

# Primary Health Care Organisation and Models of Care



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# **Identification of research gaps to enable better primary health care organisation in low- & middle-income countries**

- Contract awarded by Ariadne Labs, recipient of Bill & Melinda Gates Foundation grant
- 'Rough & ready' approach given very short timeframe: grant awarded 20 Dec 2017; project start 8 Jan 2018; final report due 31 May

## **Named objectives**

1. Produce list of 10-16 prioritised research questions for PHC organisation internationally, focus on LMIC
2. Produce gap map, including areas where there is evidence of what works to improve the gap, & where there are major gaps in evidence
3. Prepare research implementation plans for top 3 or 4 research questions in specific LMICs

# Team led by Felicity Goodyear-Smith on behalf of WONCA



## Co-investigators

Prof Andrew Bazemore, USA (Robert Graham Center)

Ms Megan Coffman, USA

Prof Amanda Howe, UK (was current President  
WONCA)

Dr Hannah Jackson, USA

Prof Michael Kidd, Canada (past President WONCA)

Prof Robert L Phillips, USA (American Board of Family  
Medicine)

Assoc Prof Katherine Rouleau, Canada (Besrour  
Centre)

Prof Chris van Weel, Netherlands (past President  
WONCA)

## Advisors

Dr Henry Lawson, WONCA Regional President, Africa

Prof Kanu Bala, WONCA Regional President, South Asia

Dr Inez Padula, WONCA Regional President, South America

## Implementation plans

Dr Sandro Rodrigues Batista, Brazil

Prof Shabir Moosa, South Africa

Prof Sherina Mohd-Sidik, Malaysia

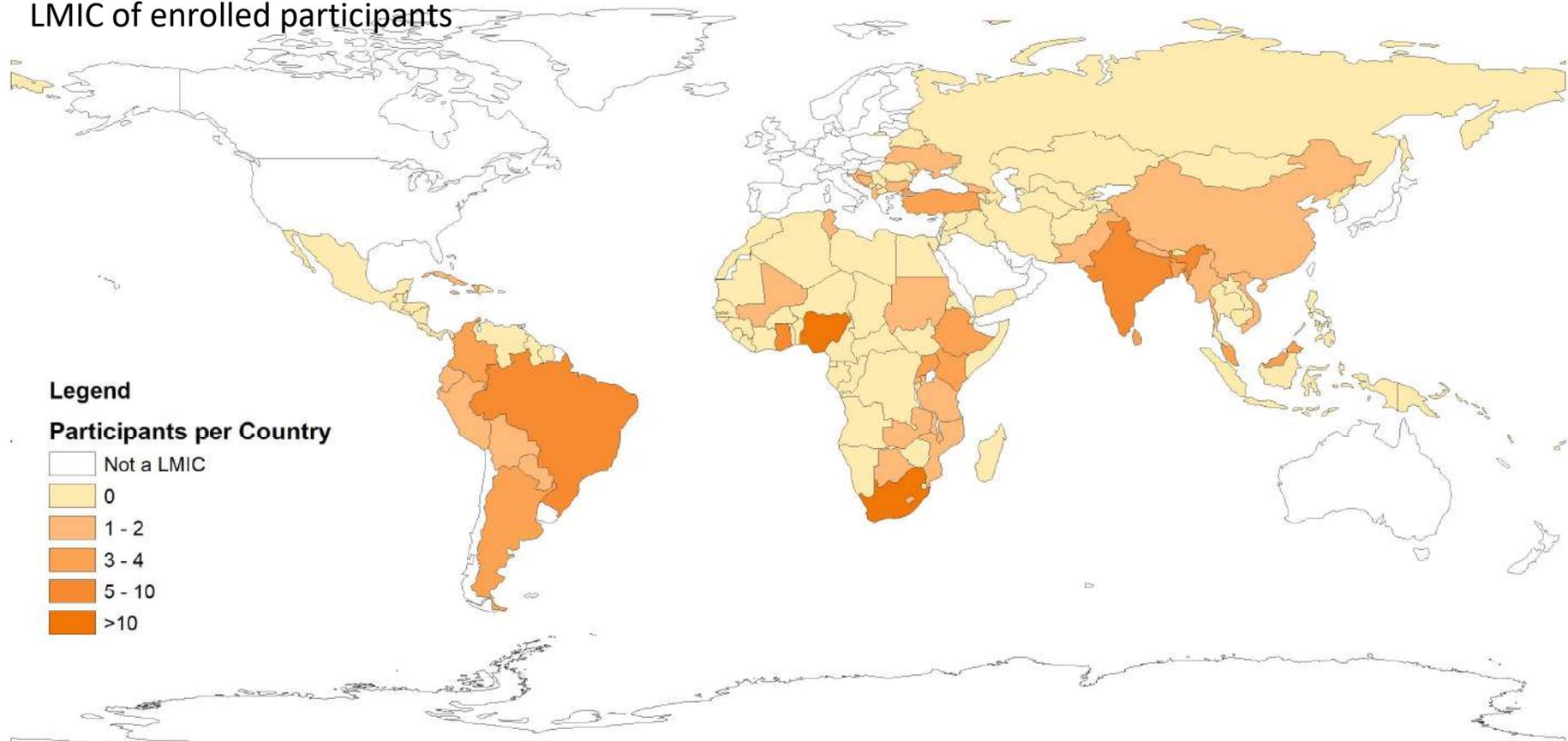
Dr Aboi Madaki, Nigeria

# Participants

141 participants from 50 LMIC from all global regions recruited in 1 week.

Diverse range (country, age, gender, experience, role) of PHC practitioners, academics & policy-makers

LMIC of enrolled participants



## Developing prioritised research questions

3-round expert panel consultation using web-based surveys

**Panellists:** LMIC PHC practitioners, academics & policy-makers recruited from global networks

**1st round (Pre-Delphi survey)** Elicited possible research questions to address knowledge gaps about PHC organisation

744 responses independently coded by 2 researchers, collapsed & synthesised to list of 36 questions

**2<sup>nd</sup> round (Delphi Round 1)** Panellists rated importance of each question (4-point Likert scale)

**3<sup>rd</sup> round (Delphi Round 2)** Panellists ranked 16 questions into order of importance (drag & drop)

Top 4 four prioritised questions identified

# Inter-rater reliability of coding

Independent coding of 1st 25 survey responses showed high degree of consistency with Cicchetti-Allison kappa co-efficient weight

$\hat{\kappa}=0.879$  (95% CI 0.7345–1.000)  $p<0.0001$  (almost perfect agreement)

## **Final top 4 research questions**

1. What are factors to consider & negotiate for successful referral from primary to secondary care & back?
2. How should care be horizontally integrated & coordinated among the multidisciplinary PHC team?
3. How can the public and private sectors work more collaboratively to improve and integrate PHC coverage and prevent segmentation of the services?
4. How can different stakeholders support & assist PHC workforce & successful team functioning?

# Literature reviews

Test whether already LMIC literature base for 36 research questions generated by panel

Took place in parallel with rounds 2 & 3

2-dimensional coding matrices constructed based on PHCPI conceptual framework & dimensions of PHC organisation identified through coding questions generated in Round 1

Literature searches conducted

## Searches consisted of string of terms for PHC & LMIC since 2003 (last 15 years)

("Primary Health Care"[Mesh] OR "General Practice"[Mesh] OR "Family Practice"[MeSH]) AND ("Internationality"[Mesh:NoExp] OR "Developing Countries"[Mesh] OR (developing countr\*[tiab] OR under developed countr\*[tiab] OR developing nation\*[tiab] OR developing world[tiab] OR less developed world[tiab] OR lmic\*[tiab] OR (less developed[tiab] OR low income[tiab] OR lower income[tiab] OR middle income[tiab] OR low middle income[tiab] OR resource poor[tiab] OR resource constrained[tiab] OR low resource[tiab] OR limited resource\*[tiab] OR resource limited[tiab])) AND (country[tiab] OR countries[tiab] OR region[tiab] OR regions[tiab] OR settings[tiab] OR area[tiab] OR areas[tiab])) OR OR "Africa South of the Sahara"[Mesh] OR "Central America"[Mesh] OR "South America"[Mesh] OR "Latin America"[Mesh] OR "Caribbean Region"[Mesh] OR "Mexico"[Mesh] OR "Asia"[Mesh:NoExp] OR "Asia, Central"[Mesh] OR "Asia, Northern"[Mesh] OR "Asia, Southeastern"[Mesh] OR "Asia, Western"[Mesh] OR Afghanistan [tiab] OR Afghan [tiab] OR Albania\* [tiab] OR Algeria\* [tiab] OR American Samoa\* [tiab] OR Angola\* [tiab] OR Argentina [tiab] OR Argentinian [tiab] OR Armenia\* [tiab] OR Azerbaijan\* [tiab] OR Bangladesh\* [tiab] OR Barbados [tiab] OR Barbadian [tiab] OR Belarus [tiab] OR Belorussian [tiab] OR Belize\* [tiab] OR Benin\* [tiab] OR Blutan\* [tiab] OR Bolivia\* [tiab] OR Bosnia [tiab] OR Bosnian\* [tiab] OR Herzegovina\* [tiab] OR Botswana\* [tiab] OR Brazil [tiab] OR Brazilian [tiab] OR Bulgaria\* [tiab] OR Burkina Faso [tiab] OR Burkinabe [tiab] OR Burmese [tiab] OR Burund\* [tiab] OR Cambodia\* [tiab] OR Cameroon\* [tiab] OR Cape Verde [tiab] OR Cape Verdean [tiab] OR Central African Republic [tiab] OR Chad [tiab] OR Chadian [tiab] OR China [tiab] OR Chinese [tiab] OR Colombia [tiab] OR Colombian [tiab] OR Comoros [tiab] OR Comorian [tiab] OR Congo [tiab] OR Congolese [tiab] OR Costa Rica [tiab] OR Costa Rican [tiab] OR Cote d'Ivoire [tiab] OR Ivory Coast [tiab] OR Croatia\* [tiab] OR Cuba [tiab] OR Cuban [tiab] OR Czech [tiab] OR Djibouti\* [tiab] OR Dominica [tiab] OR Dominican [tiab] OR Ecuador\* [tiab] OR Egypt [tiab] OR Egyptian [tiab] OR El Salvador [tiab] OR Salvadorian [tiab] OR Guinea [tiab] OR Guinean [tiab] OR Eritrea\* [tiab] OR Estonia\* [tiab] OR Ethiopia\* [tiab] OR Fiji\* [tiab] OR Gabon\* [tiab] OR Gambia\* [tiab] OR Gaza [tiab] OR Georgia [tiab] OR Georgian [tiab] OR Ghana [tiab] OR Ghanaian [tiab] OR Grenad\* [tiab] OR Guatemala\* [tiab] OR Guinea [tiab] OR Guinean [tiab] OR Guyana\* [tiab] OR Haiti\* [tiab] OR Honduras\* [tiab] OR Hong Kong [tiab] OR Hungary\* [tiab] OR India [tiab] OR Indian [tiab] OR Indonesia\* [tiab] OR Iran [tiab] OR Iraq\* [tiab] OR Jamaica\* [tiab] OR Jordan [tiab] OR Jordanian [tiab] OR Kazakh\* [tiab] OR Kenya [tiab] OR Kenyan [tiab] OR Kiribati [tiab] OR Korea\* [tiab] OR Kyrgyz Republic [tiab] OR Kyrgyzstan [tiab] OR Laos [tiab] OR Laotian [tiab] OR Lebanon [tiab] OR Lebanese [tiab] OR Lesotho [tiab] OR Liberia\* [tiab] OR Libya\* [tiab] OR Macedonia\* [tiab] OR Madagaska\* [tiab] OR Malawi\* [tiab] OR Malaysia\* [tiab] OR Maldives [tiab] OR Maldivian [tiab] OR Mali [tiab] OR Malian [tiab] OR Marshall Islands [tiab] OR Mauritania\* [tiab] OR Mauritius [tiab] OR Mauritian [tiab] OR Mayotte [tiab] OR Mexico [tiab] OR Mexican [tiab] OR Micronesia\* [tiab] OR Moldova\* [tiab] OR Mongolia\* [tiab] OR Morocco\* [tiab] OR Mozambique [tiab] OR Mozambican [tiab] OR Myanmar [tiab] OR Namibia\* [tiab] OR Nepal\* [tiab] OR Nicaragua\* [tiab] OR Niger [tiab] OR Nigeria\* [tiab] OR Northern Mariana Islands [tiab] OR Oman\* [tiab] OR Pakistan\* [tiab] OR Palau\* [tiab] OR Panama\* [tiab] OR Papua New Guinea [tiab] OR Paraguay\* [tiab] OR Peru\* [tiab] OR Philippine\* [tiab] OR Poland [tiab] OR Polish [tiab] OR Romania\* [tiab] OR Rwanda\* [tiab] OR Samoa\* [tiab] OR Sao Tome [tiab] OR Senegal\* [tiab] OR Serbia [tiab] OR Serbia\* [tiab] OR Montenegro\* [tiab] OR Seychell\* [tiab] OR Sierra Leone [tiab] OR Slovak Republic [tiab] OR Slovakian [tiab] OR Solomon Islands [tiab] OR Somali\* [tiab] OR South Africa [tiab] OR South African [tiab] OR Sri Lanka [tiab] OR Sri Lankan [tiab] OR Saint Kitts [tiab] OR Saint Lucia [tiab] OR Saint Vincent [tiab] OR Sudan\* [tiab] OR Suriname\* [tiab] OR Swaziland [tiab] OR Swazi [tiab] OR Syria [tiab] OR Syrian [tiab] OR Tajikistan [tiab] OR Tajik [tiab] OR Tanzania\* [tiab] OR Thailand [tiab] OR Thai [tiab] OR Timor-Leste [tiab] OR Togo\* [tiab] OR Tonga\* [tiab] OR Trinidad and Tobago [tiab] OR Trinidadian [tiab] OR Tobagonian [tiab] OR Tunisia\* [tiab] OR Turk\* [tiab] OR Turkmenistan [tiab] OR Uganda\* [tiab] OR Ukraine\* [tiab] OR Uzbekistan [tiab] OR Uzbek [tiab] OR Vanuat\* [tiab] OR Venezuela\* [tiab] OR Vietnam\* [tiab] OR West Bank [tiab] OR Yemen\* [tiab] OR Zambia\* [tiab] OR Zimbabwe\* [tiab]) AND ("2003/01/01"[PDAT]: "3000/12/31"[PDAT])

followed by MeSH & / or text words [tw] / or title & abstract words [tiab] relating to specific domain or sub-domain from coding matrix

# Search processes

**Inclusion criteria** PHC studies conducted in LMIC in last 15 years with MeSH or key terms pertaining to the questions of interest

**Excluded** Commentaries, non-English, grey literature were excluded

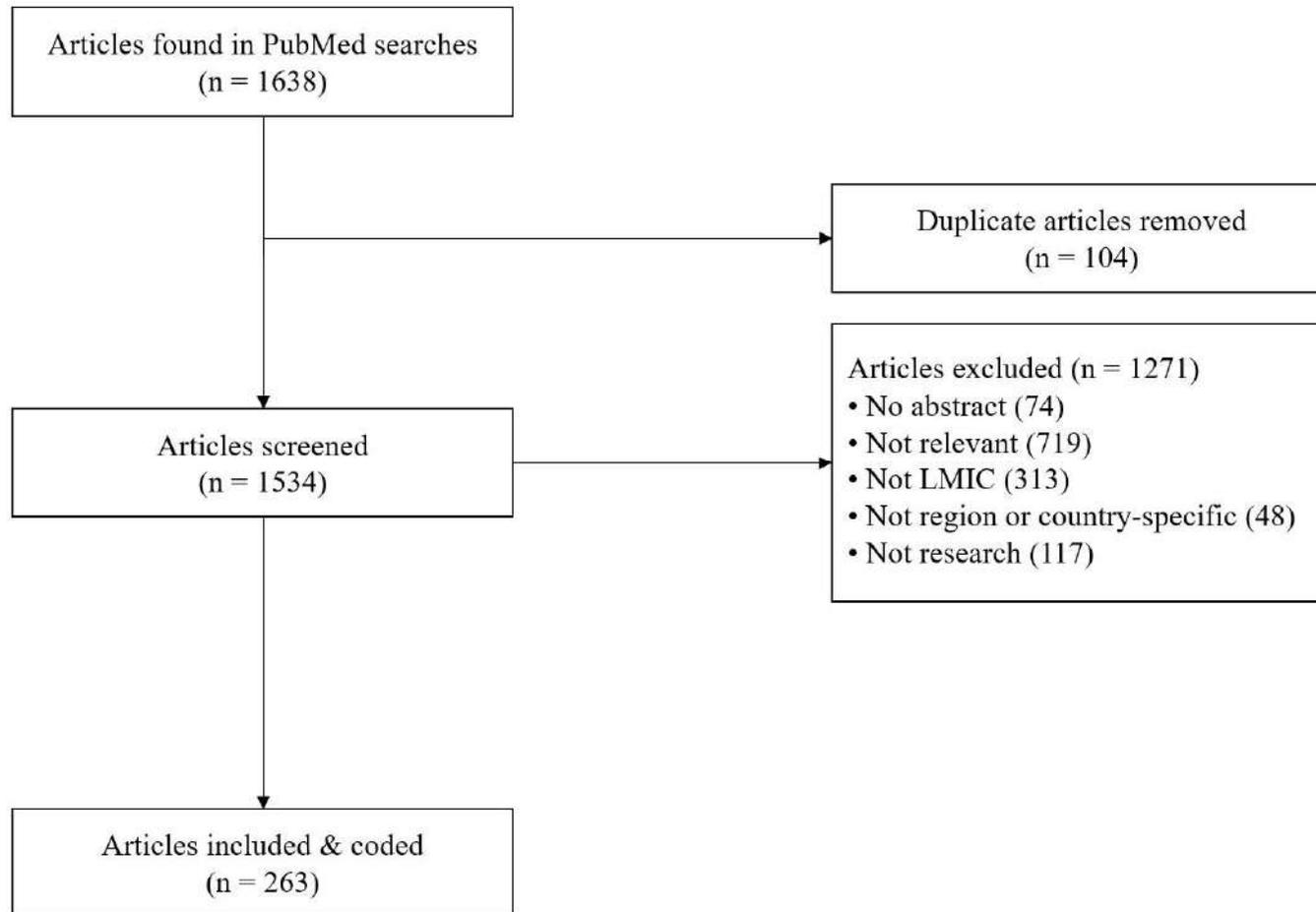
Search conducted in PubMed through Eppi-Reviewer 4 literature management software with shared review

Using matrix, selected articles relevant to each question coded for both axes, & for filters (study global region, LMIC country) to be added to map

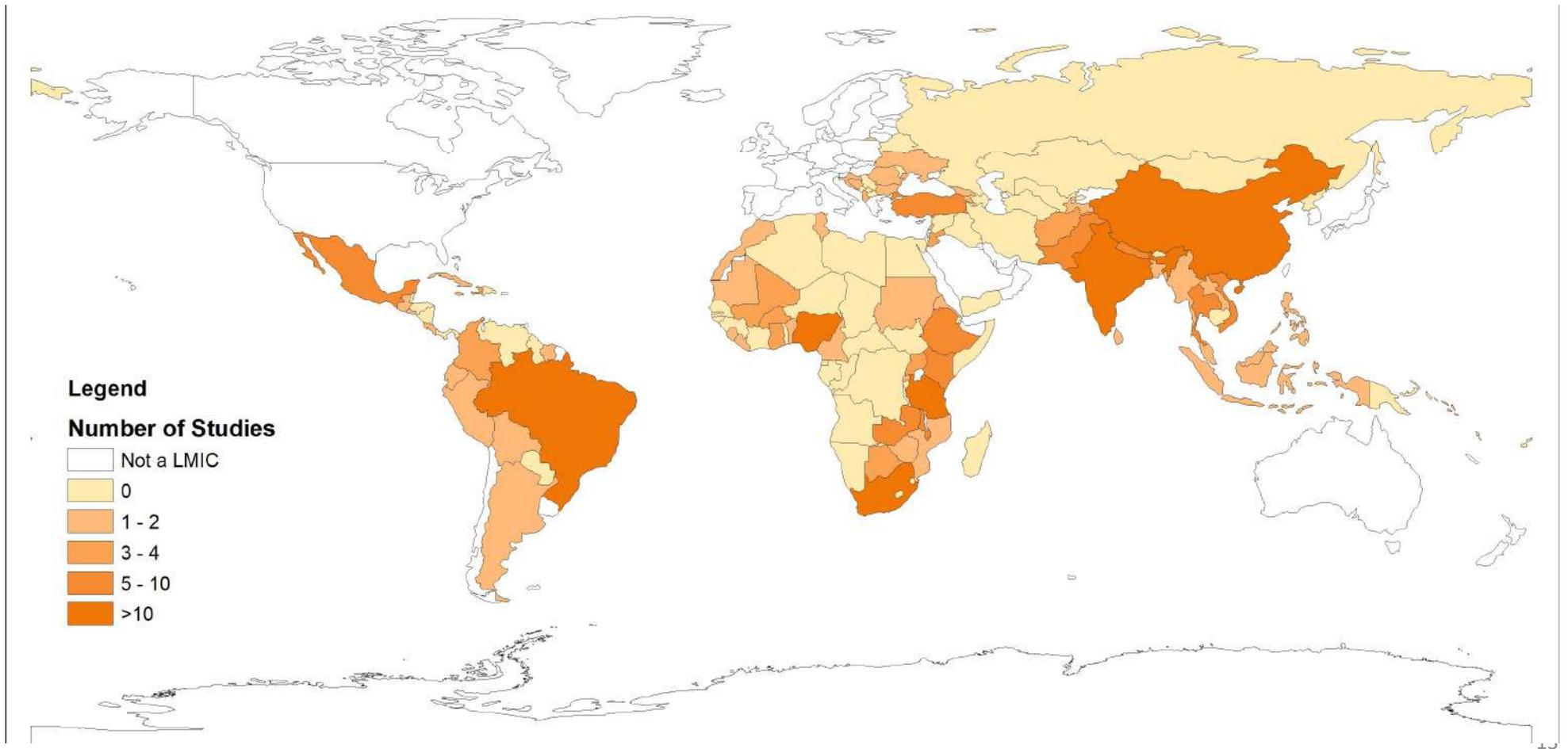
Selection of searches conducted by 2 researchers independently to avoid researcher bias & check for coding consistency



# Flow chart of PHC organisation literature review



# 263 studies per LMIC



# Gap map

Interactive web-based map presents heat & bubble maps with filters for LMIC & global regions

Studies viewed by clicking on bubble in cell



<https://www.graham-center.org/gapmap/moc.html>

Example: Click here brings up reference list  
& scroll down for details of each

The screenshot displays a research database interface. On the left, a bubble chart shows various research topics. A red arrow points from the text above to a specific bubble in the chart. On the right, a reference list is displayed, with another red arrow pointing from the text above to a specific reference entry. The reference entry is titled "Factors associated with job satisfaction by Chinese primary care providers." and includes details such as authors, year, volume, issue, pages, and type name.

**10 References** Filter

**Factors affecting motivation and retention...**  
Gakka, S., Unger, S., Janis, J.,  
June 2014

**Factors associated with job satisfaction ...**  
Shi, L., Song, K., Rane, S., Sun, X., Li, H., Meng, Q.,  
January 2014

**Hope and despair: community health ass...**  
Zhu, J.M., Kinnear, J., Michels, C., Harig, A.,  
May 2014

**Job preferences among clinical officers I...**  
Tokumura, T., Kishimoto, K., Ellsaoui, D.,  
January 2016

**Job satisfaction and turnover intent of p...**  
Gekobele, P., Rawlinson, J., Niu, S., Meiser, F.,  
February 2011

**Job satisfaction of urban community hea...**  
Zhang, M., Yang, R., Wang, W., Gilman, J. C.,  
February 2016

**Motivation and job satisfaction among m...**  
Liang, G. J., Kadom, S., Hassan, M.A., Pan, S.,  
September 2012

**The retention of health human resources ...**  
Alameddine, M., Saleh, S., El-Jardali, F., Dim...,  
November 2012

**Understanding the organisational culture...**  
Akrivitsaki, G., Mich, R., Phaladze, N.,  
November 2015

**What elements of the work environment ...**  
Munzke, G.F., Larson, E., Kinnear, A., Kouk...,  
August 2014

**Factors associated with job satisfaction by Chinese primary care providers.**

**OBJECTIVES:** This study provides a snapshot of the current state of primary care workforce (PCW) serving China's grassroots communities and examines the factors associated with their job satisfaction. **METHODS:** Data for the study were from the 2011 China Primary Care Workforce Survey, a nationally representative survey that provides the most current assessment of community-based PCW. Outcome measures included 12 items on job satisfaction. Covariates included intrinsic and extrinsic factors associated with job satisfaction. In addition, PCW type (i.e., physicians, nurses, public health, and village doctors) and practice setting (i.e., rural versus urban) were included to identify potential differences due to the type of PCW and practice settings. **RESULTS:** The overall satisfaction level is rather low with only 47.6% of the Chinese PCW reporting either satisfied or very satisfied with their job. PCW are least satisfied with their income level (only 8.6% are either satisfied or very satisfied), benefits (12.8%), and professional development (19.5%). They (particularly village doctors) are also dissatisfied with their workload (37.2%). Lower income and higher workload are the two major contributing factors toward job dissatisfaction. **CONCLUSION:** To improve the general satisfaction level, policymakers must provide better pay and benefits and more opportunities for career development, particularly for village doctors.

[10.1017/S1446443013000402](#)

Title	Factors associated with job satisfaction by Chinese primary care providers.
Authors	Shi, L.; Song, K.; Rane, S.; Sun, X.; Li, H.; Meng, Q.;
Year	2014
Volume	15
Issue	1
Pages	46-57
Type Name	Journal Article

# Developing implementation plans

- Top 4 questions circulated to panellists – particular interest in one, & if so, what methods might they use, knowledge of relevant datasets or innovative programmes in their country or region that might be evaluated or scaled up?
- 45 responses within few days
- Research questions allocated on judgement of applying team to be able to deliver based on previous work, plus spreading work throughout different countries & global regions
- Provided template to produce 3-5 page outline research implementation plan to include specific aims, study design, targeted geographic regions, potential research team & partners, overview work plan, & estimated total budget

## 4 priority questions for specific LMICs

Question	Lead researcher
What are the factors to be considered & negotiated for successful referral from primary to secondary care & back in Brazil?	Sandro Rodrigues
How should care be horizontally integrated & coordinated among multidisciplinary PHC team in South Africa?	Shabir Moosa
How can public & private sectors work more collaboratively to improve & integrate PHC coverage and prevent segmentation of services in Malaysia?	Sherina Mohd-Sidik
How can different stakeholders (eg policymakers, health system managers, health workforce organisations, academic institutions and communities) support & assist PHC workforce & successful team functioning in Nigeria?	Aboi Madaki

# Writing & revising plans

- Research teams provided with mentor from HIC (member of project research team or other) to provide support & feedback
- Draft plans used at workshop run by members of research team at WONCA Europe conference in Krakow, Poland in late May 2018
- During workshop, small groups of participants critiqued plans & provided feedback eg are methods doable & answer question at hand?
- Critiques sent back to those preparing plans to help refine them

# Discussion

- Voice of health care providers & academics enables traction at community level
- Bottom-up approach counters frequent top-down decisions by policy-makers lacking in stakeholder engagement & not translated into effective change
- Large number of research questions generated suggests significant sense that evidence is lacking
- Literature review did not indicate existing evidence for priority questions

## Strengths

- Large diverse panel of experts recruited rapidly
- Anonymous Delphi process enabled consensus of research priorities
- Enabled access to researchers in LMIC interested in developing implementation plans specific to their local contexts
- High degree of inter-rater reliability for coding of Round 1 responses

## Limitations

Extremely tight timeline meant:

- No time for translations
- Stopped recruitment while still interest & not all PHC groups reached (eg more nurses, policy-makers)
- 1 week to pilot survey
- Very short turn-around between rounds
- Pragmatic literature review Pubmed only
- Difficult to get busy people from LMIC to engage in this work

## Publications

Goodyear-Smith F, Bazemore A, Coffman M, Fortier R, Howe A, Kidd M, Phillips R, Rouleau K, Van Weel C. Primary care research priorities in low- and middle-income countries, *Annals of Family Medicine*. 2019, 17(1):31-35.

DOI:10.1370/afm.2329

Goodyear-Smith F, Bazemore A, Coffman M, Fortier R, Howe A, Kidd M, Phillips R, Rouleau K, Van Weel C. Research gaps in the organisation of primary health care in low- and middle-income countries and ways to address them: a mixed methods approach *BMJ Global Health*. 2019. 4:e001482.

doi:10.1136/bmjgh-2019-001482

# Other PHC organisation / models of care prioritised questions generated by Ariadne project



- Team from George Institute explored gaps in evidence in Asia Pacific
- Team from Stellenbosch University explored gaps in evidence in sub-Saharan Africa



Palagyi A, Dodd R, Jan S, *et al* Organisation of primary health care in the Asia-Pacific region: developing a prioritised research agenda *BMJ Global Health* 2019;4:e001467.

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- Literature review of PHC organisational interventions in **Asia-Pacific LMICs**
- Evidence gaps ascertained
- Largest gaps related to interventions to promote access to essential medicines, patient management tools, effective health promotion strategies, service planning & accountability
- Evidence from Pacific Island countries particularly scant.
- Engaged expert panel of 22 PHC stakeholders from 7 Asia-Pacific LMICs in Delphi exercise to identify priority questions for future research
- Research priorities were:
  1. identifying effective PHC service delivery models for chronic diseases
  2. devising sustainable models of disease integration
  3. optimising task shifting
  4. understanding barriers to care continuity
  5. projecting future PHC needs
  6. designing appropriate PHC service packages





Dodd R, Palagyi A, Jan S, et al Organisation of primary health care systems in low- and middle-income countries: review of evidence on what works and why in the Asia-Pacific region BMJ Global Health 2019;4:e001487.

- Literature review of intervention studies from **Asia-Pacific region LMICs** - what 'works' to improve coverage, quality, efficiency, equity & responsiveness of PHC
- 111/3001 articles included
- **Key themes:**
  - Non-physician health workers for coverage & quality of care, though better integration with other PHC services needed
  - Community-based services most effective when well integrated through functional referral systems & supportive supervision arrangements & have reliable supply of medicines
  - Importance of community engagement in improving service demand. Few studies adopted 'systems' lens or adequately considered long-term costs or implementation challenges
  - Integrating non-communicable disease prevention & control into basic package of care
  - Building managerial capacity
  - Institutionalising community engagement
  - Modernising PHC information systems





Mash B, Ray S, Essuman A, et al Community-orientated primary care: a scoping review of different models, and their effectiveness and feasibility in sub-Saharan Africa BMJ Global Health 2019;4:e001489

### Scoping review of community-orientated primary care in **sub-Saharan Africa**

Looked for evidence of different models, effectiveness & feasibility

- Articles from past 10 years grouped into 5 categories: historical analysis, models, implementation, educational studies & effectiveness
- 39/1997 publications included
- 32 publications from last 5 years; 27 research; 27 from South Africa; 25 focused on implementation
- 9 case studies; 6 programme evaluation; 10 qualitative studies
- Factors related to implementation of COPC identified in terms of
  - governance
  - Finances
  - community health workers
  - primary care facilities
  - community participation
  - health information & training
- Little evidence regarding effectiveness of COPC





## Nine principles of COPC identified from different models

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1. defined community
2. multidisciplinary team approach
3. comprehensive approach
4. equitable approach
5. Analysis of local health needs & assets
6. Prioritisation of health needs & interventions
7. Community participation
8. Evidence-based & scientific
9. Service integration around users



# Further developments



- PHCRC synthesised identified prioritised research questions from all projects
- Prioritised questions help direct research endeavours of PHCRC
- Implementation plans help inform methodologies