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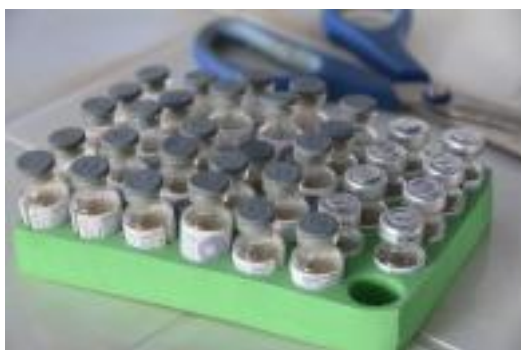
Single Dose Killed OCV: When Sometimes Less is More



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Photo: Louise Annaud, Courtesy of MSF (2015)

The internationally-licensed killed oral cholera vaccines (OCV): Dukoral, Shanchol, and Euvichol are recommended as two-dose regimens given one to two weeks apart. However, delivery of two doses can be challenging during emergency situations, especially when vaccine supplies are limited.

Under certain circumstances, a one-dose campaign, where a larger number of people receive OCV may be better than a two-dose strategy, where half as many people are vaccinated. The recommended two-dose regimen provides at least 64 percent protection during the third year after vaccination but in emergency situations, the shortened duration of outbreaks after just one OCV dose is given could make the extended protection conferred by a second dose less urgent [1].

Recently, we published a [review on single-dose killed OCV](#) [3] [2]. We included both immunity and protection data since a vaccine-induced increase in immune response in the blood has been linked (although imperfectly) with protection, and because there are relatively few studies that document protection conferred by single-dose killed OCV against cholera. In the pooled analysis of immunogenicity studies, over 70 percent of participants who receive an OCV dose developed an immune response detectable in their blood. We combined available data on protection from one randomized trial in Bangladesh [3] and five observational studies [4-8]. Single-dose protection is greatest soon after vaccination and wanes over time; from 87 percent at two months decreasing to 33 percent at two years. Since publication of our review, additional data has become available. For example, an observational study in Zambia showed single-dose protection of 89 percent at seven weeks [9], and the two-year follow-up of the Bangladesh trial showed 39 percent vaccine efficacy, as shown in the red font and circles in the Figure below [10]. Importantly, the randomized trial in Bangladesh found no significant protective effect in children younger than five years [3, 10], but a single OCV dose conferred 57 percent protection in older children and adults at two years of follow-up.

Although single-dose OCV provides lower protection of shorter duration compared to two doses, this may be sufficient to reduce short-term risk in outbreaks or other high-risk settings. Aside from the studies described above, there is increasing experience with single-dose OCV campaigns. In 2016, during a resurgence of cholera cases after Hurricane Matthew, Haiti launched a large emergency

campaign when more than 700,000 people received a single dose of OCV [11, 12]. In 2017, during mass vaccinations of Rohingya refugees in Bangladesh, one dose of OCV was given to more than 700,000 people, while a second dose was given to children between the ages of one and five [13].

Overall, we found that protection from a single-dose of killed OCV may be sufficient to reduce short-term risk during outbreaks or other high-risk settings, especially when vaccine supply is limited. However, a second dose should be given as soon as circumstances allow to ensure longer and more robust protection.

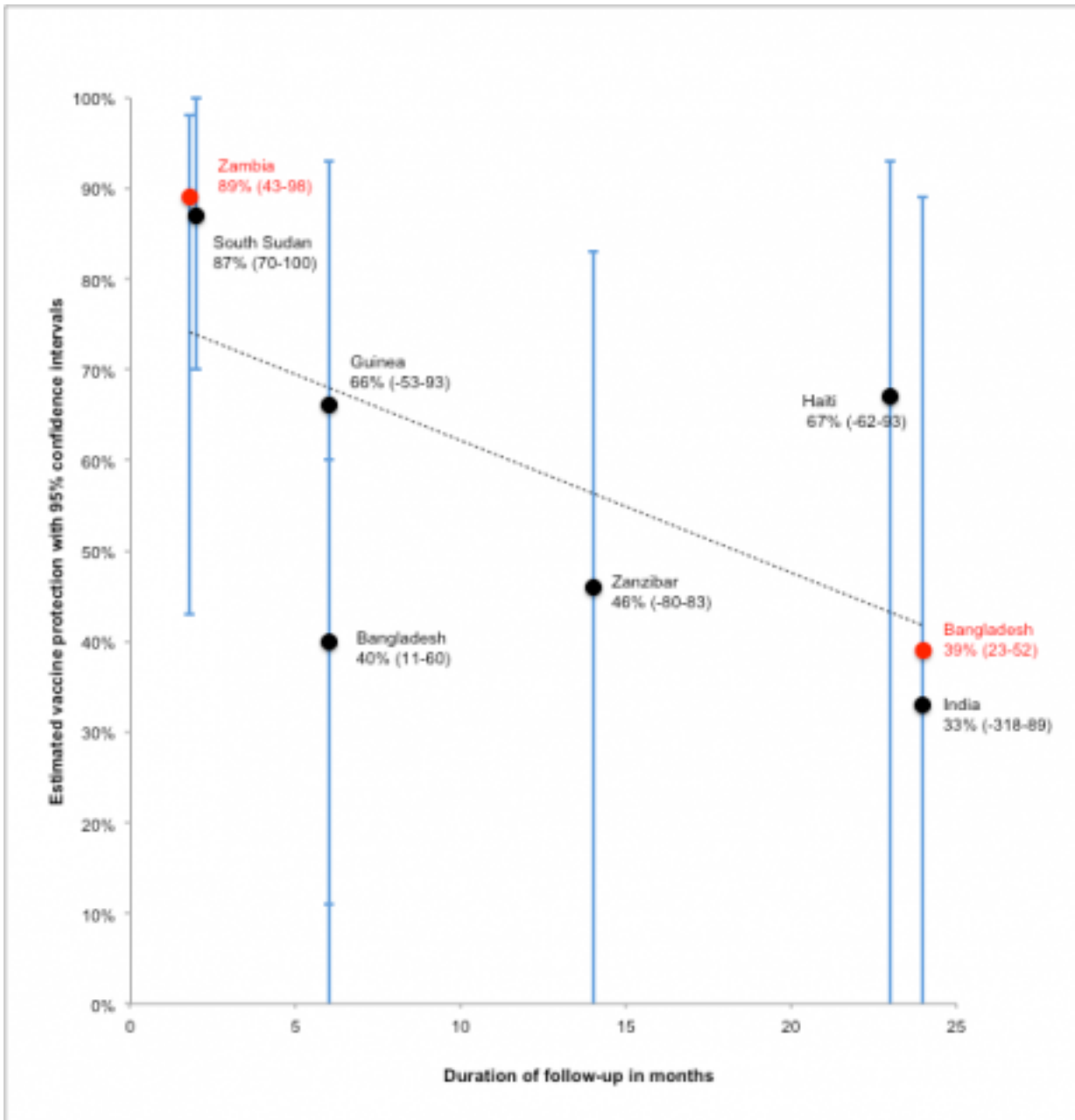


Figure: Estimated single-dose oral cholera vaccine protection (95% confidence intervals), by study site and month of follow-up [3-10]

References

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[3] <https://www.ncbi.nlm.nih.gov/pubmed/29177437>

[4] <http://www.npr.org/sections/goatsandsoda/2016/11/08/501155987/haiti-launches-largest-ever-emergency-cholera-vaccination-campaign>

[5] <http://www.who.int/en/news-room/feature-stories/detail/cholera-vaccination-campaign-for-haitians-hardest-hit-by-hurricane-matthew>

[6] <http://www.searo.who.int/bangladesh/sdcv/en/>