Supplementary webappendix

1. SEARCH STRINGS

Note: The Cochrane Review Library was searched used cholera* AND efficacy OR effect* OR protect*.

Date of query	Date and language restrictions	Exact Search Query (PubMed)	Exact Search Query (EMBASE)
Antibiotic chemoprophylaxis			
January 23, 2020	January 1, 2000- April 24, 2020; English, French	((antibiotic[Title/Abstract] OR antimicrobial[Title/Abstract] OR chemoprevention[Title/Abstract] OR chemoprophyla*[Title/Abstract]) AND (effect*[Title/Abstract] OR efficacy[Title/Abstract] OR protect*[Title/Abstract])) AND ((((cholera[Title/Abstract] OR vibrio cholerae[Title/Abstract] OR acute watery diarrh*[Title/Abstract]))) AND ("2000/01/01"[Date - Publication] : "3000"[Date - Publication]))	1. cholera*.ti,ab. 2. efficac*.ab,ti. 3. effect*.ab,ti. 4. protect*.ab,ti. 5. antibiotic*.ti,ab. 6. antimicrobial*.ti,ab. 7. chemoprophyla**.ti,ab. 8. chemoprevent*.ti,ab. 9. 5 or 6 or 7 or 8 10. 2 or 3 or 4 11. 1 and 9 and 10 12. limit 11 to (full text and yr="2000 -Current")
Oral cholera vaccination			
January 23, 2020	January 1, 2000- April 24, 2020; English, French	(((vaccin*[Title/Abstract]) AND (effect*[Title/Abstract] OR efficacy[Title/Abstract] OR protect*[Title/Abstract]))) AND ((((cholera[Title/Abstract] OR vibrio cholerae[Title/Abstract] OR acute watery diarrh*[Title/Abstract]))) AND ("2000/01/01"[Date - Publication] : "3000"[Date - Publication]))	13. cholera*.ti,ab. 14. efficac*.ab,ti. 15. effect*.ab,ti. 16. protect*.ab,ti. 17. vaccin*.ab,ti. 18. 1 and 5 19. 2 or 3 or 4 20. 6 and 7 21. limit 8 to (full text and yr="2000 -Current")
WASH and hygiene promotion			
January 23, 2020	January 1, 2000- April 24, 2020; English, French	(((hygiene promot*[Title/Abstract] OR “health education”[Title/Abstract] OR hygiene[Title/Abstract] OR "hygiene promotion"[Title/Abstract] OR “hand hygiene”[Title/Abstract] OR “hand-washing”[Title/Abstract] OR handwashing[Title/Abstract] OR hand disinfection*[Title/Abstract] OR health behavior*[Title/Abstract]) AND (effect*[Title/Abstract] OR efficacy[Title/Abstract] OR protect*[Title/Abstract]))) AND ((((cholera[Title/Abstract] OR vibrio cholerae[Title/Abstract] OR acute watery diarrh*[Title/Abstract]))) AND ("2000/01/01"[Date - Publication] : "3000"[Date - Publication]))	1. cholera*.ti,ab. 2. efficac*.ab,ti. 3. effect*.ab,ti. 4. protect*.ab,ti. 5. 2 or 3 or 4 6. hygiene promot*.ti,ab. 7. health educ*.ti,ab. 8. hygiene promoti*.ti,ab. 9. hand hyg*.ti,ab. 10. hand-wash*.ti,ab. 11. hand disinfect*.ti,ab. 12. health behav*.ti,ab. 13. 6 or 7 or 8 or 9 or 10 or 11 or 12 14. 1 and 5 and 13 15. limit 14 to (full text and yr="2000 -Current")
Water treatment			

January 23, 2020	January 1, 2000- April 24, 2020; English, French *The requirement for effectiveness studies was removed since none were initially found.	(((water purification[Title/Abstract] OR "water treatment"[Title/Abstract] OR chlorin*[Title/Abstract] OR aquatab[Title/Abstract] OR well chlorin*[Title/Abstract] OR bucket chlorin*[Title/Abstract] OR pot chlorin*[Title/Abstract])) AND ((((cholera[Title/Abstract] OR vibrio cholerae[Title/Abstract] OR acute watery diarrh*[Title/Abstract])))) AND ("2000/01/01"[Date - Publication] : "3000"[Date - Publication]))	1. cholera*.ti,ab. 2. efficac*.ab,ti. 3. effect*.ab,ti. 4. protect*.ab,ti. 5. 2 or 3 or 4 6. water purif*.ti,ab. 7. water treat*.ti,ab. 8. chlorin*.ti,ab. 9. aquatab.ti,ab. 10. 6 or 7 or 8 or 9 11. 1 and 5 and 10 12. limit 11 to (full text and yr="2000 -Current")
Household spraying/disinfection			
January 23, 2020	January 1, 2000- April 24, 2020; English, French *The requirement for effectiveness studies was removed since none were initially found.	(((spray*[Title/Abstract] OR household spray*[Title/Abstract] OR household clean*[Title/Abstract])) AND ((((cholera[Title/Abstract] OR vibrio cholerae[Title/Abstract] OR acute watery diarrh*[Title/Abstract])))) AND ("2000/01/01"[Date - Publication] : "3000"[Date - Publication]))	1. cholera*.ti,ab. 2. spray*.ti,ab. 3. household spray*.ti,ab. 4. household clean*.ti,ab. 1. 2 or 3 or 4 5. 1 and 5 6. limit 10 to (full text and yr="2000 -Current")
Safe burial			
January 23, 2020	January 1, 2000- April 24, 2020; English, French *The requirement for effectiveness studies was removed since none were initially found. Date limits were removed as no relevant articles were initially found.	(funeral*[Title/Abstract] OR burial*[Title/Abstract] OR corpse*[Title/Abstract]) AND (cholera[Title/Abstract] OR vibrio cholerae[Title/Abstract] OR acute watery diarrh*[Title/Abstract])	2. cholera*.ti,ab. 3. funeral*.ti,ab. 4. burial*.ti,ab. 5. corpse*.ti,ab. 6. 2 or 3 or 4 7. 1 and 5
Case-area targeted response			
January 23, 2020	January 1, 2000- April 24, 2020; English, French	(((targeted response*[Title/Abstract] OR "targeted intervention"[Title/Abstract] OR "comprehensive targeted response"[Title/Abstract] OR "case-area targeted response"[Title/Abstract] OR "case-area targeted intervention"[Title/Abstract] OR "alert and response"[Title/Abstract] OR "rapid response"[Title/Abstract] OR "ring vaccination"[Title/Abstract] OR "community response"[Title/Abstract] OR "community-based response"[Title/Abstract] OR community health workers[Title/Abstract] OR community health work*[Title/Abstract] OR community health volunteer*[Title/Abstract])) AND ((((cholera[Title/Abstract] OR vibrio cholerae[Title/Abstract] OR acute watery diarrh*[Title/Abstract])))) AND ("2000/01/01"[Date - Publication] : "3000"[Date - Publication]))	1. cholera*.ti,ab. 2. targeted response.ti,ab. 3. targeted intervention.ti,ab. 4. comprehensive targeted response.ti,ab. 5. case-area targeted response.ti,ab. 6. case-area targeted intervention.ti,ab. 7. "alert and response".ti,ab. 8. "rapid response".ti,ab. 9. "community response".ti,ab. 10. "community-based response".ti,ab. 11. "community health work".ti,ab. 12. "community health volunteer".ti,ab. 13. 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 14. 1 and 13 15. limit 14 to (full text and yr="2000 -Current")
Spatiotemporal transmission			

January 23, 2020	January 1, 2000- April 24, 2020; English, French	(((communicable disease transmission[Title/Abstract] OR disease clustering[Title/Abstract] OR clustering[Title/Abstract] OR cluster*[Title/Abstract] OR cluster analysis[Title/Abstract] OR "spatial clustering"[Title/Abstract] OR spatial analysis[Title/Abstract] OR "spatial transmission"[Title/Abstract] OR spatio-temporal analysis[Title/Abstract] OR "household transmission"[Title/Abstract] OR "community transmission"[Title/Abstract] OR "neighborhood transmission"[Title/Abstract] OR "hotspot"[Title/Abstract])) AND ((((cholera[Title/Abstract] OR vibrio cholerae[Title/Abstract] OR acute watery diarrh*[Title/Abstract])) AND ("2000/01/01"[Date - Publication] : "3000"[Date - Publication]))	1. cholera*.ti,ab. 2. "communicable disease transmission".ti,ab. 3. "disease cluster".ti,ab. 4. cluster*.ti,ab. 5. "cluster analysis".ti,ab. 6. "spatial cluster".ti,ab. 7. "spatial analysis".ti,ab. 8. "spatial transmission".ti,ab. 9. "household transmission".ti,ab. 10. "community transmission".ti,ab. 11. "neighborhood transmission".ti,ab. 12. "neighbourhood transmission".ti,ab. 13. "hotspot".ti,ab. 14. 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 15. 1 and 14 16. limit 15 to (full text and yr="2000 -Current")

2. Websites searched and organizations contacted

Websites searched	Organizations contacted
Global Task Force for Cholera Control Global Health Cluster Global WASH Cluster UNICEF WHO	1. Aix-Marseille University 2. Centers for Disease Control and Prevention (CDC): Emergency Response and Recovery Branch 3. Democratic Republic of Congo, Ministry of Health 4. Epicentre 5. International Centre for Diarrhoeal Disease Research, Bangladesh (icddr, b) 6. International Federation of the Red Cross and Red Crescent (IFRC) 7. International Rescue Committee (IRC) 8. International Vaccine Institute (IVI) 9. Johns Hopkins Bloomberg School of Public Health: DOVE Project 10. Mahidol-Oxford Tropical Medicine Research Unit 11. Massachusetts General Hospital Center for Global Health 12. Médecins Sans Frontières (MSF), OCA, 13. Médecins Sans Frontières (MSF), OCG 14. Norwegian Red Cross 15. UNICEF, Public Health Emergencies 16. UNICEF, WASH 17. Universidad Miguel Hernandez 18. University of Philippines 19. Swiss Red Cross 20. Tufts University: School of Engineering 21. WHO, Cholera Branch 22. WHO, Eastern Mediterranean Regional Office (EMRO) 23. WHO, Health Emergencies Branch 24. WHO, Western Pacific Regional Office (WPRO) 25. York University: Dahdaleh Institute for Global Health Research

3. Data abstraction variables for CATI descriptions and evaluations

Descriptions	Evaluations
Setting	Volume (suspected cases, and/or contacts)
Catchment population	Types of cases targeted
Transmission pattern	Proportion responded to (alerts)
Epidemic period	Mean delay (detection to household visit)
Size of epidemic (suspected cases)	Coverage (contacts in catchment area)
Target (case-area or household-only)	Impact on epidemic
Epidemic phase when implemented	Study design and limitations
Delay (weeks)	
Objective	
Modality (operational approach)	
Cases targeted	
Ring size	
Timing (intended)	
Team composition	
Costs	

4. RETRIEVED ARTICLES (April 24, 2020)

INTERVENTIONS

	Antibiotic chemoprophylaxis	**Study design**	**Search**
1.	Grandesso F. The Use of doxycycline to prevent cholera. Journée Scientifique Epicentre/Médecins Sans Frontières - Jeudi 2 juin 2016. Paris, France: Epicentre; 2016. p. 14. (unpublished abstract)	Cohort study	CATI request
2.	Khan WA, Saha D, Rahman A, Salam MA, Bogaerts J, Bennish ML. Comparison of single-dose azithromycin and 12-dose, 3-day erythromycin for childhood cholera: a randomised, double-blind trial. *Lancet* 2002; **360**(9347): 1722-7.	Randomized control trial (treatment)	ACP
3.	Leibovici-Weissman Y, Neuberger A, Bitterman R, Sinclair D, Salam MA, Paul M. Antimicrobial drugs for treating cholera. *Cochrane Database Syst Rev* 2014; (6): CD008625.	Meta-analysis (treatment)	ACP
4.	Reveiz L, Chapman E, Ramon-Pardo P, et al. Chemoprophylaxis in contacts of patients with cholera: systematic review and meta-analysis. *PLoS One* 2011; **6**(11): e27060.	Meta-analysis (chemoprophylaxis)	ACP
	Oral cholera vaccination	**Study design**	**Search**
5.	Abubakar A, Azman AS, Rumunu J, et al. The First Use of the Global Oral Cholera Vaccine Emergency Stockpile: Lessons from South Sudan. *PLoS Med* 2015; **12**(11): e1001901.	Case study (two doses)	Manual (Ref 8)
6.	Azman AS, Parker LA, Rumunu J, et al. Effectiveness of one dose of oral cholera vaccine in response to an outbreak: a case-cohort study. *Lancet Glob Health* 2016; **4**(11): e856-e63.	Case-cohort study (one dose)	OCV
7.	Bi Q, Ferreras E, Pezzoli L, et al. Protection against cholera from killed whole-cell oral cholera vaccines: a systematic review and meta-analysis. *Lancet Infect Dis* 2017; **17**(10): 1080-8.	Meta-analysis (one dose, two doses)	OCV
8.	Date KA, Vicari A, Hyde TB, et al. Considerations for oral cholera vaccine use during outbreak after earthquake in Haiti, 2010-2011. *Emerging infectious diseases* 2011; **17**(11): 2105-12.	Case study	Manual (Ref 17)
9.	Ferreras E, Chizema-Kawesha E, Blake A, et al. Single-Dose Cholera Vaccine in Response to an Outbreak in Zambia. *N Engl J Med* 2018; **378**(6): 577-9.	Case-control study (one dose)	OCV
10.	Hsiao A, Desai SN, Mogasale V, Excler JL, Digilio L. Lessons learnt from 12 oral cholera vaccine campaigns in resource-poor settings. *Bull World Health Organ* 2017; **95**(4): 303-12.	Literature review (two doses)	OCV
11.	Iyer AS, Bouhenia M, Rumunu J, et al. Immune Responses to an Oral Cholera Vaccine in Internally Displaced Persons in South Sudan. *Sci Rep* 2016; **6**: 35742.	Cohort study (one-dose, two doses)	OCV
12.	Lopez AL, Deen J, Azman AS, et al. Immunogenicity and Protection From a Single Dose of Internationally Available Killed Oral Cholera Vaccine: A Systematic Review and Metaanalysis. *Clin Infect Dis* 2018; **66**(12): 1960-71.	Meta-analysis (one dose)	OCV
13.	Parker LA, Rumunu J, Jamet C, et al. Adapting to the global shortage of cholera vaccines: targeted single dose cholera vaccine in response to an outbreak in South Sudan. *Lancet Infect Dis* 2017; **17**(4): e123-e7.	Case study (one-dose)	OCV
14.	Poncin M, Zulu G, Voute C, et al. Implementation research: reactive mass vaccination with single-dose oral cholera vaccine, Zambia. *Bull World Health Organ* 2018; **96**(2): 86-93.	Case study	OCV
15.	Qadri F, Ali M, Lynch J, et al. Efficacy of a single-dose regimen of inactivated whole-cell oral cholera vaccine: results from 2 years of follow-up of a randomised trial. *Lancet Infect Dis* 2018; 18(6): 666-74.	Randomized control trial (one dose)	OCV
16.	Qadri F, Wierzba TF, Ali M, et al. Efficacy of a Single-Dose, Inactivated Oral Cholera Vaccine in Bangladesh. *N Engl J Med* 2016; **374**(18): 1723-32.	Randomized control trial (one dose)	OCV
17.	Spiegel P, Ratnayake R, Hellman N, et al. Responding to epidemics in large-scale humanitarian crises: a case study of the cholera response in Yemen, 2016–2018. *BMJ Global Health* 2019; **4**(4): e001709.	Case study	Trans
	Water, sanitation, and hygiene (WASH)	**Study design**	**Search**
	WASH reviews		
18.	Fewtrell L, Kaufmann RB, Kay D, Enanoria W, Haller L, Colford JM, Jr. Water, sanitation, and hygiene interventions to reduce diarrhoea in less developed countries: a systematic review and meta-analysis. *Lancet Infect Dis* 2005; **5**(1): 42-52.	Meta-analysis (diarrhea)	Manual (Ref 40)
19.	Taylor DL, Kahawita TM, Cairncross S, Ensink JH. The Impact of Water, Sanitation and Hygiene Interventions to Control Cholera: A Systematic Review. *PLoS One* 2015; **10**(8): e0135676	Systematic review (WASH interventions)	WT

20.	Wolfe M, Kaur M, Yates T, Woodin M, Lantagne D. A Systematic Review and Meta-Analysis of the Association between Water, Sanitation, and Hygiene Exposures and Cholera in Case-Control Studies. *Am J Trop Med Hyg* 2018; **99**(2): 534-45.	Meta-analysis (case-control studies)	Hyg Pr
21.	Yates T, Vujcic JA, Joseph ML, Gallandat K, Lantagne D. Water, sanitation, and hygiene interventions in outbreak response: a synthesis of evidence. *Waterlines* 2018; **37**(1): 5-30.	Systematic review (WASH interventions)	Manual (Ref 19)
Water treatment (also includes WASH reviews, above)			
22.	Lantagne D, Yates T. Household Water Treatment and Cholera Control. *J Infect Dis* 2018; **218**(suppl_3): S147-S53.	Systematic review (household treatment)	WT
23.	Roberts L, Chartier Y, Chartier O, Malenga G, Toole M, Rodka H. Keeping clean water clean in a Malawi refugee camp: arandomized intervention trial. *Bull World Health Organ* 2001; **79**(4): 280-7.	Randomized control trial (safe storage)	WT
Household spraying and hygiene kits (also includes WASH reviews, above)			
24.	Gallandat K, String G, Lantagne D. Effectiveness evaluation of household spraying in cholera outbreaks. 9th Emergency Environmental Health Forum: 18-19 June 2019. Geneva, Switzerland; 2019. (unpublished abstract)	Exploratory study	CATI request
25.	Gartley M, Valeh P, de Lange R, et al. Uptake of household disinfection kits as an additional measure in response to a cholera outbreak in urban areas of Haiti. *J Water Health* 2013; **11**(4): 623-8.	Program evaluation	WT
Safe burial			
26.	Gunnlaugsson G, Einarsdottir J, Angulo FJ, Mentambanar SA, Passa A, Tauxe RV. Funerals during the 1994 cholera epidemic in Guinea-Bissau, West Africa: the need for disinfection of bodies of persons dying of cholera. *Epidemiol Infect* 1998; **120**(1): 7-15.	Observational study	Safe burial
Hygiene promotion (also includes WASH reviews, above)			
27.	Childs L, Francois J, Choudhury A, et al. Evaluation of Knowledge and Practices Regarding Cholera, Water Treatment, Hygiene, and Sanitation Before and After an Oral Cholera Vaccination Campaign-Haiti, 2013-2014. *Am J Trop Med Hyg* 2016; **95**(6): 1305-13.	Cross-sectional surveys	WT
28.	Lilje J, Kessely H, Mosler HJ. Factors determining water treatment behavior for the prevention of cholera in Chad. *Am J Trop Med Hyg* 2015; **93**(1): 57-65.	Cross-sectional surveys	WT

SPATIOTEMPORAL TRANSMISSION

Spatiotemporal transmission		**Study design**	**Search**
29.	Ali M, Debes AK, Luquero FJ, et al. Potential for Controlling Cholera Using a Ring Vaccination Strategy: Re-analysis of Data from a Cluster-Randomized Clinical Trial. *PLoS Med* 2016; **13**(9): e1002120.	Epidemiological model	Trans
30.	Azman AS, Luquero FJ, Salje H, et al. Micro-Hotspots of Risk in Urban Cholera Epidemics. *J Infect Dis* 2018; **218**(7): 1164-8.	Epidemiological model	Manual (Ref 40)
31.	Debes AK, Ali M, Azman AS, Yunus M, Sack DA. Cholera cases cluster in time and space in Matlab, Bangladesh: implications for targeted preventive interventions. *Int J Epidemiol* 2016; **45**(6): 2134-9.	Epidemiological model	Trans
Spatial-only transmission		**Study design**	
32.	Ali M, Kim DR, Kanungo S, et al. Use of oral cholera vaccine as a vaccine probe to define the geographical dimensions of person-to-person transmission of cholera. *Int J Infect Dis* 2018; **66**: 90-5.	Epidemiological model	OCV
33.	Ali M, Sur D, You YA, et al. Herd protection by a bivalent killed whole-cell oral cholera vaccine in the slums of Kolkata, India. *Clin Infect Dis* 2013; **56**(8): 1123-31.	Epidemiological model	Trans
34.	Bi Q, Azman AS, Satter SM, et al. Micro-scale Spatial Clustering of Cholera Risk Factors in Urban Bangladesh. *PLoS Negl Trop Dis* 2016; **10**(2): e0004400.	Epidemiological model	Trans
Household-transmission		**Study design**	
35.	Richterman A, Sainvilien DR, Eberly L, Ivers LC. Individual and Household Risk Factors for Symptomatic Cholera Infection: A Systematic Review and Meta-analysis. The Journal of infectious diseases 2018; 218: S154-S64.	Meta-analysis	WT
36.	Sugimoto JD, Koepke AA, Kenah EE, et al. Household Transmission of Vibrio cholerae in Bangladesh. *PLoS Negl Trop Dis* 2014; **8**(11): e3314.	Cohort study	Trans

37.	Weil AA, Begum Y, Chowdhury F, et al. Bacterial shedding in household contacts of cholera patients in Dhaka, Bangladesh. *Am J Trop Med Hyg* 2014; **91**(4): 738-42.	Cohort study	Manual (Ref 36)
38.	Weil AA, Khan AI, Chowdhury F, et al. Clinical outcomes in household contacts of patients with cholera in Bangladesh. *Clin Infect Dis* 2009; **49**(10): 1473-9.	Cohort study	Manual (Ref 40)

CASE-AREA TARGETED INTERVENTION (CATI)

CATI		Study design	Search
39.	Bompangue D, Moore S, Taty N, Impouma, Sudre B, Manda R, Balde T, Mboussou F, Vandevelde T. Description of the targeted water supply and hygiene response strategy implemented during the cholera outbreak of 2017–2018 in Kinshasa, DRC. *BMC Med* 2020; 20(226): 10.1186/s12879-020-4916-0	Observational study	WT
40.	Finger F, Bertuzzo E, Luquero FJ, et al. The potential impact of case-area targeted interventions in response to cholera outbreaks: A modeling study. *PLoS Med* 2018; **15**(2): e1002509.	Mathematical model	OCV
41.	George CM, Monira S, Sack DA, et al. Randomized Controlled Trial of Hospital-Based Hygiene and Water Treatment Intervention (CHoBI7) to Reduce Cholera. *Emerg Infect Dis* 2016; **22**(2): 233-41. (see associated studies below)	Randomized control trial (individual)	WT
42.	George CM, Biswas S, Jung D, et al. Psychosocial Factors Mediating the Effect of the CHoBI7 Intervention on Handwashing With Soap: A Randomized Controlled Trial. *Health Educ Behav* 2017; **44**(4): 613-25.		Hyg Pr
43.	George CM, Jung DS, Saif-Ur-Rahman KM, et al. Sustained Uptake of a Hospital-Based Handwashing with Soap and Water Treatment Intervention (Cholera-Hospital-Based Intervention for 7 Days [CHoBI7]): A Randomized Controlled Trial. *Am J Trop Med Hyg* 2016; **94**(2): 428-36.		WT
44.	Burrowes V, Perin J, Monira S, et al. Risk Factors for Household Transmission of Vibrio cholerae in Dhaka, Bangladesh (CHoBI7 Trial). *Am J Trop Med Hyg* 2017; **96**(6): 1382-7.		WT
45.	Guevart E, Noeske J, Solle J, Mouangue A, Bikoti JM. [Large-scale selective antibiotic prophylaxis during the 2004 cholera outbreak in Douala (Cameroon)]. *Sante* 2007; **17**(2): 63-8. (see associated study below)	Observational study (routine data)	Manual (Ref 40)
46.	Noeske J, Guevart E, Kuaban C, et al. Routine use of antimicrobial drugs during the 2004 cholera epidemic in Douala, Cameroon. *East Afr Med J* 2006; **83**(11): 596-601.		Manual (Ref 45)
47.	Michel E, Gaudart J, Beaulieu S, et al. Estimating effectiveness of case-area targeted response interventions against cholera in Haiti. *Elife* 2019; **8**. (see associated study below)	Quasi-experimental evaluation	CATI
48.	Saif-Ur-Rahman KM, Parvin T, Bhuyian SI, et al. Promotion of Cholera Awareness Among Households of Cholera Patients: A Randomized Controlled Trial of the Cholera-Hospital-Based-Intervention-for-7 Days (CHoBI7) Intervention. *Am J Trop Med Hyg* 2016; **95**(6): 1292-8.		Hyg Pr
49.	Parker LA, Rumunu J, Jamet C, et al. Neighborhood-targeted and case-triggered use of a single dose of oral cholera vaccine in an urban setting: Feasibility and vaccine coverage. *PLoS Negl Trop Dis* 2017; **11**(6): e0005652.	Program evaluation (cross-sectional survey)	OCV
50.	Ramos M. Global Review of Water, Sanitation and Hygiene (WASH) Components in Rapid Response Mechanisms and Rapid Response Teams in Cholera Outbreak Settings - Haiti, Nigeria, South Sudan and Yemen. New York, NY, USA: UNICEF, 2019.	Program evaluation (routine data)	CATI request
51.	Rebaudet S, Bulit G, Gaudart J, et al. The case-area targeted rapid response strategy to control cholera in Haiti: a four-year implementation study. *PLoS Negl Trop Dis* 2019; **13**(4): e0007263.		CATI
52.	Roskosky M, Acharya B, Shakya G, et al. Feasibility of a Comprehensive Targeted Cholera Intervention in The Kathmandu Valley, Nepal. *Am J Trop Med Hyg* 2019; **100**(5): 1088-97.	Program evaluation (cross-sectional survey)	CATI
53.	Santa-Olalla P, Gayer M, Magloire R, et al. Implementation of an alert and response system in Haiti during the early stage of the response to the cholera epidemic. *Am J Trop Med Hyg* 2013; **89**(4): 688-97.	Program description	CATI

Risk of Bias Assessment

Author	Year	Design	Domain	Selection bias and confounding	Spillover and contamination	Incomplete outcome	Selective reporting	Other biases	Overall	Notes
Bompangue et al	2020	NE	CATI (eval)	High	Low	Low	Low	High	High	Based only on routinely collected data with no bias assessment
Burrowes et al	2017	E	CATI (eval)	Low	Low	Low	Low	Low	Low	Bias unlikely due to study design
George et al	2017	E	CATI (eval)	Low	Low	Low	Low	Low	Low	Bias unlikely due to study design
George, Jung et al	2016b	E	CATI (eval)	Low	Low	Low	Low	Low	Low	Despite following up intervention and control groups later, the groups remained similar.
George, Monira et al	2016a	E	CATI (eval)	Low	Low	Low	Low	Low	Low	Bias unlikely due to study design
Guevart et al	2007	NE	CATI (eval)	High	High	Unclear	Unclear	High	High	Based only on routinely collected data with no bias assessment
Michel et al	2019	QE	CATI (eval)	Low	High	Low	Low	High	Medium	Unmeasured confounders due to design; inconsistent exposure to ACP
Noeske et al	2006	NE	CATI (eval)	High	High	Unclear	Unclear	High	High	Based only on routinely collected data with no bias assessment
Ramos et al	2019	NE	CATI (eval)	High	High	Unclear	Unclear	High	High	Based only on routinely collected data with no bias assessment
Rebaudet et al	2018	QE	CATI (eval)	Low	High	Low	Low	High	Medium	Unmeasured confounders due to design; inconsistent exposure to ACP
Roskosky et al	2019	NE	CATI (eval)	High	High	Low	Low	Low	Medium	Weak coverage evaluation due to gap between intervention and survey
Saif-Ur-Rahman et al	2016	E	CATI (eval)	Low	Low	Low	Low	Low	Low	Bias unlikely due to study design
Grandesso	2016	NE	I: ACP	High	High	Unclear	Unclear	Unclear	Unclear	Unclear, as source was an abstract with limited information
Khan et al	2002	E	I: ACP	Low	Low	Low	Low	Low	Low	Bias unlikely due to study design
Childs et al	2012	E	I: HP	Low	Low	Low	Low	Low	Low	Bias unlikely due to study design
Gallandat et al	2019	NE	I: HP	High	Low	High	Unclear	High	High	Source is abstract with limited information; small sample size
Gartley et al	2013	NE	I: HP	High	High	Unclear	High	High	High	Non-systematic sampling method
Gunnlaugsson et al	1998	NE	I: HP	High	High	Unclear	Unclear	High	High	Based only on routinely collected surveillance data with no bias assessment
Lilje et al	2015	NE	I: HP	High	Low	Low	Low	High	Medium	Desirability bias since asking about self-reported behaviours
Azman et al	2016	NE	I: OCV	Low	Medium	Low	Low	Low	Medium	Potential bias related to ascertainment of vaccination through self-report
Ferreras et al	2018	NE	I: OCV	Low	Medium	Low	Low	Low	Medium	Potential bias related to ascertainment of vaccination through self-report
Iyer et al	2016	NE	I: OCV	High	Low	Low	Low	High	Medium	Non-systematic sampling method
Qadri et al	2016	E	I: OCV	Low	Low	Low	Low	Low	Low	Bias unlikely due to study design
Qadri et al	2018	E	I: OCV	Low	Low	Low	Low	Low	Low	Bias unlikely due to study design
Roberts et al	2001	E	I: Water	Low	Low	Unclear	Low	High	Medium	Those lost to follow-up were significantly different.

E, experimental; QE, quasi-experimental; NE, non-experimental; ACP, antibiotic chemoprophylaxis; OCV, oral cholera vaccination; HP, hygiene promotion; CATI, case-area targeted intervention.
Excluded Parker et al, 2017b and Santa-Ollala et al, 2013 because of the lack of evaluative study design.

Table S1. Estimates of the effectiveness of individual interventions against infection and/or development of symptoms

Intervention	References (cholera-specific)	References (all-cause diarrhea)	Relative risk reduction (RRR) [1-RR, 95% CI]	Days to protection	Duration of protection (days)
Antibiotic chemoprophylaxis (for reduction of symptoms among infected persons)	Finger, 2017[57] based on: Lewnard, 2016[75] (meta-analysis) Echevarria, 1995[76] (ciprofloxacin) Reveiz, 2011[19] (multiple drugs)*	-	0·96 [0·70, 0·99]*	0	2·74 [95% CI 3·07, 2·4][20] (mean reduction in days of shedding)
Antibiotic chemoprophylaxis (for protection against infection among uninfected persons)	Reveiz, 2011[19] (multiple drugs)* Grandesso, 2016[21] (doxycycline)	-	0·66 [0·34, 0·82]* 0·68 [0·29, 0·87]*	0	2[18] (azithromycin) 1[77,78] (doxycycline)
OCV (1-dose, <12m) OCV (1-dose, 2m, endemic) OCV (1-dose, 2m, naïve)	Bi, 2017 [27] (meta-analysis) Azman, 2015 (case-cohort, 2m)[24] Ferreras, 2019 (case-control, 2m)[30]	-	0·69 [0·15, 0·65]* 0·87 [0·7, 1]‡ 0·89 [0·43, 0·98]*	2-12[24]	≥365[27]
Point of use water treatment	Lantagne and Yates, 2018[40] (systematic review) NR	Fewtrell, 2005[35] (meta-analysis)	0·26 [0·15, 0·35]*	0	▪ As long as sustained ▪ Limited by compliance
Safe water storage	Lantagne and Yates, 2018[40] Taylor, 2015[36] (systematic review) NR	Roberts, 2001 (RCT)[39]	0·21 [-0·03, 0·38]*	0	▪ As long as sustained ▪ Limited by compliance
Water treatment of local collection sources	Taylor, 2015[36] NR	Fewtrell, 2005[35]	0·11 [-0·9, 0·58]*	0	▪ As long as sustained ▪ Limited by compliance
Hygiene interventions focusing on handwashing	Taylor, 2015[36] NR	Fewtrell, 2005[35]	0·44 (0·07—0·66)	0	▪ As long as sustained ▪ Limited by compliance

Shaded cells represent studies that were used to derive the RR estimates. (*) direct effect; (‡) indirect effect; (-) not reported. Multiple drugs = tetracycline, doxycycline, ciprofloxacin, sulfadoxine.

Table S2. Spatiotemporal studies of cholera infection risk.

Setting	Epidemic year	Design	Distance and time increments (range)	Spatial window limits (m)	Time limit (d)	RR [95% CI]
Spatiotemporal models						
Matlab, Bangladesh[15]	1991-2000	Epi. model	50 m (0-500 m) 3 d (0-30 d)	≤ 50 m* ≤ 150 m	1-3 d ≤ 23 d	35·74 [22·92–55·72] *sig· RR ≤450 m (range, 1·71, 35·74) 1·81 [1·30—2·51]
Kolkata, India[16]	2006-2011	Epi. model using RCT data.	10 m (0-55 m) 7 d (0-42 d)	≤10 m*	≤ 7 d ≤ 14 d	11·44 [6·89—19] *sig· RR ≤50 m (range, 2·52, 11·44) 8·84 [2·09—37·36]
N'Djamena, Chad[17]	2011	Epi. model	10 m (0-500 m) 1 d (0-30 d)	≤ 40 m* ≤ 40 m 75-125 m 75-125 m	1 d 5 d 1 d 5 d	55·4 [42·3–72·4] *sig· RR ≤340 m 32·4 [25·3—41] 5·9 [3·8–8·7] 3·9 [2·7—5·4]
Kalemie, DRC[17]	2013-2014	Epi. model	10 m (0-500 m) 1 d (0-30 d)	≤ 40 m* ≤ 40 m 75-125 m 75-125 m	1 d 5 d 1 d 5 d	189·7 [139·7—261·9] *sig· RR ≤80 m 121·1 [89·7—164·8] 1·9 [0·7–3·6] 2·0 [1·0—3·2]
Spatial models						
Kolkata, India[18]	2006-2009	Epi. model using RCT data.	50 m (0-500 m)	≤ 150 m	-	-
Dhaka, Bangladesh[19]	2013	Epi. model	N/A (0-780 m)	≤ 400 m	-	-
Matlab, Bangladesh[18]	1985-1986	Epi. model using RCT data.	100 m (0-700 m)	≤ 500 m	-	-

*Epi. model = regression model comparing incidence of cases among a cohort of contacts of cases, and controls. Sig. RR = RR and 95% confidence intervals are greater than 1.

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