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## How do primary healthcare workers in low- and middle-income countries obtain information during consultations to aid safe prescribing: systematic review protocol

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## How do primary healthcare workers in low- and middle-income countries obtain information during consultations to aid safe prescribing: systematic review protocol

Chris Smith<sup>1,2</sup>, Michelle Helena van Velthoven<sup>3</sup>, Neil Pakenham-Walsh<sup>4</sup>

<sup>1</sup> Graduate School of Tropical Medicine & Global Health (TMGH), Nagasaki University, Japan

<sup>2</sup> London School of Hygiene and Tropical Medicine, London, UK

<sup>3</sup> Healthcare Translation Research Group, Department of Paediatrics, University of Oxford, Oxford, UK

<sup>4</sup> Healthcare Information For All (HIFA) network

### Corresponding author:

Chris Smith

5th Floor

School of Tropical Medicine and Global Health

Nagasaki University

1-12-4 Sakamoto

Nagasaki

852-8523

Japan

[christopher.smith@lshtm.ac.uk](mailto:christopher.smith@lshtm.ac.uk)

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## Abstract (word count: 274)

### Introduction

There is a wide variety in prescribing by primary healthcare workers in low- and middle-income countries. Whilst there is much information available, both on- and off-line, there is variation in quality and relevance to different settings. Acting on incorrect or out-of-date information can lead to inappropriate prescribing and impact on patient safety. The aim of this review is to systematically review the evidence on how primary healthcare workers obtain information during consultations to prescribe safely and appropriately.

### Methods and analysis

We will identify relevant articles by searching electronic databases: Medline (Ovid), EMBASE (Ovid), Cochrane Central Register of Controlled Trials, CABI Global Health (Ovid), World Health Organization global health library, POPLINE, Africa-Wide Information (Ebsco), Library, Information Science & Technology Abstracts (Ebsco), ClinicalTrials.gov, and World Health Organization International Clinical Trials Registry Platform. Also, the Health Information For All network will be consulted and evidence databases (TRIP database, Epistemonikos, PDQ Evidence) will be searched. We will hand-search reference lists, run citation searches of included studies and email authors of identified papers. Observational and intervention studies involving primary healthcare workers in low- and middle-income countries who prescribe and/or dispense medication will be included. The primary outcome is the proportion of healthcare workers obtaining information relevant to consultations from different sources. Secondary outcomes are the change in healthcare provider and patient knowledge or behaviour, adverse outcomes, and use of resources. We will exclude studies focusing on secondary care. We anticipate a limited scope for meta-analysis and will provide a narrative overview of findings and tabular summaries of extracted data.

### Ethics and dissemination

No ethics approval is required. Findings will be disseminated through the Healthcare Information For All network.

Key words: primary care, health information, decision-making, LMICs, prescribing  
PROSPERO registration number:

### Strengths and limitations of this study

- This review will systematically review the evidence on how primary healthcare workers obtain health information during consultations to support decision-making for prescribing in low- and middle-income countries.
- Our review is following, where possible, the Cochrane Collaboration and Centre for Review and Dissemination methodology for conducting systematic reviews.
- A comprehensive search of the evidence will be conducted.
- The review results will be disseminated to inform efforts that aim to improve the availability of health information in low- and middle-income countries.

### Background

#### **Description of the issue**

Accessible, high-quality primary healthcare is a key part of Universal Health Coverage, but is still not available almost 40 years after the Alma Ata declaration of 1978.<sup>1,2</sup> Primary healthcare workers in low- and middle-middle income settings are often faced with large numbers of consultations in remote rural areas. Also, in addition to infectious diseases, such as HIV, TB, and malaria, there is an increasing prevalence of non-communicable diseases and mental health issues.<sup>3</sup> This forces health workers to deal with more complex treatment of patients, often with limited support and resources, on a background of having received varied levels of education and training.<sup>4-6</sup>

Primary healthcare workers encompass a diverse range of healthcare cadres such as doctors, clinical officers, nurses, pharmacists and drug store vendors and are often the first level of contact of individuals, the family and the community with the national health system.<sup>2</sup> Poor performance of these primary healthcare workers can result in incorrect diagnosis and management of common diseases, including inappropriate drug prescribing.

There are various issues related to inappropriate and unsafe prescribing. There are medication errors, which applies to errors of dose or route of administration, and to errors of communication between prescription and dispensing (e.g. bad handwriting etc). Also, healthcare workers can prescribe the wrong medicine, with or without a failure to correctly diagnose the case. Furthermore, overprescribing is a huge problem, especially in low-and-middle income countries (LMICs), with almost every patient being given one or more medicines per consultation.<sup>7</sup> Overuse of antimicrobials accelerates the emergence and growth of antimicrobial resistance,

1  
2  
3 which is an increasingly serious threat to global public health.<sup>8</sup> 'Rational' use of  
4 medicines depends largely on the ability of the health worker to make the correct  
5 diagnosis and then prescribe (or not) accordingly.<sup>9</sup>

6  
7 Unsafe prescribing by primary healthcare workers have often been attributed to  
8 weak medication systems, poor environmental conditions or staff shortages, poor  
9 education, inadequate training and lack of knowledge and skills.<sup>10</sup> Previous studies in  
10 Africa have suggested variations in knowledge about the basics on how to diagnose  
11 and manage common diseases, going right across the health workforce and often  
12 associated with suboptimal, ineffective and dangerous health care practices.<sup>9,11-13</sup>

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16 One important factor influencing knowledge and practice of primary healthcare  
17 workers is the wide variation in quality of health information and relevance to  
18 different settings with respect to their language, geographical focus and technical  
19 level. Offline resources may be out-of-date and might not have not incorporated  
20 changes in medical knowledge and guidance that have occurred over time such as  
21 new diagnostic tests and antibiotic regimens. Acting on such information can lead to  
22 incorrect diagnosis and inappropriate prescribing.

### 23 24 25 26 ***Description of the intervention***

27  
28 By 'healthcare information' we refer to the information that healthcare workers  
29 need at the point of care to guide them in prescribing: to guide them on how to  
30 select whether to prescribe a medicine for an individual patient, which medicine to  
31 use, and how to do so.

32  
33 For this study, we are focusing on healthcare information resources such as point-of-  
34 care decision tools, formularies, books, manuals, guidelines and protocols, rather  
35 than routine health information such as patient records and local epidemiological  
36 reports.

### 37 38 39 40 ***How the intervention might work***

41  
42 Arguably, correct information to guide prescribing (including diagnosis and, where  
43 appropriate, selection of medicine) is the single most important aspect of point-of-  
44 care information for most of clinical consultations, especially at primary care level.

45  
46 Factors influencing whether healthcare providers attempt to access information  
47 during consultations include previous training and availability of the information,  
48 which could include internet access.<sup>9,11,14</sup> Additional influencing factors might be  
49 how common or rare a condition is, whether it is a condition where it is important to  
50 give correct medication/dose (i.e. risk or adverse event or child dosing required), the  
51 degree of risk health workers to provide prepared to take without checking, and  
52 'black holes' i.e. not aware of lack of knowledge.

### ***Why it is important to do this review***

The World Health Organisation (WHO) aims to reduce the level of severe, avoidable harm related to medications by 50% over the next five years, globally.<sup>10</sup> Whilst there exists a plethora of health information, it is unclear to what extent primary healthcare workers in LMICs access such information to aid prescribing, including free and for purchase materials, both in digital and off-line forms. A recent systematic review found that most of interventions to improve healthcare worker performance have focused on 'Supervision' as opposed to 'Tools and Aids' such as protocols and/or charts. Digital health tools targeting primary healthcare workers were not reported to have been extensively studied.<sup>6</sup>

To our knowledge no systematic reviews have assessed how primary healthcare workers in LMICs obtain health information during consultations to aid safe prescribing. Therefore, the aim of this review is to review the evidence on how primary healthcare workers obtain health information during consultations to support prescribing decision-making.

### **Objectives**

Systematically review the evidence on how primary healthcare workers obtain health information during consultations to aid decision-making for prescribing in LMICs and its impact by assessing:

1. proportions of healthcare workers obtaining healthcare information from different sources (e.g. use of books, guidelines, digital resources, peer networks) during consultations (i.e. from the time when the patient arrives to leaving) to make decisions on prescribing;
2. change in healthcare provider and patient knowledge or behaviour;
3. adverse outcomes (e.g. misconceptions resulting from out-of-date or incorrect information, whether obtaining information to guide prescribing relevant to a consultation reduces the quality of a consultation, for example patients trust a healthcare worker less or perceive a lack of empathy when a health worker looks up information);
4. use of resources.

### **Methods**

This is the protocol for a systematic review of the literature that is reported where possible according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for protocols (PRISMA-P) as provided as a Supplementary File.<sup>15</sup> Our review is following, where possible, the Cochrane Collaboration<sup>16</sup> and Centre for

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2  
3 Review and Dissemination<sup>17</sup> methodology for conducting systematic reviews where  
4 possible.  
5

### 6 **Criteria for considering studies**

#### 7 **Types of studies**

8 We will include observational studies, such as cross-sectional surveys, cohort  
9 studies, qualitative studies (e.g. interview studies and focus groups) and mystery  
10 client studies, and intervention studies, such as Randomized Controlled Trials (RCTs)  
11 and non-randomised studies (non-randomized controlled trials, controlled before-  
12 and-after studies, interrupted-time-series studies). We will only include studies  
13 reported in English that were published after 2000.  
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#### 18 **Types of participants**

19 We will include studies involving primary healthcare workers in LMICs who prescribe  
20 or dispense medication, or order medical tests, such as doctors, clinical officers,  
21 nurses, midwives, pharmacists, specialist drug shop vendors, or community health  
22 workers. We will exclude studies focusing on secondary care or hospital settings,  
23 allied health professionals, e.g. physiotherapists and traditional medicine health  
24 workers.  
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27

#### 28 **Types of interventions**

29 We will include any studies assessing interventions to improve access to healthcare  
30 information during consultation for prescribing, e.g. tools and aids (possible  
31 interventions could use digital resources, books, protocols etc.). Also, studies that do  
32 not focus on an intervention (e.g. observational studies) will be included. We will not  
33 include quality improvement, supervision or mentoring interventions unless support  
34 in the form of tools or aids for healthcare workers are explicitly available during the  
35 consultation.  
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#### 40 **Types of comparators**

41 We will include any type of comparator interventions.  
42  
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#### 44 **Types of outcome measures**

45 The primary outcome of this review is the proportion of healthcare workers  
46 obtaining healthcare information during consultations (i.e. from the time when the  
47 patient arrives to leaving) from different sources (e.g. use of books, guidelines,  
48 digital resources, peer networks, no information - memory). Secondary outcomes  
49 are the change in healthcare provider knowledge or behaviour (e.g.  
50 prescribing/diagnosis) (e.g. intervention studies), change in patient knowledge,  
51 behaviour or clinical outcomes, adverse outcomes, and use of particular resources.  
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### Information sources

Relevant articles will be identified by searching electronic databases:

- MEDLINE through Ovid;
- EMBASE through Ovid
- CABI Global health through Ovid;
- WHO global health library  
(<http://www.globalhealthlibrary.net/php/index.php>),
- POPLINE: <http://www.poline.org/>;
- Africa-Wide Information (<https://www.ebsco.com/products/research-databases/africa-wide-information>)
- Library, Information Science & Technology D/base  
(<https://www.ebsco.com/products/research-databases/library-information-science-and-technology-abstracts>);
- Web of Science;
- Cochrane Central Register of Controlled Trials (CENTRAL)  
(<http://www.cochranelibrary.com/about/central-landing-page.html>);
- WHO International Clinical Trials Registry Platform  
(<http://apps.who.int/trialsearch/>);
- ClinicalTrials.gov

In addition, the Healthcare Information For All (HIFA) network will be consulted for relevant publications and evidence databases such as TRIP database (<https://www.tripdatabase.com/>), Epistemonikos (<https://www.epistemonikos.org/>), PDQ Evidence (<https://www.pdq-evidence.org/>). We will hand-search reference lists, run citation searches of included studies (e.g. in Google Scholar, Scopus or Web of Knowledge) and email authors of identified papers to identify additional articles.

### Search strategy

Final search strategies can be found in the Supplementary File tailored to the different databases with a medical research librarian (John Evers). No study design filter will be used as both quantitative and qualitative studies are included. We will use the titles, abstracts and keywords of a set of articles for which we know that meet our inclusion criteria to define a search strategy that will return all these articles without an unmanageably large number of irrelevant articles.

## Data management, collection and analysis

### Selection of studies

We will exclude duplicate references by comparing titles, authors and digital object identifiers (DOIs) between similar search results using two software programs (Endnote:<http://endnote.com/> and EPPI: <http://eppi.ioe.ac.uk/cms/>). One reviewer will screen titles/abstracts of search results against the inclusion and exclusion criteria and 10% of the titles/abstracts will be screened by a second reviewer for validation. One reviewer will retrieve a full-text paper when a study includes participants who are primary healthcare workers in LMICs and it assesses one or more relevant outcome measures. Two reviewers will assess full-text for eligibility, with any disagreement to be resolved through discussion with a third author.

### Data extraction

To extract data from included studies we will use a standardized Excel form that includes general information (title, authors, date, etc.), study characteristics (study design, aim, duration, inclusion/exclusion criteria), risk of bias (depending on study design), participants (description, geographic location setting etc.), intervention (if appropriate and to include sources of on- or off-line information sources used), outcomes (as specified above, other outcomes, adverse events), and results (outcomes, times of assessment). We will pilot the data extraction form on a small number of studies to develop the final data extraction form. One reviewer will extract data from included studies that will be validated by a second reviewer.

### Assessment of risk of bias

Risk of bias for RCTs will be undertaken by one reviewer and independently checked by another. Any disagreements will be resolved by consensus and the opinion of a third reviewer. The methods specified in the Cochrane Collaboration tool for assessing risk of bias will be used, which includes assessment of the following six domains: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, and selective reporting. Three bias assessment categories will be used: low, high and unclear risk. As specified in the Cochrane handbook,<sup>16</sup> an adapted version of these domains will also be used for NRS. For case control and cohort studies, the Newcastle-Ottawa Scales will be considered. For observational studies, guidance from the Centre for Review and Dissemination<sup>17</sup> will be used to inform the quality assessment. At the moment, the value of quality assessment of qualitative research is debated. A relevant tool will be selected based on the Cochrane Handbook's recommendations.

### Assessment of heterogeneity

We anticipate a limited scope for meta-analysis due to differences study populations, interventions, and outcomes. If a sufficient number of studies are found, we will explore heterogeneity through consideration of the study populations, methods and interventions, by visual inspection of results. Also in statistical terms, we will assess the chi-squared test for homogeneity and the  $I^2$  statistic. We define statistically significant heterogeneity as  $p < 0.10$ . The  $I^2$  will be assessed with the following levels of inconsistency:  $I^2$  of 0–25% = low level of inconsistency; 26–50% = moderate level of inconsistency; and  $> 50\%$  = high level of inconsistency.

### Data synthesis

We will provide a narrative overview of findings and tabular summaries of extracted data. If a meta-analysis can be performed, this will estimate a summary measure of effect on relevant outcomes. For dichotomous outcomes, odds ratios (ORs) will be used as the summary statistic. For continuous outcomes, mean difference (MD) will be the summary statistic. Meta-analyses will be conducted when clinically homogeneous studies of similar comparisons reporting the same outcome measures are identified. Standard pairwise meta-analysis will be conducted when more than one RCT was identified. Quality of evidence will be assessed using the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) approach.

### Subgroup analyses

If appropriate, we will provide a narrative overview of subgroups including different interventions (e.g. digital vs. analogue), cadres of healthcare workers, and geographic regions.

### Ethics and dissemination

No ethics approval is required. This review will systematically review the evidence on how primary healthcare workers obtain health information during consultations to support decision-making for prescribing in low- and middle-income countries. A strength of this review is the use of robust methodology and a comprehensive search of the evidence. A limitation of the review is that the quality and quantity of studies with similar interventions conducted in low- and middle-income countries may be limited. Therefore, it is unlikely that we will be able to conduct a meta-analysis. We will report our findings based on guidelines from Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. We will submit the full systematic review for publication in a peer-reviewed medical journal. The review will inform efforts that aim to improve the prescribing practices of

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3 healthcare workers in low- and middle-income countries. Findings will be  
4 disseminated through the Health Information For All network.  
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## 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

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### Authors' contributions

Chris Smith and Michelle van Velthoven jointly wrote the protocol. Neil Pakenham-Walsh provided extensive comments on the protocol.

### Funding statement

This work was supported by Nagasaki University. The funder did not have input in developing this protocol.

### Competing interests statement

The author(s) declared the following potential competing interests with respect to the research, authorship, and/or publication of this article: Dr Michelle van Velthoven is the director of Dutches Consulting Ltd., which provides advice to clients in the life sciences.

### Patient and Public Involvement

Patients and the public were not involved in writing this protocol.

## Supplementary File

### Searches

#### 1. Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) <1946 to Present> Searched 1<sup>st</sup> December 2017

- 1 exp Health Personnel/ (470086)
- 2 (((health or medical or healthcare) adj (personnel or worker\* or auxiliar\* or staff or professional\*)) or doctor\* or physician\* or GP or general practitioner? or family doctor or nurse\* or midwi\* or clinical officer\* or pharmacist\* or dentist\* or ((birth or childbirth or labor or labour) adj (attendant? or assistant?))).ti,ab,kw. (903556)
- 3 (lay adj5 (worker? or visitor? or attendant? or aide or aides or support\$ or person\$ or helper? or carer? or caregiver? or care giver? or consultant? or assistant? or staff)).ti,ab,kw. (2050)
- 4 (paraprofessional? or paramedic or paramedics or paramedical worker? or paramedical personnel or allied health personnel or allied health worker? or support worker? or home health aide?).ti,ab,kw. (7866)
- 5 ((community or village?) adj3 (health worker? or health care worker? or healthcare worker?)).ti,ab,kw. (4384)
- 6 (doula? or douladural? or monitrice\* or "barefoot doctor?").ti,ab,kw. (432)
- 7 Primary Health Care/ or (primary adj (health or care)).ti,ab,kw. (139360)
- 8 or/1-7 (1239133)
- 9 (decision\* adj3 (make or makes or making or made or support\* or algorithm\* or aid or aids or app or apps or application\* or tool\* or instrument\* or technolog\* or technique\* or system\* or program\* or process\* or method\* or intervention\* or material\* or board\* or guide\* or counselling\*)).ti,ab,kw. (168674)
- 10 Decision Making/ (87993)
- 11 Decision Support Systems, Clinical/ (7147)
- 12 Decision Support Techniques/ (18896)
- 13 Diagnosis, Computer-assisted/ (22858)
- 14 Expert Systems/ (3530)
- 15 Point-of-Care Systems/ (10987)
- 16 Guideline Adherence/ or Clinical Protocols/ or Checklist/ (60686)
- 17 Therapy, Computer-Assisted/ (6753)
- 18 "Drug Therapy, Computer-Assisted"/ (1731)
- 19 Electronic Prescribing/ (893)
- 20 Clinical Laboratory Information Systems/ or Clinical Pharmacy Information Systems/ (3270)
- 21 (((guideline\* or protocol\*) adj4 (adher\* or comply or complian\* or observ\*)) or checklist\*).ti,ab,kw. (49650)
- 22 Drug Utilization/ (20253)
- 23 drug prescriptions/ or inappropriate prescribing/ or medication errors/ (39442)
- 24 Pharmacy/ or Pharmacies/ or Education, Pharmacy/ (21040)
- 25 practice patterns, nurses'/ or practice patterns, physicians'/ (57488)
- 26 (prescrib\* or prescription\* or dispens\* or pharmac\*).ti,ab,kw. (880900)
- 27 ((prescrib\* or prescription\* or dispens\* or pharmac\*) adj3 (pattern\* or habit\* or behavi\* or practice\* or practise\* or custom\*)).ti,ab,kw. (27761)
- 28 Access to Information/ (5939)
- 29 Health Information Systems/ut [Utilization] (107)
- 30 exp Information Services/ut [Utilization] (1467)
- 31 Information Seeking Behavior/ (1687)
- 32 Computer Literacy/ or Information Literacy/ (1849)
- 33 Knowledge/ (10411)
- 34 Health Knowledge, Attitudes, Practice/ (100228)
- 35 (information or knowledge).ti,ab,kw. (1559658)

1  
2  
3 36 ((information or knowledge) adj3 (access\* or seek\* or search\* or request\*).ti,ab,kw.  
4 (22942)  
5 37 or/9-36 (2731874)  
6 38 Developing Countries.sh,kf. (85222)  
7 39 Africa/ or Asia/ or Caribbean/ or West Indies/ or Middle East/ or South America/ or Latin  
8 America/ or Central America/ (78370)  
9 40 (Africa or Asia or Caribbean or West Indies or Middle East or South America or Latin  
10 America or Central America).tw. (170009)  
11 41 ((Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or  
12 Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or  
13 Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana  
14 or Brazil or Bulgaria or Burkina Faso or Burkina Fasso or Upper Volta or Burundi or Urundi or  
15 Cambodia or Khmer Republic or Kampuchea or Cameroon or Cameroons or Cameron or  
16 Camerons or Cape Verde or Central African Republic or Chad or China or Colombia or Comoros  
17 or Comoro Islands or Comores or Mayotte or Congo or Zaire or Costa Rica or Cote d'Ivoire or  
18 Ivory Coast or Cuba or Djibouti or French Somaliland or Dominica or Dominican Republic or East  
19 Timor or East Timor or Timor Leste or Ecuador or Egypt or United Arab Republic or El Salvador  
20 or Eritrea or Ethiopia or Fiji or Gabon or Gabonese Republic or Gambia or Gaza or Georgia  
21 Republic or Georgian Republic or Ghana or Grenada or Guatemala or Guinea or Guiana or  
22 Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or  
23 Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or  
24 Kirghizia or Kyrgyz Republic or Kirghiz or Kirgizstan or Lao PDR or Laos or Lebanon or Lesotho  
25 or Basutoland or Liberia or Libya or Macedonia or Madagascar or Malagasy Republic or Malaysia  
26 or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or Marshall Islands or Mauritania or  
27 Mauritius or Agalega Islands or Mexico or Micronesia or Middle East or Moldova or Moldavia or  
28 Moldovan or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma  
29 or Burma or Namibia or Nepal or Netherlands Antilles or Nicaragua or Niger or Nigeria or Muscat  
30 or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or  
31 Phillipines or Phillipines or Papua New Guinea or Romania or Rumania or Roumania or Rwanda  
32 or Ruanda or Saint Lucia or St Lucia or Saint Vincent or St Vincent or Grenadines or Samoa or  
33 Samoan Islands or Navigator Island or Navigator Islands or Sao Tome or Senegal or Serbia or  
34 Montenegro or Seychelles or Sierra Leone or Sri Lanka or Solomon Islands or Somalia or Sudan  
35 or Suriname or Surinam or Swaziland or South Africa or Syria or Tajikistan or Tadjikistan or  
36 Tadjikistan or Tadjik or Tanzania or Thailand or Togo or Togolese Republic or Tonga or Tunisia  
37 or Turkey or Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu  
38 or New Hebrides or Venezuela or Vietnam or Viet Nam or West Bank or Yemen or Zambia or  
39 Zimbabwe) not ("African-American\*" or "African American\*" or "Mexican American\*" or "American  
40 Indian\*" or "Asian American\*" or "native american\*").tw. (911556)  
41 42 exp africa/ or algeria/ or egypt/ or libya/ or morocco/ or tunisia/ or cameroon/ or central  
42 african republic/ or chad/ or congo/ or "democratic republic of the congo"/ or equatorial guinea/ or  
43 gabon/ or burundi/ or djibouti/ or eritrea/ or ethiopia/ or kenya/ or rwanda/ or somalia/ or south  
44 sudan/ or sudan/ or tanzania/ or uganda/ or angola/ or botswana/ or lesotho/ or malawi/ or  
45 mozambique/ or namibia/ or south africa/ or swaziland/ or zambia/ or zimbabwe/ or benin/ or  
46 burkina faso/ or cape verde/ or cote d'ivoire/ or gambia/ or ghana/ or guinea/ or guinea-bissau/ or  
47 liberia/ or mali/ or mauritania/ or niger/ or nigeria/ or senegal/ or sierra leone/ or togo/ or americas/  
48 or exp caribbean region/ or exp west indies/ or exp central america/ or belize/ or costa rica/ or el  
49 salvador/ or guatemala/ or honduras/ or nicaragua/ or panama/ or panama canal zone/ or latin  
50 america/ or mexico/ or exp south america/ or argentina/ or bolivia/ or brazil/ or chile/ or colombia/  
51 or ecuador/ or french guiana/ or guyana/ or paraguay/ or peru/ or suriname/ or uruguay/ or  
52 venezuela/ or asia/ or asia, central/ or kazakhstan/ or kyrgyzstan/ or tajikistan/ or turkmenistan/ or  
53 uzbekistan/ or exp asia, southeastern/ or borneo/ or brunei/ or cambodia/ or timor-leste/ or  
54 indonesia/ or laos/ or malaysia/ or mekong valley/ or myanmar/ or philippines/ or singapore/ or  
55 thailand/ or vietnam/ or asia, western/ or bangladesh/ or bhutan/ or india/ or sikkim/ or middle  
56 east/ or afghanistan/ or bahrain/ or iran/ or iraq/ or israel/ or jordan/ or kuwait/ or lebanon/ or  
57 oman/ or qatar/ or saudi arabia/ or syria/ or turkey/ or united arab emirates/ or yemen/ or nepal/ or  
58 pakistan/ or sri lanka/ or far east/ or china/ or beijing/ or macau/ or tibet/ or korea/ or mongolia/ or



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2  
3 taiwan/ or indian ocean islands/ or comoros/ or madagascar/ or mauritius/ or reunion/ or  
4 seychelles/ or pacific islands/ or exp melanesia/ or exp micronesia/ or polynesia/ or pitcairn  
5 island/ or exp samoa/ or tonga/ or prince edward island/ or west indies/ or "antigua and barbuda"/  
6 or bahamas/ or barbados/ or cuba/ or dominica/ or dominican republic/ or grenada/ or  
7 guadeloupe/ or haiti/ or jamaica/ or martinique/ or netherlands antilles/ or puerto rico/ or "saint  
8 kitts and nevis"/ or saint lucia/ or "saint vincent and the grenadines"/ or "trinidad and tobago"/ or  
9 united states virgin islands/ or oceania/ (1016763)  
10 43 ((developing or less\* developed or under developed or underdeveloped or middle income or  
11 low\* income or underserved or under served or deprived or poor\*) adj (countr\* or nation? or  
12 population? or world or state\*)).ti,ab. (85470)  
13 44 ((developing or less\* developed or under developed or underdeveloped or middle income or  
14 low\* income) adj (economy or economies)).ti,ab. (440)  
15 45 (low\* adj (gdp or gnp or gross domestic or gross national)).tw. (219)  
16 46 (low adj3 middle adj3 countr\*).tw. (9973)  
17 47 (lmic or lmic3 or third world or lami countr\*).tw. (5479)  
18 48 transitional countr\*.tw. (157)  
19 49 or/38-48 (1508903)  
20 50 8 and 37 and 49 (41601)  
21 51 limit 50 to yr="2000 -Current" (34758)

22 **Medline +In-Process (Ovid) Update Search (1<sup>st</sup> Dec 2017-18<sup>th</sup> Jan 2018) – Searched**  
23 **17<sup>th</sup> January 2018**

24  
25 Result: 1051

26  
27 **2. Cochrane Library – Searched 25<sup>th</sup> January 2018**

28  
29 #1 MeSH descriptor: [Health Personnel] explode all trees 8110  
30 #2 (((health or medical or healthcare) near/1 (personnel or worker\* or auxiliar\* or staff or  
31 professional\*)) or doctor\* or physician\* or GP or "general practitioner?" or "family doctor?" or  
32 nurse\* or midwi\* or "clinical officer\*" or pharmacist\* or dentist\* or ((birth or childbirth or labor or  
33 labour) near/1 (attendant? or assistant?)):ti,ab 49924  
34 #3 (lay near/5 (worker? or visitor? or attendant? or aide or aides or support\* or person\* or  
35 helper? or carer? or caregiver? or care giver? or consultant? or assistant? or staff)):ti,ab 254  
36 #4 (paraprofessional? or paramedic or paramedics or "paramedical worker?" or  
37 "paramedical personnel" or "allied health personnel" or "allied health worker?" or "support  
38 worker?" or "home health aide?"):ti,ab 639  
39 #5 ((community or village?) near/3 ("health worker?" or "health care worker?" or "healthcare  
40 worker?"):ti,ab 484  
41 #6 (doula? or douladural? or monitrice\* or "barefoot doctor?"):ti,ab 22  
42 #7 (primary near/1 (health or care or healthcare)):ti,ab 13102  
43 #8 MeSH descriptor: [Primary Health Care] this term only 4192  
44 #9 {or #1-#8} 61779  
45 #10 (decision\* near/3 (make or makes or making or made or support\* or algorithm\* or aid or  
46 aids or app or apps or application\* or tool\* or instrument\* or technolog\* or technique\* or system\*  
47 or program\* or process\* or method\* or intervention\* or material\* or board\* or guide\* or  
48 counselling\* or counseling)):ti,ab 9511  
49 #11 MeSH descriptor: [Decision Making] this term only 2177  
50 #12 MeSH descriptor: [Decision Support Systems, Clinical] this term only 390  
51 #13 MeSH descriptor: [Decision Support Techniques] this term only 1847  
52 #14 MeSH descriptor: [Diagnosis, Computer-Assisted] this term only 748  
53 #15 MeSH descriptor: [Expert Systems] this term only 60  
54 #16 MeSH descriptor: [Point-of-Care Systems] this term only 516  
55 #17 [mh ^"Guideline Adherence"] or [mh ^"Clinical Protocols"] or [mh ^Checklist] 5091  
56 #18 MeSH descriptor: [Therapy, Computer-Assisted] this term only 1173  
57 #19 MeSH descriptor: [Drug Therapy, Computer-Assisted] this term only 163  
58  
59  
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2  
3 #20 MeSH descriptor: [Electronic Prescribing] this term only 27  
4 #21 [mh ^"Clinical Laboratory Information Systems"] or [mh ^"Clinical Pharmacy Information  
5 Systems"] 38  
6 #22 (((guideline\* or protocol\*) near/4 (adher\* or comply or complian\* or observ\*)) or  
7 checklist\*);ti,ab 1112  
8 #23 MeSH descriptor: [Drug Utilization] this term only 463  
9 #24 [mh ^"drug prescriptions"] or [mh ^"inappropriate prescribing"] or [mh ^"medication  
10 errors"] 869  
11 #25 [mh ^Pharmacy] or [mh ^Pharmacies] or [mh ^"Education, Pharmacy"] 180  
12 #26 [mh ^"practice patterns, nurses"] or [mh ^"practice patterns, physicians"] 1446  
13 #27 ((prescrib\* or prescription\* or dispens\* or pharmac\*) near/3 (pattern\* or habit\* or behavi\*  
14 or practice\* or practise\* or custom\*)):ti,ab 2407  
15 #28 MeSH descriptor: [Access to Information] this term only 49  
16 #29 MeSH descriptor: [Health Information Systems] this term only 12  
17 #30 [mh "Information Services"] 2103  
18 #31 [mh ^"Information Seeking Behavior"] or [mh ^"Computer Literacy"] or [mh ^"Information  
19 Literacy"] or [mh ^"Knowledge"] or [mh ^"Health Knowledge, Attitudes, Practice"] 5514  
20 #32 ((information or knowledge) near/3 (access\* or seek\* or search\* or request\*)):ti,ab  
21 1226  
22 #33 {or #10-#32} 31735  
23 #34 MeSH descriptor: [Developing Countries] this term only 1033  
24 #35 [mh Africa] or [mh Asia] or [mh Caribbean] or [mh "West Indies"] or [mh "Middle East"] or  
25 [mh "South America"] or [mh "Latin America"] or [mh "Central America"] 25548  
26 #36 ((Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or  
27 Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or  
28 Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana  
29 or Brazil or Bulgaria or Burkina Faso or "Burkina Fasso" or "Upper Volta" or Burundi or Urundi or  
30 Cambodia or "Khmer Republic" or Kampuchea or Cameroon or Cameroons or Cameron or  
31 Camerons or "Cape Verde" or "Central African Republic" or Chad or China or Colombia or  
32 Comoros or "Comoro Islands" or Comores or Mayotte or Congo or Zaire or "Costa Rica" or "Cote  
33 d'Ivoire" or "Ivory Coast" or Cuba or Djibouti or "French Somaliland" or Dominica or "Dominican  
34 Republic" or "East Timor" or "East Timur" or "Timor Leste" or Ecuador or Egypt or "United Arab  
35 Republic" or "El Salvador" or Eritrea or Ethiopia or Fiji or Gabon or "Gabonese Republic" or  
36 Gambia or Gaza or "Georgia Republic" or "Georgian Republic" or Ghana or Grenada or  
37 Guatemala or Guinea or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia  
38 or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or  
39 Kosovo or Kyrgyzstan or Kirghizia or "Kyrgyz Republic" or Kirghiz or Kirgizstan or "Lao PDR" or  
40 Laos or Lebanon or Lesotho or Basutoland or Liberia or Libya or Macedonia or Madagascar or  
41 "Malagasy Republic" or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or  
42 "Marshall Islands" or Mauritania or Mauritius or "Agalega Islands" or Mexico or Micronesia or  
43 "Middle East" or Moldova or Moldovia or Moldovian or Mongolian or Montenegro or Morocco or Ifni  
44 or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or "Netherlands Antilles"  
45 or Nicaragua or Niger or Nigeria or Muscat or Pakistan or Palau or Palestine or Panama or  
46 Paraguay or Peru or Philippines or Philipines or Phillipines or Phillippines or "Papua New Guinea"  
47 or Romania or Rumania or Roumania or Rwanda or Ruanda or "Saint Lucia" or "St Lucia" or  
48 "Saint Vincent" or "St Vincent" or Grenadines or Samoa or "Samoan Islands" or "Navigator  
49 Island" or "Navigator Islands" or "Sao Tome" or Senegal or Serbia or Montenegro or Seychelles  
50 or "Sierra Leone" or "Sri Lanka" or "Solomon Islands" or Somalia or Sudan or Suriname or  
51 Surinam or Swaziland or "South Africa" or Syria or Tajikistan or Tadjhikistan or Tadjikistan or  
52 Tadjhik or Tanzania or Thailand or Togo or "Togolese Republic" or Tonga or Tunisia or Turkey or  
53 Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu or "New  
54 Hebrides" or Venezuela or Vietnam or "Viet Nam" or "West Bank" or Yemen or Zambia or  
55 Zimbabwe) not ("African-American\*" or "African American\*" or "Mexican American\*" or "American  
56 Indian\*" or "Asian American\*" or "native american\*"));ti,ab,kw 47798  
57  
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3 #37 ((developing or "less\* developed" or "under developed" or underdeveloped or "middle  
4 income" or "low\* income" or underserved or "under served" or deprived or poor\*) near/1 (countr\*  
5 or nation? or population? or world or state\* or economy or economies)) .ti,ab 659  
6 #38 (low\* near/1 (gdp or gnp or "gross domestic" or "gross national")):ti,ab 40  
7 #39 (low near/3 middle near/3 countr\*):ti,ab 719  
8 #40 (lmic or lmics or "third world" or "lami countr\*" or "transitional countr\*"):ti,ab 196  
9 #41 {or #34-#40} 55166  
10 #42 #9 and #33 and #41 Publication Year from 2000 to 2018 867

### 3. CAB Global Health (Ovid) <1910 to 2018 Week 03> Searched 27th January 2018

13 1 exp health care workers/ (60311)  
14 2 (((health or medical or healthcare) adj (personnel or worker\* or auxiliar\* or staff or  
15 professional\*)) or doctor\* or physician\* or GP or general practitioner? or family doctor or nurse\* or  
16 midwi\* or clinical officer\* or pharmacist\* or dentist\* or ((birth or childbirth or labor or labour) adj  
17 (attendant? or assistant?))):ti,ab. (113958)  
18 3 (lay adj5 (worker? or visitor? or attendant? or aide or aides or support\$ or person\$ or helper?  
19 or carer? or caregiver? or care giver? or consultant? or assistant? or staff)):ti,ab. (513)  
20 4 (paraprofessional? or paramedic or paramedics or paramedical worker? or paramedical  
21 personnel or allied health personnel or allied health worker? or support worker? or home health  
22 aide?):ti,ab. (849)  
23 5 ((community or village?) adj3 (health worker? or health care worker? or healthcare  
24 worker?):ti,ab. (2778)  
25 6 (doula? or douladural? or monitrice\* or "barefoot doctor?"):ti,ab. (104)  
26 7 primary health care/ or (primary adj (health or care)):ti,ab. (22980)  
27 8 or/1-7 (145328)  
28 9 (decision\* adj3 (make or makes or making or made or support\* or algorithm\* or aid or aids or  
29 app or apps or application\* or tool\* or instrument\* or technolog\* or technique\* or system\* or  
30 program\* or process\* or method\* or intervention\* or material\* or board\* or guide\* or  
31 counselling\*)):ti,ab. (19367)  
32 10 decision making/ or decision support systems/ (5879)  
33 11 expert systems/ (101)  
34 12 guidelines/ (36483)  
35 13 checklists/ or reference works/ (1496)  
36 14 information systems/ (3341)  
37 15 (((guideline\* or protocol\*) adj4 (adher\* or comply or complian\* or observ\*)) or  
38 checklist\*):ti,ab. (8239)  
39 16 prescriptions/ (7147)  
40 17 errors/ (544)  
41 18 pharmacy/ (1449)  
42 19 ((prescrib\* or prescription\* or dispens\* or pharmac\*) adj3 (pattern\* or habit\* or behavi\* or  
43 practice\* or practis\* or custom\*)):ti,ab. (3658)  
44 20 information services/ or information needs/ (1752)  
45 21 "diffusion of information"/ (1692)  
46 22 knowledge/ or knowledge level/ (20316)  
47 23 ((information or knowledge) adj3 (access\* or seek\* or search\* or need\* or request\*)):ti,ab.  
48 (8022)  
49 24 or/9-23 (102817)  
50 25 exp africa/ (228281)  
51 26 exp Central America/ or exp Latin America/ or exp South America/ (168913)  
52 27 mexico/ (20887)  
53 28 exp central asia/ (11750)  
54 29 east asia/ or china/ or korea democratic people's republic/ or korea republic/ or mongolia/  
55 (221234)  
56 30 exp south asia/ or himalaya/ (140897)  
57 31 exp south east asia/ or pacific rim/ (91496)

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3 32 exp caribbean/ (21079)  
4 33 exp pacific islands/ (13985)  
5 34 exp developing countries/ (840339)  
6 35 (Africa or Asia or Caribbean or West Indies or South America or Latin America or Central  
7 America).tw. (948168)  
8 36 (Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or  
9 Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or  
10 Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana  
11 or Brazil or Bulgaria or Burkina Faso or Burkina Fasso or Upper Volta or Burundi or Urundi or  
12 Cambodia or Khmer Republic or Kampuchea or Cameroon or Camerouns or Cameron or  
13 Camerons or Cape Verde or Central African Republic or Chad or China or Colombia or Comoros  
14 or Comoro Islands or Comores or Mayotte or Congo or Zaire or Costa Rica or Cote d'Ivoire or  
15 Ivory Coast or Cuba or Djibouti or French Somaliland or Dominica or Dominican Republic or East  
16 Timor or East Timor or Timor Leste or Ecuador or Egypt or United Arab Republic or El Salvador  
17 or Eritrea or Ethiopia or Fiji or Gabon or Gabonese Republic or Gambia or Gaza or Georgia  
18 Republic or Georgian Republic or Ghana or Grenada or Guatemala or Guinea or Guiana or  
19 Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or  
20 Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or  
21 Kirghizia or Kyrgyz Republic or Kirghiz or Kirgizstan or Lao PDR or Laos or Lebanon or Lesotho  
22 or Basutoland or Liberia or Libya or Macedonia or Madagascar or Malagasy Republic or Malaysia  
23 or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or Marshall Islands or Mauritania or  
24 Mauritius or Agalega Islands or Mexico or Micronesia or Middle East or Moldova or Moldovia or  
25 Moldovian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma  
26 or Burma or Namibia or Nepal or Netherlands Antilles or Nicaragua or Niger or Nigeria or Muscat  
27 or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or  
28 Phillipines or Phillipines or Papua New Guinea or Romania or Rumania or Roumania or Rwanda  
29 or Ruanda or Saint Lucia or St Lucia or Saint Vincent or St Vincent or Grenadines or Samoa or  
30 Samoan Islands or Navigator Island or Navigator Islands or Sao Tome or Senegal or Serbia or  
31 Montenegro or Seychelles or Sierra Leone or Sri Lanka or Solomon Islands or Somalia or Sudan  
32 or Suriname or Surinam or Swaziland or South Africa or Syria or Tajikistan or Tadjhikistan or  
33 Tadjikistan or Tadjhik or Tanzania or Thailand or Togo or Togolese Republic or Tonga or Tunisia  
34 or Turkey or Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu  
35 or New Hebrides or Venezuela or Vietnam or Viet Nam or West Bank or Yemen or Zambia or  
36 Zimbabwe).tw. (926305)  
37 ((developing or less\* developed or under developed or underdeveloped or middle income or  
38 low\* income or underserved or under served or deprived or poor\*) adj (countr\* or nation? or  
39 population? or world or state\*).ti,ab. (46270)  
40 38 ((developing or less\* developed or under developed or underdeveloped or middle income or  
41 low\* income) adj (economy or economies)).ti,ab. (235)  
42 39 (low\* adj (gdp or gnp or gross domestic or gross national)).tw. (64)  
43 40 (low adj3 middle adj3 countr\*).tw. (5140)  
44 41 (lmic or Imics or third world or lami countr\*).tw. (20036)  
45 42 transitional countr\*.tw. (90)  
46 43 or/25-41 (1068753)  
47 44 8 and 24 and 43 (9736)  
48 45 limit 44 to yr="2000 -Current" (8935)

#### 4. Web of Science (SCI, SSCI, AHCI) – Searched 28<sup>th</sup> January 2018

# 27 **7,657**

#25 AND #12 AND #7

Refined by: PUBLICATION YEARS: ( 2017 OR 2008 OR 2016 OR 2007 OR 2000 OR 2015 OR  
2006 OR 2018 OR 2014 OR 2005 OR 2013 OR 2003 OR 2012 OR 2004 OR 2011 OR 2001 OR  
2010 OR 2002 OR 2009 )

# 26 8,034

#25 AND #12 AND #7

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# 25 9,820,411

#24 OR #23 OR #22 OR #21 OR #20 OR #19 OR #18 OR #17 OR #16

# 24 329

TS=("transitional countr\*")

# 23 11,372

TS=(Imic or Imics or "third world" or "lami countr\*")

# 22 9,314

TS=(low NEAR/3 middle NEAR/3 countr\*)

# 21 418

TS=(low\* NEAR/1 (gdp or gnp or "gross domestic" or "gross national"))

# 20 162,500

TS=((developing or "less\* developed" or "under developed" or underdeveloped or "middle income" or "low\* income" or underserved or "under served" or deprived or poor\*) NEAR/1 (countr\* or nation? or population? or world or state\* or economy or economies))

# 19 273,978

CU=(Africa or Asia or Caribbean or "West Indies" or "Middle East" or "South America" or "Latin America" or "Central America")

# 18 8,740,046

CU=(Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or "Burkina Faso" or "Burkina Fasso" or "Upper Volta" or Burundi or Urundi or Cambodia or "Khmer Republic" or Kampuchea or Cameroon or Camerouns or Cameron or Camerons or "Cape Verde" or "Central African Republic" or Chad or China or Colombia or Comoros or "Comoro Islands" or Comores or Mayotte or Congo or Zaire or "Costa Rica" or "Cote d'Ivoire" or "Ivory Coast" or Cuba or Djibouti or "French Somaliland" or Dominica or "Dominican Republic" or "East Timor" or "East Timur" or "Timor Leste" or Ecuador or Egypt or "United Arab Republic" or "El Salvador" or Eritrea or Ethiopia or Fiji or Gabon or "Gabonese Republic" or Gambia or Gaza or "Georgia Republic" or "Georgian Republic" or Ghana or Grenada or Guatemala or Guinea or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or Kirghizia or "Kyrgyz Republic" or Kirghiz or Kirgizstan or "Lao PDR" or Laos or Lebanon or Lesotho or Basutoland or Liberia or Libya or Macedonia or Madagascar or "Malagasy Republic" or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or "Marshall Islands" or Mauritania or Mauritius or "Agalega Islands" or Mexico or Micronesia or "Middle East" or Moldova or Moldovia or Moldovian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or "Netherlands Antilles" or Nicaragua or Niger or Nigeria or Muscat or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or Phillipines or Phillipines or "Papua New Guinea" or Romania or Rumania or Roumania or Rwanda or Ruanda or "Saint Lucia" or "St Lucia" or "Saint Vincent" or "St Vincent" or Grenadines or Samoa or "Samoan Islands" or "Navigator Island" or "Navigator Islands" or "Sao Tome" or Senegal or Serbia or Montenegro or Seychelles or "Sierra Leone" or "Sri Lanka" or "Solomon Islands" or Somalia or Sudan or Suriname or Surinam or Swaziland or "South Africa" or Syria or Tajikistan or Tadhikistan or Tadjikistan or Tadhik or Tanzania or Thailand or Togo or "Togolese Republic" or Tonga or Tunisia or Turkey or Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu or "New Hebrides" or Venezuela or Vietnam or "Viet Nam" or "West Bank" or Yemen or Zambia or Zimbabwe)

# 17 2,055,819

TS=((Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or "Burkina Faso" or "Burkina Fasso" or "Upper Volta" or Burundi or Urundi or Cambodia or "Khmer Republic" or Kampuchea or Cameroon or Camerouns or Cameron or Camerons or "Cape Verde" or "Central African Republic" or Chad or China or Colombia or

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3 Comoros or "Comoro Islands" or Comores or Mayotte or Congo or Zaire or "Costa Rica" or "Cote  
4 d'Ivoire" or "Ivory Coast" or Cuba or Djibouti or "French Somaliland" or Dominica or "Dominican  
5 Republic" or "East Timor" or "East Timur" or "Timor Leste" or Ecuador or Egypt or "United Arab  
6 Republic" or "El Salvador" or Eritrea or Ethiopia or Fiji or Gabon or "Gabonese Republic" or  
7 Gambia or Gaza or "Georgia Republic" or "Georgian Republic" or Ghana or Grenada or  
8 Guatemala or Guinea or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia  
9 or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or  
10 Kosovo or Kyrgyzstan or Kirghizia or "Kyrgyz Republic" or Kirghiz or Kirgizstan or "Lao PDR" or  
11 Laos or Lebanon or Lesotho or Basutoland or Liberia or Libya or Macedonia or Madagascar or  
12 "Malagasy Republic" or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or  
13 "Marshall Islands" or Mauritania or Mauritius or "Agalega Islands" or Mexico or Micronesia or  
14 "Middle East" or Moldova or Moldavia or Moldovan or Mongolia or Montenegro or Morocco or Ifni  
15 or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or "Netherlands Antilles"  
16 or Nicaragua or Niger or Nigeria or Muscat or Pakistan or Palau or Palestine or Panama or  
17 Paraguay or Peru or Philippines or Philipines or Phillipines or Phillipines or "Papua New Guinea"  
18 or Romania or Rumania or Roumania or Rwanda or Ruanda or "Saint Lucia" or "St Lucia" or  
19 "Saint Vincent" or "St Vincent" or Grenadines or Samoa or "Samoan Islands" or "Navigator  
20 Island" or "Navigator Islands" or "Sao Tome" or Senegal or Serbia or Montenegro or Seychelles  
21 or "Sierra Leone" or "Sri Lanka" or "Solomon Islands" or Somalia or Sudan or Suriname or  
22 Surinam or Swaziland or "South Africa" or Syria or Tajikistan or Tadjhikistan or Tadjikistan or  
23 Tadjhik or Tanzania or Thailand or Togo or "Togolese Republic" or Tonga or Tunisia or Turkey or  
24 Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu or "New  
25 Hebrides" or Venezuela or Vietnam or "Viet Nam" or "West Bank" or Yemen or Zambia or  
26 Zimbabwe) not ("African-American\*" or "African American\*" or "Mexican American\*" or "American  
27 Indian\*" or "Asian American\*" or "native american\*"))

# 16 478,786

TS=(Africa or Asia or Caribbean or "West Indies" or "Middle East" or "South America" or "Latin  
28 America" or "Central America")

# 15 3,235,777

#14 OR #13

# 14 2,407,968

TS=(information or knowledge)

# 13 910,516

TS=(prescrib\* or prescription\* or dispens\* or pharmac\*)

# 12 493,150

#11 OR #10 OR #9 OR #8

# 11 83,603

TS=((information or knowledge) NEAR/3 (access\* or seek\* or search\* or need\* or request\*))

# 10 28,489

TS=((prescrib\* or prescription\* or dispens\* or pharmac\*) NEAR/3 (pattern\* or habit\* or behavi\* or  
41 practice\* or practise\* or custom\*))

# 9 58,217

TS=((guideline\* or protocol\*) NEAR/4 (adher\* or comply or complian\* or observ\*)) or checklist\*)

# 8 335,422

TS=(decision\* NEAR/3 (make or makes or making or made or support\* or algorithm\* or aid or  
46 aids or app or apps or application\* or tool\* or instrument\* or technolog\* or technique\* or system\*  
47 or program\* or process\* or method\* or intervention\* or material\* or board\* or guide\* or  
48 counselling or counseling))

# 7 726,237

#6 OR #5 OR #4 OR #3 OR #2 OR #1

# 6 125,194

TS=(primary NEAR/1 (health or care))

# 5 180

TS=(doula? or douladural? or monitrice\* or "barefoot doctor?")

# 4 3,029

TS=((community or village?) NEAR/3 ("health worker?" or "health care worker?" or "healthcare worker?"))  
 # 3 5,274

TS=(paraprofessional? or paramedic or paramedics or "paramedical worker?" or "paramedical personnel" or "allied health personnel" or "allied health worker?" or "support worker?" or "home health aide?")  
 # 2 3,404

TS=(lay NEAR/5 (worker? or visitor? or attendant? or aide or aides or support\$ or person\$ or helper? or carer? or caregiver? or "care giver?" or consultant? or assistant? or staff))  
 # 1 649,011

TS=((health or medical or healthcare) NEAR/1 (personnel or worker\* or auxiliar\* or staff or professional\*)) or doctor\* or physician\* or GP or "general practitioner\*" or "family doctor\*" or nurse\* or midwi\* or "clinical officer\*" or pharmacist\* or dentist\* or ((birth or childbirth or labor or labour) NEAR/1 (attendant\* or assistant\*))

### 5. Embase (Ovid) <1980 to 2018 Week 05> Searched 30<sup>th</sup> January 2018

- 1 exp health care personnel/ (1272742)
- 2 (((health or medical or healthcare) adj (personnel or worker\* or auxiliar\* or staff or professional\*)) or doctor\* or physician\* or GP or general practitioner? or family doctor or nurse\* or midwi\* or clinical officer\* or pharmacist\* or dentist\* or ((birth or childbirth or labor or labour) adj (attendant? or assistant?)).ti,ab,kw. (1097704)
- 3 (lay adj5 (worker? or visitor? or attendant? or aide or aides or support\$ or person\$ or helper? or carer? or caregiver? or care giver? or consultant? or assistant? or staff)).ti,ab,kw. (2359)
- 4 (paraprofessional? or paramedic or paramedics or paramedical worker? or paramedical personnel or allied health personnel or allied health worker? or support worker? or home health aide?).ti,ab,kw. (9617)
- 5 ((community or village?) adj3 (health worker? or health care worker? or healthcare worker?)).ti,ab,kw. (4877)
- 6 (doula? or douladural? or monitrice\* or "barefoot doctor?").ti,ab,kw. (346)
- 7 (primary adj (health or care)).ti,ab,kw. (147185)
- 8 primary health care/ or primary medical care/ (141453)
- 9 or/1-8 (1961429)
- 10 (decision\* adj3 (make or makes or making or made or support\* or algorithm\* or aid or aids or app or apps or application\* or tool\* or instrument\* or technolog\* or technique\* or system\* or program\* or process\* or method\* or intervention\* or material\* or board\* or guide\* or counselling\*).ti,ab,kw. (221161)
- 11 clinical decision support system/ or clinical decision making/ or decision support system/ or ethical decision making/ or medical decision making/ or decision making/ (316383)
- 12 computer assisted diagnosis/ or computer assisted drug therapy/ (38130)
- 13 expert system/ (5069)
- 14 practice guideline/ (324525)
- 15 clinical protocol/ or protocol compliance/ (91338)
- 16 checklist/ (16841)
- 17 computer assisted therapy/ (4317)
- 18 inappropriate prescribing/ or electronic prescribing/ (5159)
- 19 information system/ or hospital information system/ or medical information system/ or nursing information system/ (71464)
- 20 drug information/ (22078)
- 21 (((guideline\* or protocol\*) adj4 (adher\* or comply or complian\* or observ\*)) or checklist\*).ti,ab,kw. (69034)
- 22 drug utilization/ (18316)
- 23 prescription/ (155034)
- 24 medication error/ or potentially inappropriate medication/ (16779)
- 25 pharmacy/ (67151)

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3 26 clinical practice/ or professional practice/ or medical practice/ (360294)  
4 27 ((prescrib\* or prescription\* or dispens\* or pharmac\*) adj3 (pattern\* or habit\* or behavi\* or  
5 practice\* or practise\* or custom\*)).ti,ab,kw. (39444)  
6 28 access to information/ or digital divide/ (17356)  
7 29 information seeking/ or information service/ (17641)  
8 30 information literacy/ (399)  
9 31 nursing knowledge/ or knowledge/ or professional knowledge/ (45259)  
10 32 ((information or knowledge) adj3 (access\* or seek\* or search\* or request\* or availab\* or  
11 attitude\*)).ti,ab,kw. (117782)  
12 33 or/10-32 (1590896)  
13 34 developing country/ (87021)  
14 35 low income country/ (1827)  
15 36 middle income country/ (2441)  
16 37 ((developing or less\* developed or under developed or underdeveloped or middle income or  
17 low\* income or underserved or under served or deprived or poor\*) adj (economy or  
18 economies)).ti,ab. (618)  
19 38 ((developing or less\* developed or under developed or underdeveloped or middle income or  
20 low\* income or underserved or under served or deprived or poor\*) adj (countr\* or nation? or  
21 population? or world)).ti,ab. (98614)  
22 39 (low\* adj (gdp or gnp or gross domestic or gross national)).ti,ab. (302)  
23 40 (low adj3 middle adj3 countr\*).ti,ab. (10912)  
24 41 (lmic or lmic3 or third world or lami countr\*).ti,ab. (6124)  
25 42 transitional countr\*.ti,ab. (198)  
26 43 global south.ti,ab. (205)  
27 44 "Africa south of the Sahara"/ (11730)  
28 45 ("africa south of the sahara" or sub-saharan africa or central africa or eastern africa or  
29 southern africa or western africa).ti,ab. (25783)  
30 46 Botswana/ (2077)  
31 47 (Botswana or Bechuanaland or Kalahari).ti,ab. (2177)  
32 48 Equatorial Guinea/ (373)  
33 49 (Equatorial Guinea or Spanish Guinea).ti,ab. (453)  
34 50 Gabon/ (1521)  
35 51 (Gabon or Gabonese Republic).ti,ab. (1658)  
36 52 Mauritius/ (742)  
37 53 (Mauritius or Agalega Islands).ti,ab. (855)  
38 54 Namibia/ (1265)  
39 55 Namibia.ti,ab. (1290)  
40 56 South Africa/ (43279)  
41 57 South Africa.ti,ab. (30727)  
42 58 Angola/ (1165)  
43 59 angola.ti,ab. (1210)  
44 60 Cameroon/ (5773)  
45 61 Cameroon.ti,ab. (6291)  
46 62 Cape Verde/ (260)  
47 63 (Cape Verde or Cabo Verde).ti,ab. (487)  
48 64 Congo/ (3029)  
49 65 (congo not ((democratic republic adj3 congo) or congo red or crimean-congo)).ti,ab. (2135)  
50 66 Cote d'Ivoire/ (2848)  
51 67 (Cote d'Ivoire or Ivory Coast).ti,ab. (3606)  
52 68 Ghana/ (8828)  
53 69 (Ghana or Gold Coast).ti,ab. (9057)  
54 70 Kenya/ (17113)  
55 71 kenya.mp. (20115)  
56 72 Lesotho/ (546)  
57 73 (Lesotho or Basutoland).ti,ab. (601)  
58 74 Mauritania/ (522)



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3 75 Mauritania.ti,ab. (532)  
4 76 Nigeria/ (32467)  
5 77 Nigeria.ti,ab. (28722)  
6 78 "Sao Tome and Principe"/ (59)  
7 79 (sao tome adj2 principe).ti,ab. (121)  
8 80 Sudan/ (5392)  
9 81 (Sudan not south sudan).ti,ab. (6902)  
10 82 Swaziland/ (753)  
11 83 Swaziland.ti,ab. (761)  
12 84 Zambia/ (5056)  
13 85 (Zambia or Northern Rhodesia).ti,ab. (4614)  
14 86 Benin/ (1997)  
15 87 (Benin or Dahomey).ti,ab. (4026)  
16 88 Burkina Faso/ (3509)  
17 89 (Burkina Faso or Burkina Fasso or Upper Volta).ti,ab. (4048)  
18 90 Burundi/ (703)  
19 91 Burundi.ti,ab. (714)  
20 92 Central African Republic/ (775)  
21 93 (Central African Republic or Ubangi-Shari).ti,ab. (905)  
22 94 Chad/ (789)  
23 95 Chad.ti,ab. (1068)  
24 96 Comoros/ (277)  
25 97 (Comoros or Comoro Islands or Mayotte or Iles Comores).ti,ab. (519)  
26 98 "Democratic Republic Congo"/ (2858)  
27 99 ((democratic republic adj2 congo) or belgian congo or zaire).ti,ab. (3631)  
28 100 Eritrea/ (393)  
29 101 Eritrea.ti,ab. (462)  
30 102 Ethiopia/ (11992)  
31 103 Ethiopia.ti,ab. (10826)  
32 104 Gambia/ (2460)  
33 105 Gambia.ti,ab. (2122)  
34 106 Guinea/ (1513)  
35 107 (Guinea not (New Guinea or Guinea Pig\* or Guinea Fowl)).ti,ab. (3719)  
36 108 Guinea-Bissau/ (923)  
37 109 (Guinea-Bissau or Portuguese Guinea).ti,ab. (957)  
38 110 Liberia/ (1376)  
39 111 Liberia.ti,ab. (1312)  
40 112 Madagascar/ (3695)  
41 113 (Madagascar or Malagasy Republic).ti,ab. (4234)  
42 114 Malawi/ (5764)  
43 115 (Malawi or Nyasaland).ti,ab. (5990)  
44 116 Mali/ (2858)  
45 117 Mali.ti,ab. (3462)  
46 118 Mozambique/ (2857)  
47 119 (Mozambique or Mocambique or Portuguese East Africa).ti,ab. (3082)  
48 120 Niger/ (1763)  
49 121 (Niger not (Aspergillus or Peptococcus or Schizothorax or Cruciferae or Gobius or Lasius  
50 or Agelastes or Melanosuchus or radish or Parastromateus or Orius or Apergillus or  
51 Parastromateus or Stomoxys)).ti,ab. (3384)  
52 122 Rwanda/ (2754)  
53 123 (Rwanda or Ruanda).ti,ab. (2538)  
54 124 Senegal/ (5939)  
55 125 senegal.ti,ab. (5531)  
56 126 Sierra Leone/ (1794)  
57 127 Sierra Leone.mp. (2313)  
58 128 exp Somalia/ (1709)

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3 129 Somalia.ti,ab. (1198)  
4 130 South Sudan/ (135)  
5 131 south sudan.ti,ab. (429)  
6 132 Tanzania/ (12272)  
7 133 (Tanzania or Tanganyika or Zanzibar).ti,ab. (12061)  
8 134 Togo/ (1158)  
9 135 (Togo or Togolese Republic).ti,ab. (1319)  
10 136 Uganda/ (13359)  
11 137 Uganda.ti,ab. (12650)  
12 138 Zimbabwe/ (5875)  
13 139 (Zimbabwe or Rhodesia).ti,ab. (5120)  
14 140 Maldives/ (208)  
15 141 Maldives.ti,ab. (240)  
16 142 Algeria/ (3800)  
17 143 Algeria.ti,ab. (3601)  
18 144 Iran/ (39202)  
19 145 Iran.ti,ab. (39180)  
20 146 exp Iraq/ (6675)  
21 147 Iraq.ti,ab. (6749)  
22 148 Jordan/ (5196)  
23 149 Jordan.ti,ab. (6156)  
24 150 Lebanon/ (4495)  
25 151 Lebanon.ti,ab. (4009)  
26 152 Libyan Arab Jamahiriya/ (1487)  
27 153 Libya.ti,ab. (1244)  
28 154 Argentina/ (18616)  
29 155 Argentina.ti,ab. (17626)  
30 156 Belize/ (635)  
31 157 Belize.ti,ab. (726)  
32 158 exp Brazil/ (91530)  
33 159 Brazil.ti,ab. (79390)  
34 160 Colombia/ (14346)  
35 161 Colombia.ti,ab. (12170)  
36 162 Costa Rica/ (4058)  
37 163 Costa Rica.ti,ab. (4166)  
38 164 Cuba/ (6155)  
39 165 Cuba.ti,ab. (4967)  
40 166 Dominica/ (128)  
41 167 Dominica.ti,ab. (413)  
42 168 Dominican Republic/ (2014)  
43 169 Dominican Republic.ti,ab. (1763)  
44 170 Ecuador/ (4091)  
45 171 Ecuador.ti,ab. (3930)  
46 172 Grenada/ (182)  
47 173 Grenada.ti,ab. (280)  
48 174 Guyana/ (675)  
49 175 Guyana.mp. (1116)  
50 176 Jamaica/ (3447)  
51 177 Jamaica.ti,ab. (2950)  
52 178 Mexico/ (39633)  
53 179 Mexico.ti,ab. (41246)  
54 180 exp Panama/ (2426)  
55 181 Panama.ti,ab. (3163)  
56 182 Paraguay/ (1154)  
57 183 Paraguay.mp. (1708)  
58 184 Peru/ (9426)  
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3 185 Peru.ti,ab. (9738)  
4 186 Saint Lucia/ (83)  
5 187 (St Lucia or Saint Lucia).ti,ab. (273)  
6 188 "Saint Vincent and the Grenadines"/ (63)  
7 189 Grenadines.ti,ab. (62)  
8 190 Suriname/ (919)  
9 191 Suriname.ti,ab. (537)  
10 192 Venezuela/ (5772)  
11 193 Venezuela.ti,ab. (5348)  
12 194 Albania/ (1548)  
13 195 Albania.ti,ab. (1387)  
14 196 Azerbaijan/ (1566)  
15 197 Azerbaijan.ti,ab. (1536)  
16 198 Belarus/ (2567)  
17 199 (belarus or byelarus or belorussia).ti,ab. (1935)  
18 200 exp "Bosnia and Herzegovina"/ (2286)  
19 201 (bosnia or herzegovina).ti,ab. (2430)  
20 202 Bulgaria/ (8080)  
21 203 Bulgaria.ti,ab. (5115)  
22 204 Croatia/ (8714)  
23 205 croatia.ti,ab. (8186)  
24 206 Kazakhstan/ (3205)  
25 207 (Kazakhstan or kazakh).ti,ab. (2994)  
26 208 "Macedonia (Republic)"/ (974)  
27 209 Macedonia.ti,ab. (1565)  
28 210 "Montenegro (republic)"/ (592)  
29 211 Montenegro.ti,ab. (914)  
30 212 Romania/ (12433)  
31 213 Romania.ti,ab. (7339)  
32 214 exp Russian Federation/ (54940)  
33 215 USSR/ (44960)  
34 216 (Russia or Russian Federation or USSR or Union of Soviet Socialist Republics or Soviet  
Union).mp. (106649)  
35 217 exp Serbia/ (4687)  
36 218 serbia.ti,ab. (5401)  
37 219 "Turkey (republic)"/ (31578)  
38 220 turkey.ti,ab. not animal/ (34726)  
39 221 Turkmenistan/ (573)  
40 222 Turkmenistan.ti,ab. (298)  
41 223 Yugoslavia/ (8616)  
42 224 yugoslavia.ti,ab. (2104)  
43 225 exp Samoan Islands/ (780)  
44 226 american samoa.ti,ab. (332)  
45 227 exp China/ (171073)  
46 228 china.ti,ab. (148036)  
47 229 Fiji/ (1096)  
48 230 fiji.ti,ab. (1468)  
49 231 Malaysia/ (17995)  
50 232 malaysia.ti,ab. (15868)  
51 233 Marshall Islands/ (119)  
52 234 marshall islands.ti,ab. (289)  
53 235 Nauru/ (54)  
54 236 nauru.ti,ab. (133)  
55 237 ("independent state of samoa" or (samoa not american samoa) or western samoa or  
navigator islands or samoan islands).ti,ab. (463)  
56 238 Thailand/ (28774)  
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3 239 Thailand.ti,ab. (25647)  
4 240 Tonga/ (318)  
5 241 tonga.ti,ab. (402)  
6 242 Tuvalu/ (36)  
7 243 Tuvalu.ti,ab. (50)  
8 244 Bangladesh/ (13108)  
9 245 Bangladesh.ti,ab. (12802)  
10 246 Bhutan/ (562)  
11 247 Bhutan.ti,ab. (538)  
12 248 exp India/ (125083)  
13 249 India.ti,ab. (103457)  
14 250 exp Pakistan/ (22188)  
15 251 Pakistan.ti,ab. (18529)  
16 252 Sri Lanka/ (6898)  
17 253 Sri Lanka.ti,ab. (6028)  
18 254 Djibouti/ (273)  
19 255 (Djibouti or French Somaliland).ti,ab. (342)  
20 256 Egypt/ (17504)  
21 257 Egypt.ti,ab. (14584)  
22 258 Jordan/ (5196)  
23 259 Jordan.ti,ab. (6156)  
24 260 Morocco/ (6276)  
25 261 Morocco.ti,ab. (5661)  
26 262 Syrian Arab Republic/ (1978)  
27 263 (Syria or Syrian Arab Republic).ti,ab. (1703)  
28 264 Tunisia/ (8499)  
29 265 tunisia.mp. (10159)  
30 266 Palestine/ (1219)  
31 267 Gaza.ti,ab. (926)  
32 268 Yemen/ (1625)  
33 269 Yemen.ti,ab. (1642)  
34 270 Bolivia/ (2998)  
35 271 Bolivia.ti,ab. (3027)  
36 272 El Salvador/ (1478)  
37 273 El Salvador.ti,ab. (1175)  
38 274 Guatemala/ (3491)  
39 275 Guatemala.ti,ab. (3223)  
40 276 Honduras/ (1513)  
41 277 Honduras.ti,ab. (1573)  
42 278 Nicaragua/ (1886)  
43 279 Nicaragua.ti,ab. (1844)  
44 280 Armenia/ (1705)  
45 281 Armenia.ti,ab. (1226)  
46 282 "Georgia (Republic)"/ (1687)  
47 283 Kosovo/ (315)  
48 284 Kosovo.ti,ab. (1008)  
49 285 Kyrgyzstan/ (1410)  
50 286 (kyrgyzstan or kyrgyz republic or kirghizia or kirghiz).ti,ab. (976)  
51 287 Moldova/ (990)  
52 288 Moldova.ti,ab. (716)  
53 289 Tajikistan/ (821)  
54 290 tajikistan.ti,ab. (534)  
55 291 exp Ukraine/ (15321)  
56 292 Ukraine.ti,ab. (5276)  
57 293 Uzbekistan/ (1984)  
58 294 Uzbekistan.ti,ab. (1195)  
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 3 295 Cambodia/ (4077)  
 4 296 cambodia.ti,ab. (3639)  
 5 297 exp Indonesia/ (13216)  
 6 298 indonesia.ti,ab. (11731)  
 7 299 Kiribati/ (80)  
 8 300 Kiribati.ti,ab. (142)  
 9 301 Laos/ (1812)  
 10 302 (laos or (lao adj1 democratic republic)).ti,ab. (1571)  
 11 303 "Marshall Islands"/ (119)  
 12 304 "Federated States of Micronesia"/ (856)  
 13 305 (marshall island\* or caroline island\* or ellice island\* or gilbert island\* or johnston island\* or  
 14 mariana island\* or micronesia or pacific island\*).ti,ab. (6678)  
 15 306 Mongolia/ (2631)  
 16 307 mongolia.ti,ab. (3632)  
 17 308 Myanmar/ (2680)  
 18 309 (myanmar or burma).ti,ab. (3127)  
 19 310 Papua New Guinea/ (5341)  
 20 311 Papua New Guinea.ti,ab. (4157)  
 21 312 Philippines/ (9527)  
 22 313 Philippines.ti,ab. (7507)  
 23 314 Timor-Leste/ (415)  
 24 315 Timor-Leste.ti,ab. (267)  
 25 316 Vanuatu/ (371)  
 26 317 Vanuatu.ti,ab. (569)  
 27 318 Viet Nam/ (13230)  
 28 319 (Viet Nam or vietnam).ti,ab. (13417)  
 29 320 Afghanistan/ (5026)  
 30 321 Afghanistan.ti,ab. (5599)  
 31 322 Nepal/ (9183)  
 32 323 Nepal.ti,ab. (8719)  
 33 324 Haiti/ (3456)  
 34 325 Haiti.ti,ab. (2984)  
 35 326 "North Korea"/ (427)  
 36 327 (north korea or (democratic people\* republic adj2 korea)).ti,ab. (341)  
 37 328 or/34-327 [ALL LMICs] (1414607)  
 38 329 9 and 33 and 328 (34122)  
 39 330 limit 329 to yr="2000 -Current" (31572)  
 40 331 limit 330 to embase (19974)

## 6. Poptline – Searched 31<sup>st</sup> January 2018

41  
 42 Title: information OR knowledge OR misinform\* OR Keyword: x INFORMATION OR x  
 43 INFORMATION CENTERS OR x INFORMATION NETWORKS OR x INFORMATION  
 44 RETRIEVAL SYSTEMS OR x INFORMATION DISSEMINATION OR x INFORMATION  
 45 SOURCES OR x INFORMATION SERVICES OR x MISINFORMATION OR x INFORMATION  
 46 COMMUNICATION TECHNOLOGY OR x KNOWLEDGE SOURCES OR x KNOWLEDGE  
 47 AND

48 All Fields: (lay AND (worker\* OR visitor\* OR attendant\* OR aide OR aides OR support\* OR  
 49 person\* OR helper\* OR carer\* OR caregiver\* OR "care giver\*" OR consultant\* OR assistant\* OR  
 50 staff)) OR ((community OR village\*) AND ("health worker\*" OR "health care worker\*" OR  
 51 "healthcare worker\*")) OR "primary health" OR "primary healthcare" OR paraprofessional\* OR  
 52 paramedic OR paramedics OR "paramedical worker\*" OR "paramedical personnel" OR "allied  
 53 health personnel" OR "allied health worker\*" OR "support worker\*" OR "home health aide" OR  
 54 ((birth OR childbirth OR labor OR labour) AND (attendant\* OR assistant\*)) OR doctor\* OR  
 55 physician\* OR GP OR "general practitioner\*" OR "family doctor" OR nurse\* OR midwi\* OR  
 56 "clinical officer\*" OR pharmacist\* OR dentist\* OR ((health OR medical OR healthcare) AND  
 57 (personnel OR worker\* OR auxiliar\* OR staff OR professional\*))

Total – 4536

## 7. WHO Global Health Index – Searched 1<sup>st</sup> February 2018

(tw:(information OR knowledge OR misinform\*)) OR (mh:(information OR knowledge OR misinform\*)) AND (mh:(health personnel)) OR (tw:(doctor\* OR physician\* OR GP OR "general practitioner\*" OR "family doctor" OR nurse\* OR midwi\* OR "clinical officer\*" OR pharmacist\* OR dentist\* OR ((health OR medical OR healthcare) AND (personnel OR worker\* OR auxiliar\* OR staff OR professional\*)) OR (lay AND (worker\* OR visitor\* OR attendant\* OR aide OR aides OR support\* OR person\* OR helper\* OR carer\* OR caregiver\* OR "care giver\*" OR consultant\* OR assistant\* OR staff)) OR ((community OR village\*) AND ("health worker\*" OR "health care worker\*" OR "healthcare worker\*")) OR "primary health" OR "primary healthcare" OR paraprofessional\* OR paramedic OR paramedics OR "paramedical worker\*" OR "paramedical personnel" OR "allied health personnel" OR "allied health worker\*" OR "support worker\*" OR "home health aide" OR ((birth OR childbirth OR labor OR labour) AND (attendant\* OR assistant\*))) AND (year\_cluster:(2000 OR 2001 OR 2002 OR 2003 OR 2004 OR 2005 OR 2006 OR 2007 OR 2008 OR 2009 OR 2010 OR 2011 OR 2012 OR 2013 OR 2014 OR 2015 OR 2016 OR 2017 OR 2018)) - 1521

## 8. Africa-Wide (Ebsco) – Searched 1<sup>st</sup> February 2018

S13 S7 AND S12 - 1,564 Limiters - Year Published: 2000-2018; Data Contributor: AFRICAN HEALTHLINE, .....African Index Medicus, .....African Laboratory for Natural Products Database, .....AIDS Consortium Resource Centre Database, .....Bibliography of Filariasis, .....Community Health Information Database, .....Healthlink Worldwide, .....Healthlit, .....Medicines Information Centre Database, .....SA COUNCIL ON ALCOHOLISM AND DRUG DEPENDENCE DATABASE, .....SAMED, AFRICAN STUDIES, .....Africa Book Centre Database, .....Africa Institute, .....AfricaLit, .....African Books Collective Database, .....African Development Database, .....African Journals Online, .....African Periodicals Exhibit, .....African Publications, .....African Studies Centre Leiden The Netherlands, .....Afrotropical Birds Database, .....CONTEMPORARY AFRICAN POLITICS AND DEVELOPMENT, .....Durban Metropolitan Libraries: Don Africana, .....Ibiscus Database, .....Killie Campbell Africana Library Bibliography, .....Media Africa, .....NAMLIT, .....Natural & Cultural Heritage of Africa, .....NIZA-BIDOC Catalogue, .....Sardius - Bibliographies, .....Sardius - Chronologies, .....Sardius - Treaties, .....School of Oriental & African Studies, .....SOAS: Serials Holdings for Entire Library, .....Swiss Theses on Africa, SOUTH AFRICAN STUDIES, .....Centre for Rural Legal Studies Database, .....Index to South African Periodicals, .....KNIPKAT, .....NELM - Creative Works, .....NELM - Critical Works, .....NELM - Literary Awards, .....NELM - Literature & Literary Criticism by Black South Africans, .....NELM - Main catalog, .....NELM - Manuscripts, .....Nexus - Database of Current & Completed Research in South Africa, .....POLITICAL INFORMATION AND MONITORING SERVICE DATABASE [PIMS], .....South African Legal Abbreviations - Unisa Law Library, .....South African National Bibliography, .....Wits MBA

S12 S8 OR S9 OR S10 OR S11

49,726

S11 TX((information or knowledge) N3 (access\* or seek\* or search\* or need\* or request\*))

11,845

S10 TX(((prescrib\* or prescription\* or dispens\* or pharmac\*) N3 (pattern\* or habit\* or behavi\* or practice\* or practise\* or custom\*)))

2,922

S9 TX(((guideline\* or protocol\*) N4 (adher\* or comply or complian\* or observ\*)) or checklist\*)

10,726

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S8 TX((decision\* N3 (make or makes or making or made or support\* or algorithm\* or aid or aids or app or apps or application\* or tool\* or instrument\* or technolog\* or technique\* or system\* or program\* or process\* or method\* or intervention\* or material\* or board\* or guide\* or counselling or counseling)))

25,313

S7 S1 OR S2 OR S3 OR S4 OR S5 OR S6

134,610

S6 TX(primary N1 (health or care))

19,938

S5 TX(doula\* or douladural\* or monitrice\* or "barefoot doctor\*")

152

S4 TX((community or village\*) N3 ("health worker\*" or "health care worker\*" or "healthcare worker\*"))

3,007

S3 TX(paraprofessional\* or paramedic or paramedics or "paramedical worker\*" or "paramedical personnel" or "allied health personnel" or "allied health worker\*" or "support worker\*" or "home health aide\*")

911

S2 TX(lay N5 (worker\* or visitor\* or attendant\* or aide or aides or support\* or person\* or helper\* or carer\* or caregiver\* or "care giver\*" or consultant\* or assistant\* or staff))

524

S1 TX((((health or medical or healthcare) N1 (personnel or worker\* or auxiliar\* or staff or professional\*)) or doctor\* or physician\* or GP or "general practitioner\*" or "family doctor\*" or nurse\* or midwi\* or "clinical officer\*" or pharmacist\* or dentist\* or ((birth or childbirth or labor or labour) N1 (attendant? or assistant?)))

120,962

## 9. Library, Information Science & Technology Abstracts (Ebsco) – Searched 1<sup>st</sup> February 2018

S21 S7 AND S12 AND S20 Limiters – Publication Date: 20000101-20181231

**354 (302 with duplicates removed)**

S20 S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19

108,395

S19 TX("transitional countr\*")

12

S18 TX(lmic or Imics or "third world" or "lami countr\*")

1,448

S17 TX(low N3 middle N3 countr\*)

50

S16 TX(low\* N1 (gdp or gnp or "gross domestic" or "gross national"))

3

S15 TX((developing or "less\* developed" or "under developed" or underdeveloped or "middle income" or "low\* income" or underserved or "under served" or deprived or poor\*) N1 (countr\* or nation\* or population\* or world or state\* or economy or economies))

5,475

S14 TX((Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or "Burkina Faso" or "Burkina Fasso" or "Upper Volta" or Burundi or Urundi or Cambodia or "Khmer Republic" or Kampuchea or Cameroon or Camerouns or Cameron or Camerons or "Cape Verde" or "Central African Republic" or Chad or China or Colombia or Comoros or "Comoro Islands" or Comores or Mayotte or Congo or Zaire or "Costa Rica" or "Cote d'Ivoire" or "Ivory Coast" or Cuba or Djibouti or "French Somaliland" or Dominica or "Dominican Republic" or "East Timor" or "East Timur" or "Timor Leste" or Ecuador or Egypt or "United Arab

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3 Republic" or "El Salvador" or Eritrea or Ethiopia or Fiji or Gabon or "Gabonese Republic" or  
4 Gambia or Gaza or "Georgia Republic" or "Georgian Republic" or Ghana or Grenada or  
5 Guatemala or Guinea or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia  
6 or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or  
7 Kosovo or Kyrgyzstan or Kirghizia or "Kyrgyz Republic" or Kirghiz or Kirgizstan or "Lao PDR" or  
8 Laos or Lebanon or Lesotho or Basutoland or Liberia or Libya or Macedonia or Madagascar or  
9 "Malagasy Republic" or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or  
10 "Marshall Islands" or Mauritania or Mauritius or "Agalega Islands" or Mexico or Micronesia or  
11 "Middle East" or Moldova or Moldavia or Moldovan or Mongolia or Montenegro or Morocco or Ifni  
12 or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or "Netherlands Antilles"  
13 or Nicaragua or Niger or Nigeria or Muscat or Pakistan or Palau or Palestine or Panama or  
14 Paraguay or Peru or Philippines or Philipines or Phillipines or Phillippines or "Papua New Guinea"  
15 or Romania or Rumania or Roumania or Rwanda or Ruanda or "Saint Lucia" or "St Lucia" or  
16 "Saint Vincent" or "St Vincent" or Grenadines or Samoa or "Samoan Islands" or "Navigator  
17 Island" or "Navigator Islands" or "Sao Tome" or Senegal or Serbia or Montenegro or Seychelles  
18 or "Sierra Leone" or "Sri Lanka" or "Solomon Islands" or Somalia or Sudan or Suriname or  
19 Surinam or Swaziland or "South Africa" or Syria or Tajikistan or Tadjhikistan or Tadjikistan or  
20 Tadzhih or Tanzania or Thailand or Togo or "Togolese Republic" or Tonga or Tunisia or Turkey or  
21 Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu or "New  
22 Hebrides" or Venezuela or Vietnam or "Viet Nam" or "West Bank" or Yemen or Zambia or  
23 Zimbabwe) not ("African-American\*" or "African American\*" or "Mexican American\*" or "American  
24 Indian\*" or "Asian American\*" or "native american\*"))

25 95,492  
26 S13 TX(Africa or Asia or Caribbean or "West Indies" or "Middle East" or "South America" or  
27 "Latin America" or "Central America")  
28 23,024  
29 S12 S8 OR S9 OR S10 OR S11  
30 56,286  
31 S11 TX((information or knowledge) N3 (access\* or seek\* or search\* or need\* or request\*))  
32 41,290  
33 S10 TX(((prescrib\* or prescription\* or dispens\* or pharmac\*) N3 (pattern\* or habit\* or behavi\*  
34 or practice\* or practise\* or custom\*)))  
35 225  
36 S9 TX(((guideline\* or protocol\*) N4 (adher\* or comply or complian\* or observ\*)) or checklist\*)  
37 3,310  
38 S8 TX((decision\* N3 (make or makes or making or made or support\* or algorithm\* or aid or  
39 aids or app or apps or application\* or tool\* or instrument\* or technolog\* or technique\* or system\*  
40 or program\* or process\* or method\* or intervention\* or material\* or board\* or guide\* or  
41 counselling or counseling)))  
42 13,397  
43 S7 S1 OR S2 OR S3 OR S4 OR S5 OR S6  
44 23,105  
45 S6 TX(primary N1 (health or care))  
46 912  
47 S5 TX(doula\* or douladural\* or monitrice\* or "barefoot doctor\*")  
48 21  
49 S4 TX((community or village\*) N3 ("health worker\*" or "health care worker\*" or "healthcare  
50 worker\*"))  
51 28  
52 S3 TX(paraprofessional\* or paramedic or paramedics or "paramedical worker\*" or  
53 "paramedical personnel" or "allied health personnel" or "allied health worker\*" or "support  
54 worker\*" or "home health aide\*")  
55 1,194  
56 S2 TX(lay N5 (worker\* or visitor\* or attendant\* or aide or aides or support\* or person\* or  
57 helper\* or carer\* or caregiver\* or "care giver\*" or consultant\* or assistant\* or staff))  
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3 S1 TX((((health or medical or healthcare) N1 (personnel or worker\* or auxiliar\* or staff or  
4 professional\*)) or doctor\* or physician\* or GP or "general practitioner" or "family doctor\*" or  
5 nurse\* or midwi\* or "clinical officer\*" or pharmacist\* or dentist\* or ((birth or childbirth or labor or  
6 labour) N1 (attendant? or assistant?)))  
7 21,453  
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9 **10. ClinicalTrials.gov – Searched 3<sup>rd</sup> February 2018**

10 information OR knowledge OR decision OR decisions OR decision-making | "health personnel"  
11 OR doctor OR doctors OR nurse OR nurses OR pharmacist OR pharmacists OR physician OR  
12 physicians OR practitioner OR practitioners | Start date on or after 01/01/2000 - **16**  
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14 **11. WHO ICTRP – Searched 3<sup>rd</sup> February 2018**

15 ("health personnel" OR doctor OR doctors OR nurse OR nurses OR pharmacist OR pharmacists  
16 OR physician OR physicians OR practitioner OR practitioners) AND (information OR knowledge  
17 OR decision\*) – **161**  
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# Reporting checklist for protocol of a systematic review.

Based on the PRISMA-P guidelines.

## Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

Upload your completed checklist as an extra file when you submit to a journal.

In your methods section, say that you used the PRISMA-P reporting guidelines, and cite them as:

Moher D, Shamseer L, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart LA. Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) 2015 statement. *Syst Rev.* 2015;4(1):1.

		Reporting Item	Page Number
Identification	#1a	Identify the report as a protocol of a systematic review	1
Update	#1b	If the protocol is for an update of a previous systematic review, identify as such	NA
	#2	If registered, provide the name of the registry (such as PROSPERO) and registration number	In progress
Contact	#3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	1
Contribution	#3b	Describe contributions of protocol authors and identify the guarantor of the review	12
	#4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important	NA

1			protocol amendments	
2	Sources	#5a	Indicate sources of financial or other support for the review	12
3				
4	Sponsor	#5b	Provide name for the review funder and / or sponsor	12
5				
6				
7	Role of sponsor or	#5c	Describe roles of funder(s), sponsor(s), and / or institution(s),	12
8	funder		if any, in developing the protocol	
9				
10				
11	Rationale	#6	Describe the rationale for the review in the context of what is	3-5
12			already known	
13				
14	Objectives	#7	Provide an explicit statement of the question(s) the review will	5
15			address with reference to participants, interventions,	
16			comparators, and outcomes (PICO)	
17				
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19				
20	Eligibility criteria	#8	Specify the study characteristics (such as PICO, study	6
21			design, setting, time frame) and report characteristics (such	
22			as years considered, language, publication status) to be used	
23			as criteria for eligibility for the review	
24				
25				
26				
27	Information	#9	Describe all intended information sources (such as electronic	7
28	sources		databases, contact with study authors, trial registers or other	
29			grey literature sources) with planned dates of coverage	
30				
31				
32	Search strategy	#10	Present draft of search strategy to be used for at least one	7
33			electronic database, including planned limits, such that it	
34			could be repeated	
35				
36				
37	Study records -	#11a	Describe the mechanism(s) that will be used to manage	8
38	data management		records and data throughout the review	
39				
40				
41	Study records -	#11b	State the process that will be used for selecting studies (such	8
42	selection process		as two independent reviewers) through each phase of the	
43			review (that is, screening, eligibility and inclusion in meta-	
44			analysis)	
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47				
48	Study records -	#11c	Describe planned method of extracting data from reports	8
49	data collection		(such as piloting forms, done independently, in duplicate),	
50	process		any processes for obtaining and confirming data from	
51			investigators	
52				
53				
54				
55	Data items	#12	List and define all variables for which data will be sought	8
56			(such as PICO items, funding sources), any pre-planned data	
57			assumptions and simplifications	
58				
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1	Outcomes and	#13	List and define all outcomes for which data will be sought,	6
2	prioritization		including prioritization of main and additional outcomes, with	
3			rationale	
4				
5				
6	Risk of bias in	#14	Describe anticipated methods for assessing risk of bias of	8
7	individual studies		individual studies, including whether this will be done at the	
8			outcome or study level, or both; state how this information will	
9			be used in data synthesis	
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13	Data synthesis	#15a	Describe criteria under which study data will be quantitatively	9
14			synthesised	
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17		#15b	If data are appropriate for quantitative synthesis, describe	9
18			planned summary measures, methods of handling data and	
19			methods of combining data from studies, including any	
20			planned exploration of consistency (such as I <sup>2</sup> , Kendall's $\tau$ )	
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24		#15c	Describe any proposed additional analyses (such as	9
25			sensitivity or subgroup analyses, meta-regression)	
26				
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28		#15d	If quantitative synthesis is not appropriate, describe the type	9
29			of summary planned	
30				
31	Meta-bias(es)	#16	Specify any planned assessment of meta-bias(es) (such as	NA
32			publication bias across studies, selective reporting within	
33			studies)	
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37	Confidence in	#17	Describe how the strength of the body of evidence will be	9
38	cumulative		assessed (such as GRADE)	
39	evidence			
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42 The PRISMA-P checklist is distributed under the terms of the Creative Commons Attribution License  
 43 CC-BY 4.0. This checklist was completed on 16. March 2018 using <http://www.goodreports.org/>, a  
 44 tool made by the [EQUATOR Network](#) in collaboration with [Penelope.ai](#)  
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**How do primary healthcare workers in low- and middle-income countries obtain information during consultations to aid safe prescribing: systematic review protocol**

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2018-023015.R1
Article Type:	Protocol
Date Submitted by the Author:	15-Oct-2018
Complete List of Authors:	Smith, Chris; Nagasaki University, Graduate School of Tropical Medicine & Global Health (TMGH); London School of Hygiene & Tropical Medicine Van Velthoven, Michelle; University of Oxford, Department of Paediatrics Pakenham-Walsh, Neil; Healthcare Information For All (HIFA) network
<b>Primary Subject Heading</b>:	Global health
Secondary Subject Heading:	General practice / Family practice, Pharmacology and therapeutics, Communication
Keywords:	PRIMARY CARE, health information, prescribing, LMICs, decision-making

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Manuscripts

# How do primary healthcare workers in low- and middle-income countries obtain information during consultations to aid safe prescribing: systematic review protocol

Chris Smith<sup>1,2</sup>, Michelle Helena van Velthoven<sup>3</sup>, Neil Pakenham-Walsh<sup>4</sup>

<sup>1</sup> Graduate School of Tropical Medicine & Global Health (TMGH), Nagasaki University, Japan

<sup>2</sup> London School of Hygiene and Tropical Medicine, London, UK

<sup>3</sup> Healthcare Translation Research Group, Department of Paediatrics, University of Oxford, Oxford, UK

<sup>4</sup> Healthcare Information For All (HIFA) network

## Corresponding author:

Chris Smith

5th Floor

School of Tropical Medicine and Global Health

Nagasaki University

1-12-4 Sakamoto

Nagasaki

852-8523

Japan

[christopher.smith@lshtm.ac.uk](mailto:christopher.smith@lshtm.ac.uk)

Word count: 2307

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For peer review only

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## Abstract (word count: 274)

### Introduction

There is a wide variety in prescribing by primary healthcare workers in low- and middle-income countries. Whilst there is much information available, both on- and off-line, there is variation in quality and relevance to different settings. Acting on incorrect or out-of-date information can lead to inappropriate prescribing and impact on patient safety. The aim of this review is to systematically review the evidence on how primary healthcare workers obtain information during consultations to prescribe safely and appropriately.

### Methods and analysis

We will identify relevant articles by searching electronic databases: Medline (Ovid), EMBASE (Ovid), Cochrane Central Register of Controlled Trials, CABI Global Health (Ovid), World Health Organization global health library, POPLINE, Africa-Wide Information (Ebsco), Library, Information Science & Technology Abstracts (Ebsco), ClinicalTrials.gov, and World Health Organization International Clinical Trials Registry Platform. Also, the Health Information For All network will be consulted and evidence databases (TRIP database, Epistemonikos, PDQ Evidence) will be searched. We will hand-search reference lists, run citation searches of included studies and email authors of identified papers. Observational and intervention studies involving primary healthcare workers in low- and middle-income countries who prescribe and/or dispense medication will be included. The primary outcome is the proportion of healthcare workers obtaining information relevant to consultations from different sources. Secondary outcomes are the change in healthcare provider and patient knowledge or behaviour, adverse outcomes, and use of resources. We will exclude studies focusing on secondary care. We anticipate a limited scope for meta-analysis and will provide a narrative overview of findings and tabular summaries of extracted data.

### Ethics and dissemination

No ethics approval is required. Findings will be disseminated through the Healthcare Information For All network.

Key words: primary care, health information, decision-making, LMICs, prescribing  
PROSPERO registration number: PROSPERO 2018 CRD42018091088

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## Strengths and limitations of this study

- This review will systematically review the evidence on how primary healthcare workers obtain health information during consultations to support decision-making for prescribing in low- and middle-income countries.
- Our review is following, where possible, the Cochrane Collaboration and Centre for Review and Dissemination methodology for conducting systematic reviews and we will report our findings based on guidelines from Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement
- A comprehensive search of the evidence will be conducted.
- A limitation of the review is that the quality and quantity of studies with similar interventions conducted in low- and middle-income countries may be limited. Therefore, it is unlikely that we will be able to conduct a meta-analysis.
- The review results will be disseminated to inform efforts that aim to improve the availability of health information in low- and middle-income countries.

## Background

### *Description of the issue*

Accessible, high-quality primary healthcare is a key part of Universal Health Coverage, but is still not available almost 40 years after the Alma Ata declaration of 1978.<sup>1,2</sup> Primary healthcare workers in low- and middle-middle income settings are often faced with large numbers of consultations in remote rural areas. Also, in addition to infectious diseases, such as HIV, TB, and malaria, there is an increasing prevalence of non-communicable diseases and mental health issues.<sup>3</sup> This forces health workers to deal with more complex treatment of patients, often with limited support and resources, on a background of having received varied levels of education and training.<sup>4-6</sup>

Primary healthcare workers encompass a diverse range of healthcare cadres such as doctors, clinical officers, nurses, pharmacists and drug store vendors and are often the first level of contact of individuals, the family and the community with the national health system.<sup>2</sup> Poor performance of these primary healthcare workers can result in incorrect diagnosis and management of common diseases, including inappropriate drug prescribing.

There are various issues related to inappropriate and unsafe prescribing. There are medication errors, which applies to errors of dose or route of administration, and to

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3 errors of communication between prescription and dispensing (e.g. bad handwriting  
4 etc). Also, healthcare workers can prescribe the wrong medicine, with or without a  
5 failure to correctly diagnose the case. Furthermore, overprescribing is a huge problem,  
6 especially in low-and-middle income countries (LMICs), with almost every patient being  
7 given one or more medicines per consultation.<sup>7</sup> Overuse of antimicrobials accelerates  
8 the emergence and growth of antimicrobial resistance, which is an increasingly serious  
9 threat to global public health.<sup>8</sup> 'Rational' use of medicines depends largely on the ability  
10 of the health worker to make the correct diagnosis and then prescribe (or not)  
11 accordingly.<sup>9</sup>

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16 Unsafe prescribing by primary healthcare workers have often been attributed to weak  
17 medication systems, poor environmental conditions or staff shortages, poor education,  
18 inadequate training and lack of knowledge and skills.<sup>10</sup> Previous studies in Africa have  
19 suggested variations in knowledge about the basics on how to diagnose and manage  
20 common diseases, going right across the health workforce and often associated with  
21 suboptimal, ineffective and dangerous health care practices.<sup>9,11-13</sup>

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26 One important factor influencing knowledge and practice of primary healthcare workers  
27 is the wide variation in quality of health information and relevance to different settings  
28 with respect to their language, geographical focus and technical level. Offline resources  
29 may be out-of-date and might not have not incorporated changes in medical knowledge  
30 and guidance that have occurred over time such as new diagnostic tests and antibiotic  
31 regimens. Acting on such information can lead to incorrect diagnosis and inappropriate  
32 prescribing.

### 33 34 35 36 37 ***Description of the intervention***

38 By 'healthcare information' we refer to the information that healthcare workers need at  
39 the point of care to guide them in prescribing: to guide them on how to select whether  
40 to prescribe a medicine for an individual patient, which medicine to use, and how to do  
41 so.

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44 For this study, we are focusing on healthcare information resources such as point-of-  
45 care decision tools, formularies, books, manuals, guidelines and protocols, rather than  
46 routine health information such as patient records and local epidemiological reports.

### 47 48 49 ***How the intervention might work***

50 Arguably, correct information to guide prescribing (including diagnosis and, where  
51 appropriate, selection of medicine) is the single most important aspect of point-of-care  
52 information for most of clinical consultations, especially at primary care level.

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5 Factors influencing whether healthcare providers attempt to access information during  
6 consultations include previous training and availability of the information, which could  
7 include internet access.<sup>9,11,14</sup> Additional influencing factors might be how common or  
8 rare a condition is, whether it is a condition where it is important to give correct  
9 medication/dose (i.e. risk or adverse event or child dosing required), the degree of risk  
10 health workers to provide prepared to take without checking, and 'black holes' i.e. not  
11 aware of lack of knowledge.  
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### 16 ***Why it is important to do this review***

17 The World Health Organisation (WHO) aims to reduce the level of severe, avoidable  
18 harm related to medications by 50% over the next five years, globally.<sup>10</sup> Whilst there  
19 exists a plethora of health information, it is unclear to what extent primary healthcare  
20 workers in LMICs access such information to aid prescribing, including free and for  
21 purchase materials, both in digital and off-line forms. A recent systematic review found  
22 that most of interventions to improve healthcare worker performance have focused on  
23 'Supervision' as opposed to 'Tools and Aids' such as protocols and/or charts. Digital  
24 health tools targeting primary healthcare workers were not reported to have been  
25 extensively studied.<sup>6</sup>  
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31 To our knowledge no systematic reviews have assessed how primary healthcare workers  
32 in LMICs obtain health information during consultations to aid safe prescribing.  
33 Therefore, the aim of this review is to review the evidence on how primary healthcare  
34 workers obtain health information during consultations to support prescribing decision-  
35 making.  
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### 41 **Objectives**

42 Systematically review the evidence on how primary healthcare workers obtain health  
43 information during consultations to aid decision-making for prescribing in LMICs and its  
44 impact by assessing:  
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- 46 1. proportions of healthcare workers obtaining healthcare information from  
47 different sources (e.g. use of books, guidelines, digital resources, peer networks)  
48 during consultations (i.e. from the time when the patient arrives to leaving) to  
49 make decisions on prescribing;
- 50 2. change in healthcare provider and patient knowledge or behaviour;
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3. adverse outcomes (e.g. misconceptions resulting from out-of-date or incorrect information, whether obtaining information to guide prescribing relevant to a consultation reduces the quality of a consultation, for example patients trust a healthcare worker less or perceive a lack of empathy when a health worker looks up information);
4. use of resources.

## Methods

This is the protocol for a systematic review of the literature that is reported where possible according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for protocols (PRISMA-P) as provided as Supplementary File 1.<sup>15</sup> Our review is following, where possible, the Cochrane Collaboration<sup>16</sup> and Centre for Review and Dissemination<sup>17</sup> methodology for conducting systematic reviews where possible.

### Criteria for considering studies

#### Types of studies

We will include observational studies, such as cross-sectional surveys, cohort studies, qualitative studies (e.g. interview studies and focus groups) and mystery client studies, and intervention studies, such as Randomized Controlled Trials (RCTs) and non-randomised studies (non-randomized controlled trials, controlled before-and-after studies, interrupted-time-series studies). We will only include studies reported in English that were published after 2000.

#### Types of participants

We will include studies involving primary healthcare workers in LMICs who prescribe or dispense medication, or order medical tests, such as doctors, clinical officers, nurses, midwives, pharmacists, specialist drug shop vendors, or community health workers. We will exclude studies focusing on secondary care or hospital settings, allied health professionals, e.g. physiotherapists and traditional medicine health workers.

#### Types of interventions

We will include any studies assessing interventions to improve access to healthcare information during consultation for prescribing, e.g. tools and aids (possible interventions could use digital resources, books, protocols etc.). Also, studies that do not focus on an intervention (e.g. observational studies) will be included. We will not include quality improvement, supervision or mentoring interventions unless support in

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2  
3 the form of tools or aids for healthcare workers are explicitly available during the  
4 consultation.  
5

### 6 7 **Types of comparators**

8 We will include any type of comparator interventions.  
9

### 10 11 **Types of outcome measures**

12 The primary outcome of this review is the proportion of healthcare workers obtaining  
13 healthcare information during consultations (i.e. from the time when the patient arrives  
14 to leaving) from different sources (e.g. use of books, guidelines, digital resources, peer  
15 networks, no information - memory). Secondary outcomes are the change in healthcare  
16 provider knowledge or behaviour (e.g. prescribing/diagnosis) (e.g. intervention studies),  
17 change in patient knowledge, behaviour or clinical outcomes, adverse outcomes, and  
18 use of particular resources.  
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### 23 **Information sources**

24 Relevant articles will be identified by searching electronic databases:  
25

- 26 • MEDLINE through Ovid;
  - 27 • EMBASE through Ovid
  - 28 • CABI Global health through Ovid;
  - 29 • WHO global health library (<http://www.globalhealthlibrary.net/php/index.php>),
  - 30 • POPLINE: <http://www.poline.org/>;
  - 31 • Africa-Wide Information ([https://www.ebsco.com/products/research-](https://www.ebsco.com/products/research-databases/africa-wide-information)  
32 [databases/africa-wide-information](https://www.ebsco.com/products/research-databases/africa-wide-information))
  - 33 • Library, Information Science & Technology D/base  
34 ([https://www.ebsco.com/products/research-databases/library-information-](https://www.ebsco.com/products/research-databases/library-information-science-and-technology-abstracts)  
35 [science-and-technology-abstracts](https://www.ebsco.com/products/research-databases/library-information-science-and-technology-abstracts));
  - 36 • Web of Science;
  - 37 • Cochrane Central Register of Controlled Trials (CENTRAL)  
38 (<http://www.cochranelibrary.com/about/central-landing-page.html>);
  - 39 • WHO International Clinical Trials Registry Platform  
40 (<http://apps.who.int/trialsearch/>);
  - 41 • ClinicalTrials.gov
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3 In addition, the Healthcare Information For All (HIFA) network will be consulted for  
4 relevant publications and evidence databases such as TRIP database  
5 (<https://www.tripdatabase.com/>), Epistemonikos (<https://www.epistemonikos.org/>),  
6 PDQ Evidence (<https://www.pdq-evidence.org/>). We will hand-search reference lists,  
7 run citation searches of included studies (e.g. in Google Scholar, Scopus or Web of  
8 Knowledge) and email authors of identified papers to identify additional articles.  
9  
10

### 11 12 **Search strategy**

13 Final search strategies can be found in Supplementary File 2 tailored to the different  
14 databases with a medical research librarian (John Eyers). No study design filter will be  
15 used as both quantitative and qualitative studies are included. We will use the titles,  
16 abstracts and keywords of a set of articles for which we know that meet our inclusion  
17 criteria to define a search strategy that will return all these articles without an  
18 unmanageably large number of irrelevant articles.  
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### 23 **Data management, collection and analysis**

#### 24 **Selection of studies**

25 We will exclude duplicate references by comparing titles, authors and digital object  
26 identifiers (DOIs) between similar search results using two software programs (Endnote:  
27 <http://endnote.com/> and EPPI: <http://eppi.ioe.ac.uk/cms/>). One reviewer will screen  
28 titles/abstracts of search results against the inclusion and exclusion criteria and 10% of  
29 the titles/abstracts will be screened by a second reviewer for validation. One reviewer  
30 will retrieve a full-text paper when a study includes participants who are primary  
31 healthcare workers in LMICs and it assesses one or more relevant outcome measures.  
32 Two reviewers will assess full-text for eligibility, with any disagreement to be resolved  
33 through discussion with a third author.  
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#### 40 **Data extraction**

41 To extract data from included studies we will use a standardized Excel form that  
42 includes general information (title, authors, date, etc.), study characteristics (study  
43 design, aim, duration, inclusion/exclusion criteria), risk of bias (depending on study  
44 design), participants (description, geographic location setting etc.), intervention (if  
45 appropriate and to include sources of on- or off-line information sources used),  
46 outcomes (as specified above, other outcomes, adverse events), and results (outcomes,  
47 times of assessment). We will pilot the data extraction form on a small number of  
48 studies to develop the final data extraction form. One reviewer will extract data from  
49 included studies that will be validated by a second reviewer.  
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51  
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### **Assessment of risk of bias**

Risk of bias for RCTs will be undertaken by one reviewer and independently checked by another. Any disagreements will be resolved by consensus and the opinion of a third reviewer. The methods specified in the Cochrane Collaboration tool for assessing risk of bias will be used, which includes assessment of the following six domains: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, and selective reporting. Three bias assessment categories will be used: low, high and unclear risk. As specified in the Cochrane handbook,<sup>16</sup> an adapted version of these domains will also be used for NRS. For case control and cohort studies, the Newcastle-Ottawa Scales will be considered. For observational studies, guidance from the Centre for Review and Dissemination<sup>17</sup> will be used to inform the quality assessment. At the moment, the value of quality assessment of qualitative research is debated. A relevant tool will be selected based on the Cochrane Handbook's recommendations.

### **Assessment of heterogeneity**

We anticipate a limited scope for meta-analysis due to differences study populations, interventions, and outcomes. If a sufficient number of studies are found, we will explore heterogeneity through consideration of the study populations, methods and interventions, by visual inspection of results. Also in statistical terms, we will assess the chi-squared test for homogeneity and the  $I^2$  statistic. We define statistically significant heterogeneity as  $p < 0.10$ . The  $I^2$  will be assessed with the following levels of inconsistency:  $I^2$  of 0–25% = low level of inconsistency; 26–50% = moderate level of inconsistency; and  $> 50\%$  = high level of inconsistency.

### **Data synthesis**

We will provide a narrative overview of findings and tabular summaries of extracted data. If a meta-analysis can be performed, this will estimate a summary measure of effect on relevant outcomes. For dichotomous outcomes, odds ratios (ORs) will be used as the summary statistic. For continuous outcomes, mean difference (MD) will be the summary statistic. Meta-analyses will be conducted when clinically homogeneous studies of similar comparisons reporting the same outcome measures are identified. Standard pairwise meta-analysis will be conducted when more than one RCT was identified. Quality of evidence will be assessed using the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) approach.

### Subgroup analyses

If appropriate, we will provide a narrative overview of subgroups including different interventions (e.g. digital vs. analogue), cadres of healthcare workers, and geographic regions.

### Ethics and dissemination

No ethics approval is required. We will submit the full systematic review for publication in a peer-reviewed medical journal. The review will inform efforts that aim to improve the prescribing practices of healthcare workers in low- and middle-income countries. Findings will be disseminated through the Health Information For All network.

### Patient and Public Involvement

Patients and the public were not involved in writing this protocol.

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### Authors' contributions

Chris Smith and Michelle van Velthoven jointly wrote the protocol. Neil Pakenham-Walsh provided extensive comments on the protocol.

### Funding statement

This work was supported by Nagasaki University. The funder did not have input in developing this protocol.

### Competing interests statement

The author(s) declared the following potential competing interests with respect to the research, authorship, and/or publication of this article: Dr Michelle van Velthoven is the director of Dutches Consulting Ltd., which provides advice to clients in the life sciences.

peer review only

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# Reporting checklist for protocol of a systematic review.

Based on the PRISMA-P guidelines.

## Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

Upload your completed checklist as an extra file when you submit to a journal.

In your methods section, say that you used the PRISMA-P reporting guidelines, and cite them as:

Moher D, Shamseer L, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart LA. Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) 2015 statement. *Syst Rev.* 2015;4(1):1.

		Reporting Item	Page Number
Identification	#1a	Identify the report as a protocol of a systematic review	1
Update	#1b	If the protocol is for an update of a previous systematic review, identify as such	NA
	#2	If registered, provide the name of the registry (such as PROSPERO) and registration number	2
Contact	#3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	1
Contribution	#3b	Describe contributions of protocol authors and identify the guarantor of the review	12
	#4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important	NA

1			protocol amendments	
2				
3	Sources	#5a	Indicate sources of financial or other support for the review	12
4				
5	Sponsor	#5b	Provide name for the review funder and / or sponsor	12
6				
7	Role of sponsor or	#5c	Describe roles of funder(s), sponsor(s), and / or institution(s),	12
8	funder		if any, in developing the protocol	
9				
10				
11	Rationale	#6	Describe the rationale for the review in the context of what is	3-5
12			already known	
13				
14				
15	Objectives	#7	Provide an explicit statement of the question(s) the review will	5
16			address with reference to participants, interventions,	
17			comparators, and outcomes (PICO)	
18				
19				
20	Eligibility criteria	#8	Specify the study characteristics (such as PICO, study design,	6
21			setting, time frame) and report characteristics (such as years	
22			considered, language, publication status) to be used as	
23			criteria for eligibility for the review	
24				
25				
26				
27	Information	#9	Describe all intended information sources (such as electronic	7
28	sources		databases, contact with study authors, trial registers or other	
29			grey literature sources) with planned dates of coverage	
30				
31				
32	Search strategy	#10	Present draft of search strategy to be used for at least one	7
33			electronic database, including planned limits, such that it	
34			could be repeated	
35				
36				
37	Study records -	#11a	Describe the mechanism(s) that will be used to manage	8
38	data management		records and data throughout the review	
39				
40				
41	Study records -	#11b	State the process that will be used for selecting studies (such	8
42	selection process		as two independent reviewers) through each phase of the	
43			review (that is, screening, eligibility and inclusion in meta-	
44			analysis)	
45				
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47				
48	Study records -	#11c	Describe planned method of extracting data from reports	8
49	data collection		(such as piloting forms, done independently, in duplicate), any	
50	process		processes for obtaining and confirming data from investigators	
51				
52				
53	Data items	#12	List and define all variables for which data will be sought	8
54			(such as PICO items, funding sources), any pre-planned data	
55			assumptions and simplifications	
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1	Outcomes and	#13	List and define all outcomes for which data will be sought,	6
2	prioritization		including prioritization of main and additional outcomes, with	
3			rationale	
4				
5				
6	Risk of bias in	#14	Describe anticipated methods for assessing risk of bias of	8
7	individual studies		individual studies, including whether this will be done at the	
8			outcome or study level, or both; state how this information will	
9			be used in data synthesis	
10				
11				
12				
13	Data synthesis	#15a	Describe criteria under which study data will be quantitatively	9
14			synthesised	
15				
16				
17		#15b	If data are appropriate for quantitative synthesis, describe	9
18			planned summary measures, methods of handling data and	
19			methods of combining data from studies, including any	
20			planned exploration of consistency (such as I <sup>2</sup> , Kendall's $\tau$ )	
21				
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23				
24		#15c	Describe any proposed additional analyses (such as	9
25			sensitivity or subgroup analyses, meta-regression)	
26				
27				
28		#15d	If quantitative synthesis is not appropriate, describe the type	9
29			of summary planned	
30				
31	Meta-bias(es)	#16	Specify any planned assessment of meta-bias(es) (such as	NA
32			publication bias across studies, selective reporting within	
33			studies)	
34				
35				
36				
37	Confidence in	#17	Describe how the strength of the body of evidence will be	9
38	cumulative		assessed (such as GRADE)	
39	evidence			
40				
41				

42 The PRISMA-P checklist is distributed under the terms of the Creative Commons Attribution License  
 43 CC-BY 4.0. This checklist was completed on 16. March 2018 using <http://www.goodreports.org/>, a  
 44 tool made by the [EQUATOR Network](#) in collaboration with [Penelope.ai](#)  
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## Supplementary File 2

### Searches

#### 1. Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) <1946 to Present> Searched 1<sup>st</sup> December 2017

- 1 exp Health Personnel/ (470086)
- 2 (((health or medical or healthcare) adj (personnel or worker\* or auxiliar\* or staff or professional\*)) or doctor\* or physician\* or GP or general practitioner? or family doctor or nurse\* or midwi\* or clinical officer\* or pharmacist\* or dentist\* or ((birth or childbirth or labor or labour) adj (attendant? or assistant?))).ti,ab,kw. (903556)
- 3 (lay adj5 (worker? or visitor? or attendant? or aide or aides or support\$ or person\$ or helper? or carer? or caregiver? or care giver? or consultant? or assistant? or staff)).ti,ab,kw. (2050)
- 4 (paraprofessional? or paramedic or paramedics or paramedical worker? or paramedical personnel or allied health personnel or allied health worker? or support worker? or home health aide?).ti,ab,kw. (7866)
- 5 ((community or village?) adj3 (health worker? or health care worker? or healthcare worker?)).ti,ab,kw. (4384)
- 6 (doula? or douladural? or monitrice\* or "barefoot doctor?").ti,ab,kw. (432)
- 7 Primary Health Care/ or (primary adj (health or care)).ti,ab,kw. (139360)
- 8 or/1-7 (1239133)
- 9 (decision\* adj3 (make or makes or making or made or support\* or algorithm\* or aid or aids or app or apps or application\* or tool\* or instrument\* or technolog\* or technique\* or system\* or program\* or process\* or method\* or intervention\* or material\* or board\* or guide\* or counselling\*)).ti,ab,kw. (168674)
- 10 Decision Making/ (87993)
- 11 Decision Support Systems, Clinical/ (7147)
- 12 Decision Support Techniques/ (18896)
- 13 Diagnosis, Computer-assisted/ (22858)
- 14 Expert Systems/ (3530)
- 15 Point-of-Care Systems/ (10987)
- 16 Guideline Adherence/ or Clinical Protocols/ or Checklist/ (60686)
- 17 Therapy, Computer-Assisted/ (6753)
- 18 "Drug Therapy, Computer-Assisted"/ (1731)
- 19 Electronic Prescribing/ (893)
- 20 Clinical Laboratory Information Systems/ or Clinical Pharmacy Information Systems/ (3270)
- 21 (((guideline\* or protocol\*) adj4 (adher\* or comply or complian\* or observ\*)) or checklist\*).ti,ab,kw. (49650)
- 22 Drug Utilization/ (20253)
- 23 drug prescriptions/ or inappropriate prescribing/ or medication errors/ (39442)
- 24 Pharmacy/ or Pharmacies/ or Education, Pharmacy/ (21040)
- 25 practice patterns, nurses'/ or practice patterns, physicians'/ (57488)
- 26 (prescrib\* or prescription\* or dispens\* or pharmac\*).ti,ab,kw. (880900)
- 27 ((prescrib\* or prescription\* or dispens\* or pharmac\*) adj3 (pattern\* or habit\* or behavi\* or practice\* or practise\* or custom\*)).ti,ab,kw. (27761)
- 28 Access to Information/ (5939)
- 29 Health Information Systems/ut [Utilization] (107)
- 30 exp Information Services/ut [Utilization] (1467)
- 31 Information Seeking Behavior/ (1687)
- 32 Computer Literacy/ or Information Literacy/ (1849)
- 33 Knowledge/ (10411)
- 34 Health Knowledge, Attitudes, Practice/ (100228)
- 35 (information or knowledge).ti,ab,kw. (1559658)

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2  
3 36 ((information or knowledge) adj3 (access\* or seek\* or search\* or request\*).ti,ab,kw.  
4 (22942)  
5 37 or/9-36 (2731874)  
6 38 Developing Countries.sh,kf. (85222)  
7 39 Africa/ or Asia/ or Caribbean/ or West Indies/ or Middle East/ or South America/ or Latin  
8 America/ or Central America/ (78370)  
9 40 (Africa or Asia or Caribbean or West Indies or Middle East or South America or Latin  
10 America or Central America).tw. (170009)  
11 41 ((Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or  
12 Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or  
13 Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana  
14 or Brazil or Bulgaria or Burkina Faso or Burkina Fasso or Upper Volta or Burundi or Urundi or  
15 Cambodia or Khmer Republic or Kampuchea or Cameroon or Camerouns or Cameron or  
16 Camerons or Cape Verde or Central African Republic or Chad or China or Colombia or Comoros  
17 or Comoro Islands or Comores or Mayotte or Congo or Zaire or Costa Rica or Cote d'Ivoire or  
18 Ivory Coast or Cuba or Djibouti or French Somaliland or Dominica or Dominican Republic or East  
19 Timor or East Timor or Timor Leste or Ecuador or Egypt or United Arab Republic or El Salvador  
20 or Eritrea or Ethiopia or Fiji or Gabon or Gabonese Republic or Gambia or Gaza or Georgia  
21 Republic or Georgian Republic or Ghana or Grenada or Guatemala or Guinea or Guiana or  
22 Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or  
23 Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or  
24 Kirghizia or Kyrgyz Republic or Kirghiz or Kirgizstan or Lao PDR or Laos or Lebanon or Lesotho  
25 or Basutoland or Liberia or Libya or Macedonia or Madagascar or Malagasy Republic or Malaysia  
26 or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or Marshall Islands or Mauritania or  
27 Mauritius or Agalega Islands or Mexico or Micronesia or Middle East or Moldova or Moldovia or  
28 Moldovian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma  
29 or Burma or Namibia or Nepal or Netherlands Antilles or Nicaragua or Niger or Nigeria or Muscat  
30 or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or  
31 Phillipines or Phillipines or Papua New Guinea or Romania or Rumania or Roumania or Rwanda  
32 or Ruanda or Saint Lucia or St Lucia or Saint Vincent or St Vincent or Grenadines or Samoa or  
33 Samoan Islands or Navigator Island or Navigator Islands or Sao Tome or Senegal or Serbia or  
34 Montenegro or Seychelles or Sierra Leone or Sri Lanka or Solomon Islands or Somalia or Sudan  
35 or Suriname or Surinam or Swaziland or South Africa or Syria or Tajikistan or Tadjhikistan or  
36 Tadjikistan or Tadjhik or Tanzania or Thailand or Togo or Togolese Republic or Tonga or Tunisia  
37 or Turkey or Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu  
38 or New Hebrides or Venezuela or Vietnam or Viet Nam or West Bank or Yemen or Zambia or  
39 Zimbabwe) not ("African-American\*" or "African American\*" or "Mexican American\*" or "American  
40 Indian\*" or "Asian American\*" or "native american\*").tw. (911556)  
41 42 exp africa/ or algeria/ or egypt/ or libya/ or morocco/ or tunisia/ or cameroon/ or central  
42 african republic/ or chad/ or congo/ or "democratic republic of the congo"/ or equatorial guinea/ or  
43 gabon/ or burundi/ or djibouti/ or eritrea/ or ethiopia/ or kenya/ or rwanda/ or somalia/ or south  
44 sudan/ or sudan/ or tanzania/ or uganda/ or angola/ or botswana/ or lesotho/ or malawi/ or  
45 mozambique/ or namibia/ or south africa/ or swaziland/ or zambia/ or zimbabwe/ or benin/ or  
46 burkina faso/ or cape verde/ or cote d'ivoire/ or gambia/ or ghana/ or guinea/ or guinea-bissau/ or  
47 liberia/ or mali/ or mauritania/ or niger/ or nigeria/ or senegal/ or sierra leone/ or togo/ or americas/  
48 or exp caribbean region/ or exp west indies/ or exp central america/ or belize/ or costa rica/ or el  
49 salvador/ or guatemala/ or honduras/ or nicaragua/ or panama/ or panama canal zone/ or latin  
50 america/ or mexico/ or exp south america/ or argentina/ or bolivia/ or brazil/ or chile/ or colombia/  
51 or ecuador/ or french guiana/ or guyana/ or paraguay/ or peru/ or suriname/ or uruguay/ or  
52 venezuela/ or asia/ or asia, central/ or kazakhstan/ or kyrgyzstan/ or tajikistan/ or turkmenistan/ or  
53 uzbekistan/ or exp asia, southeastern/ or borneo/ or brunei/ or cambodia/ or timor-leste/ or  
54 indonesia/ or laos/ or malaysia/ or mekong valley/ or myanmar/ or philippines/ or singapore/ or  
55 thailand/ or vietnam/ or asia, western/ or bangladesh/ or bhutan/ or india/ or sikkim/ or middle  
56 east/ or afghanistan/ or bahrain/ or iran/ or iraq/ or israel/ or jordan/ or kuwait/ or lebanon/ or  
57 oman/ or qatar/ or saudi arabia/ or syria/ or turkey/ or united arab emirates/ or yemen/ or nepal/ or  
58 pakistan/ or sri lanka/ or far east/ or china/ or beijing/ or macau/ or tibet/ or korea/ or mongolia/ or  
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3 taiwan/ or indian ocean islands/ or comoros/ or madagascar/ or mauritius/ or reunion/ or  
4 seychelles/ or pacific islands/ or exp melanesia/ or exp micronesia/ or polynesia/ or pitcairn  
5 island/ or exp samoa/ or tonga/ or prince edward island/ or west indies/ or "antigua and barbuda"/  
6 or bahamas/ or barbados/ or cuba/ or dominica/ or dominican republic/ or grenada/ or  
7 guadeloupe/ or haiti/ or jamaica/ or martinique/ or netherlands antilles/ or puerto rico/ or "saint  
8 kitts and nevis"/ or saint lucia/ or "saint vincent and the grenadines"/ or "trinidad and tobago"/ or  
9 united states virgin islands/ or oceania/ (1016763)  
10 43 ((developing or less\* developed or under developed or underdeveloped or middle income or  
11 low\* income or underserved or under served or deprived or poor\*) adj (countr\* or nation? or  
12 population? or world or state\*)).ti,ab. (85470)  
13 44 ((developing or less\* developed or under developed or underdeveloped or middle income or  
14 low\* income) adj (economy or economies)).ti,ab. (440)  
15 45 (low\* adj (gdp or gnp or gross domestic or gross national)).tw. (219)  
16 46 (low adj3 middle adj3 countr\*).tw. (9973)  
17 47 (lmic or lmic3 or third world or lami countr\*).tw. (5479)  
18 48 transitional countr\*.tw. (157)  
19 49 or/38-48 (1508903)  
20 50 8 and 37 and 49 (41601)  
21 51 limit 50 to yr="2000 -Current" (34758)

22 **Medline +In-Process (Ovid) Update Search (1<sup>st</sup> Dec 2017-18<sup>th</sup> Jan 2018) – Searched**  
23 **17<sup>th</sup> January 2018**

24  
25 Result: 1051

26  
27 **2. Cochrane Library – Searched 25<sup>th</sup> January 2018**

28  
29 #1 MeSH descriptor: [Health Personnel] explode all trees 8110  
30 #2 (((health or medical or healthcare) near/1 (personnel or worker\* or auxiliar\* or staff or  
31 professional\*)) or doctor\* or physician\* or GP or "general practitioner?" or "family doctor?" or  
32 nurse\* or midwi\* or "clinical officer\*" or pharmacist\* or dentist\* or ((birth or childbirth or labor or  
33 labour) near/1 (attendant? or assistant?)):ti,ab 49924  
34 #3 (lay near/5 (worker? or visitor? or attendant? or aide or aides or support\* or person\* or  
35 helper? or carer? or caregiver? or care giver? or consultant? or assistant? or staff)):ti,ab 254  
36 #4 (paraprofessional? or paramedic or paramedics or "paramedical worker?" or  
37 "paramedical personnel" or "allied health personnel" or "allied health worker?" or "support  
38 worker?" or "home health aide?"):ti,ab 639  
39 #5 ((community or village?) near/3 ("health worker?" or "health care worker?" or "healthcare  
40 worker?"):ti,ab 484  
41 #6 (doula? or douladural? or monitrice\* or "barefoot doctor?"):ti,ab 22  
42 #7 (primary near/1 (health or care or healthcare)):ti,ab 13102  
43 #8 MeSH descriptor: [Primary Health Care] this term only 4192  
44 #9 {or #1-#8} 61779  
45 #10 (decision\* near/3 (make or makes or making or made or support\* or algorithm\* or aid or  
46 aids or app or apps or application\* or tool\* or instrument\* or technolog\* or technique\* or system\*  
47 or program\* or process\* or method\* or intervention\* or material\* or board\* or guide\* or  
48 counselling\* or counseling)):ti,ab 9511  
49 #11 MeSH descriptor: [Decision Making] this term only 2177  
50 #12 MeSH descriptor: [Decision Support Systems, Clinical] this term only 390  
51 #13 MeSH descriptor: [Decision Support Techniques] this term only 1847  
52 #14 MeSH descriptor: [Diagnosis, Computer-Assisted] this term only 748  
53 #15 MeSH descriptor: [Expert Systems] this term only 60  
54 #16 MeSH descriptor: [Point-of-Care Systems] this term only 516  
55 #17 [mh ^"Guideline Adherence"] or [mh ^"Clinical Protocols"] or [mh ^Checklist] 5091  
56 #18 MeSH descriptor: [Therapy, Computer-Assisted] this term only 1173  
57 #19 MeSH descriptor: [Drug Therapy, Computer-Assisted] this term only 163



- 1  
2  
3 #20 MeSH descriptor: [Electronic Prescribing] this term only 27  
4 #21 [mh ^"Clinical Laboratory Information Systems"] or [mh ^"Clinical Pharmacy Information  
5 Systems"] 38  
6 #22 (((guideline\* or protocol\*) near/4 (adher\* or comply or complian\* or observ\*)) or  
7 checklist\*);ti,ab 1112  
8 #23 MeSH descriptor: [Drug Utilization] this term only 463  
9 #24 [mh ^"drug prescriptions"] or [mh ^"inappropriate prescribing"] or [mh ^"medication  
10 errors"] 869  
11 #25 [mh ^Pharmacy] or [mh ^Pharmacies] or [mh ^"Education, Pharmacy"] 180  
12 #26 [mh ^"practice patterns, nurses"] or [mh ^"practice patterns, physicians"] 1446  
13 #27 ((prescrib\* or prescription\* or dispens\* or pharmac\*) near/3 (pattern\* or habit\* or behavi\*  
14 or practice\* or practise\* or custom\*)):ti,ab 2407  
15 #28 MeSH descriptor: [Access to Information] this term only 49  
16 #29 MeSH descriptor: [Health Information Systems] this term only 12  
17 #30 [mh "Information Services"] 2103  
18 #31 [mh ^"Information Seeking Behavior"] or [mh ^"Computer Literacy"] or [mh ^"Information  
19 Literacy"] or [mh ^"Knowledge"] or [mh ^"Health Knowledge, Attitudes, Practice"] 5514  
20 #32 ((information or knowledge) near/3 (access\* or seek\* or search\* or request\*)):ti,ab  
21 1226  
22 #33 {or #10-#32} 31735  
23 #34 MeSH descriptor: [Developing Countries] this term only 1033  
24 #35 [mh Africa] or [mh Asia] or [mh Caribbean] or [mh "West Indies"] or [mh "Middle East"] or  
25 [mh "South America"] or [mh "Latin America"] or [mh "Central America"] 25548  
26 #36 ((Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or  
27 Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or  
28 Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana  
29 or Brazil or Bulgaria or Burkina Faso or "Burkina Fasso" or "Upper Volta" or Burundi or Urundi or  
30 Cambodia or "Khmer Republic" or Kampuchea or Cameroon or Cameroons or Cameron or  
31 Camerons or "Cape Verde" or "Central African Republic" or Chad or China or Colombia or  
32 Comoros or "Comoro Islands" or Comores or Mayotte or Congo or Zaire or "Costa Rica" or "Cote  
33 d'Ivoire" or "Ivory Coast" or Cuba or Djibouti or "French Somaliland" or Dominica or "Dominican  
34 Republic" or "East Timor" or "East Timur" or "Timor Leste" or Ecuador or Egypt or "United Arab  
35 Republic" or "El Salvador" or Eritrea or Ethiopia or Fiji or Gabon or "Gabonese Republic" or  
36 Gambia or Gaza or "Georgia Republic" or "Georgian Republic" or Ghana or Grenada or  
37 Guatemala or Guinea or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia  
38 or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or  
39 Kosovo or Kyrgyzstan or Kirghizia or "Kyrgyz Republic" or Kirghiz or Kirgizstan or "Lao PDR" or  
40 Laos or Lebanon or Lesotho or Basutoland or Liberia or Libya or Macedonia or Madagascar or  
41 "Malagasy Republic" or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or  
42 "Marshall Islands" or Mauritania or Mauritius or "Agalega Islands" or Mexico or Micronesia or  
43 "Middle East" or Moldova or Moldovia or Moldovian or Mongolian or Montenegro or Morocco or Ifni  
44 or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or "Netherlands Antilles"  
45 or Nicaragua or Niger or Nigeria or Muscat or Pakistan or Palau or Palestine or Panama or  
46 Paraguay or Peru or Philippines or Philipines or Phillipines or Phillippines or "Papua New Guinea"  
47 or Romania or Rumania or Roumania or Rwanda or Ruanda or "Saint Lucia" or "St Lucia" or  
48 "Saint Vincent" or "St Vincent" or Grenadines or Samoa or "Samoan Islands" or "Navigator  
49 Island" or "Navigator Islands" or "Sao Tome" or Senegal or Serbia or Montenegro or Seychelles  
50 or "Sierra Leone" or "Sri Lanka" or "Solomon Islands" or Somalia or Sudan or Suriname or  
51 Surinam or Swaziland or "South Africa" or Syria or Tajikistan or Tadjhikistan or Tadjikistan or  
52 Tadjhik or Tanzania or Thailand or Togo or "Togolese Republic" or Tonga or Tunisia or Turkey or  
53 Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu or "New  
54 Hebrides" or Venezuela or Vietnam or "Viet Nam" or "West Bank" or Yemen or Zambia or  
55 Zimbabwe) not ("African-American\*" or "African American\*" or "Mexican American\*" or "American  
56 Indian\*" or "Asian American\*" or "native american\*"));ti,ab,kw 47798  
57  
58  
59  
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3 #37 ((developing or "less\* developed" or "under developed" or underdeveloped or "middle  
4 income" or "low\* income" or underserved or "under served" or deprived or poor\*) near/1 (countr\*  
5 or nation? or population? or world or state\* or economy or economies)) .ti,ab 659  
6 #38 (low\* near/1 (gdp or gnp or "gross domestic" or "gross national")):ti,ab 40  
7 #39 (low near/3 middle near/3 countr\*):ti,ab 719  
8 #40 (lmic or lmics or "third world" or "lami countr\*" or "transitional countr\*"):ti,ab 196  
9 #41 {or #34-#40} 55166  
10 #42 #9 and #33 and #41 Publication Year from 2000 to 2018 867

### 3. CAB Global Health (Ovid) <1910 to 2018 Week 03> Searched 27th January 2018

13 1 exp health care workers/ (60311)  
14 2 (((health or medical or healthcare) adj (personnel or worker\* or auxiliar\* or staff or  
15 professional\*)) or doctor\* or physician\* or GP or general practitioner? or family doctor or nurse\* or  
16 midwi\* or clinical officer\* or pharmacist\* or dentist\* or ((birth or childbirth or labor or labour) adj  
17 (attendant? or assistant?))):ti,ab. (113958)  
18 3 (lay adj5 (worker? or visitor? or attendant? or aide or aides or support\$ or person\$ or helper?  
19 or carer? or caregiver? or care giver? or consultant? or assistant? or staff)):ti,ab. (513)  
20 4 (paraprofessional? or paramedic or paramedics or paramedical worker? or paramedical  
21 personnel or allied health personnel or allied health worker? or support worker? or home health  
22 aide?):ti,ab. (849)  
23 5 ((community or village?) adj3 (health worker? or health care worker? or healthcare  
24 worker?):ti,ab. (2778)  
25 6 (doula? or douladural? or monitrice\* or "barefoot doctor?"):ti,ab. (104)  
26 7 primary health care/ or (primary adj (health or care)):ti,ab. (22980)  
27 8 or/1-7 (145328)  
28 9 (decision\* adj3 (make or makes or making or made or support\* or algorithm\* or aid or aids or  
29 app or apps or application\* or tool\* or instrument\* or technolog\* or technique\* or system\* or  
30 program\* or process\* or method\* or intervention\* or material\* or board\* or guide\* or  
31 counselling\*)):ti,ab. (19367)  
32 10 decision making/ or decision support systems/ (5879)  
33 11 expert systems/ (101)  
34 12 guidelines/ (36483)  
35 13 checklists/ or reference works/ (1496)  
36 14 information systems/ (3341)  
37 15 (((guideline\* or protocol\*) adj4 (adher\* or comply or complian\* or observ\*)) or  
38 checklist\*):ti,ab. (8239)  
39 16 prescriptions/ (7147)  
40 17 errors/ (544)  
41 18 pharmacy/ (1449)  
42 19 ((prescrib\* or prescription\* or dispens\* or pharmac\*) adj3 (pattern\* or habit\* or behavi\* or  
43 practice\* or practis\* or custom\*)):ti,ab. (3658)  
44 20 information services/ or information needs/ (1752)  
45 21 "diffusion of information"/ (1692)  
46 22 knowledge/ or knowledge level/ (20316)  
47 23 ((information or knowledge) adj3 (access\* or seek\* or search\* or need\* or request\*)):ti,ab.  
48 (8022)  
49 24 or/9-23 (102817)  
50 25 exp africa/ (228281)  
51 26 exp Central America/ or exp Latin America/ or exp South America/ (168913)  
52 27 mexico/ (20887)  
53 28 exp central asia/ (11750)  
54 29 east asia/ or china/ or korea democratic people's republic/ or korea republic/ or mongolia/  
55 (221234)  
56 30 exp south asia/ or himalaya/ (140897)  
57 31 exp south east asia/ or pacific rim/ (91496)

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3 32 exp caribbean/ (21079)  
4 33 exp pacific islands/ (13985)  
5 34 exp developing countries/ (840339)  
6 35 (Africa or Asia or Caribbean or West Indies or South America or Latin America or Central  
7 America).tw. (948168)  
8 36 (Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or  
9 Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or  
10 Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana  
11 or Brazil or Bulgaria or Burkina Faso or Burkina Fasso or Upper Volta or Burundi or Urundi or  
12 Cambodia or Khmer Republic or Kampuchea or Cameroon or Camerouns or Cameron or  
13 Camerons or Cape Verde or Central African Republic or Chad or China or Colombia or Comoros  
14 or Comoro Islands or Comores or Mayotte or Congo or Zaire or Costa Rica or Cote d'Ivoire or  
15 Ivory Coast or Cuba or Djibouti or French Somaliland or Dominica or Dominican Republic or East  
16 Timor or East Timor or Timor Leste or Ecuador or Egypt or United Arab Republic or El Salvador  
17 or Eritrea or Ethiopia or Fiji or Gabon or Gabonese Republic or Gambia or Gaza or Georgia  
18 Republic or Georgian Republic or Ghana or Grenada or Guatemala or Guinea or Guiana or  
19 Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or  
20 Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or  
21 Kirghizia or Kyrgyz Republic or Kirghiz or Kirgizstan or Lao PDR or Laos or Lebanon or Lesotho  
22 or Basutoland or Liberia or Libya or Macedonia or Madagascar or Malagasy Republic or Malaysia  
23 or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or Marshall Islands or Mauritania or  
24 Mauritius or Agalega Islands or Mexico or Micronesia or Middle East or Moldova or Moldovia or  
25 Moldovian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma  
26 or Burma or Namibia or Nepal or Netherlands Antilles or Nicaragua or Niger or Nigeria or Muscat  
27 or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or  
28 Phillipines or Phillipines or Papua New Guinea or Romania or Rumania or Roumania or Rwanda  
29 or Ruanda or Saint Lucia or St Lucia or Saint Vincent or St Vincent or Grenadines or Samoa or  
30 Samoan Islands or Navigator Island or Navigator Islands or Sao Tome or Senegal or Serbia or  
31 Montenegro or Seychelles or Sierra Leone or Sri Lanka or Solomon Islands or Somalia or Sudan  
32 or Suriname or Surinam or Swaziland or South Africa or Syria or Tajikistan or Tadjhikistan or  
33 Tadjikistan or Tadjhik or Tanzania or Thailand or Togo or Togolese Republic or Tonga or Tunisia  
34 or Turkey or Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu  
35 or New Hebrides or Venezuela or Vietnam or Viet Nam or West Bank or Yemen or Zambia or  
36 Zimbabwe).tw. (926305)  
37 ((developing or less\* developed or under developed or underdeveloped or middle income or  
38 low\* income or underserved or under served or deprived or poor\*) adj (countr\* or nation? or  
39 population? or world or state\*).ti,ab. (46270)  
40 38 ((developing or less\* developed or under developed or underdeveloped or middle income or  
41 low\* income) adj (economy or economies)).ti,ab. (235)  
42 39 (low\* adj (gdp or gnp or gross domestic or gross national)).tw. (64)  
43 40 (low adj3 middle adj3 countr\*).tw. (5140)  
44 41 (lmic or Imics or third world or lami countr\*).tw. (20036)  
45 42 transitional countr\*.tw. (90)  
46 43 or/25-41 (1068753)  
47 44 8 and 24 and 43 (9736)  
48 45 limit 44 to yr="2000 -Current" (8935)

#### 4. Web of Science (SCI, SSCI, AHCI) – Searched 28<sup>th</sup> January 2018

# 27 7,657

#25 AND #12 AND #7

Refined by: PUBLICATION YEARS: ( 2017 OR 2008 OR 2016 OR 2007 OR 2000 OR 2015 OR  
2006 OR 2018 OR 2014 OR 2005 OR 2013 OR 2003 OR 2012 OR 2004 OR 2011 OR 2001 OR  
2010 OR 2002 OR 2009 )

# 26 8,034

#25 AND #12 AND #7

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# 25 9,820,411

#24 OR #23 OR #22 OR #21 OR #20 OR #19 OR #18 OR #17 OR #16

# 24 329

TS=("transitional countr\*")

# 23 11,372

TS=(Imic or Imics or "third world" or "lami countr\*")

# 22 9,314

TS=(low NEAR/3 middle NEAR/3 countr\*)

# 21 418

TS=(low\* NEAR/1 (gdp or gnp or "gross domestic" or "gross national"))

# 20 162,500

TS=((developing or "less\* developed" or "under developed" or underdeveloped or "middle income" or "low\* income" or underserved or "under served" or deprived or poor\*) NEAR/1 (countr\* or nation? or population? or world or state\* or economy or economies))

# 19 273,978

CU=(Africa or Asia or Caribbean or "West Indies" or "Middle East" or "South America" or "Latin America" or "Central America")

# 18 8,740,046

CU=(Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or "Burkina Faso" or "Burkina Fasso" or "Upper Volta" or Burundi or Urundi or Cambodia or "Khmer Republic" or Kampuchea or Cameroon or Camerouns or Cameron or Camerons or "Cape Verde" or "Central African Republic" or Chad or China or Colombia or Comoros or "Comoro Islands" or Comores or Mayotte or Congo or Zaire or "Costa Rica" or "Cote d'Ivoire" or "Ivory Coast" or Cuba or Djibouti or "French Somaliland" or Dominica or "Dominican Republic" or "East Timor" or "East Timur" or "Timor Leste" or Ecuador or Egypt or "United Arab Republic" or "El Salvador" or Eritrea or Ethiopia or Fiji or Gabon or "Gabonese Republic" or Gambia or Gaza or "Georgia Republic" or "Georgian Republic" or Ghana or Grenada or Guatemala or Guinea or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or Kirghizia or "Kyrgyz Republic" or Kirghiz or Kirgizstan or "Lao PDR" or Laos or Lebanon or Lesotho or Basutoland or Liberia or Libya or Macedonia or Madagascar or "Malagasy Republic" or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or "Marshall Islands" or Mauritania or Mauritius or "Agalega Islands" or Mexico or Micronesia or "Middle East" or Moldova or Moldovia or Moldovian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or "Netherlands Antilles" or Nicaragua or Niger or Nigeria or Muscat or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or Phillipines or Phillipines or "Papua New Guinea" or Romania or Rumania or Roumania or Rwanda or Ruanda or "Saint Lucia" or "St Lucia" or "Saint Vincent" or "St Vincent" or Grenadines or Samoa or "Samoan Islands" or "Navigator Island" or "Navigator Islands" or "Sao Tome" or Senegal or Serbia or Montenegro or Seychelles or "Sierra Leone" or "Sri Lanka" or "Solomon Islands" or Somalia or Sudan or Suriname or Surinam or Swaziland or "South Africa" or Syria or Tajikistan or Tadhikistan or Tadjikistan or Tadhik or Tanzania or Thailand or Togo or "Togolese Republic" or Tonga or Tunisia or Turkey or Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu or "New Hebrides" or Venezuela or Vietnam or "Viet Nam" or "West Bank" or Yemen or Zambia or Zimbabwe)

# 17 2,055,819

TS=((Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or "Burkina Faso" or "Burkina Fasso" or "Upper Volta" or Burundi or Urundi or Cambodia or "Khmer Republic" or Kampuchea or Cameroon or Camerouns or Cameron or Camerons or "Cape Verde" or "Central African Republic" or Chad or China or Colombia or

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2  
3 Comoros or "Comoro Islands" or Comores or Mayotte or Congo or Zaire or "Costa Rica" or "Cote  
4 d'Ivoire" or "Ivory Coast" or Cuba or Djibouti or "French Somaliland" or Dominica or "Dominican  
5 Republic" or "East Timor" or "East Timur" or "Timor Leste" or Ecuador or Egypt or "United Arab  
6 Republic" or "El Salvador" or Eritrea or Ethiopia or Fiji or Gabon or "Gabonese Republic" or  
7 Gambia or Gaza or "Georgia Republic" or "Georgian Republic" or Ghana or Grenada or  
8 Guatemala or Guinea or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia  
9 or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or  
10 Kosovo or Kyrgyzstan or Kirghizia or "Kyrgyz Republic" or Kirghiz or Kirgizstan or "Lao PDR" or  
11 Laos or Lebanon or Lesotho or Basutoland or Liberia or Libya or Macedonia or Madagascar or  
12 "Malagasy Republic" or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or  
13 "Marshall Islands" or Mauritania or Mauritius or "Agalega Islands" or Mexico or Micronesia or  
14 "Middle East" or Moldova or Moldavia or Moldovan or Mongolia or Montenegro or Morocco or Ifni  
15 or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or "Netherlands Antilles"  
16 or Nicaragua or Niger or Nigeria or Muscat or Pakistan or Palau or Palestine or Panama or  
17 Paraguay or Peru or Philippines or Philipines or Phillipines or Phillipines or "Papua New Guinea"  
18 or Romania or Rumania or Roumania or Rwanda or Ruanda or "Saint Lucia" or "St Lucia" or  
19 "Saint Vincent" or "St Vincent" or Grenadines or Samoa or "Samoan Islands" or "Navigator  
20 Island" or "Navigator Islands" or "Sao Tome" or Senegal or Serbia or Montenegro or Seychelles  
21 or "Sierra Leone" or "Sri Lanka" or "Solomon Islands" or Somalia or Sudan or Suriname or  
22 Surinam or Swaziland or "South Africa" or Syria or Tajikistan or Tadjhikistan or Tadjikistan or  
23 Tadjhik or Tanzania or Thailand or Togo or "Togolese Republic" or Tonga or Tunisia or Turkey or  
24 Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu or "New  
25 Hebrides" or Venezuela or Vietnam or "Viet Nam" or "West Bank" or Yemen or Zambia or  
26 Zimbabwe) not ("African-American\*" or "African American\*" or "Mexican American\*" or "American  
27 Indian\*" or "Asian American\*" or "native american\*"))

28 # 16 478,786

29 TS=(Africa or Asia or Caribbean or "West Indies" or "Middle East" or "South America" or "Latin  
30 America" or "Central America")

31 # 15 3,235,777

32 #14 OR #13

33 # 14 2,407,968

34 TS=(information or knowledge)

35 # 13 910,516

36 TS=(prescrib\* or prescription\* or dispens\* or pharmac\*)

37 # 12 493,150

38 #11 OR #10 OR #9 OR #8

39 # 11 83,603

40 TS=((information or knowledge) NEAR/3 (access\* or seek\* or search\* or need\* or request\*))

41 # 10 28,489

42 TS=((prescrib\* or prescription\* or dispens\* or pharmac\*) NEAR/3 (pattern\* or habit\* or behavi\* or  
43 practice\* or practise\* or custom\*))

44 # 9 58,217

45 TS=((guideline\* or protocol\*) NEAR/4 (adher\* or comply or complian\* or observ\*)) or checklist\*)

46 # 8 335,422

47 TS=(decision\* NEAR/3 (make or makes or making or made or support\* or algorithm\* or aid or  
48 aids or app or apps or application\* or tool\* or instrument\* or technolog\* or technique\* or system\*  
49 or program\* or process\* or method\* or intervention\* or material\* or board\* or guide\* or  
50 counselling or counseling))

51 # 7 726,237

52 #6 OR #5 OR #4 OR #3 OR #2 OR #1

53 # 6 125,194

54 TS=(primary NEAR/1 (health or care))

55 # 5 180

56 TS=(doula? or douladural? or monitrice\* or "barefoot doctor?")

57 # 4 3,029

TS=((community or village?) NEAR/3 ("health worker?" or "health care worker?" or "healthcare worker?"))  
# 3 5,274

TS=(paraprofessional? or paramedic or paramedics or "paramedical worker?" or "paramedical personnel" or "allied health personnel" or "allied health worker?" or "support worker?" or "home health aide?")  
# 2 3,404

TS=(lay NEAR/5 (worker? or visitor? or attendant? or aide or aides or support\$ or person\$ or helper? or carer? or caregiver? or "care giver?" or consultant? or assistant? or staff))  
# 1 649,011

TS=((health or medical or healthcare) NEAR/1 (personnel or worker\* or auxiliar\* or staff or professional\*)) or doctor\* or physician\* or GP or "general practitioner\*" or "family doctor\*" or nurse\* or midwi\* or "clinical officer\*" or pharmacist\* or dentist\* or ((birth or childbirth or labor or labour) NEAR/1 (attendant\* or assistant\*))

### 5. Embase (Ovid) <1980 to 2018 Week 05> Searched 30<sup>th</sup> January 2018

- 1 exp health care personnel/ (1272742)
- 2 (((health or medical or healthcare) adj (personnel or worker\* or auxiliar\* or staff or professional\*)) or doctor\* or physician\* or GP or general practitioner? or family doctor or nurse\* or midwi\* or clinical officer\* or pharmacist\* or dentist\* or ((birth or childbirth or labor or labour) adj (attendant? or assistant?))).ti,ab,kw. (1097704)
- 3 (lay adj5 (worker? or visitor? or attendant? or aide or aides or support\$ or person\$ or helper? or carer? or caregiver? or care giver? or consultant? or assistant? or staff)).ti,ab,kw. (2359)
- 4 (paraprofessional? or paramedic or paramedics or paramedical worker? or paramedical personnel or allied health personnel or allied health worker? or support worker? or home health aide?).ti,ab,kw. (9617)
- 5 ((community or village?) adj3 (health worker? or health care worker? or healthcare worker?)).ti,ab,kw. (4877)
- 6 (doula? or douladural? or monitrice\* or "barefoot doctor?").ti,ab,kw. (346)
- 7 (primary adj (health or care)).ti,ab,kw. (147185)
- 8 primary health care/ or primary medical care/ (141453)
- 9 or/1-8 (1961429)
- 10 (decision\* adj3 (make or makes or making or made or support\* or algorithm\* or aid or aids or app or apps or application\* or tool\* or instrument\* or technolog\* or technique\* or system\* or program\* or process\* or method\* or intervention\* or material\* or board\* or guide\* or counselling\*)).ti,ab,kw. (221161)
- 11 clinical decision support system/ or clinical decision making/ or decision support system/ or ethical decision making/ or medical decision making/ or decision making/ (316383)
- 12 computer assisted diagnosis/ or computer assisted drug therapy/ (38130)
- 13 expert system/ (5069)
- 14 practice guideline/ (324525)
- 15 clinical protocol/ or protocol compliance/ (91338)
- 16 checklist/ (16841)
- 17 computer assisted therapy/ (4317)
- 18 inappropriate prescribing/ or electronic prescribing/ (5159)
- 19 information system/ or hospital information system/ or medical information system/ or nursing information system/ (71464)
- 20 drug information/ (22078)
- 21 (((guideline\* or protocol\*) adj4 (adher\* or comply or complian\* or observ\*)) or checklist\*).ti,ab,kw. (69034)
- 22 drug utilization/ (18316)
- 23 prescription/ (155034)
- 24 medication error/ or potentially inappropriate medication/ (16779)
- 25 pharmacy/ (67151)

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3 26 clinical practice/ or professional practice/ or medical practice/ (360294)  
4 27 ((prescrib\* or prescription\* or dispens\* or pharmac\*) adj3 (pattern\* or habit\* or behavi\* or  
5 practice\* or practise\* or custom\*)).ti,ab,kw. (39444)  
6 28 access to information/ or digital divide/ (17356)  
7 29 information seeking/ or information service/ (17641)  
8 30 information literacy/ (399)  
9 31 nursing knowledge/ or knowledge/ or professional knowledge/ (45259)  
10 32 ((information or knowledge) adj3 (access\* or seek\* or search\* or request\* or availab\* or  
11 attitude\*)).ti,ab,kw. (117782)  
12 33 or/10-32 (1590896)  
13 34 developing country/ (87021)  
14 35 low income country/ (1827)  
15 36 middle income country/ (2441)  
16 37 ((developing or less\* developed or under developed or underdeveloped or middle income or  
17 low\* income or underserved or under served or deprived or poor\*) adj (economy or  
18 economies)).ti,ab. (618)  
19 38 ((developing or less\* developed or under developed or underdeveloped or middle income or  
20 low\* income or underserved or under served or deprived or poor\*) adj (countr\* or nation? or  
21 population? or world)).ti,ab. (98614)  
22 39 (low\* adj (gdp or gnp or gross domestic or gross national)).ti,ab. (302)  
23 40 (low adj3 middle adj3 countr\*).ti,ab. (10912)  
24 41 (lmic or lmic or third world or lami countr\*).ti,ab. (6124)  
25 42 transitional countr\*.ti,ab. (198)  
26 43 global south.ti,ab. (205)  
27 44 "Africa south of the Sahara"/ (11730)  
28 45 ("africa south of the sahara" or sub-saharan africa or central africa or eastern africa or  
29 southern africa or western africa).ti,ab. (25783)  
30 46 Botswana/ (2077)  
31 47 (Botswana or Bechuanaland or Kalahari).ti,ab. (2177)  
32 48 Equatorial Guinea/ (373)  
33 49 (Equatorial Guinea or Spanish Guinea).ti,ab. (453)  
34 50 Gabon/ (1521)  
35 51 (Gabon or Gabonese Republic).ti,ab. (1658)  
36 52 Mauritius/ (742)  
37 53 (Mauritius or Agalega Islands).ti,ab. (855)  
38 54 Namibia/ (1265)  
39 55 Namibia.ti,ab. (1290)  
40 56 South Africa/ (43279)  
41 57 South Africa.ti,ab. (30727)  
42 58 Angola/ (1165)  
43 59 angola.ti,ab. (1210)  
44 60 Cameroon/ (5773)  
45 61 Cameroon.ti,ab. (6291)  
46 62 Cape Verde/ (260)  
47 63 (Cape Verde or Cabo Verde).ti,ab. (487)  
48 64 Congo/ (3029)  
49 65 (congo not ((democratic republic adj3 congo) or congo red or crimean-congo)).ti,ab. (2135)  
50 66 Cote d'Ivoire/ (2848)  
51 67 (Cote d'Ivoire or Ivory Coast).ti,ab. (3606)  
52 68 Ghana/ (8828)  
53 69 (Ghana or Gold Coast).ti,ab. (9057)  
54 70 Kenya/ (17113)  
55 71 kenya.mp. (20115)  
56 72 Lesotho/ (546)  
57 73 (Lesotho or Basutoland).ti,ab. (601)  
58 74 Mauritania/ (522)

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3 75 Mauritania.ti,ab. (532)  
4 76 Nigeria/ (32467)  
5 77 Nigeria.ti,ab. (28722)  
6 78 "Sao Tome and Principe"/ (59)  
7 79 (sao tome adj2 principe).ti,ab. (121)  
8 80 Sudan/ (5392)  
9 81 (Sudan not south sudan).ti,ab. (6902)  
10 82 Swaziland/ (753)  
11 83 Swaziland.ti,ab. (761)  
12 84 Zambia/ (5056)  
13 85 (Zambia or Northern Rhodesia).ti,ab. (4614)  
14 86 Benin/ (1997)  
15 87 (Benin or Dahomey).ti,ab. (4026)  
16 88 Burkina Faso/ (3509)  
17 89 (Burkina Faso or Burkina Fasso or Upper Volta).ti,ab. (4048)  
18 90 Burundi/ (703)  
19 91 Burundi.ti,ab. (714)  
20 92 Central African Republic/ (775)  
21 93 (Central African Republic or Ubangi-Shari).ti,ab. (905)  
22 94 Chad/ (789)  
23 95 Chad.ti,ab. (1068)  
24 96 Comoros/ (277)  
25 97 (Comoros or Comoro Islands or Mayotte or Iles Comores).ti,ab. (519)  
26 98 "Democratic Republic Congo"/ (2858)  
27 99 ((democratic republic adj2 congo) or belgian congo or zaire).ti,ab. (3631)  
28 100 Eritrea/ (393)  
29 101 Eritrea.ti,ab. (462)  
30 102 Ethiopia/ (11992)  
31 103 Ethiopia.ti,ab. (10826)  
32 104 Gambia/ (2460)  
33 105 Gambia.ti,ab. (2122)  
34 106 Guinea/ (1513)  
35 107 (Guinea not (New Guinea or Guinea Pig\* or Guinea Fowl)).ti,ab. (3719)  
36 108 Guinea-Bissau/ (923)  
37 109 (Guinea-Bissau or Portuguese Guinea).ti,ab. (957)  
38 110 Liberia/ (1376)  
39 111 Liberia.ti,ab. (1312)  
40 112 Madagascar/ (3695)  
41 113 (Madagascar or Malagasy Republic).ti,ab. (4234)  
42 114 Malawi/ (5764)  
43 115 (Malawi or Nyasaland).ti,ab. (5990)  
44 116 Mali/ (2858)  
45 117 Mali.ti,ab. (3462)  
46 118 Mozambique/ (2857)  
47 119 (Mozambique or Mocambique or Portuguese East Africa).ti,ab. (3082)  
48 120 Niger/ (1763)  
49 121 (Niger not (Aspergillus or Peptococcus or Schizothorax or Cruciferae or Gobius or Lasius  
50 or Agelastes or Melanosuchus or radish or Parastromateus or Orius or Apergillus or  
51 Parastromateus or Stomoxys)).ti,ab. (3384)  
52 122 Rwanda/ (2754)  
53 123 (Rwanda or Ruanda).ti,ab. (2538)  
54 124 Senegal/ (5939)  
55 125 senegal.ti,ab. (5531)  
56 126 Sierra Leone/ (1794)  
57 127 Sierra Leone.mp. (2313)  
58 128 exp Somalia/ (1709)  
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3 129 Somalia.ti,ab. (1198)  
4 130 South Sudan/ (135)  
5 131 south sudan.ti,ab. (429)  
6 132 Tanzania/ (12272)  
7 133 (Tanzania or Tanganyika or Zanzibar).ti,ab. (12061)  
8 134 Togo/ (1158)  
9 135 (Togo or Togolese Republic).ti,ab. (1319)  
10 136 Uganda/ (13359)  
11 137 Uganda.ti,ab. (12650)  
12 138 Zimbabwe/ (5875)  
13 139 (Zimbabwe or Rhodesia).ti,ab. (5120)  
14 140 Maldives/ (208)  
15 141 Maldives.ti,ab. (240)  
16 142 Algeria/ (3800)  
17 143 Algeria.ti,ab. (3601)  
18 144 Iran/ (39202)  
19 145 Iran.ti,ab. (39180)  
20 146 exp Iraq/ (6675)  
21 147 Iraq.ti,ab. (6749)  
22 148 Jordan/ (5196)  
23 149 Jordan.ti,ab. (6156)  
24 150 Lebanon/ (4495)  
25 151 Lebanon.ti,ab. (4009)  
26 152 Libyan Arab Jamahiriya/ (1487)  
27 153 Libya.ti,ab. (1244)  
28 154 Argentina/ (18616)  
29 155 Argentina.ti,ab. (17626)  
30 156 Belize/ (635)  
31 157 Belize.ti,ab. (726)  
32 158 exp Brazil/ (91530)  
33 159 Brazil.ti,ab. (79390)  
34 160 Colombia/ (14346)  
35 161 Colombia.ti,ab. (12170)  
36 162 Costa Rica/ (4058)  
37 163 Costa Rica.ti,ab. (4166)  
38 164 Cuba/ (6155)  
39 165 Cuba.ti,ab. (4967)  
40 166 Dominica/ (128)  
41 167 Dominica.ti,ab. (413)  
42 168 Dominican Republic/ (2014)  
43 169 Dominican Republic.ti,ab. (1763)  
44 170 Ecuador/ (4091)  
45 171 Ecuador.ti,ab. (3930)  
46 172 Grenada/ (182)  
47 173 Grenada.ti,ab. (280)  
48 174 Guyana/ (675)  
49 175 Guyana.mp. (1116)  
50 176 Jamaica/ (3447)  
51 177 Jamaica.ti,ab. (2950)  
52 178 Mexico/ (39633)  
53 179 Mexico.ti,ab. (41246)  
54 180 exp Panama/ (2426)  
55 181 Panama.ti,ab. (3163)  
56 182 Paraguay/ (1154)  
57 183 Paraguay.mp. (1708)  
58 184 Peru/ (9426)  
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3 185 Peru.ti,ab. (9738)  
4 186 Saint Lucia/ (83)  
5 187 (St Lucia or Saint Lucia).ti,ab. (273)  
6 188 "Saint Vincent and the Grenadines"/ (63)  
7 189 Grenadines.ti,ab. (62)  
8 190 Suriname/ (919)  
9 191 Suriname.ti,ab. (537)  
10 192 Venezuela/ (5772)  
11 193 Venezuela.ti,ab. (5348)  
12 194 Albania/ (1548)  
13 195 Albania.ti,ab. (1387)  
14 196 Azerbaijan/ (1566)  
15 197 Azerbaijan.ti,ab. (1536)  
16 198 Belarus/ (2567)  
17 199 (belarus or byelarus or belorussia).ti,ab. (1935)  
18 200 exp "Bosnia and Herzegovina"/ (2286)  
19 201 (bosnia or herzegovina).ti,ab. (2430)  
20 202 Bulgaria/ (8080)  
21 203 Bulgaria.ti,ab. (5115)  
22 204 Croatia/ (8714)  
23 205 croatia.ti,ab. (8186)  
24 206 Kazakhstan/ (3205)  
25 207 (Kazakhstan or kazakh).ti,ab. (2994)  
26 208 "Macedonia (Republic)"/ (974)  
27 209 Macedonia.ti,ab. (1565)  
28 210 "Montenegro (republic)"/ (592)  
29 211 Montenegro.ti,ab. (914)  
30 212 Romania/ (12433)  
31 213 Romania.ti,ab. (7339)  
32 214 exp Russian Federation/ (54940)  
33 215 USSR/ (44960)  
34 216 (Russia or Russian Federation or USSR or Union of Soviet Socialist Republics or Soviet  
35 Union).mp. (106649)  
36 217 exp Serbia/ (4687)  
37 218 serbia.ti,ab. (5401)  
38 219 "Turkey (republic)"/ (31578)  
39 220 turkey.ti,ab. not animal/ (34726)  
40 221 Turkmenistan/ (573)  
41 222 Turkmenistan.ti,ab. (298)  
42 223 Yugoslavia/ (8616)  
43 224 yugoslavia.ti,ab. (2104)  
44 225 exp Samoan Islands/ (780)  
45 226 american samoa.ti,ab. (332)  
46 227 exp China/ (171073)  
47 228 china.ti,ab. (148036)  
48 229 Fiji/ (1096)  
49 230 fiji.ti,ab. (1468)  
50 231 Malaysia/ (17995)  
51 232 malaysia.ti,ab. (15868)  
52 233 Marshall Islands/ (119)  
53 234 marshall islands.ti,ab. (289)  
54 235 Nauru/ (54)  
55 236 nauru.ti,ab. (133)  
56 237 ("independent state of samoa" or (samoa not american samoa) or western samoa or  
57 navigator islands or samoan islands).ti,ab. (463)  
58 238 Thailand/ (28774)  
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3 239 Thailand.ti,ab. (25647)  
4 240 Tonga/ (318)  
5 241 tonga.ti,ab. (402)  
6 242 Tuvalu/ (36)  
7 243 Tuvalu.ti,ab. (50)  
8 244 Bangladesh/ (13108)  
9 245 Bangladesh.ti,ab. (12802)  
10 246 Bhutan/ (562)  
11 247 Bhutan.ti,ab. (538)  
12 248 exp India/ (125083)  
13 249 India.ti,ab. (103457)  
14 250 exp Pakistan/ (22188)  
15 251 Pakistan.ti,ab. (18529)  
16 252 Sri Lanka/ (6898)  
17 253 Sri Lanka.ti,ab. (6028)  
18 254 Djibouti/ (273)  
19 255 (Djibouti or French Somaliland).ti,ab. (342)  
20 256 Egypt/ (17504)  
21 257 Egypt.ti,ab. (14584)  
22 258 Jordan/ (5196)  
23 259 Jordan.ti,ab. (6156)  
24 260 Morocco/ (6276)  
25 261 Morocco.ti,ab. (5661)  
26 262 Syrian Arab Republic/ (1978)  
27 263 (Syria or Syrian Arab Republic).ti,ab. (1703)  
28 264 Tunisia/ (8499)  
29 265 tunisia.mp. (10159)  
30 266 Palestine/ (1219)  
31 267 Gaza.ti,ab. (926)  
32 268 Yemen/ (1625)  
33 269 Yemen.ti,ab. (1642)  
34 270 Bolivia/ (2998)  
35 271 Bolivia.ti,ab. (3027)  
36 272 El Salvador/ (1478)  
37 273 El Salvador.ti,ab. (1175)  
38 274 Guatemala/ (3491)  
39 275 Guatemala.ti,ab. (3223)  
40 276 Honduras/ (1513)  
41 277 Honduras.ti,ab. (1573)  
42 278 Nicaragua/ (1886)  
43 279 Nicaragua.ti,ab. (1844)  
44 280 Armenia/ (1705)  
45 281 Armenia.ti,ab. (1226)  
46 282 "Georgia (Republic)"/ (1687)  
47 283 Kosovo/ (315)  
48 284 Kosovo.ti,ab. (1008)  
49 285 Kyrgyzstan/ (1410)  
50 286 (kyrgyzstan or kyrgyz republic or kirghizia or kirghiz).ti,ab. (976)  
51 287 Moldova/ (990)  
52 288 Moldova.ti,ab. (716)  
53 289 Tajikistan/ (821)  
54 290 tajikistan.ti,ab. (534)  
55 291 exp Ukraine/ (15321)  
56 292 Ukraine.ti,ab. (5276)  
57 293 Uzbekistan/ (1984)  
58 294 Uzbekistan.ti,ab. (1195)  
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3 295 Cambodia/ (4077)  
4 296 cambodia.ti,ab. (3639)  
5 297 exp Indonesia/ (13216)  
6 298 indonesia.ti,ab. (11731)  
7 299 Kiribati/ (80)  
8 300 Kiribati.ti,ab. (142)  
9 301 Laos/ (1812)  
10 302 (laos or (lao adj1 democratic republic)).ti,ab. (1571)  
11 303 "Marshall Islands"/ (119)  
12 304 "Federated States of Micronesia"/ (856)  
13 305 (marshall island\* or caroline island\* or ellice island\* or gilbert island\* or johnston island\* or  
14 mariana island\* or micronesia or pacific island\*).ti,ab. (6678)  
15 306 Mongolia/ (2631)  
16 307 mongolia.ti,ab. (3632)  
17 308 Myanmar/ (2680)  
18 309 (myanmar or burma).ti,ab. (3127)  
19 310 Papua New Guinea/ (5341)  
20 311 Papua New Guinea.ti,ab. (4157)  
21 312 Philippines/ (9527)  
22 313 Philippines.ti,ab. (7507)  
23 314 Timor-Leste/ (415)  
24 315 Timor-Leste.ti,ab. (267)  
25 316 Vanuatu/ (371)  
26 317 Vanuatu.ti,ab. (569)  
27 318 Viet Nam/ (13230)  
28 319 (Viet Nam or vietnam).ti,ab. (13417)  
29 320 Afghanistan/ (5026)  
30 321 Afghanistan.ti,ab. (5599)  
31 322 Nepal/ (9183)  
32 323 Nepal.ti,ab. (8719)  
33 324 Haiti/ (3456)  
34 325 Haiti.ti,ab. (2984)  
35 326 "North Korea"/ (427)  
36 327 (north korea or (democratic people\* republic adj2 korea)).ti,ab. (341)  
37 328 or/34-327 [ALL LMICs] (1414607)  
38 329 9 and 33 and 328 (34122)  
39 330 limit 329 to yr="2000 -Current" (31572)  
40 331 limit 330 to embase (19974)

#### 6. Poptline – Searched 31<sup>st</sup> January 2018

Title: information OR knowledge OR misinform\* OR Keyword: x INFORMATION OR x INFORMATION CENTERS OR x INFORMATION NETWORKS OR x INFORMATION RETRIEVAL SYSTEMS OR x INFORMATION DISSEMINATION OR x INFORMATION SOURCES OR x INFORMATION SERVICES OR x MISINFORMATION OR x INFORMATION COMMUNICATION TECHNOLOGY OR x KNOWLEDGE SOURCES OR x KNOWLEDGE AND

All Fields: (lay AND (worker\* OR visitor\* OR attendant\* OR aide OR aides OR support\* OR person\* OR helper\* OR carer\* OR caregiver\* OR "care giver\*" OR consultant\* OR assistant\* OR staff)) OR ((community OR village\*) AND ("health worker\*" OR "health care worker\*" OR "healthcare worker\*")) OR "primary health" OR "primary healthcare" OR paraprofessional\* OR paramedic OR paramedics OR "paramedical worker\*" OR "paramedical personnel" OR "allied health personnel" OR "allied health worker\*" OR "support worker\*" OR "home health aide" OR ((birth OR childbirth OR labor OR labour) AND (attendant\* OR assistant\*)) OR doctor\* OR physician\* OR GP OR "general practitioner\*" OR "family doctor" OR nurse\* OR midwi\* OR "clinical officer\*" OR pharmacist\* OR dentist\* OR ((health OR medical OR healthcare) AND (personnel OR worker\* OR auxiliar\* OR staff OR professional\*))

Total – 4536

## 7. WHO Global Health Index – Searched 1<sup>st</sup> February 2018

(tw:(information OR knowledge OR misinform\*)) OR (mh:(information OR knowledge OR misinform\*)) AND (mh:(health personnel)) OR (tw:(doctor\* OR physician\* OR GP OR "general practitioner\*" OR "family doctor" OR nurse\* OR midwi\* OR "clinical officer\*" OR pharmacist\* OR dentist\* OR ((health OR medical OR healthcare) AND (personnel OR worker\* OR auxiliar\* OR staff OR professional\*)) OR (lay AND (worker\* OR visitor\* OR attendant\* OR aide OR aides OR support\* OR person\* OR helper\* OR carer\* OR caregiver\* OR "care giver\*" OR consultant\* OR assistant\* OR staff)) OR ((community OR village\*) AND ("health worker\*" OR "health care worker\*" OR "healthcare worker\*")) OR "primary health" OR "primary healthcare" OR paraprofessional\* OR paramedic OR paramedics OR "paramedical worker\*" OR "paramedical personnel" OR "allied health personnel" OR "allied health worker\*" OR "support worker\*" OR "home health aide" OR ((birth OR childbirth OR labor OR labour) AND (attendant\* OR assistant\*))) AND (year\_cluster:(2000 OR 2001 OR 2002 OR 2003 OR 2004 OR 2005 OR 2006 OR 2007 OR 2008 OR 2009 OR 2010 OR 2011 OR 2012 OR 2013 OR 2014 OR 2015 OR 2016 OR 2017 OR 2018)) - 1521

## 8. Africa-Wide (Ebsco) – Searched 1<sup>st</sup> February 2018

S13 S7 AND S12 - 1,564 Limiters - Year Published: 2000-2018; Data Contributor: AFRICAN HEALTHLINE, .....African Index Medicus, .....African Laboratory for Natural Products Database, .....AIDS Consortium Resource Centre Database, .....Bibliography of Filariasis, .....Community Health Information Database, .....Healthlink Worldwide, .....Healthlit, .....Medicines Information Centre Database, .....SA COUNCIL ON ALCOHOLISM AND DRUG DEPENDENCE DATABASE, .....SAMED, AFRICAN STUDIES, .....Africa Book Centre Database, .....Africa Institute, .....AfricaLit, .....African Books Collective Database, .....African Development Database, .....African Journals Online, .....African Periodicals Exhibit, .....African Publications, .....African Studies Centre Leiden The Netherlands, .....Afrotropical Birds Database, .....CONTEMPORARY AFRICAN POLITICS AND DEVELOPMENT, .....Durban Metropolitan Libraries: Don Africana, .....Ibiscus Database, .....Killie Campbell Africana Library Bibliography, .....Media Africa, .....NAMLIT, .....Natural & Cultural Heritage of Africa, .....NIZA-BIDOC Catalogue, .....Sardius - Bibliographies, .....Sardius - Chronologies, .....Sardius - Treaties, .....School of Oriental & African Studies, .....SOAS: Serials Holdings for Entire Library, .....Swiss Theses on Africa, SOUTH AFRICAN STUDIES, .....Centre for Rural Legal Studies Database, .....Index to South African Periodicals, .....KNIPKAT, .....NELM - Creative Works, .....NELM - Critical Works, .....NELM - Literary Awards, .....NELM - Literature & Literary Criticism by Black South Africans, .....NELM - Main catalog, .....NELM - Manuscripts, .....Nexus - Database of Current & Completed Research in South Africa, .....POLITICAL INFORMATION AND MONITORING SERVICE DATABASE [PIMS], .....South African Legal Abbreviations - Unisa Law Library, .....South African National Bibliography, .....Wits MBA

S12 S8 OR S9 OR S10 OR S11

49,726

S11 TX((information or knowledge) N3 (access\* or seek\* or search\* or need\* or request\*))

11,845

S10 TX(((prescrib\* or prescription\* or dispens\* or pharmac\*) N3 (pattern\* or habit\* or behavi\* or practice\* or practise\* or custom\*)))

2,922

S9 TX(((guideline\* or protocol\*) N4 (adher\* or comply or complian\* or observ\*)) or checklist\*)

10,726

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S8 TX((decision\* N3 (make or makes or making or made or support\* or algorithm\* or aid or aids or app or apps or application\* or tool\* or instrument\* or technolog\* or technique\* or system\* or program\* or process\* or method\* or intervention\* or material\* or board\* or guide\* or counselling or counseling)))

25,313

S7 S1 OR S2 OR S3 OR S4 OR S5 OR S6

134,610

S6 TX(primary N1 (health or care))

19,938

S5 TX(doula\* or douladural\* or monitrice\* or "barefoot doctor\*")

152

S4 TX((community or village\*) N3 ("health worker\*" or "health care worker\*" or "healthcare worker\*"))

3,007

S3 TX(paraprofessional\* or paramedic or paramedics or "paramedical worker\*" or "paramedical personnel" or "allied health personnel" or "allied health worker\*" or "support worker\*" or "home health aide\*")

911

S2 TX(lay N5 (worker\* or visitor\* or attendant\* or aide or aides or support\* or person\* or helper\* or carer\* or caregiver\* or "care giver\*" or consultant\* or assistant\* or staff))

524

S1 TX((((health or medical or healthcare) N1 (personnel or worker\* or auxiliar\* or staff or professional\*)) or doctor\* or physician\* or GP or "general practitioner\*" or "family doctor\*" or nurse\* or midwi\* or "clinical officer\*" or pharmacist\* or dentist\* or ((birth or childbirth or labor or labour) N1 (attendant? or assistant?)))

120,962

## 9. Library, Information Science & Technology Abstracts (Ebsco) – Searched 1<sup>st</sup> February 2018

S21 S7 AND S12 AND S20 Limiters – Publication Date: 20000101-20181231

**354 (302 with duplicates removed)**

S20 S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19

108,395

S19 TX("transitional countr\*")

12

S18 TX(lmic or Imics or "third world" or "lami countr\*")

1,448

S17 TX(low N3 middle N3 countr\*)

50

S16 TX(low\* N1 (gdp or gnp or "gross domestic" or "gross national"))

3

S15 TX((developing or "less\* developed" or "under developed" or underdeveloped or "middle income" or "low\* income" or underserved or "under served" or deprived or poor\*) N1 (countr\* or nation\* or population\* or world or state\* or economy or economies))

5,475

S14 TX((Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or "Burkina Faso" or "Burkina Fasso" or "Upper Volta" or Burundi or Urundi or Cambodia or "Khmer Republic" or Kampuchea or Cameroon or Cameroons or Cameron or Camerons or "Cape Verde" or "Central African Republic" or Chad or China or Colombia or Comoros or "Comoro Islands" or Comores or Mayotte or Congo or Zaire or "Costa Rica" or "Cote d'Ivoire" or "Ivory Coast" or Cuba or Djibouti or "French Somaliland" or Dominica or "Dominican Republic" or "East Timor" or "East Timur" or "Timor Leste" or Ecuador or Egypt or "United Arab

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3 Republic" or "El Salvador" or Eritrea or Ethiopia or Fiji or Gabon or "Gabonese Republic" or  
4 Gambia or Gaza or "Georgia Republic" or "Georgian Republic" or Ghana or Grenada or  
5 Guatemala or Guinea or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia  
6 or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or  
7 Kosovo or Kyrgyzstan or Kirghizia or "Kyrgyz Republic" or Kirghiz or Kirgizstan or "Lao PDR" or  
8 Laos or Lebanon or Lesotho or Basutoland or Liberia or Libya or Macedonia or Madagascar or  
9 "Malagasy Republic" or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or  
10 "Marshall Islands" or Mauritania or Mauritius or "Agalega Islands" or Mexico or Micronesia or  
11 "Middle East" or Moldova or Moldavia or Moldovan or Mongolia or Montenegro or Morocco or Ifni  
12 or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or "Netherlands Antilles"  
13 or Nicaragua or Niger or Nigeria or Muscat or Pakistan or Palau or Palestine or Panama or  
14 Paraguay or Peru or Philippines or Philipines or Phillipines or Phillippines or "Papua New Guinea"  
15 or Romania or Rumania or Roumania or Rwanda or Ruanda or "Saint Lucia" or "St Lucia" or  
16 "Saint Vincent" or "St Vincent" or Grenadines or Samoa or "Samoan Islands" or "Navigator  
17 Island" or "Navigator Islands" or "Sao Tome" or Senegal or Serbia or Montenegro or Seychelles  
18 or "Sierra Leone" or "Sri Lanka" or "Solomon Islands" or Somalia or Sudan or Suriname or  
19 Surinam or Swaziland or "South Africa" or Syria or Tajikistan or Tadjikistan or Tadjikistan or  
20 Tadzhih or Tanzania or Thailand or Togo or "Togolese Republic" or Tonga or Tunisia or Turkey or  
21 Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu or "New  
22 Hebrides" or Venezuela or Vietnam or "Viet Nam" or "West Bank" or Yemen or Zambia or  
23 Zimbabwe) not ("African-American\*" or "African American\*" or "Mexican American\*" or "American  
24 Indian\*" or "Asian American\*" or "native american\*"))

25 95,492

26 S13 TX(Africa or Asia or Caribbean or "West Indies" or "Middle East" or "South America" or  
27 "Latin America" or "Central America")

28 23,024

29 S12 S8 OR S9 OR S10 OR S11

30 56,286

31 S11 TX((information or knowledge) N3 (access\* or seek\* or search\* or need\* or request\*))

32 41,290

33 S10 TX(((prescrib\* or prescription\* or dispens\* or pharmac\*) N3 (pattern\* or habit\* or behavi\*  
34 or practice\* or practise\* or custom\*)))

35 225

36 S9 TX(((guideline\* or protocol\*) N4 (adher\* or comply or complian\* or observ\*)) or checklist\*)

37 3,310

38 S8 TX((decision\* N3 (make or makes or making or made or support\* or algorithm\* or aid or  
39 aids or app or apps or application\* or tool\* or instrument\* or technolog\* or technique\* or system\*  
40 or program\* or process\* or method\* or intervention\* or material\* or board\* or guide\* or  
41 counselling or counseling)))

42 13,397

43 S7 S1 OR S2 OR S3 OR S4 OR S5 OR S6

44 23,105

45 S6 TX(primary N1 (health or care))

46 912

47 S5 TX(doula\* or douladural\* or monitrice\* or "barefoot doctor\*")

48 21

49 S4 TX((community or village\*) N3 ("health worker\*" or "health care worker\*" or "healthcare  
50 worker\*"))

51 28

52 S3 TX(paraprofessional\* or paramedic or paramedics or "paramedical worker\*" or  
53 "paramedical personnel" or "allied health personnel" or "allied health worker\*" or "support  
54 worker\*" or "home health aide\*")

55 1,194

56 S2 TX(lay N5 (worker\* or visitor\* or attendant\* or aide or aides or support\* or person\* or  
57 helper\* or carer\* or caregiver\* or "care giver\*" or consultant\* or assistant\* or staff))

58 100

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3 S1 TX((((health or medical or healthcare) N1 (personnel or worker\* or auxiliar\* or staff or  
4 professional\*)) or doctor\* or physician\* or GP or "general practitioner" or "family doctor\*" or  
5 nurse\* or midwi\* or "clinical officer\*" or pharmacist\* or dentist\* or ((birth or childbirth or labor or  
6 labour) N1 (attendant? or assistant?)))  
7 21,453  
8

9 **10. ClinicalTrials.gov – Searched 3<sup>rd</sup> February 2018**

10 information OR knowledge OR decision OR decisions OR decision-making | "health personnel"  
11 OR doctor OR doctors OR nurse OR nurses OR pharmacist OR pharmacists OR physician OR  
12 physicians OR practitioner OR practitioners | Start date on or after 01/01/2000 - **16**  
13

14 **11. WHO ICTRP – Searched 3<sup>rd</sup> February 2018**

15 ("health personnel" OR doctor OR doctors OR nurse OR nurses OR pharmacist OR pharmacists  
16 OR physician OR physicians OR practitioner OR practitioners) AND (information OR knowledge  
17 OR decision\*) – **161**  
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