



Delivering Oral Vaccines Effectively (DOVE)

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- The DOVE Project and oral cholera vaccine
- Stopcholera (DOVE) toolkit
 - Cholera basics
 - OCV basics
 - Tools for deciding whether to use OCV
 - Manual for OCV campaigns



The DOVE Project (Delivering Oral Vaccine Effectively)

- **Mission:**

- Ensure that populations at risk of cholera will benefit from receiving oral cholera vaccine (OCV) in an appropriate and effective manner.

- **Objectives:**

- Promote appropriate and effective use of OCV through:
 - research,
 - monitoring and evaluation,
 - technical assistance, and
 - the development of practical resources to inform the use of OCV



Timeline for cholera vaccines

1900s: Injectable cholera vaccines developed and used

1970s: Injectable cholera vaccines impractical for public health use

1980s: Oral cholera vaccine (Dukoral) developed but not used extensively for public health use

1990s: After tech transfer, Vietnam modified OCV (ORC-Vax) and used this in public health use

2000s: OCV modified to comply with international standards and cheaper OCV licensed in India (Shanchol)



The DOVE Project

(Delivering Oral Vaccine Effectively)

- ***Oral cholera vaccine (OCV) can save lives.*** The goal of the DOVE project is to ensure that populations at risk of cholera will benefit from receiving OCV in an appropriate and effective manner.
- Working in close collaboration with WHO, UNICEF, and other key partners, the DOVE project can help countries and agencies make evidence-based decisions regarding when and how to use OCV.
- Funded by the Bill and Melinda Gates Foundation

www.stopcholera.org

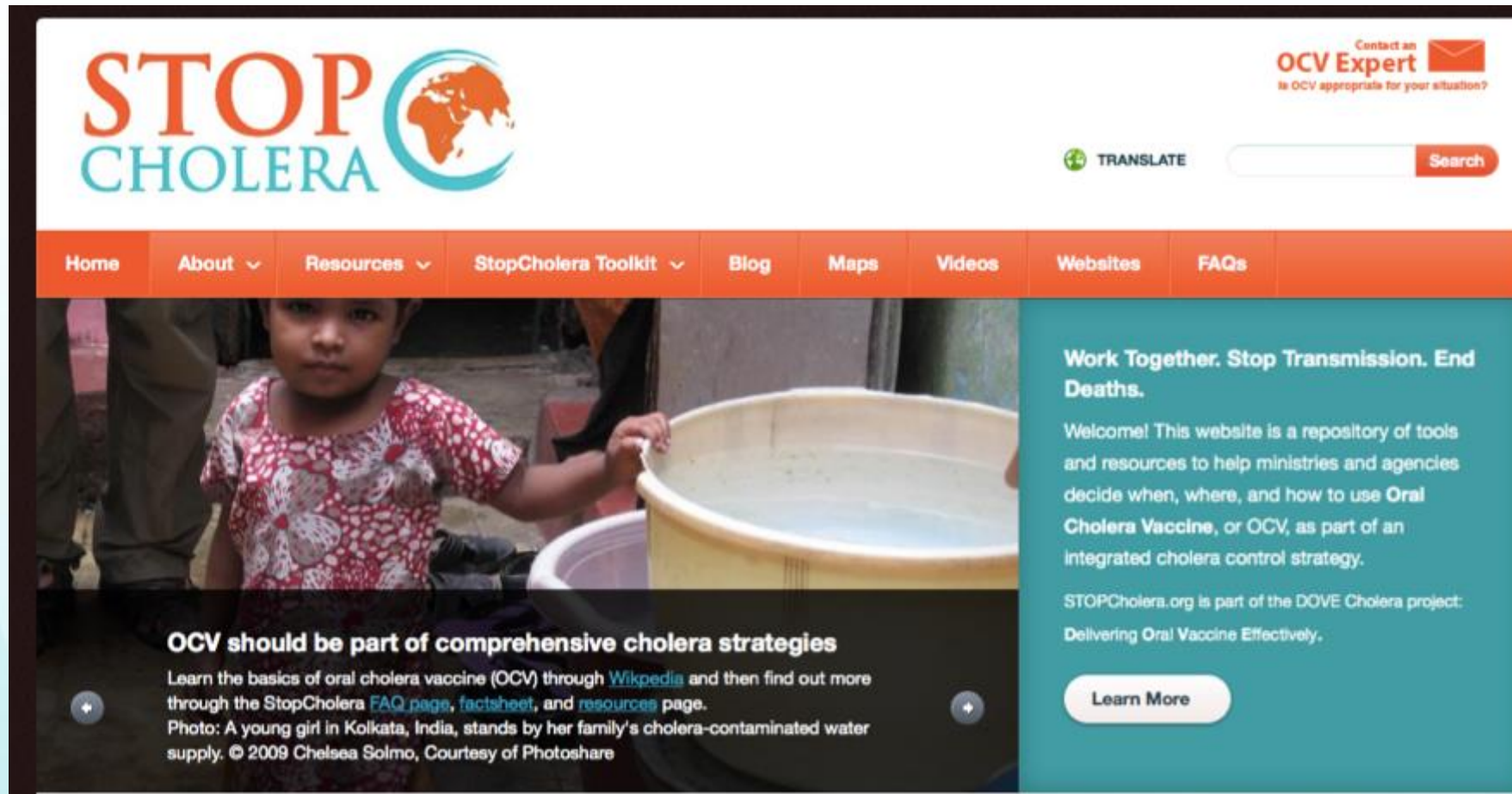
Where DOVE Works

- Cameroon
- India
- Malawi
- Nepal
- South Sudan
- Uganda
- Vietnam
- Zambia





How can the DOVE Project help?


- Provide operations research, monitoring and evaluation support for current and future OCV projects
 - What area is an “endemic area? “at risk?”
 - How would Ministry of Health know if the country qualifies?
 - If vaccine is being given, who should receive it?
 - How can vaccine be delivered most efficiently?
- Surveillance
 - How should vaccine programs be evaluated?
 - How can agencies and ministries learn how best to use vaccine?
 - Use of simplified methods and tools to guide the use of OCV
- Development of a rapid and practical OCV toolkit to guide decisions on use of OCV
- How to use “in conjunction with other...strategies?”






The screenshot shows the homepage of the STOP CHOLERA website. At the top left is the logo with the text "STOP CHOLERA" and a globe icon. To the right is a "Contact an OCV Expert" button with an envelope icon and the text "Is OCV appropriate for your situation?". Below this is a "TRANSLATE" button with a globe icon and a search bar with a "Search" button. A navigation menu below the header includes links for Home, About, Resources, StopCholera Toolkit, Blog, Maps, Videos, Websites, and FAQs. The main content area features a large image of a young girl in a red and white patterned shirt standing next to a large yellow water container. Below the image is a dark banner with the text "OCV should be part of comprehensive cholera strategies" and a link to "Learn More". To the right of the image is a teal sidebar with the text "Work Together. Stop Transmission. End Deaths." and a "Learn More" button.

STOP CHOLERA 

Contact an **OCV Expert** 
Is OCV appropriate for your situation?

 TRANSLATE

Home About  Resources  StopCholera Toolkit  Blog Maps Videos Websites FAQs

OCV should be part of comprehensive cholera strategies
Learn the basics of oral cholera vaccine (OCV) through [Wikipedia](#) and then find out more through the StopCholera [FAQ page](#), [factsheet](#), and [resources page](#).
Photo: A young girl in Kolkata, India, stands by her family's cholera-contaminated water supply. © 2009 Chelsea Solmo, Courtesy of Photoshare

Work Together. Stop Transmission. End Deaths.
Welcome! This website is a repository of tools and resources to help ministries and agencies decide when, where, and how to use **Oral Cholera Vaccine**, or OCV, as part of an integrated cholera control strategy.
STOPCholera.org is part of the DOVE Cholera project: Delivering Oral Vaccine Effectively.

StopCholera TOOLKIT



StopCholera toolkit is a collection of practical resources and how-to guides created by the DOVE Project

The screenshot shows the website stopcholera.org. The main navigation bar includes: Home, About, StopCholera Toolkit, Resources, Blog, Field Stories, Videos, Websites, and FAQs. The 'StopCholera Toolkit' section is highlighted in teal and contains a sub-menu with: Home, About, and All Resources. Below the navigation, there is a featured article titled 'Oral cholera vaccine saves lives: When, where, and how to use it' with a photo of a healthcare worker administering a vaccine to a child. A sidebar on the right lists additional resources: Cholera Basics, Oral Cholera Vaccine, Tools for Deciding Whether to Use OCV, and Manual for Oral Cholera Vaccination Campaigns. The top right of the page features a 'Contact an OCV Expert' button and a 'TRANSLATE' dropdown menu.

- Contains 4 modules
- 1. **Cholera Basics**: Resources about cholera, including a glossary, fact sheets, key links, and a self-administered facility capacity assessment for cholera outbreaks.
- 2. **Oral Cholera Vaccine Basics**: Tools for understanding OCV and making the case for its use, including fact sheets on vaccine safety, ethical use, use in pregnancy, and approaches for integrating OCV and WASH programs.
- 3. **Tools for deciding whether to use OCV**: Tools to assist the decision to use a cholera vaccine, including different scenarios, risk assessment tools, and the vaccine introduction cost-effectiveness (VICE) calculator.
- 4. **Manual for OCV Campaigns**: A guide for developing training sessions in preparation for carrying out OCV campaigns and a reference guide for conducting campaigns and administering the vaccine.

1. Cholera Basics

Global Burden of Cholera in Endemic Countries (PDF - 2 pages)

This fact sheet provides a revised estimate of the cholera disease burden based on recent data (from 2008-2012) using newer estimation methods.

An Introduction to the Infectious Disease Cost Calculator (PDF - 2 pages)

This [fact sheet](#) provides an introduction to the [Infectious Disease Cost Calculator](#), which can be used to assess the costs associated with cholera.

Glossary of Terms for Cholera and Cholera Vaccine Programs (PDF - 17 pages)

This glossary is suggested as a guide to commonly used terms for cholera and cholera vaccine programs. The glossary will help to clarify the meaning of certain terms, and in the process assist in developing improved strategies for cholera control. An annex accompanies this glossary and expands the understanding and concepts of many of these terms.

Cholera Surveillance: Detecting and Reporting Cases (PDF - 10 pages)

This document discusses when, where and why surveillance for cholera is needed and considerations for establishing a useful and cost-effective surveillance system for cholera.

Manual for Detecting Vibrio Cholera (PDF - 9 pages)

This guide provides step-by-step instructions for detecting Vibrio cholera 01 from fecal samples using a modified dipstick assay, a low-cost simplified method of confirming cholera.

Self-Assessment Tool for Health Facilities (PDF - 20 pages)

This document is intended as a self-assessment guide to determine if preparations are adequate for a facility and community to manage a cholera outbreak. It includes questionnaires to assess community knowledge, health facility capacity, health care provider capacity and regional and district resources. It



Cholera surveillance: Detecting and Reporting cases

- A case of cholera should be suspected when:
 - in an area where the disease is not known to be present, a patient aged 5 years or more develops severe dehydration or dies from acute watery diarrhoea;
 - in an area where there is a cholera epidemic, a patient aged 5 years or more develops acute watery diarrhoea, with or without vomiting.
- A case of cholera is confirmed when *Vibrio cholerae* O1 or O139 is isolated from any patient with diarrhoea. - **Stool culture confirmation is required**
- Severe diarrheal diseases can be caused by other agents, especially ETEC
- New rapid diagnostic tests (RDT), e.g. Crystal VC has ~90% sensitivity but a specificity of ~70% ---high false negatives
 - Use of enriched dipstick (using APW as enrichment medium) method increases specificity to 99.8%



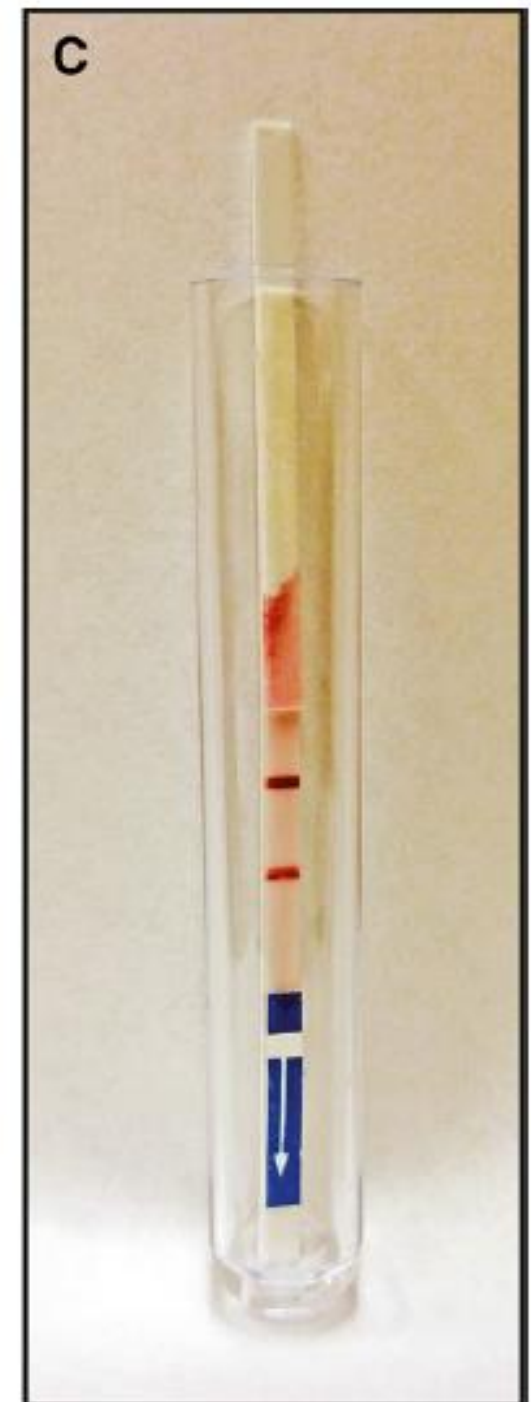
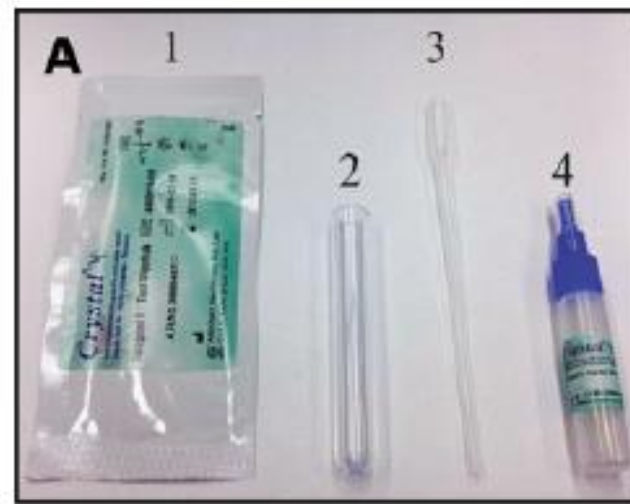
RDT: Crystal VC kit

<https://www.stopcholera.org/content/videos>

Dr. David Sack: Instructions for Using the Cholera Dipstick



This video presentation by Dr. David Sack provides easy-to-follow instructions on the use of the Crystal VC dipstick test to test a fecal specimen for the presence of vibrio cholera. The video covers direct and enriched tests (12 min).





START HERE with a fecal sample in a cup or a Cary Blair medium



Using a cotton swab, inoculate a tube of APW from the fecal sample



After 6 hours incubation, test the APW using the Crystal VC



If dipstick is positive, confirm a sample of the positive samples by culturing using TCBS



OPTIONAL place 2 drops onto Protein saver card and allow to air dry to save DNA from APW for later confirmation using PCR



Detecting *V. cholerae* O1 from fecal samples using RDT



Cholera Rapid Test with Enrichment Step Has Diagnostic Performance Equivalent to Culture

Table 2. Diagnostic performance of direct and enriched RDT, and of culture at National Public Health Laboratory, Juba, and at Institut Pasteur, Paris, using PCR as the reference standard in all (N = 101) or patients without prior antibiotics (N = 80).

		Sensitivity	Specificity	PPV	NPV
		% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
All					
	Enriched RDT	86.1 (70.5–95.3)	100 (94.4–100)	100 (88.8–100)	92.8 (83.9–97.6)
	Culture NPHL	83.3 (67.2–93.6)	98.5 (91.7–100)	96.8 (83.3–99.9)	91.4 (82.3–96.8)
	Culture IP	72.2 (54.8–85.8)	100 (94.5–100)	100 (86.8–100)	86.7 (76.8–93.4)
No prior antibiotics					
	Enriched RDT	87.5 (67.6–97.3)	100 (93.6–100)	100 (83.9–100)	94.9 (85.9–98.9)
	Culture NPHL	87.5 (67.6–97.3)	98.2 (90.4–100)	95.5 (77.2–99.9)	94.8 (85.6–98.9)
	Culture IP	70.8 (48.9–87.4)	100 (93.6–100)	100 (80.5–100)	88.9 (78.4–95.4)



2. Oral cholera vaccine

Oral Cholera Vaccine: What You Need to Know (PDF - 3 pages) [**French**- Updated version coming soon]

This fact sheet covers the basic aspects of the currently available oral cholera vaccines, summarizing recommendations and comparing across vaccines.

Comparison of Currently Manufactured Oral Cholera Vaccines (PDF - 1 page)

A table comparing the different specifications of the three oral cholera vaccines currently available.

Integration of Oral Cholera Vaccine with Other Interventions (PDF - 2 pages)

This fact sheet outlines the need for integrating water, sanitation and hygiene (WASH) activities and other traditional cholera control interventions with oral cholera vaccination programs to improve the impact of both.

Oral Cholera Vaccine Safety (PDF - 2 pages)

This two-page fact sheet discusses the overall safety of oral cholera vaccine, briefly touching on vaccine safety in specific populations including pregnant women and children.

Cholera and the Use of OCV in Pregnant Women (PDF - 3 pages)

This document addresses the risks and benefits of cholera and the use of oral cholera vaccine in pregnant women.

Considerations Concerning the Ethical Use of OCV (PDF - 2 pages)

This document identifies the ethical concerns associated with oral cholera vaccine and provides guidance on some ethical issues that may arise when considering the use of oral cholera vaccine.

An Introductory Lecture on Oral Cholera Vaccine by Dr. David Sack (Video)

Cholera and use of OCV in pregnancy

- Higher rate of miscarriage or premature delivery if pregnant women develops cholera

Table 1. Rates of fetal losses (miscarriages and stillbirths) by level of dehydration among women in Haiti treated at a specialized cholera unit for pregnant women, 2010-20116

Dehydration level	No. pregnant women	Fetal losses		Adjusted relative risk
		No.	%	
None	136	4	2.9	9.4 (severe vs. mild dehydration) (p=0.005)
Moderate	110	11	10.0	
Severe	16	6	37.5	

- “Other groups that are especially vulnerable to severe disease and for which the vaccines are not contraindicated may also be targeted, such as pregnant women and HIV-infected individuals.”
 - Cholera vaccines: WHO position paper Weekly epidemiol Rec 2010;13:117–128

Safety of OCV in pregnant women

- Zanzibar: Out of 1,453 deliveries, no statistically significant evidence of a harmful effect of gestational exposure to the rBS-WC vaccine. Hashim R, et al PLoS Negl Trop Dis 2012;6(7): e1743.
- Guinea: Out of 2,494 pregnancies, no association between fetal exposure to BivWC and risk of pregnancy loss or malformation Grout, et al PLoS NTD 2015;9(12):e0004274.
- Bangladesh: No excess adverse fetal outcome in 69 pregnant women who received OCV Khan AI, et al. Vaccine 2017
- Malawi: No significant difference in risk of pregnancy loss, neonatal mortality, or malformation among 900 OCV-exposed and 899 non-exposed pregnant women Ali M, et al Lancet Infect Dis 2017



Tools for deciding whether to use OCV

[Scenario Approach for Considering Oral Cholera Vaccination](#) (PDF – 5 pages)

Published in The Lancet, this analysis presents a systematic classification of scenarios based on five types of cholera epidemiology and provides recommendations on when and how vaccination should be used in each scenario.

[Vaccine Introduction Cost-effectiveness \(VICE\) Calculator](#) (Excel - 4 sheets)

The VICE calculator is a user-friendly excel-based tool that estimates the cost-effectiveness of oral cholera vaccination in various settings. Clicking the [link](#) above will download the Excel file.

[Introduction to the Vaccine Introduction Cost-effectiveness \(VICE\) Calculator](#) (PDF - 2 pages)

This fact sheet provides a quick introduction to the VICE calculator for estimating the cost-effectiveness of oral cholera vaccination.

[Determining the Feasibility of an Oral Cholera Vaccination \(OCV\) Campaign](#) (PDF - 5 pages)

Several factors must be considered to determine whether oral cholera vaccination is feasible in a given setting. This short document describes a series of feasibility factors and includes a feasibility assessment that results in a clear decision on whether or not to move forward with the vaccination plan.

Characteristics	Oral cholera vaccination recommendation	Other considerations
Scenario 1	Ongoing cholera outbreak in areas where water and sanitation conditions have deteriorated severely as a result of natural or man-made disasters	Populations with no recent cholera outbreaks are especially at risk; oral cholera vaccination campaigns under diverse and difficult conditions have been shown to be feasible; use oral cholera vaccination as part of an integrated strategy to reduce transmission and prevent cholera deaths; enhance cholera surveillance to monitor course of the outbreak
Scenario 2	Areas where sanitation and water conditions have deteriorated severely as a result of natural or man-made disasters, increasing the risk for cholera	Difficult to predict outbreak, reactive vaccination could be more feasible; if oral cholera vaccination is used, ensure an integrated strategy with other cholera interventions; enhance cholera surveillance so that an outbreak can be detected early
Scenario 3	Areas with endemic cholera	Recommend oral cholera vaccination for populations with high incidence rate
Scenario 4	Cholera has not been identified in areas with poor water and sanitation infrastructure	Implement oral cholera vaccination if an outbreak occurs; oral cholera vaccination should be considered if cholera occurs at an adjacent site
Scenario 5	Cholera has not been identified in areas in which water and sanitation standards are high	Oral cholera vaccination not recommended

Key Factors for OCV Feasibility:

- Vaccine availability
- Importation regulations
- Commitment of Partners
- Funding availability
- Competing priorities
- Cold chain capacity
- Human resources
- Transport needs
- Security concerns
- Acceptability of communities
- Timeliness



Manual for Oral Cholera Vaccination Campaigns: For adaptation by program managers for training health care workers (PDF - 61 pages, including annexes)

This manual is meant to be used by immunization program managers to develop training sessions in preparation for carrying out oral cholera vaccine (OCV) campaigns. It is also intended to serve as a reference guide for health care workers conducting the campaigns and administering the vaccine. The manual should enable program managers to prepare quality training sessions and their own training materials in a relatively short period of time.

Annexes:

Annex A: OCV Vaccination Card (PDF - 1 page) [French]

Annex B: Vaccination Tally Sheets (PDF - 3 pages) [French]

Annex C: Daily Logistic Supply and Return Form (PDF - 1 Page) [French]

Annex D: Supervisor Checklist (PDF - 1 page)

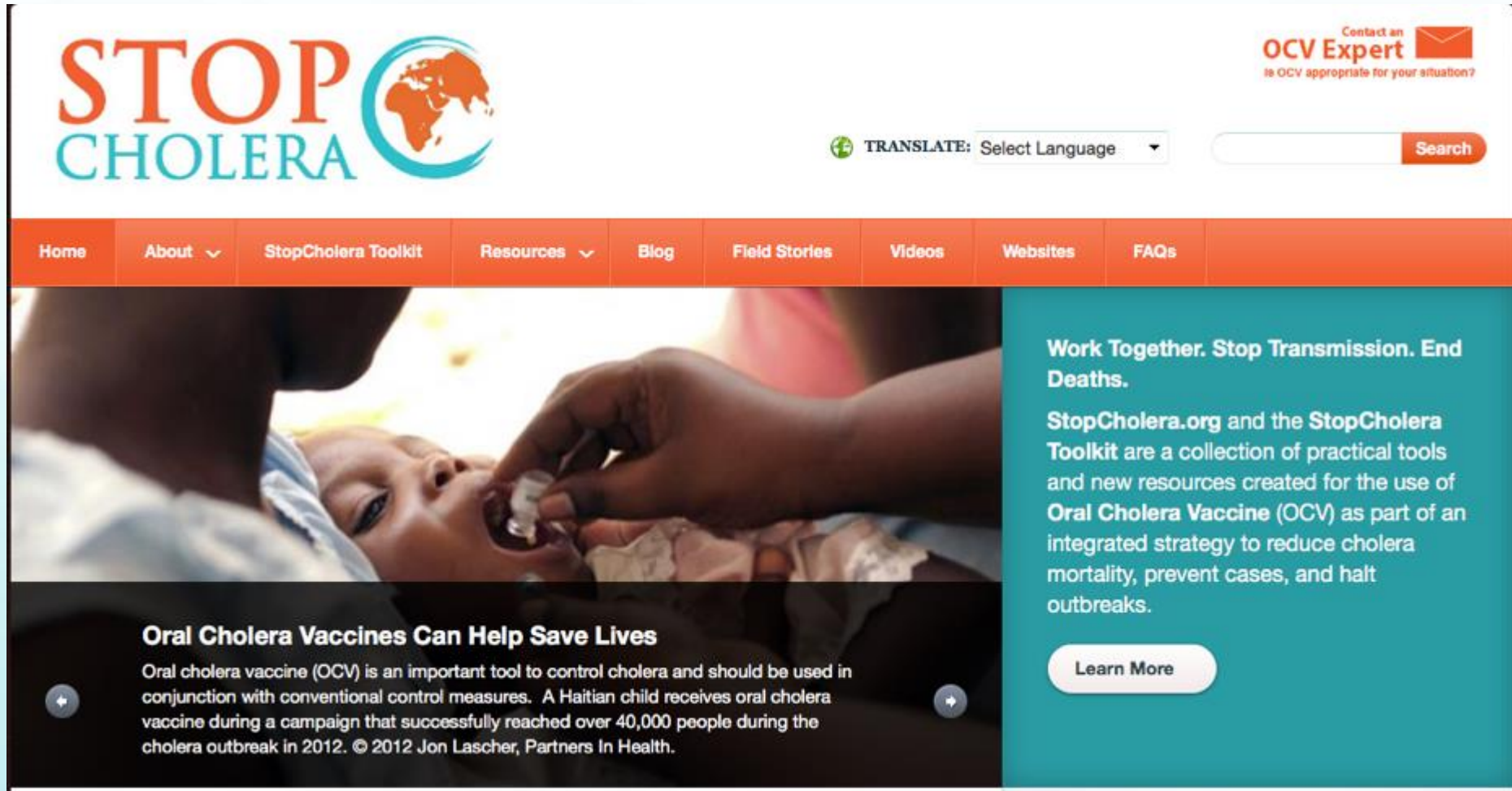
Annex E: Daily Reporting Form (PDF - 1 page) [French]



Continue to follow developments on OCV at our website and on Twitter

 Follow @STOPCholera

www.stopcholera.org



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Thank you!