Evidence Update

Other Infectious Diseases Series

February 2005

Do cholera vaccines prevent cholera?

Single dose cholera vaccines tested to date provide partial protection for people living in endemic areas for up to 2 years.

Inclusion criteria

Studies:

Randomized or quasi-randomized controlled trials comparing cholera vaccines with placebo, control vaccines, or no intervention.

Participants:

Well adults or children.

Intervention:

Killed cholera vaccines administered by any route.

Outcomes:

Cholera cases; death; systemic and local side effects.

Results

- 25 trials included (18 efficacy trials and 11 safety trials). The 18 efficacy trials included over 2.6 million participants and the 11 safety trials included 9342 adults and children. Allocation concealment was adequate in 23 trials.
- All types of vaccines prevent cholera at 1 year (relative risk 0.51, 95% confidence interval 0.42 to 0.61); and the vaccines remain effective in year 2 (relative risk 0.51, 95% confidence interval 0.42 to 0.62).
- The risk of contracting cholera in year 3 increases; and by years 4 and 5 the vaccines are no longer effective.
- Children under 5 years were only protected for up to 1 year following vaccination, while protection for older children and adults extended up to 3 years.
- Injected vaccines were associated with increased systemic and local side effects compared with placebo, while oral vaccines were not.







Adapted from Graves P, Deeks J, Demicheli V, Pratt M, Jefferson T. Vaccines for preventing cholera. *The Cochrane Database of Systematic Reviews* 2001, Issue 1. Art. No.: CD000974. DOI: 10.1002/14651858.CD000974.

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Review: Vaccines for preventing cholera

Comparison: 01 KWC vaccine vs placebo (no booster, subgroups: injected or oral route)

Outcome: 02 Cholera cases, up to one year follow up

Study	Vaccination n/N	Control n/N	Relative Risk (Random) 95% Cl	Weight (%)	Relative Risk (Random) 95% Cl
01 Injected					
E Pakistan 63(2)	12/6956	43/7103		5.0	0.28 [0.15, 0.54]
E Pakistan 64 a	13/8357	24 / 4228	—	4.7	0.27 [0.14, 0.54]
E Pakistan 66	44 / 29939	35/9923	-	7.0	0.42 [0.27, 0.65]
E Pakistan 68 a	32/11491	12/3810		4.8	0.88 [0.46, 1.71]
E Pakistan 68 b	2/11435	13/3810 —		1.5	0.05 [0.01, 0.23]
India 65(1)	63 / 52878	45/26460	-	7.7	0.70 [0.48, 1.03]
India 65(2)a	20/26561	11/13276	_ -	4.3	0.91 [0.44, 1.90]
India 65(2)b	22/26544	11/13276	_ _	4.3	1.00 [0.49, 2.06]
India 75	18/101096	48/101030		5.9	0.37 [0.22, 0.64]
Indonesia 73 a	37 / 156300	33/79250		6.7	0.57 [0.36, 0.91]
Indonesia 73 b	30/155600	34/79250		6.4	0.45 [0.28, 0.73]
Philippines 64 a	127 / 145500	55 / 48934		8.5	0.78 [0.57, 1.07]
Philippines 64 b	106/148100	56 / 48933	+	8.4	0.63 [0.45, 0.86]
Philippines 64 c	77/143600	56 / 48933	+	8.2	0.47 [0.33, 0.66]
ubtotal (95% CI) est for heterogeneity chi-se est for overall effect=-5.67	603 / 1024357 quare=36.05 df =13 p=0.0 / p<0.00001	476/488216 0006	•	83.3	0.52 [0.42, 0.65]
? Oral					
Bangladesh 85	93/41448	110/20837	+	9.0	0.43 [0.32, 0.56]
Vietnam 92	37 / 67395	92/67058	-	7.7	0.40 [0.27, 0.59]
ubtotal (95% CI) est for heterogeneity chi-se est for overall effect=-7.69	130 / 108843 quare=0.06 df=1 p=0.801 9 p<0.00001	202 / 87895 1	•	16.7	0.42 [0.33, 0.52]
otal (95% CI) est for heterogeneity chi-s est for overall effect=-6.91	733 / 1133200 quare=40.91 df=15 p=0.0 p<0.00001	678 / 576111 0003	•	100.0	0.51 [0.42, 0.61]
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Authors' conclusions

Implications for practice:

Cholera vaccines can provide protection for populations living in endemic areas for up to 2 years following a single dose, and for 3 to 4 years with annual booster. There are little data on the effect of cholera vaccines in visitors to endemic areas.

Implications for research:

Further trials are needed to evaluate immunization for preventing cholera epidemics, to estimate the most effective dose of oral vaccine for children, and to compare new live oral vaccines with killed vaccines.