

A second affordable oral cholera vaccine: implications for the global vaccine stockpile



On Dec 23, 2015, WHO prequalified a second affordable oral cholera vaccine (OCV), Euvichol (Eubiologics, South Korea), which is expected to double current global OCV production and has the potential to further increase production capacity.¹ The increased production will have implications for vaccine availability and reduced costs per dose, and will ultimately represent an added value for global cholera prevention and control.

Vaccine prequalification is a WHO-led activity intended to ensure that vaccines purchased by UN procurement agencies will be acceptable under conditions of use in national immunisation programmes in low-income and middle-income countries (LMICs).² Prequalification also indicates that a vaccine meets WHO recommendations for quality, safety, and efficacy—enabling wider implementation of the vaccine in resource-limited contexts.

Cholera is endemic in more than 50 countries, with an estimated at-risk population of 1.5 billion, plus an annual estimated morbidity of more than 2 million cases and nearly 100 000 deaths.³ However, public attention is only garnered when outbreaks strike disaster-ravaged areas. Successful cholera control depends on a long-term commitment to improve water quality and sanitation systems, but an effective vaccine serves as an important component in a comprehensive prevention package.

In 2001, WHO prequalified the OCV Dukoral (SBLVaccin, Sweden) for purchase by UN agencies. Through a successful technology transfer agreement, a modified bivalent formulation, Shanchol (Shantha Biotechnics, India), was developed and manufactured and was prequalified in 2011. Both Shanchol and the newly prequalified Korean vaccine (Euvichol) are reformulated versions of Dukoral. Because these newer versions do not contain the cholera toxin, they do not require co-administration with an oral buffer, making these versions both easier to deliver in challenging field conditions and substantially less costly for the standard two-dose regimen (US\$3.7 for Shanchol and Euvichol vs >\$10.5 for Dukoral).⁴

In July, 2013, a global OCV stockpile was created. A stockpile is a mechanism to encourage change in vaccine use for underserved populations: a change from low

demand, low production, high unit costs, and inequitable distribution, to an increased demand and production, lower unit costs, and greater equity of distribution. The Gavi Alliance approved funding of US\$115 million from 2014–18 for a global stockpile delivery strategy for use in epidemic and endemic settings. Since inception, 21 shipments of OCV have been approved to be used in large preventive or reactive vaccination campaigns (about 4 million doses) in 11 countries. Because of limited supply, OCV is released from this stockpile after review and recommendation of country applications by the International Coordinating Group, composed of UNICEF, Médecins Sans Frontières, The International Federation of Red Cross, and WHO. The vaccine has been used successfully in various contexts—humanitarian crises (eg, South Sudan and Ethiopia), disease outbreaks (eg, Guinea, Malawi, Tanzania, and Iraq), and endemic hotspots (eg, Bangladesh, Democratic Republic of Congo, and Haiti).⁵

A major development during 2015 was that OCV demand exceeded supply (figure). The main reasons for this increase in demand are the observed feasibility of mass OCV campaigns and their ability to confer

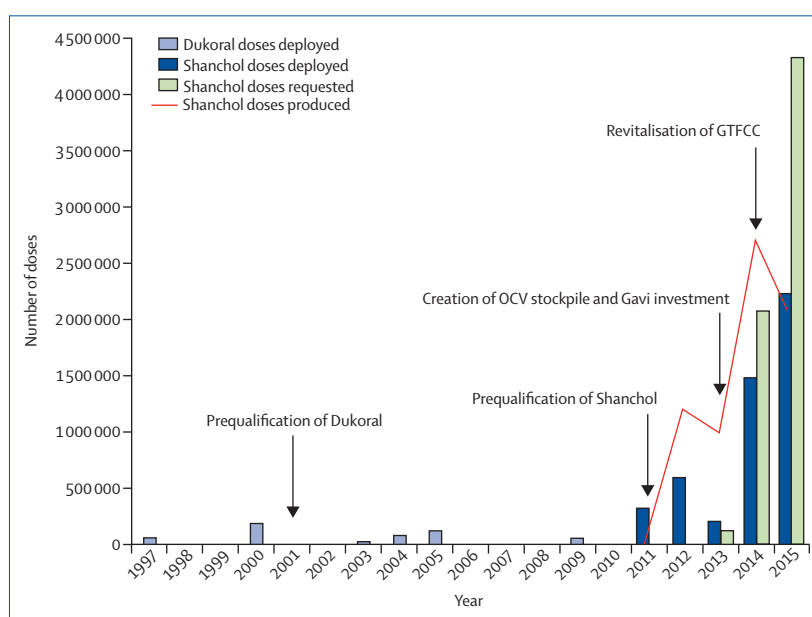


Figure: Cholera vaccine demand, use, and production during 1997–2015

Since 2013, the International Coordinating Group has served as the decision body as to whether OCV is deployed through the global stockpile. GTFCC=Global Task Force on Cholera Control. OCV=oral cholera vaccine.

protection to underserved populations in complex situations.⁶⁻⁸ The increased availability and use of OCV has a multifaceted added value. OCV and established cholera response measures (eg, water, sanitation, and hygiene [WASH] measures; treatment regimens; surveillance; and social mobilisation) have often been viewed in the past as competitive, if not mutually exclusive. With greater awareness and use of OCV, these measures and vaccines are now being considered as complimentary and have proven to be synergistic on many occasions.⁹ In this sense, the stockpile becomes an operational data generator. In other words, with emphasis on vaccine availability accompanying the use of OCV, many donors and partners have worked together within the framework of the Global Task Force on Cholera Control to show the public health potential of a coordinated effort against cholera. The growing body of evidence of vaccine effectiveness and costing data is contributing to inform large investments in integrated control and prevention strategies. Over recent years, countries have become more prepared to report cholera, which is an important and positive change from the past, in which political and economic imperatives prevailed.

For too long the response to cholera epidemics has been purely reactive. OCV might be a key to the door for prevention and control of a disease that is often overlooked until epidemics are too advanced for a vaccine to be effective. WHO prequalification of a second affordable OCV represents an important step forward in achieving the stockpile goals of increased availability and distribution to affected populations. Although the increased access and awareness of OCV is

not the absolute solution for cholera, it certainly serves as a substantial step towards achieving a complete prevention and control strategy.

*Sachin N Desai, Lorenzo Pezzoli, Stephen Martin, Alejandro Costa, Carmen Rodriguez, Dominique Legros, William Perea

World Health Organization, 1211 Geneva, Switzerland
desaisa@who.int

All authors declare no competing interests.

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