



City Research Online

City St George's, University of London

Citation: Zhu, N., Ferlie, E., Castro-Sanchez, E., Birgand, G., Holmes, A. H., Atun, R. A., Kieltyka, H. & Ahmad, R. (2021). Macro level factors influencing strategic responses to emergent pandemics: a scoping review. *Journal of Global Health*, 11, pp. 1-16. doi: 10.7189/jogh.11.05012

This is the supplemental version of the paper.

This version of the publication may differ from the final published version. To cite this item please consult the publisher's version.

Permanent repository link: <https://openaccess.city.ac.uk/id/eprint/25823/>

Link to published version: <https://doi.org/10.7189/jogh.11.05012>

Copyright and Reuse: Copyright and Moral Rights remain with the author(s) and/or copyright holders. Copies of full items can be used for personal research or study, educational, or not-for-profit purposes without prior permission or charge, unless otherwise indicated, provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way. For full details of reuse please refer to [City Research Online policy](#).

Online Supplementary Document

Table S1. Scoping review search strings

Strings for PubMed: Search 1: ((situation analysis[Title/Abstract]) OR (situational analysis[Title/Abstract]) OR (strategic analysis[Title/Abstract]) OR (SWOT[Title/Abstract]) OR (PESTEL[Title/Abstract]) OR (PESTELI[Title/Abstract]) OR (STEEPLE[Title/Abstract])) OR (PEARLES[Title/Abstract]) AND ((pandemic*[Title]) OR (epidemic*[Title]) OR (outbreak*[Title])) Search 2: ((preparedness*[Title]) OR (planning[Title]) OR (response*[Title]) OR (control[Title]) OR (mitigate*[Title]) OR manag*[Title]) AND ((facilitat* [Title/Abstract]) OR (inhibit*[Title/Abstract]) OR (influenc*[Title/Abstract]) OR (correlate*[Title/Abstract]) OR (determinant*[Title/Abstract]) OR (predictor*[Title/Abstract]) OR (barrier*[Title/Abstract]) OR (contribut*[Title/Abstract]) OR (driv*[Title/Abstract])) AND ((anthropolog*[Title/Abstract]) OR (socio*[Title/Abstract]) OR (social*[Title/Abstract]) OR (politic*[Title/Abstract]) OR (economic*[Title/Abstract]) OR (technolog*[Title/Abstract]) OR (ecolog*[Title/Abstract]) OR (environment*[Title/Abstract]) OR (legislati*[Title/Abstract]) OR (law*[Title/Abstract]) OR (regulat*[Title/Abstract]) OR (industr*[Title/Abstract])) AND ((pandemic*[Title]) OR (epidemic*[Title]) OR (outbreak*[Title])) Limit: 2000-current Limit: English only
Strings for Ovid databases: Search 1: 1. (situation analysis or situational analysis or strategic analysis or SWOT or PESTEL or PESTELI or STEEPLE or PEARLES).ab. and (pandemic* or epidemic* or outbreak*).ti. 2. limit 1 to English language 3. limit 2 to yr = "2000-Current" Search 2: 1. (((prepare* or planning or respon* or control* or mitigate* or manag*) and (facilitat* or enabl* or inhibit* or influenc* or correlate* or determinant* or predictor* or barrier* or contribut* or driv*) and (anthropolog* or

socio* or social* or politic* or economic* or technolog* or ecolog* or environment* or legislati* or law* or
regulat* or industr*)).ab. and (pandemic* or epidemic*).ti.) not (diabet* or asthma or opioid* or obes* or HIV or
malaria or tuberculosis).ti.
2. limit 1 to english language
3. limit 2 to yr = "2000-Current"

Table S2. Facilitators and inhibitors in pandemic management identified in individual studies

(a) COVID-19

	Political (P)	Economic (Econ)	Sociological (S)	Technological (T)	Ecological (E)	Legislative (L)	Industry (I)
	COVID-19						
(21)	Facilitators						
	Enactment of emergency policies and decrees					Banned air traffic from China; mandatory reporting of travel history to the Italian National Health Service (NHS); mandatory quarantine	Rapid response including increased healthcare human resources capacity and protected supply chains
	Inhibitors						
	Inconsistency between local and national guidance in technical orders and clinical protocols			Constraints in data integration and smart technologies to support contact tracing, surveillance, and other interventions			
(22)	Facilitators						
				Health informatics technologies (<i>e.g.</i> big data for tracking and tracing; 5G network for telemedicine; artificial intelligence for rapid, precise diagnostics); regulation of travelling using QR code of health record			High internet coverage and utilisation
	Inhibitors						
				Lack of rapid deployment of information systems; suboptimal information exchange across health institutions; non-standardised electronic health records to streamline emergency information			
(25)	Facilitators						
	Inhibitors						

Contests between powerful domestic actors delaying crisis response; organisational limitations, cognitive barriers and political construction of threat perception in policy makers may lead to hesitation in HCW deployment						Deployment of HCWs can be delayed if industry interdependence exists, such as logistical planning, medical evacuation, and other necessities
--	--	--	--	--	--	--

(c) Influenza A (H1N1)

	Political (P)	Economic (Econ)	Sociological (S)	Technological (T)	Ecological (E)	Legislative (L)	Industry (I)
	Influenza A (H1N1)						
(32)	Facilitators						
	External funds through the Partnership Contribution (PC) of pandemic influenza preparedness (PIP)			Vaccination coverage; early initiation of antivirals			
	Inhibitors						
	Inadequate preparedness plans lacking detailed strategic review and assessment		The annual Islamic pilgrimage (Hajj) driving transmission; population displacement and migration due to ongoing wars and conflicts	Lack of complete surveillance systems across national, sub-national and regional level; absence of integration between animal and human surveillance networks	Global migratory bird flight increasing transmission of Avian influenza through wild birds, poultry and humans	Absence of legal framework (for declaring emergency and taking actions) in pandemic planning	Shortage in trained staff and laboratory equipment for surveillance; lack of planning for procurement, storage and distribution of vaccines; low utilisation of research and evaluation to revise preparedness plans and improve prevention and containment measures
(33)	Facilitators						
			Public knowledge (<i>e.g.</i> knowledge in transmission mechanism, how to infection control measures; efficacy and effectiveness of control measures); optimal perception of severity and vulnerability of the infection				
	Inhibitors						

			Anxiety and fear				
(34)	Facilitators						
	Arrangement and strength in governance and stewardship			Technologies available for surveillance, case detection, and infection control	Existing epidemiological profile of high life expectancy and low mortality		External resources available for LMICS (e.g. Laos, Cambodia)
	Inhibitors						
		Insufficient budget for pandemic preparedness; reliance on external funding	Lack of public health education specifically for Influenza A (instead focusing on Avian influenza)				Shortage of qualified human resources restricting surveillance and response capacity
(26)	Facilitators						
			Optimal knowledge in the influenza pandemic; having a health-related personal network (e.g. having family or friends who can provide health-related information or support)				
	Inhibitors						
			Low education; unemployment and low socio-economic position associated with inadequate access to health information				
(35)	Facilitators						
			Adherence with antiviral medication (either as prophylaxis or treatment) associated with previous compliance with other precautionary advice about pandemic flu, beliefs that the recommended preventive measures were necessary; having discussed the option of taking antiviral medication with someone who had not experienced side effects				

	Inhibitors					
			Non-adherence with antiviral medication due to experienced or perceived adverse effects, not wanting to take medication, forgetting, losing, or running out of tablets			
(36)	Facilitators					
	Inhibitors					
			Social stigma and discrimination against one or more particular social sub-group (s); lack of trust in government's capacity and fairness when handling the emergence; inequalities in exposure to public health communication messages, which led to negative outcomes, including low vaccine uptake; inadequate knowledge, attitude, and beliefs about the pandemic, suboptimal care seeking behaviour; low ability and willingness to seek and process information; poor emotional responses			
(37)	Facilitators					
			Perception of benefits of vaccination (<i>e.g.</i> protecting themselves and loved ones, protecting patients); adequate perception of susceptibility (<i>e.g.</i> risk of infection, immunity via previous exposure) and severity; responsive action to information from mass media, public health authorities, and co-workers/supervisor			
	Inhibitors					

	Delayed, poor coordination of hospital level policies and protocols and hospice-specific guidance	Ethical challenges concerning allocation of scarce resources		Lack of data collection systems to understand patient outcomes and share learnings			Lack of material supplies (<i>e.g.</i> PPE, diagnostic and monitoring equipment)
(29)	Facilitators						
	Collaboration between governmental agencies and external organisations (<i>e.g.</i> the CDC and WHO)						
	Inhibitors						
				Low adoption of remote medical assistance to detect and control zoonotic infectious disease outbreaks	Fast transmission due to environmental change and international travel via railway and air way		Lack of integration of internet and related technologies for surveillance activities (<i>e.g.</i> simultaneous reporting and monitoring, end-to-end connectivity, data assortment and analysis, tracking and alerts)
(30)	Facilitators						
				Pathogen discovery techniques; meta-genomic technology to predict pandemic potential in novel microbes			
	Inhibitors						
					Juxtaposition of livestock production and wildlife populations; change in land use related to development of tropical forests		
(31)	Facilitators						
	Credibility of evidence informing responses; healthcare system capacity						
	Inhibitors						

	Confusion in attribution of responsibility (<i>e.g.</i> healthcare system or the general public?); lack of coordination in responses among agencies due to competing causal explanations of the pandemic and conflicts in priorities	Economic inequalities in social sub-group(s)	Globalisation accelerating transmission; culture (<i>e.g.</i> traditional burial practices, dietary habits such as consumption of bush meat, blaming and social stigma)	Inadequate case reporting due to lack of information technologies			
--	---	--	--	---	--	--	--