

## Oral cholera vaccines: transforming old products into new solutions for neglected populations

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Cholera vaccines have only recently become a control tool despite the fact that early prototypes of the currently prequalified cholera vaccines exist since the 1880s. Key research conducted by Médecins Sans Frontières and Epicentre has shown that mass campaigns using oral cholera vaccines (OCV) are feasible in different settings (humanitarian crises, outbreaks and endemic countries), well accepted by the population, and that the vaccines are a safe and effective tool for prevention and response. In addition, we recently demonstrated that short-term vaccine protection can be achieved with a single dose of vaccine, which is a major logistical advantage in response to outbreaks. These key data, along with the creation of a global stockpile managed by the WHO and dedicated funding have led to the doubling of the number of OCV doses delivered worldwide each year since 2012.

However, the significant public health benefit from OCV has not yet been realized because of cost, availability (supply) and logistical constraints. These include a recommendation for two doses, with the second delivered 14 days after the first, high packing volume and cold chain requirements. These factors make vaccine delivery costly and challenging in certain settings. In addition, the complex vaccine formulation translates in suboptimal production, which limits vaccine availability and impedes price reduction (~1.85USD per dose), making the total cost of one fully vaccinated person approximately 6USD.

An improved new generation cholera vaccine could lift these barriers and will bring substantial public health benefits. Any new vaccine should be easier to produce, cheaper, heat-stable and have a reduced storage volume. As one of the main responders to cholera epidemics, MSF could play an important role in pushing for improved vaccines. With better cholera vaccines, used in conjunction with WaSH measures, many more lives could be saved and perhaps the elimination of cholera outbreaks could be foreseen in a near future.

The potential impact of cholera vaccine has not fully materialized because of limitations of current products. New vaccines should be easier to produce, cheaper, heat-stable and with reduced storage volume. MSF and Epicentre could play an important role in pushing for such improved vaccines.