm PHC as essential to attaining universal health coverage (UHC) by 2030. There is a vast body of evidence on what is needed to support comprehensive PHC for all. In 2018, a group of seven academic institutions formed the global Primary Health Care Research Consortium (PHCRC)<sup>4</sup> to support country-specific and global implementation research in the pursuit of high-quality PHC in low- and middle-income countries (LMICs). The consortium conducted literature reviews, evidence gap mapping and consultations with a wide range of stakeholders and proposed a prioritized PHC implementation research agenda.<sup>5-17</sup> In this paper, we present the review findings and update the evidence base accumulated as part of the PHCRC’s work and synthesize what was already known about strengthening PHC prior to COVID-19 in LMICs. We identify the health systems strengthening strategies that should be prioritized to promote high-quality, equitable, people-centred PHC and to improve future responses to public health crises in the post-COVID-19 era.

## Methods

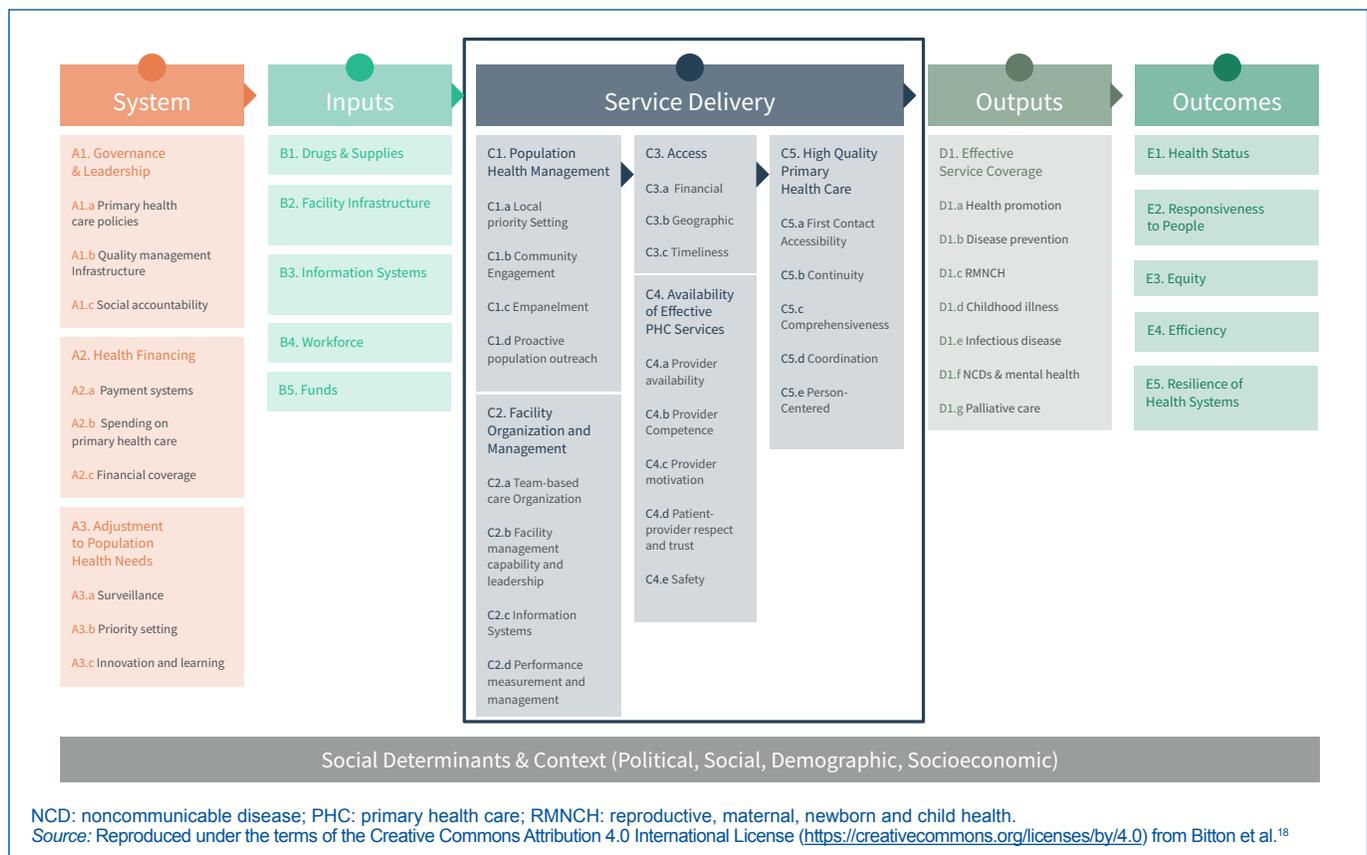
We drew on the Primary Health Care Performance Initiative (PHCPI) conceptual framework to conduct a secondary analysis of reviews and evidence gap maps (EGMs) completed by the PHCRC in 2018. The PHCPI conceptual framework draws on the World Health Organization (WHO) definitions and

focuses particularly on PHC services and people-centred care (Fig. 1).<sup>18</sup> The PHCPI focuses particularly on health services (including primary care and public health services) and less on the other two PHC domains of multisectoral engagement and empowered people and communities. It examines the systems, inputs and service delivery components that have the potential to lead to improved effective service coverage and a range of health and health system outcomes.

As part of the original evidence synthesis and EGM research, four domains were prioritized following a stakeholder consultation and prioritization process: PHC policy and governance; PHC organization and care delivery models; PHC financing; and PHC performance, safety and quality. Eleven reviews and seven EGMs were conducted across these four domains (Box 1).

Annex 1 provides a detailed description of the methods for data extraction and coding using the PHCPI framework. To synthesize key learnings from this body of work and to determine areas of best practice, we used the WHO *Operational framework for primary health care*.<sup>20</sup> It describes core strategic levers (political commitment and leadership, governance and policy frameworks, funding and allocation of resources, and engagement of communities) and operational levers (e.g. models of care, workforce, digital health, systems for enhancing quality, payment systems) required to transform the 2018 Astana Declaration commitments into action (Fig. 2). When referring to all three PHC approaches (integrated health services, empowered people and communities, and multisectoral policy and action), we use the term “PHC”; when specifically describing services, we use the term “primary care”.

**Fig. 1. Primary Health Care Performance Initiative conceptual framework**



### Box 1. Summary of evidence reviews and evidence gap map analyses

#### 1. PHC policy and governance

- a. A review and EGM analysis of 24 systematic reviews and 7 impact evaluations focusing on PHC policy and governance in LMICs.<sup>15</sup>

#### 2. PHC organization and care delivery models

- a. A scoping review of 39 studies of community-oriented primary care models and their effectiveness and feasibility in sub-Saharan Africa.<sup>7</sup>  
 b. A scoping review of 73 studies of family medicine in sub-Saharan Africa and its impact on African health care systems.<sup>14</sup>  
 c. A narrative synthesis and EGM analysis of 111 studies of PHC service delivery models in the Asia Pacific region.<sup>5,10</sup>  
 d. A stakeholder-driven literature review and EGM analysis of 263 articles relating to PHC models of care in LMICs.<sup>12</sup>

#### 3. PHC financing

- a. A systematic review and EGM analysis of 31 studies of PHC financing interventions in the Asia Pacific region.<sup>13</sup>  
 b. A stakeholder-driven literature review and EGM analysis of 113 studies relating to strategies to enhance PHC financing.<sup>11</sup>

#### 4. PHC performance, safety and quality

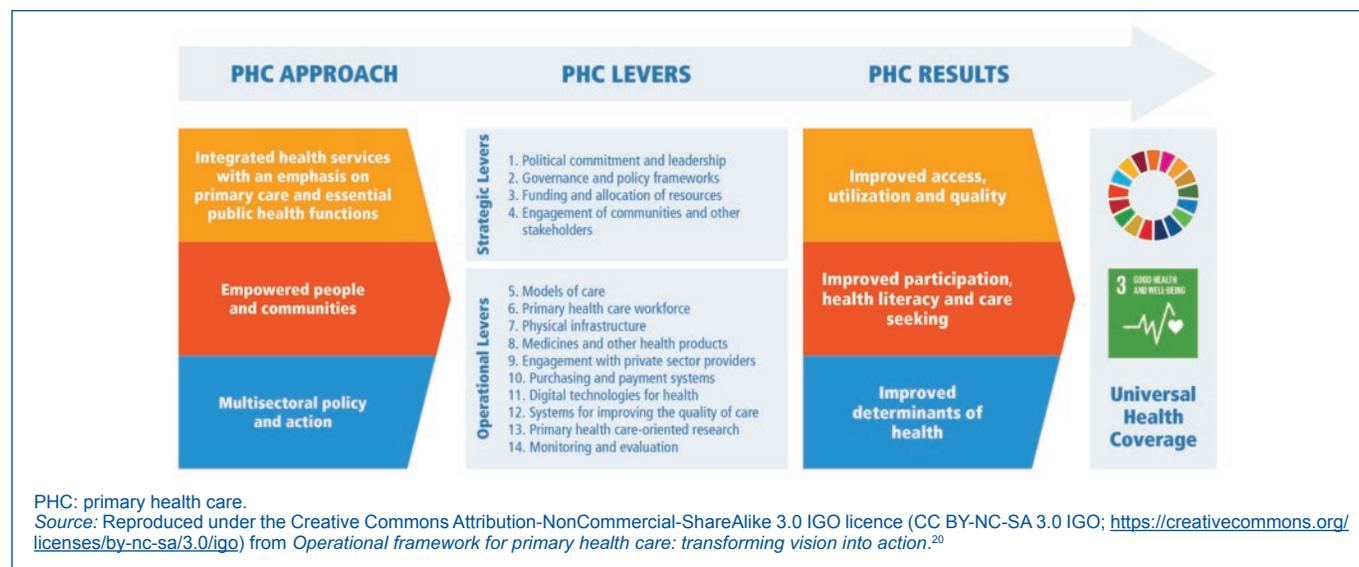
- a. A scoping review of 207 studies related to PHC system performance in LMICs from 2010 to 2017.<sup>16</sup>  
 b. A systematic characterization and EGM of 137 impact evaluations and 18 systematic reviews related to PHC systems performance measurement and management in LMICs from 2000 to 2018.<sup>8</sup>  
 c. A scoping review and EGM analysis of 61 studies related to interventions for quality, safety and performance management in PHC in the Eastern Mediterranean Region.<sup>17</sup>  
 d. A scoping review of 19 African studies and reports that addressed measuring elements of primary care performance.<sup>19</sup>

## Results

By examining 1003 article abstracts identified from the source reviews and EGMs, 201 articles were identified as describing beneficial outputs or outcomes. An additional 37 articles were included from supplementary searches. Of the 238 included articles, 61% were published in 2013 or later. Annex Fig. 1 provides a breakdown of the articles by study type and region. Almost half of the articles reported on studies from the African and Eastern Mediterranean regions. The distribution of study types was similar across regions, with multiregion studies being mainly review articles. Annex Table 1 breaks

the included articles down by PHCPI domain and study type. Governance and leadership, adjustment to population health needs, and workforce were the most common system and input domains, while availability of effective PHC services, and high-quality PHC were the most common service delivery domains studied, with a similar distribution across all study types. Only 35% of articles had documented outputs related to effective service coverage (most commonly, these were in the areas of reproductive, maternal, newborn and child health; childhood illnesses; and noncommunicable diseases and mental health). Relatively few studies documented benefits in PHCPI outcome domains (Annex Table 1).

Fig. 2. Primary health care theory of change from the WHO *Operational framework for primary health care*



Annex 2 provides a detailed summary of best practices identified for each of the WHO operational framework levers. Table 1 provides examples of best practices organized by operational framework lever. In most examples, more than one strategic or operational lever was being used, and therefore we highlight additional “moderating levers” that appeared to be important to achieving success with the primary lever. In many articles, it was difficult to distinguish between the PHC-

oriented research levers and the monitoring and evaluation levers, and consequently these were grouped together in the analysis. Annex Table 2 provides the references for each of these best practice examples. Taking these findings together, it can be observed that many best practices are complex strategies, focusing on multiple strategic and operational levers rather than acting exclusively on any one lever.

**Table 1. Summary of best practices (see Annex Table 2 for references for each country and Annex 2 for detailed descriptions for each lever)**

| Primary lever                                    | Countries and regions with evidence of beneficial outcomes  | Determinants of success  | Moderating levers  |
|--|---|--|--|
| <b>Strategic levers</b>                          |   |  |  |
| Political commitment and leadership              | <b>Country-specific articles:</b> Afghanistan, Bangladesh, Bolivia, Brazil, Costa Rica, Cuba, Ethiopia, The Gambia, Georgia, Ghana, India (Kerala state), Iran, Liberia, Mexico, Niger, Rwanda, Sri Lanka, Thailand | “Health in all policies” approach to multisectoral reforms<br>Strong leadership from civil society organizations<br>Pluralistic service provision<br>Community-based approaches<br>Focus on demand generation through community mobilization   | Engagement of communities and other stakeholders<br>Funding and allocation of resources (outcome = increased health spending and insurance coverage)<br>Primary health care (PHC) workforce (outcome = increased physician and nurse density)<br>Monitoring and evaluation (outcome = health information system reforms)       |
| Governance and policy frameworks                 | <b>Country-specific articles:</b> Brazil, China, Costa Rica, Côte d'Ivoire, Ethiopia, Ghana, Haiti, India, Indonesia, Mexico, the Philippines, Thailand   | Governance perspective included in health system reforms<br>Clear institutional arrangements for governing quality of care<br>Political will leveraged<br>Bottom-up accountability<br>Decentralization and strengthening of meso-tier organizations<br>Service accreditation   | Political commitment and leadership  |
| Funding and allocation of resources              | <b>Country-specific articles:</b> Afghanistan, Bhutan, Mexico, Niger, Vietnam, Zambia   | National health insurance schemes<br>Social health insurance schemes for low-paid workers<br>Community-based health insurance<br>Disease-specific benefit packages (noncommunicable diseases)  | Political commitment and leadership<br>Governance and policy frameworks  |
| Engagement of communities and other stakeholders | <b>Country-specific articles:</b> Thailand<br><b>Multi-country articles:</b> see Annex Table 2  | Participation<br>Inclusion of marginalized groups<br>Transparency and/or citizen efforts to ensure public service accountability   | Political commitment and leadership  |
| <b>Operational levers</b>                        |   |  |  |
| Models of care                                   | <b>Country-specific articles:</b> India<br><b>Multi-country articles:</b> see Annex Table 2<br><b>Regional articles:</b> sub-Saharan Africa   | Promotion of service and/or programme integration, incorporating: <ul style="list-style-type: none"> <li>• medical staff from different disciplines</li> <li>• patients and medical staff</li> <li>• care package for one medical condition</li> <li>• care package for two or more medical conditions</li> <li>• specialist stand-alone services and PHC services</li> <li>• community locations</li> <li>• a person-centred approach</li> </ul> Community participation/empowerment<br>Multidisciplinary teams<br>Evidence-informed decision-making, designed based on analyses of local needs and assets<br>Intervention prioritization<br>Focus on both supply- and demand-side factors<br>Increased public health funding<br>Decentralizing village- and district-level health planning and management<br>Strengthening service delivery infrastructure | Governance and policy frameworks (outcome = efficiency gains)<br>Funding and allocation of resources (outcome = efficiency gains)<br>Engagement of communities and other stakeholders<br>PHC workforce<br>PHC-oriented research<br>Monitoring and evaluation<br>Funding and allocation of resources<br>Physical infrastructure |

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| Primary lever                                       | Countries and regions with evidence of beneficial outcomes   | Determinants of success   | Moderating levers  |
|---|--|---|--|
| PHC workforce                                       | <b>Country-specific articles:</b> Brazil, China, Ethiopia, India, Indonesia, Kenya, Thailand<br><b>Regional articles:</b> Africa, Asia, Latin America  | Investment in skills/capacity development<br>Appropriate remuneration/incentive packages<br>Task-sharing<br>Investment in governance and policy environment to support mid-level health worker programmes: <ul style="list-style-type: none"> <li>clearly defined health workforce cadres</li> <li>investment in training</li> <li>licensing</li> <li>monitoring and evaluation</li> <li>clear deployment and retention strategy</li> <li>supportive supervision</li> </ul>   | Governance and policy frameworks<br>Political commitment and leadership  |
| Physical infrastructure                             | <b>Country-specific articles:</b> Ethiopia, Ghana, Uganda  | Reliable electricity<br>Accessible transportation<br>Sustainable medical supplies   | Governance and policy frameworks<br>Funding and allocation of resources<br>Medicines and other health products         |
| Medicines and other health products                 | <b>Country-specific articles:</b> China, Colombia, Saudi Arabia, Sudan<br><b>Regional articles:</b> South America  | Use of essential medicine lists<br>Regulatory and administrative controls<br>Clear national pharmaceutical policies<br>Training in rational prescribing<br>Online feedback<br>Capitation-based payment/pay-for-performance schemes<br>Health insurance schemes to reduce out-of-pocket costs  | Governance and policy frameworks<br>Funding and allocation of resources<br>PHC workforce                               |
| Engagement with private sector providers            | <b>Country-specific articles:</b> Afghanistan, Bangladesh, Pakistan  | Contracting arrangements for PHC service provision, with: <ul style="list-style-type: none"> <li>contractor autonomy in fund allocation</li> <li>non-negotiable deliverables</li> <li>management by independent government agency</li> </ul> Contracting arrangements for PHC service management, with: <ul style="list-style-type: none"> <li>contractor autonomy to deliver organizational or managerial changes, purchase medications and supplies, and allocate budget</li> <li>availability of existing health workforce (salaried by government)</li> </ul> | Governance and policy frameworks<br>Funding and allocation of resources<br>PHC workforce                               |
| Purchasing and payment systems                      | <b>Country-specific articles:</b> China  | Performance-based incentives for health workers with/without capitation-based payment<br>Combined demand- and supply-side incentives  | Governance and policy frameworks<br>Funding and allocation of resources<br>PHC workforce                               |
| Digital technologies for health                     | <b>Country-specific articles:</b> Afghanistan, Brazil, China, India, Iraq, Lebanon,  | Improved access to screening at home<br>Functional referral system between outreach and facility-based care<br>Regular supply of medicines/free medicines<br>Supervisory support and coaching – a cycle of regular assessment, feedback, training and action<br>Ability to tailor patient care based on algorithms<br>Easy-to-follow clinical management guidelines<br>Links to virtual consultations (telehealth)<br>Enhanced non-physician health worker capabilities and motivation  | PHC workforce<br>Medicines and other health products<br>Physical infrastructure<br>Funding and allocation of resources |
| Systems for improving the quality of care           | <b>Country-specific articles:</b> Brazil, Egypt, Kuwait, Saudi Arabia, Tanzania<br><b>Multi-country articles:</b> see Annex Table 2<br><b>Region-specific articles:</b> Africa (see Annex Table 2) | Provider-level strategies: <ul style="list-style-type: none"> <li>training to reduce medical errors</li> <li>patient education</li> <li>optimizing clinical records</li> <li>decision support tools</li> <li>national protocols and guidelines</li> <li>public scorecards and performance reports</li> <li>risk and safety management</li> <li>audit and feedback</li> <li>external accreditation and quality improvement</li> <li>supportive supervision</li> <li>recruitment and retention strategies</li> </ul>  | Governance and policy frameworks<br>PHC workforce<br>Digital technologies for health<br>Monitoring and evaluation      |
| PHC-oriented research and monitoring and evaluation | <b>Country-specific articles:</b> Ethiopia, India, Nepal, Pakistan   | Implementation research partnerships between government and research institutions<br>Revised approached to research funding, emphasizing inclusion of decision-maker needs from outset  |  |

## Discussion

The highly varied country responses to the COVID-19 pandemic have emphasized that health systems need a strong equity orientation to ensure that no one is left behind – both during a disaster and in recovery. The Astana Declaration reaffirmed PHC as a fundamental enabler of UHC, with its three core functions of meeting people's needs throughout life and not only during sickness; countering social determinants of health such as financial hardship and limited access to education; and empowering individuals and communities to engage in maintaining and enhancing their health and well-being.<sup>2</sup>

The concept of “building back better” was used at the Third UN World Conference on Disaster Risk Reduction to describe an approach to post-disaster recovery that reduces vulnerability to future disasters and builds community resilience to address physical, social, environmental and economic vulnerabilities and shocks.<sup>3</sup> Abimbola and Topp consider health system resilience a dualistic concept encompassing both adaptation and robustness – the two being necessary and interrelated conditions for resilience.<sup>21</sup> The extent to which health systems are robust is determined by the pre-disaster context. The adequacy of the adaptation response is dependent on how robust the system was to begin with. For example, rapid acceleration of telehealth care (an adaptive response) requires adequate digital health infrastructure (system robustness). In the presence of weak, fragmented information systems, telehealth models of care could increase vulnerability and expose inequity.<sup>22–24</sup>

In this paper, we present the substantial evidence of what was already known pre-COVID-19 to support strengthening PHC and fostering robust health systems. Priority needs to be given to the strategic levers of political commitment and leadership, governance and policy frameworks, funding and allocation of resources, and engagement of decision-makers, communities and other stakeholders. The “hard grind” of producing change in these areas remains a complex undertaking long after the adaptive response to a public health emergency has been implemented.<sup>21</sup>

Despite global declarations, PHC receives variable and often fleeting attention from government leaders and is grossly underfunded in most LMICs; furthermore, there is a lack of accountability mechanisms to maximize population-level health outcomes and social participation in health system governance and service delivery functions.<sup>25</sup> “Social vaccines” that protect communities from disasters by addressing underlying social determinants of health are needed just as much as COVID-19 vaccines.<sup>26</sup> Despite several knowledge deficits, country case studies and large-scale policy evaluations clearly identify many areas of success that can be adapted to and adopted in other settings. Policy interventions such as incorporating health into all policies;<sup>27</sup> institution building to strengthen governance structures and processes at national, regional and local levels; major increases in health expenditures and reallocation of funds to primary care from hospital specialist services; and engagement of civil society organizations in decision-making and demand generation are components of successful PHC reforms.

Despite the primacy of the strategic levers, we found that many successful reform strategies required these to be combined with a wide range of operational levers. The

most mature evidence relates to workforce strengthening initiatives. Adequately motivated, digitally enabled, supportively supervised PHC teams with ample autonomy and decision space, and clearly delineated and complementary tasks, can improve service access, coverage and quality while also improving workforce satisfaction and retention. Professionalization of and continuing support for the community health workforce is a core priority.<sup>28</sup> Investment in strategies that embrace the complex leadership roles of highly trained primary care professionals such as doctors and nurses is also needed, such that management and clinical skills are equally valued.<sup>29</sup> Strategies to effectively regulate and engage with private sector health professionals are also critically important, given that they are the first point of contact in many countries. This again highlights the importance of strategic levers (regulation) being combined with operational levers (workforce engagement and strengthening).

More case studies of excellence are also critical motivators for change. The Exemplars in Global Health initiative is a good example of a systematic approach to sharing experiences of success and carefully documenting the factors that drove that success.<sup>30,31</sup> The PHCPI Vital Signs Profiles provide measurement tools to enable a range of stakeholders to better understand and improve primary care in highly varied country contexts.<sup>32</sup> Such initiatives have strong potential to improve measurement of primary care performance and to stimulate learning and knowledge sharing. And, finally, although there is a large evidence base to draw from, there remain many areas where knowledge is relatively limited. These are extensively documented in the PHCRC's previous EGM work (see Box 1). Innovative models of care that integrate services across the life course, across diseases and across health care sectors are a priority area to be explored further. More research is also needed on performance management systems that focus on organizations rather than people and can be implemented at scale. Evidence-based priority setting through health technology assessments is becoming more common in several LMICs; however, the focus remains on high-cost technologies and its use in designing PHC benefits packages is another priority area to support PHC reforms.<sup>33–36</sup> Embedded implementation research that forges multisectoral partnerships and embraces blurred boundaries between knowledge generators and knowledge users offers us a way forward to address these knowledge gaps.<sup>37</sup>

## Conclusion

COVID-19 has revealed gross deficiencies in health systems around the world, highlighting the need for transformational change, at the centre of which should be the strengthening of PHC. This secondary analysis of literature reviews, EGMs and recent literature informed by experts in the field synthesizes what was already known about best practices to strengthen PHC prior to COVID-19. Using the WHO *Operational framework for primary health care*, we emphasize in each domain the factors that are known to have contributed to success. In order to achieve transformational change in PHC, major shifts are needed in the framework's four strategic levers: political commitment and leadership, governance and policy, funding and allocation of resources, engagement

of communities and other stakeholders. However, where we found sufficient evidence of programmes and interventions that have resulted in improvements, attention to these strategic levers was accompanied by substantive investment in a range of operational levers, particularly in the areas of models of care, workforce strengthening and use of digital health technologies. In several areas, there remain knowledge gaps, and we endorse recent calls to strengthen implementation research in which multisectoral stakeholders come together to determine contextually calibrated priority research questions and adhere to codesign principles to answer those questions. There has been vast health system adaptation as a result of the pandemic, but such adaptation is precarious when underlying health system robustness is not addressed and could worsen inequities. The factors that foster robust health systems are the “hard grind” factors that can take years or even decades to implement at scale and require consistent, long-term investment in PHC. We document many case studies demonstrating success in undertaking lasting PHC reforms in a variety of country contexts – reforms that will stand these nations in good stead when it comes to adaptation during the pandemic and its aftermath.

**Acknowledgements:** We gratefully acknowledge the contribution of the coauthors of the primary review and EGM papers that underpin the analyses in this paper. Many thanks also to Dr Arpita Ghosh, who assisted with the frequency analyses for the tables presented in this paper.

**Source of support:** The Primary Health Care Research Consortium is supported by a grant from the Bill & Melinda Gates Foundation. The findings and conclusions included in this paper are those of the authors and do not necessarily reflect positions or policies of the Bill & Melinda Gates Foundation.

**Conflict of interest:** None declared.

**Authorship:** All authors were involved in the study design and provided recommendations of new articles to include in the review. MS extracted the articles from the original reviews and MS and DPr coded the data. DPe, MS, DPr and AP analysed the data to identify priority themes. DPe wrote the first draft and all authors contributed to subsequent drafts and approved the final version for submission.

**How to cite this paper:** Peiris D, Sharma M, Praveen D, Bitton A, Bresick G, Coffman M, Dodd R, El-Jardali F, Fadlallah R, Flinkenflögel M, Goodyear-Smith F, Hirschhorn LR, Munar W, Palagyi A, Saif-Ur-Rahman KM, Mash R. Strengthening primary health care in the COVID-19 era: a review of best practices to inform health system responses in low- and middle-income countries. *WHO South-East Asia J Public Health*. 2021;10(Suppl. 1):S6–S25. doi:10.4103/2224-3151.309867.

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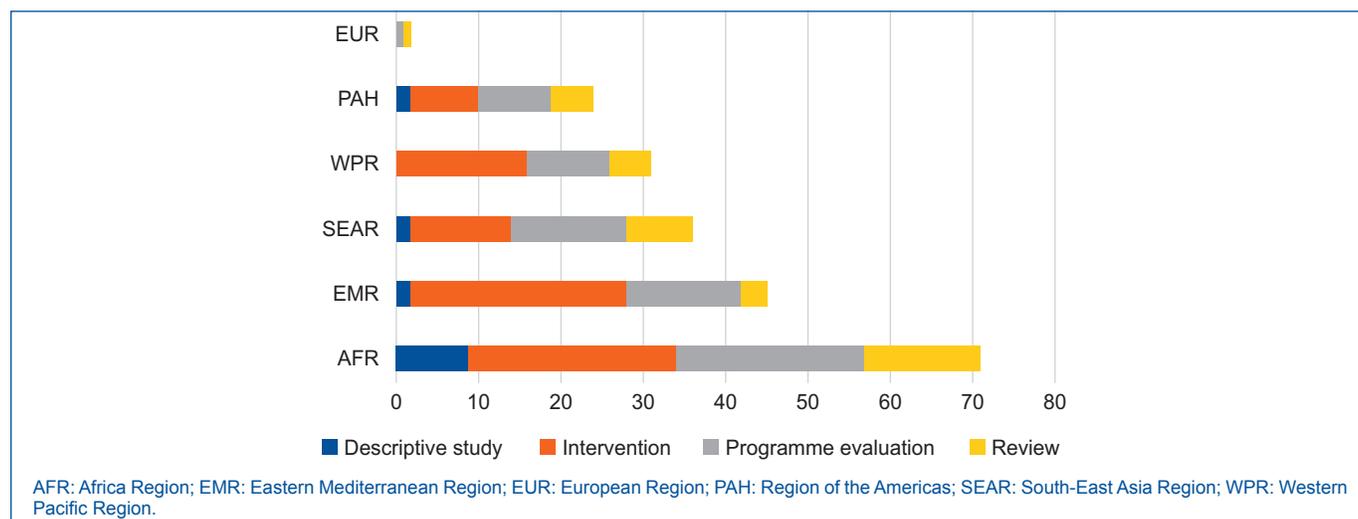
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## Annexes

**Annex Fig. 1. Numbers of included articles by region and type**



**Annex Table 1. Included articles (n = 238) by Primary Health Care Performance Initiative domain and study type**

| PHCPI domain                              | Descriptive studies | Interventions | Programme evaluations | Reviews | Total | Percentage of all papers <sup>a</sup> |
|---|---------------------|---------------|-----------------------|---------|-------|---------------------------------------|
| <b>System</b>                             |                     |               |                       |         |       |                                       |
| A1 Governance and leadership              | 4                   | 16            | 18                    | 29      | 67    | 28                                    |
| A2 Health financing                       | –                   | 7             | 12                    | 13      | 32    | 13                                    |
| A3 Adjustment to population health needs  | 4                   | 12            | 14                    | 23      | 53    | 22                                    |
| <b>Inputs</b>                             |                     |               |                       |         |       |                                       |
| B1 Drugs and supplies                     | 3                   | 3             | 6                     | 7       | 19    | 8                                     |
| B2 Facility infrastructure                | 2                   | –             | 2                     | 8       | 12    | 5                                     |
| B3 Information systems                    | 1                   | 4             | 5                     | 11      | 21    | 9                                     |
| B4 Workforce                              | 6                   | 4             | 3                     | 23      | 36    | 15                                    |
| B5 Funds                                  | 1                   | 3             | 2                     | 9       | 15    | 6                                     |
| <b>Service delivery</b>                   |                     |               |                       |         |       |                                       |
| C1 Population health management           | 3                   | 18            | 12                    | 21      | 54    | 22                                    |
| C2 Facility organization and management   | 1                   | 15            | 7                     | 18      | 41    | 17                                    |
| C3 Access                                 | 1                   | 7             | 6                     | 14      | 28    | 12                                    |
| C4 Availability of effective PHC services | 7                   | 54            | 31                    | 38      | 130   | 54                                    |
| C5 High-quality PHC                       | 5                   | 30            | 29                    | 27      | 91    | 38                                    |
| <b>Outputs</b>                            |                     |               |                       |         |       |                                       |
| D1 Effective service coverage (all areas) | 3                   | 38            | 27                    | 17      | 85    | 35                                    |
| D1.a Health promotion                     | –                   | 3             | 1                     | 2       | 6     | 2                                     |
| D1.b Disease prevention                   | –                   | –             | 1                     | 3       | 4     | 2                                     |
| D1.c RMNCH                                | 1                   | 6             | 6                     | 10      | 23    | 10                                    |
| D1.d Childhood illness                    | –                   | 11            | 11                    | 9       | 31    | 13                                    |
| D1.e Infectious disease                   | –                   | 2             | –                     | 6       | 8     | 3                                     |
| D1.f NCDs and mental health               | 1                   | 13            | 10                    | 2       | 26    | 11                                    |
| D1.g Palliative care                      | –                   | –             | –                     | –       | –     | –                                     |
| <b>Outcomes</b>                           |                     |               |                       |         |       |                                       |
| E1 Health status                          | 1                   | 7             | 3                     | 10      | 21    | 9                                     |
| E2 Responsiveness to people               | 1                   | 9             | 4                     | 3       | 17    | 7                                     |
| E3 Equity                                 | 1                   | 2             | 5                     | 3       | 11    | 5                                     |
| E4 Efficiency                             | 1                   | 2             | 4                     | 1       | 8     | 3                                     |
| E5 Resilience of health systems           | 1                   | 2             | 2                     | 3       | 8     | 3                                     |

NCD: noncommunicable disease; PHC: primary health care; PHCPI: Primary Health Care Performance Initiative; RMNCH: reproductive, maternal, newborn and child health.  
<sup>a</sup>Studies may be coded to more than one domain and therefore the column total does not add up to 100%.

**Annex Table 2. References for identified best practices**

| Primary lever                                  | Evidence of beneficial outcomes   | Primary lever   | Evidence of beneficial outcomes  |
|--|---|---|--|
| <b>Strategic levers</b>                        |   |   |  |
| Political commitment and leadership            | Afghanistan, Bolivia, Brazil, Costa Rica, Cuba, Ethiopia, The Gambia, Georgia, Ghana, India (Kerala state), Iran, Liberia, Mexico, Niger, Sri Lanka, Thailand <sup>1-4</sup> , Bangladesh <sup>5</sup> , Rwanda <sup>6,7</sup>              | Physical infrastructure   | Ghana, Uganda <sup>37</sup> , Ethiopia <sup>38</sup>   |
| Governance and policy frameworks               | Côte d'Ivoire, Ethiopia, Haiti, India, Indonesia, the Philippines, Thailand, <sup>3</sup> Brazil <sup>8,9</sup> , Mexico <sup>10</sup> , Costa Rica <sup>11</sup> , Thailand <sup>4,12</sup> , China <sup>13</sup> , Ghana <sup>14,15</sup> | Medicines and other health products                                 | China <sup>39,40</sup> , Colombia <sup>41</sup> , Saudi Arabia <sup>42</sup> , Sudan <sup>43</sup> , South America <sup>44</sup>   |
| Funding and allocation of resources            | Vietnam <sup>16</sup> , Afghanistan <sup>17,18</sup> , Niger, Zambia <sup>19</sup> , Bhutan <sup>20</sup> , Mexico <sup>21</sup>  | Engagement with private sector providers                            | Afghanistan <sup>45</sup> , Bangladesh <sup>46</sup> , Pakistan <sup>47</sup>  |
| Engagement of community and other stakeholders | Multiple countries <sup>22</sup> , Thailand <sup>4,23</sup>   | Purchasing and payment systems                                      | China <sup>48,49</sup>   |
| <b>Operational levers</b>                      |   |   |  |
| Models of care                                 | Multiple countries <sup>24</sup> , Sub-Saharan Africa <sup>25</sup> , India <sup>26,27</sup>  | Digital technologies for health                                     | China <sup>50</sup> , India <sup>51,52</sup> , Iraq <sup>53</sup> , Lebanon <sup>54</sup> , Afghanistan <sup>55</sup> , Brazil <sup>56</sup>   |
| Primary health care workforce                  | Brazil <sup>28,29</sup> , China <sup>30</sup> , India <sup>31-33</sup> , Thailand <sup>34</sup> , Ethiopia, Indonesia, Kenya <sup>35</sup> , Africa, Asia, Latin America <sup>36</sup>  | Systems for improving the quality of care                           | Multiple countries <sup>57</sup> , Kuwait <sup>58</sup> , Saudi Arabia <sup>59,60</sup> , Brazil <sup>61</sup> , Egypt <sup>62</sup> , Multiple countries in Africa <sup>63</sup> , Tanzania <sup>64</sup> |
|  |   | Primary health care-oriented research and monitoring and evaluation | Ethiopia, India, Nepal, Pakistan <sup>65</sup>   |

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## Annex 1. Data extraction methods

The abstracts of the articles included in the reviews and EGMs were analysed to determine if the article explicitly described examples of best practice and included either a quantitative or a qualitative description of a beneficial output or outcome in one or more domains of the PHCPI conceptual framework. Evidence included descriptive qualitative research and case studies that described an overall benefit; programme evaluations with a pre–post design or those lacking an explicit study design; interventions using experimental or quasi-experimental designs; and literature reviews (including scoping reviews, narrative syntheses and systematic reviews with or without meta-analyses). Perspective articles, opinion pieces and articles primarily focused on identifying gaps in knowledge were excluded.

For those articles that provided evidence of benefit, a full text review was conducted and the inputs, service delivery processes and outputs/outcomes described were coded to one or more PHCPI domains. A random sample of 10% of articles were coded by a second reviewer (DPr). Coding disagreements were discussed for each article and consensus reached on the principles that should be applied when coding articles to the domains of the PHCPI framework. Subsequently, the first reviewer (MS) coded the remainder of the dataset. Because the source reviews were completed in early 2019, we also conducted supplementary ad hoc searches of the literature based on expert opinion from members of the PHCRC network to identify additional articles published to December 2020 describing best practices prior to COVID-19. PHCPI inputs and outputs were tabulated to understand the density of interventions and outcomes by geographical region, population focus and study type. Documents were coded in a spreadsheet and frequency analyses were conducted using R software.

## Annex 2. Best practices for each lever in the WHO Operational framework for primary health care Strategic levers

### Political commitment and leadership

Mixed methods country-level case studies provide compelling evidence that political commitment and leadership (by heads of state and government, other political leaders, civil society, and influential community, religious and business leaders) have played a major role in successful PHC reforms.<sup>1</sup> Kruk and colleagues looked at LMICs that had implemented PHC initiatives at a large scale. These countries included Bolivia, Brazil, Costa Rica, Cuba, The Gambia, Ghana, India (focusing on the state of Kerala), Iran, Mexico, Nigeria, Sri Lanka, Thailand and two fragile states, Afghanistan and Liberia.<sup>2</sup> A common factor in the success of these national programmes

was that they did not focus only on service delivery but, rather, took a “health in all policies” approach to multisectoral reforms, especially important given that spending decisions are made by heads of state and ministries of finance rather than decision-makers in the health sector.<sup>1</sup> Financing reform to boost PHC and public health system funding was critical, as these sectors are traditionally the “poor cousin” of the hospital sector. Another success factor in these countries was a sustained focus on demand generation through community mobilization.<sup>1</sup> This in turn requires strong leadership from civil society organizations to ensure participation in decision-making at the highest levels.

Other case studies have highlighted the influence of pivotal historical moments in driving reforms. One determinant of Bangladesh’s sustained success has been that, since its independence in 1971, there has been a decades long commitment to the guiding principles of PHC, such as preventive care, community participation, social justice and equity. This led to major institutional reforms, multisectoral collaboration, prioritization of community-based approaches and “pluralistic service provision (i.e., involvement of various types of service providers working in different capacities, modalities, and locations)”.<sup>3</sup> Rwanda, similarly, has accelerated progress towards achieving UHC in the past decade, primarily through strong political commitment to strengthening PHC.<sup>4</sup> Its health system reforms have resulted in marked increases in health spending (16.5% of total government spending in 2015/2016), with increased insurance coverage, increased primary care service utilization, especially among those in the lowest socioeconomic categories, increased physician and nurse workforce density, and major reforms in health information systems.<sup>5</sup>

### Governance and policy frameworks

A review of several countries looking at governance-enhancing activities (accountability and transparency, governance frameworks and political economy analysis, institutional arrangements in health sector reforms, fair and transparent procurement principles) identified four key lessons on improving health system performance: (i) include a governance perspective to ensure the success and sustainability of health system reforms; (ii) establish clear institutional arrangements for governing quality of care in all national efforts; (iii) harness political will to enhance impact and sustainability; and (iv) foster bottom-up accountability for sustainability and scale-up of health care reform.<sup>6,7</sup>

Case studies from Brazil, China, Costa Rica and Thailand have shown the role of robust PHC policy and governance systems and their impact on improving health system performance.<sup>8–12</sup> However, the relationship between governance and health system performance is underexplored. One empirical study examined whether expansion of the Brazilian *Estratégia de Saúde da Família* (ESF), a community-based primary care programme, reduced amenable mortality (mortality avoidable with timely and effective health care) in 1622 municipalities over the period 2000–2012. Overall, increasing ESF coverage from 0% to 100% was associated with a reduction of 6.8% in rates of amenable mortality, compared with no increase in ESF coverage.<sup>13,14</sup> Despite these improvements, subsequent policies have potentially eroded the gains made by the Brazilian *Sistema Unico de Saude*,

highlighting the importance of sustained political commitment to health reform initiatives.<sup>13–16</sup>

Health system architecture plays an important role in governance structures and service delivery. There is emerging evidence of the importance of decentralization and strengthening meso-tier organizations to support PHC reforms. For example, Chinese PHC reforms have encouraged township hospitals to own and manage village clinics.<sup>8</sup> Ghana’s Community-Based Health Planning and Service initiative relocates primary care services from subdistrict health centres to convenient community locations.<sup>17</sup> However, the impact of governance changes on service delivery and outcomes is not well established, in part due to challenges in measuring such far-reaching and multifaceted system-level changes.<sup>18</sup> Studies on the impact of accreditation of primary care centres suggest that such regulatory processes lead to improved documentation, reinforcement of quality standards, strengthened relationships between primary care centres and multiple stakeholders, and improved staff and patient satisfaction.<sup>19</sup> There are also studies of gatekeeping policies that require patients to access non-emergency hospital care or specialist services via primary care, and they have demonstrated reduced utilization of hospital services with no impact on patient satisfaction.<sup>20</sup>

### Funding and allocation of resources

Countries need to mobilize sufficient financial resources to provide or purchase essential primary care services for their populations.<sup>21</sup> The vast majority of these resources are generated by the government and through out-of-pocket costs, with international donors and the private sector being relatively small contributors.<sup>22</sup> A recent study of 27 LMICs found that the majority (55%) of primary care spending comes mainly from out-of-pocket costs and that the level and definition of primary care spending vary greatly across these countries.<sup>23</sup>

Many LMIC governments are seeking to resource-pool and define essential benefit packages; however, the success of this strategy is dependent on an adequate absolute level of funding, robust management and accountability structures, and an ability to translate increased resources into quality services.<sup>21</sup> There is reasonably robust evidence that national health insurance schemes, social health insurance schemes for low-paid workers and community-based health insurance can reduce or eliminate user fees, improve service coverage, reduce financial barriers to accessing care and provide financial protection against catastrophic losses.<sup>24–29</sup> Such strategies are generally associated with improved service coverage; however, there can be high variability in the uptake of such programmes, suggesting that implementation needs to be carefully calibrated to the local context and measured to assess fidelity.

In terms of purchasing, most health systems rely on fee-for-service models, with few examples of capitation-based payment models. There is growing interest in strategic purchasing of tightly defined services, allocation mechanisms built over time (not visits), and greater focus on performance monitoring and outcomes.<sup>30</sup> However, there are few robust evaluations of strategic purchasing interventions. In terms of disease-specific benefit packages, one study examined the impact of large-scale implementation of the WHO Package of Essential Noncommunicable Disease Interventions in Bhutan and found

that the intervention was cost effective, with efficiency gains to be made based on different population-screening criteria.<sup>31</sup> Another large-scale evaluation, of a Mexican noncommunicable disease (NCD) policy involving funding primary care longitudinal management and prevention of NCDs, found reduced NCD mortality rates over a 13-year period.<sup>32</sup>

### Engagement of communities and other stakeholders

The SDGs explicitly recognize the importance of the development of effective, accountable and transparent institutions at all levels. Participation, inclusion, transparency and accountability (PITA) structures and mechanisms are key to promoting empowerment of individuals and communities. Several studies have examined citizen engagement and empowerment.<sup>3,33–39</sup> One systematic review and meta-analysis assessed 35 citizen engagement programmes in LMICs and found that enhanced citizen engagement occurred primarily through four routes: participation, inclusion of marginalized groups, transparency and/or citizen efforts to ensure public service accountability, and PITA mechanisms collectively.<sup>40</sup> Intervention targets were at the level of political systems (e.g. national referendums to set policies), internal institutional systems (e.g. decentralization of and community engagement in decision-making)<sup>38,41–46</sup> and external engagement with citizens (e.g. interventions to disseminate information on performance, quality or cost).<sup>34,37,47</sup> The review found that citizen engagement efforts improved access to and the quality of public services by an overall pooled effect size of 0.10 standard deviations. However, they did not systematically improve health outcomes, partly as a result of broader system barriers.

### Operational levers

#### Models of care

New primary care models that promote service integration across sectors (public health, primary health care, hospital care) and integration between horizontal and vertical programmes are a core element of the WHO *Framework on integrated, people-centred health services*.<sup>48</sup> Efforts to integrate care can substantially change organization of service delivery, leading to efficiency gains from organizational, operational and managerial perspectives, and may lead to more equitable delivery of care across disease-specific conditions.<sup>49</sup> A global review of 67 articles on service integration experiments identified the following categories of integration: collaboration between medical staff from different disciplines and between patients and medical staff, development of care packages for specific and multiple medical conditions, specialist services integrated with PHC services, and service delivery in community locations.<sup>50</sup> It concluded that positive outcomes can be generated from such service integration efforts without incurring additional costs.<sup>50</sup> Similarly, a scoping review of 39 articles relating to community-oriented primary care models identified the following principles: a defined community, community participation, multidisciplinary teams, a comprehensive and equitable approach, local needs and assets analysis, prioritization of interventions, evidence-informed decision-making and person-centred service integration.<sup>51–53</sup>

In terms of large-scale, population-specific models of care, the evidence base is strongest in the area of reproductive, maternal, newborn and child health (RMNCH). Several large-scale impact evaluations of new models of care have

been shown to improve RMNCH outcomes.<sup>38,54–56</sup> Two notable examples include the Indonesian Safe Motherhood Project and India's National Rural Health Mission. The Safe Motherhood Project focused on both supply-side factors (professionalization, quality, technical and counselling capacity, and sustainability of midwives and other health providers) and demand-side factors to improve awareness of family planning and reproductive health. Net beneficial changes in under-5 mortality, total fertility rate, teenage pregnancy, unmet contraceptive need and percentage of deliveries overseen by trained health personnel were observed.<sup>56</sup> India's National Rural Health Mission is a transformational policy focused on changing care delivery through increasing public health funding, decentralizing village- and district-level health planning and management, strengthening public health service delivery infrastructure, and promoting social participation and community empowerment. It was associated with marked improvements in access to antenatal care and institutional delivery among all socioeconomic groups, with greater effects in the lowest and middle wealth and education terciles than in the highest tercile.<sup>38</sup> These two examples highlight the importance of combining strategic and operational levers in order to generate sustainable improvements.

### Primary health care workforce

There is a large and growing body of evidence that workforce strengthening strategies are highly effective in achieving the core functions of PHC. Health workers of varying skill levels can be trained to perform core primary care services such as administering immunizations and other preventive treatments, advising communities on basic diagnostic screening examinations and tests, advising on prevention against communicable and noncommunicable diseases, systematically recording health information and enumerating community populations for performance tracking.<sup>57–75</sup>

Investments to increase remuneration and improve these different cadres of health care providers' skills are effective in strengthening workforce recruitment, retention and satisfaction, and care quality.<sup>13,14,76,77</sup> Some studies have also demonstrated efficiency gains from task-sharing models of care<sup>78–82</sup> and equity gains for workers themselves in terms of access to paid employment and skill-building opportunities.<sup>83</sup>

Eight country case studies, from Africa, Asia and Latin America, were used to assess the governance and policy environment for mid-level health worker programmes. The review recommended that policy-makers clearly define the type of cadres, the desired skill mix and roles to be performed; invest in training, licensing, supervision, monitoring and evaluation; and develop a coherent deployment and retention strategy.<sup>57</sup> Supportive supervision is an important enabler of quality health care. It is characterized by the involvement of informal supervisors and peers as well as line managers, and encompasses teamwork, communication and empowerment of staff alongside oversight of clinical skills.<sup>84–91</sup> A scoping review of African family medicine also highlighted that family medicine physicians have a high degree of variation in roles and responsibilities throughout the region and that this poses challenges for their establishment as a specific cadre within health care systems.<sup>92</sup> It recommended greater policy support in nurturing a critical mass of family physicians who are comprehensively supported and integrated into all aspects of the health system.

### Physical infrastructure

A frequently neglected area in research evidence is the critical role of adequate physical infrastructure to support primary care service functions. One descriptive study from Ghana and Uganda looked at electrification in rural areas and found that improved access to reliable electricity was associated with increased availability of health services, access to communications and vaccine and medicine storage, and improved health worker motivation and satisfaction; however, the study also highlighted that other facility infrastructure barriers, such as poor transportation, amenities and drug stock facilities, were additional barriers.<sup>93</sup> Despite the lack of empirical research in this area, many of the country case studies of excellence in PHC reforms emphasized the issue of strong facility management and infrastructure as being essential enablers of success.<sup>70–72,94,95</sup>

### Medicines and other health products

The use of essential medicines lists and national pharmaceutical policies,<sup>96–99</sup> regulatory and administrative controls,<sup>100</sup> specific training in rational prescribing and academic detailing,<sup>89,101–103</sup> online feedback,<sup>104</sup> capitation-based payment systems and other pay-for-performance schemes,<sup>8,96</sup> and health insurance schemes to reduce out of pocket costs<sup>105</sup> have all been shown to improve quality use of medicines, reduce prescription costs and lower inappropriate use of antibiotics.

### Engagement with private sector providers

Several studies examining government contracting of primary care services to private and nongovernmental providers generally have demonstrated improvements in service utilization and community satisfaction.<sup>106–112</sup> However, systematic reviews evaluating its impact on quality of care or coverage of services are contradictory and less clear.<sup>106,109,113</sup> One review found that, although there is evidence that both vouchers and contracting can improve health service outcomes in underserved areas, these outcomes are influenced by the degree of collaboration and cooperation between key actors, the type of delivered services and community demand, provider autonomy and trust, and the availability of robust governance structures to provide oversight for such services.<sup>114</sup>

### Purchasing and payment systems

Financial incentives have been frequently studied, with variable outcomes observed.<sup>8,26,27,31,36,77,115–120</sup> These studies suggest that performance-based incentives have a role to play in improving health worker performance; however, effect sizes are often modest, are variable and are rarely sustained over time. Some studies have demonstrated benefits in service utilization and reduction in hospitalizations from pay-for-performance schemes when used in conjunction with capitation-based payment.<sup>121,122</sup> One study concluded that a direct link is needed between provider effort and the desired performance outcome for health workers to respond to incentives. Conversely, performance outcomes that require multiple actors to be engaged are less likely to meet with success.<sup>115</sup> Incentives may also have unintended consequences on non-incentivized outcomes, and therefore careful consideration is needed when designing such incentives and monitoring their outcomes.<sup>115</sup>

Although studies of patient incentives alone are generally not associated with improved outcomes, some studies examining combined incentives to both providers and patients have shown benefits.<sup>121</sup>

### Digital technologies for health

Digital health strategies that have sound evidence to support integration into primary care systems include data collection and formation of registries underpinned by portable electronic medical records, sensors and point of care diagnostics, patient behaviour change and education applications, point-of-care decision support systems, recall and reminder systems, telehealth models of care, workforce education and training, and human resource management.<sup>123–132</sup>

However, to leverage technology fully, there is a need for an increased focus on health systems strengthening rather than on single-solution applications. There are relatively few examples of digital health interventions that have been implemented at scale and this remains an ongoing challenge. Factors such as data security, cost constraints, health provider privacy and technical barriers are well-known barriers.<sup>129</sup> The WHO mHealth Assessment and Planning for Scale Toolkit on scale-up of digital technologies describes six “axes of scale” that need to be considered to support scale-up and sustainability of digital health: (i) adequate formative groundwork to understand contextual influences and the scientific basis for the product; (ii) strategies for identifying, developing and sustaining fruitful partnerships; (iii) financial health, including business case development to understand projection of scale-up costs, and long-term revenue generation; (iv) fit for purpose technology and architecture that supports interoperability with existing and evolving information systems; (v) operations that can support implementation, use and maintenance of the product throughout the scaling-up process; (vi) and monitoring and evaluation activities to generate actionable knowledge that can support iteration and adaptation over time.<sup>133</sup>

### Systems for improving the quality of care

Most quality improvement interventions are small-scale studies of provider-level strategies such as reducing medical errors, training, patient education, changes to record sheets, and decision support tools.<sup>90,134–136</sup> There is a need for organizational and system-level strategies with a focus on health outcomes and research examining national-level strategies on quality and performance-monitoring systems.<sup>137,138</sup> In the few studies of such large-scale programmes, benefits were observed from national protocols and guidelines and quality improvement programmes.<sup>90,139–148</sup> Similarly, use of public scorecards and performance reports, risk and safety management, educational outreach, audit and feedback, external accreditation and quality improvement, community-based interventions, supervision, and recruitment and retention strategies all hold promise in improving technical quality.<sup>90</sup> However, the evidence base is immature and tends to lack a health systems-oriented approach that takes into account complex environments and moves beyond merely documenting what works. Furthermore, the involvement of communities and service users in assessment of quality is a relatively nascent area.<sup>141</sup>

### Primary health care-oriented research and monitoring and evaluation

In all the reviews and gap maps developed, there were recommendations for future implementation research to address prioritized knowledge gaps. However, there is recognition that there may be tension between the priorities of knowledge producers and knowledge users.<sup>149</sup> A recent journal supplement called for “embedded implementation research” with a core focus on involvement of programme/policy decision-makers in the research cycle.<sup>150</sup> Proactive engagement with decision-makers, communities and service users requires adequate funding and establishment of appropriate structures to facilitate participation, including a commitment to purposive translation and strengthening implementation research capacity.<sup>148</sup> Participatory action research, with its emphasis on equitable engagement of all actors, flexible action planning, sensitivity to power imbalances, and development of structures for ongoing learning is considered a particularly important method of enabling such engagement.<sup>147</sup>

Case studies of successful research partnerships in Ethiopia, India, Nepal and Pakistan have demonstrated the value of such an embedded implementation research approach.<sup>144</sup> Such an approach has implications for traditional research funding agencies. The recent Global Alliance for Chronic Diseases call for implementation research to scale up proven interventions is an example of how decision-maker needs can be incorporated at the outset. In this funding call, academics were required to identify implementation partners who were prepared to cover the costs of the strategy to be implemented.<sup>151</sup> Such strategies blur the boundaries between traditional programme monitoring and evaluation processes and implementation research.

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