Primary care research priorities in low- and middle-income countries

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Abstract

Purpose To identify and prioritize the needs for new research evidence for primary health care (PHC) in low- and middle-income countries (LMIC) about organization, models of care, and financing of PHC.

Methods Three-round expert panel consultation of LMIC PHC practitioners and academics sampled from global networks, using web-based surveys. Iterative literature review conducted in parallel. First round (Pre-Delphi survey) elicited possible research questions to address knowledge gaps aboutorganization and models of care, and financing. Round 2 invited panelists to rate importance of each question, and in Round 3 panelists provided priority ranking.

Results 141 practitioners and academics from 50 LMIC from all global regions participated and identified 744 knowledge gaps critical to improving PHC organization, and 479 for financing. Four organizational issues around effective transition of primary and secondary services, horizontal intergration within a multidisciplinary team and intersectoral referral; integration of private and public sectors; ways to support successfully functioning PHC professionals were proritized. Financial evidence priorities were: mechanisms to drive investment into PHC, redress inequities, enhance service quality, determine the minimum necessary budget for good PHC.

Conclusions This novel approach towards PHC needs in LMIC, informed by local academics and professionals, created an expansive and prioritized list of critical knowledge gaps in PHC organization and financing. It resulted in research questions, offering valuable guidance to global supporters of primary care evaluation and implementation. Its source and context specificity, informed by LMIC practitioners and academics, should increase the likelihood of local relevance and eventual success in implementing research findings.

Keywords

Primary health care; Developing countries; Economics; Organization and Administration; Knowledge; Research gaps

Abbreviations

HIC	High-income countries
LIC	Low-income countries
LMIC	Low- and middle-income countries
PHC	Primary health care
PHCPI	Primary Health Care Performance Initiative
WHO	World Health Organization
WONCA	World Organization of Family Doctors

Introduction

The 1978 Alma Ata Declaration called for strengthening of family medicine and primary health care (PHC) globally, particularly in developing countries.[1] As the speciality of family medicine has grown, so has its academic presence. Creation and dissemination of new knowledge is a hallmark of an academic discipline, and informs clinical practice and teaching. Academic family medicine plays a pivotal role in advancing PHC research. Many medical schools now include departments of family medicine, often broadening into PHC.[2] There has been corresponding growth in PHC research, indicated by the introduction of the Subject Heading 'Primary Health Care' in Index Medicus in 2010, with indexed journals focusing on general practice, family medicine and primary health care allocated to this subject.[3]

PHC research has predominately advanced in high-income countries (HIC).[4,5] Many low- and middle-income countries (LMICs) are still establishing family medicine as a speciality, and the relative immaturity of the discipline, combined with the dominance of research by bioscience agendas, and the greater capacity of HICs for funding and performing research, means that capacity and funding for research on LMIC PHC priorities is still limited. Research priority setting does occur in LMIC, but tends to be led by governments and international agencies with limited evidence of subsequent implementation.[6]

This study is embedded in a suite of work undertaken by Ariadne Labs to identify gaps in PHC research in LMIC, and develop research implementation plans for prioritized topics. Traditionally, policy makers often make decisions which fail to translate into effective change. The voice of health care providers and clinical academics has been badly lacking in much PHC policy to date, and yet is of immense value if initiatives are to have traction at a

community level. In line with the funder's criteria, we aimed to identify and prioritize the perceived evidence gaps for PHC practitioners and researchers about the organization of PHC, particularly different models of care, and the ways PHC systems may be financed.

Methods

The study design was a modified Delphi panel of PHC experts from LMIC. Participants were invited using our research team's collective extensive global networks, augmented by 'snowballing' sampling techniques.[7] We created a matrix of respondents to ensure that our panel represented diversity in gender, age, residing country, rural or urban location, role and discipline, and years of experience. Inclusion criteria were PHC practitioners and/or researchers residing in LMICs with internet access and with experience relevant to provide opinions on regional or national research needs in PHC organization and financing. Exclusion criterion was insufficient fluency in written English, as lack of time and resources precluded survey translation.

The survey was piloted among family doctors in WONCA leadership roles. The funder timeline allowed for three-months to recruit the expert panel and conduct one qualitative and two modified Delphi survey rounds, delivered anonymously to enrolled panellists using Qualtrics software.[8] Round 1 required panelists to generate research questions addressing knowledge gaps. Responses were collated, coded and synthesized to lists of questions presented in round 2 where these were rated for level of importance. In round 3, the top 16 questions for both organization and financing were ranked in order of priority.

Ariadne Labs is concurrently funding similar work on PHC quality and safety, policy and governance. Questions identified as belonging to these key areas were removed, and one

question on finance identified as more relevant to PHC organization was moved across. The four highest-ranking questions for organization and finance were selected for formulation of country-specific implementation plans by researchers in LMIC. In parallel, iterative literature reviews were conducted to ensure the generated questions were areas with genuine evidence gaps (reported elsewhere).

Statistical analyses were performed with SAS version 9.3 (SAS Institute Inc., Cary, NC). Ethics approval was obtained from the University of Auckland Human Participants Ethics Committee (18 January 2018 Ref 020630). Further details on each round are included in the Appendix.

Results

There were 141 enrolled participants from 50 LMIC from all global regions, with respondents from 40% of all MIC and 19% of all LIC (Figure 1). Table A (Appendix) shows the number of countries represented per region.

Table 1 shows the demographic characteristics of participants in each round. Round 1 generated 1229 questions for coding: 744 for PHC organization, and 479 for financing. Independent coding of the first 25 survey responses showed a high degree of consistency with a Cicchetti-Allison kappa co-efficient weight for organization κ=0·879 (95% CI 0.7345–1.000) p<0.0001 (almost perfect agreement), and for finances κ=0·611 (95% CI 0.3107-0.9105) p<0.0001 (substantial agreement). In Round 2, 36 questions on organization and 31 on financing were presented for rating. Once the ratings were summed, the top 16 questions in each area were presented for ranking (Table B, Appendix, shows the full lists of questions). After removing questions deemed more relevant to another components of PHC,

the top-ranked four in each area were selected for the development of implementation plans by researchers in LMIC (Table 2).

Discussion

The panellists generated over 1000 research ideas, synthesized to 36 organizational and 31 finance questions. The final four prioritized questions for PHC organization deal with primary / secondary care transition, horizontal intergration within a multidisciplinary team, integration of private and public sectors, and ways to support successfully functioning PHC teams. The finance questions address payment sytems to increase access and availability, mechanisms to encourage governments to invest, the ideal proportion of the healthcare budget, and factors to improve workforce distribution.

Relatonship to the literature

A focus on optimal team-based care, equitable access and integration across care sectors aligns with the WHO Framework for Integrated People-Centered Health Services, which advocates universal access to health services coordinated around people's needs.[9] It also aligns with the third Sustainable Development Goal on universal health and well-being.[10] Emphasising the position of PHC in the health system reflects the historic bias of many health systems towards reactive hospital based care, and the importance of horizontal links of PHC to other community-based sectors impacting on population health.[4] The Alma Ata Declaration today invites a move beyond health services' structure to how to organize them to advance health equity, and support people to actively participate in the maintenance of their health.[11] Our findings relate to key components of health systems, where LMIC need to evaluate and gather evidence of what works in their context.

A precursor to this work is the research priorities indentified by the Primary Health Care Measurement and Implementation Research Consortium.[12] Further, the Primary Health Care Performance Initiative (PHCPI) has introduced a framework to assess PHC performance in LMIC to help guide health reforms.[13] Many of the generated questions relate to required health system reform, and hence complement this work.

Strengths

A strength is the size and representation of our LMIC panel given the short time period available. Top-down decisions made by policy-makers often lack stakeholder engagement, and hence fail to translate into effective change The voice of, and indeed, the co-production of evidence by, health care providers and clinical academics is of great value if initiatives are to have traction at a PHC level.

In many LMIC, competing political and economic agendas, as well as the burden of disproportionally high demand/supply ratios, may limit evaluation of what works and what does not.[14] This study should inform PHC reforms, and prioritize research evaluation. Other strengths include our use of robust qualitative analysis methodology, with a high degree of inter-rater coding reliability and two Delphi rounds faciltating consensus of research question priorities.

Limitations

In keeping with the authors' professional contexts, most panellists were family doctors. Overall, LIC were under-represented compared to MIC. There was limited snowballing to non-medical professionals via international networks due to time restraints. Time and resources restricted us to English-only surveys, and the majority of African panellists came

from Anglophone countries. This also limited active authorship,with a bias towards Anglophone academics in HIC. This emphasizes the urgency of building and supporting academic PHC capacity and infrastructure in LMIC. Finally, organization and financing of PHC were separately approached, although some questions generated in one area fitted better in the 'brief' for another. This illustrates the inter-relatedness of the topics in the perception of the respondents, who may see the system as a whole rather than 'split' into different components.

Conclusion and next steps

The focus on integration of PHC between the public/private interface, secondary care and community services signals to policy-makers where attention is required, as does the need for new evidence on how to design models of care and finance PHC for equitable access.

The other phase of this study involved literature reviews which established that these questions have not already been robustly answered in the LMIC context, and gap maps were generated. Researchers from LMIC, selected from the panelists, have developed country-specific research implementation plans for prioritized questions, shortly to be presented at a forum attended by donors for consideration of funding these LMIC research teams to implement their proposals. Other agencies may also consider these findings, which will be disseminated back to the networks from which data were drawn – there may be possibilities to prioritise further work in additional settings.

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Conflict of interest statement

No author has any conflict of interest to declare.

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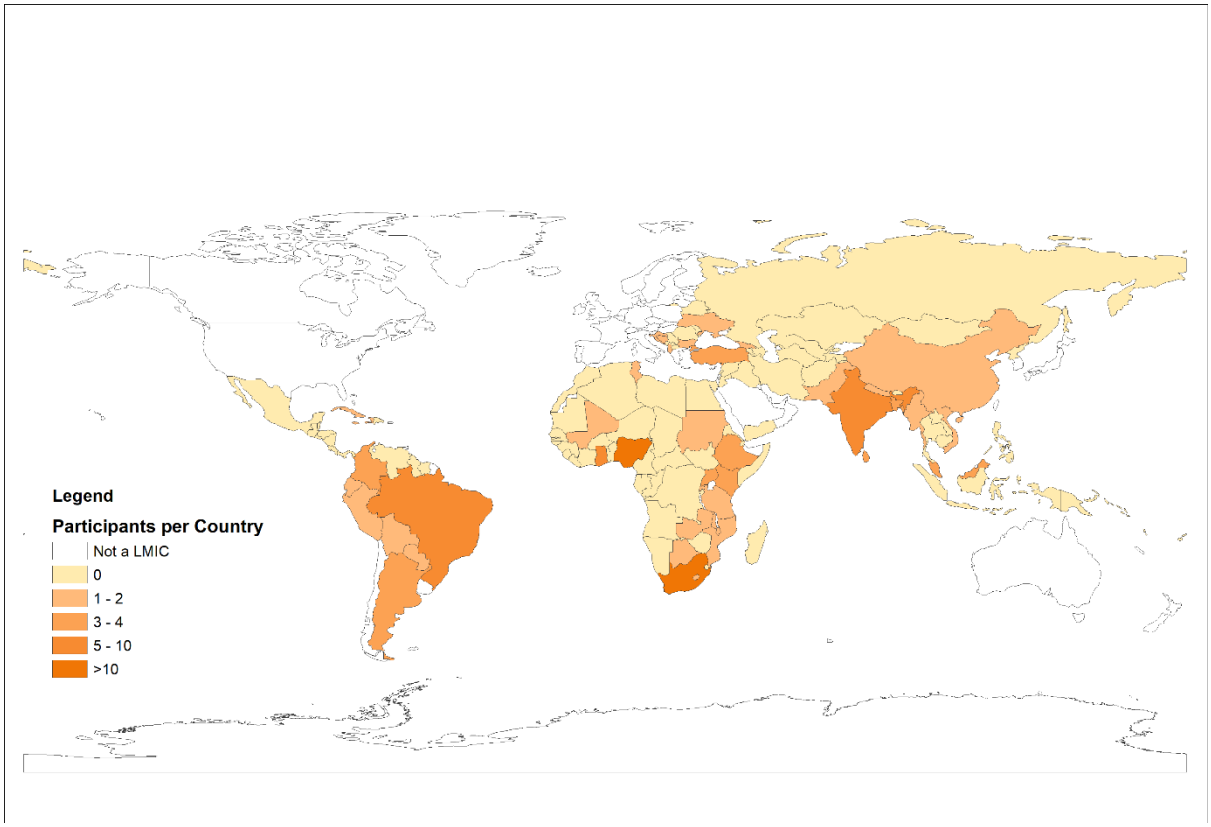

Figure 1: Countries of enrolled participants

Table 1 Demographics of panelists in the three rounds

	Round 1 N=70 n (%)	Round 2 N=84 n (%)	Round 3 N=68 n (%)
Gender			
Male	42 (60)	46 (55)	39 (57)
Female	28 (40)	38 (45)	29 (43)
Age in years			
Under 30	2 (3)	4 (5)	3 (4)
30-39	16 (23)	21 (25)	15 (22)
40-49	22 (31)	24 (29)	18 (27)
50-59	18 (26)	22 (26)	22 (32)
60 and over	12 (17)	13 (15)	10 (15)
Location			
Urban	50 (71)	62 (74)	52 (76)
Rural	20 (29)	22 (26)	16 (24)
Global region			
Europe	9 (13)	13 (15)	10 (15)
Africa	31(44)	35 (42)	31 (46)
Eastern Mediterranean	1 (1)	1 (1)	1 (1)
South Asia	10 (14)	11 (13)	7 (10)
Asia Pacific	6 (9)	6 (7)	6 (9)
North America	2 (3)	5 (6)	2 (3)
Caribbean			
South America	11 (16)	13 (16)	11 (16)

Health practitioner¥	**54 (77)**	**61 (73)**	**50 (74)**
Family doctor	52 (74)	57 (68)	46 (68)
Other doctor	1 (1)	3 (4)	3 (4)
Nurse	1 (1)	1 (1)	1 (1)
Years as health professional	54 (77)	61 (73)	50 (74)
<5	6 (9)	9 (11)	8 (12)
5-10	14 (20)	13 (15)	12 (18)
11-15	12 (17)	13 (15)	11 (16)
16-20	7 (10)	7 (8)	6 (9)
>20	15 (21)	19 (23)	13 (19)
Primary care academic¥	55 (79)	58 (69)	47 (69)
Junior academic role	24 (34)	37 (44)	20 (29)
Senior academic role	31 (44)	21 (25)	27 (40)
Years as academic	55 (79	58 (69)	47 (69)
<5	18 (26)	17 (20)	12 (18)
5-10	19 (27)	24 (29)	19 (28)
11-15	5 (7)	7 (8)	3 (4)
16-20	7 (10)	5 (6)	8 (12)
>20	6 (9)	5 (6)	5 (7)
Policy--maker¥	18 (26)	16 (19)	14 (21)
Years as policy-maker	18 (26)	16 (19)	14 (21)
<5	9 (13)	6 (7)	5 (7)
5-10	5 (7)	6 (7)	4 (6)
11-15	2 (3)	2 (2)	2 (3)

16-20	1 (1)	2 (2)	1 (1)
>20	1 (1)	0 (0)	2(3)

* WONCA global regions see http://www.globalfamilydoctor.com/AboutWonca/Regions.aspx

¥ Some panelists hold more than one role hence total >100%

Table 2 Four top-ranked research questions for PHC organization and financing (country-specific version)

	PHC organization	PHC financing
1	What are the factors to be considered and negotiated for successful referral from primary to secondary care and back (in Brazil)?	What is the most appropriate payment system to increase access and availability of quality PHC (in Croatia)?
2	How should care be horizontally integrated and coordinated among the multidisciplinary PHC team (in South Africa)?	What mechanisms have been found to be effective in persuading governments to invest in PHC ((in Kenya)?
3	How can the public and private sectors work more collaboratively to improve and integrate PHC coverage and prevent segmentation of the services (in Malaysia)?	What are the factors or incentives that can improve distribution of PHC workforce or equity of accessing PHC services (in the Caribbean)?
	How can different stakeholders (e.g. policymakers, health system managers, health workforce organisations, academic institutions and communities) support and assist the primary health care workforce and successful team functioning (in Nigeria)?	What is the ideal proportion of the total health care budget that guarantees the development of quality PHC (in Turkey)?

Appendix

Additional methods

The team's global networks approached included WONCA regional membership and its Working Parties; the Besrour Centre; the American Board of Family Medicine; the Robert Graham Center; Primafamed;, the North American Primary Care Research Group; the South Pacific Community; Global Health at the School of Population Health, University of Auckland; and the International Council of Nurses. LMIC were determined from the World Bank list of economies.[1] We used a modified Delphi technique whereby sequential surveys are answered anonymously by a range of relevant experts, with summarized feedback to enable reaching a consensus.[2] The first round was qualitative, aiming to generate as many ideas as possible, with the remaining two following a modified method, providing anonymized summaries of experts' responses to facilitate group convergence. Respondents had one week to complete each round.

In Round 1, participants were asked to generate research questions addressing gaps in knowledge in organization (e.g. workforce, models of care, use of teams, scope of care, transitions of care, government policy), and financing (e.g. equity, quality, safety, contracting of services, payment systems, scaling up / implementing best practice, essential and cost-efficient commodities). Enrolled participants were invited to respond through individual survey links. Questions generated by the panelists were extracted, collated and coded into domains and sub-domains for both key areas using a general inductive thematic approach. Two researchers independently coded the first 25 respondent replies and calculated Cicchetti-Allison kappa co-efficients to check for consistency in coding. Data were sorted by codes, collapsed, and synthesized to lists of

questions for the key areas of organization and financing. Similar questions from a number of participants were combined into representative questions for Round 2.

In Round 2, all enrolled participants were invited to rate each question on a four-point Likert scale for level of importance to be researched in their country. Both the two key areas and the question lists were randomly presented to each participant to prevent response bias from the order of presentation.

The participants' responses were used to calculate agreement, which was indicated by mean score, where a larger mean demonstrated more agreement. Collated responses were ordered in degree of importance, and the top 16 research questions were selected for both areas. In Round 3, panelists were asked to prioritize the research questions by dragging and dropping them into order of importance for their country. The two areas and question lists were randomly presented.

Additional results

Table A: Numbers of enrolled participants residing and working in low- and middle-income countries

Global region*	Number of MIC / number MIC in region (%)	Number LIC / number LIC in region (%)	Number of enrolled participants
Europe	8/22 (36)	0/0 (0)	14
Africa	11/20 (55)	4/27 (15)	69
South Asia	4/6 (67)	1/1 (100)	19
Asia Pacific	6/23 (26)	0/1 (0)	11

North American Caribbean	3/6 (50)	1/1 (100)	5
South America	9/19 (47)	0 (0)	19
Eastern Mediterranean	3/13 (23)	0/1 (0)	4
Total	44/109 (40%)	6/31 (19%)	141

Between 48% and 60% of enrolled panelists participated in each round.

Table B Appendix: Research questions for PHC organization and financing rated for importance

	Organization / models of care	Sum	Mean	Financing	Sum	Mean
1.	How can family physicians be supported to provide comprehensive community-based care instead of resources being directed into vertical programmes?	290	3.58	What are the barriers to implementing best practice in PHC?	285	3.52
2.	What are the drivers for PHC teams to deliver high quality services (intrinsic and extrinsic factors such as pay, status, career pathway/promotion etc)?	286	3.53	When resources are limited, where/how is it most cost-effective to use the available funds for the greatest health outcomes in PHC?	280	3.46
3.	How can education and training support the PHC workforce to deliver the range of services that address priority health needs of the community?	284	3.51	What are the best practices in PHC and how can they be scaled up?	279	3.44
4.	How does PHC impact the health indicators of the countries? What are these indicators? How are they measured? How do they compare between countries?	284	3.51	What are the resources essential to deliver quality PHC services?	274	3.38
5.	What are the factors that facilitate recruitment and retention of a PHC workforce in underserved community settings?	280	3.46	What is the ideal proportion of the total health care budget that guarantees the development of quality PHC?	272	3.36
6.	What are the best strategies to implement and monitor best practice in PHC?	280	3.46	What is the most appropriate payment system to increase access and availability of quality PHC?	270	3.33

7.	Are the services and scope of practice of PHC aligned with people's health needs, taking into account variations in population needs, resources and geography, and what is the evidence on which the range of services/scope of care provided should be decided?	279	3.44	How much of the PHC budget should be allocated for preventable diseases (e.g. NCDs, vaccination, cancer screening)?	270	3.33
8.	What strategies can be undertaken to ensure quality in the delivery of PHC service to patients (e.g. training/research/quality control)?	279	3.44	Does everyone have access to quality PHC that he/she needs?	267	3.30
9.	What are the factors or incentives that can improve distribution of PHC workforce or equity of accessing PHC services?	277	3.42	What effective funding models exist for delivering universal PHC coverage in LMICs?	266	3.28
10.	How can different stakeholders (e.g. policymakers, health system managers, health workforce organizations, academic institutions and communities) support and assist the PHC workforce and successful team functioning?	277	3.42	What mechanisms have been found to be effective in persuading governments to invest in PHC?	263	3.25
11.	How can PHC services be integrated with other community-based health and social services?	276	3.41	How do you maintain accountability for safety and/or quality in PHC while scaling up?	261	3.22
12.	What are the factors to be considered and negotiated for successful referral from primary to secondary care and back?	275	3.40	Do accreditation systems (e.g. of vocational training, of practices) improve quality of patient care?	260	3.21
13.	What PHC models of care provision in resourced limited environments provide the highest impact?	274	3.38	How can the public and private sectors work more collaboratively to improve and integrate PHC coverage and prevent segmentation of the services?	258	3.19

14.	How should care be horizontally integrated and coordinated among the multidisciplinary PHC team?	273	3.37	What percentage of public health care spending is dedicated to PHC in different LMIC countries?	258	3.19
15.	What factors should determine the composition of the PHC team and what professionals should the team include as a minimum?	270	3.33	What advances have been made in the last ten years to improve PHC and quality in the public and private sectors?	257	3.17
16.	What are the essential features to ensure adequate coordination and collaboration among PHC team members to address the priority health concerns of the population they serve?	270	3.33	Does the government have policies/legal provisions to insure quality and safety of PHC?	257	3.17
17.	What procedures and protocols are required to ensure seamless transitions and transfers occur when required to and from primary and secondary care? What role can IT play in this?	269	3.32	Does the allocation of resources follow a defined pattern that considers social determinants in health in PHC?	256	3.16
18.	What is the best leadership model for PHC? Who should lead the PHC delivery team where there is no physician?	268	3.31	What incentives and rewards are required to ensure that the PHC private sector contributes to successful comprehensive primary health care?	255	3.15
19.	How can different stakeholders (e.g. health system managers, health workforce members, academic institutions and communities) advise policymakers on how to ensure that PHC services address population health needs?	268	3.31	How do you communicate clearly the risks and benefits of PHC vs other high-cost subspecialty care?	252	3.11

20.	What can be done to prioritize limited resources and what alternatives including telemedicine can assist in providing PHC to under-resourced areas?	264	3.26	Are quality measurements currently used to allocate resources in PHC?	247	3.05
21.	What tools and processes are best for assessing the match between PHC team structure and function and patient/community needs?	263	3.25	How do PHC facilities clearly communicate their funding needs through a transparent, accountable system?	246	3.04
22.	What is the effective panel (patient population) size for provision of effective, comprehensive PHC? How does this differ depending on worker type, PHC team composition, and location (e.g. urban vs rural)?	259	3.20	What are the appropriate outcomes to assess the effectiveness of different governance models for both the PHC public and private sectors?	244	3.01
23.	How does a PHC team establish practice priorities, what essential services need to be provided and decide what is out of scope?	255	3.15	Why, and when, should PHC services be contracted out by ministries of health and will this lead to improvements in quality of care and better management of scarce resources?	241	2.98
24.	Are there differences in the ability to access PHC based on the region of the country, and between rural and urban?	254	3.14	What are the similarities in PHC between the public and private networks in different HIC and LMIC countries?	236	2.91
25.	What are the most useful ways of delineating PHC services and hospital services in a generalist district health system model?	253	3.12	What is the role of NGOs in the PHC system?	235	2.90
26.	What do patients consider should be the basic / essential scope of practice for PHC team?	252	3.11	How do the PHC public and private sectors learn from each other to improve quality?	233	2.88

27.	What role is there for specialists to see patients in community settings and for PHC workers including family physicians to work in secondary and tertiary settings?	252	3.11	What is the role of the private sector in PHC services?	232	2.86
28.	Why is there a significant number of the populace not able or willing to access services in PHC?	251	3.10	How does the quality and safety of the implementation of PHC affect having differences in the budget in the private and public sectors?	232	2.86
29.	What role is there for community members guide the development and delivery of public and private community-based PHC services and to contribute to government policy which supports these services?	247	3.05	Is the PHC system well-funded through taxation (leading to subsidized payments) or via co-payments determined by insurance services?	230	2.84
30.	What are the most effective and efficient means of tracking of where PHC workers practice after completing training in LMICs?	243	3.00	How does regulation of the PHC private sector compare with public sector regulation by regulatory bodies?	225	2.78
31.	How do government policies impact migration (import or export) of PHC physicians in LMICs?	242	2.99	Are taxes on products with harmful effects, such as alcohol and tobacco, used to try to increase health system funding?	216	2.67
32.	How can traditional healers be accommodated within a PHC system?	238	2.94			
33.	What are the legal barriers & enablers that most inhibit and facilitate access to PHC services?	234	2.89			

34.	Is there a role for high school graduates to work in PHC teams as community workers if physicians and other trained clinicians are not available, particularly in rural areas, and what would a standardised skill set for these health workers be?	233	2.88			
35.	How do different PHC terminologies in LMIC and HIC countries influence comparative international research outcomes?	231	2.85			
36.	Do centres of excellence in key urban areas focus predominantly on secondary and tertiary services in your country? Are workers sent to rural and PHC settings as a form of disciplinary action?	223	2.75			

* Maximum possible score = 336 (if all panellists rated the question very important)

References for Appendix

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