«Ενιαία υγεία και λοιμώξεις στη Λεκάνη της Μεσογείου/Οστικό Έλλειμμα και Λοίμωξη»

ACUTE DIARRHEAL SYNDROMES

CHOLERA

(*Vibrio cholerae* Infection)

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Σύγκρουση Συμφερόντων
Conflict of Interest Statement

ΚΥΡΙΟΣ ΕΡΕΥΝΗΤΗΣ ΣΕ:

-Διεθνή Μελέτη του National Institute of Allergy and Infectious Diseases (NIAID)

-Ομαδική Κλινική Μελέτη του Ελληνικού Ινστιτούτου Σήψης

-Ομαδική Κλινική Μελέτη της Ελλην Εταιρείας Χημειοθεραπείας

-Τιμητικές αμοιβές για συμμετοχές σε Εκπαιδευτικές εκδηλώσεις και συμμετοχή σε εκπαιδευτικά συνέδρια από Φαρμακευτικές Εταιρείες **Pfizer, Astellas, Angelini,MSD**

Τμήμα Επιδημιολογικής Επιτήρησης και Παρέμβασης
ΧΟΛΕΡΑ (ICD-10 A00)

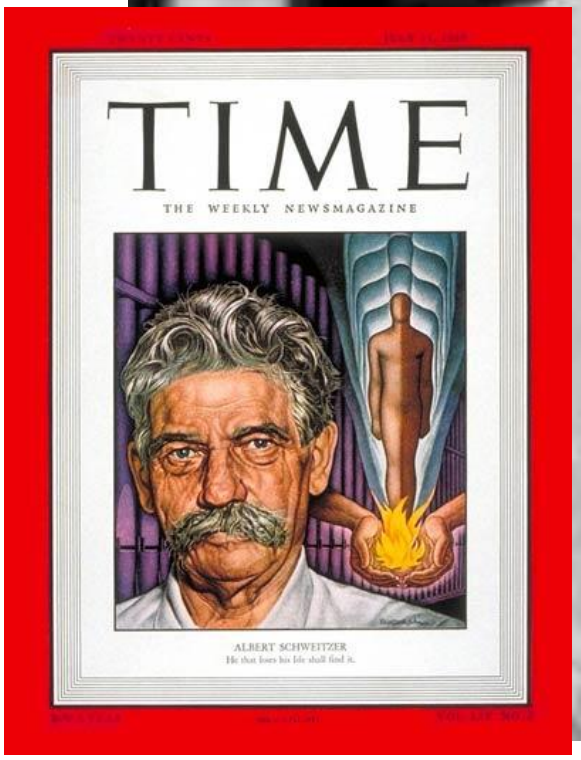
- Η χολέρα είναι μια οξεία διαρροϊκή νόσος που οφείλεται στην προσβολή του εντέρου **από την εντεροτοξίνη που παράγει το βακτήριο *Vibrio cholerae***
- Σύμφωνα με τον Π.Ο.Υ. **μόνο τα στελέχη του *Vibrio cholerae* των ορομάδων Ο1 και Ο139 που παράγουν τοξίνη** προκαλούν σοβαρή νόσο που χαρακτηρίζεται ως **«χολέρα» και επιδημίες**
- Κάθε ορομάδα έχει **2 βιότυπους τον Κλασικό & τον El-Tor**
- Κάθε βιότυπος έχει **3 οροτύπους Inaba, Ogawa & Hikojima**
- Οι **υπόλοιπες ορομάδες του βακτηρίου τοξινογόνοι ή μη** μπορούν να προκαλέσουν ήπιο διαρροϊκό σύνδρομο και δεν προκαλούν επιδημίες

ΕΘΝΙΚΟΣ ΟΡΓΑΝΙΣΜΟΣ ΔΗΜΟΣΙΑΣ ΥΓΕΙΑΣ

ΚΕΕΛΠΝΟ

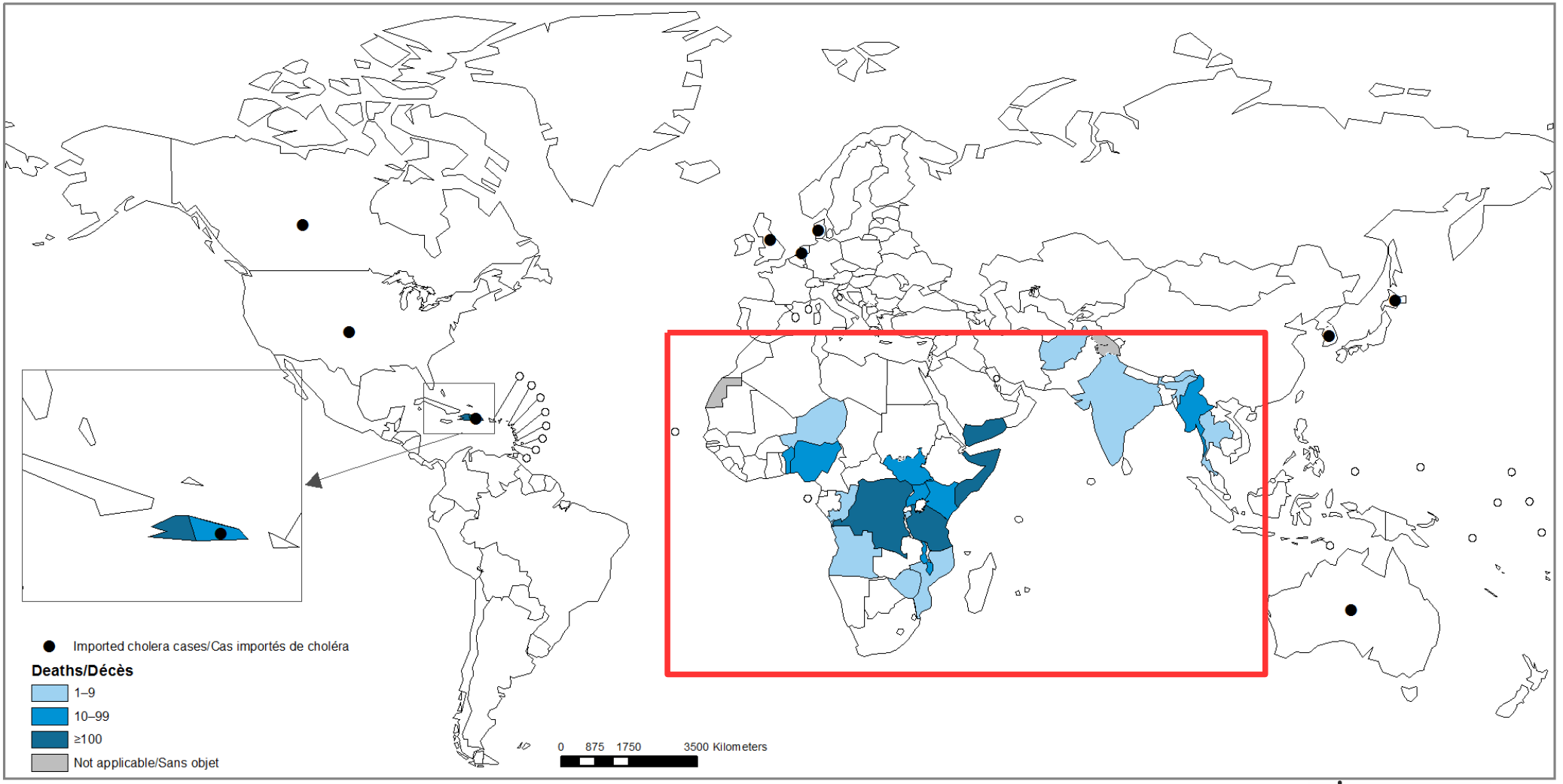
NOBEL of Peace 1952

Albert Schweitzer



Ιδρυση και τη συντήρηση νοσοκομείου στο Λαμπαρενέ της Γκαμπόν, στην κεντροδυτική Αφρική.

Countries reporting cholera deaths and imported cases in 2016
Pays ayant déclaré des décès dus au choléra et des cas importés en 2016



Data Source: Control of Epidemic Diseases Unit
World Health Organization

Map Production: Information Evidence and Research (IER)
World Health Organization

World Health Organization

Organisation mondiale de la Santé

Cholera 101: Why This Ancient Disease Is Making Headlines In 2019

April 2, 2019 · 10:25 AM ET

The figure at left is the personification of cholera, facing resistance from a group of women. This 19th century engraving is from Barcelona.

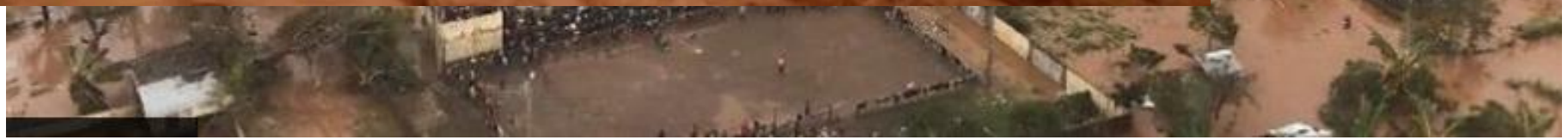
Cyclone Idai: First cholera death in Mozambique as cases double

March 2019

Cholera is a Fast Killer & can kill a person in a matter of hours

Cyclone Idai, which hit on 14 March 2019, caused massive flooding and killed more than 700 people across southern Africa.
More than **500 cases of cholera have since been reported in Beira with cases of the disease almost doubling in Mozambique**


Mozambique
Atlantic Ocean
Copyright © Ontheworldmap.com



World Health Organization

Cholera Remains..

- A major public health problem
- Affects primarily developing world populations
- No proper access to adequate water and sanitation resources

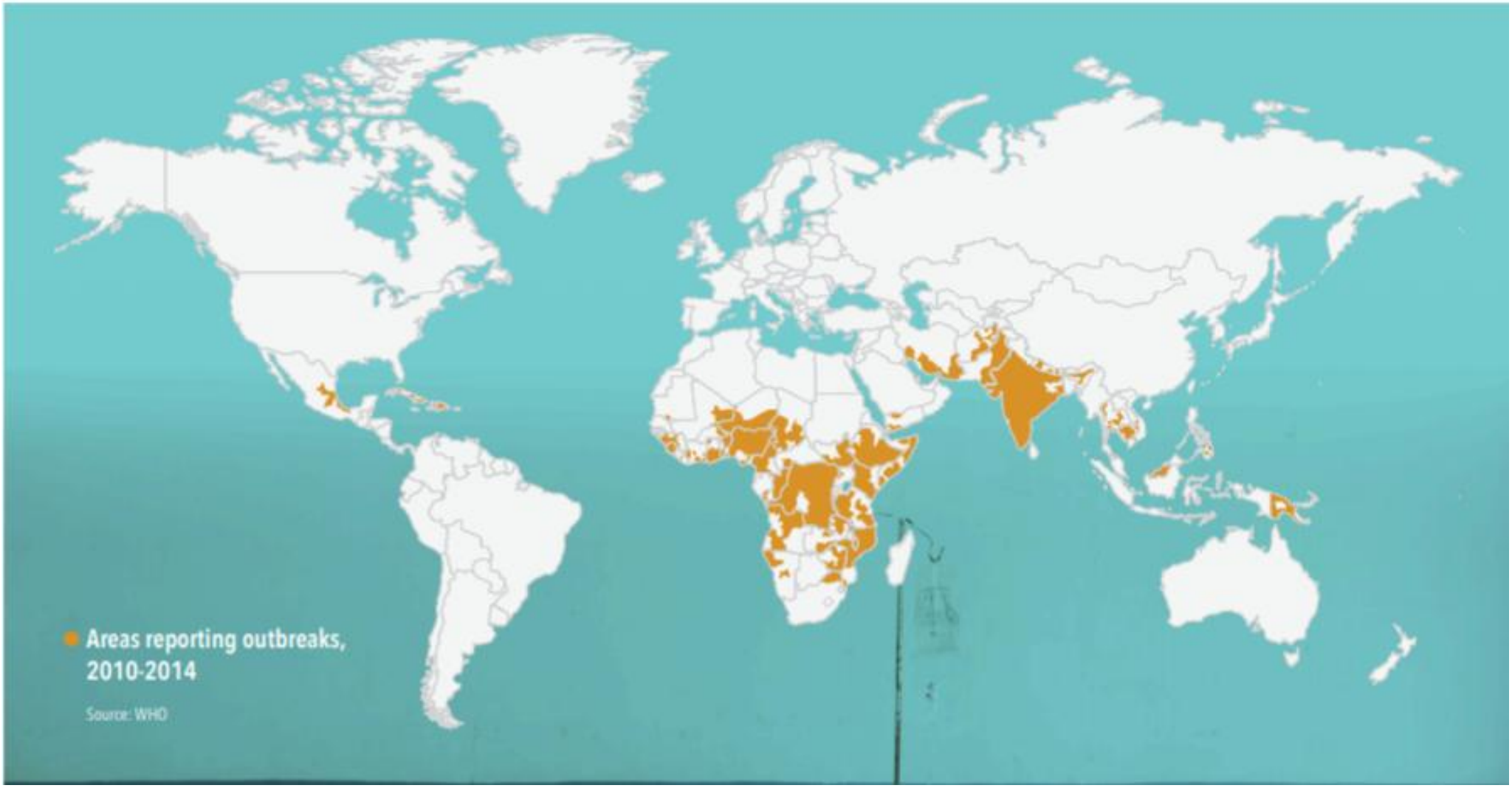
GREECE

➔ Η μέση δηλούμενη επίπτωση στις χώρες της Ευρωπαϊκής Ένωσης 2009, ήταν **<0,01 κρούσματα ανά 100.000 πληθυσμού**

➔ Στην Ελλάδα, η τελευταία επιδημία χολέρας καταγράφηκε το 1912-1913 (Βαλκανικοί πόλεμοι)

➔ Η χολέρα ανήκει στα νοσήματα άμεσης δήλωσης του συστήματος υποχρεωτικής δήλωσης νοσημάτων του ΕΟΔΥ (ΚΕΕΛΠΝΟ)

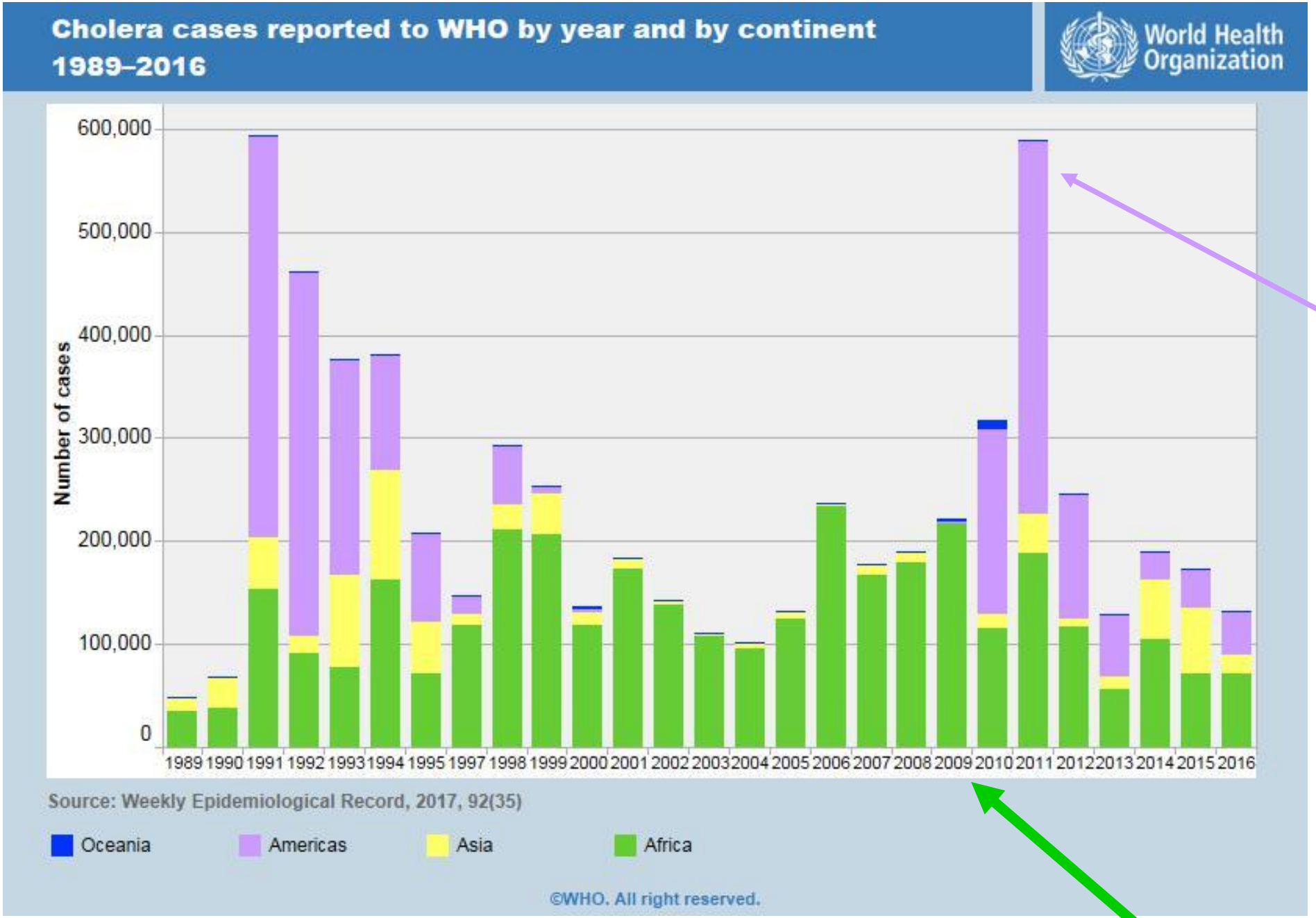
Epidemiology



Cholera is under-reported

- 2.9 million cases
- 95,000 deaths are suspected to actually occur each year

Epidemiology



Epidemiology

Cholera cases reported

WHO worldwide

In 2016:

- 132121 cholera cases
- 2420 deaths
- Outbreaks continued to affect several countries
- 54% of cases were reported from Africa
- 13% from Asia
- 32% from Hispaniola

World Health Organization

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

Epidemiology

In 2017:

Cholera continues to hit communities already made vulnerable **by tragedies such as conflicts and famines**

- Yemen currently faces the world's largest cholera outbreak, with over 700,000 suspected cases and **more than 2,000 deaths reported since April**

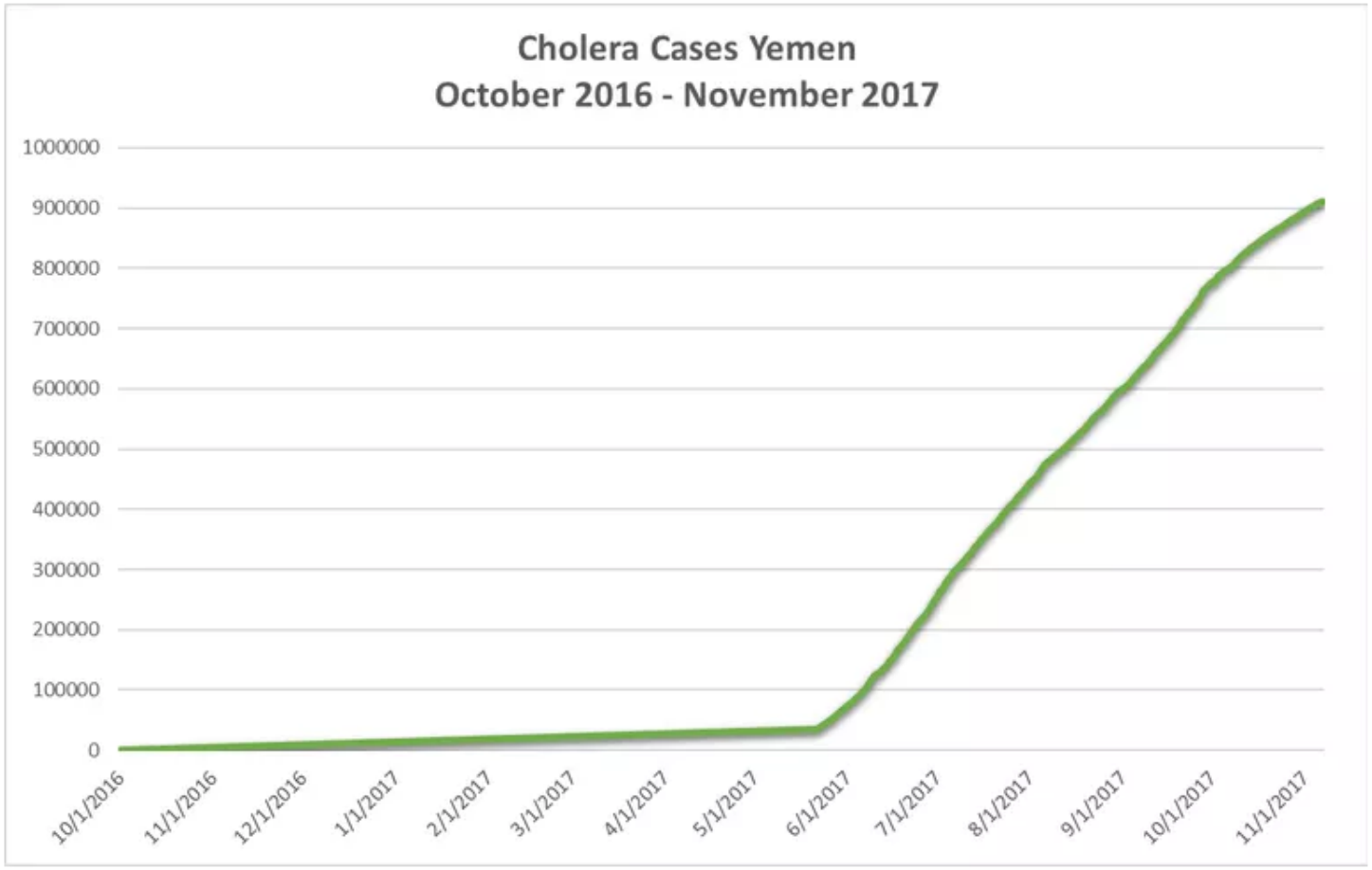
- Somalia: Over **800 people have died of cholera** since the beginning of the year, and o**ver 500 in the DRC**

- Haiti has now reported nearly 1 million cases and 10,000 deaths **since the beginning of the 2010 outbreak**

World Health Organization

Yemen cholera outbreak accelerates to 10,000+ cases per week: WHO

On May 22, the number of cases began a dramatic trend upward.



Water born Infection

Transmission

- **Cholera transmission is closely linked to inadequate access to clean water and sanitation facilities**.
- **Typical at-risk areas** include peri-urban slums, and camps for internally displaced persons or refugees, *where* ***minimum requirements of clean water and sanitation are not been met.***
- The **consequences of a humanitarian crisis** – such as disruption of water and sanitation systems, or the displacement of populations to inadequate and overcrowded camps – can increase the risk of cholera transmission, should the bacteria be present or introduced.
- **People who are more likely to be exposed to cholera include:**

  - healthcare personnel

  - cholera response workers

  - travelers in an area of active cholera transmission *(who cannot or do not always follow safe food and water precautions and personal hygiene measures)*

- **Uninfected dead bodies have never been reported as the source of epidemics**

Epidemiology

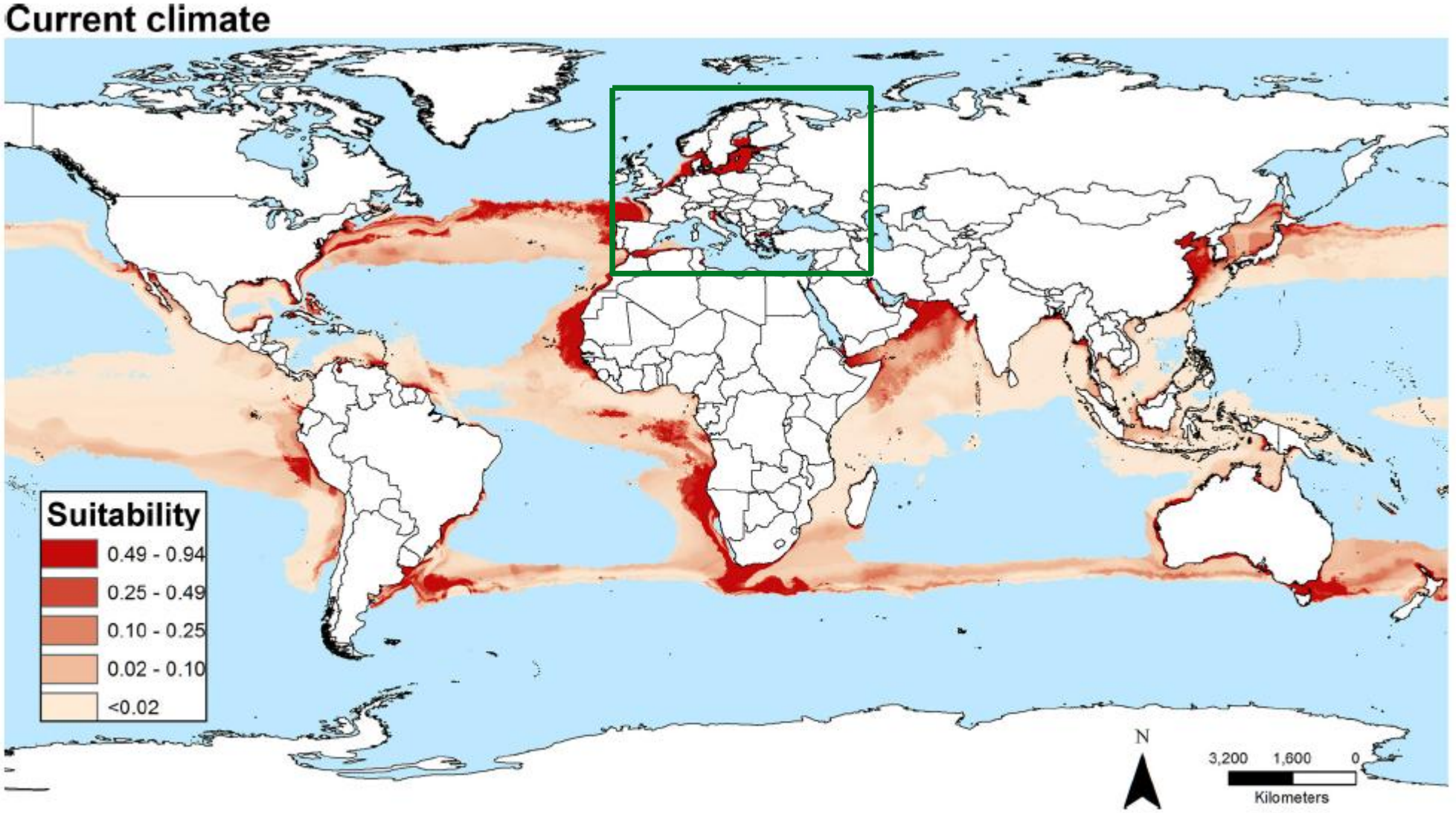
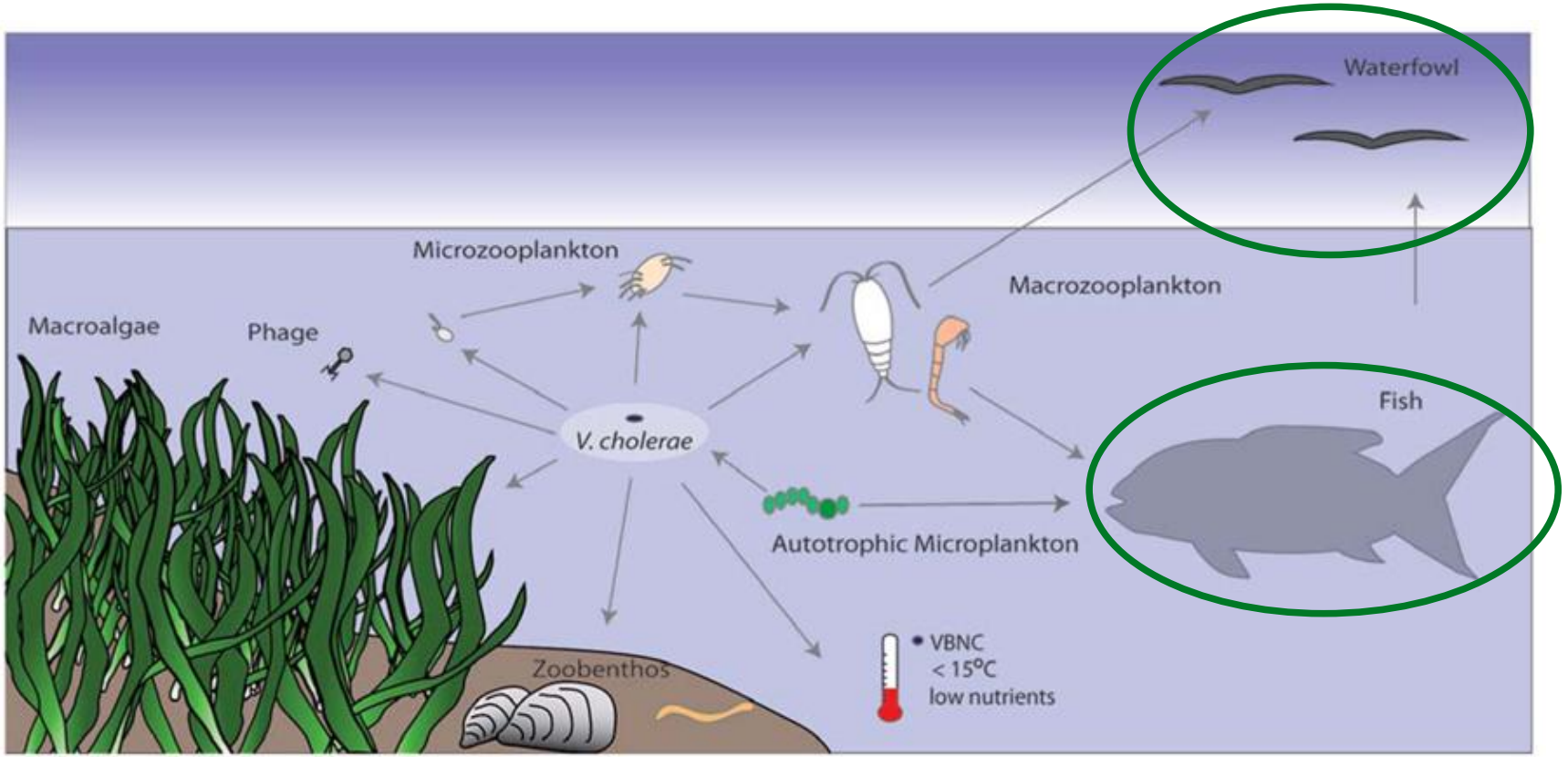


Fig. 4. Global map of *Vibrio cholerae* suitability in seawaters. Model generated under the current climate scenario.

L. Escobaret al.Acta Tropica 149 (2015) *202–211*



Vibrio cholerae interactions with other organisms and the environment:

V. cholerae is part of the bacterioplankton in aquatic environments.

It is under predation **pressure by protozoa and bacteriophage** and is thus incorporated into the microbial loop. Low temperature and nutrient conditions can trigger the VBNC state *(**v**iable **b**ut **n**on**c**ulturable (VBNC) bacteria refers to bacteria that are in a state of very low metabolic activity and do not divide, but are alive and have the ability to become culturable once resuscitated).*

V. cholerae can also attach to autotrophic organisms such as **phytoplankton or macroalgae**, which can provide a carbon source. Attachment to chitinous **zooplankton and gelatinous egg masses** (e.g., chironomids) provide nutrients and also facilitate HGT *(Horizontal gene transfer)*.

Fish and birds feed on plankton or mussels that might harbor V.cholerae and can potentially spread the bacterium across long distances.

Microbiology

- Class : Gamma Proteobacteria
- Order: Vibrionales
- Family: Vibrionaceae
- Genus: ***Vibrio*** → **Diarrhea**
- Species: ***V. cholerae***

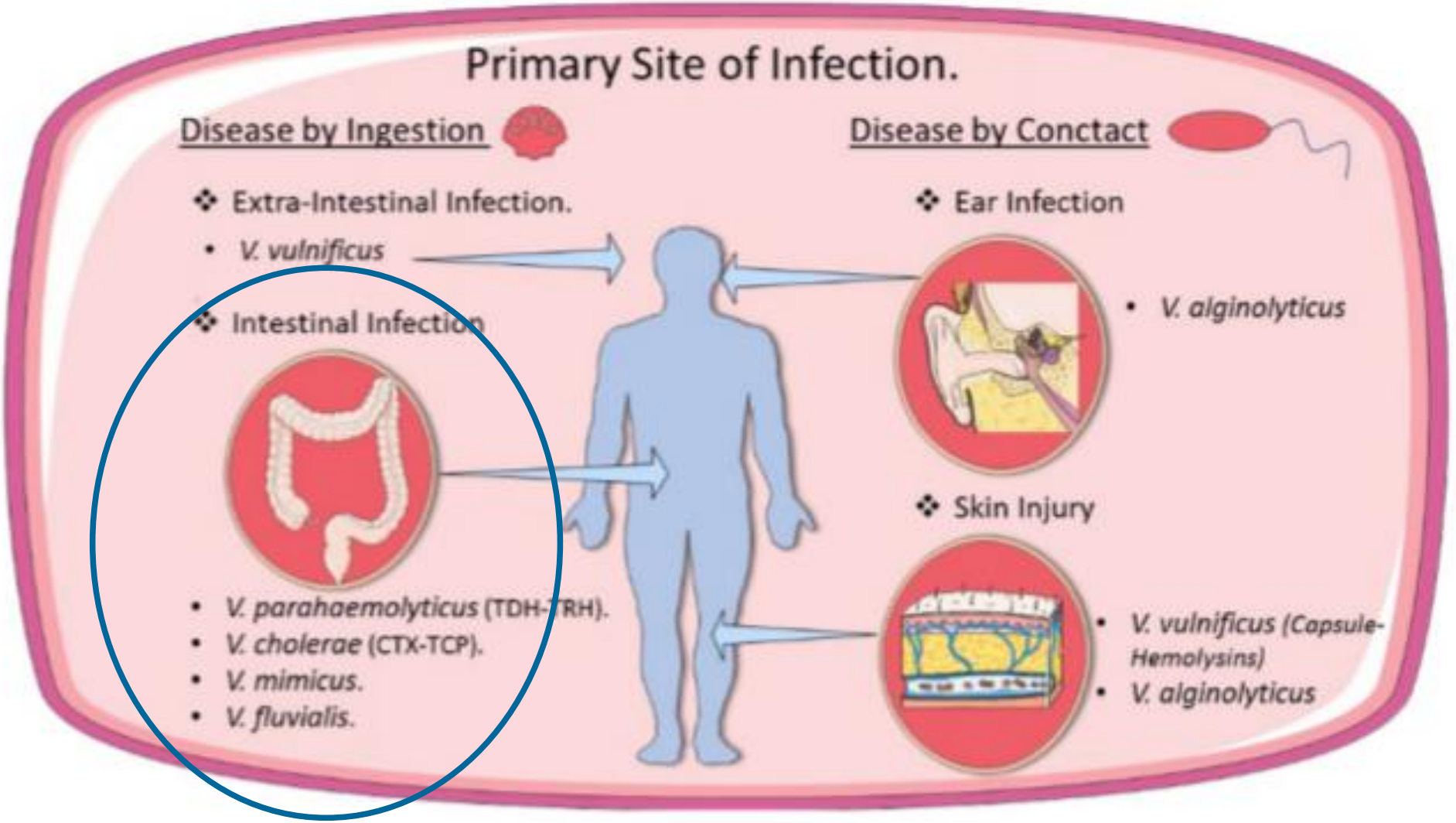
V. parahaemolyticus

V. fluvialis

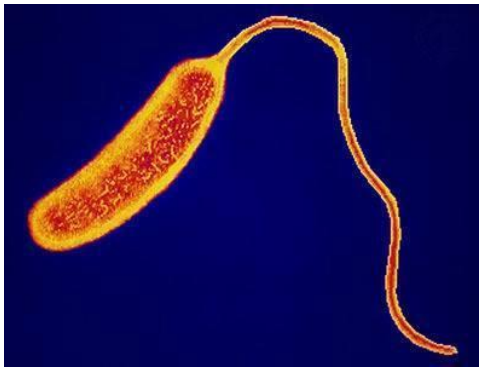
V. mimicus

V. vulnificus

Vibrio spp


Primary Site of Infection.
Disease by Ingestion
Extra-Intestinal Infection.
V. vulnificus
Intestinal Infection
V. parahaemolyticus (TDH-TRH).
V. cholerae (CTX-TCP).
V. mimicus.
V. fluvialis.
Disease by Conctact
Ear Infection
V. alginolyticus
Skin Injury
V. vulnificus (Capsule-Hemolysins)
V. alginolyticus

Microbiology

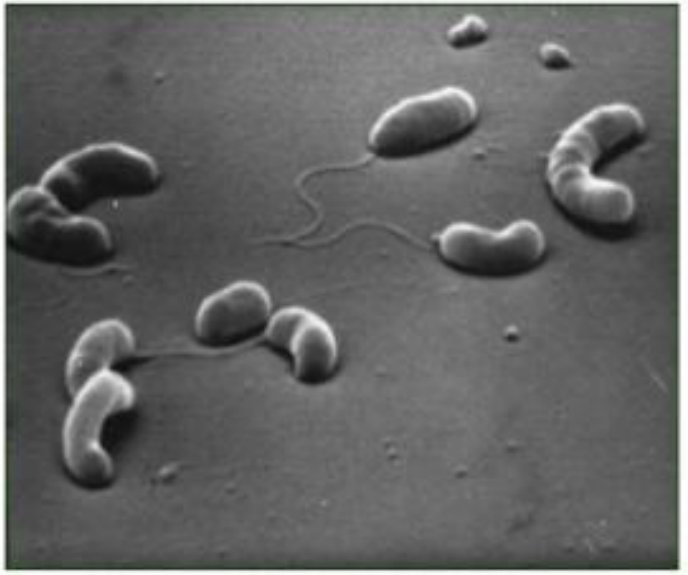


- Many serogroups of ***Vibrio cholerae***
- Only two – O1 and O139 – cause outbreaks
- ***V. cholerae* O:1** has caused all recent outbreaks
- ***V. cholerae* O:139** – first identified in Bangladesh in 1992 – caused outbreaks in the past. *It has never been identified outside Asia.*
- There is no difference in the illness caused by the two serogroups.

Microbiology

Vibrio cholerae
Morphology

- Gram negative
- rigid, curved rods that are actively motile
- Comma shaped
- Sheathed, polar flagellum
- About 1.5*0.2-0.4µm in size



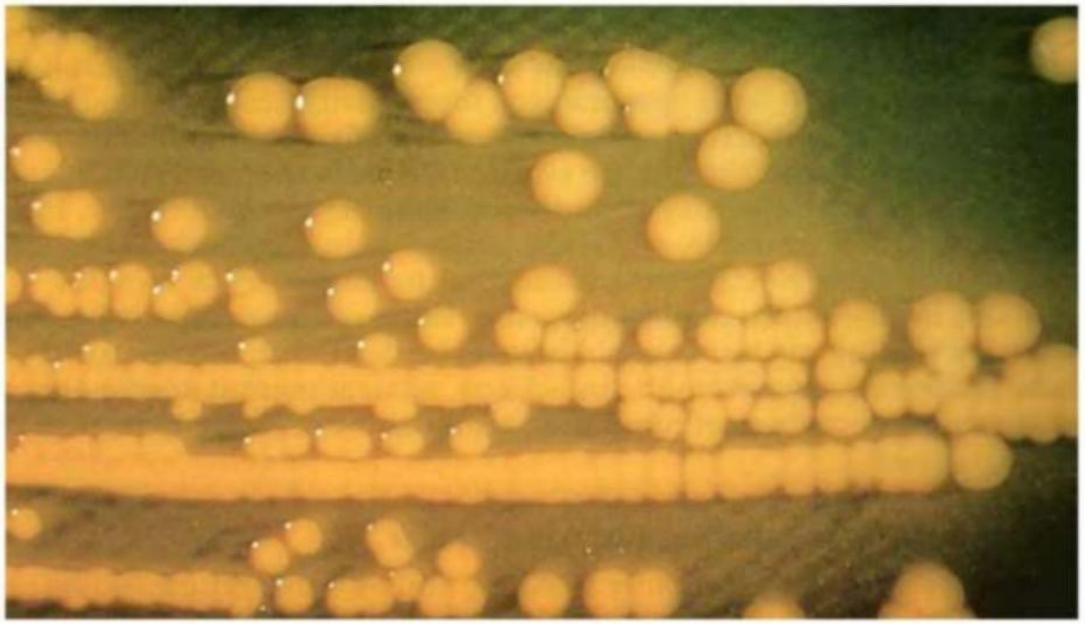


Figure IV-1. Overnight colonies of *V. cholerae* on TCBS because of the fermentation of sucrose. They are characteri slightly flattened.

Vibrio cholerae growing on thiosulphate citrate bile salt sucrose (TCBS) agar plates

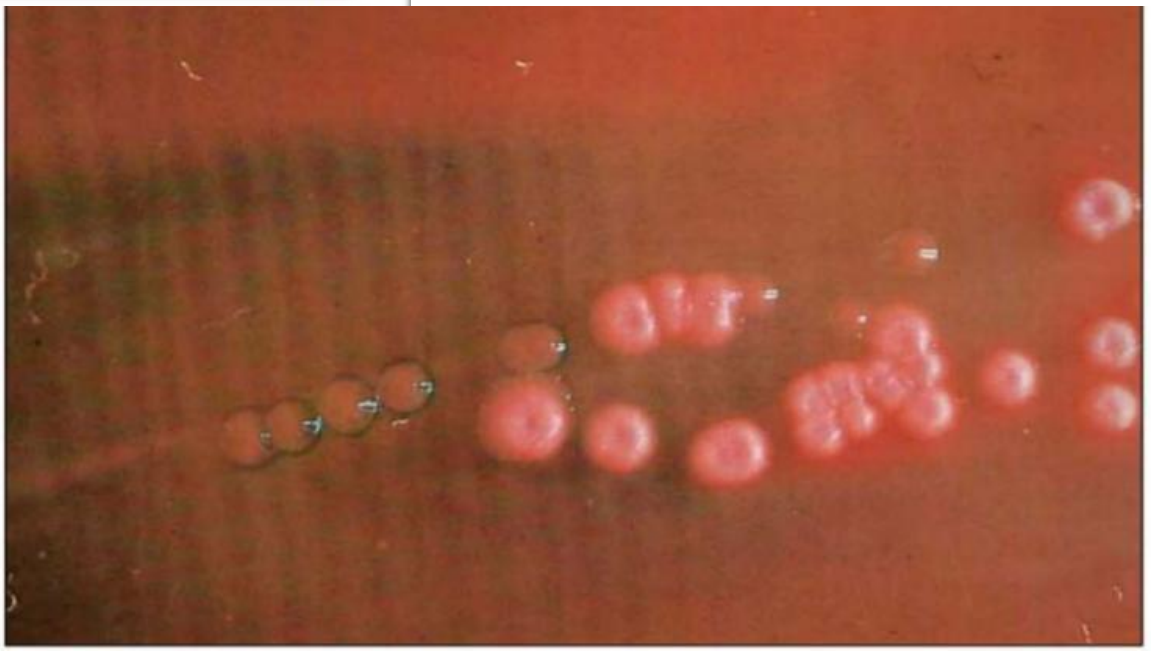


Figure IV-3. Overnight growth of *V. cholerae* on MacConkey agar appears as small (1- to 3 mm), translucent, colorless-to-light pink (lactose-negative) colonies.

Diagnosis

✓ Confirmed by Culture or PCR

A suspected case with Vibrio cholerae O1 or O139 confirmed **by culture or PCR**

In countries where cholera is not present or has been eliminated, the *Vibrio cholerae* O1 or O139 strain is demonstrated to be toxigenic

✓ Rapid Tests

In areas with limited or no laboratory testing, the **Crystal® VC dipstick rapid test** can provide an early warning to public health officials that an outbreak of cholera is occurring *Sensitivity and specificity of this test is not optimal.* Recommended, **always be confirmed using traditional culture-based** methods suitable for the isolation and identification of V. cholerae

Table 1

Minimum inhibitory concentration (MIC) values of antibiotics for outbreak causing *V. cholerae* O1 biotype El Tor serotype Ogawa isolates in Kolkata, India.

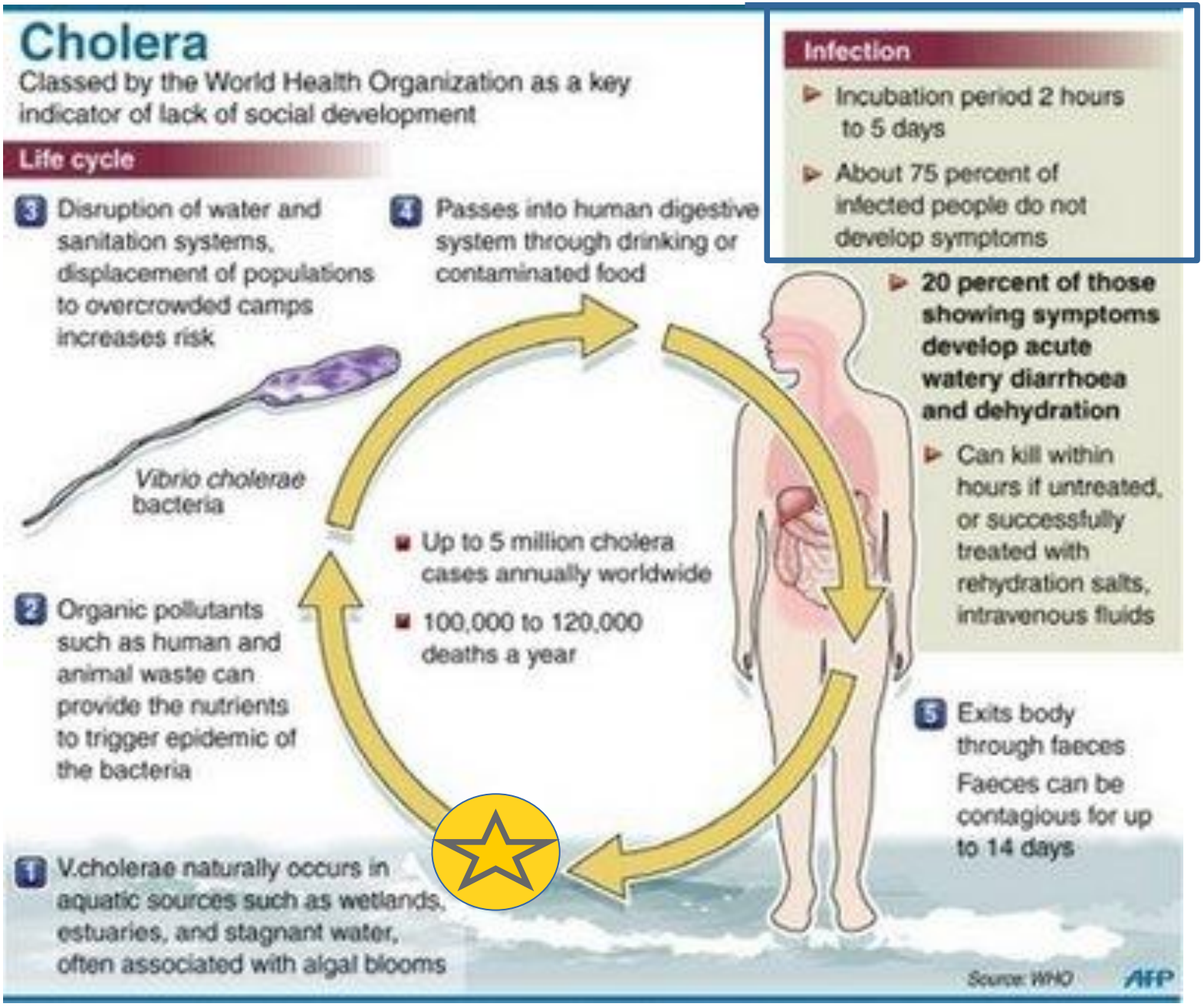
Strains	MICs of antibiotics (μ g/mL)								
	Am	C	Tm	T	Er	Nx	Cp	Ak	Cfx
Resistant isolates	75–200	–	75–200	75–100	64–128	32–64	10	–	–
Sensitive isolates	2–4	2–8	–	4	2	4–8	0.66	2–4	2–8

Am = ampicillin, Ak = amikacin, C = chloramphenicol, Cfx = cefotaxime, Cp = ciprofloxacin, Er = erythromycin, Nx = nalidixic acid, Tm = trimethoprim, T = tetracycline.

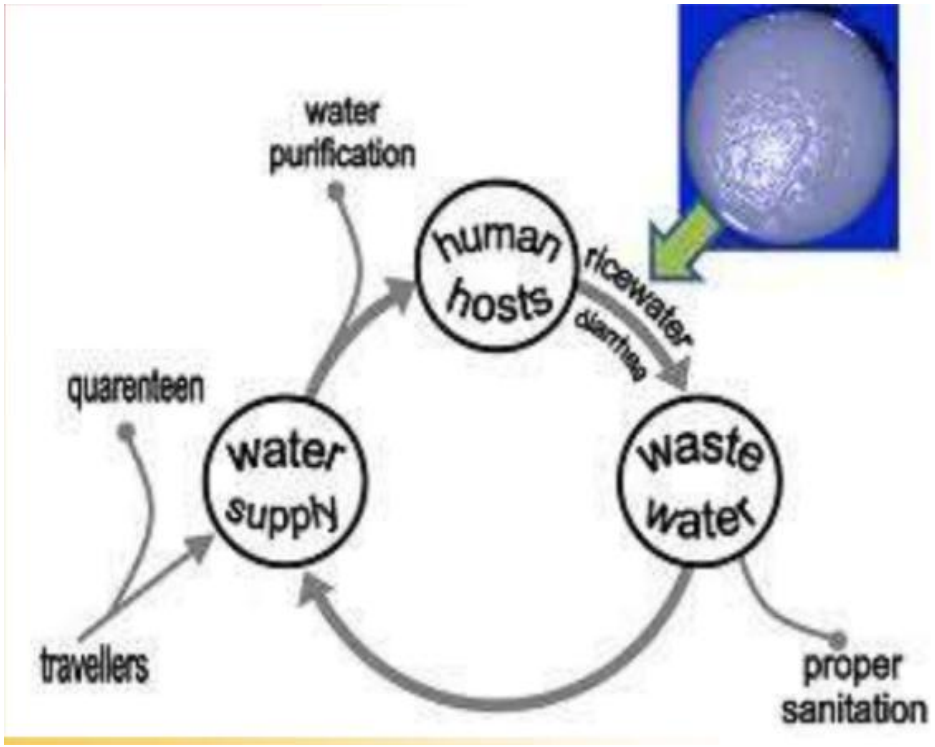
Shyamapada Mandal et al.Cholera: a great global concern. Asian Pacific Journal of Tropical Medicine (2011)573-580

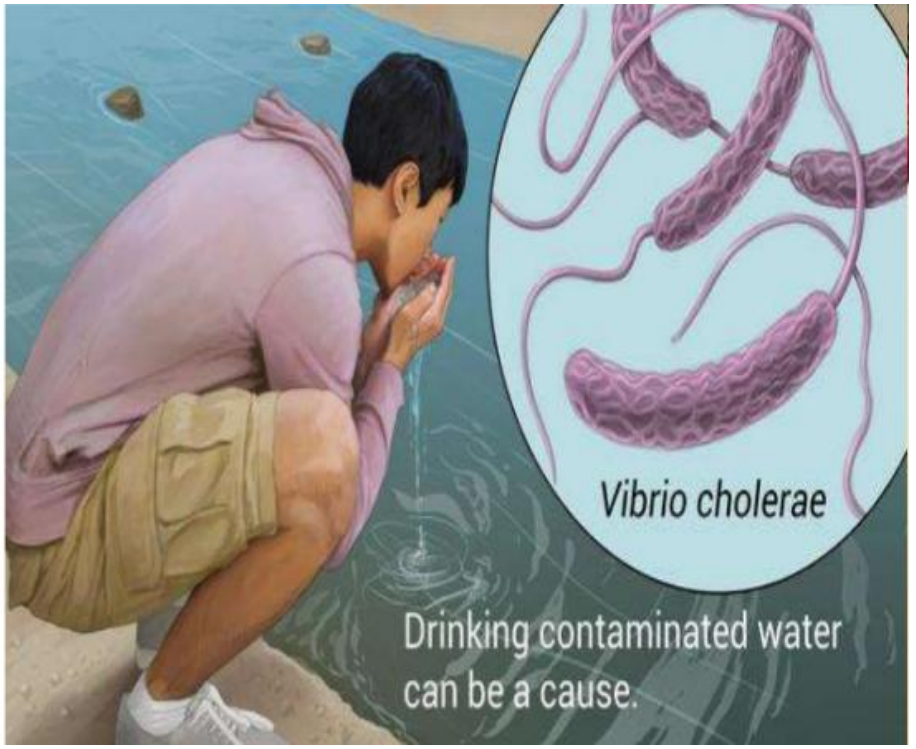
World Health Organization

Life Cycle



Life Cycle



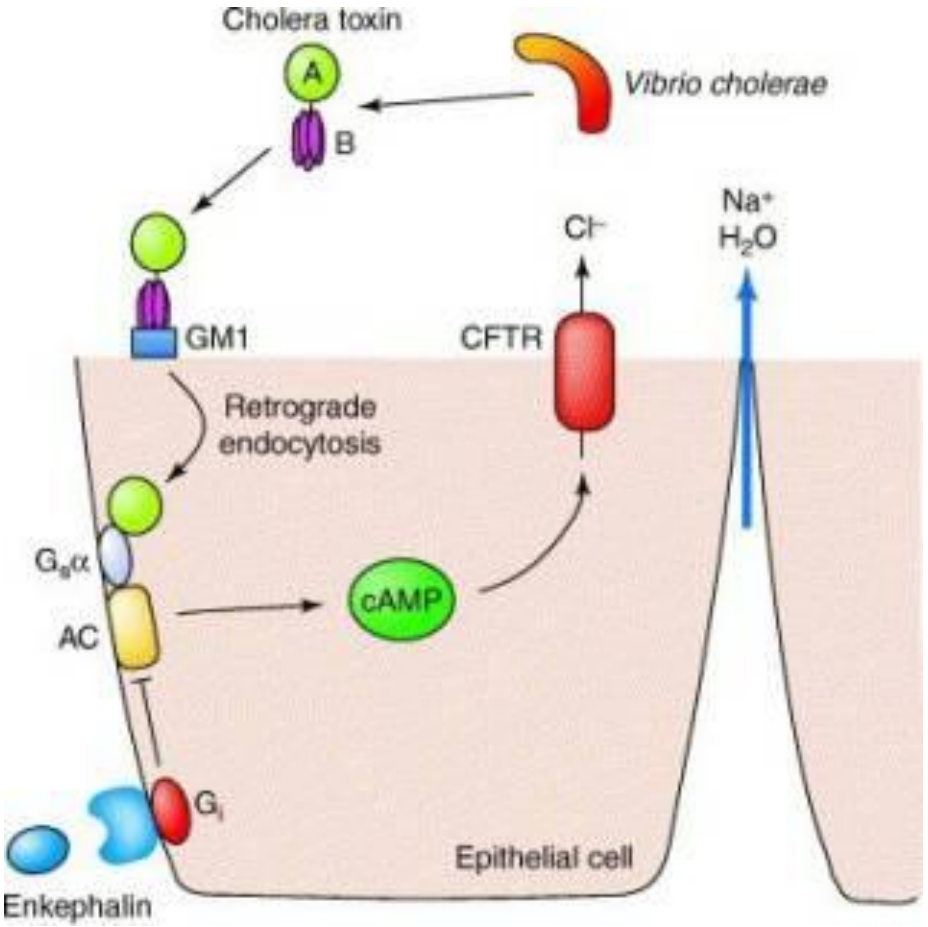


Incubation periods: *1-5 days*

Asian Pacific Journal of Tropical Medicine (2011)573-580

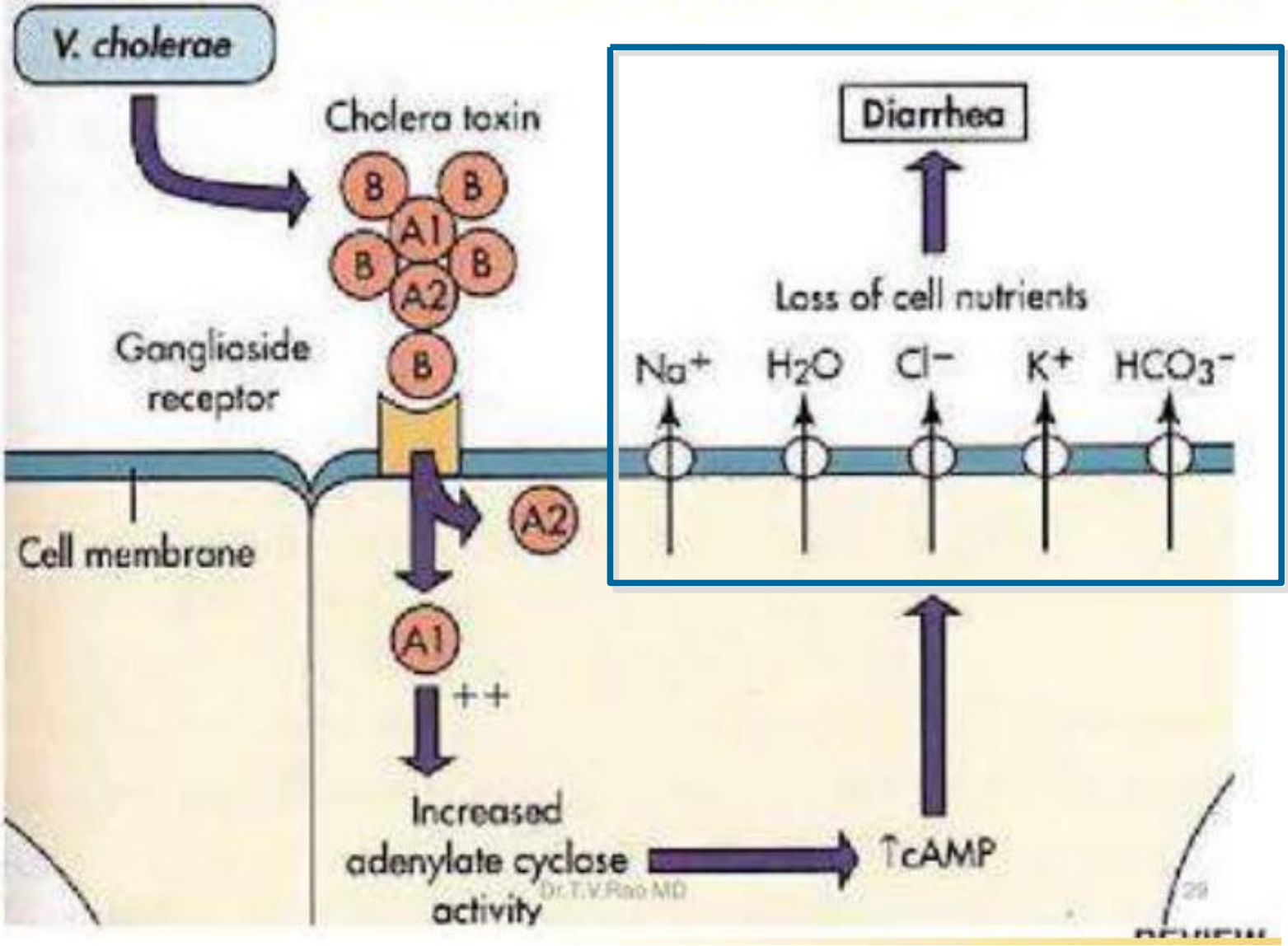
Pathophysiology - Biochemistry

- O1 and O139 cholera bacteria strains secrete a toxin that contains **Cholera Toxin Subunit B (CTB)**
- CTB binds to **Ganglioside GM1** on the cell membranes of enterocytes and the toxin is internalized
- The **A1 domain** of the toxin's A subunit is cleaved and travels to the cytosol
- A1 binds and activates **Gsa**, locking it in its GTP form
- The GTP form of Gsa stimulates **adenylate cyclase (AC),** which produces **cyclic AMP (cAMP)**



1. Ganglioside GM1. (2018). U.S. National Library of Medicine.
2. Lauer, S.,et al (2002). Analysis of Cholera Toxin–Ganglioside Interactions by Flow Cytometry. Biochemistry. 41(6): 1742-1751

Mechanism of Action of Cholera Toxin



Lauer, S. Et al. (2002). Analysis of Cholera Toxin–Ganglioside Interactions by Flow Cytometry. Biochemistry. 41(6): 1742-1751

Mechanism → Symptoms

- cAMP binds to a transmembrane protein called **Cystic Fibrosis Transmembrane Regulator**, which releases **chloride ions** into the extracellular space

- Efflux of chloride ions triggers efflux of **sodium** and **water** as well, as cell tries to restore a balance in charge

- Efflux of abnormal amounts of water and ions from the intestine induces **watery diarrhea** (which causes dehydration and a decrease in blood volume), **cramps** (due to electrolyte imbalance), **hypovolemic shock** (due to decreased blood volume), and **vomiting** in the infected individual

Signs & Symptoms

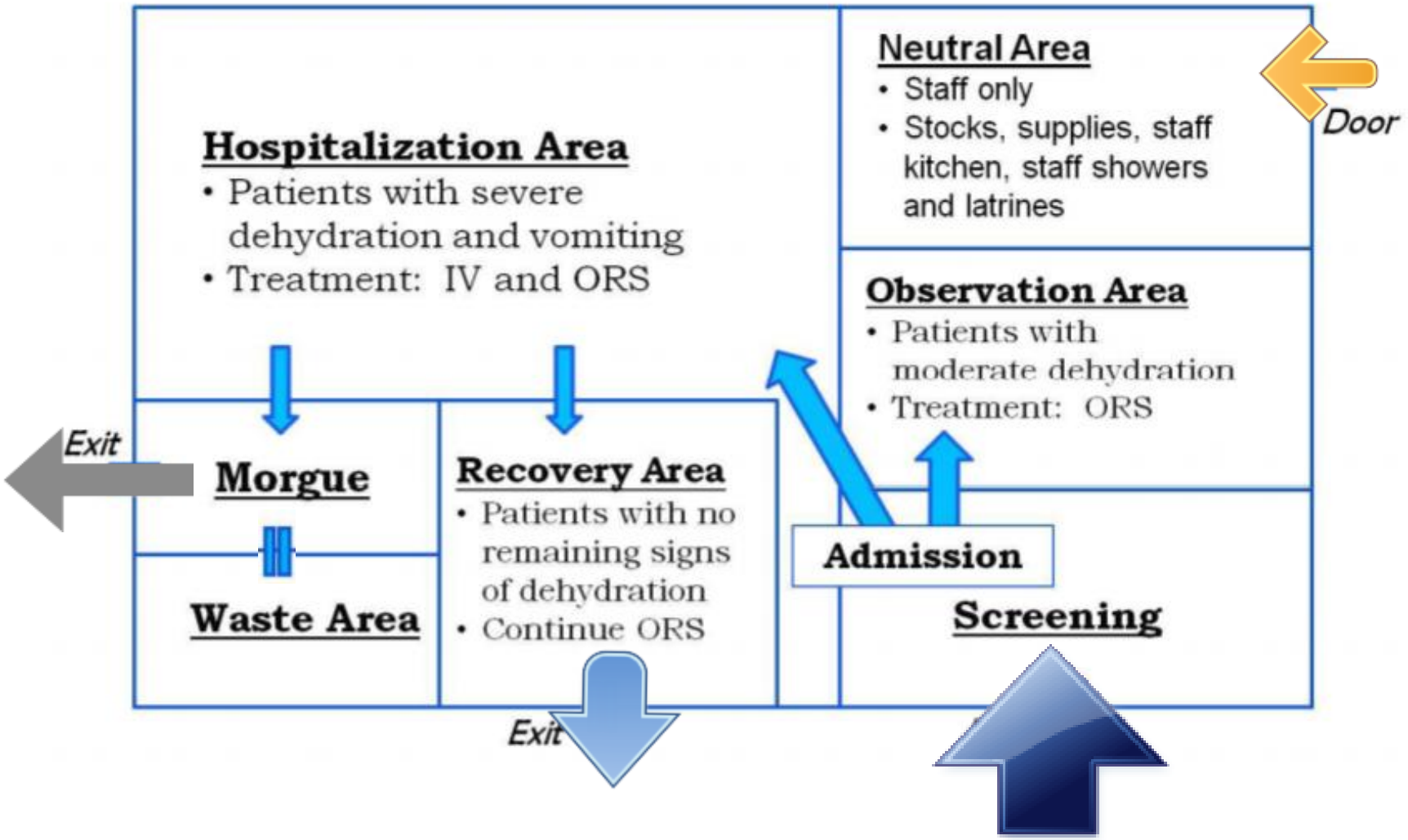
Symptoms: *Watery diarrhoea, vomiting, thirst, dehydration, muscle cramps*

Complications: *Muscular pain, renal failure, pulmonary edema, cardiac arrhythrnias*

How to choose a site for a CTC

Cholera Treatment Centers should be:

1. Where patients can easily access the facility
2. Located away from water sources and functioning facilities (e.g. schools, markets, dispensaries)
3. Separated from other patient wards, if located within an existing healthcare facility
4. Easy to clean



WHO GUIDELINES

Management of the patient with cholera

Steps in the management of suspected cholera:

Step 1. Assess for dehydration.

Step 2. Rehydrate the patient, and monitor frequently. Then reassess hydration status.

Step 3. Maintain hydration: replace ongoing fluid losses until diarrhoea stops.

Step 4. Give an oral antibiotic to the patient with severe dehydration.

Step 5. Feed the patient.

Cholera Treatment Kit

Cholera Treatment

- **Oral Rehydration Therapy (ORT)**
  - **Timely administration of oral rehydration salts** can reduce the fatality rate to less than 1%
  - For severe dehydration and hypovolemic shock, **intravenous fluids** (ex. Ringer's lactate) and **electrolytes** are required
- **Zinc Treatment**
  - Recommended for use in cases of **pediatric diarrhea**
  - Helps reduce the duration of diarrhea and volume of stool
  - Reduces **cAMP** concentration

LaRocque, R., Harris, JB. (2018). Cholera: Clinical features, diagnosis, treatment, and prevention. UpToDate.

World Health Organization

STEP 1

Table 1: Assessment and classification of cholera patients for dehydration

Degree of Dehydration	No dehydration	Some Dehydration	Severe dehydration
1. Look at: a. General condition	Well, alert	Restless, Irritable Fluid loss less than 10% of body weight	Lethargic or Unconscious / floppy Fluid loss more than 10% of body weight. Pulse: barely detectable.
b. Eyes	Normal	Sunken	Very sunken and dry
c. Tears	Present	Absent	Absent
d. Mouth and tongue	Moist	Dry	Very dry
e. Thirst	Not thirsty, drinks normally	Thirsty, drinks Eagerly	Drinks poorly or not able to drink
2. Feel	Skin pinch Goes back quickly	Goes back slowly (within 2 seconds) Care must be taken for the elderly persons	Goes back very slowly (more than 2 second) Care must be taken for the elderly persons
3. Decide	No sign of dehydration: **(<5 percent)** Plan A	The patient has two or more signs including at least one bold sign **(5-10 percent)** Plan B	The patient has two or more signs including at least one bold sign: **(>10 percent)** Plan C
4. Treatment	ORS plus health Education, counseling and rehabilitation observe for 4 hours then discharge on ORS, recommended antibiotics and zinc for children under 5 years	Oral rehydration with ORS, recommended antibiotic and zinc for children under 5 years, vigorous monitoring at CTU. Continue feeding	IV therapy plus recommended Antibiotics, and zinc for children under 5 years and ORS as soon as able to drink. Continue feeding

World Health Organization

STEP 2

Minimal to No Dehydration – Plan A

Treatment

ORS amounts to prevent dehydration (WHO recommendation)

Age	Amount of ORS after each loose stool	ORS quantity needed
Less than 24 months	50 to 100 ml	Enough for 500 ml/day (1 sachet)*
2 to 10 years	100 to 200 ml	Enough for 1000 ml/day (1 sachet)*
Over 10 years	as much as wanted	Enough for 2000 ml/day (2 sachets)*

(*) ORS bags are usually for 1 litre. In some countries, ORS bags are conditioned for less than 1 litre.

World Health Organization

STEP 2

Moderate dehydration – Plan B

Treatment

ORS administration in the **first 4 hours** (generally 75ml x weight (kg))

- If unable to take oral, use NG tube
- Vomiting often ceases within 2-3 hours after dehydration has improved.
- If pt. is thirsty, administer more ORS
- Observe pt. to ensure required amount of ORS is administered
- If after 4 hours, pt. has signs of dehydration, use **Plan C**
- Monitor urine output

STEP 2

Rehydration protocol for Plan B

Age	<5months	6—11 Months	12-23months	2-4 yrs	5-14 yrs	15+ years
Weight	<5kg	5-7kg	8-10kg	11-15kg	16-29kg	30+
ORS ml	200-400	400-600	600-800	800-1200	1200-2200	2200-4000
Zinc tablet 20 mg (tab)	1/2 tab for 10 days	1 tab for 10 days	1 tab for 10 days	1 tab for 10 days	Not recommended	

ΙΦΕΤ :
Solvazinc tab eff 125mg
Wilzin cap 50mg

Recommended for under-five children only

M Imran Qadir et al. Zinc: Role in the management of diarrhea and cholera World J Clin Cases 2013 July 16; 1(4): 140-142

Severe dehydration –Plan C Treatment - Intravenous fluids

> 1 year old

First 30 mins:
30 ml/kg

Every 2.5 hours:
70 ml/kg

≤ 1 year old

First 60 mins:
30 ml/kg

Every 5 hours:
70 ml/kg

200 ml/kg or more may be needed in first 24 hours

ADULTS

100ml/kg*/hour (4h)

-Large bore 18 gauge IV needles
-Can use nasogastric tube if IV cannot be placed (20ml/kg 1st hour)

Source: CDC trainers of trainers presentation

Algorithm of Rehydration

SIGN OF DEHYDRATION

2 or more of the following signs?
1. **sunken eyes**
2. **absence of tears**
3. **dry mouth and tongue**
4. **thirsty and drinks eagerly**
5. **Goes back slowly(< 2 sec)**

If NO

No dehydration (<5 percent)

Oral Rehydration

Age	Amount After Loose Stool
< 24 mo	50-100 mL
2-9 y	100-200 mL
>10 y	As much as is wanted

If YES

2 or more of the following signs?
1. **lethargic, unconscious or floppy**
2. **unable to drink**
3. **radial pulse is weak**
4. **Goes back very slowly(>2 sec)**

If NO

Some dehydration (5-10 percent)

If improv

ORS solution to give in the first 4 hours

Age	< 4 mo	4-11 mo	12-23 mo	2-4 y	5-14 y	>15 y
Weight	< 5 kg	5-7.9 kg	8-10.9 kg	11-15.9 kg	16-29.9 kg	>30 kg
ORS solution in mL	200-400	400-600	600-800	800-1200	1200-2200	2200-4000

If YES

Severe dehydration (>10 percent)

Cholera Treatment

- **Oral Rehydration Therapy (ORT)**
  - **Timely administration o**f **oral rehydration salts** can reduce the fatality rate to less than 1%
  - For severe dehydration and hypovolemic shock, **intravenous fluids** (ex. Ringer's lactate) and **electrolytes** are required
- **Zinc Treatment**
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LaRocque, R., Harris, JB. (2018). Cholera: Clinical features, diagnosis, treatment, and prevention. UpToDate.

Organization	Recommendation	drug choice	choices	Drug choices for special populations
World Health Organization [21]	Antibiotic treatment for cholera patients with severe dehydration only	Doxycycline 300mg single dose	Tetracycline 500mg x 4 x 3d	Erythromycin is recommended drug for children 12,5 mg/kr x 4 x 3d children
Pan American Health Organization [22]	Antibiotic treatment for cholera patients with moderate or severe dehydration	Doxycycline 300mg single dose	Ciprofloxacin 1gr* Azithromycin 1gr* *single dose	Erythromycin or azithromycin recommended as first-line drugs for pregnant women and children Ciprofloxacin and doxycycline recommended as second-line drugs for children
International Centre for Diarrhoeal Disease Research, Bangladesh [23]	Antibiotic treatment for cholera patients with some or severe dehydration	Doxycycline 300mg single dose	Ciprofloxacin 1gr* Azithromycin 1gr* Cotrimoxazole *single dose	Erythromycin recommended as first-line drug for children and pregnant women 500mg x 4 x 3d Pregnant women
Medicins Sans Frontieres [24]	Antibiotic treatment for severely dehydrated patients only	Doxycycline 300mg single dose	Erythromycin Cotrimoxazole Chloramphenicol Furazolidone	

CDC http://www.cdc.gov/cholera/index.html

The NEW ENGLAND JOURNAL of MEDICINE

Single-Dose Azithromycin for the Treatment of Cholera in Adults

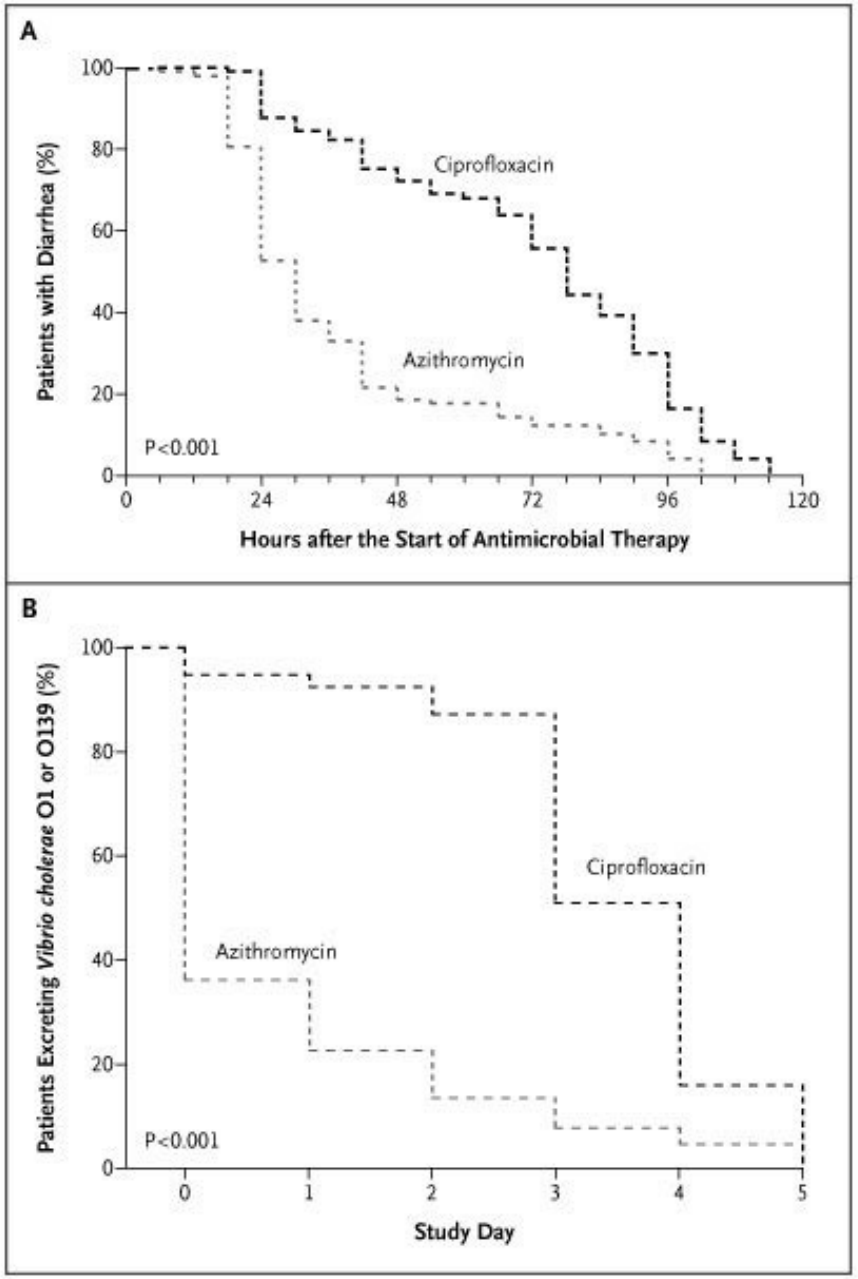


Table 3. Multivariate Logistic-Regression Analysis of Variables Predicting Clinical Failure of Therapy among 195 Patients with Cholera Treated with Azithromycin or Ciprofloxacin.*

Variable	Odds Ratio (95% CI)	P Value
Ciprofloxacin treatment (vs. azithromycin)	10.2 (4.8–21.5)	<0.001
No. of stools before admission†	1.1 (1.0–1.1)	0.02
Stool volume during 4-hr observation period‡	1.1 (1.1–1.2)	0.002

* Variables that were considered in the model were treatment received, the duration of illness before admission, the number of stools after the onset of illness and before admission, the weight on arrival, the change in weight between arrival and full hydration, the serum creatinine level, and the volume and numbers of stool during the observation period. CI denotes confidence interval.
† For each additional stool before admission, the risk of clinical failure increased by an odds ratio of 1.1.
‡ For each additional milliliter of stool per kilogram of body weight per hour, the risk of clinical failure increased by 1.1.

Saha D, Bennish Mlet al. N Engl J Med. 2006;354(23):2452-62

Vibrio cholerae - Resistance

Many studies emphasize the critical problem of increasing antimicrobial resistance

➔In Bangladesh and elsewhere, has developed **substantial antimicrobial resistance to:**

-Trimethoprim–sulfamethoxazole
-Furazolidone
-Tetracycline

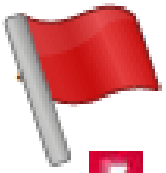
➔**Resistance is emerging to:**

-Ciprofloxacin
-Azithromycin

http://www.cdc.gov/cholera/index.html

1. Khan WA, Bennish Mlet al.. Comparison of single-dose azithromycin for childhood cholera: a randomized, double-blind trial. Lancet. 2002;360:1722-7.
2. Saha D, Bennish Mlet al. . Single-dose azithromycin for the treatment of cholera in adults. N Engl J Med. 2006;354(23):2452-62

Cholera Therapy - What Not To Use



Mass chemoprophylaxis

- Mass administration of antibiotics to the community is NOT recommended in controlling a cholera outbreak as it may worsen the situation through false confidence.
- Nevertheless, chemoprophylaxis may be useful when a cholera outbreak occurs in a closed population, such as a prisons, mental health institutions, child care homes, boarding schools, barracks (police and army), IDP/Refugee camps.

OUTCOMES

More likely to have severe disease from cholera and suffer poor outcomes:

➔ Individuals with **achlorhydria**

➔ Blood **type O**

➔ **Chronic medical** conditions

➔ Those **without ready access to rehydration therapy** and medical services

Prevention


UNITY FREEDOM JUSTICE
Oral Cholera Vaccine Campaign
For People 1 Year and Above
In Landslide and Flood Affected Communities
Dates:
1st Dose - 15th – 20th September, 2017
2nd Dose– 5th – 10th October, 2017
Protect yourself and your family from cholera! Take two doses of the vaccine, drink safe water and practice proper hygiene!
Gavi
The Vaccine Alliance
World Health Organization
unicef

Prevention

- **Oral Vaccines (offer incomplete protection)**
  - Bivalent killed whole-cell vaccine (**Sanchol**) ASIA
  - contains serotypes of *V. cholerae* O1 and **O139** without the toxin B subunit
  - WC/rBS cholera vaccine (**Dukoral**) → Out of ASIA
  - contains serotypes of *V. cholerae* O1 and recombinant cholera toxin B subunit
  - Lyophilized CVD 103-HgR **(Vaxchora),** a single-dose **live oral** cholera vaccine, *approved by FDA in 2016 ~ (3 mo 80% protection)*

- Drink and use **safe water (**water that is bottled, has been boiled, or has been treated with a chlorine product)
- **Wash your hands** often
- **Cook your food (espesially seafood) well** and keep it covered
- **Clean up safely**

Centers for Disease Control and Prevention (2018). *Cholera - Vibrio cholerae Infection*

AL TASK FORCE ON CHOLERA CONTROL

Acute diarrhoeal disease in compl emergenc

CRITICAL ST

Decision-making f
preparedness and resp

THE PURPOSE

This leaflet is designed to

- Identify key issues relevan

CONTROL

First steps managing outbreak of acute iarrhoea

LET AIMS AT GUIDING YOU THROUGH
RY FIRST DAYS OF AN OUTBREAK

f emergencies regarding acute diarrhoea exist:

holera = acute watery diarrhoea
and
a dysentery = acute bloody diarrhoea

nsmitted by contaminated water, unsafe food,
ands and vomit or stools of sick people.

ses of diarrhoea may produce severe illness
tient, but will not produce outbreaks which
nt an immediate threat to the community.

CHOLERA OUTBREAK

ASSESSING THE OUTBREAK RESPONSE AND IMPROVING PREPAREDNESS

World Health Organization

GLOBAL TASK FORCE ON
CHOLERA CONTROL

ENDING CHOLERA
A GLOBAL ROADMAP TO 2030

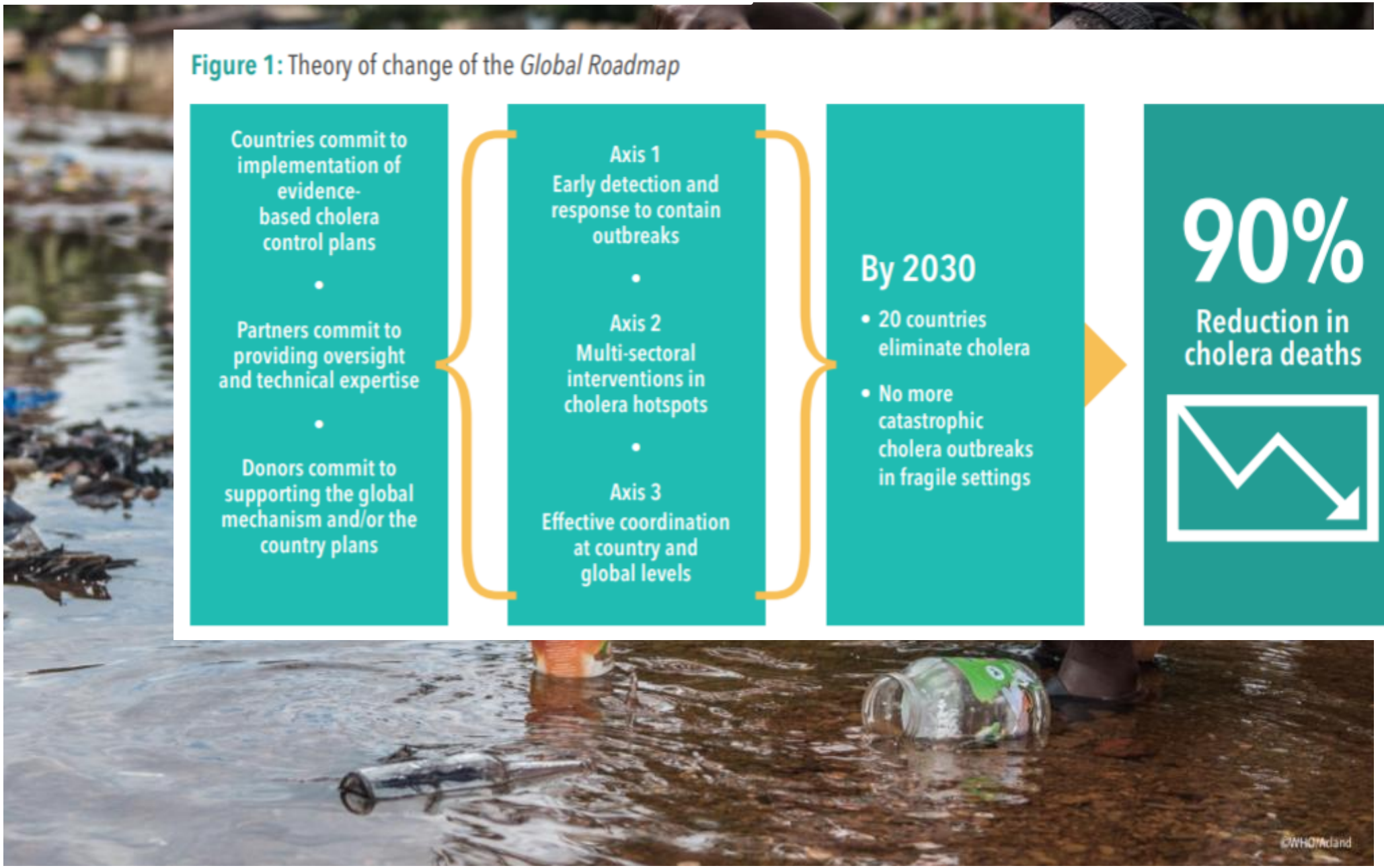


Figure 1: Theory of change of the *Global Roadmap*

Countries commit to implementation of evidence-based cholera control plans

•

Partners commit to providing oversight and technical expertise

•

Donors commit to supporting the global mechanism and/or the country plans

Axis 1
Early detection and response to contain outbreaks

•

Axis 2
Multi-sectoral interventions in cholera hotspots

•

Axis 3
Effective coordination at country and global levels

By 2030

- 20 countries eliminate cholera
- No more catastrophic cholera outbreaks in fragile settings

90%
Reduction in cholera deaths

SUMMARY

Description: Infectious disease caused by ingestion of contaminated food containing bacterium *Vibrio cholerae*

- 2 strains of *Vibrio cholerae* causes outbreak - **O1** and **O139**
- Symptoms (if any) include: vomiting, leg cramps and watery diarrhea

Treatment:

- ✓ Oral Rehydration Therapy is the first-line treatment
- ✓ Doxycycline or tetracycline for adults
- ✓ Azithromycin for children and pregnant women can be used as an adjunctive therapy

Prevention: use **safe water** (boiled or water treated with a chemical disinfectant), cook your food well and eat it hot, wash your hands often, consider vaccination **(Sanchol** and **Dukoral** or **Vaxchora** [USA]**)**

Ending Cholera—A Global Roadmap to 2030 operationalises the new global strategy for cholera control at the country level and provides a concrete path toward a world in which cholera is no longer a threat to public health

Σας ευχαριστώ για τη προσοχή σας