

Cholera – Country Presentation

Pakistan

5th Initiative against Diarrheal and Enteric
diseases in Asia (IDEA)

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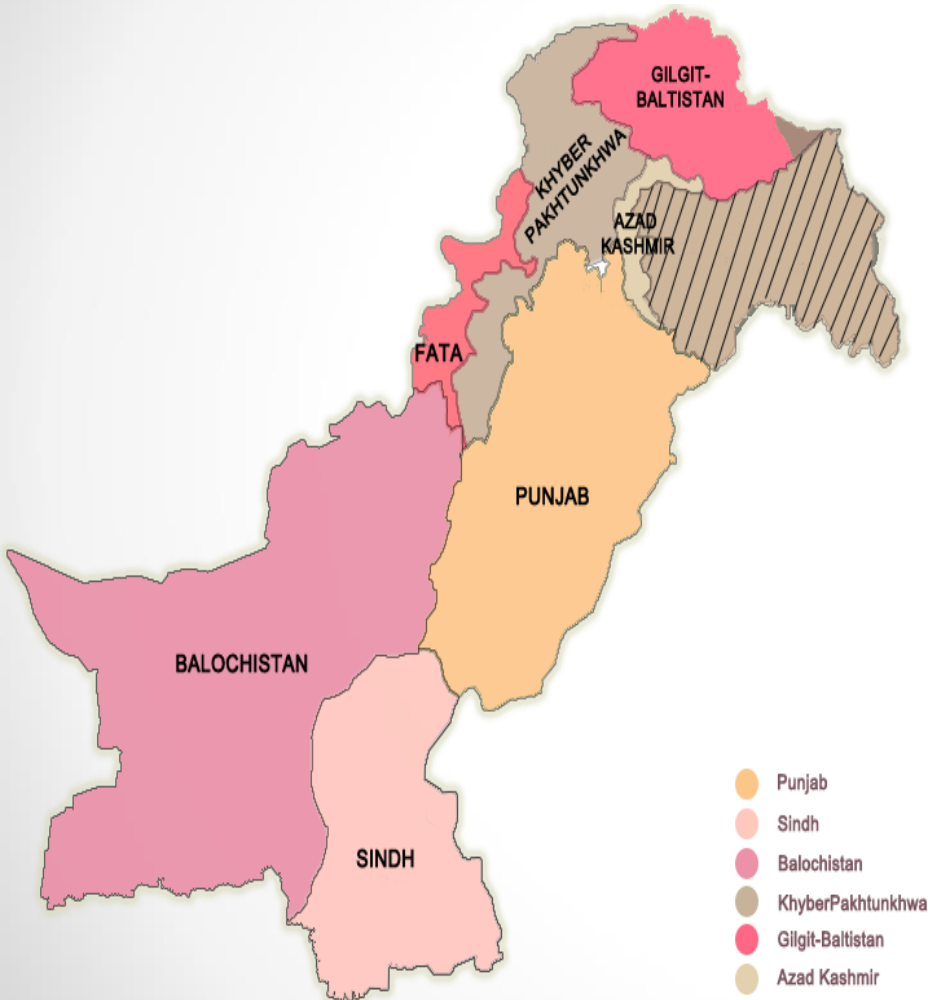
Under Reporting

- Global cases(estimated) 3-5 M
- Deaths: 100,000-120,000
- Cases reported to WHO: 178,000 - 58,900

Why

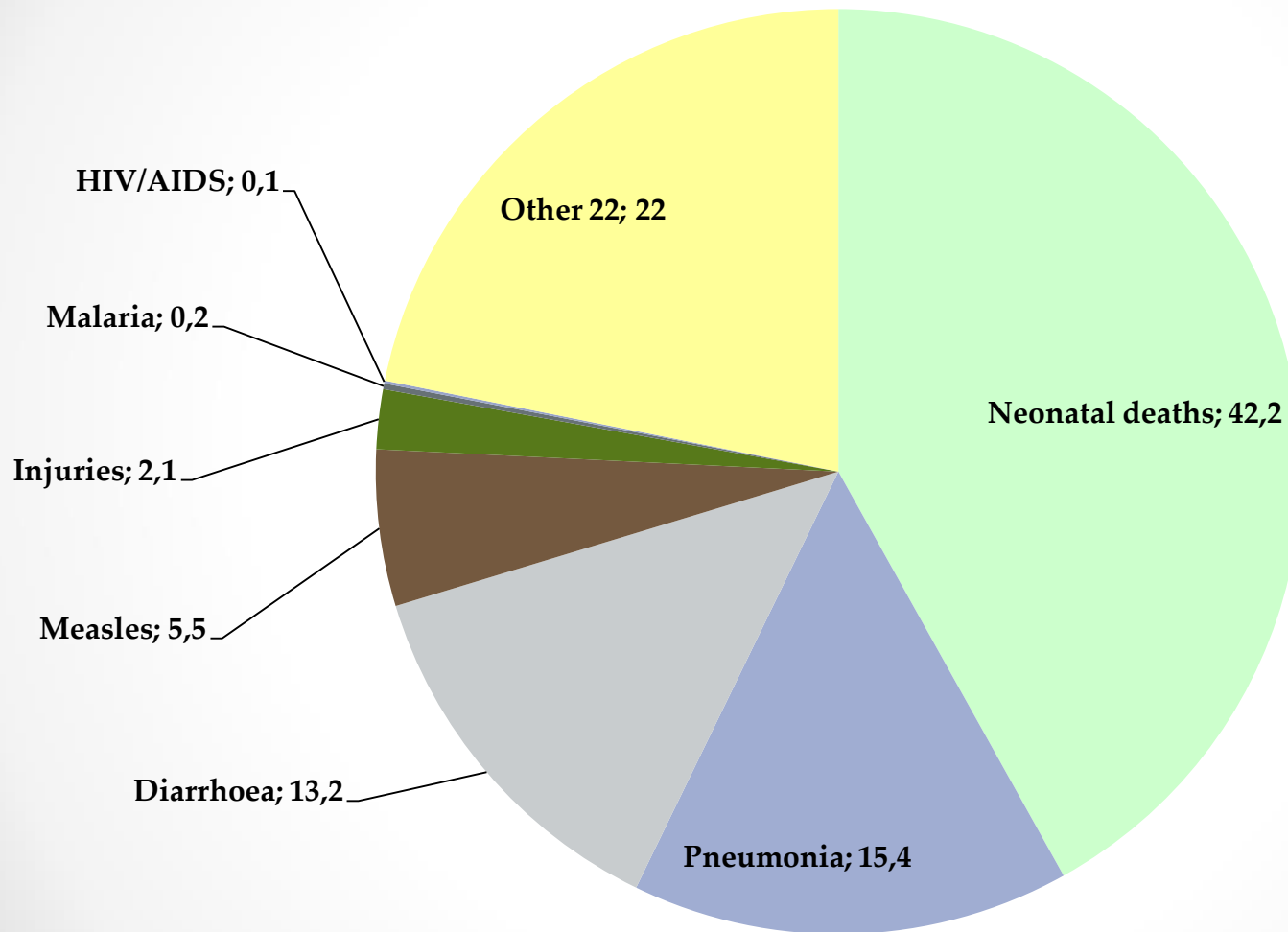
- Limitation of surveillance system
- Lack of systematic studies
- Fear of trade and travel sanctions

Pakistan Statistics



- Population: 180 million
 - < 15yrs. = 45% (81 million)
 - < 5 yrs. = 16 % (28.8 million)
 - < 2 yrs. = 10 % (18 million)
- Paucity of Epidemiological Data
- Health Provincial subject since 2012

Causes of under-five mortality (Pakistan)



Source: World Health Statistics, WHO, 2009

PAKISTAN

Birth cohort	4.5 million
IMR	54/ 1000
U5MR	77/ 1000

Demographic survey of Pakistan

- 4-6 episodes of diarrhea per child per year
- $< 5 \text{ year } 28.8 \text{ million} \times 4 = 115.2 \text{ million episodes of diarrhea/ year}$
- Under five deaths per year from Diarrhea:
59,400 of 450,000 (13.2%)

PSLM 2014-15

- 16M do not have access to clean drinking water
- 27% consume tap water
- 86% have access to improved water source
- 73% have access to sanitation facilities
- 13 % no toilet facility

Diarrhea cases across last 30 days

- Overall 9%
- Balochistan 11%
- Sindh 6%

SEASONAL VARIATION OF *VIBRIO CHOLERAE* AND *VIBRIO MIMICUS* IN FRESHWATER ENVIRONMENT

A.H. Shar and Y.F. Kazi and N.A Kanhar

Table 3. Isolation Rate of *Vibrio cholerae* (2007).

City (Sampling site)	Isolation Rate (Months)				Average/site/ year
	January- March	April-June	July- September	October- December	
Khairpur	17%	33.33%	50%	0%	25.00%
Sukkur	0%	33.33%	67%	33.33%	33.41%
Rohri	33.33%	67%	83.33%	50%	58.41%
Average/quarter	17%	44.55%	67%	28%	39.00%



Limitations and Sources

- No active case based surveillance in place
- Published articles
Unpublished data from health facilities-Patchy
- Passive case based surveillance from large hospitals of major cities
- WHO EMRO Documents
- Reports of NGOs working in disaster situations.

Epidemiology, Determinants and Dynamics of Cholera in Pakistan: Gaps and Prospects for Future...

Article in Journal of the College of Physicians and Surgeons--Pakistan: JCPSP · November 2014

Source: PubMed

Table I: Epidemiology and determinants of cholera infection in Pakistan from published research articles from 1995 - 2010.

Year of publication	No. of articles published	Agent	Host	Environment
1995-2000	2	1989-1992: Major serotype responsible was Ogawa 01 1993-94: Reappearance of non-01 (O139) 1990-98: Ogawa biotype El Tor predominant 1999: Emergence of classical Ogawa 01 serotype	All ages and both gender are at risk of getting disease. Non-01 involved mostly adults, youngest child infected with cholera was 7 days old. Mean age for child affected with El Tor was 31+/-34 months.	Environmental factors of cholera infection were not explored in this period in Pakistan.
2001-2005	8	2000-2001: Predominant serotype non-01 (O139). However, classical Ogawa also exist in this period. 2002-2004: El Tor biotype of Ogawa responsible for outbreaks and epidemics of cholera in this period.	Mean age for non 01 infection was 40 years while for 01 it was 23 years. Both gender at risk. Poverty and low education were also important host factor determinants. Severity of infection and fever along with symptoms of diarrhea common with non 01.	No primary research done in Pakistan to explore environmental aspect of cholera infection.
2006-2010	7	2004-2005: upsurge in the isolation of <i>Vibrio cholerae</i> Inaba. 2008: predominant serotype 01 biotype El Tor.	Involvement of both children and adults with younger age affected with Ogawa 01 and older age in non-01 infection.	Environmental factors such as water contamination with <i>V. cholerae</i> , use of toilet other than flush system associated with increased infection.

Local Studies

Author	Year	Total No	+ ve	Isolated
Siddiqui FJ (LHR)	1990-96		888	Serogroup O1, 64% Serogroup O139, 36%
Nizami et al (KHI)	1990-95	4346	348	<i>V. cholerae</i> O1 Ogawa biotype El Tor <i>V. cholerae</i> O139(14%)
Hussain S et al (ISB)	1994-99		212	<i>V. cholerae</i> El Tor Serotype Ogawa
Memon IA (KHI)	2002	846	161	
Jabeen et al (KHI)	2000-01		545 144	Vibrio cholerae O1 <i>V. cholerae</i> O139
Shams R (ISB)	2005			<i>V. Cholera</i> El Tor biotype Ogawa (100%)

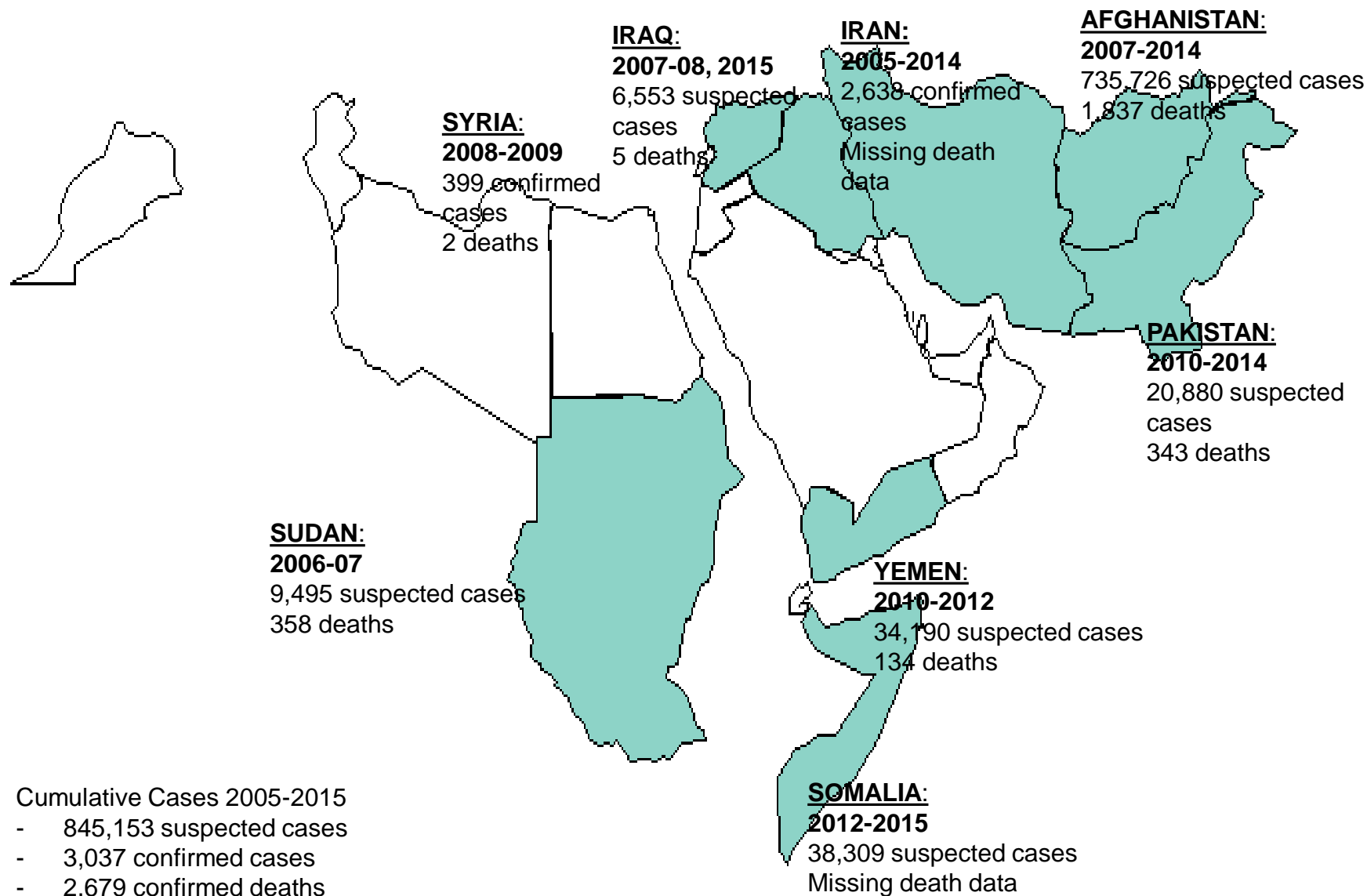
Cholera burden and risk in the Eastern Mediterranean region: Mapping exercise

Heather McKay, Justin Lessler, Sean Moore, Andrew Azman,
Department of Epidemiology
Johns Hopkins Bloomberg School of Public Health

Cumulative number of cholera cases and deaths reported from the Eastern Mediterranean Region by Country, 2011 - 2015

Country	2011		2012		2013		2014		2015	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Afghanistan	3733	44	12	0	3957	14	45481	4.0	0	0
Djibouti	0	0	0	0	0	0	0	0.0	0	0
Iran	1187	12	53	0	256	7	9	0.0	62	0
Iraq	0	0	4693	4	1	0	0	0.0	2724	2
Pakistan	11489	219	3395	31	1069	23	1218	6.0	0	0
Somalia	77636	1130	22576	200	6864	140	7577	0	5198	13
Sudan	0	0	0	0	0	0	0	0.0	0	0
Yemen	31789	134	0	0	0	0	0	0.0	0	0
Total	125834	1539	30729	235	12,147	184	54285	10.0	7984	15

Eastern Mediterranean Region (EMR)



Country: The Islamic Republic of Pakistan

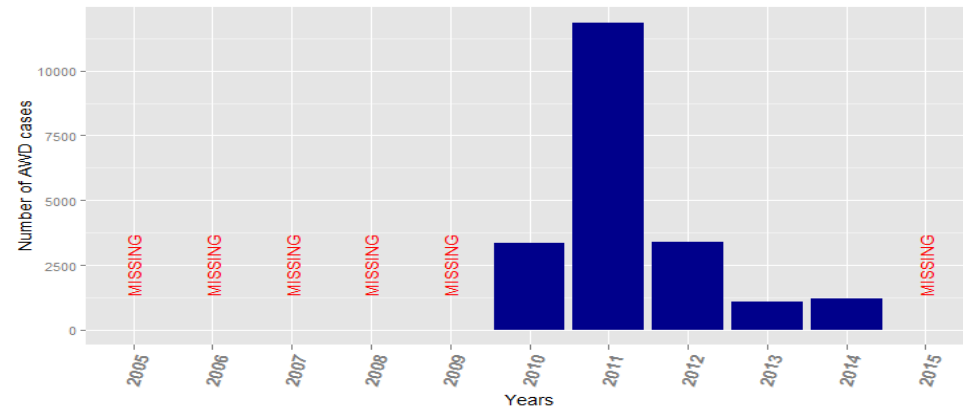
Population (2010): 170,043,918

Data received (years): 2010-2014

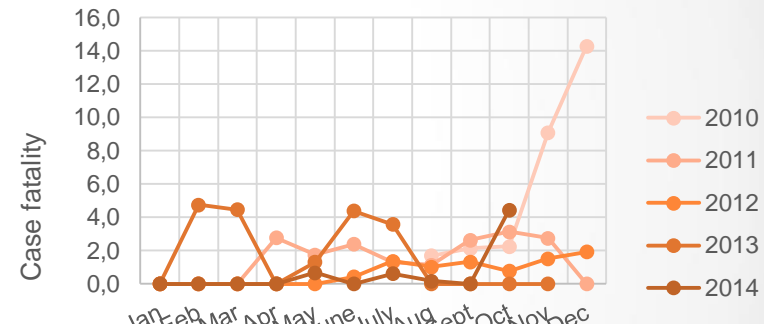
Cases: 20,880 (suspected)

Deaths: 343

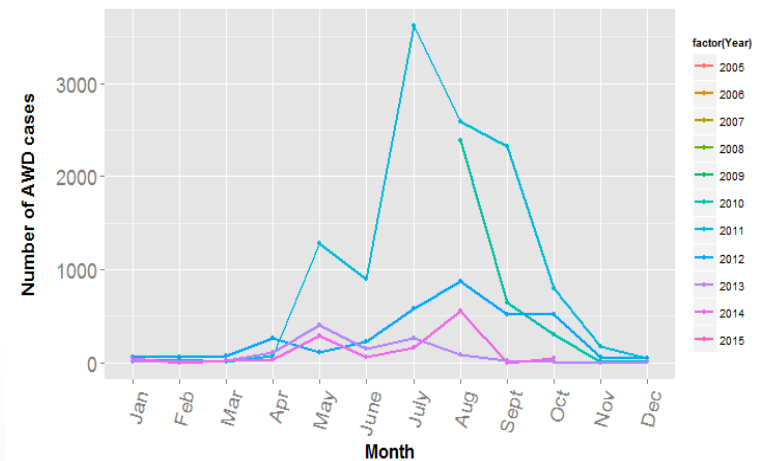
Annual Number of Cases of Acute Watery Diarrhea Pakistan, 2005-2014



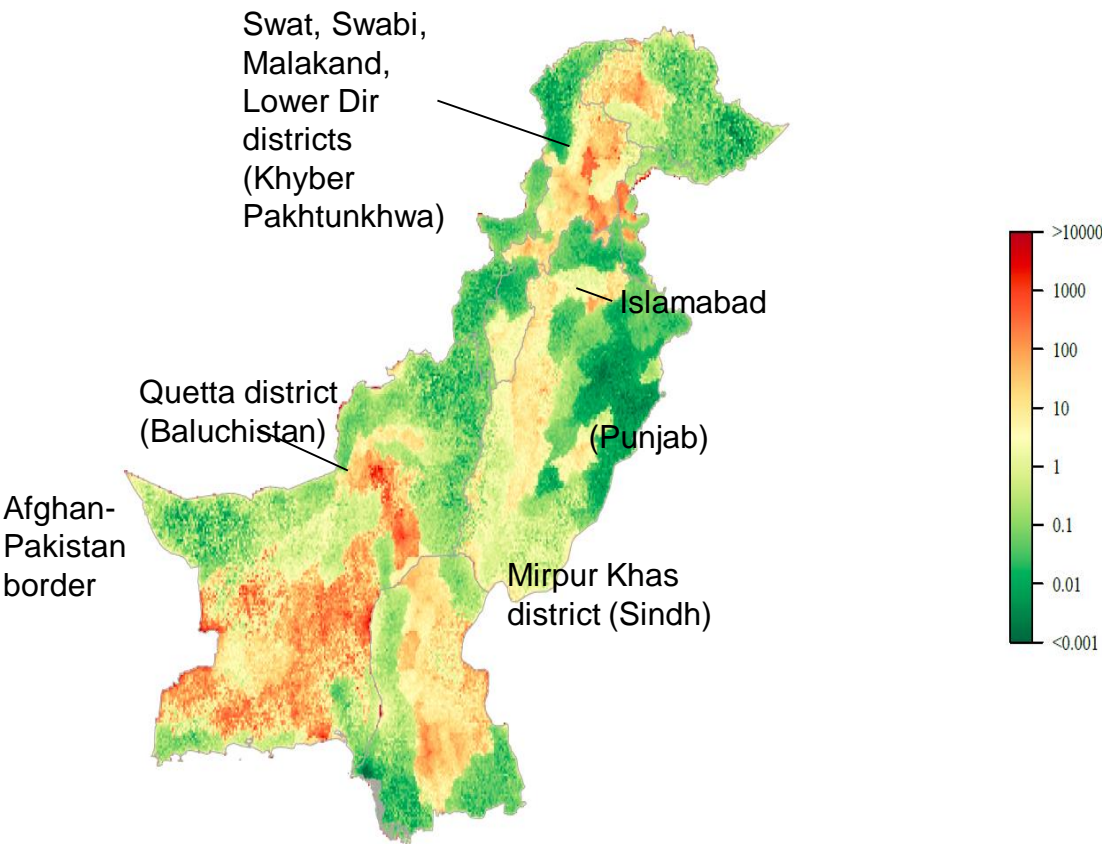
Case fatality, Pakistan, 2010-2014



Cases of Acute Watery Diarrhea (AWD) Pakistan, 2005-2015



Cumulative 5-year Incidence (per 100,000) 2010-2014



Suspected cholera cases/deaths by province: Pakistan, 2010-2014

Administrative Division	Cases/Deaths ¹	% of total cases	Case fatality
Sindh	6,537/174	31.3	2.7
Khyber Pakhtunkhwa	6,017/65	28.8	1.1
Balochistan	4,832/46	23.1	1.0
Azad Kashmir	1,776/19	8.5	1.1
Punjab	1,330/33	6.4	2.5
FATA	237/2	1.1	0.8
Gilgit-Baltistan	93/1	0.4	1.1
Islamabad	58/1	0.3	1.7

¹Total cases = 20,880 and total deaths = 341 between 2010 and 2014, DEWS.

WHO EMRO

Incidence Rate for countries like Pakistan (calculated 2011)

- Infants 7.16/1000
- 1-4 year 7.01/1000
- 5-14 year 2.19/1000
- >14 year 0.93/1000

Annual incidence 1.64/1000

Case fatality rate 3.63-41.56

First cases of cholera are reported in Pakistan, say aid agencies

Nayanah Siva LONDON

The first suspected cases of cholera have been reported in flood stricken Pakistan, and cases of acute diarrhoea are rife, aid agencies report.

"We have seen a lot of suspected cholera cases in more than one district," said Ahmed Mukhtar, medical coordinator for Médecins Sans Frontières in Pakistan. "It seems

there is some kind of alarming trend."

Dr Mukhtar said that several cases were suspected throughout the country but that he was still awaiting laboratory confirmation from samples

that had been sent for testing.

Most of the suspected cases were reported in the Swat valley in the northwestern province of Khyber Pakhtunkhwa. "In the Swat [district] we saw 60 patients with acute diarrhoea who fulfilled the clinical case description of cholera," Dr Mukhtar said. "We had another 11 cases in a neighbouring area, the Malakand district, and another four suspected cases in another district, Lower Dir.

"We are following all suspected cases closely and have started to treat them as if they are cholera cases."

Cite this as: *BMJ* 2010;341:c4525

Medical supplies and water are thrown from a rescue helicopter



Asia			
Qadri et al ²⁷	Bangladesh	78 laboratory-confirmed cases; >3740 estimated cases in total	Flooding
International Centre for Diarrhoeal Disease Research B ²⁸	Bangladesh	Thousands of isolations reported to the International Centre for Diarrhoeal Disease Research, Bangladesh (eg, approximately 5500 in Sept, 2004)	Continuing analysis
Dowse ²⁹	Indonesia	One case imported by an Australian tourist	..
Chung ³⁰	Indonesia	One case imported by a Korean tourist	..
Chann ³¹	Burma	"Scores of cases, several deaths"	Flooding, and damage to sewerage systems
Pacific Disaster Management Information Network ³²	Pakistan	At least 25 deaths	Afghan refugee camp
Anon ³³	Pakistan	At least 12 deaths	Contaminated water, drought
Anon ³⁴	Pakistan	Epidemic resulting in at least four deaths	..
UK Health Protection Agency ³⁵	Pakistan	One case imported by a UK tourist	..
International Society for Infectious Diseases ³⁶	Taiwan	One case imported from the Philippines	Contaminated seafood
Centers for Disease Control and Prevention ³⁷	Thailand	One case imported by a tourist from the USA	Contaminated seafood
Robert Koch-Institut ³⁸	Thailand	One case imported by a German tourist	..
Anon ³⁹	Thailand	One case imported by an Australian tourist	..
Infectious Agents Surveillance Report ⁴⁰	Thailand	Eight cases imported by Japanese tourists	..
Europe			
Strauss et al ⁴¹	Austria	Two cases imported from India	..
Oceania			
GIDEON ⁴⁶	New Zealand	One case, travel history unknown	..

..=not reported.

Table 2: Countries for which reports of cholera occurring during 2004 have been identified but who did not report cholera to WHO, by report

The true burden and risk of cholera: implications for prevention and control

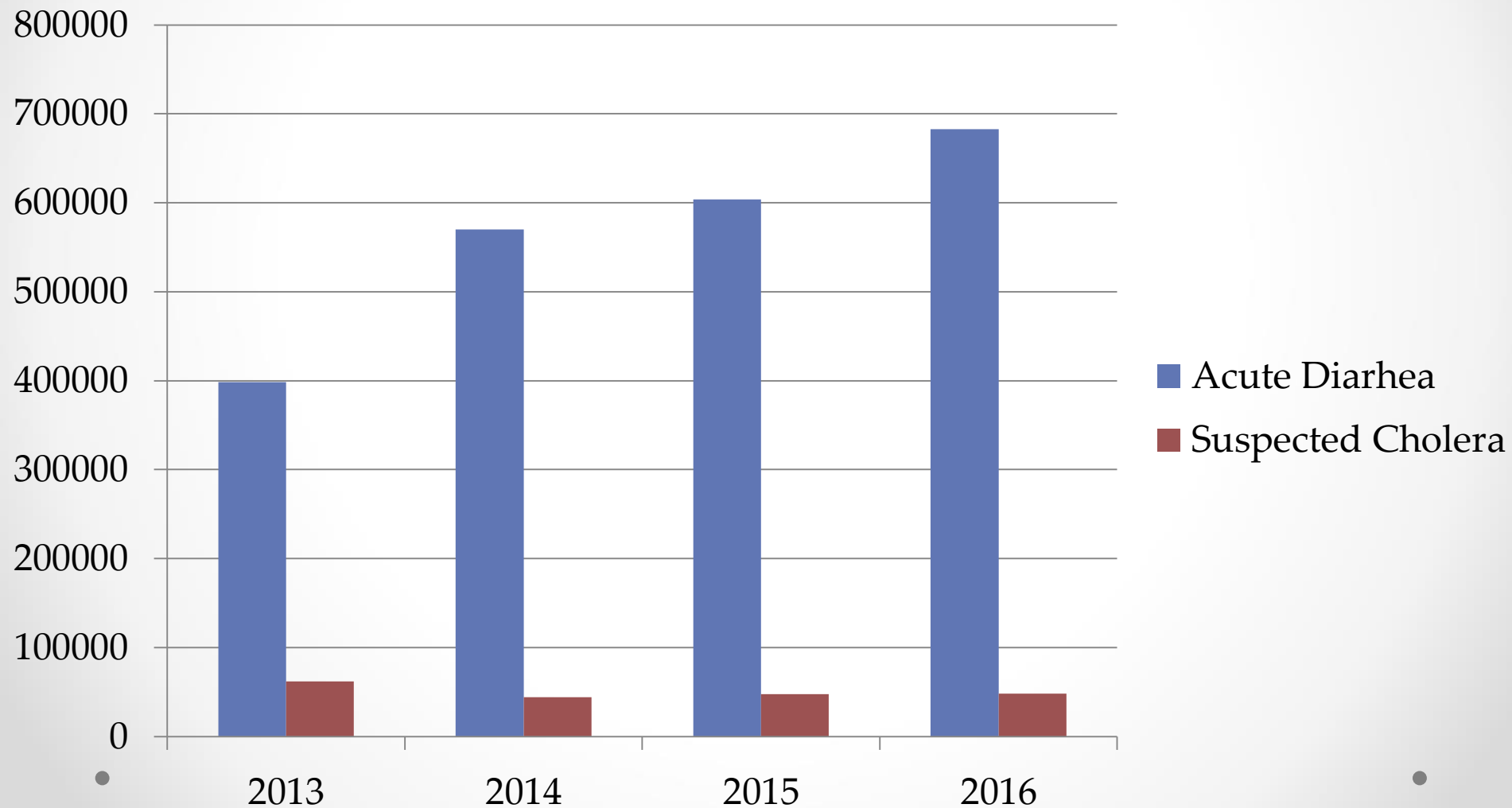
Jane N Zuckerman, Lars Rombo, Alain Fisch

<http://infection.thelancet.com> Vol 7 August 2007

Year Wise Reported Cases

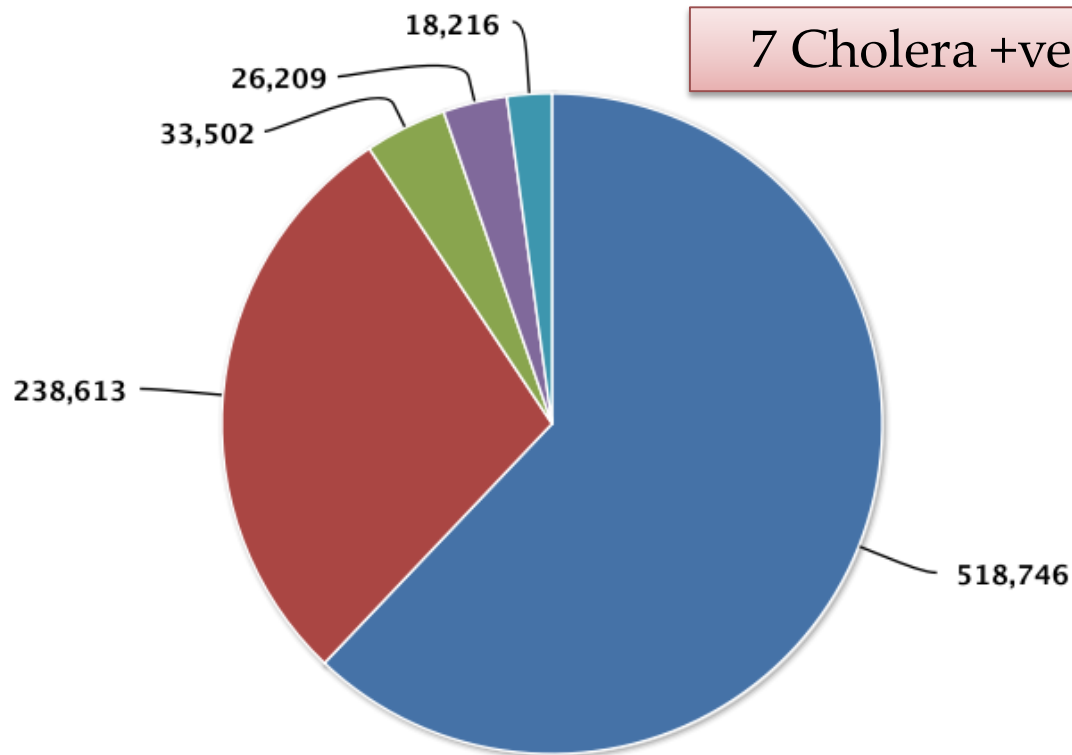
Acute Diarrhea VS Susp Cholera

Punjab Information Technology year wise data



2016 Lahore Data

Top Five Diseases Pie Chart



■ ACUTE (UPPER) RESPIRATORY INFECTIONS ■ DIARRHOEA (ACUTE)
■ PYREXIA OF UNKNOWN ORIGIN (PUO) ■ ACUTE WATERY DIARRHEA/SUSPECTED CHOLERA
■ SCABIES

Risk factors for cholera in the EMR

- **Complex emergencies** (at-least 76 million people in 9 out of 22 countries in the region are in complex emergencies)
- **Increased population movement** in the region (IDPs, Refugees and religious mass gathering)
- **Hard to reach areas** in some of the geographically remote places;
- **Poor infrastructure** and limited access to health care
- **Poor sanitation and hygiene practice** in some countries

Regional Cholera Strategic Priorities 1

- **Coordinating** the cholera preparedness and response interventions at regional and country levels
- **Improve preparedness and response** capacity for potential cholera epidemic
- **Improve surveillance system** for early detection, verification and response
- **Improve Laboratory capacity** to confirm cholera epidemics
- **Build the human capacities** to support the cholera response
- **Monitor water, sanitation and food safety** activities

Regional Cholera Strategic Priorities 2

- **Improve environmental health** management to prevent or contain cholera epidemics
- **Regular risk assessments** to identify high-risk or hotspot areas
- **Improve case management and infection control practice** to reduce the morbidity and case fatality rate to less than 1%
- ***Invest risk communication*** and social mobilization
- **Oral Cholera vaccination** campaigns (pre-emptive and reactive)
- **Emergency stockpiles** of drugs and other supplies

Main Challenges

- Recurrent humanitarian emergencies
- Weak surveillance system and underreporting
- Limited laboratory capacity in some countries
- Countries are not well prepared to respond major cholera epidemics
- Under resources of the public health control activities
- Poor water and sanitation condition in conflict affected countries
- Lack of cross border collaboration between the neighboring countries
- Recurrent cholera outbreak in some countries with complex emergencies

THANK YOU

Pakistan Statistics

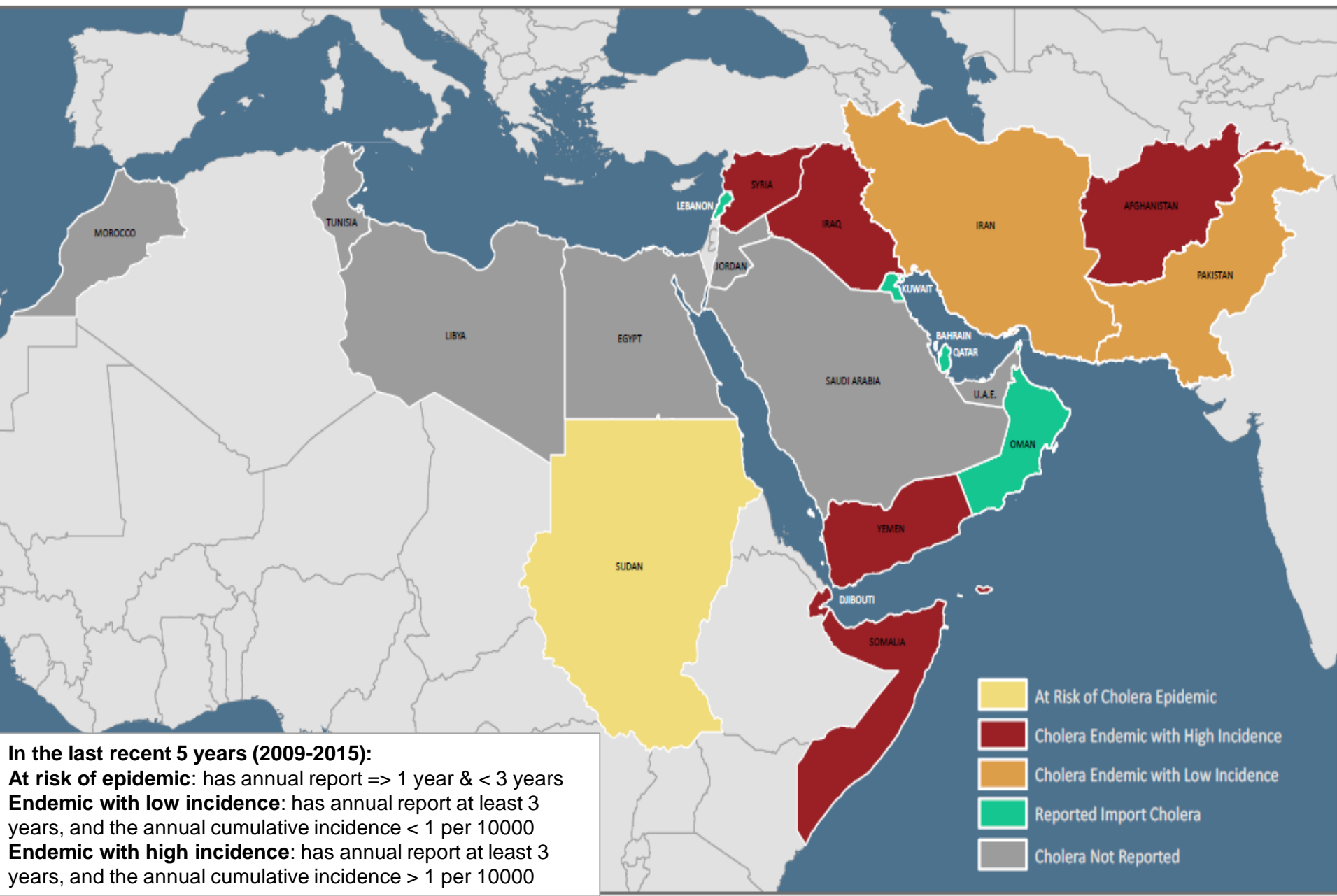


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 - < 5 yrs. = 16 % (28.8 million)
 - < 2 yrs. = 10 % (18 million)
- Paucity of Epidemiological Data
- No Systemic analysis or evaluation even in affluent population.



Eastern Mediterranean Region: Cholera Status by Country

(from 2009 - 2015)



Current situation of cholera in the WHO Eastern Mediterranean Region

Dr Abdinasir Abubakar

Pandemic and Epidemic Disease

World Health Organization

Regional Office for Eastern Mediterranean

November 17-19, 2015; Amman, Jordan

