

SUPPLEMENTARY FILE #3: FULL RESULTS

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SYSTEMS DOMAIN

A1. GOVERNANCE AND LEADERSHIP

A1.A PRIMARY HEALTH CARE POLICIES

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 47

EVIDENCE HIGHLIGHTS

We found an extensive number of publications related to primary health care policies. Highlights from the literature are captured under six themes, below.

1) EFFECTIVE NATIONAL PROGRAM POLICIES

- *Community-based deployment of PHC teams*
 - *Brazil:* The Family Health Strategy (FHS) was begun in 1994 and is comprised of multidisciplinary teams that are assigned a panel of approximately 3500-4000 people in primarily disadvantaged metropolitan areas.(1) PHC teams consist of at least one physician, nurse, medical assistant, and four to six trained community health workers (CHW) to deliver services at community-based clinics and make regular home visits as well as conduct neighborhood health promotion activities. Between 1999-2007, hospitalizations in Brazil for ambulatory care-sensitive chronic diseases (cardiovascular disease, stroke, and asthma) fell at twice the rate of decline in hospitalizations for all other causes.(2) In municipalities with high FHS enrollment, chronic disease adjusted hospitalization rates were 13 percent lower than in municipalities with low enrollment. Access and quality have improved compared to traditional health posts and centers as well as some private sector facilities. A second study confirmed significant reductions in ambulatory care sensitive hospitalizations within areas that had high FHS coverage.(3) Rapid program expansion led to a shortage of doctors that was subsequently addressed through the *Mais Medicos* program that recruited doctors to work in underserved areas. The decentralized nature of the program often leads to variation in the quality, staffing, and available supplies of teams. Finally, coverage is incomplete throughout the country – roughly only 50-60% of people are covered by it.
 - *Costa Rica:* Formally started in 1994, the Equipo Básico de Atención Integral de Salud (EBAIS) model of PHC includes 1) integration and alignment of public health services and PHC delivery within one ministry, 2) multi-disciplinary teams consisting of a doctor, nurse, CHW, pharmacist, and clerk to collect data, 3) geographic empanelment to catchment areas of around 5000 people and 4) strong measurement and data feedback loops. The components are interconnected and have been effectively implemented on a national scale to provide highly equitable and effective chronic disease management, prevention, and acute care services at a reasonable cost.(4)
 - *Ethiopia:* Over the last 10 years, the government of Ethiopia invested in PHC through the Health Extension Program (HEP), training/deploying nearly 40,000 community health extension workers (HEW) across the country. Two HEWs cover approximately 5000 patients, through health posts at every village, providing a basic package of curative services

- along with health promotion and disease prevention.(5,6) Access to basic care has increased, and child mortality at the population level has decreased over the course of the program. However, inefficiencies in HEW time allocation, changing disease burdens, and increase in service delivery needs remain a challenge.
- Iran: Starting in the 1970s, Iran began providing preventive and curative services through new village health houses and training of CHWs (behvarz) to reduce the improve equity and health. Behvarz are local, paid pairs of health workers who address the basic health care needs of the rural population. The village health house is the most peripheral health delivery facility in rural areas; providers are empanelled to a target population of about 1500/house.(7) The program has been associated with increased access to care and reductions in avoidable mortality.(7) Integration of health services and medical education reform undertaken in the 1980's through the National Health Network program.(8) A Family Physician Program was established in 2005 but not scaled nationwide. Fragmentation of care, rising costs, and unclear leadership structures remain important challenges.(8)
 - *Expanded access through national insurance linked to community-based PHC teams*
 - Thailand: Thailand's PHC reforms over the past 40 years were largely directed towards two major goals: 1) protecting the poor from unaffordable health costs and improving financial accessibility of primary health care; 2) expanding the geographic accessibility to effective primary health care. Thailand's Universal Coverage Scheme built on previous incremental expansions to more fully cover economically vulnerable populations and allow them to access care through contracted public and private PHC providers.(9) A multi-decade effort to improve health worker availability in rural areas through rural doctor placement programs and a national community health volunteer network significantly improved access to PHC teams.
 - Mexico: In 2003, Mexico implemented an expanded insurance scheme known as Seguro Popular to provide free access to an explicit package of health care services to more than 50 million uncovered people. By 2012, the package included all PHC related services and 85% of hospital services for the poor.(10) An integrated primary care program known as PREVENIMSS to address non-communicable diseases (NCDs) was initiated nearly concurrently to the insurance scheme.(11) Substantial increases in access to care, reductions in out of pocket payments, improved NCDs outcomes and disease-specific mortality have been documented. Ambulatory-care sensitive admissions did increase (likely related to pent-up demand), and some NCD targets remain unchanged or worsened.(11)
 - Ghana: The Community-based Health Planning and Services (CHPS) was created in 1994 with the aim of reducing barriers to geographical access by deploying trained and salaried nurses as Community Health Officers and bringing them closer to communities. These nurses provide door-to-door services (preventative, curative, and promotional health services) for the catchment area of their "CHPS zone," as well as basic services at community-based CHPS compounds.(12) Subsequent reforms included improved community-based services, development of service quality, ensuring access to essential equipment and supplies, building capacity for budgeting and planning, and strengthening leadership.(13) Additionally, insurance expansions through the Ghana Health Insurance Scheme have provided risk protection and expanded access to care for many Ghanaians, but uptake is still somewhat limited, reimbursements are delayed, and service provider concerns are still often unaddressed.(14)
 - *Expanded access through infrastructure expansion and a basic package of services*
 - Afghanistan: A Basic Package of Health Service expansion began in 2004 to improve rural access to care and service availability.(15) Thousands of facilities were built (70% increase

in functioning PHC facilities), and utilization expanded from 2 million to 45 million visits between 2004 and 2011. Systems management centrally occurred through an innovative balanced scorecard approach.(16) Nonetheless, gains have been fragile and major access and service delivery quality gaps remain in many parts of this war-torn country.

2) BUNDLING SERVICES THROUGH INTEGRATED PROTOCOLS

- Integrated community case management (iCCM) is delivered by community health workers at the community level to provide treatment for 1) childhood pneumonia with antibiotics, 2) diarrhea with zinc and oral rehydration salts, and 3) malaria with artemisinin combination therapy; identification of severe acute malnutrition and home visits for newborns are also bundled.(17) iCCM facilitates geographic through the delivery of services directly to communities. Case studies in Burkina Faso, Kenya, Malawi, Mali, Mozambique, and Niger suggest that prior strong commitments to PHC supported iCCM policy. Countries with existing CHW programs adopted iCCM more easily. Critical stakeholders included technical officers within the Ministry of Health; there was often resistance among policy makers focused on CHWs treating complex conditions. Policy formulation was lengthy and long-term financial sustainability is unclear in some countries.

3) INTEGRATION WITH THE PRIVATE SECTOR

- A systematic review examining five models of public system integration with the private sector found five overarching strategies: 1) commodity social marketing, 2) social franchising, 3) contracting 4) accreditation 5) vouchers.(18) Overall there was a dearth of evidence on these models, but early evidence suggests that they may improve access, utilization, and possibly quality.

4) TASK SHIFTING

- A systematic review of studies looked at task shifting for management of NCDs in LMIC as a means of overcoming physician shortages.(19) Available evidence suggests that non-professional health workers can effectively screen for NCDs in the community, treat patients according to protocol for conditions such as asthma, hypertension, diabetes, depression, and epilepsy. Some studies show improved access to healthcare at community level. A few studies showed improved disease outcomes. Enablers of task shifting included: training, provision of algorithms, protocols, guidelines, and availability of drugs; barriers included irregular drug supply, poor staff retention, and unavailability of equipment.

5) DECENTRALIZATION

- A systematic review of the effects of decentralization of the health system in LMIC included 54 studies from 26 countries.(20) Literature suggests that decentralization should target interventions to local needs, manage resources more efficiently, and be more accountable. The authors grouped aspects of the health system that could be decentralized: governance, financing, medicines and equipment, health information, human resources, and service delivery. While some quantitative studies found overall positive effects of decentralization, qualitative studies found mixed results based on the aspect of the system being decentralized. Stakeholders held generally less positive views when decentralization addressed four or more types of decentralization compared to three or fewer types. Managerial skills were found to be a challenge associated with decentralization.

6) COMPREHENSIVE, RIGHTS-BASED, PARTICIPATORY APPROACH

- A review of South American experiences with PHC since 1978 found that health system reforms in South America have focused on comprehensiveness with increased involvement of social movements and community organizations often concomitant with greater social, economic, and legal changes refocusing health as a human right.⁽²¹⁾ Five themes were identified: 1) incorporation of rights-based approach to health; 2) citizen participation; 3) intersectoral collaboration; 4) service comprehensiveness, and 5) equity orientation of health systems. Comprehensiveness was promoted when medical/hospital oriented systems were replaced with community based approaches and there was professional development and cultural competency training of staff. Other factors influencing comprehensiveness include: multidisciplinary teams, successful promotion of various conceptions of health and illness, and coordinated care through all stages of life.

EVIDENCE GAPS

- A large amount of often high-quality literature is available on PHC policy. The literature is concentrated on a few frequently documented country examples that are often considered to be positive outliers. Comparatively less literature is available on PHC policies in most African, Asian, and Pacific LMIC.
- Most well conducted policy literature analyzes predominantly public PHC systems. Evidence on more fragmented and mixed public-private PHC systems is lacking.
- While a few methodologically sound papers rigorously assess the impact of PHC policy mechanisms on attributable changes in care outcomes, utilization, and user experience, more evidence from more countries is needed.
- Further evidence is also needed at a disaggregated or local level; more qualitative implementation or mixed methods evidence here would be useful.
- How to encourage participation of private providers through contracting and other mechanisms is important to better understand.

A1.B QUALITY MANAGEMENT INFRASTRUCTURE

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 4

EVIDENCE HIGHLIGHTS

- A study on Malawi's monitoring and evaluation capacities for iCCM in four districts found generally inadequate data quality controls, data entry verification, protocols for addressing errors, and a lack of procedures for data collection, entry, analysis, and management.⁽²²⁾ The authors concluded that prioritizing data management with documented protocols, and additional training and approaches to create efficient supervision practices may be necessary improve iCCM data quality.
- Costa Rica's EBASIS teams each cover a geographic catchment area, collecting vital registry and clinical data from their empaneled populations.⁽⁴⁾ They visit each household at least once a year in addition to collecting clinical process and outcome data. These data are then sent to the health area (equivalent to a county) and then to the Caja Costarricense de Seguro Social (or CCSS, the social security agency). The CCSS collates data and feeds that information back to the health areas and thence to the EBASIS team managers, so they can assess their performance against targets established through management contracts with the CCSS. If a health area falls short of its goals, it creates an action plan to achieve its target the following year.

- The Lebanese Ministry of Public Health began a PHC accreditation program to improve quality in 2009. A 2014 assessment of staff and director perceptions found that over 97% of respondents agreed that accreditation was worthwhile. Qualitative analysis suggested that accreditation improved staff and patient satisfaction, and strengthened PHC center relationships with stakeholders.(23) Strategic planning around quality, focus on customer satisfaction, and staff involvement were associated with higher quality perception. Constrained financial, human, and infrastructure resources hampered the effectiveness of accreditation.

EVIDENCE GAPS

- Comparatively little is published about the contours and constructs of effective quality management in PHC systems.
- In particular, amongst countries balancing vertical quality reporting requirements, it is unclear how to best set up PHC quality management systems, and how to best train staff to generate and accept data reports within a closed feedback loop.

A1.C SOCIAL ACCOUNTABILITY

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 3

EVIDENCE HIGHLIGHTS

- A review of 37 social accountability programs in 15 countries found that provider receptivity to citizens' demands for better health care is mediated by provider perceptions of the legitimacy of citizen groups, and the extent to which citizen groups provide support to health providers.(24) Some citizen groups promoted political or bureaucratic accountability channels but the effect on provider responsiveness to these strategies was mixed. Providers were more responsive in contexts they themselves identify as activists, in systems where providers more often depend on citizens' expertise and capacities, and systems where providers have perceived ability to change the system.
- A review of accountability mechanisms and relationships within health systems found that bureaucratic accountability mechanisms often constrain the functioning of external social accountability mechanisms.(25) Organizational cultures characterized by supervision and management systems focused on compliance to centrally defined outputs and targets may constrain front line managers and health providers from adequately responding to local patient and population priorities.
- Enactment of Mexico's Seguro Popular system was associated with demonstrably higher increases in service utilization by members of disadvantaged indigenous populations than other groups, suggesting that universal expansion in coverage can preferentially benefit marginalized populations.(26)

EVIDENCE GAPS

- It is unclear how to best use social accountability mechanisms for improvement in contexts where providers are neither empowered nor interested in listening to external inputs.
- The evidence cannot, or does not yet, quantify the impact of investing in social accountability initiatives on actual PHC performance. What are the best ways of studying this complex system dynamic?

A2. HEALTH FINANCING

A2.A PAYMENT SYSTEMS

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 30

EVIDENCE HIGHLIGHTS

- Figure 2 below lays out the basic contours of financing for PHC, from collection to service provision.(27) The four main payment mechanisms used and evaluated across LMIC include the following: budget systems (both global and line item that provide fixed payments per time increment), capitation (pre-payment for fixed services per patient per time amount), fee for service provided, and pay for performance systems. Case-based rates and mixed modalities are less common.
- A recent (2017) large systematic review and meta-analysis assessed the impact of different payment methods on the performance of outpatient care facilities.(27) It included 21 studies from Afghanistan, Burundi, China, Democratic Republic of Congo, Rwanda, Tanzania, the United Kingdom, and the US of health facilities providing primary health care and mental health care. The authors analyzed three kinds of payment comparisons for which there was sufficient comparable data: (27)
 - 1) *Pay for performance (P4P) combined with some existing payment method compared to the existing payment method alone*: From 13 studies, the authors found that the extra P4P incentives slightly improved the health professionals' use of some tests and treatments and likely led to little or no difference in adherence to quality assurance criteria. P4P incentives were associated with little or no difference in patients' utilization of health services and little or no difference in the control of blood pressure or cholesterol.
 - 2) *Capitation combined with P4P compared to fee-for-service (FFS)*: One study found that a capitated budget combined with payment based on providers' performance, compared with FFS alone, reduced antibiotic prescriptions in primary health facilities.
 - 3) *Capitation compared to FFS*: Two studies compared capitation to FFS in mental health facilities in the United States. Based on these studies, the effects of capitation compared to FFS on the utilization and costs of services were unclear.
 - The authors concluded that there is moderate certainty evidence that P4P is associated with slight improvements in health professionals' use of tests or treatments, particularly for chronic diseases.(27) Little or no improvement in health services utilization or health outcomes was found. Key elements of P4P design should include choice of performance indicator, performance target, payment frequency, amount of additional funding available, and whether the payment level is sufficient to change provider behavior, and where the performance incentive will be allocated (individual providers, teams or facilities).
- Pay for performance mechanisms in LMIC for maternal and child health were analyzed in a recent large systematic review.(28) A wide variety of different structures for P4P were identified, and a large range of incentives provided. Overall, there was a positive effect on overall patient perceived quality of antenatal care and overall professional quality score of health centers. P4P did not have any effect on equipment quality, infrastructure index, or drug availability.
- A large systematic review examined progress towards equity in health care financing in LMIC by using benefit and financing incidence analysis.(29) These tools assess the extent to which public spending on health benefits the poor and provide a way to assess progress towards universal health coverage targets. Most of the studies included showed pro-rich distributions of health financing in sub-Saharan Africa and Asia Pacific due to a pro-rich distribution of, and orientation toward, hospital

services. The distribution of health financing benefits at the PHC level was pro-poor in Asia Pacific but not as much in sub-Saharan Africa. They also found that the distribution of health care payments is progressive in sub-Saharan Africa and Asia, meaning the wealthy contribute more. The authors conclude that although there is a push for UHC in LMIC, many countries continue to disproportionately focus funds on inpatient, tertiary, and specialized care in urban areas, all of which contribute to persistent barriers in equitable access to care.(29) Further, a lack of evidence of pro-poor distribution at the PHC level indicates that health care reforms to strengthen PHC may have had a limited impact on service delivery and utilization. An underlying reason for this might be that the PHC systems do not align with, or meet, the needs of the poor.

EVIDENCE GAPS

- Understanding the benefit of hybridized models of financing (FFS + P4P or Capitation + P4P), instead of polarized models (FFS versus capitation) is necessary.
- Understanding the impact of P4P or capitation on top of budget-based mechanisms (especially line item budgets for health worker salaries) is critical.
- Better understanding elements of strategic purchasing such as gatekeeping in LMIC is necessary (some information is available from upper middle-income countries, but little from low and low-middle income).
- More well designed comparisons of different payment methods for outpatient health facilities in LMIC directly comparing different designs (e.g. different payment levels) of the same payment method (e.g. P4P or FFS) are needed.
- Optimal design considerations for P4P/results-based financing are still unclear.
- Which payment models promote equitable care is also unclear.

A2.B SPENDING ON PRIMARY HEALTH CARE

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 7

EVIDENCE HIGHLIGHTS

- [Data collected from PHCPI on PHC spending per capita](#) shows a range between \$5.80 in Comoros to \$145 in Namibia (Figure 1).

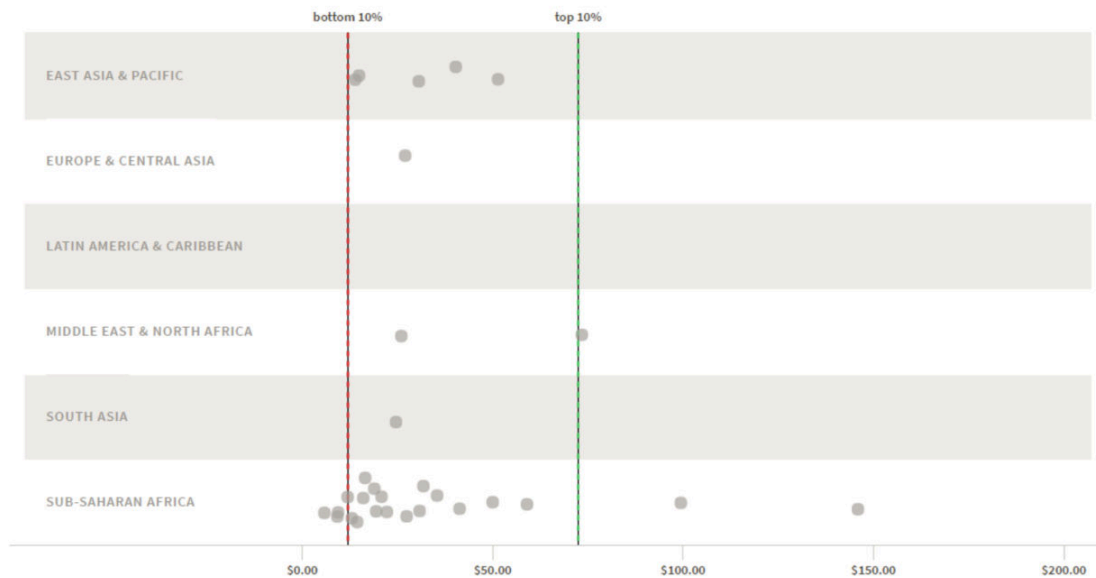


Figure 1: PHC spending per capita (www.phcperformanceinitiative.org)

- PHCPI data on PHC spend as a proportion of total government health expenditure shows a range between 2% in Sri Lanka to 56% in Cote d'Ivoire (Figure 2).

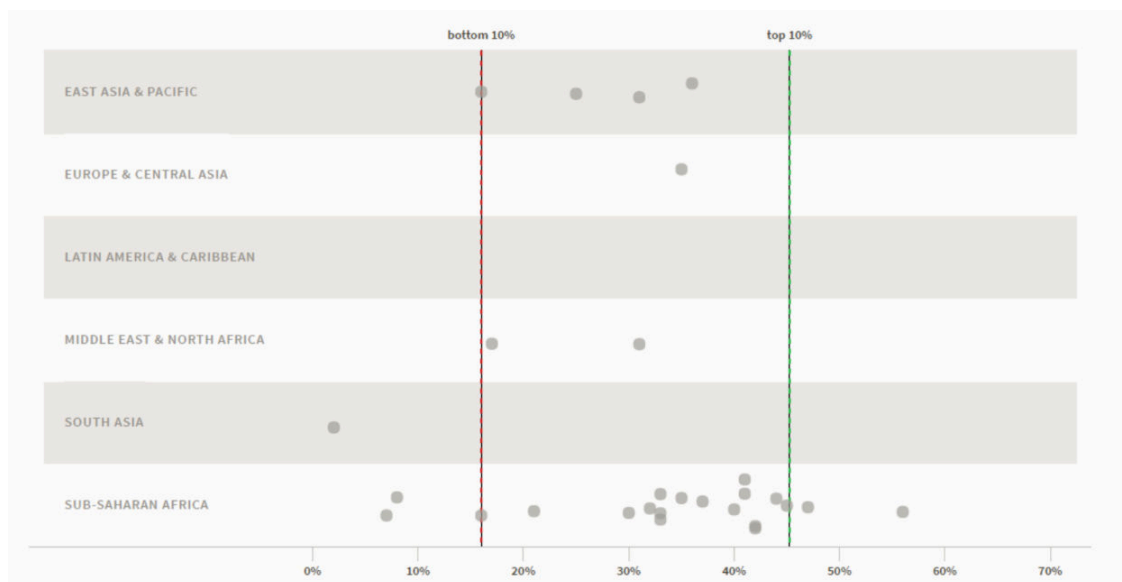


Figure 2: PHC spending as proportion of total government health expenditure (www.phcperformanceinitiative.org)

- A systematic review of 39 studies across LMIC found two main types of studies assessing equity of public resource allocation: those that consider the use of *need-based allocation* algorithms and those

that examine the *distribution of benefits from public health spending across socio-economic groups*.⁽³⁰⁾ Included studies suggested that need-based resource allocation algorithms likely enhance equity across geographic areas. The evidence for distribution of benefits by SES groups was mixed. Existing evidence suggested that public spending in primary health care is more equitable than spending in secondary care.

- Total health spending increased across the six countries reviewed in the Countdown to 2015 case studies (Afghanistan, Ethiopia, Malawi, Pakistan, Peru, and Tanzania) since 2000.⁽³¹⁾ Economic growth, government stability, political commitment to health, rapid economic growth, community engagement, decentralization efforts, and targeted anti-poverty programs with a clear focus on RMNCH all led to improved outcomes. Reliance on external funding and high out of pocket spending remain key challenges. Improved resource-tracking systems will help to assess where countries should best invest resources focused on quality improvement.

EVIDENCE GAPS

- More recent, and more widely available, country level and disaggregated data is needed on PHC spending levels.
- Further research is needed about optimizing resource allocation mechanisms within the context of varying health systems in order to promote equity of outcome.

A2.C FINANCIAL COVERAGE

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 10

EVIDENCE HIGHLIGHTS

- A large systematic review assessed factors associated with community based health insurance enrollment in LMIC.⁽³²⁾ Low income levels and financial resources were major factors affecting enrollment. Inadequate existing service delivery quality (i.e. stock-outs, poor healthcare worker attitudes, long waiting times) was associated with low community based insurance coverage. Trust in both the insurance scheme and healthcare providers also significantly influenced enrollment. Educational attainment (less educated willing to pay less), gender (men are willing to pay more), age (younger are willing to pay more), and household size (larger households are willing to pay more) also influenced enrollment. Community-based health insurance schemes may be helpful in the short term to improving rural and informal workers' access to health services. But lack of funds, poor quality of care, and lack of trust are major reasons for low financial coverage in LMIC.
- A recent study assessed UHC coverage for adults (aged 50+) with chronic illness in China, Ghana, India, Mexico, Russia and South Africa.⁽³³⁾ Amongst 16,631 participants with at least one diagnosed chronic condition, access to basic chronic care ranged from 21% in Mexico to 48% in South Africa. Access rates were unequally distributed and worse for the poor people, except for South Africa where PHC is free to all. Rural residence did not affect access. Catastrophic out-of-pocket expenditure ranged from 15% in China to 55% in Ghana. Financial hardship was more common in poorer countries. Insurance was associated with increased access to care, but did not fully protect against financial hardship.
- A systematic review of user fees in LMIC found that introducing or increasing fees has a generally negative impact on health services utilization, especially preventive services.⁽³⁴⁾ Some evidence suggests that when implemented with quality improvement of health services, these combined interventions can be targeted to increase use of necessary curative care. Removing user fees

generally increases the utilization of often desirable healthcare services. However, initially there is no change in uptake, and utilization often increases only gradually. When user fees are decreased, there is an increase in the use of preventive and curative healthcare services, ranging from a very small to a large increase. Most of the included studies suffered from significant methodological shortcomings.

EVIDENCE GAPS

- How to best sequence financial coverage expansions with service delivery reforms in PHC is still unclear.
- Finding the best types of insurance mechanisms for mixed public/private systems, and generating the right contracting mechanisms is under-studied.
- Building the right coverage schemes to induce utilization of preventive and first contact PHC (avoiding bypass) is important to understand.

A3. ADJUSTMENT TO POPULATION HEALTH NEEDS

A3.A SURVEILLANCE

NUMBER OF ARTICLES TAGGED TO TOPIC: 7

EVIDENCE HIGHLIGHTS

- Surveillance systems are an essential component of resilient health systems, and necessary for responding to all types of health shocks—whether rapid shocks (for example, Ebola, natural disasters, or terror attacks), gradual shocks (for example, epidemiologic transitions), or sustained chronic stresses (for example, drug and health workforce shortages).(35) Surveillance can be bolstered by functioning vital statistics resources, robust local communication networks, population trust in the health system, and platforms for community dialogue.
- In Brazil, CHWs play a significant role in surveillance through data collection and identification of local health needs. However, variability within the country highlights the need for strong supervision.(36)
- Costa Rica provides an example of how well designed data collection tools and full integration of community-based providers into health care teams can enable the collection of data for local and national surveillance purposes.(4)
- While surveillance systems (routine and for emergencies) exist, ensuring that they are continuously functioning and effective remains a challenge in some settings.(37) For example, a qualitative assessment of the Ghanaian surveillance system in the wake of a threatened Ebola outbreak revealed that the system is hampered by a lack of equipment, screening tools, staff, isolation centers, and regular data feedback.(38) These findings highlight the complex network of inputs required to make surveillance systems effective.

EVIDENCE GAPS

- A review of non-communicable disease surveillance systems found that high-income countries were 16 times more likely than low and middle-income countries to have population-based mortality data for non-communicable diseases.(39) Key to the success of high-income countries has been the

application of surveillance systems in the primary health care setting. More research is needed to understand which surveillance approaches are feasible and effective in LMIC, and how PHC providers can be involved to produce real-time data.

- Effective responses to natural and man-made disasters are dependent on strong surveillance systems. However, more research is needed to identify PHC-specific disaster indicators, including the impact of a disaster on the PHC system itself. (40)
- Data feedback loops are essential to surveillance systems. More research is needed about the optimal ways to conduct data feedback to lead to data use, including how to effectively integrate eHealth and better leverage existing routinely collected data.
- More work is needed to define, validate, and ensure the resiliency of surveillance systems, as well as to create a parsimonious measurement tool for system resilience. (35)
- There is a current lack of evidence regarding mechanisms to capture the voices of patients and communities in routine surveillance systems.

A3.B PRIORITY SETTING

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 7

EVIDENCE HIGHLIGHTS

- Costa Rica's surveillance and primary health care team-based data collection system produces comprehensive population-level data that can be aggregated from the local to the national level. This data—combined with a national commitment to data use—enables effective priority setting and targeting of resources to the areas most in need. (4)
- Priority setting is dependent on effective community engagement (locally and nationally), and innovative approaches have been tested (ex. Internet-based, citizens action groups) but evidence on how to effectively scale these approaches and integrate into national priority setting is needed. (24,41)
- Data to inform priority setting should include a range of sources, including health, service utilization, and health financing and be disaggregated by wealth, allocation (hospital versus PHC) and geography to measure inequity. (29)
- A review of an intervention to improve evidence-based policy making in Argentina, Bangladesh, Cameroon, Nigeria, and Zambia found that research was more likely to be incorporated into policy when policymakers are interested and informed, and research is timely and easy to understand. Simply presenting information to policy makers was found to be ineffective. (42)
- Ensuring that policy is evidence-based and incorporates emerging resources and best practices requires a series of steps and meaningful engagement between policy makers and researchers, and has been successfully done in diverse settings. (42,43)

EVIDENCE GAPS

- A recent study described the challenges encountered when adapting a Tanzanian tool for decision-making based on burden of disease at the district level to the Ghanaian context, including challenges that were technical, implementation-based, and organizational. This work highlights the additional knowledge needed to be able to effectively adapt and implement tools from one country to the next. (44)

- A common challenge faced by countries is how to design information systems that are able to ensure interoperability from a wide range of data sources in order to inform priority setting.
- Additional work is needed to understand how best to monitor and communicate the effectiveness of priority setting decisions for planning purposes and in response to emerging diseases/outbreaks.

A3.C INNOVATION AND LEARNING

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 5

EVIDENCE HIGHLIGHTS

- In Sierra Leone, innovation and a willingness to adapt and rapidly implement promising practices from other countries responding to the same Ebola crisis at the national level was important for enabling and supporting local response (for example, the replication of community care centers). (45) This experience and others have shown that the integration of both effectiveness and implementation outcomes is important to drive ongoing learning and creation of replicable packages to accelerate responses to emerging system stresses.
- In Costa Rica, long-term health system innovation required leadership and commitment at the highest levels from all involved agencies; engagement with the community, providers and decision makers; realistic expectations for the timeframe of success; reliable data to assess progress; and a willingness to continue to adapt as needed. (4)
- A review of the sustainability of health system interventions in sub-Saharan Africa found that community ownership and mobilization as well as adjustment to social norms and values were facilitators of innovation sustainability. The authors propose a framework that includes the intervention, the broader socio-cultural context, organizational factors, and the influence of time to support policy makers to design sustainable innovations from the outset. (46)
- Kruk and colleagues profiled two “homeostatic innovations” in response to health system stresses—the influx of refugees into Lebanon and repeated natural disasters into Indonesia—that contributed to the resiliency of these countries’ health systems. (35) Successful resilience efforts in both countries hinged upon rapidly mobilized public and private sector actors to respond to crisis, and establishing nodal data coordination and surveillance efforts to mitigate further health shocks.

EVIDENCE GAPS

- What are the individual competencies, organizational capacities, and systems needed to ensure that leaders can be flexible and adapt to changing health needs? How, if at all, do these factors differ between responses to acute threats compared to slower, chronic changes? What are effective methods to build and sustain these factors?
- Appropriate measures of innovation sustainability are needed. (46)
- Positive deviance is a means of integrating emerging promising practices into innovative responses, but the issue is poorly explored in LMIC. (47)
- Systems to detect and then explore etiology of positive or negative changes at a sub national or local level in more real time to inform the need for or ideas for innovation are needed.

INPUTS DOMAIN

B1. DRUGS AND SUPPLIES

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 7

EVIDENCE HIGHLIGHTS

- Gaps in availability of drugs and supplies have been well documented at the facility and community levels across many countries. These gaps are associated with lower readiness, lower quality, and reduced ability to expand needed services.(48–50)
- Evidence from Ethiopia, Malawi and Rwanda shows that interventions to improve supply chains can be effective but require integration of product flow, data flow, and effective people into intervention design.(51) Success is more likely when the workforce is able and motivated to use data to continually monitor the system.
- A study from Kenya using standardized patients to collect medication samples for lab analysis found that 17% of prescribed medications did not comply with quality standards, highlighting that medication availability is only the first step in medication quality.(52)
- When done well, integration of eHealth can strengthen supply chain management and make processes more efficient.(53)

EVIDENCE GAPS

- How can new technologies best be integrated to strengthen supply chains, reduce stock-outs and wastage, and ensure responsiveness to emerging needs?
- What are best practices for ensuring appropriate pricing and quality of medications across all sources of care (including public and private facilities and pharmacies)?

B2. FACILITY INFRASTRUCTURE

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 3

EVIDENCE HIGHLIGHTS

- Ensuring adequate distribution of facilities requires a national policy and strategy and appropriate investments.(54)
- Infrastructure without adequate drugs and service delivery quality will not achieve the goal of universal PHC as patients will likely not access these facilities and, even if they do, population health outcomes will not improve.
- A focus on facility infrastructure expansion can increase geographic access to care, even in war-torn countries like Afghanistan or countries in perpetual political and environmental crisis such as Haiti.(50,55)

EVIDENCE GAPS

- What is the appropriate mix of facility types based on population, health needs, geography and burden of disease?

- How can private sector facilities be more efficiently mapped?
- How can private facilities be integrated into policies and strategies to determine needs for additional facilities?

B3. INFORMATION SYSTEMS

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 2

EVIDENCE HIGHLIGHTS

- A systematic review of systematic reviews of eHealth implementation found that several specific steps and processes strengthen implementation. (56) These include: selecting a technology based on its ability to be adapted; including end-users of the system during design; interoperability with other systems in use; incentives to reduce start-up costs at the facility level; standards and policies to guide implementation and ensure data safety; and critical inputs such as electricity and internet connectivity. However, these steps are often not followed.
- An eight-country study of primary care facilities found that most information systems are not designed to ensure continuity of patient information (such as through use of longitudinal medical records) and that even fewer have an electronic medical record able to ensure continuity and coordination of care.(48)

EVIDENCE GAPS

- What are effective approaches to ensure interoperability between data sources?
- Need to identify scalable and affordable approaches for effective planning of eHealth implementation.
- How can innovations in technology (solar power, mobile phones) be used to strengthen information systems broadly without waiting for major infrastructure changes?
- What are efficient and feasible approaches to build off existing eHealth technology to structure HMIS that are able to serve patients, providers, and managers?

B4. WORKFORCE

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 29

EVIDENCE HIGHLIGHTS

- While global standards exist on the number and type of health care workers per population, measures of national averages often miss inequity of distribution which require local solutions. (48)
- Ensuring human resources for health (HRH) in PHC will require leadership from the top levels as well as integrated approaches to training and community engagement. (57)
- Ensuring adequate HRH—particularly physicians—in rural areas and in the public sector more broadly remains a challenge. A number of solutions have been tried with varying impact including financial incentives, training providers from rural settings, mandatory service, stipends, etc. (58–60)
- Task shifting can be effective to address shortages of providers, but requires supportive supervision, adequate supplies and training.(12,36,61)
- Task shifting can work to fill HRH gaps when the cadre training (pre-service and in-service) matches the scope of services and is supported by a functioning health care system. (62,63)

- Community-based health workers can serve as valuable expansion of workforce through task shifting and expansion of promotion and preventive care but also require training, systems and work to intentionally integrate physically and culturally into facility-based care systems.(64) In addition, their roles may differ based on setting (for example, urban versus rural), even within the same country.(5)
- Posting and transfer—the deployment of HRH—is under-studied and under-theorized, and “best practices” in HRH management seem to have had little impact on the practice of posting and transfer.(65)

EVIDENCE GAPS

- What is ideal mix and number of providers based on different national and subnational contexts?
- What is the optimal role of community-based health workers and how can they best be integrated into the health care system?
- What is the appropriate role for informal providers and when and how should investments in them be made to ensure quality?
- What are the most effective and feasible approaches to ensure equitable distribution of HRH across different contextual and national settings?

B5. FUNDS

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 0

EVIDENCE GAPS

- Our searches returned no articles concerned with the availability of funds at the facility level. We hypothesize that this may be an artifact of the PHCPI Conceptual Framework, in which systems-level payment and financing and facility-level financial management are both represented as separate areas. Nevertheless, this lack of evidence is surprising and deserves further exploration.

SERVICE DELIVERY DOMAIN

C1. POPULATION HEALTH MANAGEMENT

C1.A LOCAL PRIORITY SETTING

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 7

EVIDENCE HIGHLIGHTS

- CHWs have spearheaded local priority setting efforts in a number of settings in LMIC. In particular, evidence from Brazil and Costa Rica shows that CHWs can help regularly collect the local data needed for priority setting, as well as ensure responsiveness (see below C1.d: Proactive Population Outreach).(4,36)

EVIDENCE GAPS

- How should local priority setting be measured?
- What are interventions (including for CHWs) to ensure effective data use for local priority setting and allocation of resources?
- What data are most actionable at the local level to inform local priority setting?
- How can community engagement be done most effectively to ensure that stakeholder voices are included in local priority setting decisions (see also Community Engagement, below)? For example, a review from Sarrami-Foroushani and colleagues on consumer and community engagement in health care did not identify any evidence-based approaches in which community engagement in health system design has resulted in more responsive systems.(66)
- How to ensure that local data collection results in data of sufficient quality to be useful for local and higher-level priority setting?(37)

C1.B COMMUNITY ENGAGEMENT

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 16

EVIDENCE HIGHLIGHTS

- The Community Health Planning and Services (CHPS) program in Ghana is a strong example of how to engage stakeholders from the community during the roll-out of a program to ensure that planning and service delivery is responsive to local health needs and that the stage is set for national scale-up. Successful strategies included recruiting nurses from nearby villages for CHPS facilities to ensure local engagement as well as appropriate social distance and community engagement and advocacy with local politicians to fund start-up costs. However, gaps in scaling community engagement have been noted.(12,13,67)
- Another randomized controlled trial (RCT) in Ghana showed that community engagement interventions that engage community groups in assessing healthcare quality can increase leadership and accountability and competent/capable workforce at the facilities. (68)

- Integrating community engagement into decentralization of health systems as a specific goal is important to achieving health outcomes.
- A qualitative study from Liberia found that—in the context of widespread distrust and fear of the health system during the Ebola outbreak—CHWs who were already engaged with the community offered a trusted source of care and strengthened resilience of the system. (69)

EVIDENCE GAPS

- What are the most effective ways to develop and support effective community engagement including at the facility level?
- How can the impact of community engagement on PHC delivery and outcomes be measured?
- How to sustain community engagement and its contribution?

C1.C EMPANELMENT

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 5

EVIDENCE HIGHLIGHTS

- Empanelment in Costa Rica based on geographic boundaries enabled continuity, comprehensiveness, and coordination of care services. (4) Similar results were seen in Brazil with multidisciplinary teams and geographic empanelment.(70)
- Empanelment is important for community-based health worker programs to define the group of patients for targeting their outreach work and service delivery, as well as to define denominators for measurement of population health indices and outcomes.(36)

EVIDENCE GAPS

- What are effective models of empanelment that can be implemented in different LMIC?
- What are the criteria and health systems reorganizations needed to implement, and how can success be measured?

C1.D PROACTIVE POPULATION OUTREACH

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 11

EVIDENCE HIGHLIGHTS

- Successful integration of community-based health worker programs into the health care delivery systems require supportive policy, engagement, resources, and political leadership. Conversely, expanding too rapidly, resistance from other cadres of health workers, poor incentive structures, lack of infrastructure and supplies, discrimination against community-based health workers, and communication structures that are hierarchical and/or parallel all hamper integration.(64)
- Effective models of CHW-provided services exist, many of which are associated with improved health outcomes in different settings.(71) These include routine home visits for education and motivation, group meetings, periodical outreach at a service delivery point, community-based case management, active care delivery and overall community empowerment. (46,72)
- In Brazil, training was shown to improved community perceptions of CHW performance. (73)

- CHW-driven proactive population outreach requires local facilities to be well functioning and offer supplies, referrals, and supportive supervision.(46)
- Expanding health care delivery activities beyond the physical facility is a mechanism of proactive population outreach and can lead to increased access to care.(13)

EVIDENCE GAPS

- How can the contribution of community-based health workers to PHC delivery, effective coverage, and outcomes be better measured and financed outside of systems with long experience and orientation toward these models?
- What factors promote CHW training and other support being prioritized and effective nationally?(36)
- How can effective models be adapted into other settings?

C2. FACILITY ORGANIZATION AND MANAGEMENT

C2.A TEAM-BASED CARE ORGANIZATION

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 13

EVIDENCE HIGHLIGHTS

- A global systematic review of service delivery integration found that multidisciplinary team formation was the second most common type of integration strategy.(74) MDT formation is often a part of a larger set of interventions that rely on integration of care packages for multiple conditions such as integrated management of childhood illness (IMCI).
- Limited evidence from LMIC does suggest that MDT is associated with improved continuity of team membership and leadership, improved team functioning, increased patient trust, and improved patient self-management.(74)
- Nurse collaboration and integration with other health workers can foster improved care for vulnerable populations in a culturally competent manner.(63)
- Multidisciplinary teams have been critical components of health system reforms in Costa Rica, Brazil, and Turkey.
 - In Costa Rica, MDTs consisting of a doctor, nurse, CHW, vital registry data clerk, and a pharmacist have been successfully deployed at scale through the EBAIS program—nearly 75% of all clinical consultations are provided by teams.(4) These teams are highly trained with clearly delineated roles and responsibilities, which enables them to integrate public health and preventive care services at the community level with clinical care in the facility to empaneled populations. Team structure enables data collection and performance monitoring, from local to national levels.
 - In Brazil, Family Health Teams (FHT) consisting of a general practitioner, nurse, auxiliary nurse, and CHW are the core of the Family Health Strategy (FHS), particularly in poor urban areas. Each team provides services to an empaneled population of 600-1000 families.(36,75) Coverage has increased but not achieved the same levels as in Costa Rica—only 53% of the eligible population in urban areas is covered. Training of CHWs is less formalized than in Costa Rica. While nurses are team leaders and coordinate CHW work, surveyed nurses in one large Brazilian city report their relationships with doctors as only partially favorable, and

- also report low control over work environment and only moderate organizational support.(76) In Porto Alegre, an RCT found that team-based care was associated with significant decreases in systolic and diastolic blood pressure, increased rates of controlled blood pressure increased medication adherence, and increased patient activity.(77)
- In Turkey, teams were deployed in Turkey through the Health Transformation Program. (78,79) Teams are also assigned to empaneled populations, and deployment led to increased utilization of primary care services. Implementation of the team model was supported through continuous data monitoring and feedback. Team-based care was associated with improved receipt of most preventive and some chronic disease care services, decreased specialty referral rates, and improved patient experience. (79)

EVIDENCE GAPS

- Beyond a few middle-income countries (Costa Rica, Brazil, and Turkey), a general paucity of evidence exists in low-income countries on MDT deployment and outcomes. However, within the context of well-studied integration initiatives like IMCI, MDT appears to be a key component.
- Little evidence is available on how to best train providers to become teams, and how to foster and maintain successful team culture. A large evidence base in high-income countries suggests that inter-professional team training is successful.
- It is clear that teams need not be led by doctors. However, the ideal leadership structure and composition of teams is not clear.
- The best ways to finance teams within LMIC settings deserve more study, as do pay for performance schemes that incent teams as opposed to individual clinicians.

C2.B FACILITY MANAGEMENT CAPABILITY AND LEADERSHIP

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 9

EVIDENCE HIGHLIGHTS

- A study of PHC managers in Thailand defined six areas of managerial competency: visionary leadership; assessment, planning, and evaluation; health promotion and prevention; information management; partnership and collaboration; communication.(80) Personality traits of managers were associated with these competencies, including: conscientiousness was positively related to all six areas; intrinsic motivation was related to all but assessment/planning and information management; extrinsic motivation was positively related to visionary leadership; assessment, planning, and evaluation; and communication; neuroticism was negatively associated with visionary leadership.
- Another study in Thailand involved the creation of competency scale for sub-district PHC managers.(81) These researchers found nine dimensions similar to the above study: leadership, communication, partnership, systems thinking and strategic decision making, organizational development and professionalism, emotional intelligence, proactive approach, financial planning, information management.
- Supportive supervision re-focuses management activities from inspection/accountability toward aiding the worker or at least removing barriers to accomplishing key tasks. Unlike other QI strategies, two major systematic reviews have been published on the association between supportive supervision strategies and PHC worker performance.(82,83)

- An early Cochrane review of nine mostly low quality studies from LMIC found small benefits of supportive supervision on worker performance, concluding that long-term effectiveness on PHC quality is still unknown.(82)
- A more recent systematic review found that supportive supervision was associated with modest but heterogeneous improvements in clinical performance of health workers such as knowledge level, adherence to clinical protocols, and consistency in record keeping.(83) The largest impact was seen on counseling and communication techniques. Improvements were difficult to sustain without other underlying quality improvement (QI) processes in place. A lack of managerial time and equipment/drug shortages hamper improvement. Supportive supervision is less effective at changing processes when solutions required external resources. Many studies showed improvement in morale, motivation, self-esteem and/or confidence; generally by providing opportunity for staff to share concerns, discuss, and be heard.
- Additionally, another recent systematic review identified supportive supervision as one of five approaches of quality/performance improvement interventions that have been used in LMIC: 1) supervision and supportive supervision; 2) mentoring; 3) tools and aids; 4) quality improvement methods; 5) coaching.(84) The authors concluded that there is a need for more comparative evidence; supervision seems promising but no clarity on type of supervision or strategy is best; mentoring and coaching need more evaluation; more data on which tools and job aids work for workers and supervisors; little is known about the optimal operational approach for any of these methods.

EVIDENCE GAPS

- A general dearth of high quality evidence exists around management competencies and training across LMIC. Part of the problem is definitional – core management competencies, scales, and measurement strategies are still in development.
- Of the five types of QI/improvement strategies, which are associated with more rapid (or any) improvement? There is a need for comparative effectiveness trials.
- The inconsistent findings in the two systematic reviews on supportive supervision and clinical outcomes can be explained either by a true lack of association, or by the poor methodological quality of the studies that were included in the review.
- Limited availability of adequate inputs appears to mitigate the effectiveness of supportive supervision. Can supportive supervision work in truly under-resourced environments (perhaps even to improve availability), or is availability truly a precursor to effective supervision?

C2.C INFORMATION SYSTEM USE

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 5

EVIDENCE HIGHLIGHTS

- A study of information and communication technology (ICT) in Brazil found relatively low levels of three dimensions of ICT: infrastructure, system implementation, and information use. There was a statistically significant association between quality of care provided to women and all three dimensions of ICT.
- A narrative global review of studies using mHealth to overcome HRH shortages in PHC was conducted.(60) "mHealth" refers to practices supported by mobile devices such as phones, patient

monitoring devices, personal digital assistants. mHealth projects were conducted for data collection, surveillance, training, health education, awareness, supervision, and monitoring. Benefits of eHealth included: faster data collection, transmission, and calculation and improved data accuracy; reduced supervisor workload through virtual supervision; improved attendance of health workers through GPS tracking; increased methods for patient feedback; and improved adherence to protocols through mobile-based algorithms. Challenges included sustainability, data security, cost-intensiveness, and worker privacy.

- A systematic review of systematic reviews on eHealth implementation identified a myriad of factors that hamper implementation, including slow network performance, poorly designed software and hardware, interoperability challenges, implementation barriers at the facility level, data storage and handling difficulties, and challenges with workflow implementation.(56) Better eHealth systems design should incorporate workflow and implementation analysis. Resistance to eHealth may be from health worker fear, dissatisfaction over new roles and responsibilities, and overall concern about process change. Leadership engagement and management support are critically important for implementation success. Staff need significant training and support, and implementation programs need to account for a period of transition.

EVIDENCE GAPS

- There is a large amount evidence and experience documenting system-level eHealth design and implementation. Much less literature exists around how to best implement and improve local use of ICT and eHealth to improve outcomes within PHC.
- How do emerging mHealth technologies interdigitate with new eHealth systems?
- How and what do ideal, low-cost, simple eHealth documentation and data records look like in low resource settings with high worker turnover and major infrastructure (electricity, hardware, and network) challenges?
- What does the interface between electronic health records and national data systems such as DHIS2 ideally look like?

C2.D PERFORMANCE MEASUREMENT AND MANAGEMENT

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 15

EVIDENCE HIGHLIGHTS

- Costa Rica's EBASIS teams use regularly collected data by the medical clerk during home visits, along with metrics specified by their management contracts, to assess performance against clear national and regional targets.(4) The central CCSS authority redirects resources toward underperforming or under-resourced areas.
- After five years of implementation in Afghanistan, a Balanced Scorecard for health systems was found to be an instrumental tool in ensuring system performance transparency and improvement at the national and regional level, and facilitated performance benchmarking and strategic management.(16) However, it was minimally used at the facility level and its results translated into little frontline utility.
- The Population Health Implementation and Training Partnership (PHIT) was a multiyear effort to strengthen health systems through performance improvement in Ghana, Mozambique, Rwanda, Tanzania, and Zambia.(85) Common QI approaches across the countries to ensure better data quality and utilization at the local levels included: strong feedback loops for data analysis at all levels

(region, district, sub-districts); supportive supervision for frontline staff; formal staff mentoring programs; training for managers around data use and analysis, and conducting operational research to understand performance variation.

EVIDENCE GAPS

- While the general theoretical framework is well-developed around how performance measurement should best be structured to improve performance, its adaptation to local contexts, especially frontline facilities, is rather limited in the literature
- There are notable exceptions to the above including examples from Costa Rica, Afghanistan, PHIT, and Thailand.
- More operational and implementation trials are needed to understand meshing national targets to local actions, and building feedback loops. Comparative effectiveness trials within a real-world setting may be useful as well.

C3. ACCESS

C3.A FINANCIAL ACCESS

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 13

EVIDENCE HIGHLIGHTS

- Removal of financial fees, when combined with geographic access resulted in increased use of services and reduction in mortality in a number of countries, although degree of impact varied and requires attention to other barriers which exist.(86–88)
- Community insurance schemes can also reduce financial barriers, reduce catastrophic spending and inequity of access.(89)
- Equity-focused interventions such as fee waiver cards can increase access, but need to be monitored to ensure the target population receives the support.(90)
- Conditional cash transfers designed to both incentivize and remove financial barriers have strong evidence for increased uptake, although more variable results for reduction in targeted mortality rates.(91)

EVIDENCE GAPS

- Evidence is needed around sustainability of existing models for ensuring financial access to care and a focus on equity.
- Successful balancing resources needed to reduce financial access with those needed to ensure quality care and sustainable care delivery systems
- As insurance schemes increase, feasible and effective ways to measure their impact on reducing financial access barriers across sub-populations and at the subnational and local levels
- Currently much of these data come from periodic national representative HH surveys or research studies. Research to identify feasible approaches to monitor interventions at the local level able to disaggregate to measure inequity is needed. Measuring the effectiveness to provide actionable data

C3.B GEOGRAPHIC ACCESS

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 12

EVIDENCE HIGHLIGHTS

- Ensuring adequate infrastructure focused on geographic at a national and sub national level is possible requiring national strategy and policy,(92) and when integrated with strategies to ensure inputs and quality is associated with improved access and outcomes.(15,86)
- Community-based health workers (CBHWs) can be effective in increasing geographic access, but only for a limited scope of services. Proactive outreach by other provider types (for examples, nurses in the CHPS system in Ghana) is also effective.(12)
- A nationwide study in Haiti has shown that ensuring geographic access independent of input, technical and experiential quality is not uniformly effective in ensuring receipt of timely and effective care.(50)

EVIDENCE GAPS

- The relative need (and how) to balance quality and geographic access for some conditions such as childbirth is largely unknown
- As the range of care expands to include NCDs, how to decentralize while maintaining quality of inputs, availability and competency at a national level is an area of active work, but limited evidence on interventions and system redesign was found

C3.C TIMELINESS

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 2

EVIDENCE HIGHLIGHTS

- Timeliness has been shown to be a challenge across a number of settings for initial primary care, including access to primary care on weekends referral for specialists, although the presence of assumed barriers (such as provider workload) are not always confirmed. (88,93)
- Expanding delivery of selected services by CBHW or expansion of other HWs outside the facility can increase timeliness, although evidence on the impact is sparse.
- System redesign can improve timeliness (integration, change in patient flow etc.), but more evidence of impact on patient outcomes is needed.

EVIDENCE GAPS

- Efficient methods for measuring timeliness to incorporate absolute values as well as expectations across different populations is needed to provide relatively real-time evidence for evaluating change is needed
- Effective interventions which improve timeliness (both in hours services are available and waiting time within the facility and for referrals) which also ensure experiential and technical quality are needed

- Impact of novel approaches to expanding access for specialty care (for continuity and comprehensiveness) on timeliness through innovations such as telemedicine
- See also highlights above

C4. AVAILABILITY OF EFFECTIVE PHC SERVICES

C4.A PROVIDER AVAILABILITY

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 6

EVIDENCE HIGHLIGHTS

- In Afghanistan, combining a performance-based financing scheme with a Balanced Scorecard approach had a positive impact on the amount of time providers spent with patients, although this approach showed less impact on other measures of provider availability.(94)
- A combination of strategies including training opportunities for providers in more rural areas, salary increases, and supporting infrastructure can increase availability in under-served areas. (92)
- Task shifting in a number of areas has increased availability of trained providers but requires adequate training and support (see C4.b Provider Competence).(19)

EVIDENCE GAPS

- What are the contextual factors that drive availability in different settings? What are the most effective intervention and implementation strategies for these challenges?
- What is the sustainability of interventions that have proven to be effective?
- What is the potential role of task shifting to increase provider availability?

C4.B PROVIDER COMPETENCE

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 32

EVIDENCE HIGHLIGHTS

- Gaps in competency have been described across countries, areas of care, process of care (for example, diagnosis, treatment, exam), cadres and health sectors.(95–97)
- The impact of supervision varies, potentially due to the quality and content of the supervision.(83,98–100)
- Protocol-based approaches that focus on a range of common conditions (for example, IMCI) are associated with improvement in technical competency but not always outcomes.(101) Adaption of this approach for adults (the Practical Approach to Care Kit, or PACK, in South Africa) also resulted in improvement and has been scaled to other countries requiring: local adaptation of guidelines; ensuring training was cost-effective (ex. distance vs. in-person); making job aids more interactive (ex. e-tablet, not paper); expanding roles so that all clinicians using PACK are able to prescribe; and integrated quality assurance mechanisms.(102)
- A global systematic review of care provided by mid-level providers versus doctors found that most outcomes of numerous interventions in the areas of maternal and child health and communicable and non-communicable diseases were similar when the interventions across training level.(62) Task

shifting when accompanied by training and protocols/guidelines (as well adequate supplies) can ensure competency of lower cadre providers in a range of areas, including NCDs.(19,62)

- Improving prescribing patterns through a range of interventions is achievable, although more cost-effective approach are needed.(103)
- There are a wide range of approaches to measure provider competency, including standardized patients, observation, chart review, vignettes, etc., but evidence is much less robust on the optimal approach in terms of feasibility, accuracy, and cost for different settings, patient type, and care areas.(96,104,105)
- System interventions such as service integration can be associated with better competency, as measured by process of care delivery.(74)

EVIDENCE GAPS

- A wide variety of factors have been associated with the quality of IMCI delivery across countries; however, these factors typically only explain a small percent of the variance seen.(49,93,101,106) More research is needed to understand how to ensure quality across contexts.
- While RCTs have demonstrated impact on some aspects of improving provider competence (for example, technical quality), contextual factors play a critical role in success or failure. To effectively scale-up these interventions, more research into how to measure and then adapt for these factors is needed.(107)

C4.C PROVIDER MOTIVATION

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 22

EVIDENCE HIGHLIGHTS

- Burnout and low motivation is common in a number of countries and can be measured using existing tools.
- Factors associated with higher or lower motivation have been described (typically cross-sectional studies) and include autonomy, respect, and organizational climate.(76,108,109)
- Similar work has been done for retention, which low motivation may negatively impact.(110)
- Interventions have not been found to increase motivation including: performance-based financing (PBF) combined with a balanced score card and other performance-tied incentives in many settings.(94,111)

EVIDENCE GAPS

- Interventions which are feasible and sustainable are needed, as are measures to understand the impact on care delivery, provider availability, and retention.

C4.D PATIENT-PROVIDER RESPECT AND TRUST

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 14

EVIDENCE HIGHLIGHTS

- In Brazil, facility infrastructure and resources—while important for coordination and access—were not associated with higher user reports of respect for cultural practices.(112)
- A systematic review of service integration found that integration led to higher patient reports of respect.(74)
- A systematic review of women’s satisfaction with maternity care services found that lack of respect is associated with lower satisfaction.(113) In turn, as work from Iran shows, lower satisfaction is associated with a greater chance of physician change, which results in less continuity and further reductions of trust.(114)
- Evidence from Afghanistan shows that poor trust and disrespect during maternity care services is associated with bypass or non-use of care.(115)

EVIDENCE GAPS

- Levels of technical and experiential quality including relationships do not always track together.(116) A better understanding of how to improve experiential quality including respect and trust is needed.(117)
- Technical quality is not always correlated with patient satisfaction and reported responsiveness.(93) Understanding this disconnect and how to routinely measure patient-reported experience, including trust, is needed.

C4.E SAFETY

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 4

EVIDENCE HIGHLIGHTS

- Unsafe practices in diagnosis and treatment (including quality of medications) is well documented.(52,97)
- Evidence from facility surveys in Ghana shows significant gaps in infrastructure, policies and completion of standard practices.(93)

EVIDENCE GAPS

- Evidence is needed on effective, feasible and scalable interventions to sustainably improve safety both in direct patient care and facility practices and environment. This needs to be across the range of PHC-delivery sources (community-based, facility, public and private).

C5. HIGH-QUALITY PRIMARY HEALTH CARE

C5.A FIRST CONTACT ACCESSIBILITY

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 12

EVIDENCE HIGHLIGHTS

- A review of patient experiences of care in six countries (Brazil, Colombia, El Salvador, Jamaica, Mexico, and Panama) found that more than half of respondents reported not having a regular

primary care provider, and between 30% (Brazil) and 60% (Jamaica) of respondents reported visiting the ED for conditions that they believed could be treated in ambulatory care setting. (88) Individuals who reported having more problems with PHC (including access) had a greater chance of reporting that their health system needed reform.

- In Brazil, individuals enrolled in the FHS were more likely to have seen a doctor than those with no health plan, but less likely than those with a private plan. (70) 75% of those enrolled in FHS reported a usual source of care while 67% and 76% reported so among those with no health plan and private health plan respectively.
- In Afghanistan, expansion of a Basic Package of Health Services led to a 70% increase in functioning PHC facilities and an increase in utilization from two million to 45 million visits between 2004 and 2011. (15) Removing user fees led to a 400% increase in utilization but did not impact perceptions of quality of care. (90)
- A recent systematic review of interventions in LMIC (half from Africa) to improve access to care for children under five identified multiple supply and demand-side interventions that have been tested, including delivery of services at or closer to home; service-level improvements such as integration of care; educational programs; ICT interventions such as text messages; and financial or other incentives. (118) Interventions that delivered services at or closer to home and text messages were in general associated with a significant improvement in relevant outcomes, while no consistent pattern could be determined for the other interventions.
- Establishment of geographically empanelled EBAIS teams in Costa Rica significantly improved regular access to care, and perceptions of access. (4)

EVIDENCE GAPS

- There is a plethora of intervention types for improving access to care, and perceptions of access, but more evidence is needed about which levers (expansion of coverage, community-based teams, removal of user fees, ICT, construction of clinics) should be used in which contexts.
- What are the best tools for measuring perceived access in LMIC, and how can they be incorporated into regularly collected data mechanisms?

C5.B CONTINUITY

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 11

EVIDENCE HIGHLIGHTS

- Among patients in Brazil who were hospitalized for an ambulatory care sensitive condition, those who were in the FHS rated their continuity of care slightly, but statistically significantly, higher than those not in the program. (119) Additionally, primary care centers in Brazil with more available services and better structure, equipment and supply availability, and information and communication systems were associated with better continuity of care. (112)
- A study from Iran demonstrates that high levels of visiting the same family physician are not necessarily associated with patient-perceived relational continuity. (120) Poor health information technology hinders continuity.
- Similarly, patient and provider perceptions of continuity may be influenced by different factors and are not always aligned. For example, primary care users in Dominica reported lower perceptions of continuity than providers did. (121)

EVIDENCE GAPS

- Outside of Latin America (especially Brazil) and Iran, there is relatively little data available on continuity measurement.
- Key questions remain on the impact of continuity to provider versus continuity to team or facility in terms of improving outcomes and perceptions of care, especially in low resource settings in LMIC.

C5.C COMPREHENSIVENESS

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 16

EVIDENCE HIGHLIGHTS

- PHC system reforms in South America since Alma-Ata in 1978 have focused on comprehensiveness through increased involvement of social movements and community organizations often concomitant with greater social, economic, and legal changes refocusing health as a human right. (21) Comprehensiveness was promoted when medical/hospital oriented systems were replaced with community based approaches and there was professional development and cultural competency training of staff. Other factors influencing comprehensiveness include: multidisciplinary teams, successful promotion of non-exclusively medical conceptions of health and illness, and coordinated care through all stages of life.
- A review of patient experience in six Latin American/Caribbean countries found significant gaps in comprehensiveness, including nearly half of surveyed patients using the emergency department for a condition they considered treatable in a primary care setting and over 30% reporting that primary care doctors do not solve most health problems. (88)
- In 2002, the Mexican Institute for Social Security implemented primary health care strengthening efforts aimed at integrating a comprehensive PHC-based approach to NCDs called PREVENIMSS using training, treatment, and documentation packages. A 2016 evaluation showed that mortality rates from nearly all targeted NCDs (ischemic heart disease, cerebrovascular disease, diabetes, breast cancer, and cervical cancer) declined for populations enrolled in the program compared to controls. (11)
- At least two programs have attempted to replicate IMCI for adult illnesses, including WHO's Integrated Management of Adolescent and Adult Illness (IMAI) and the Practical Approach to Care Kit (PACK, and PACK-PLUS) developed at the University of Cape Town. (102,122) In South Africa, trials of PACK have found improvements in prescribing, referral, screening, and improved patient outcomes for communicable and non-communicable disease. Barriers to widespread adoption of these methods include that adults present with many different diseases and etiologies compared to children, that adult and adolescent populations are challenging to isolate, and a lack of focus on improving healthcare at the community and policy level. If done well, methods like these could improve primary care delivery by integrated vertical programs, helping to standardize new protocols for chronic conditions, integrated acute and chronic care, and integrate preventive and therapeutic care.

EVIDENCE GAPS

- Incremental levels of comprehensive service line expansion are not well defined in LMIC. What is the right array of services in a given LMIC country that previously was organized around a few vertical programs? How comprehensive should PHC actually be?

- What are the best ways to integrated curative and preventive care within PHC facilities?
- What are the best ways to train staff to become more comprehensive in capacity and approach to the care of each patient?
- What is the relationship between expanded comprehensiveness of formerly limited PHC service and quality of care for those services? How should a system expand PHC comprehensiveness while maintaining adequate quality?

C5.D COORDINATION

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 11

EVIDENCE HIGHLIGHTS

- A qualitative study of coordination in Brazil and Colombia found two core emergent themes: 1) system design creates vested actors that can create conflict in configuring an integrated system, 2) factors related to organization of services and training of professions can influence coordination.(123) In Colombia, market incentives hindered coordination while in Brazil, economic incentives and insufficient capacity of municipalities reduced coordination. Fee for service was an obstacle for care coordination while a capitation payment system was a facilitator.
- Major coordination gaps were found across six Latin American/Caribbean countries.(88) Over 60% of patients said their primary care doctor does not help coordinate care (ranging from 51% in Mexico to 74% in Brazil), and nearly 25% of admitted patients required hospital readmission (12% in Panama to 33% in Jamaica).
- An emergency referral system was built in rural Northern Ghana to fill major coordination and infrastructure gaps.(67) An analysis of the program found that community engagement was a major factor in the success of the system, along with intersectoral collaboration with transportation authorities. Overall, emergency referrals increased which reduced reliance on PHC facilities that lacked the capacity to meet emergency needs for acute care.

EVIDENCE GAPS

- A dearth of evidence exists on the experience of care coordination within large, fragmented public/private systems in Sub-Saharan Africa and South Asia.
- What are the best ways to improve coordination and information transfer about transitions of care and referrals in fragmented systems?

C5.E PERSON-CENTERED

NUMBER OF ARTICLES TAGGED TO RESEARCH TOPIC: 18

EVIDENCE HIGHLIGHTS

- Large gaps in person-centered care have been documented in a wide variety of contexts.
 - In six Latin American/Caribbean countries, nearly half of respondents reported that their doctor was difficult to communicate with and did not spend enough time with them.(88) Over a quarter reported they were given an opportunity to ask questions, and that their doctor did not explain things well. Over one third thought their entire health system needed a major overhaul.

- In post-conflict Liberia, over half of patients were dissatisfied with the health system (similar formal and informal sector ratings).(124) Poverty, past trauma, reliance on informal health sector, and being dissatisfied with the last formal health visit were associated with decreased confidence. Geographic access had no association with satisfaction.
- Multiple studies have document factors associated with user-perceptions of quality and satisfaction.
 - A systematic review found multiple determinants of women’s satisfaction with maternal health care in LMIC, including structural factors (such as physical environment, availability of supplies, and availability of providers), process factors (such as waiting times, interpersonal behaviors like respect and kindness, privacy and confidentiality, perceived competence, and cognitive and emotional support, and maternal and newborn outcomes.(113) Interpersonal behavior was most widely reported as a determinant of satisfaction.
 - In rural China, increased doctor competence did not have a significant impact of perceptions of quality, however, household perceptions of quality did predict care-seeking behavior.(125)
 - In Ashanti, Ghana, respondents reported high trust in providers, despite negative views about a new capitation payment system that they believed to be politically motivated.(126) Another study in Ghana found non-significant differences in satisfaction between insured and uninsured patients.(127)

EVIDENCE GAPS

- State and country level estimates of person-centeredness are still largely unavailable for most countries in Africa and South Asia.
- Further exploration is needed to understand the lack of (or lag of) effects on patient experience amongst insured and uninsured patients.
- Better understanding is needed regarding the apparent lack of relationship between observed quality and care seeking behavior, as well as perceived versus observed quality.

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