

# Use of cholera vaccines in countries: progress and challenges

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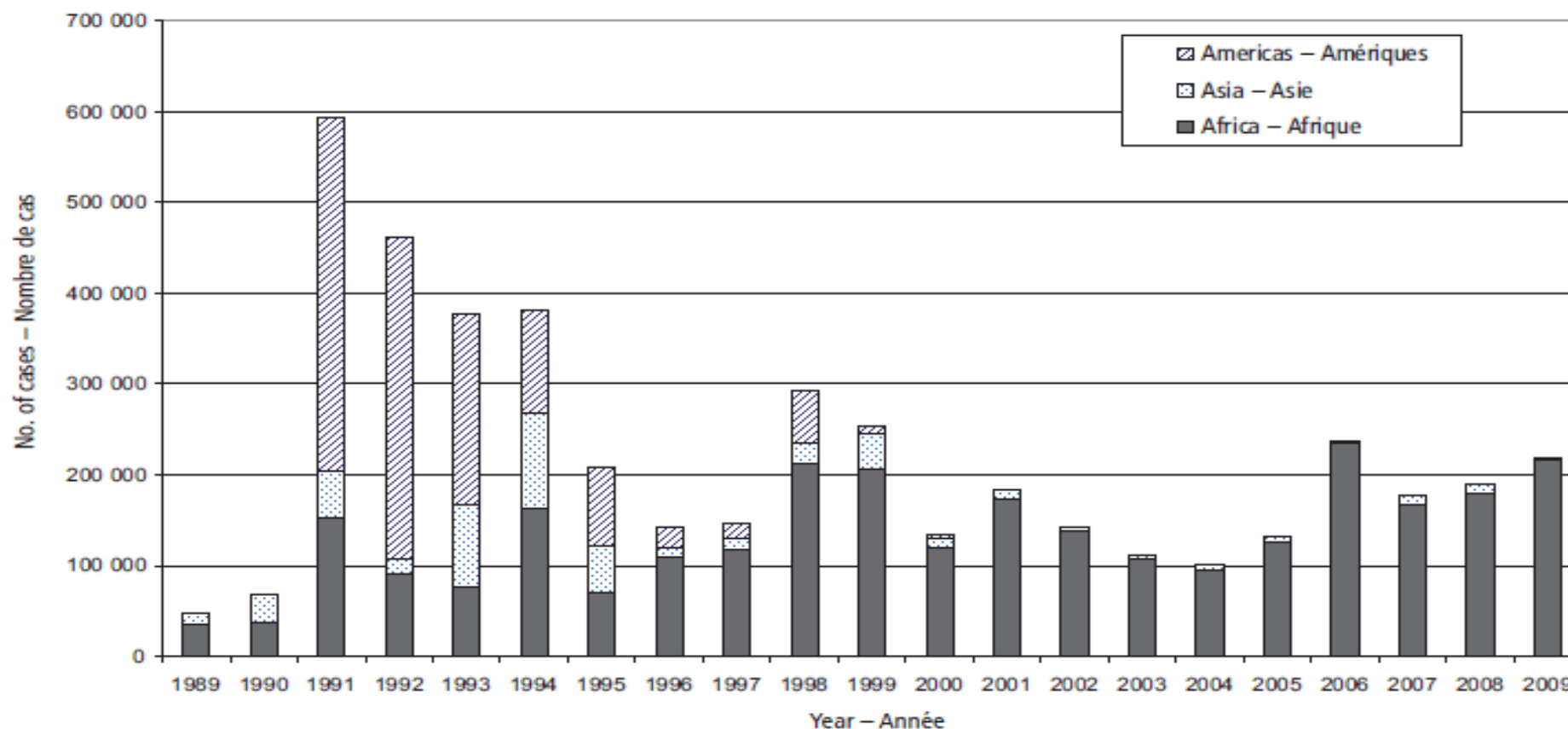
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Organization**

# Cholera cases reported to WHO, 1989-2009

Fig. 1 Number of cholera cases reported to WHO by year and continent, 1989-2009  
Fig. 1 Nombre de cas de choléra déclarés à l'OMS par année et par continent, 1989-2009



Source: WER 31, 2010; 85: 293-308

# Reported cholera cases & deaths, worldwide, 2010 (*provisional only*)

<i>Country</i>	<i>Cholera cases</i>	<i>Cholera deaths</i>	<i>Case fatality (%)</i>
Haiti	121,518	2,591	2.1
Dominican Republic	399	0	0.0
USA	13	0	0.0
Pakistan	99	?	NA
Chad	2,508	111	4.4
Cameroon	7,869	515	6.5
Niger	976	62	6.4
Papua New Guinea	870	32	3.7
Nigeria	29,115	1,191	4.1

# Cholera vaccine use...1/

- Past use of oral cholera vaccine

- In 1997, in a refugee setting in Uganda a cholera vaccination campaign was carried out where 63,220 doses of vaccine were administered to assess the feasibility of vaccination in such a setting and showing that it was feasible [1]
- In 2003/2004, in Beira, Mozambique, cholera vaccination was carried out targeting 19,550 people to evaluate vaccine protection in an endemic setting; demonstrating significant protection 78% [2]
- Following the tsunami in Aceh, Indonesia, from April to August 2005, 78,870 at risk people were targeted for a preventive cholera vaccination campaign, achieving 69% coverage

1. Bull of WHO 1999, 77 (10)  
2. NEJM 2005, 352; 8



# Cholera vaccine use...2/

- More recent use of cholera vaccine:
  - The only country where cholera vaccine is reported to be used routinely is in Viet Nam; in one province-Hue. In 2010, a total of 149,038 doses were administered in a 2-dose schedule for 2-yr old children
  - It is also only in Viet Nam, in 2008, where cholera vaccine was used in two districts in Hanoi during an outbreak of cholera
- Cholera vaccine use in research settings
  - The ongoing Kolkata Shanchol study
  - In 2009, a study in a rural and an urban setting in Zanzibar where cholera is endemic was carried out to assess feasibility and vaccine efficacy in such a setting
    - It targeted 51,151 population at risk for the vaccination; receipt of one or more doses of rBS-WC was associated with a 62% (95% CI, 7 to 85; P0.03) and 77% (95% CI, 30 to 93; P0.01) [unpublished data]
- The extent of use of cholera vaccines in the private sector is unknown

# Recent cholera outbreaks

- In recent times there has been several outbreaks of cholera, and discussions on the role of vaccines have surfaced without it actually ever taking place
  - **Zimbabwe**, outbreak started in 2008, cholera has spread to the whole country and, as of May 2009, 98,424 suspected cases, including 4 276 deaths (Case Fatality Rate of 4.3%) have been reported.
  - **Papua New Guinea**, starting in 2009, cholera outbreak has continued to spread to other parts of the country, and by June 2010, 5,039 cases including 79 deaths (case fatality rate of 1.57%) in 7 provinces were reported
  - Most recent outbreak of cholera is of **Haiti**, which will be presented separately and in greater detail
  - The outbreak of cholera in **Pakistan** is an example of the complex nature of response to an outbreak, particularly when set against the backdrop of immense humanitarian & emergency situation

# Pakistan floods, an example of the complex issues around cholera vaccine deployment in crisis situations

## ● Pakistan- the situation

- In late July 2010, following heavy monsoon rains, the Indus breached its banks causing extensive flooding
- The flood affected more than 20 million people, displacing millions and causing devastating destruction to infrastructure such as water supplies, roads, railways, health facilities etc..
- Acute watery diarrhoea was one of the commonest causes for seeking help. Most believed that a substantial proportion of that AWD was cholera
- This was confirmed subsequently
- Discussion on possible role of vaccines began, but went no where

## ● Stated reasons that cholera vaccination was considered an inappropriate response

- Large number of displaced people, constantly moving- difficult to define target
- Many important priorities such as food, clean water, acute care etc.. in the aftermath of the disaster- implication on the time and human resources needed to mount a reasonable campaign
- Disruptions in the transport infrastructure, available resources strained to the limit- difficult to organize campaigns across entire affected areas
- Limited supplies of vaccine and that too not immediately available

# The different epidemiologic settings of cholera

- There are clearly two different settings where cholera outbreaks continue to occur:
  - In an emergency humanitarian disaster situation, and
  - In an endemic setting where cholera occurs on a regular basis
  - Each of the above epidemiologic situation requires a different approach to deal with cholera outbreaks
- In an epidemic or humanitarian disaster situation, there are many other pressing needs and, therefore, benefits of vaccine deployment need to be assessed against other priorities.
  - This is an area that requires further analysis and deliberations
  - However, in Viet Nam, cholera vaccine was used in an outbreak and subsequent evaluation showed significant protection even in such situation [3]



# The control of cholera in an endemic setting

- In an endemic setting, there is clearly a place for vaccines to complement other cholera control measures.
  - Modelling projection [4], shows that a brisk response at the start of the outbreak that would have immunized 50% of the population would have prevented 40% of subsequent cases and deaths
  - Where cholera is endemic, countries need support to plan and implement regular cholera vaccination programmes, and assist to monitor the impact of vaccination
  - Cholera outbreak response preparedness plans are needed
  - Intensified effort to reach policy makers and public health persons on the front line with clear communication on the benefits of vaccines and vaccination for cholera as a complementary intervention to efforts improve water and sanitation and living condition of affected population

# Some of the challenges and the way forward..1/

- The single WHO prequalified cholera vaccine in limited quantities is a major obstacle to a rapid and effective response when the need for vaccines is sudden and huge
  - Need to invest to increase capacity, and for manufacturers to strive for WHO prequalification are priorities
- New initiatives to move the cholera agenda forward
  - WHA64 Resolution on cholera control, in May 2011,
  - Working Group on Vaccines in Emergencies,
    - SAGE Working Group to examine the role of vaccines in emergencies- cholera expected to be an important component of this group's work

# Some of the challenges and the way forward..2/

- The potential benefits of a cholera vaccine stockpile
  - Vaccine stockpiles have been successful to address other vaccine preventable diseases with epidemic potential, e.g. YF, Meninge A, polio etc.
  - For cholera control, a vaccine stockpile may serve as a 'gateway' to address both routine immunization as well as the sudden demand in 'crisis' situation:
    - If several countries initiate routine vaccination, a stockpile is not the solution to the vaccine demand, but it would be a starting point, i.e. as the 'gateway' to building a sustainable programme
    - In sudden epidemics in crisis situations, a stockpile provides immediate availability of vaccines to move fast and effectively to curtail outbreaks in its early phase

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# THANK YOU

