

Global Rotavirus Information and Surveillance Bulletin
Reporting Period: January through December 2008
Volume 1: December 2009



Comments on this Bulletin are Welcome.
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This is the first twice-yearly WHO Global Rotavirus Surveillance Bulletin to describe sentinel surveillance for rotavirus infection among hospitalized children under five years of age and to summarize collated surveillance data for 2008. This Bulletin is the culmination of years of effort by many partners to provide such routine and standardized information.

Rotavirus Disease Burden on Children and Rotavirus Vaccination

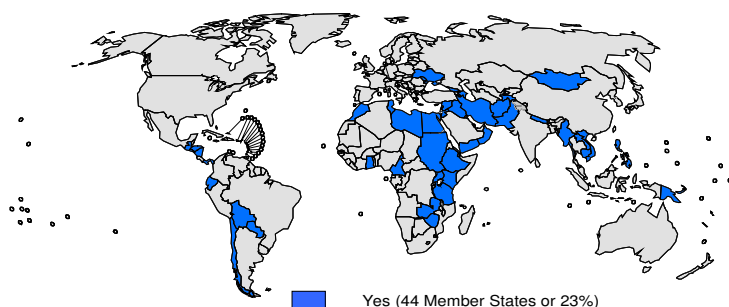
Diarrhoeal diseases account for 17% of the 10.4 million deaths among children <5 years of age globally.¹ Among children aged <5 years, rotavirus infection is the leading cause of severe acute diarrhoeal disease, accounting for an estimated 527,000 deaths annually, and is a leading cause of hospitalizations for diarrhoea² reflecting a significant cost in health resources.³ Rotavirus was first isolated in 1973, and vaccine development has been a priority to prevent the large burden of disease. With the licensure of two new rotavirus vaccines in 2006, the global health community now has the tools to prevent a major contributor to childhood death and severe illness.

The WHO Rotavirus Surveillance Network

The main purpose of the WHO rotavirus surveillance system is to provide data to decision makers regarding the introduction of rotavirus vaccine and to monitor the impact of vaccination. The system focuses on hospitalized children and provides information on the proportion of hospitalized diarrhoea caused by rotavirus. Prior to 2008, rotavirus surveillance networks in the WHO regions of the Americas, Europe, Africa and Eastern Mediterranean were coordinated by the respective WHO Regional Offices with funding through the rotaADIP and technical support from the Centers for Disease Control and Prevention, Atlanta (CDC). Surveillance in Asia was conducted by the Asian Rotavirus Surveillance Network (ARSN) supported by CDC. In 2008, the coordination of the ARSN was transitioned to the WHO regional offices in the South-East Asia and Western Pacific Regions. Thus all the regional surveillance networks are now coordinated by WHO Regional Offices, using standard definitions, core dataset and laboratory methods, with financial support provided to Global Alliance for Vaccines and Immunisation (GAVI) eligible countries. In the coming years, global surveillance will continue to be strengthened as more countries join the WHO network. During 2008, 44 WHO Member States were part of the network (Figure 1.)

Rotavirus Surveillance

Figure 1. Countries Participating in the WHO Network, 2008



Data collected from WHO Regions and partners.
Slide date: 13 November 2009

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 lines on maps represent approximate borders to which there may not yet be full agreement.
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¹ The global burden of disease: 2004 update. http://www.who.int/healthinfo/global_burden_disease/GBD_report_2004update_part2.pdf

² Global networks for surveillance of rotavirus gastroenteritis, 2001-2008. Weekly epidemiologic record. WHO. No. 47, 2008, 83, 421-425.

³ WHO. Generic protocols. (i) hospital-based surveillance to estimate the burden of rotavirus gastroenteritis in children and (ii) a community-based survey on utilization of health care services for gastroenteritis in children, 2002, WHO/V&B/02.15, <http://www.who.int/vaccines-documents/DocsPDF02/www698.pdf>

The WHO Rotavirus Surveillance Network Continued

Each participating country has at least one “core sentinel” reporting site in a major hospital. Children <5 years of age admitted for treatment of acute gastroenteritis/diarrhoea are enrolled and have stool samples collected that are tested for rotaviruses, usually at a laboratory in the country. It is planned to establish at least one “enhanced population based site” per WHO region that will determine the population incidence of severe rotavirus diarrhoea.

Rotavirus Detection (refer to page 3 for detailed data)

During 2008, over 41,000 children <5 years of age were enrolled in the WHO rotavirus surveillance network. Among these children, the overall annual rotavirus detection in the six WHO regions ranged from 27% in the region of the Americas to 52% in the Western Pacific region. Some regions saw a seasonal variation in rotavirus disease, with a peak in the first quarter of 2008 in the American (AMR) and European regions; seasonal variability was less marked in the African and Eastern Mediterranean regions (Figure 2). Globally, five countries, all within AMR, participating in the surveillance network had introduced rotavirus vaccine prior to or during 2008 (Table 1). Within AMR, countries that had introduced vaccine for more than 2 years before data collection (i.e. in 2006) appeared to have the lowest rotavirus detection rates.

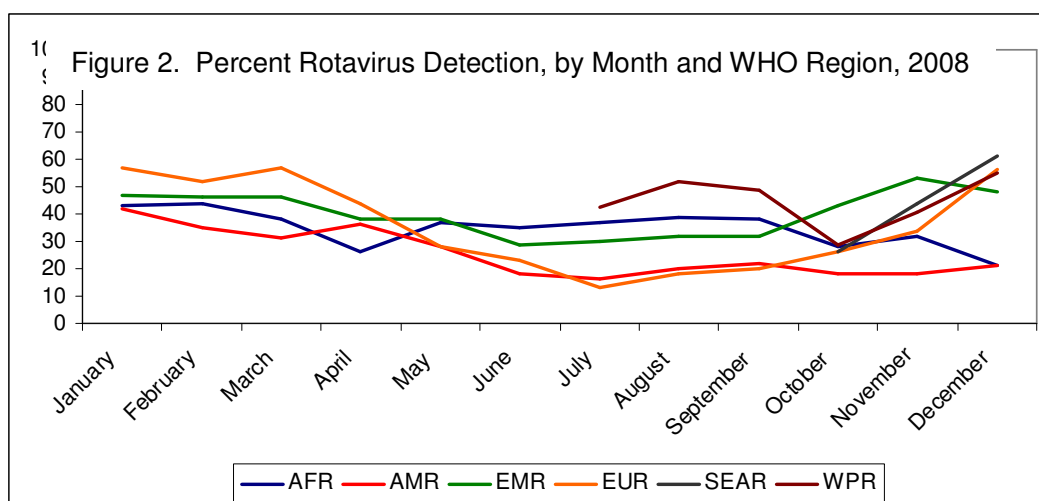


Table 1. Rotavirus Vaccine Use and Percent Rotavirus Detection, by Country, AMR, 2008

Country	Rotavirus Vaccine In Use?	Year of Vaccine Introduction	% Rotavirus Positive
El Salvador	Yes	2006	11
Nicaragua	Yes	2006	17
Panama	Yes	2006	8
Ecuador	Yes	2007	32
Bolivia	Yes	2008	48
Chile	No	-	27
Guatemala	No	-	33
Honduras	No	-	36
Paraguay	No	-	16

Spotlight on WHO Regional Offices

WHO Regional Offices coordinate planning and implementation of the rotavirus surveillance network with Ministries of Health and other public health partners in each country. Regional Offices develop and share feedback bulletins, conduct training, coordinate activities, support laboratories and monitor data quality.

WHO GLOBAL ROTAVIRUS SURVEILLANCE SYSTEM BULLETIN, REPORTING PERIOD : JANUARY-DECEMBER 2008																																
Country/ Site	Year of introduction of the vaccine in the infant national immunization schedule	Total No. of reporting sites	No. of acute diarrhoea hospitalizations in children <5 years eligible for enrollment	No. of total eligible acute diarrhoea cases that were enrolled	Number (No.) and percent (%+ive*) of total eligible acute diarrhoea cases (with CRF and stool specimen collected)** that tested positive for rotavirus among cases who had stool specimens tested																											
					January		February		March		April		May		June		July		August		September		October		November		December		2008 Total			
	Year	No.	No.	No.	No.	No.	% +ve	No.	% +ve	No.	% +ve	No.	% +ve	No.	% +ve	No.	% +ve	No.	% +ve	No.	% +ve	No.	% +ve	No.	% +ve	No.	% +ve	No.	% +ve	No.	% +ve	
AFR ¹		12	4,030	3,838	310	43	423	44	513	38	415	26	336	37	315	35	233	37	229	39	268	38	299	28	276	32	221	21	3,838	35		
Cameroon		3	277	273	52		43		32		12		9		15		19		11		18		32		24		6		273			
Ethiopia		2	210	209	9		17		37		29		24		13		14		9		8		15		9		25		209			
Ghana		1	499	497	93		88		32		35		45		42		28		19		20		49		46		0		497			
Kenya		1	680	677	16		97		183		145		69		19		20		51		16		15		22		24		677			
United Republic of Tanzania		1	182	181	50		18		12		8		13		23		4		12		8		8	ND	9	ND	16		181			
Uganda		1	1,039	929	49		101		90		86		78		84		54		83		98		65		95		46		929			
Zambia		1	695	626	36		42		26		38		59		32		20		30		84		94		66		99		626			
Zimbabwe		2	448	446	5		17		101		62		39		87		74		14		16		21		5		5		446			
AMR		36	22,821	13,761	1,270	42	1,120	35	949	31	912	36	826	28	904	18	1,063	16	781	20	744	22	617	18	516	18	616	21	10,318	27		
Bolivia (Plurinational State of)	2008	6	2,213	1,830	90		108		138		181		203		130		129		106		111		91		111		103		1,501			
Chile		1	1,831	1,082	92		82		91		50		66		78		103		115		124		109		92		80		1,082			
Ecuador	2007	2	3,011	333		ND		ND		ND	22		7		22		71		86		68		41			ND		ND	317			
El Salvador	2006	7	4,159	1,935	189		287		225		192		164		199		230		90		82		71		46		78		1,853			
Guatemala		5	2,945	1,381	326		167		91		91		74		79		79		59		61		47		50		66		1,190			
Honduras		6	4,255	4,090	434		310		158		165		130		140		170		77		66		79		68		110		1,907			
Nicaragua	2006	4	2,788	1,637	120		146		210		167		129		203		220		114		71		99		68		91		1,638			
Panama	2006	1	1,185	1,185	3		0		24		34		42		41		38		77		108		69		60		71		567			
Paraguay		4	434	288	16		20		12		10		11		12		23		57		53		11		21		17		263			
EMR		66		14,640	967	47	883	47	928	47	969	40	1,038	40	949	29	1,084	27	941	23	729	29	1,062	46	1,123	57	773	52	11,446	40		
Afghanistan		3		731	0		5		16		6		134		125		132		46		32		62		89		83		730			
Egypt		6		1,271	99		53		137		154		173		104		112		79		61		152		87		60		1,271			
Iran (Islamic Republic of)		5		1,178	143		104		64		102		126		71		95		124		95		115		98		40		1,177			
Iraq		6		976	98		103		100		140		155		109		84		57		42		30		44		14		976			
Jordan		3		249	7		27		22		25		20		42		17		15		12		17		37		8		249			
Libyan Arab Jamahiriya		4		1,028	83		32		37		49		82		48		19		44		55		109		171		83		812			
Morocco		4		585	42		36		45		59		49		44		56		52		43		72		37		50		585			
Oman		10		864	74		107		187		118		89		39		32		30		34		54		58		42		864			
Pakistan		6		4,414	199		237		153		0		1		92		203		235		148		127		87		97		1,579			
Sudan		8		1,844	87		69		84		236		118		159		205		146		98		136		233		147		1,718			
Syrian Arab Republic		5		778	62		33		21		30		51		78		77		63		72		105		86		88		766			
Tunisia		4		118	24		19		7		5		6		9		9		12		6		15		6		0		118			
Yemen		2		604	49		58		55		45		34		29		43		38		31		68		90		61		601			
EUR ²		7	6,280	4,801	371	57	361	52	298	57	306	44	325	28	471	23	647	13	555	18	424	20	368	26	353	34	322	56	4,801	42		
Azerbaijan		2	1,041	911	92		90		79		70		81		87		86		90		87		70		79		0		911			
Georgia		1	1,004	751	140		91		64		49		36		55		65		65		50		32		50		54		751			
Republic of Moldova		1	700	583		ND		ND		ND		ND		ND		60		68		121		86		60		74		114		583		
Tajikistan		1	1,741	1,009	17		36		34		57		75		168		264	ND	95	ND	70	ND	100	ND	52	ND	41	ND	1,009			
Ukraine		2	1,794	1,547	122		144		121		130		133		101		164		184		131		106		98		113		1,547			
SEAR		2	483	324																			74	26	87	44	163	61	324	48		
Myanmar		1	483	223																			37		60		126		223			
Nepal		1		101																			37		27		37		101			
WPR ³		9	13,839	4,050	143	80	169	69	242	58	186	65	256	52	322	34	439	43	471	53	392	56	291	35	316	49	308	64	3,535	52		
Cambodia		1	505	588									38		47		71		63		56		2		57		24		358			
Fiji		1	380	396	26		51		36		22		13		18		13		13		15		6		9		7		229			
Lao People's Democratic Republic		1	125	125									30		21		13		16		9		12		14		9		124			
Mongolia		1	169	172							1		18		21		35		43		30		6		1		2		157			
Papua New Guinea		1	196	235									31		31		23		39		24		37		20		17		222			
Philippines		1	306	306			28		14		18		14		19		22		21		16		30		31		39		252			
Viet Nam		3	12,158	2,228	117		90		192		145		112		165		262		276		242		198		184		210		2,193			
Global Totals		132	47,453	41,414																								34,262				
Performance indicator																																

**Suspect case of rotavirus = a child under 5 years of age admitted for treatment of acute gastroenteritis/diarrhoea to a sentinel hospital conducting surveillance

[The data used from this bulletin and on the website are in the public domain. While there should be no restrictions on the use of information, users are asked to acknowledge the source of the data at: \[www.who.int/nuvi\]\(http://www.who.int/nuvi\).](#)

WHO gratefully acknowledges the contribution of participating member states and their efforts to ensure high standards of completeness and accuracy, and their willingness to share data in the interests of collaboration on improving the health of children.

1. AFR: the number of children enrolled is used in calculations to approximate the number of children who were enrolled with samples that were tested

2. Azerbaijan did not implement surveillance in December 2008. The Republic of Moldova implements rotavirus surveillance from June 2008.

3. WPR: monthly data is available from July through December; however, totals are available for the entire year

***Percent positive breakdown:**

	>= 40% of tested samples were positive for Rotavirus
	>=20% and <40% of tested samples were positive for Rotavirus
	>=10% and <20% of tested samples were positive for Rotavirus
	<10% of tested samples were positive for Rotavirus
ND	No data available