

# **Global Cholera Burden**

**Meeting on considerations around introduction of a  
cholera vaccine in Bangladesh**

**(3 March 2013, Dhaka, Bangladesh)**

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# Cholera – overview (1)

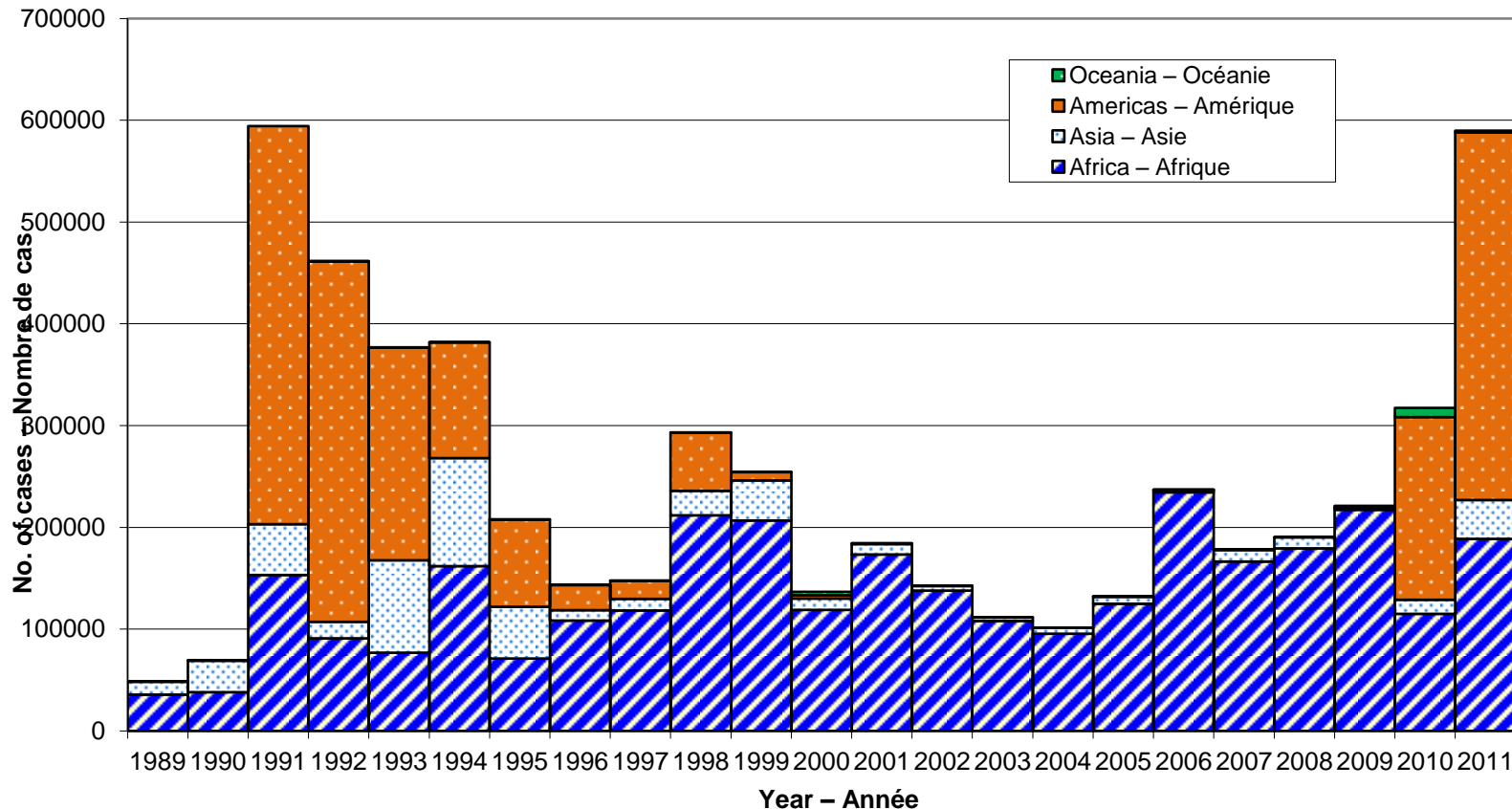
- Acute intestinal infection with *Vibrio cholerae* O1 or O139
  - majority of outbreaks by *V. cholerae* O1
- Severe watery diarrhea leading to dehydration and shock in few hours if left untreated
  - 80% of cases have mild or moderate symptoms
- Up to 80% of cases successfully treated with ORS
  - massive fluid replacement and antibiotics may be needed
- Can kill within hours if left untreated
  - most deaths in patients who do not reach a treatment facility

# Cholera – overview (2)

- Endemic as well as epidemic disease
  - explosive pattern of outbreaks enhanced by a short incubation period (2 hrs to 5 days)
- 3–5 million cholera cases estimated per year
  - vrs. 178 000–589 000 cases reported annually to WHO
  - underreporting partly due to fear of trade & travel sanctions
- **Estimated 100,000 –120,000 cholera deaths per year (only a small proportion reported to WHO)**
- Majority of countries report overall CFR <5%
  - up to 50% during outbreaks among most vulnerable groups

# Cholera cases reported to WHO by year and continent, 1985-2011

Fig. 2 Cholera cases reported to WHO by year and by continent 1989 – 2011  
 Fig. 2 Cas de choléra déclarés à l'OMS par année et par continent 1989 – 2011

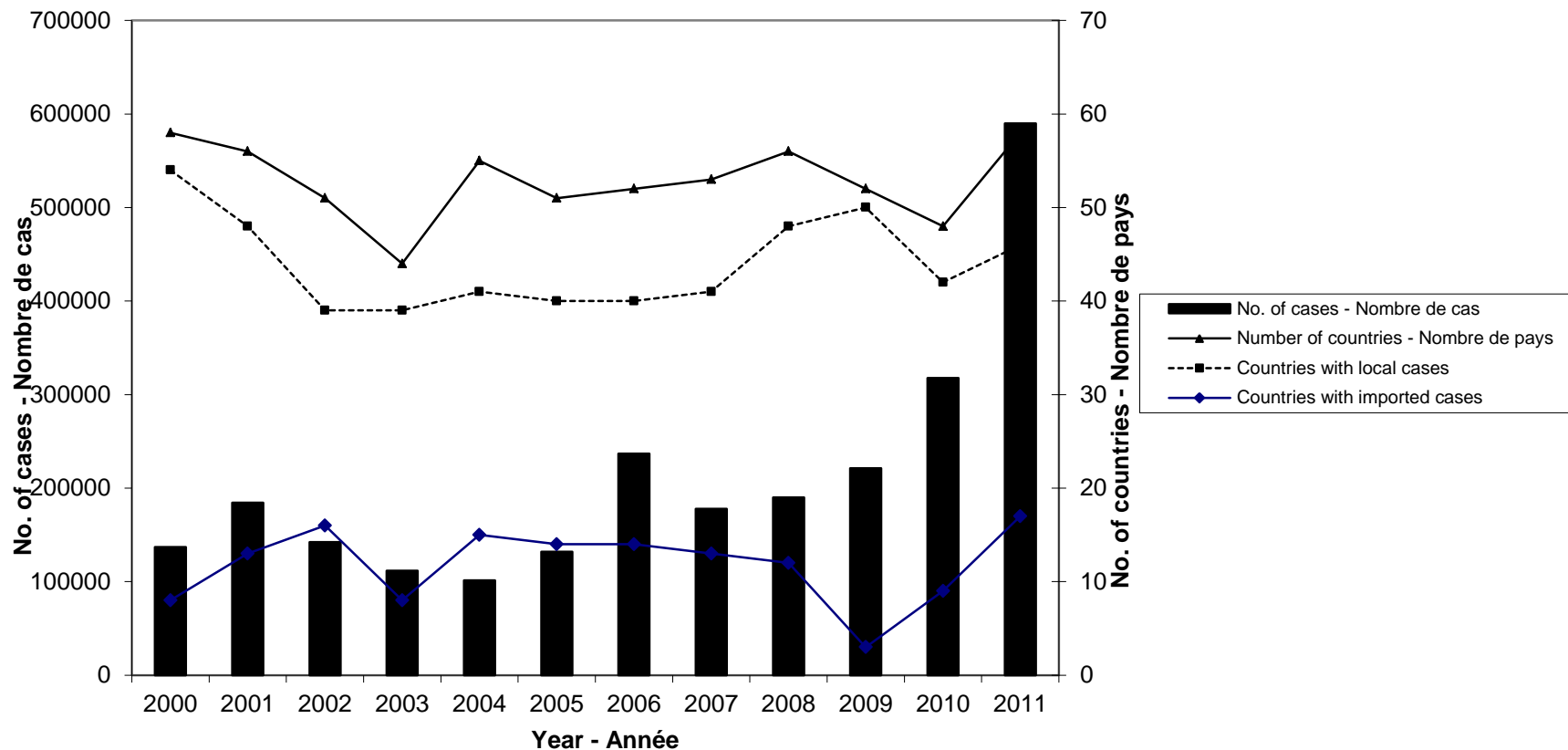


2000-2004: 676 651 cases  
 2004-2008: 838 815 cases (24% increase)

**2008-2011: 1 318 766 cases (57% increase)**  
**2011 outbreaks in Haiti, Somalia, Yemen**

# Increasing trends in reported cholera cases to WHO, 2000-2011

Fig. 1 Countries/areas reporting cholera and cases reported by year 2000–2011  
 Fig. 1 Pays/Territoires ayant déclarés des cas de cholera et nombre de cas déclarés par année 2000–2011



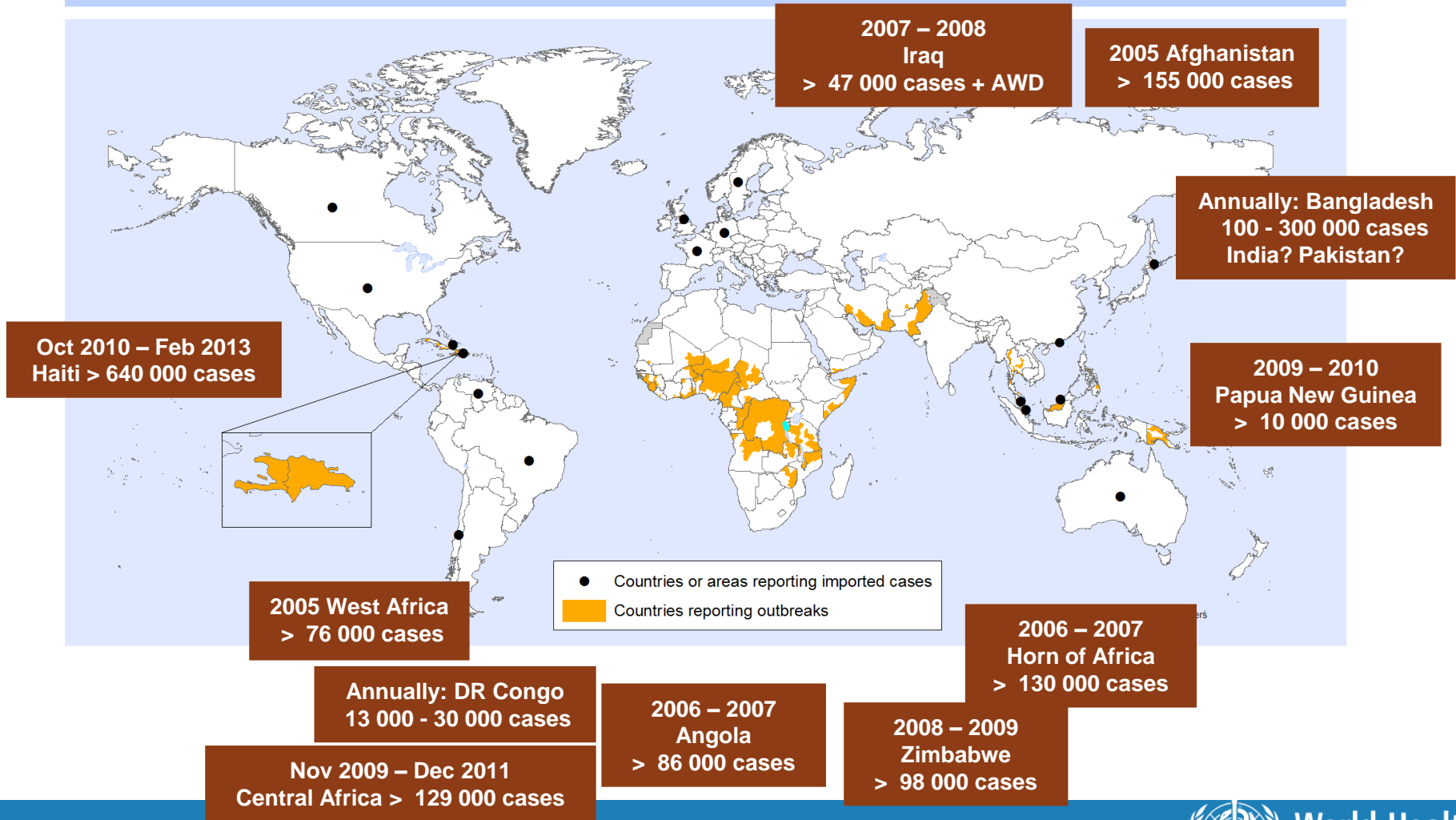
Courtesy of WHO HQ/Pandemic and Epidemic Diseases

# Growing number and frequency of major cholera outbreaks

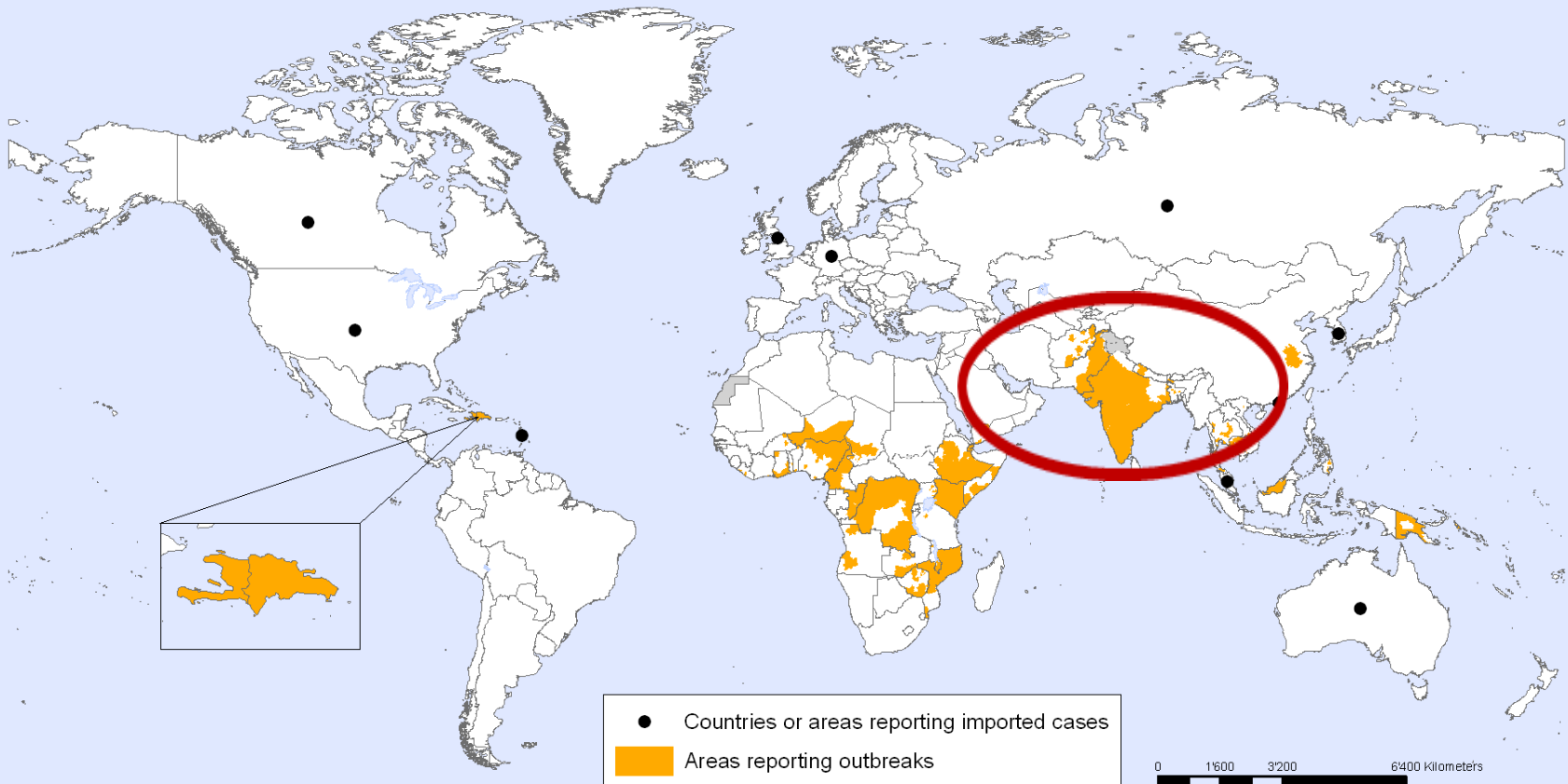
- Major impact of disasters & humanitarian emergencies
  - disruption of water and sanitation systems
  - displacement of populations (often inadequate and overcrowded camps)
- WHO conducts **epidemic surveillance** as part of Integrated Disease Surveillance and Response (IDSR)
  - Countries report number of cholera cases and deaths per week per district
  - Identification of high risk areas and vulnerable populations
  - Identification of trends over time
  - Early warning of outbreaks
  - Assessing the true burden of disease

# Major cholera outbreaks & hotspots 2005-2013

Cholera, areas reporting outbreaks, 2011-2012



## Cholera, areas reporting outbreaks, 2010–2011



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

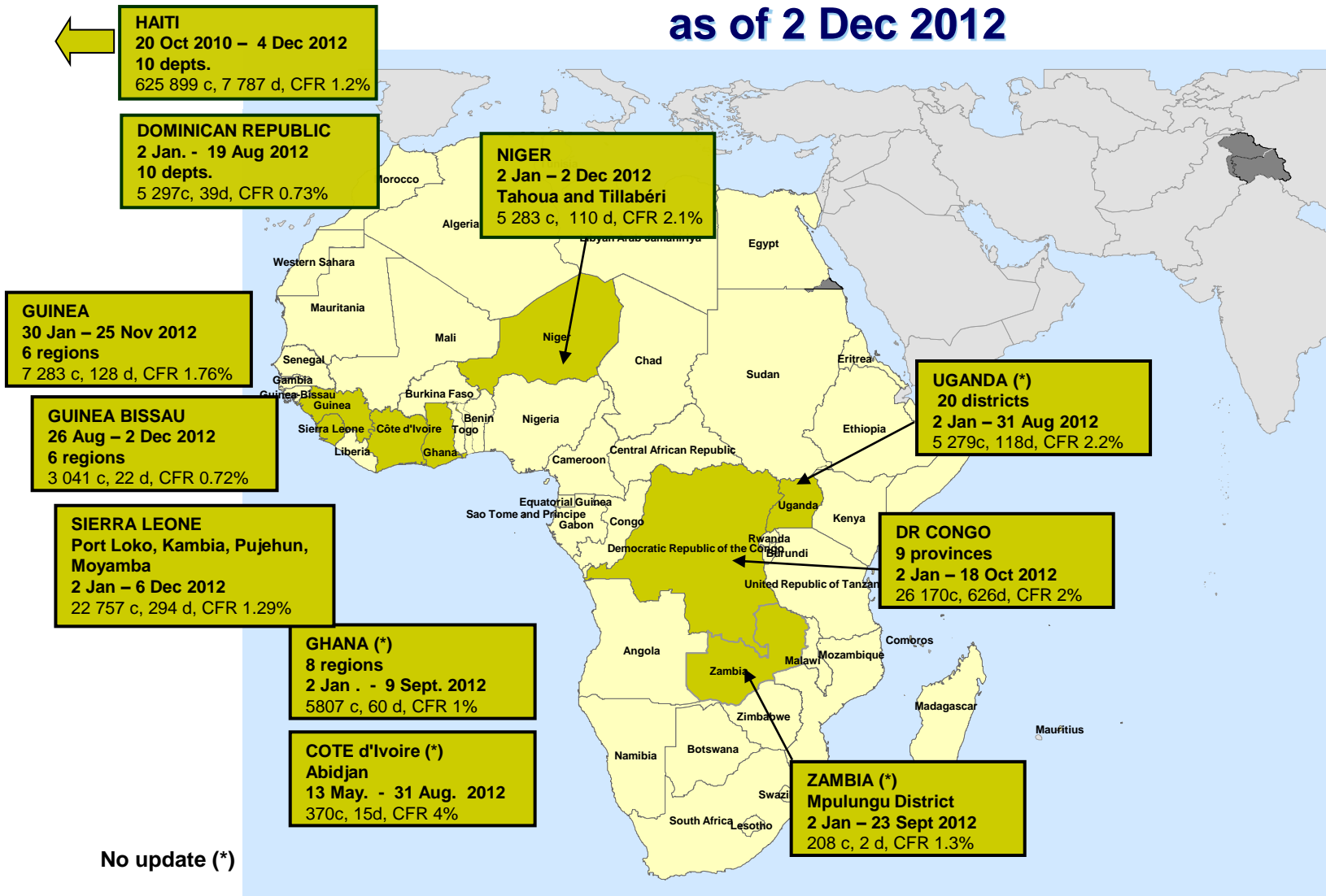
Data Source: World Health Organization  
Map Production: Public Health Information  
and Geographic Information Systems (GIS)  
World Health Organization



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# Recent and ongoing diarrhoeal disease outbreaks as of 2 Dec 2012



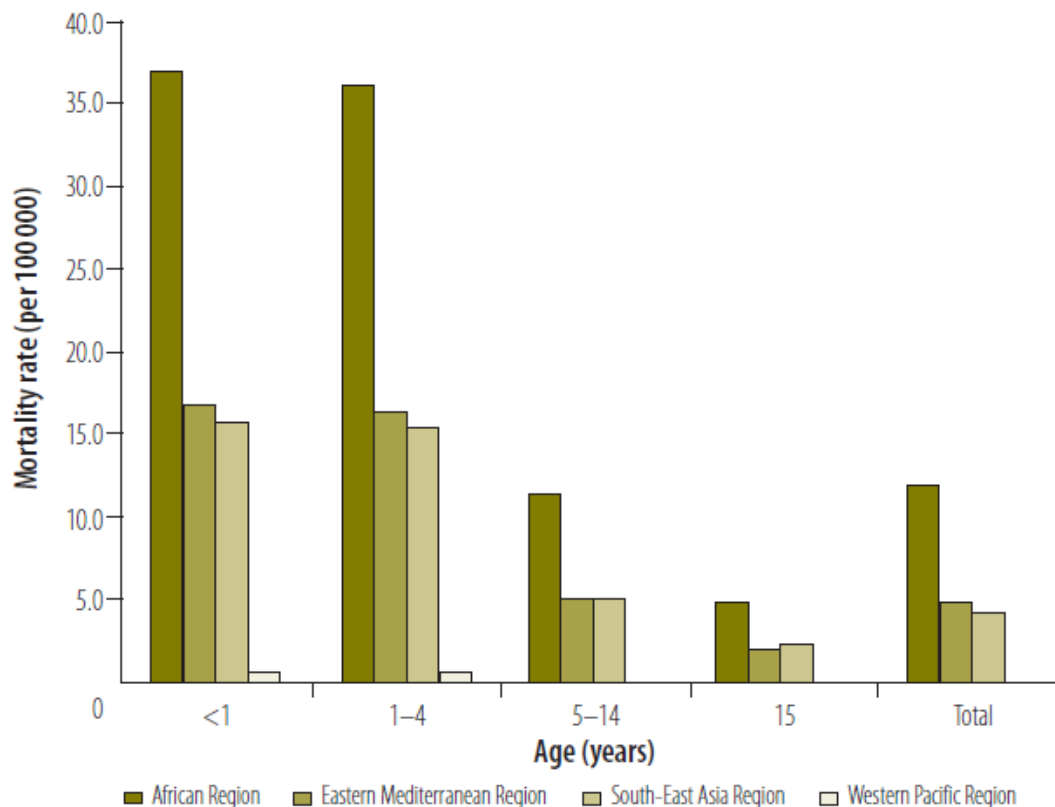
Cholera confirmed

Under verification

# Cholera burden

- Highest burden in children <5 yrs

Fig. 2. Age-specific mortality rates for at-risk populations by WHO stratum in cholera-endemic countries, 2005



Ali et al, Bull WHO 2012;90209-218A

# Cholera mainly caused by poverty, lack of sanitation and clean water

## Prevention and control strategies

- Prompt access to treatment
- Provision of safe water and proper sanitation
- Health education for improved hygiene and safe food handling practices
- **Oral cholera vaccines should be used in conjunction with other interventions**



WHO/PAHO

# WHO policy on cholera vaccination

- WHO position paper on cholera vaccines (2010) - OCVs recommended:
  - in endemic countries
  - Areas at risk of outbreaks (incl pre-emptive use in humanitarian emergencies)
- Haiti outbreak 2010 raised visibility about the lack of availability of OCVs for epidemic response
- The **World Health Assembly resolution 64.15** (2011) requested that the WHO DG “develop updated and practical evidence-based policy guidelines, including on the feasibility and assessment of the appropriate and cost-effective use of oral cholera vaccines in low-income countries and on the definition of target groups.”

# Creation of an oral cholera vaccine stockpile

- WHO convened a working group in Sept 2011 to:
  - Establish the epidemiological criteria for the use of an OCV stockpile and target population
  - Recommend the appropriate size of an OCV stockpile
  - Establish a managing partnership
  - Outline the decision making mechanism and operational issues
  - Develop a financing mechanism
- Objectives (WG recommendation): OCV stockpile should **primarily respond to outbreaks/epidemics**
  - stockpile may be also released for pre-emptive use in a humanitarian emergency if supply from standard sources is not readily available

# Working Group recommendations on OCV stockpile

- **Objectives**
- **Criteria to guide the choice of vaccine(s)** to be stockpiled:
  - 2 prequalified vaccines (Dukoral and Shancol) meet the criteria
- **Epidemiological criteria** for release of stockpile vaccine
- **Size** of the stockpile
- **Procurement**
- **Evaluation**
- **Governance:** extended mandate of International Coordinating Group (ICG) for meningococcal and YF vaccine stockpiles
  - should be targeted at epidemics in low- + medium-income countries with the highest cholera disease burden. i.e. GAVI-eligible countries.

# Working Group recommendations: Epidemiological criteria

Criteria	Indicator
Susceptibility of the population	Number of cases reported in the affected area during the past 2 – 3 years
	Attack rate of previous outbreaks in the area
	CFR of previous outbreaks in the area
Vulnerability of the population	Refugee camp, IDPs or slums are present in the area
	Area with important population movements (border, market hubs...)
	Population density in the area
	Access to WASH
Risk of extension	Time elapsed / Maturity of the outbreak since 1st case reported
	Attack rate since the beginning of the current outbreak (i.e. cumulative cases)
	Proportion of health units in the district that report cases
	Time at which 1st cases were notified during the epidemic season

# Acknowledgements

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  - Alexandra Hill