

# COVID-19 HEALTH SYSTEMS LANDSCAPING: METHODS ANNEX



START  
CENTER

STRATEGIC ANALYSIS,  
RESEARCH & TRAINING CENTER  
Department of Global Health | University of Washington

A dark blue world map with white outlines of continents and oceans. The map is centered on the Atlantic Ocean. The text 'PROJECT OVERVIEW & OBJECTIVES' is overlaid in the center in a large, bold, white sans-serif font.

# PROJECT OVERVIEW & OBJECTIVES

# PROJECT OBJECTIVE & AIMS

**OBJECTIVE:** TO CONDUCT A RAPID LANDSCAPE ANALYSIS OF STUDIES FOCUSED ON HEALTH SYSTEMS DURING EPIDEMICS WITH AN EMPHASIS ON RESEARCH THAT IS RELEVANT FOR THE GLOBAL RESPONSE TO COVID-19.

## SPECIFIC AIMS

### AIM 1

To conduct a rapid landscaping of qualitative literature on community and health provider responses to health outbreaks, crises, and epidemics in low income settings

### AIM 2

To conduct a rapid landscaping of quantitative literature that measures and models the health system constraints, barriers, and trade-offs of epidemics, and their indirect health impacts

# AIM 1 ADDITIONAL DETAIL

## OVERVIEW OF AIM 1

- Studies from anthropological, sociological, and behavioral science literature should be reviewed
- Synthesis and analysis should include identifying considerations that have potential for designing more effective interventions to address the COVID-19 outbreak

## QUESTIONS THAT SHOULD BE EXPLORED IN THE LITERATURE INCLUDE:

- Localized meanings of health and illness
- Challenges to normative care seeking and care provision behaviors and expectations
- Intersection of social and political realities with health systems in crisis
- Embedded understandings and anxieties around state mandated behaviors
- Emergent knowledge and their impact on health seeking and care provision
- Social, racial and gendered divisions in care seeking and provision
- Efforts at designing socially contextualized interventions

# AIM 2 ADDITIONAL DETAIL

## OVERVIEW OF AIM 2

- Studies should have relevance for action that can be taken during the current Covid-19 pandemic
- Three critical timeframes guided the research:
  - Rapid (i.e. immediate response of epidemics); *what can we learn quickly?*
  - Mid-term (i.e. improvements); *how can we design efforts to improve interventions and make people more comfortable?*
  - Long-term (i.e. impacts on health systems); *how might we think about health systems in a long term as a result of epidemics? Why haven't we learned and prepared from other epidemics?*

## QUESTIONS THAT SHOULD BE EXPLORED IN THE LITERATURE INCLUDE:

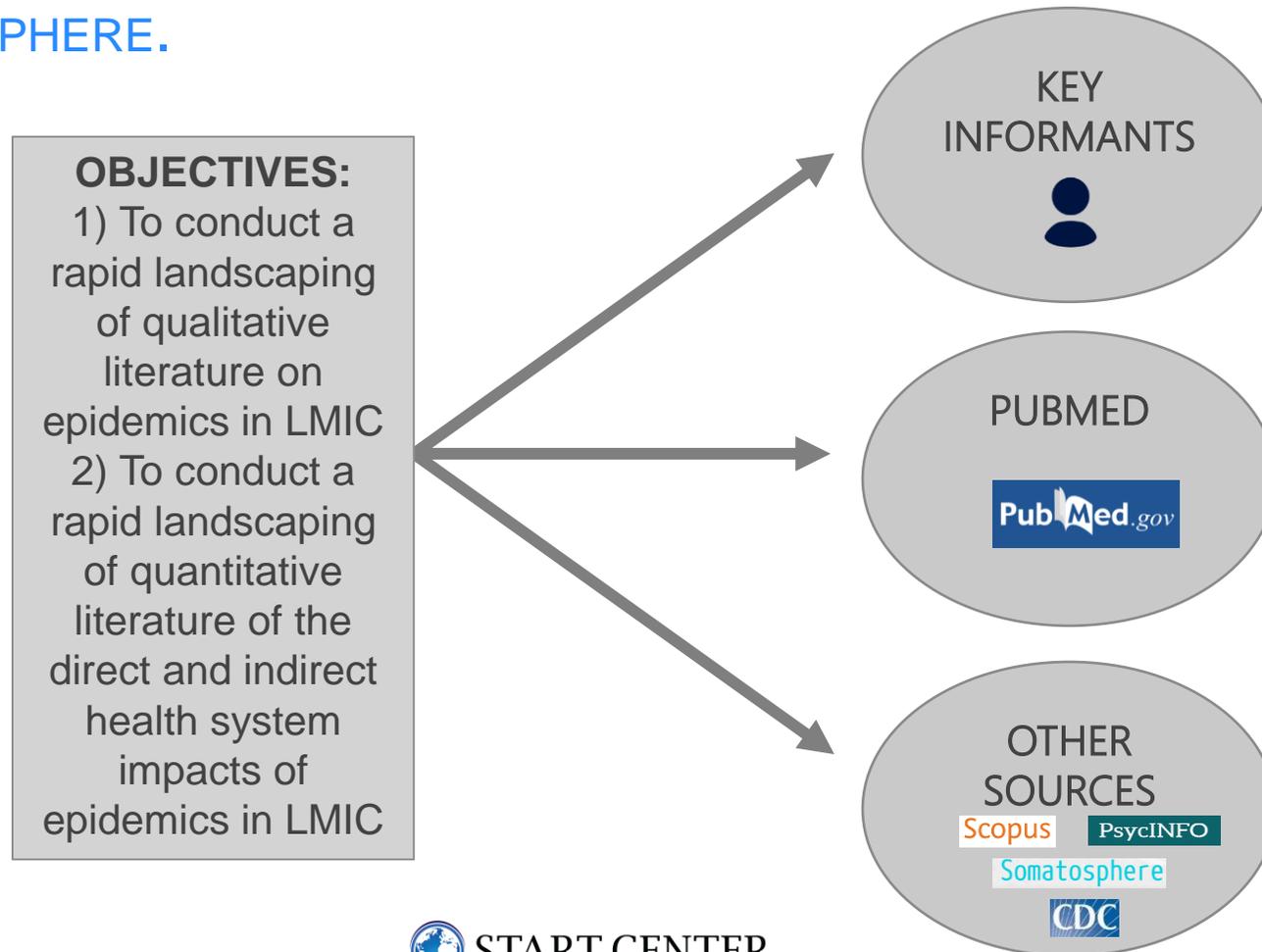
- Identify
  - Health system gaps for responding to outbreaks
  - Rapid, mid-term, and long-term interventions to strengthen health systems for outbreak response
- Assess the direct impact of outbreaks on
  - The quantity, distribution and quality of each of the health system building blocks:
    - Service delivery
    - Health workforce
    - Information and data
    - Medicines and supplies
    - Financing
    - Leadership/governance
- Assess the indirect impact of outbreaks on
  - Other health outcomes
  - Responsiveness of the health system
  - Social and financial risk protection

A dark blue world map with white outlines of continents and oceans. The map is centered and serves as the background for the text. Labels for continents and oceans are visible in a light blue font.

**PROJECT METHODS: THE  
DEVELOPMENT OF A  
LITERATURE DATABASE**

# PROJECT STRATEGY

THE TEAM ENGAGED WITH KEY INFORMANTS TO INFORM THE SEARCH STRATEGY AND CONDUCTED A DETAILED SEARCH OF LITERATURE DATABASES AND COVID-19 PRE-PRINT SERVERS: PUBMED; MEDRXIV; BIORXIV; ARXIV; RESEARCH SQUARE; CDC COVID-19 DATABASE; SCOPUS; PSYCINFO; SOMATOSPHERE.



# KEY INFORMANTS TO ASSIST WITH SEARCH STRATEGY

THE TEAM ENGAGED WITH UNIVERSITY OF WASHINGTON PROFESSORS AND AFFILIATES WITH EXPERTISE IN HEALTH SYSTEMS, QUALITATIVE METHODS, AND HEALTH SERVICE DELIVERY DURING EPIDEMICS TO DEVELOP A SEARCH STRATEGY OF PUBLIC HEALTH, ANTHROPOLOGICAL, SOCIOLOGICAL, AND BEHAVIORAL SCIENCE LITERATURE.

Key Informant	Insights
 <p><b>James Pfeiffer</b> Professor, Global Health Professor, Anthropology Adjunct Professor, Health Services Executive Director, Health Alliance International</p>	<ul style="list-style-type: none"><li>• Traditional practices, burials, etc. greatly affect care seeking/provision</li><li>• Communication/trust is critical during epidemics</li><li>• Social distancing not feasible in informal economies, should focus on ramping up for medical overflow instead</li><li>• Distrust and political issues are important considerations</li><li>• Poor coordination with international organizations and the health system is common</li></ul>
 <p><b>Pamela Collins</b> Professor, Global Health, Professor, Psychiatry and Behavioral Sciences</p>	<ul style="list-style-type: none"><li>• Risk perception is a critical area to focus on (both for care seeking/provision)</li><li>• Focus on factors causing stress/anxiety among people and healthcare workers</li><li>• Gender inequality is an area to consider during epidemics (nurses, mothers, and women are the frontline of epidemics)</li><li>• A lot of literature related to epidemics in LMIC but do not discount findings from HIC</li></ul>

# KEY INFORMANTS TO ASSIST WITH SEARCH STRATEGY (CONTINUED)

Key Informant	Insights
 <p><b>Richard Ssekitoleko,</b> Affiliate Instructor, Global Health Consultant, Ebola Preparedness and Response (Case Management &amp; Infection Prevention &amp; Control), WHO</p>	<ul style="list-style-type: none"><li>• Issues related to cultural beliefs, witchcraft, and suspicion arise, resulting in people seeking care from traditional healers</li><li>• Stigma, ostracization occurs, leading to people denying they have the disease</li><li>• Gaps in health system: testing, isolation facilities, health workforce (due to fear), non-pandemic essential services</li></ul>
 <p><b>Sara Curran</b> Adjunct Professor, Global Health Professor, Jackson School of International Studies Professor, Evans School Professor, Sociology Director, Center for Studies in Demography and Ecology</p>	<ul style="list-style-type: none"><li>• Advised us to expand search terms to include ‘meaning making’, ‘worldview’, ‘making sense of’</li><li>• Highlighted that the qualitative sampling approach should be to generate findings that can be used to generalize about the relevant conceptual domains in a community</li><li>• Provided guidance on additional sources (annual reviews, web of Science, specific papers such as those below).</li></ul>

# PUBMED – SEARCH STRATEGIES

SEARCH STRINGS WERE CONSTRUCTED TO MAXIMIZE THE NUMBER OF RELEVANT PAPERS RETURNED, WITH EACH DECREASING LEVEL OF INITIAL PRIORITY DRAWING INCREASING NUMBERS OF STUDIES IN BOTH THE QUALITATIVE AND QUANTITATIVE ARMS OF THE ANALYSIS.

Qualitative		
All themes, different disease focus	# results	Full search string
(COVID OR COVID-19 OR coronavirus OR "Severe Acute Respiratory Syndrome Coronavirus-2" OR SARS-CoV-2)	20	((("care seeking" OR "care provision") OR ("traditional p
(pandemic OR COVID OR COVID-19 OR coronavirus OR "Severe Acute Respiratory Syndrome Coronavirus-2" OR SARS-CoV-2)	85	((("care seeking" OR "care provision") OR ("traditional p
(pandemic OR epidemic OR outbreak OR COVID OR COVID-19 OR coronavirus OR "Severe Acute Respiratory Syndrome Coronavirus-2" OR SARS-CoV-2 OR Ebola)	2210	((("care seeking" OR "care provision") OR ("traditional p
Quantitative		
Focus	# results	Search string
WHO building blocks + supply chain + staffing + "health provision" + "health service coverage";		
COVID only	138	("health system" OR "service delivery" OR "health wor
Health system & vaccine preventable;		
COVID + pandemic	173	((("health system" OR "vaccine preventable") AND (imp
WHO building blocks + supply chain + staffing + "health provision" + "health service coverage";		
COVID & pandemic	1398	("health system" OR "service delivery" OR "health wor

# PUBMED – SEARCH STRATEGIES

THE RESULTS OF EACH SEARCH STRING WERE EXPORTED INTO A COMBINED EXCEL DATABASE, WHERE ADDITIONAL FIELDS SUCH AS THE COUNTRY/REGION, DISEASE, THEMES, AND TAKEAWAYS WERE ADDED FOR PAPERS THAT WERE DEEMED RELEVANT FOR INCLUSION AFTER TITLE/ABSTRACT REVIEW.

Include? (Y/Yes, M/Maybe, N/No, HIC/high-income)	Title	Publication Title	Country/region	Disease	Themes	Take-aways
Y	A Comparison of China's Risk Communication in Response to SARS and H7N9 Using Principles Drawn From International Practice.	Disaster medicine	China	SARS, H7N9	learning; risk communication	China's risk communication for SARS was poor. Their risk communication for H7N9 was strengthened by the SARS experience
Y	Experiences and challenges in the health protection of medical teams in the Chinese Ebola treatment center, Liberia: a qualitative study.	Infectious diseases	Liberia	Ebola	HCW mental health; HCW fatigue; sociopolitical unrest; inadequate supplies; inadequate staffing	HCWs experienced social and emotional stress caused by: (1) the disruption of family and social networks; (2) adapting to a different culture; (3) and anxiety over social and political unrest in Liberia.
Y	Control of highly pathogenic avian influenza in Quang Tri province, Vietnam: voices from the human-animal interface.	Rural and remote	Vietnam	Influenza (avian)	high awareness; inadequate supplies	Stakeholder engagement for risk assessment is necessary to build trust and develop multi-sectoral collaborative responses
Y	Ebola and healthcare worker stigma.	Scandinavian journal	West Africa	Ebola	HCW self-quarantine; HCW	Quarantine and self-isolation were less stringently followed by expat healthcare workers than by other aid workers in the outbreak
Y	The Response to and Impact of the Ebola Epidemic: Towards an Agenda for Interdisciplinary Research.	International journal	Guinea	Ebola	stigma; public response	In addition to health system weaknesses, one of the major barriers to controlling the disease appeared to be community resistance to the Ebola response.
Y	Health workers' experiences of coping with the Ebola epidemic in Sierra Leone's health system: a qualitative study.	BMC health services	Sierra Leone	Ebola	coping mechanisms; hazard pay; stigma	Traditional social structures (religion, family, etc.) were important support mechanisms for HCWs; Risk allowances and destigmatization workshops increased HCW motivation to continue their work;
Y	Fears and Misperceptions of the Ebola Response System during the 2014-2015 Outbreak in Sierra Leone.	PLoS neglected tropical	Sierra Leone	Ebola	Fear; trust; care-seeking	Fear, lack of trust in care system, and lack of medical understanding resulted in delayed care-seeking behavior
Y	Unintended consequences of the 'bushmeat ban' in West Africa during the 2013-2016 Ebola virus disease epidemic.	Social science & medicine	Sierra Leone	Ebola	risk messaging; socially connected	Risk messaging (of bushmeat) did not match public's experience so was less effective; Collaboration with community in developing risk messaging likely would have increased effectiveness

# OTHER SOURCES: SEARCH STRATEGIES

THE SOURCES INCLUDED THE FOLLOWING:

- Pre-print servers: [medRxiv](#), [bioRxiv](#), [arXiv](#), [ResearchSquare](#)
- [CDC COVID-19 research database](#)
- [Scopus](#)
- [PsycINFO](#) (qualitative)
- [Somatosphere](#)

CONSISTENT SEARCH STRINGS WERE USED ACROSS DATABASES

Qualitative	Source/Database/Journal	Search string	# results
All themes, different disease focus	<a href="https://www.medrxiv.org/">https://www.medrxiv.org/</a>	(COVID OR COVID-19 OR coronavirus) AI	95
(COVID OR COVID-19 OR coronavirus)	<a href="https://www.biorxiv.org/">https://www.biorxiv.org/</a>	(COVID OR COVID-19 OR coronavirus) AI	49
(COVID OR COVID-19 OR coronavirus)	<a href="https://arxiv.org/search/advanced/">https://arxiv.org/search/advanced/</a>	scrolled through each one by one	1 (included)
(COVID OR COVID-19 OR coronavirus)	<a href="https://www.researchsquare.com/">https://www.researchsquare.com/</a>	scrolled through each one by one	9 (included)
(COVID OR COVID-19 OR coronavirus OR "Severe Acute Respirat	<a href="https://www.scopus.com/home.uri">https://www.scopus.com/home.uri</a>	("care seeking" OR "care provision") OR	17
(pandemic OR COVID OR COVID-19 OR coronavirus OR "Severe	<a href="https://www.scopus.com/home.uri">https://www.scopus.com/home.uri</a>	("care seeking" OR "care provision") OR	68
(pandemic OR epidemic OR outbreak OR COVID OR COVID-19 O	<a href="https://www.scopus.com/home.uri">https://www.scopus.com/home.uri</a>	("care seeking" OR "care provision") OR	322
(COVID OR COVID-19 OR coronavirus OR "Severe Acute Respirat	<a href="https://www.apa.org/pubs/databas">https://www.apa.org/pubs/databas</a>	("care seeking" OR "care provision") OR	80
(pandemic OR COVID OR COVID-19 OR coronavirus OR "Severe	<a href="https://www.apa.org/pubs/databas">https://www.apa.org/pubs/databas</a>	("care seeking" OR "care provision") OR	174
(pandemic OR epidemic OR outbreak OR COVID OR COVID-19 O	<a href="https://www.apa.org/pubs/databas">https://www.apa.org/pubs/databas</a>	("care seeking" OR "care provision") OR	1130
Covid OR Ebola OR epidemic	<a href="https://www.heart-resources.org/ebola-response-anthropology-platform/">https://www.heart-resources.org/ebola-response-anthropology-platform/</a>		116
Covid OR coronavirus or COVID-19 AND qualitative	<a href="http://somatosphere.net/">http://somatosphere.net/</a>		0

Quantitative	Source/Database/Journal	Search string	# results
Focus			
WHO building blocks + supply chain + "health provision" + "hea	<a href="https://www.medrxiv.org/">https://www.medrxiv.org/</a>	("health system" OR "delivery" OR "acce	41
WHO building blocks + supply chain + "health provision" + "hea	<a href="https://www.biorxiv.org/">https://www.biorxiv.org/</a>	("health system" OR "delivery" OR "acce	5
WHO building blocks + supply chain + "health provision" + "hea	<a href="https://arxiv.org/search/advanced/">https://arxiv.org/search/advanced/</a>	scrolled through each one by one	3 (included)
WHO building blocks + supply chain + "health provision" + "hea	<a href="https://www.researchsquare.com/">https://www.researchsquare.com/</a>	scrolled through each one by one	3 (included)
WHO building blocks + supply chain + staffing + "health provisio	<a href="https://www.scopus.com/home.uri">https://www.scopus.com/home.uri</a>	("health system" OR "service delivery" C	110
Health system & vaccine preventable; COVID + pandemic	<a href="https://www.scopus.com/home.uri">https://www.scopus.com/home.uri</a>	("health system" OR "vaccine prevental	237
WHO building blocks + supply chain + staffing + "health provisio	<a href="https://www.scopus.com/home.uri">https://www.scopus.com/home.uri</a>	("health system" OR "service delivery" C	1871
COVID or Covid-19 or coronavirus	Covid-CDC Database		347

# QUALITATIVE SEARCH STRATEGIES & RESULTS

SOURCE	HIGH PRIORITY SEARCH TERMS	NUMBER OF RESULTS
Medrxiv	(COVID OR COVID-19 OR coronavirus) AND (qualitative OR behavioral OR anthropology OR sociology OR psychology OR psychosocial )	95
Biorxiv	(COVID OR COVID-19 OR coronavirus) AND (qualitative OR behavioral OR anthropology OR sociology OR psychology OR psychosocial )	49
arXiv	Individual item search	1
ResearchSquare	Individual item search	9
Scopus	((("care seeking" OR "care provision") OR ("traditional practices" OR "traditional practice") OR (trust AND government) OR (absenteeism OR burnout OR "burn out") OR ("healthcare worker" AND trust) OR (isolation OR "social distancing" OR solidarity) OR ("community response"))) AND (pandemic OR epidemic OR outbreak OR COVID OR COVID-19 OR coronavirus OR "Severe Acute Respiratory Syndrome Coronavirus-2" OR SARS-CoV-2 OR Ebola) AND qualitative	322
PsychInfo	((("care seeking" OR "care provision") OR ("traditional practices" OR "traditional practice") OR (trust AND government) OR (absenteeism OR burnout OR "burn out") OR ("healthcare worker" AND trust) OR (isolation OR "social distancing" OR solidarity) OR ("community response"))) AND (pandemic OR epidemic OR outbreak OR COVID OR COVID-19 OR coronavirus OR "Severe Acute Respiratory Syndrome Coronavirus-2" OR SARS-CoV-2 OR Ebola) AND qualitative	1130
AnthroSource	((("care seeking" OR "care provision") OR ("traditional practices" OR "traditional practice") OR (trust AND government) OR (absenteeism OR burnout OR "burn out") OR ("healthcare worker" AND trust) OR (isolation OR "social distancing" OR solidarity) OR ("community response"))) AND (pandemic OR epidemic OR outbreak OR COVID OR COVID-19 OR coronavirus OR "Severe Acute Respiratory Syndrome Coronavirus-2" OR SARS-CoV-2 OR Ebola) AND qualitative	523
Pubmed	((("care seeking" OR "care provision") OR ("traditional practices" OR "traditional practice") OR (trust AND government) OR (absenteeism OR burnout OR "burn out") OR ("healthcare worker" AND trust) OR (isolation OR "social distancing" OR solidarity) OR ("community response"))) AND (pandemic OR epidemic OR outbreak OR COVID OR COVID-19 OR coronavirus OR "Severe Acute Respiratory Syndrome Coronavirus-2" OR SARS-CoV-2 OR Ebola) AND qualitative	2210

# QUANTITATIVE SEARCH STRATEGIES & RESULTS

SOURCE	HIGH PRIORITY SEARCH TERMS	NUMBER OF RESULTS
Medrxiv	("health system" OR "delivery" OR "access" OR "supply" OR "coverage" OR "provision") AND (COVID OR COVID-19 OR coronavirus)	41
Biorxiv	("health system" OR "delivery" OR "access" OR "supply" OR "coverage" OR "provision") AND (COVID OR COVID-19 OR coronavirus)	5
Scopus	High priority: ("health system" OR "service delivery" OR "health workforce" OR "health information systems" OR "access to essential medicines" OR "financing" OR "leadership" OR "governance" OR "supply chain" OR staffing OR "health service coverage" OR "health provision") AND (COVID OR COVID-19 OR coronavirus OR "Severe Acute Respiratory Syndrome Coronavirus-2" OR SARS-CoV-2).	110; 237; 1871
CDC Covid 19 Database	Title review of all	347
Arxiv	Title review of all	3
Researchsquare	Title review of all	3
Pubmed	High priority: ("health system" OR "service delivery" OR "health workforce" OR "health information systems" OR "access to essential medicines" OR "financing" OR "leadership" OR "governance" OR "supply chain" OR staffing OR "health service coverage" OR "health provision") AND (COVID OR COVID-19 OR coronavirus OR "Severe Acute Respiratory Syndrome Coronavirus-2" OR SARS-CoV-2);	138; 173; 1398

# THEME HARMONIZATION

THE TEAM CREATED AND REFINED A LIST OF THEMES, INITIALLY CODING EACH STUDY INDIVIDUALLY WITH THE MOST RELEVANT THEME(S) AND SUBSEQUENTLY COLLAPSING SIMILAR THEMES TOGETHER.

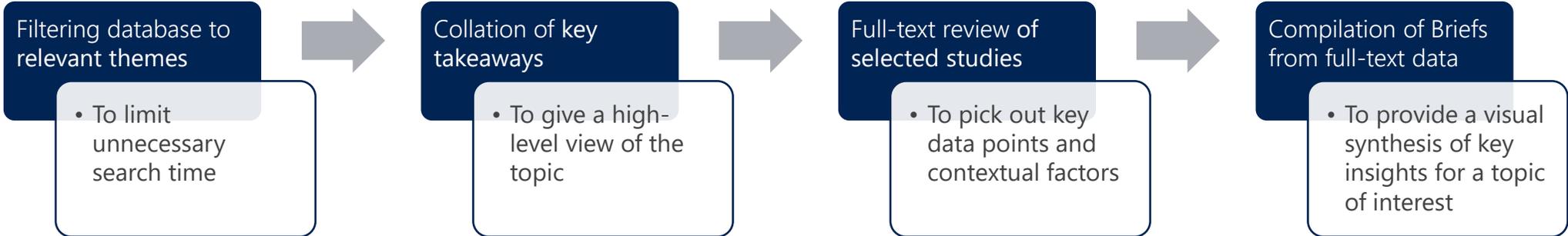
study_type_qual	theme_qual	suggested_changes_qual
Qualitative	access to healthcare	
Qualitative	advanced screening capabilities	screening/diagnostics
Qualitative	anthropogenic pressures	one health
Qualitative	antimicrobial stewardship	policy/guidelines
Qualitative	avoiding burnout	burnout
Qualitative	awareness	
Qualitative	awareness vs. knowledge vs. action	KAP
Qualitative	barriers to healthcare delivery	change to tag
Qualitative	biological surveillance	Surveillance
Qualitative	biosecurity	Security
Qualitative	blame	
Qualitative	building blocks	delete
Qualitative	building capacity	
Qualitative	building trust	trust
Qualitative	burial	
Qualitative	burnout	
Qualitative	bush meat	one health
Qualitative	capacity building	
Qualitative	care-seeking	
Qualitative	catastrophe bonds	economic impact
Qualitative	centralized control	
Qualitative	china-africa relations	international cooperation
Qualitative	colonialism	
Qualitative	colonization	colonialism
Qualitative	combatting fake news	misinformation
Qualitative	commodifying infectious disease	
Qualitative	communication	
Qualitative	communication and perception	communication; perception
Qualitative	community	delete
Qualitative	community awareness	awareness
Qualitative	community engagement	
Qualitative	community engagment	community engagement
Qualitative	community health volunteers	CHW
Qualitative	community health workers	CHW
Qualitative	community life	delete
Qualitative	community perceptions	perception
Qualitative	community volunteers	CHW
Qualitative	community work	delete
Qualitative	community-led quarantines	non-pharmaceutical interventions
Qualitative	competing health needs	resource allocation



**METHODS: THE  
DEVELOPMENT OF BRIEFS**

# PROCESS MAP

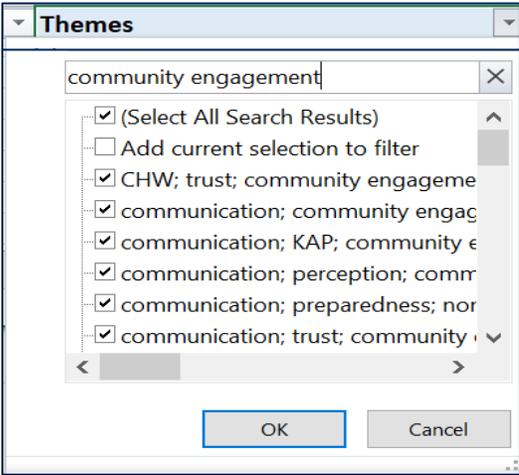
THE TEAM USED THE LITERATURE TOOL TO DEVELOP BRIEFS ON SELECT TOPICS USING THE FOLLOWING METHOD.



3



1



2

<p>vaccination coverage. In addition, the uptake of HIV/AIDS and malaria services, general hospital admissions, and major surgeries decreased as well. Interestingly, it was the uptake of health service provision by the population that decreased, rather than the volume of health service provision.</p> <p>Family planning recovered and improved. We find that family planning distribution declined by 65 percent in Liberia and 23 percent in Sierra Leone at the peak of the epidemic. Two years after Ebola, Liberia's average monthly contraception distribution is 39 percent above pre-epidemic levels, while distribution in Sierra Leone increased by 27 percent, findings echoed in data from the Demographic and Health Survey and Multiple Indicator Cluster Survey. Increased contraceptive use comes from implants in both countries, and injectables in Liberia.</p> <p>The mean number of monthly ANC visits remained stable over time, except for the subset of care provided via outreach visits where, compared with before the outbreak (n = 390), ANC1 visits declined during (n = 331, P = 0.002) and after the outbreak (n = 342, P = 0.03). Most (&gt;97%) deliveries occurred in health facilities, assisted by maternal and child health aides (&gt;80%). During the outbreak, the mean number of community-based deliveries per month declined from 31 to 21 (P = 0.03), and the mean number of deliveries performed by midwives increased from 49 to 78 (P &lt; 0.001) compared with before the outbreak. Before, during and after Ebola, there was no significant change in</p>	<p><a href="https://www.ncbi.nlm.nih.gov/pubmed/32180249">https://www.ncbi.nlm.nih.gov/pubmed/32180249</a></p> <p><a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5515563/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5515563/</a></p>	<ul style="list-style-type: none"> <li>• Distribution of family planning dropped 65% in Liberia and 23% in Sierra Leone during Ebola</li> <li>• Two years post-Ebola, average monthly contraception distribution in Liberia was up 39% over pre-Ebola levels, 27% in Sierra Leone</li> <li>• Increased contraceptive use driven by implants in both countries, injectables in Liberia</li> <li>• Before, during and after Ebola, there was no significant change in the mean number of live births (respectively n = 1134, n = 1110, n = 1162), maternal PNC1 (respectively n = 1110, n = 1105, n = 1165) or neonatal PNC1 (respectively n = 1028, n = 1050, n = 1085).</li> <li>• Authors conclude that rural areas of Sierra Leone with less transmission did not see significant decreases in maternal healthcare utilization</li> </ul>
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