RESULTS FOR DEVELOPMENT

Taking Stock of the Global Primary Health Care Measurement Landscape

Prepared by Results for Development Institute for the Primary Health Care Performance Initiative

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Abstract

Strong primary health care (PHC) is critical to improving health outcomes and achieving universal health coverage. In 2015, the Primary Health Care Performance Initiative (PHCPI) developed a conceptual framework for the essential elements of strong PHC. Since then, as global attention to PHC has grown, a multitude of PHC-relevant frameworks and empirical tools have emerged for conceptualizing PHC and measuring PHC performance. Using the PHCPI framework as a reference point, this paper takes stock of the global PHC measurement landscape. It identifies conceptual and practical areas where PHC measurement is aligned and where there are gaps and explores where data are being collected in low- and middle-income countries (LMICs) through standardized global surveys. We find that measures of inputs (such as health workforce and essential medicines), health outcomes, service coverage, and some aspects of quality are commonly included across existing frameworks and tools, including those regularly implemented in LMICs. Other important constructs—such as how the health system innovates and adapts to population needs and system outcomes such as resilience and responsiveness—emerged as gaps. We also identify additional constructs included in other measurement frameworks, but not explicitly included in the PHCPI framework. While progress has been made in understanding how to measure PHC, more work remains to be done to align measurement approaches, fill measurement gaps, and regularly produce PHC data, especially for LMICs.

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Background

Strong primary health care (PHC), identified in the 1978 Alma-Ata Declaration as key to the attainment of Health for All,[1] is a critical component of improving global health outcomes and achieving universal health coverage. In 2018, on the 40th anniversary of Alma-Ata, global health leaders recommitted to PHC in the Astana Declaration, stating, "…strengthening [PHC] is the most inclusive, effective and efficient approach to enhance people's physical and mental health, as well as social well-being".[2] However, in many countries—especially low- and middle-income countries (LMICs)—PHC performance remains weak and suffers from a lack of actionable data to identify problems, diagnose causes, and drive improvements. There has historically been a paucity of frameworks and lack of alignment on how to conceptualize and comprehensively measure high-quality PHC.

With increasing global attention to PHC, there is also growing focus on improving PHC measurement. Since its launch in 2015, the Primary Health Care Performance Initiative (PHCPI) has emerged as a leading effort to strengthen PHC measurement in LMICs. Building on the work of PHCPI, the PHC Measurement and Implementation Research Consortium[3] prioritized a research agenda to explore what works in PHC within LMIC contexts, including quality, safety and performance management; PHC policies and governance; organization and models of care; and PHC financing.[4] Further, following the Astana Declaration, the World Health Organization released a PHC Operational Framework and aims to finalize associated monitoring indicators in the near future.[3,5]

Given these renewed commitments, ongoing efforts, and the importance of global alignment in PHC measurement approaches, it is timely to take stock of existing PHC-relevant measurement frameworks to identify conceptual and practical areas where PHC measurement is aligned and where gaps persist. This paper, led by PHCPI researchers, uses the PHCPI Conceptual Framework as a reference point to 1) analyze the extent to which measurement constructs and indicators from existing, publicly available PHC-relevant measurement frameworks align with this framework, 2) identify measurement constructs and indicators captured in other frameworks that are not reflected in the PHCPI Conceptual Framework, and 3) explore the collection of PHC-relevant data across LMICs via globally standardized surveys. The findings from this analysis lay a foundation for the global community to identify priority PHC measurement areas and encourage greater alignment among actors measuring PHC performance and will inform PHCPI's efforts to refine its framework and tools.

The PHCPI Conceptual Framework

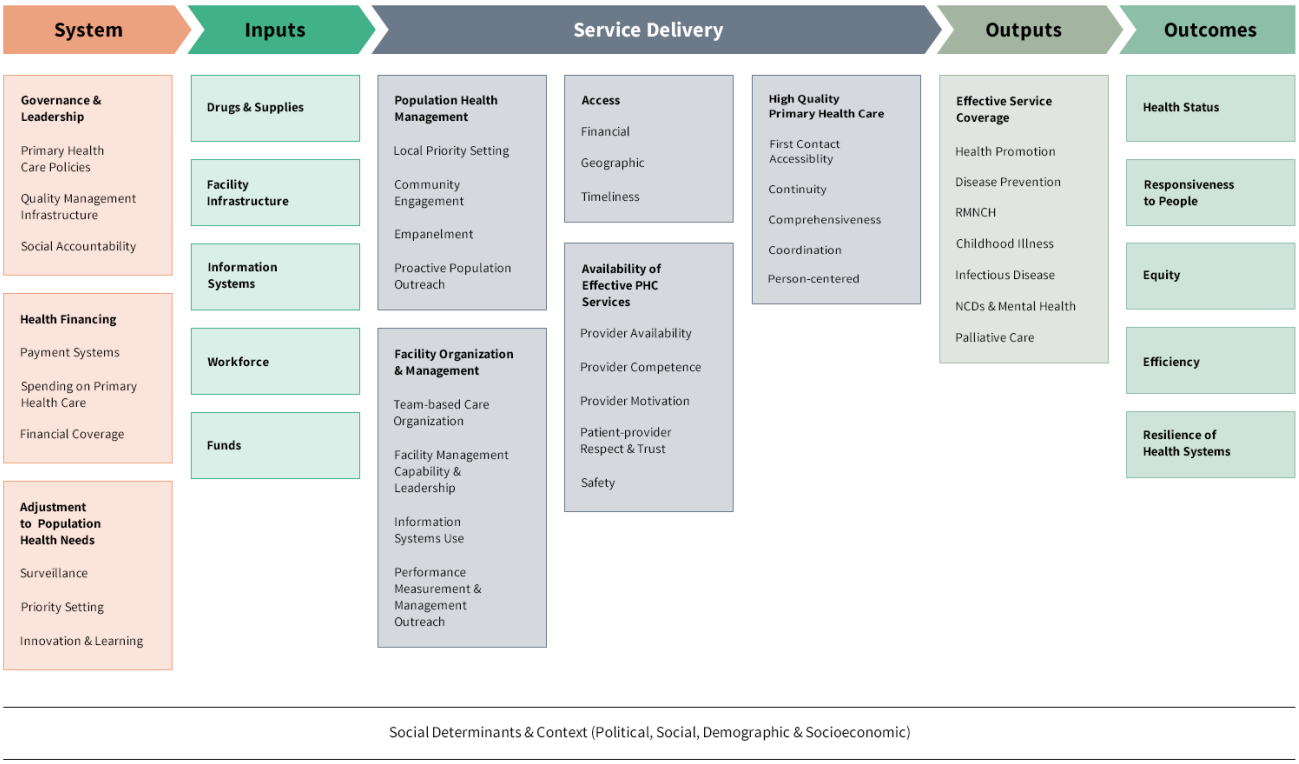
The foundation of PHCPI's work is its Conceptual Framework (Figure 1). In 2014-2015, PHCPI conducted a literature review of approximately 40 existing health systems- and PHC-related frameworks to identify key characteristics and determinants of high-performing PHC. From this, PHCPI developed a modified logic model that describes what is necessary to deliver high-quality PHC, and the outcomes achieved by doing so. The draft framework was refined through consultations with an advisory group of global experts, advocates, and national policymakers.[6]

The Framework articulates five primary **domains**—system-level characteristics, inputs, service delivery processes, outputs and outcomes—that define the essential elements of high-performing PHC, and acknowledges the broader context in which PHC operates.[7] These domains are further broken down into **subdomains** and **subdomain components** (collectively referred to here as the "elements" of the framework). Additional information about how the elements of the framework are defined is available in online supplementary file 1.

The PHCPI theory of change posits that understanding what is required to deliver high-quality PHC is foundational to measuring PHC performance, which in turn drives prioritization, action, and improvement. The PHCPI Conceptual Framework has therefore informed the development of PHCPI's measurement tools—the Core

Indicators, PHC Vital Signs Profile, and PHC Progression Model—which have been tested and applied in numerous LMICs.[8] To build on PHCPI's growing evidence base, we selected the PHCPI framework as our reference point for this analysis.

Figure 1 The PHCPI Conceptual Framework



Taking Stock: Comparing PHC-relevant Frameworks and Indicators

We explored three questions:

1) **Overlap with the PHCPI Conceptual Framework:** To what extent do other frameworks include measurement constructs captured in the PHCPI Conceptual Framework? To what extent have potentially relevant indicators been proposed for these constructs?
2) **Additional Measurement Constructs:** What additional measurement constructs are included in other frameworks, but are not explicitly captured in the PHCPI Conceptual Framework?
3) **Regular Data Collection in LMICs:** For which elements of the PHCPI Conceptual Framework are data commonly collected across LMICs through the implementation of globally standardized surveys?

We conducted a rapid scoping review, using PubMed and web-based searches, to identify PHC-relevant comparator frameworks in peer-reviewed and "grey" literature. "Comparator frameworks"—both conceptual frameworks and empirical tools based on informal underlying frameworks—included those focused on PHC or health system strengthening; scorecards and lists of health indicators relevant to PHC (e.g., the World Health Organization's Global Reference List of 100 Core Health Indicators)[9]; and globally standardized health and facility surveys (e.g., the Demographic and Health Survey[10]). Comparator frameworks that focused on clinical or disease-specific issues without reference to the broader health system, non-health sectors, or generic issues (e.g., general performance management) were excluded. Comparator frameworks reviewed by PHCPI in 2014-15 were excluded unless they were updated in subsequent years. Independent and PHCPI-affiliated PHC measurement experts

reviewed the compiled list of comparator frameworks and recommended additional frameworks for inclusion. The full list of 48 comparator frameworks reviewed is found in online supplementary file 2.

We used a closed coding approach to categorize the measurement constructs and indicators included in comparator frameworks. The elements of the PHCPI Conceptual Framework (the reference framework) were adopted as the coding scheme. Coding was completed by a team of researchers, with a lead researcher corroborating all codes to ensure consistency. When PHC-relevant constructs were identified that were not explicitly included in the PHCPI Conceptual Framework, additional codes were developed to capture them. When measurement constructs or indicators aligned with multiple elements of the PHCPI Conceptual Framework, they were coded multiple times. Constructs explicitly related to tertiary care were excluded.

Using the resulting data, we first analyzed the extent to which comparator frameworks align with the PHCPI Conceptual Framework through two variables: 1) *conceptual overlap*—the number of comparator frameworks that share measurement constructs with the PHCPI framework, per PHCPI framework element, and 2) *quantity of indicators*—the number of potentially relevant indicators identified across comparator frameworks, per PHCPI framework element. Second, we identified and summarized comparator framework measurement constructs that were PHC-relevant but not explicitly included in the PHCPI Conceptual Framework to understand where additional measurement constructs have emerged or increased in recognition since the PHCPI framework was developed. Finally, recognizing that a proposed indicator does not guarantee that data for that indicator are regularly collected, especially across LMICs, we conducted a third analysis on the conceptual focus and quantity of indicators across 6 standardized health-related household and facility surveys regularly implemented across multiple LMICs. These included the Demographic & Health Survey;[10] Multiple Indicator Cluster Surveys;[11] Service Delivery Indicators;[12] Service Availability and Readiness Assessment;[13] Service Provision Assessment;[14] and Performance Monitoring and Accountability 2020.[15]

Limitations

Several limitations should be noted. First, the PHCPI Conceptual Framework takes a perspective that emphasizes clinical primary care and puts less explicit emphasis on multi-sectoral action or social determinants of health. PHCPI has also not published official definitions for all elements of its conceptual framework, and not all comparator frameworks included detail on how their measurement constructs and indicators were defined. When definitions in comparator frameworks were not available, we relied on context within the frameworks or accompanying papers, the name of the measurement construct or indicator, and its position within the comparator framework. To minimize subjectivity in coding, we implemented a quality assurance process in which a lead coder reviewed all comparator frameworks and codes to ensure consistency.

Additionally, not all comparator frameworks consistently define PHC. Given that PHC is an approach within the broader health system, some comparator frameworks—and related measurement constructs—were relevant but not specific to PHC. While our approach identified the number of potentially relevant indicators for each element, we did not draw conclusions about their accuracy, reliability, content validity (i.e., extent of conceptual overlap with the element), or actionability. We also did not assess the applicability of the indicators to LMIC contexts.

Alignment and Gaps in Global PHC Measurement

Of the 48 comparator frameworks, 33 were not included in the original PHCPI review or were new since 2015, and 15 were included in the original review but had been subsequently updated. This implies an increase in the development of PHC-relevant frameworks over the past several years. The comparator frameworks were developed by governments and government-related entities,[16,17] universities and research centers,[18–26]

multilateral organizations,[5,9,11–13,27–37] local non-governmental organizations [38,39], expert advisory groups,[40–49] and implementing partners.[10,14,15,50–52] The majority (31) were collaborative efforts engaging more than one of these stakeholder groups. Figure 2 summarizes the results of the analysis for each element of the PHCPI Conceptual Framework. Of the 48 comparator frameworks, 35 included any associated indicators.

Figure 2 Results of the Analysis: Number of comparator frameworks that include a measurement construct overlapping with a PHCPI framework element and related number of indicators identified across all frameworks

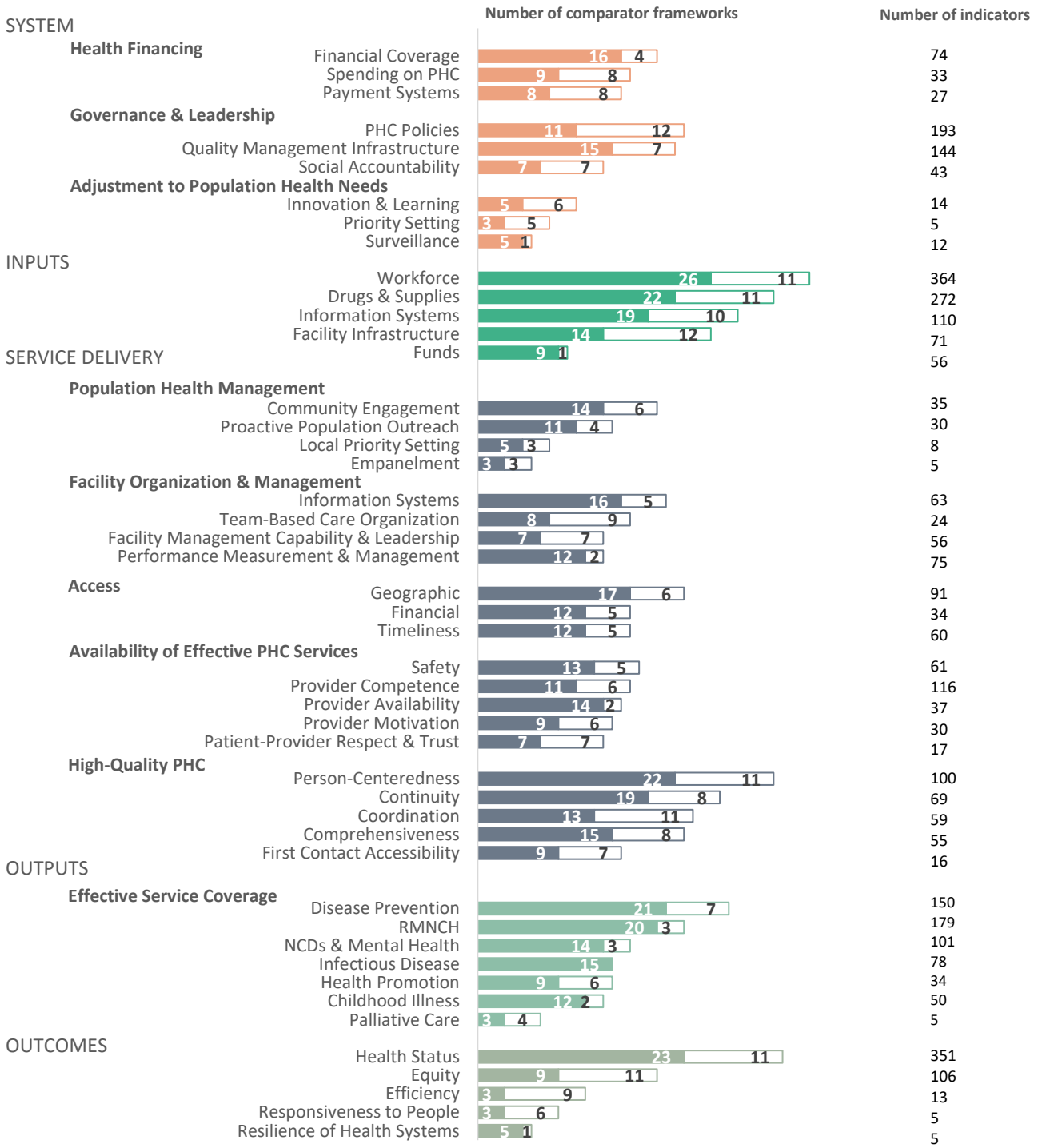
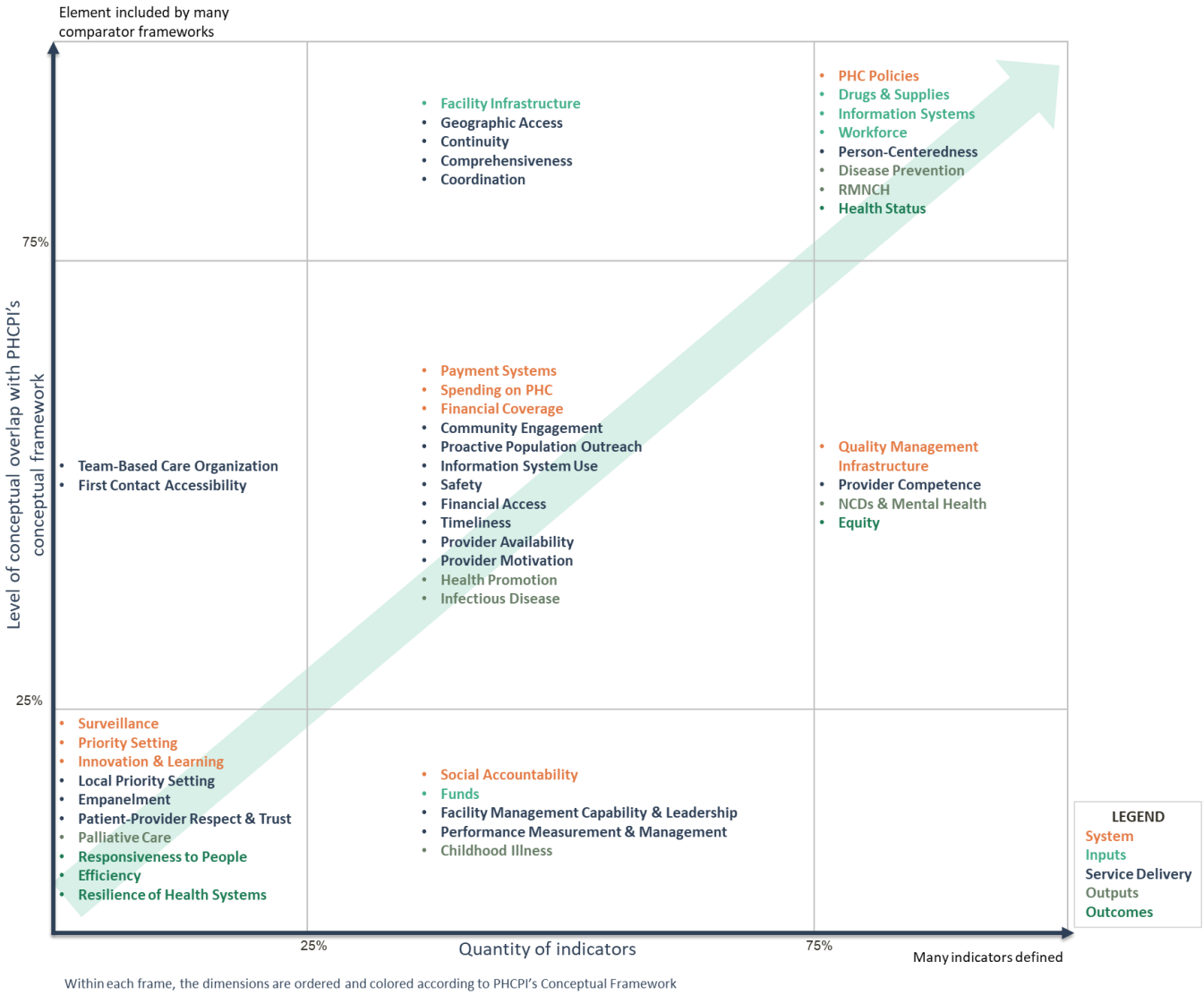


Figure 3 plots conceptual overlap by quantity of indicators for the elements of the PHCPI Conceptual Framework. The bottom-left corner of the chart displays framework elements included by relatively few comparator frameworks and with relatively few proposed indicators. Conversely, the top-right corner represents framework elements included by many comparator frameworks and with many proposed indicators. We used top and bottom quartiles to define "high" and "low" levels of conceptual overlap and indicator quantity.

Figure 3. Results of the Analysis: Conceptual Overlap vs. Volume of Indicators



Within each frame, the dimensions are ordered and colored according to PHCPI's Conceptual Framework

Areas of Overlap

We found substantial overlap among PHC-relevant measurement frameworks in the inclusion of health-status related outcomes (i.e., mortality and morbidity); service coverage, especially for RMNCH and disease prevention (focused on child immunization, malaria prevention, and screenings for various health issues); and inputs, especially for health workforce, essential medicines and supplies, and information systems. PHC policies, a broad category encompassing the existence and use of relevant health policies/strategies and government capacity for implementation and monitoring, also emerged as an area of overlap.

A smaller number of comparator frameworks included measurement constructs or indicators related to health financing, quality management infrastructure, and aspects of service delivery, including access, community engagement, and proactive population outreach. Multiple aspects of quality of care were included in many comparator frameworks, had many proposed indicators, or both, including four essential functions of PHC[53] (continuity, coordination, comprehensiveness, and person-centeredness) and constructs related to effective service provision, such as provider competence.

While frequent inclusion across comparator frameworks and large numbers of proposed indicators may signify relative alignment around a topic, variability may still exist. For example, the inputs subdomains largely correspond with the well-known health systems "building blocks" articulated in the World Health Organization (WHO) Health Systems Framework [54]; these are commonly included across health systems frameworks and frequently measured in facility surveys, including those that are not narrowly PHC-specific. Some proportion of overlapping elements may thus be less relevant to PHC performance measurement. In addition, there may be varying content validity or comprehensiveness of the compiled indicators in a given area of overlap, including for LMIC contexts. Person-centeredness, for example, more frequently appeared in frameworks developed for high-income contexts, as well as the WHO Framework on Integrated People-Centered Health Services.[31]

Remaining Conceptual & Indicator Gaps

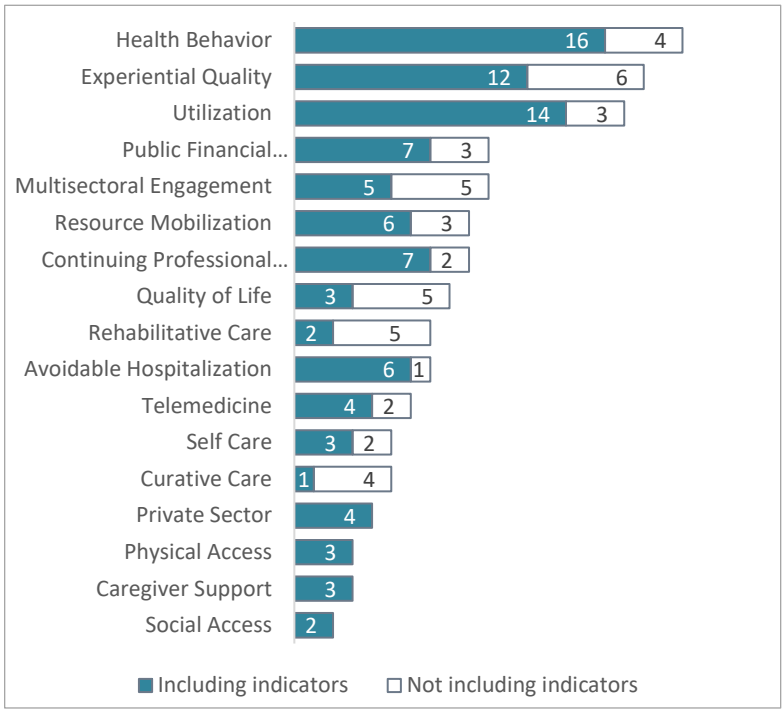
There were conceptual and indicator gaps related to how well the PHC system monitors, analyzes, and continually adjusts to population health needs; non-health status related outcomes such as efficiency, resilience, and responsiveness; patient-provider respect and trust; and elements of population health management, including how national or regional policies are translated into local strategies responding to the needs of the population and the extent to which populations are empaneled (assigned to facilities, care teams, or providers). Further, some PHC-relevant aspects of service coverage—such palliative care—were less well represented.

Though there appears to be emerging alignment around the importance of measuring team-based care (the deployment of human resources in multidisciplinary teams) and first contact accessibility (patient care-seeking at the primary level), few indicators have been proposed for these elements. Conversely, some elements—social accountability, funds (i.e., the availability of adequate operational funding in facilities), technical training and skills of facility managers, supportive supervision, and establishing and monitoring facility-level performance targets—were included by relatively few comparator frameworks but had a moderate number of potentially relevant indicators. In some cases, this may signify areas where indicators exist, but there is less agreement or shared understanding of these elements as distinct constructs.

Additional Measurement Constructs in Comparator Frameworks

We identified several measurement constructs included in one or more comparator frameworks but not explicitly included in the PHCPI framework. Displayed in Figure 4, these include constructs related to the way that the health system mobilizes, manages, and ensures transparency and accountability for funding, as well as formal engagement between health and non-health sectors and public and private actors. Constructs related to health service utilization and demand-side factors, such as consultation rates, were common.

Figure 4 Measurement constructs from comparator frameworks that are not included in the PHCPI Conceptual Framework



We identified additional constructs related to access, including social access, physical access for people with disabilities, and telemedicine or remote access. Some comparator measurement domains and indicators reflected experiential quality (i.e., patient experience); patient-centeredness overlaps with this construct but is not identical. Some frameworks viewed caregiver support as a distinct construct. Some emphasized continuing professional development as a component of provider management and the provision of quality care.

Comparator service coverage constructs included rehabilitative care, curative care not specific to a defined health area, and self-care (related to actions within an individual's control to manage health, e.g., self-testing for HIV). Multiple comparator frameworks also included "avoidable hospitalization" or hospitalization for primary care amenable conditions, which reflects the system's ability to reach those in need with effective primary care services and avoid hospitalization. Finally, some comparator frameworks included aspects of health status beyond mortality and morbidity, including health behaviors and quality of life.

Data Collection in LMICs through standardized global surveys

To gain insight into where data are regularly collected across LMICs for PHCPI Conceptual Framework elements, we analyzed the quantity of indicators available in six standardized surveys (see Table 1). Our analysis does not account exhaustively for all potential sources of PHC data at the subnational, national, and global levels. However, it provides insight into standardized, comparable data available across multiple LMICs and the measurement constructs prioritized in these globally standardized surveys.

Table 1 Number of indicators identified in 6 surveys producing data

System	
Governance and Leadership	
Primary Health Care Policies	*0*
Quality Management Infrastructure	34
Social Accountability	0
Health Financing	
Payment Systems	0
Spending on Primary Health Care	0
Financial Coverage	5
Adjustment to Population Health Needs	
Surveillance	*0*
Priority Setting	*0*
Innovation & Learning	*0*
Inputs	
Drugs and Supplies	**118**
Facility Infrastructure	**19**
Funds	**1**
Information Systems	**40**
Workforce	**163**
Service Delivery	
Population Health Management	
Local Priority Setting	0
Community Engagement	2
Empanelment	0
Proactive Population Outreach	3
Facility Organization and Management	
Team-based Care Organization	0
Facility Management Capability & Leadership	1
Information Systems	10
Performance Measurement & Management	14
Access	
Financial	10
Geographic	36
Timeliness	6
Availability of Effective PHC Services	
Provider Availability	2
Provider Competence	44
Provider Motivation	1
Patient-provider Respect & Trust	0
Safety	15
High Quality PHC	
First Contact Accessibility	0
Continuity	10
Comprehensiveness	20
Coordination	1
Person-Centeredness	32
Outputs	
Effective Service Coverage	
Childhood Illness	23
Disease Prevention	41
Health Promotion	23
Infectious Disease	20
RMNCH	79
Outcomes	
Health Status	**66**
Responsiveness to People	**0**
Equity	**0**
Efficiency	**0**
Resilience of Health Systems	**1**
Social Determinants and Context	
Social Determinants and Context	163
Emerging Domains	
Continuing Professional Development	6
Experiential Quality	1
Health Behavior	121
Private Sector	1
Public Financial Management	2
Quality of Life	3
Self Care	2
Social Access	1
Utilization	4

We found that the surveys largely focused on areas related to access to care; service coverage, particularly RMNCH; health status; facility-level inputs; and some elements of service quality and quality management, including provider competence, aspects of patient-provider interactions, and the existence and use of clinical guidelines.

Conversely, many PHCPI framework elements—especially within the system and service delivery domains—were un- or under-represented in these surveys. It is not surprising that household and facility surveys do not capture system-level constructs, such as the development and implementation of PHC policies, collaboration between government and other health sector actors, and PHC spending or provider payment. Also unrepresented were subdomain components related to adjustment to population health needs. While several elements of service delivery were represented, including some aspects of quality and access, few or no indicators were available across the subdomain components related to population health management or facility organization & management. Outcomes including system responsiveness, resilience, and efficiency were not represented, nor was equity captured (though survey data are frequently disaggregated and cross-analyzed to assess equity).

We compared these results to the full analysis. While some elements—such as drugs & supplies, workforce, RMNCH, service coverage for disease prevention, health status, and some aspects of quality—are well-represented in both analyses, the indicators may be variable in their content validity, comprehensiveness, and specificity to PHC. Priority setting, innovation and learning, and surveillance; palliative care; patient-provider respect and trust; empanelment; and system resilience, responsiveness, and efficiency emerged as gaps in both the full analysis and the analysis of the surveys. This likely indicates general challenges in operationalizing measure of these constructs, as well as a lack of alignment around their importance to PHC. Team-based care organization and first contact accessibility also had no indicators in the standardized surveys, further validating the finding that while there may be emerging alignment around their importance, there is a lack of clarity about how to measure them. Conversely, we found that social accountability, funds, and facility management capability and leadership had low conceptual overlap and few or no survey indicators, but a moderate number of proposed indicators across the comparator frameworks. Again, this may validate the finding that there may be some knowledge on how to measure these constructs, but a lack of alignment around their importance or operationalization in LMICs.

A moderate level of conceptual overlap (primarily in comparator frameworks developed for high-income contexts), and a large quantity of proposed indicators but none in the standardized surveys indicates NCDs and mental health service coverage are areas where existing measurement could be adapted to LMICs.

Conclusion: Implication for Future Research

This analysis represents a first step in a broader research effort to understand and build on global knowledge of PHC measurement, providing a foundation for additional analyses and prioritization exercises that can inform future investments in measurement by PHCPI and other global actors.

We recommend further exploration of the following questions:

- What is the content validity, reliability, accuracy, and actionability of the indicators compiled for each element?
- How applicable are the comparator frameworks and indicators to LMIC contexts? Are there elements for which indicators developed in high-income contexts, such as the Person-Centered Primary Care Measure,[55] can be readily adapted to LMICs?
- To what extent are PHC-relevant data being collected in LMICs outside of globally standardized surveys?

- Are these measures reflected in performance management systems and being used in performance-oriented reforms?

Further inquiry into these areas will help to uncover promising new approaches to improved PHC measurement and identify gaps that warrant further research and development, enabling countries to develop a comprehensive understanding of PHC performance that can be used to drive improvement efforts and achieve health for all. Additionally, while there may continue to be divergence in areas of focus for various frameworks, it would be useful in future framework formulation to explicitly define framework constructs and indicators so that practitioners and researchers are able to both understand the frameworks and compare them to one another. Explicit definitions of measurement constructs and indicators will be increasingly important as the global community works to align siloed PHC programs and harmonize measurement—as appropriate—to reduce reporting burdens on health workers.

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Annex 1. Key Measurement Questions for the PHCPI Conceptual Framework

System

- **Governance & Leadership:** Do national policies reflect the importance of PHC, promote high standards, and involve stakeholders from all sectors?
- **Health Financing:** Is PHC adequately funded to ensure access, provide protection against catastrophic expenditures, and ensure equitable use of resources?
- **Adjustment to Population Health Needs:** Is the delivery of PHC flexible enough to adjust to and best service the needs of the population?

Inputs

- **Drugs & Supplies:** Are essential dugs, vaccines, consumables, and equipment available when needed?
- **Facility Infrastructure:** Are there enough health facilities to serve the population and are they appropriately distributed?
- **Information Systems:** Are health facilities appropriately linked to information systems, including system hardware and records?
- **Workforce:** Are there sufficient staff and an appropriate combination of skills in PHC services?
- **Funds:** Are there sufficient funds available at the facility level to cover recurrent and fixed costs?

Service Delivery

- **Population Health Management:** Are local populations engaged in the design and delivery of health services to ensure that their needs and priorities are met?
- **Facility Organization & Management:** Are PHC facilities organized and managed to promote team-based care provision, use of information systems, staff support, and performance measurement and management to drive continuous improvement?
- **Access:** Do patients have financial, geographic, and timely access to PHC services?
- **Availability of Effective PHC Services:** Are the staff of PHC facilities present and competent, and motivated to provide safe and respectful care?
- **High Quality PHC:** Are PHC services of high quality, meeting peoples' needs, and connected to other parts of the health system?

Outputs

- **Effective Service Coverage:** Does the PHC system offer high-quality services across the lifespan?

Outcomes

- **Health Status:** Does the PHC system reduce the number of deaths and improve health?
- **Responsiveness to People:** Does the PHC system respond quickly to the needs of the population?
- **Equity:** Are health outcomes equitably distributed across society, by geography, education, and occupation?
- **Efficiency:** Are resources used optimally to improve health outcomes?
- **Resilience of Health Systems:** Is the PHC system able to continuously deliver health care, regardless of political or environmental instability?

Adapted from: Measuring the Performance of Primary Health Care: A Toolkit for Translating Data into Improvement. Joint Learning Network for Universal Health Coverage, 2018.

Annex 2. Full List of "Comparator Frameworks" Assessed

Framework Title	Description	Citation
A conceptual framework for measuring community health workforce performance within primary health care systems	The framework includes a list of indicators and measurement considerations for monitoring CHW performance in low- and middle-income countries. It includes twenty-one sub-domains and forty-six measurable indicators.	Agarwal S, Sripad P, Johnson C, et al. A conceptual framework for measuring community health workforce performance within primary health care systems. *Hum Resour Health*. 2019;17:86. doi:10.1186/s12960-019-0422-0
A Results-Based Logic Model for Primary Healthcare: A Conceptual Foundation for Population-Based Information Systems	A Results-Based Logic Model for PHC that uses the approach of the Treasury Board of Canada in designing management and accountability frameworks. It distinguishes among outcomes for which the PHC sector should be held accountable.	Watson DE, Broemeling A-M, Wong ST. A results-based logic model for primary healthcare: A conceptual foundation for population-based information systems. *Healthc Policy.* 2009;5:33–46.
African Leaders Malaria Alliance (ALMA) Scorecard*	The RMNCH Scorecard supports country and partner collaboration in the RMNCH landscape and helps to enhance transparency, accountability and action around RMNCH	African Leaders Malaria Alliance. What is the alma scorecard for accountability and action? [Internet]. ALMA. https://alma2030.org/scorecard-tools/scorecard-explanation/ (accessed October 2019)
Beyond the building blocks: integrating community roles into health systems frameworks to achieve health for all	This article presents an expanded framework that articulates the need for dedicated human resources and quality services at the community level; it places strategies for organizing and mobilizing social resources in communities in the context of systems for health; it situates health information as one ingredient of a larger block dedicated to information, learning and accountability; and it recognizes societal partnerships as critical links to the public health sector. This framework makes explicit the oft-neglected investment needs for community health and aims to inform efforts to situate community health within national health systems and global guidance to achieve health for all.	Sacks E, Morrow M, Story WT, et al. Beyond the building blocks: integrating community roles into health systems frameworks to achieve health for all. *BMJ Glob Health*. 2019;3:e001384.

Bureau of Health Information's Integrated Healthcare Performance Assessment Framework	This report introduces a refinement of existing approaches, one which continues a conceptual movement towards accounting for interconnections, dynamism and complexity in cause and effect relationships in the delivery of healthcare. It aims to bring clarity to performance assessment, using relevant and robust concepts – and avoiding reductionist measures – to build a whole-of-system perspective on performance	Healthcare in Focus 2013: Spotlight on Measurement [Internet]. Sydney (NSW): BHI; 2014. http://www.bhi.nsw.gov.au/__data/assets/pdf_file/0013/217030/Spotlight_on_measurement_APR_2013.pdf (accessed October 2019)
CIHI's New Health System Performance Measurement Framework	The CIHI New HSP Measurement Framework is a complementary framework that demonstrates how the inputs, processes and outcomes of any one health service relate to the larger whole. It provides a system-level overview that allows stakeholders to assess the collective contribution of all parts of the health system and connects to overall system performance.	A Performance Measurement Framework for the Canadian Health System—Updated November 2013 [Internet]. Ottawa: Canadian Institute for Health Information; 2013 https://secure.cihi.ca/free_products/HSP_Framework_Technical_Report_EN.pdf (accessed November 2019)
Countdown to 2030: Tracking progress towards universal coverage for women's, children's and adolescents' health	Countdown to 2030 aims to improve monitoring and measurement of women's, children's and adolescents' health with a focus on intervention coverage and inequality.	Tracking Progress towards Universal Coverage for Reproductive, Newborn and Child Health: The 2017 Report. [Internet]. Washington, DC: United Nations Children's Fund (UNICEF) and the World Health Organization (WHO); 2017. http://countdown2030.org/pdf/Countdown-2030-complete-with-profiles.pdf (accessed October 2019)
Crossing the Global Quality Chasm: Improving Health Care Worldwide (2018)	A framework that integrates the conceptual frameworks guiding health systems and quality of care. It was developed by applying sociotechnical systems theory to improve quality of care.	National Academies of Sciences, Engineering, and Medicine. Crossing the global quality chasm: Improving health care worldwide [Internet]. Washington, DC: The National Academies Press; 2018. doi:10.17226/25152 (accessed October 2019)
Eastern Mediterranean Region: framework for health information systems and core indicators for monitoring health situation and health system performance 2018	The 75 core indicators to monitor health information systems with a focus on three main components: 1) monitoring health determinants and risks; 2) assessing health status, including morbidity and cause specific mortality; and 3) assessing health system response	Eastern Mediterranean Region: framework for health information systems and core indicators for monitoring health situation and health system performance [Internet]. Cairo: WHO Regional Office for the Eastern Mediterranean; 2019. http://applications.emro.who.int/docs/EMROPUB_2018_EN_20620.pdf?ua=1 (accessed November 2019)

Establishing a Primary Care Performance Measurement Framework for Ontario	The Ontario Primary Care Performance Measurement (PCPM) framework identifies system- and practice-level measurement priorities and related specific performance measures across 9 domains of primary care performance.	Haj-Ali W, Hutchison B. Establishing a primary care performance measurement framework for Ontario. *Healthc Policy*. 2017;12:66–79.
Evaluation framework for Countdown to 2015 country case studies*	Evaluation framework for Countdown to 2015 for Maternal, Newborn and Child Survival (Countdown), which uses country-specific data to stimulate and support country progress towards achieving MDG4 and MDG5 in the 75 countries where more than 95 % of all maternal, newborn and child deaths occur.	Singh NS, Huicho L, Afnan-Holmes H, et al. Countdown to 2015 country case studies: systematic tools to address the "black box" of health systems and policy assessment. *BMC Public Health*. 2016;16. doi:10.1186/s12889-016-3402-5
Framework for Performance Assessment in PHC (FPA_PHC)	The Framework for Performance Assessment in Primary Health Care (FPA_PHC) is grounded in evaluation theory and explicitly identifies the processes of primary health care articulated by the World Health Organization (WHO). It is based on Donabedian's (1998) now classic "structure", "process", "outcome" model for assessment of quality of care.	Sibthorpe B, Gardner K. A conceptual framework for performance assessment in primary health care. *Aust J Prim Health*. 2007;13:96–103. doi.org/10.1071/PY07027
Framework for primary care organizations	A conceptual framework for primary care originally developed to guide the measurement of the performance of primary care organizations within the context of a large mixed-method evaluation of four types of models of primary care in Ontario, Canada.	Hogg W, Rowan M, Russell G, et al. Framework for primary care organizations: the importance of a structural domain. *Int J Qual Health Care.* 2008;20:308–13. doi.org/10.1093/intqhc/mzm054
Framework for primary care organizations Adapted for Ontario	A conceptual framework for primary care organizations to comprehensively evaluate primary care models, adapted for Ontario, Canada.	Dahrouge S, Hogg W, Russell G, et al. The Comparison of Models of Primary Care in Ontario (COMP-PC) study: methodology of a multifaceted cross-sectional practice-based study. *Open Med.* 2009;3:e149–64.
Global Financing Facility M&E Frameworks	The Global Financing Facility (GFF) results framework was developed to increase demand for high quality data and meaningful country owned data-use for improved RMNCAH-N outcomes and health financing reforms.	Global Financing Facility (GFF) Results Framework: Results Monitoring [Internet]. c2017. https://www.globalfinancingfacility.org/results-monitoring (accessed October 2019)

Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development	The global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development.	Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development [Internet]. UN Resolut. ARES71313. https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%20refinement_Eng.pdf). 2018. (accessed October 2019)
Global Reference List of 100 Core Health Indicators (plus health-related SDGs)	A standard set of core indicators to provide concise information on the health situation and trends, including responses at national and global levels.	World Health Organization (WHO). 2018 Global Reference List of 100 Core Health Indicators (plus health-related SDGs) [Internet]. Geneva, Switzerland; https://apps.who.int/iris/bitstream/handle/10665/259951/WHO-HIS-IER-GPM-2018.1-eng.pdf?sequence=1
Health at a Glance 2017: OECD Indicators	Health at a Glance presents the most recent comparable data on the health status of populations and health system performance in OECD countries.	OECD. Health at a glance 2017: OECD indicators [Internet]. Paris: OECD Publishing; 2017. http://dx.doi.org/10.1787/health_glance-2017-en (accessed October 2019)
Health Policy Tracer Indicators Dashboard*	The Health Policy Tracer Indicators Dashboard was developed to track a set of key tracer RMNCH policy indicators as tracked on Countdown to 2015 country profiles.	Singh NS, Huicho L, Afnan-Holmes H, et al. Countdown to 2015 country case studies: systematic tools to address the "black box" of health systems and policy assessment. *BMC Public Health*. 2016;16. doi:10.1186/s12889-016-3402-5
Health systems strengthening- A Compendium of Indicators	A compendium that presents the wide array of indicators that can be used to monitor progress and generate evidence for health system strengthening.	Diana ML, Yeager VA, Hotchkiss DR. Health Systems Strengthening – A Compendium of Indicators — MEASURE Evaluation [Internet]. Chapel Hill: United States Agency for International Development (USAID), MEASURE Evaluation; 2017 Sep. https://www.measureevaluation.org/resources/publications/tr-17-167b (accessed October 2019)
Health Systems Tracer Indicators Dashboard*	The Health Systems Tracer Indicators Dashboard was developed to assess key tracer health systems indicators as per Countdown to 2015 country profiles.	Singh NS, Huicho L, Afnan-Holmes H, et al. Countdown to 2015 country case studies: systematic tools to address the "black box" of health systems and policy assessment. *BMC Public Health*. 2016;16. doi:10.1186/s12889-016-3402-5

High-quality health system framework	A framework with high-quality health system components that evaluate the quality of care available to people in LMICs across a range of health needs included in the SDGs.	Kruk ME, Gage AD, Arsenault C, et al. High-quality health systems in the Sustainable Development Goals era: time for a revolution. *Lancet Glob Health*. 2018;6:e1196–252. doi:10.1016/S2214-109X(18)30386-3
Measuring the performance of local health systems	The summary results of a rapid review of how to assess the performance of local health systems through the lens of clinical commissioning groups (CCGs) in England.	Ham C, Raleigh V, Foot C, et al. Measuring the performance of local health systems: a review for the Department of Health [Internet]. London: The King's Fund; 2015 Oct https://www.kingsfund.org.uk/sites/default/files/field/field_publication_file/measuring-the-performance-of-local-health-systems-dh-review-kingsfund-oct15.pdf (accessed October 2019).
PHC Progression Model	The Primary Health Care Progression Model is a mixed-methods assessment tool used to populate the Capacity pillar of the Vital Signs Profile. The "capacity" of a Primary Health Care (PHC) system refers to the foundational properties of the system that enable it to deliver high quality PHC	Primary Health Care Progression Model [Internet]. Primary Health Care Performance Initiative. PHCPI. c2019. https://improvingphc.org/primary-health-care-progression-model (accessed October 2019)
PHC: Transforming Vision into Action Operational Framework (Draft for Consultation)	An operational framework for primary health care which includes indicators that can be used to track progress across the three components of primary health care.	Primary health care: transforming vision into action: operational framework [Internet]. Geneva, Switzerland: WHO and UNICEF; 2018. http://g2h2.org/posts/who-unicef-consultation-operational-framework-for-primary-health-care-deadline-31-december-2018/
PHCPI Core Indicators	PHCPI's 38 Core Indicators provide a snapshot of primary health care performance based on existing, globally comparable data.	PHCPI Core Indicators [Internet]. Primary Health Care Performance Initiative (PHCPI). 2018. https://improvingphc.org/phcpi-core-indicators (accessed October 2019)
PHCPI Vital Signs Profile	The Vital Signs Profiles are a measurement tool that provides an innovative snapshot of primary health care systems in individual countries, shining a light on where systems are strong and where they are weak.	Vital Signs Profiles [Internet]. Primary Health Care Performance Initiative. (PHCPI). 2018. https://improvingphc.org/vital-signs-profiles (accessed October 2019)

Primary Care Assessment Tool (PCAT)*	The Primary Care Assessment Tools (PCAT) are practical, well-validated instruments that are useful for describing the adequacy of primary care in several dimensions and from the perspective of users, practitioners, facilities and systems.	Shi L, Pinto Masís D, Guanais FC. Measurement of Primary Care: Report on the Johns Hopkins Primary Care Assessment Tool. Inter-American Development Bank; 2012 Dec
Primary Care Evaluation Framework	The Primary Care Evaluation Framework encompasses the functions of a health care system combined with key characteristics of primary care services that are part of service delivery.	Primary Care Evaluation Tool [Internet]. World Health Organization European Region http://www.euro.who.int/__data/assets/pdf_file/0004/107851/PrimaryCareEvalTool.pdf (accessed October 2019)
Primary Care Evaluation Scheme	The Primary Care Evaluation Scheme focuses on specific issues, policies and health care priorities relevant to countries. The Scheme consists of measurable topics and items related to essential features and national priorities for change in primary care and the facilitating conditions.	Primary Care Evaluation Tool [Internet]. World Health Organization European Region http://www.euro.who.int/__data/assets/pdf_file/0004/107851/PrimaryCareEvalTool.pdf (accessed October 2019)
Primary Care Monitoring System (PC Monitor)*	The Primary Care Monitor is a standardized instrument for describing and comparing primary care systems. As part of this, indicators were evaluated and selected based on their suitability for Europe-wide comparison of primary care systems.	Kringos DS, Boerma WG, Bourgueil Y, et al. The European primary care monitor: structure, process and outcome indicators. *BMC Fam Pract*. 2010;11:81. doi: 10.1186/1471-2296-11-81
WHO European Primary Health Care Impact, Performance and Capacity Tool (PHC-IMPACT)	Details a roadmap for transforming the WHO European Framework for Action on Integrated Health Services Delivery from an action-oriented policy framework to a framework for monitoring capacity and performance. The roadmap provides an overview of steps from the initial phases of designing, reviewing and preparing a monitoring tool to collecting and analyzing data and reporting findings. The publication also describes the various partnerships and their envisaged functions throughout the process of developing this work. The indicators mapped for this framework were sourced from the PHC Impact, Performance and Capacity Tool (PHC-IMPACT), a suite of indicators that are sensitive to European models of primary care, policy priorities and information systems.	Roadmap to monitoring health services delivery in the WHO European Region: WHO European framework for action on integrated health services delivery [Internet]. Copenhagen: WHO Regional Office for Europe; c2017. http://www.euro.who.int/__data/assets/pdf_file/0007/355066/Roadmap-EFFA.pdf?ua=1 (accessed November 2019) Indicator Passport: WHO European Primary Health Care Impact, Performance and Capacity Tool (PHC-IMPACT) [Internet]. Copenhagen: WHO Regional Office for Europe; c2019. http://www.euro.who.int/__data/assets/pdf_file/0005/421943/Passport-web-171219.pdf?ua=1 (accessed November 2019)

Resilient and Sustainable Systems for Health Modular Framework	The Modular Framework Handbook is comprised of modules or broad program areas that are further divided into a comprehensive set of interventions essential to build resilient and sustainable systems for health (RSSH). In addition to the list of modules, interventions and activities, the framework provides associated impact, outcome and coverage indicators.	The Global Fund. Modular framework handbook [Internet]. The Global Fund; 2019 Jul. https://www.theglobalfund.org/media/4309/fundingmodel_modularframework_handbook_en.pdf (accessed October 2019).
RMNCH Country Scorecards*	The RMNCH Scorecard supports country and partner collaboration in the RMNCH landscape and helps to enhance transparency, accountability and action around RMNCH	Community Health Worker Assessment and Improvement Matrix [Internet]. Community Health Impact Coalition, Initiatives Inc.,UNICEF, USAID; 2018 Dec. https://www.usaid.gov/sites/default/files/documents/1864/CHW_AIM_Updated_Program_Functionality_Matrix_2018_508_final.pdf (accessed October 2019)
Salud Mesoamerica Initiative	Mapping to identify the relationship between SMI and PHCPI data sources and identify elements of each project that could be helpful to the other when conducting assessments and monitoring	Coordination Unit of Salud Mesoamerica Initiative. Mapping of PHCPI and SMI Indicators. SMI, August 26, 2019 (Unpublished report)
Swiss Primary Care Active Monitoring (SPAM) Framework	The Swiss Primary Care Active Monitoring (SPAM) framework was developed as a monitoring instrument for the measurement of performance and effectiveness of the Swiss primary care system.	Ebert ST, Pittet V, Cornuz J, et al. Development of a monitoring instrument to assess the performance of the Swiss primary care system. *BMC Health Serv Res*. 2017;17:789. doi 10.1186/s12913-017-2696-z
The Balanced Scorecard Report: Afghanistan*	The Balanced Scorecard (BSC) is a means to measure performance in the delivery of Basic Package of Health Service (BPHS) throughout Afghanistan. This is the ninth BSC since 2004 and is based on 715 facility assessments.	The balanced scorecard report: Basic package of health services 2016 [Internet]. The Royal Tropical Institute; 2016 Aug. http://www.aada.org.af/sites/default/files/u97/BPHS%20BSC%20report%202016%20final.pdf (accessed October 2019)
The breadth of primary care: a systematic literature review of its core dimensions	A framework developed from a systematic literature review of core dimensions that exist within primary health care systems.	Kringos DS, Boerma WG, Hutchinson A, et al. The breadth of primary care: a systematic literature review of its core dimensions. *BMC Health Serv Res.* 2010;10:65. doi: 10.1186/1472-6963-10-65

The European primary care monitor: structure, process and outcome indicators	The Primary Care Monitor is a standardized instrument for describing and comparing primary care systems. As part of this, the Primary Care System Framework was developed consisting of three levels: structure, process and outcome, and is inspired by Donabedian's health system analysis approach.	Kringos DS, Boerma WG, Bourgueil Y, et al. The European primary care monitor: structure, process and outcome indicators. *BMC Fam Pract*. 2010;11:81. doi: 10.1186/1471-2296-11-81
Towards actionable international comparisons of health system performance: expert revision of the OECD framework and quality indicators *	An updated conceptual framework for the OECD's Health Care Quality Indicators (HCQI) project which aimed to develop and report common indicators for international comparisons of health care quality.	Carinci F, Van Gool K, Mainz J, et al. Towards actionable international comparisons of health system performance: expert revision of the OECD framework and quality indicators. *Int J Qual Health Care*. 2015;27:137–46. doi: 10.1093/intqhc/mzv00
Two-Dimensional Matrix for Primary Care	A matrixed framework for primary care performance measurement and reporting.	Langton JM, Hogg W, Ammi M, et al. A framework for primary care performance measurement and reporting [Internet]. UBC Centre for Health Services and Policy Research; http://transformphc.sites.olt.ubc.ca/files/2015/07/LANGTON-A-Conceptual-Framework.pdf (accessed October 2019)
Updated Program Functionality Matrix for Optimizing Community Health Programs	An updated program functionality matrix for optimizing community health programs	Community Health Worker Assessment and Improvement Matrix [Internet]. Community Health Impact Coalition, Initiatives Inc.,UNICEF, USAID; 2018 Dec. https://www.usaid.gov/sites/default/files/documents/1864/CHW_AIM_Updated_Program_Functionality_Matrix_2018_508_final.pdf (accessed October 2019)
WHO Global Strategy on Integrated People-Centered Care*	A framework on integrated, people-centered health services that proposes five interdependent strategies that need to be adopted.	World Health Organization (WHO). Framework on integrated, people-centred health services. Report by the Secretariat. 2016;16:A69.

Global Standardized Surveys

Demographic & Health Survey*	Demographic and Health Surveys (DHS) are nationally-representative household surveys that provide data for a wide range of monitoring and impact evaluation indicators in the areas of population, health, and nutrition.	The DHS Program - Demographic and Health Survey (DHS) [Internet]. 2019. https://dhsprogram.com/What-We-Do/Survey-Types/DHS.cfm (accessed October 2019)
Multiple Indicator Cluster Survey*	The Multiple Indicator Cluster Survey is a household survey implemented by countries to provide internationally comparable, statistically rigorous data in order to fill data gaps for monitoring the situation of children and women	Tools - UNICEF MICS [Internet]. The United Nations Children's Fund (UNICEF): Multiple Indicator Cluster Survey (MICS). 2019. http://mics.unicef.org/tools (accessed October 2019)
Performance Monitoring and Accountability 2020	Performance, Monitoring, and Accountability generates high-quality, rapid turnaround surveys monitoring key health indicators in nine countries in Africa and Asia. Data available is open source for research, program planning, and policymaking.	John Hopkins University. Indicators by Topic Area [Internet]. Performance, Monitoring, and Accountability 2020. c2019. https://www.pma2020.org/indicators-topic-area (accessed October 2019)
Service Availability and Readiness Assessment*	The Service Availability and Readiness Assessment (SARA) is a systematic survey to assess health facility service delivery.	Service availability and readiness assessment (SARA) [Internet]. Geneva: World Health Organization; 2015. https://apps.who.int/iris/bitstream/handle/10665/149025/WHO_HIS_HSI_2014.5_eng.pdf;jsessionid=73CCE5D254713EC0DB776FACA32B417F?sequence=1 (accessed October 2019)
Service Delivery Indicators*	The Service Delivery Indicators (SDI) provides a set of metrics to act as benchmarks for the performance of schools and health facilities.	Service Delivery Indicators (SDI) [Internet]. World Bank Group; c2017. https://www.sdindicators.org/ (accessed October 2019)
Service Provision Assessment*	The Service Provision Assessment (SPA) survey is a health facility assessment that provides a comprehensive overview of a country's health service delivery. SPA surveys fill an urgent need for monitoring health system strengthening in developing countries.	The DHS Program - Service Provision Assessments (SPA) [Internet]. 2017. https://dhsprogram.com/What-We-Do/Survey-Types/SPA.cfm (accessed October 2019)

*Reviewed by PHCPI in 2014-15