

Poliomyélite : Risque pour l'Europe



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Liens d'intérêts 2009-2013

- **Argene-BioMérieux** (UR grant 2009-2013)

Polio Eradication Progress 1988 - 2003

1988

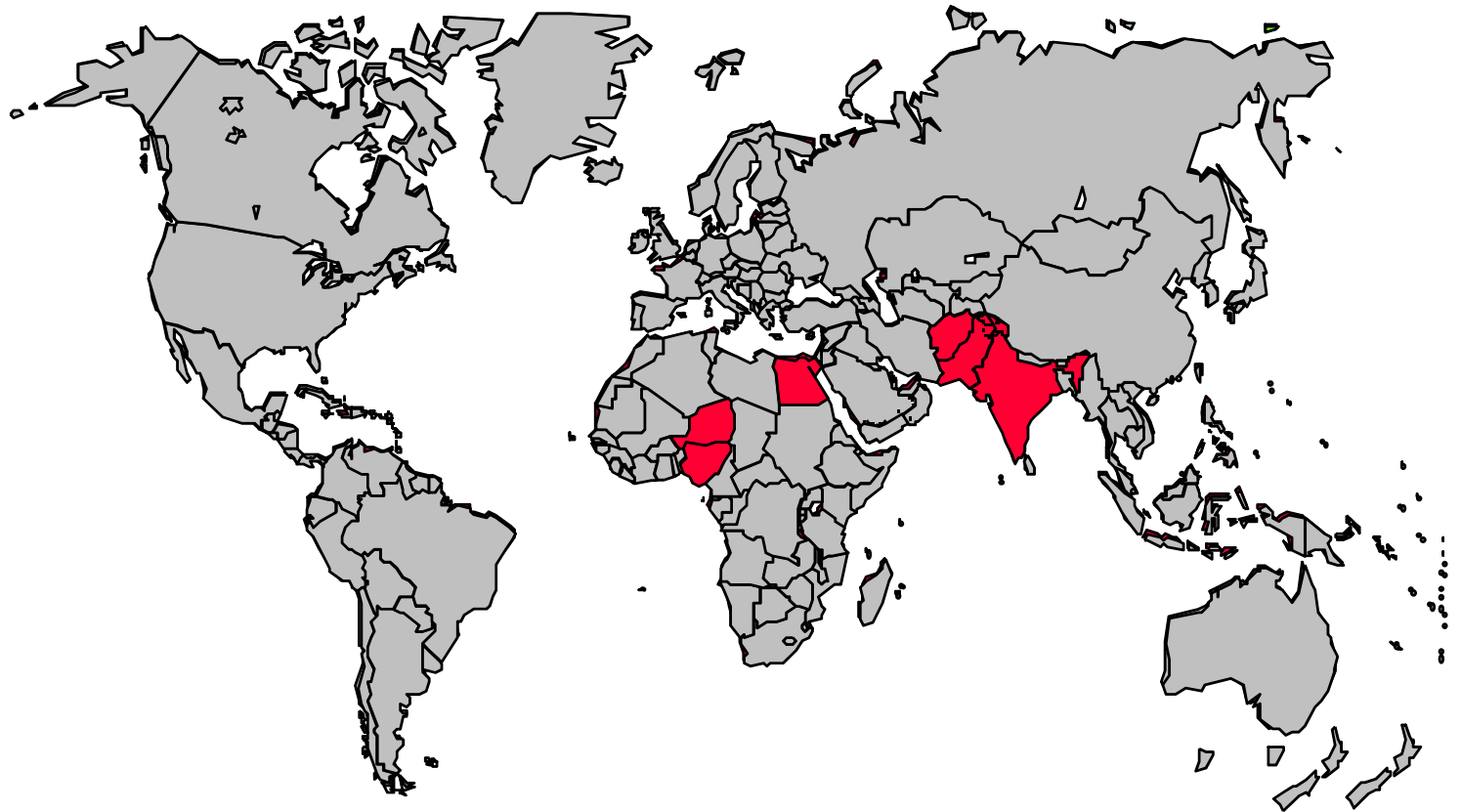
350 000 children

125 countries

2003

784 children

6 countries



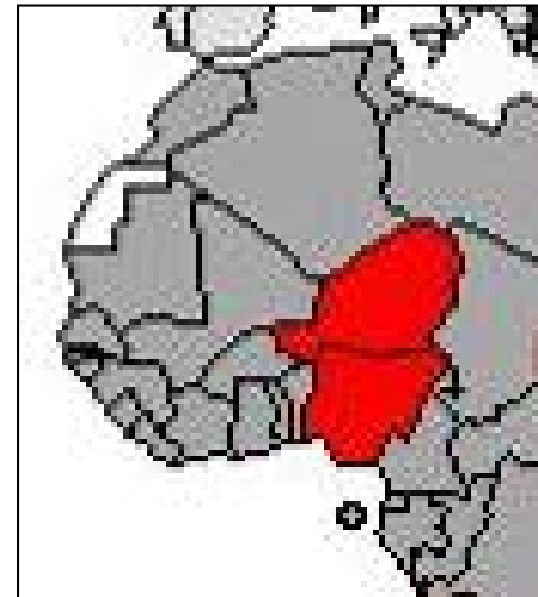
Bilan de l'éradication

Impact of Previous Synchronized Polio Campaigns, Africa

14 Country Synchronized Immunization Days, 2000

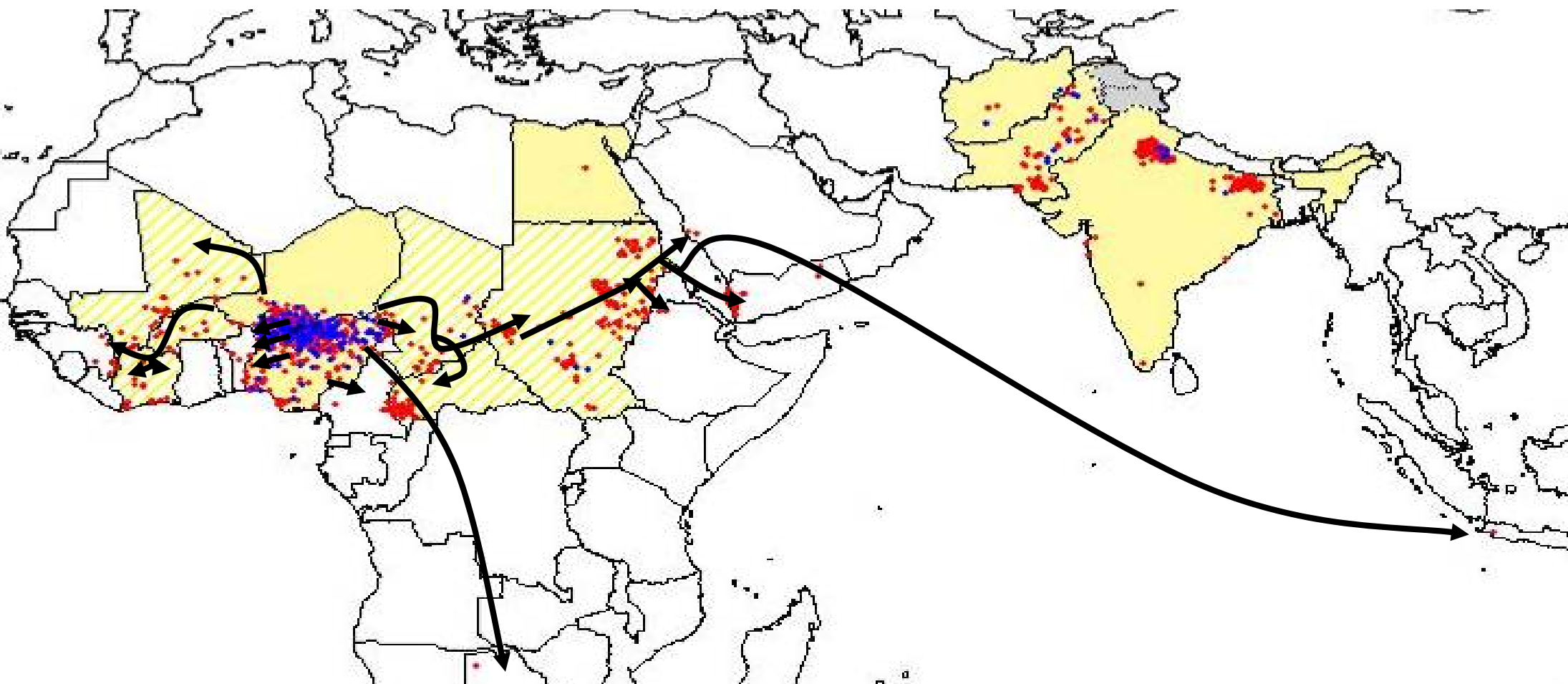


1999



2001

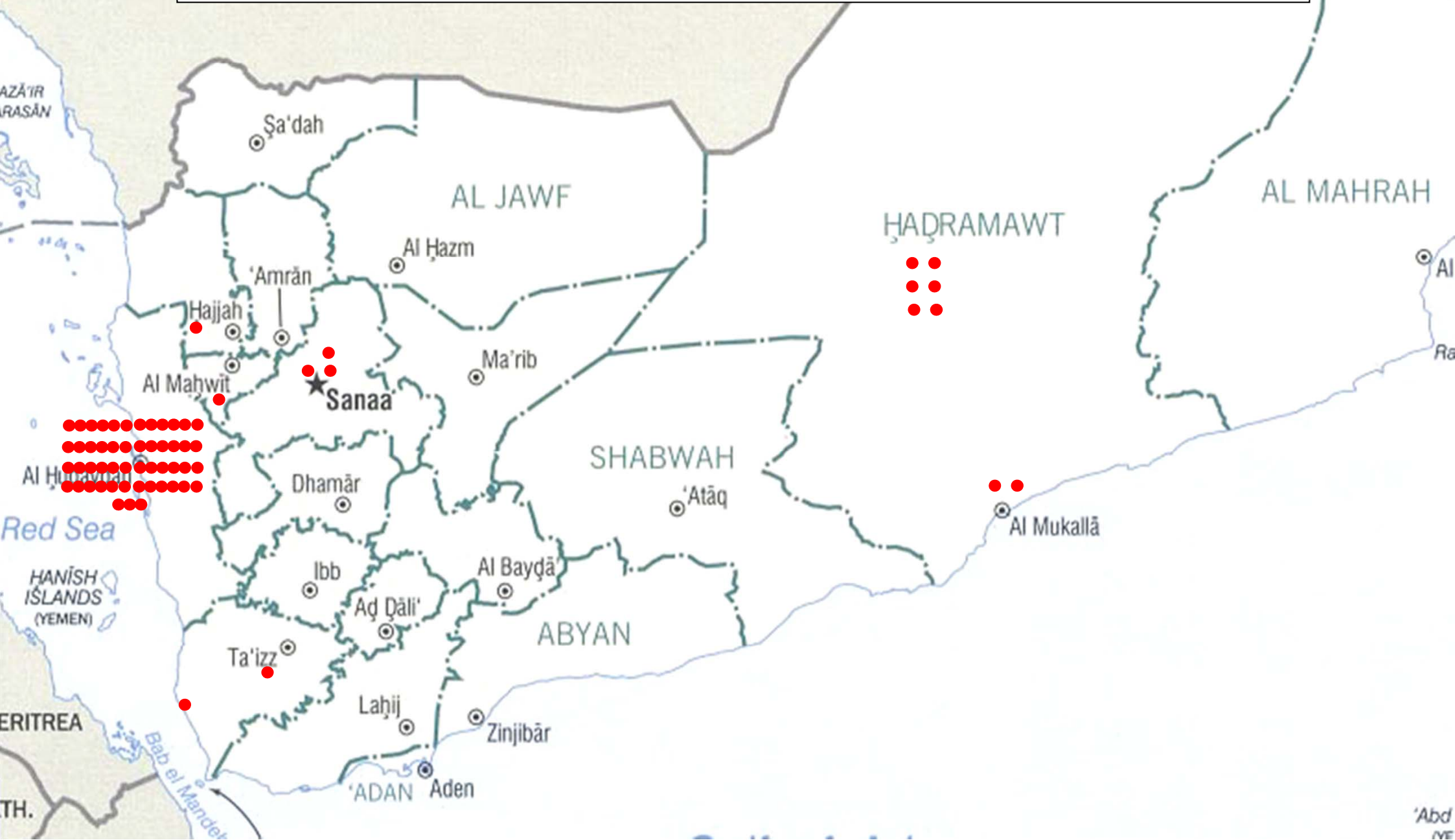
Ré-introduction des virus en 2004 - 2005



16 polio-free countries had importations originating in Nigeria
Polio transmission re-established in 6 polio-free countries.

Type 1 Poliovirus Outbreak, Yemen, Jan to April 2005

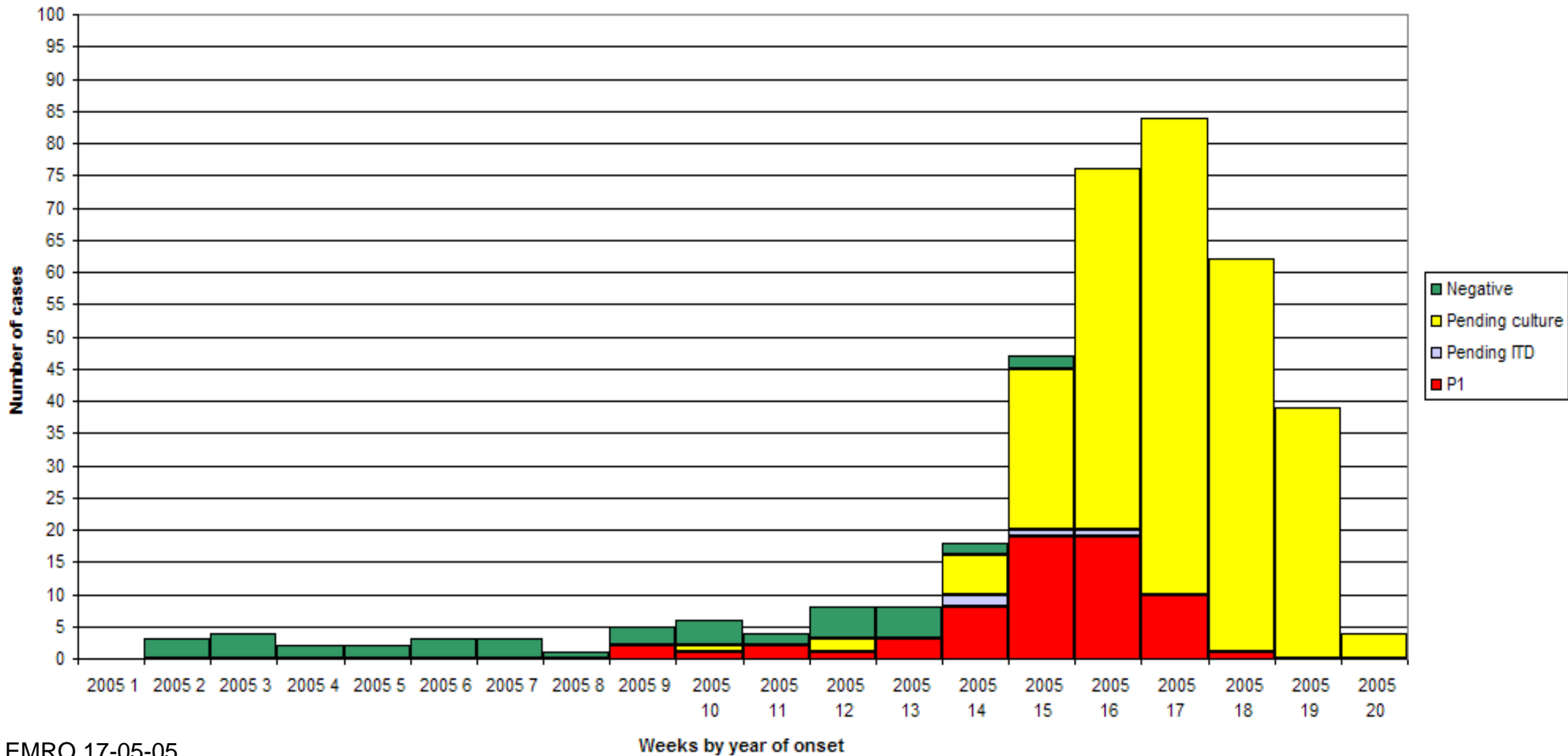
(data as of May 1, 2005)

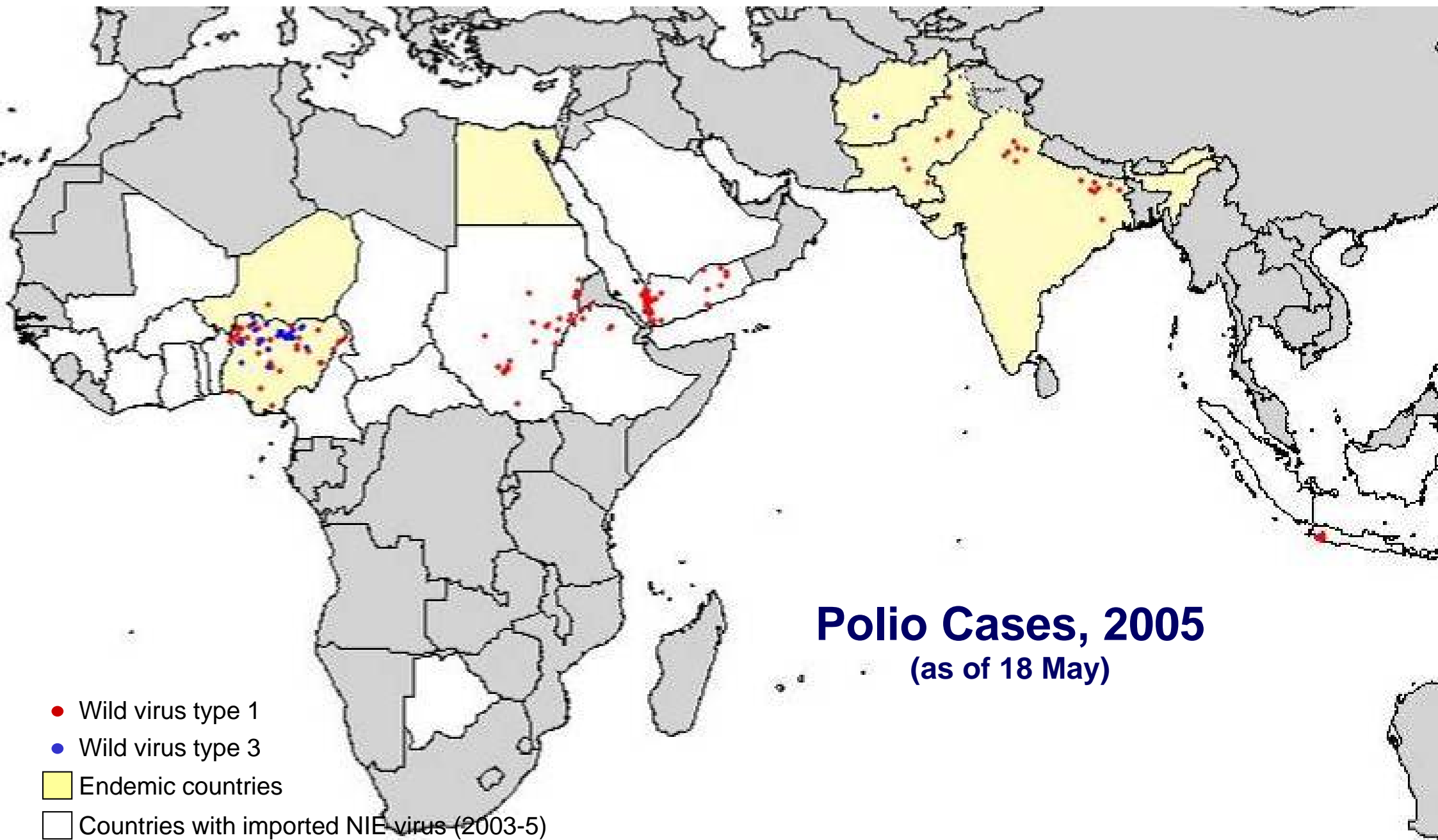


Wild PV1 cases and n.-p. AFP cases

By laboratory status and epid. Week, Yemen, 2005

(As of 17 May 2005)

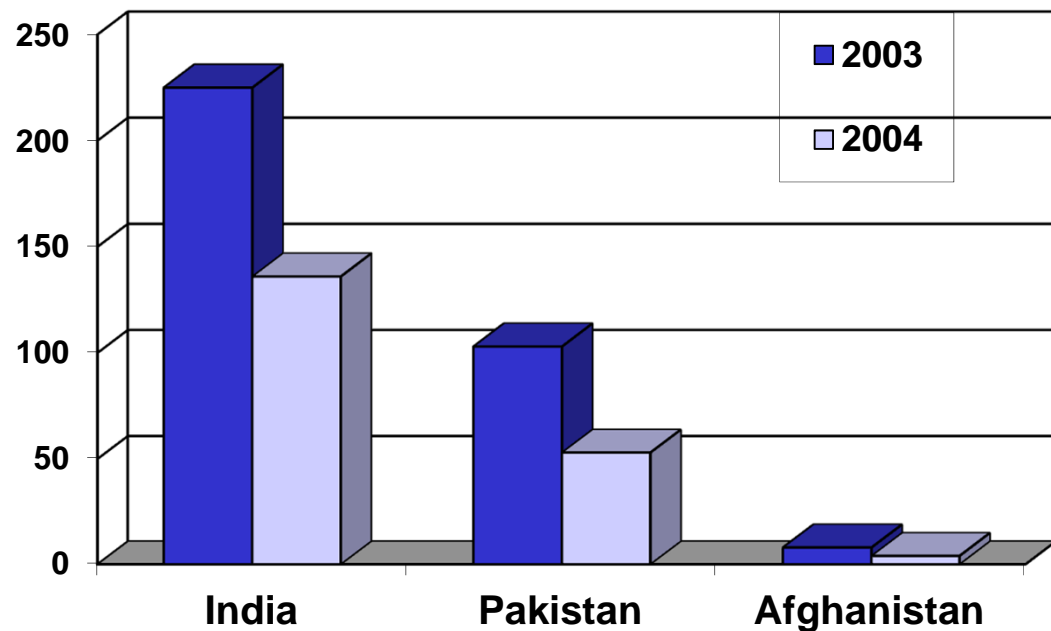




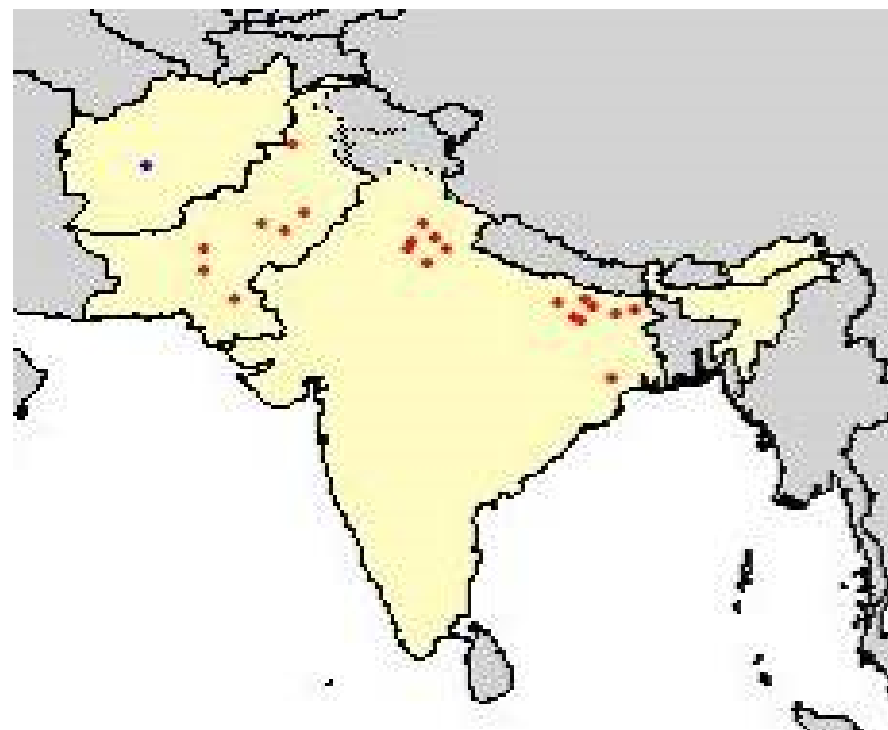
* Excludes environmental surveillance viruses.

Impact of Intensification, Asia

Reported Polio Cases, 2003-2004

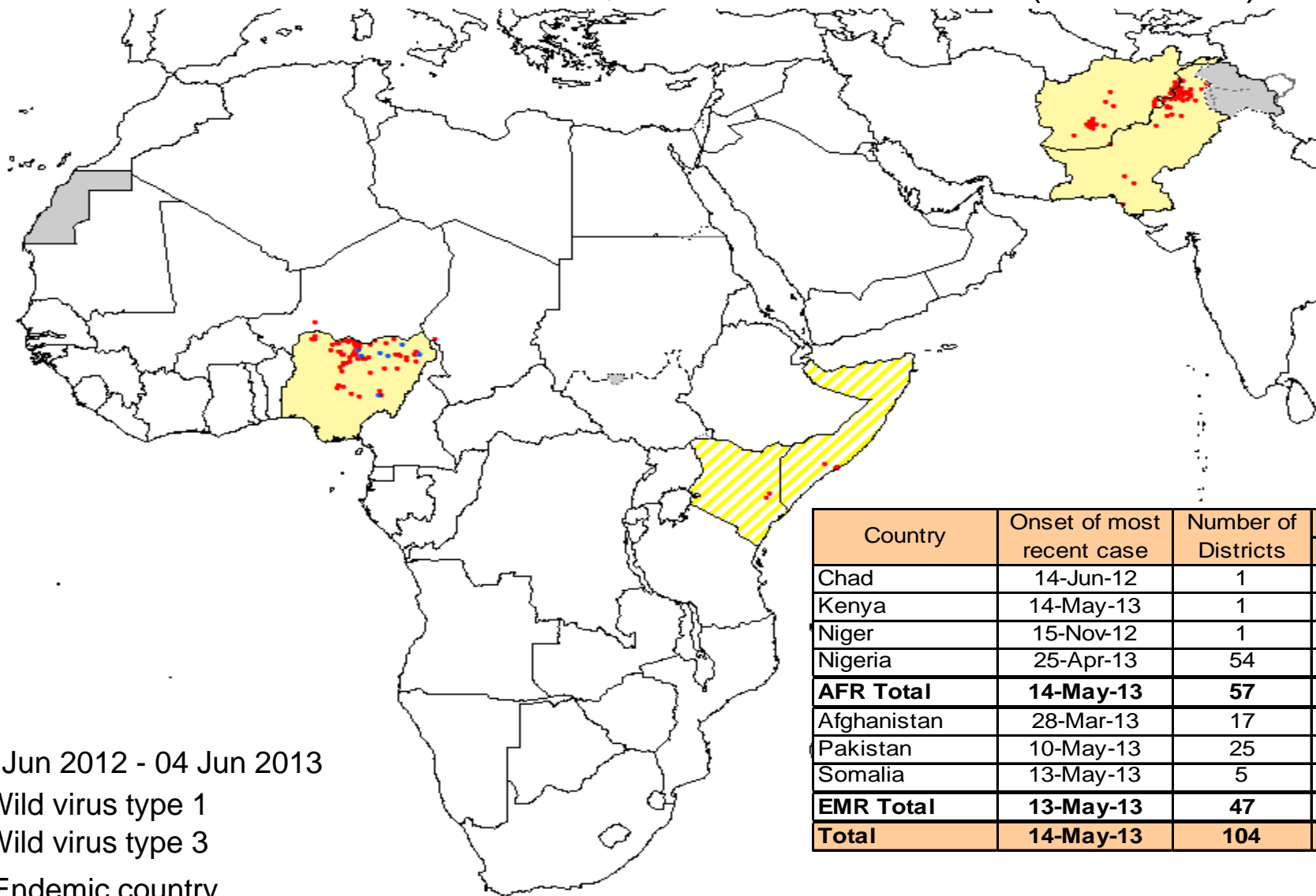


Reported Polio Cases, 2005



Etat des lieux en 2013

Wild Poliovirus¹, Previous 12 Months (June 2013)



*05 Jun 2012 - 04 Jun 2013

- Wild virus type 1
- Wild virus type 3

■ Endemic country

▨ Country with WPV case in previous 6 months

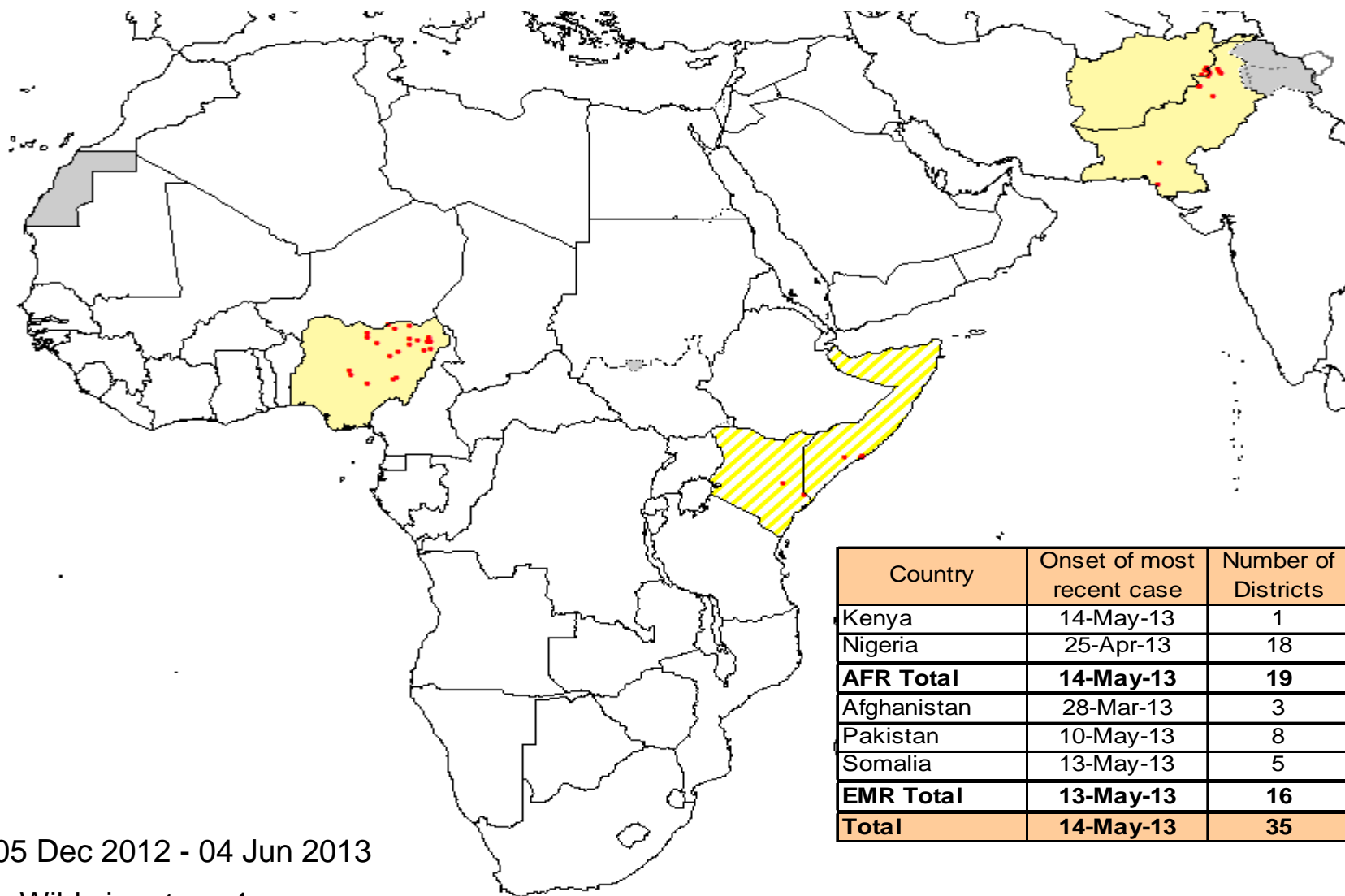
■ Country with WPV case 6-12 months ago

Country	Onset of most recent case	Number of Districts	Virus Type		TOTAL WPV
			W1	W3	
Chad	14-Jun-12	1	1		1
Kenya	14-May-13	1	2		2
Niger	15-Nov-12	1	1		1
Nigeria	25-Apr-13	54	89	7	96
AFR Total	14-May-13	57	93	7	100
Afghanistan	28-Mar-13	17	28		28
Pakistan	10-May-13	25	46		46
Somalia	13-May-13	5	7		7
EMR Total	13-May-13	47	81		81
Total	14-May-13	104	174	7	181

¹Excludes vaccine derived polioviruses and viruses detected from environmental surveillance.

1 WPV1 in Gilgit Baltistan, date of onset 06 August 2012, does not appear on the map.

Wild Poliovirus¹, Previous 6 Months (June 2013)



Country	Onset of most recent case	Number of Districts	Virus Type		TOTAL WPV
			W1	W3	
Kenya	14-May-13	1	2		2
Nigeria	25-Apr-13	18	25		25
AFR Total	14-May-13	19	27		27
Afghanistan	28-Mar-13	3	4		4
Pakistan	10-May-13	8	10		10
Somalia	13-May-13	5	7		7
EMR Total	13-May-13	16	21		21
Total	14-May-13	35	48		48

*05 Dec 2012 - 04 Jun 2013

● Wild virus type 1

■ Endemic country

▨ Country with WPV case in previous 6 months

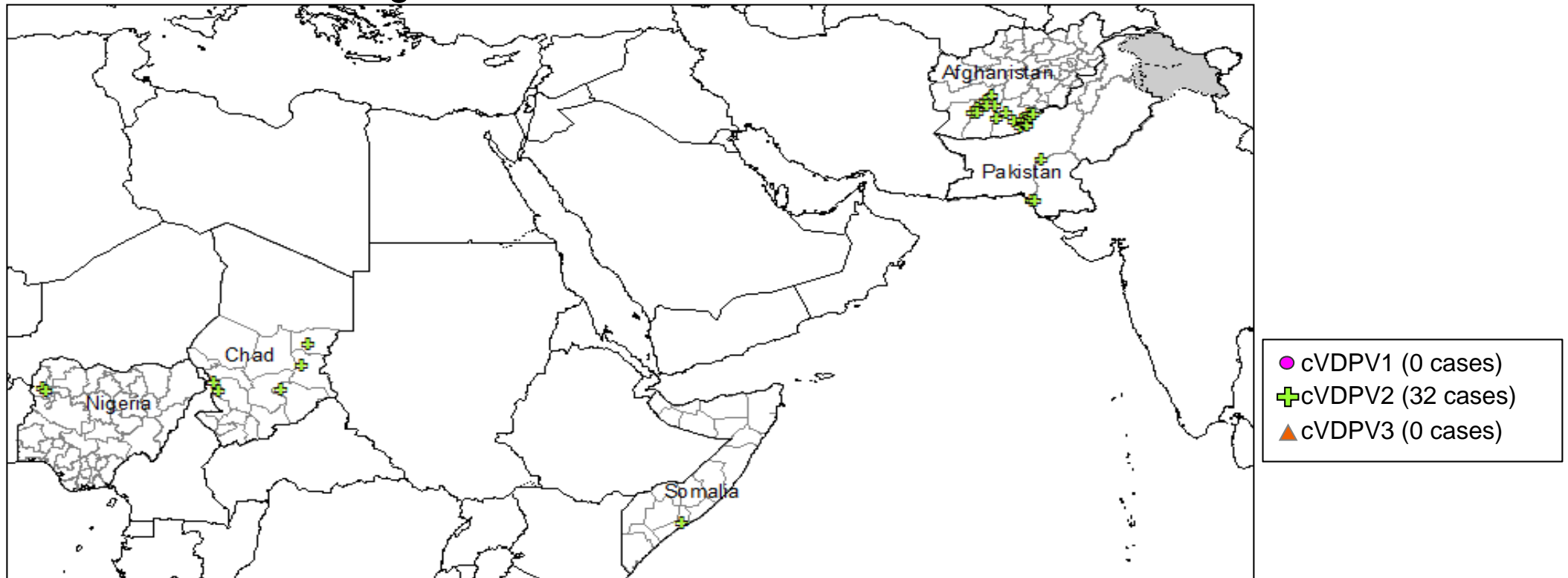
¹Excludes vaccine derived polioviruses and viruses detected from environmental surveillance.

Wild Poliovirus Cases by Type 2012 & 2013 - Year to Date Comparison

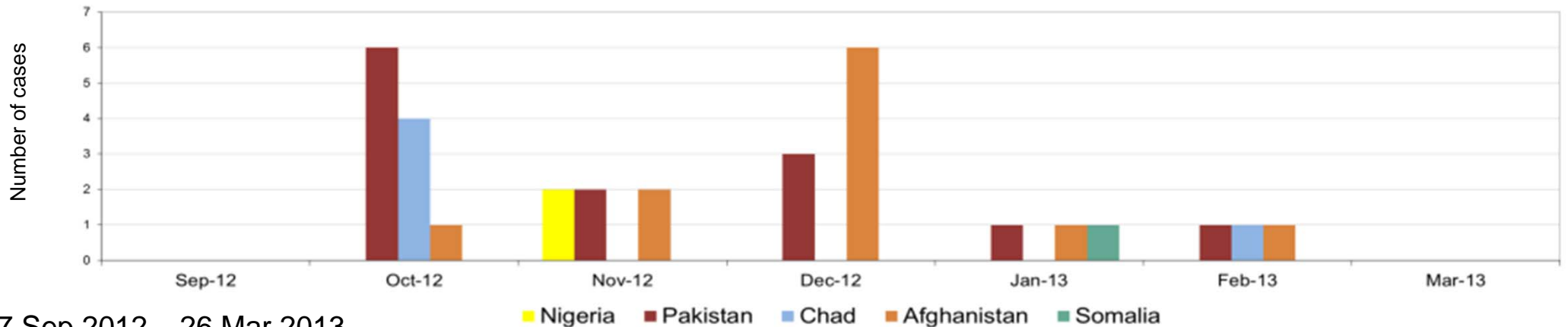
Country classification	Total 2012			01 January - 26 March ¹					Date of most recent case
				2012			2013		
	W1	W3	W1W3	W1	W3	W1W3	W1	W3	
Endemic									
Nigeria	103	19		10	3		10		24-Feb-13
Pakistan	55	2	1	13	1	1	5		12-Feb-13
Afghanistan	37			5			1		31-Jan-13
Total	195	21	1	28	4	1	16	0	
Re-established transmission									
Chad	5			3					14-Jun-12
Total	5	0	0	3	0	0	0	0	
Outbreak									
Niger	1								15-Nov-12
Total	1	0	0	0	0	0	0	0	
Global total	201	21	1	31	4	1	16	0	

¹Data as of 28 March 2012 for 2012 data and 26 March 2013 for 2013 data.

Circulating Vaccine-derived Poliovirus*, Previous 6 Months**



Monthly distribution of cases by country

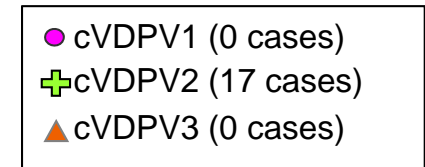
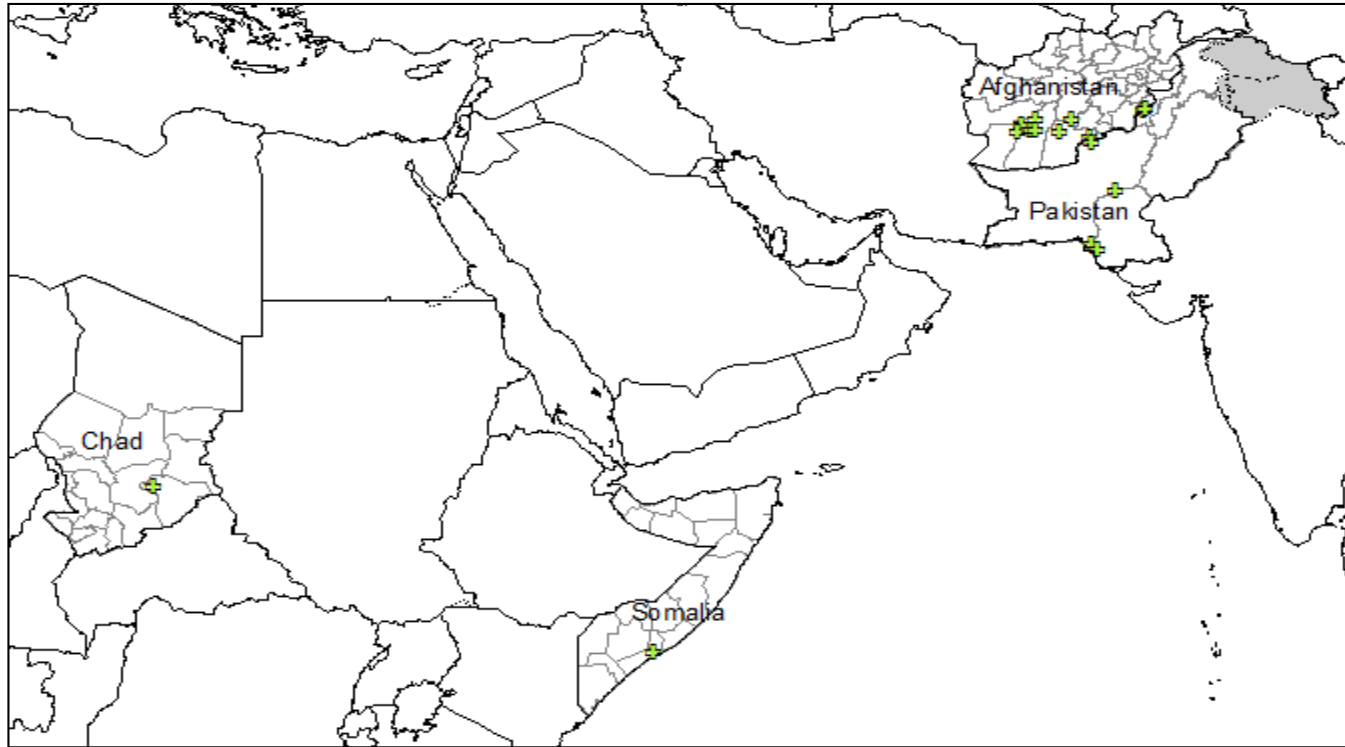


**27 Sep 2012 – 26 Mar 2013

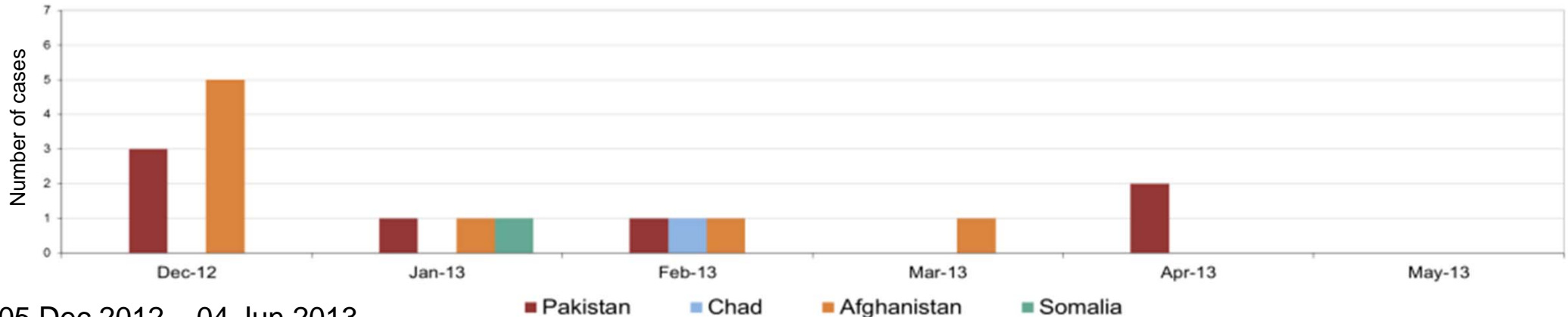
Data in WHO HQ as of 26 March 2013

*Circulating Vaccine-derived poliovirus (cVDPV) is associated with 2 or more cases of AFP. VDPV type 2 cases with greater than or equal to 6nt difference from sabin in VP1; VDPV types 1 and 3 cases with greater than or equal to 10nt difference from sabin in VP1 are reported here. Figures exclude VDPV from non-AFP source. Figures may include different chains of transmission.

Circulating Vaccine-derived Poliovirus*, Previous 6 Months**



Monthly distribution of cases by country



**05 Dec 2012 – 04 Jun 2013

Data in WHO HQ as of 04 June 2013

*Circulating Vaccine-derived poliovirus (cVDPV) is associated with 2 or more cases of AFP. VDPV type 2 cases with greater than or equal to 6nt difference from sabin in VP1; VDPV types 1 and 3 cases with greater than or equal to 10nt difference from sabin in VP1 are reported here. Figures exclude VDPV from non-AFP source. Figures may include different chains of transmission.

Circulating Vaccine-derived Poliovirus¹, 2000-2013

Country	cVDPV type 1*															Most recent transmission chain		
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	First case	Most recent case	Duration in weeks	
Mozambique												2			10-Feb-11	02-Jun-11	16	
Myanmar							1	4							30-Apr-07	06-Dec-07	31	
Indonesia						46									09-Jul-05	26-Oct-05	15	
China					2										13-Jun-04	11-Nov-04	21	
Philippines		3													15-Mar-01	26-Jul-01	19	
DOR/Haiti	12	9													12-Jul-00	12-Jul-01	52	
Total type 1	12	12	0	0	2	46	1	4	0	0	0	2	0	0				
Country	cVDPV type 2*															Most recent transmission chain		
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	First case	Most recent case	Duration in weeks	
Pakistan												16	4		30-Aug-12	22-Apr-13	33	
Afghanistan											5	1	9	3	10-Jun-10	13-Mar-13	143	
Chad											1		12	1	15-Aug-12	04-Feb-13	24	
Somalia								1	6	1	9	1	1		18-Aug-09	09-Jan-13	177	
Nigeria						3	22	71	66	154	27	34	8		02-Jul-05	24-Nov-12	386	
Kenya													3		18-Apr-12	29-Aug-12	19	
DR Congo									13	5	18	11	17		04-Nov-11	04-Apr-12	21	
Niger							2			2	1	1			11-Nov-11	11-Nov-11	<1	
Yemen												9			09-Apr-11	05-Oct-11	25	
India										15	2				19-Oct-09	18-Jan-10	13	
Ethiopia									3	1					04-Oct-08	16-Feb-09	19	
Madagascar		1	4			3									26-Jun-05	13-Jul-05	2	
Total type 2	0	1	4	0	0	6	24	71	83	183	55	65	66	9				
Country	cVDPV type 3*															Most recent transmission chain		
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	First case	Most recent case	Duration in weeks	
Yemen													2		27-Apr-12	24-Aug-12	17	
Ethiopia										1	6				27-Apr-09	17-May-10	55	
Cambodia						1	1								26-Nov-05	15-Jan-06	7	
Total type 3	0	0	0	0	0	1	1	0	0	1	6	0	2	0				

¹Circulating Vaccine-derived poliovirus (cVDPV) is associated with 2 or more cases of AFP. Niger 2006, Niger 2009, Niger 2010, Chad 2010 cVDPVs are linked to the Nigeria outbreak. Kenya 2012 cVDPVs are linked to the Somalia outbreak. VDPV type 2 cases with greater than or equal to 6nt difference from sabin in VP1; VDPV types 1 and 3 cases with greater than or equal to 10nt difference from sabin in VP1 are reported here. Figures exclude VDPV from non-AFP sources. Nigeria figures include the following cases with WPV1/cVDPV2 mixture: 2005 - 2, 2006 - 1, 2007 - 1, 2008 - 3, 2009 - 1, 2011 - 1; WPV3/cVDPV2 mixture 2007 - 2. *Figures include multiple emergences and transmission chains. **cVDPVs due to importation.

Quels risques de ré-introduction

Baisse de la couverture vaccinale

&

Introduction d'un virus par les migrants/touristes venant de zones endémiques

Figure 16 : Couverture vaccinale poliomyélite (3 doses et 3 doses + rappel) à deux ans estimée à partir des certificats de santé du 24^e mois, 1985-2009, France (source : Drees, InVS)

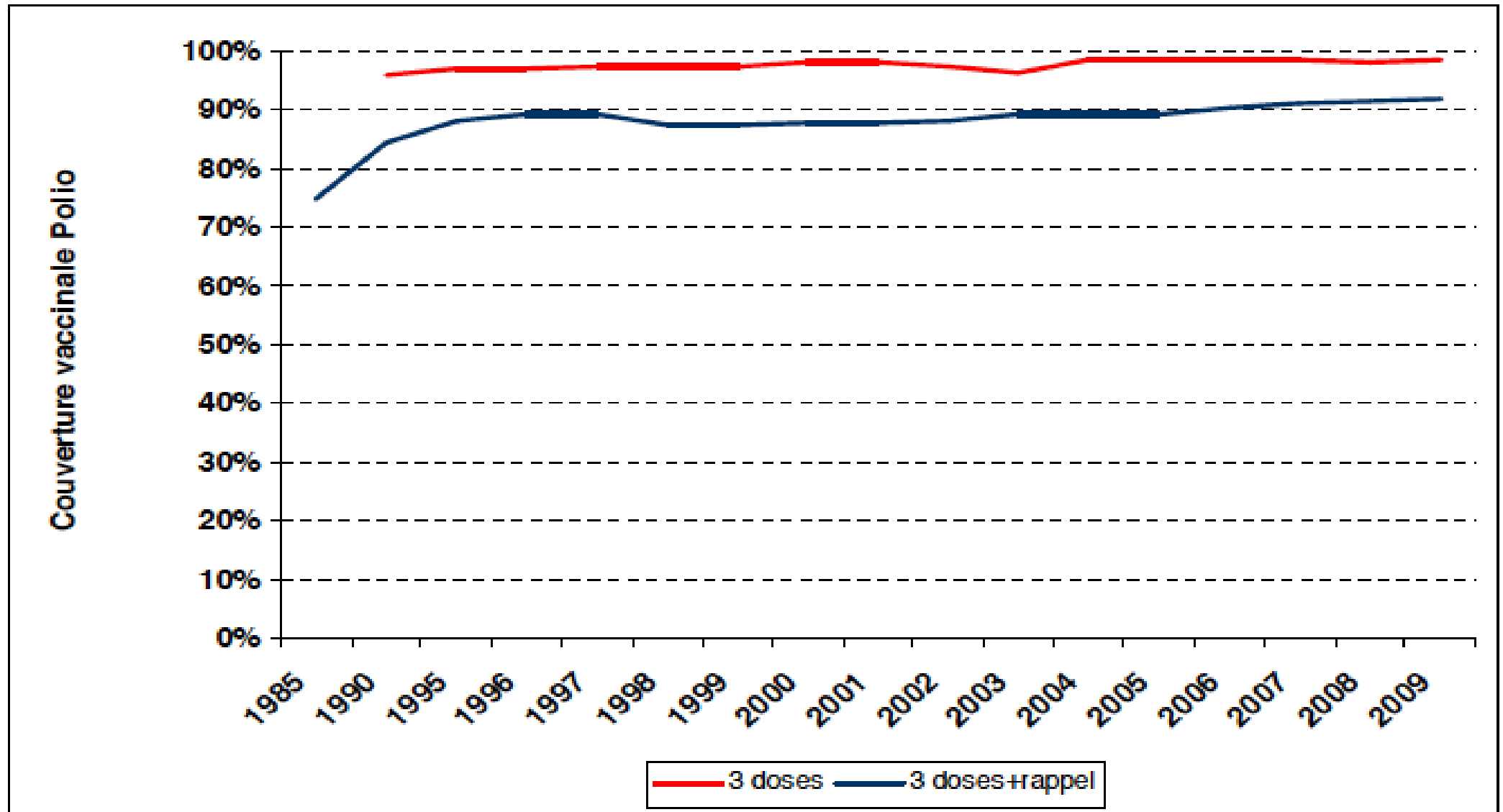


Figure 1 Couverture vaccinale par les vaccins contre le tétanos, la poliomyélite et la diphtérie selon le sexe et l'âge (données déclaratives, enquête SPS, France, 2002) / **Figure 1** Vaccine coverage for tetanus, poliomyelitis and diphtheria according to gender and age (self-reported data, SPS survey, France 2002)

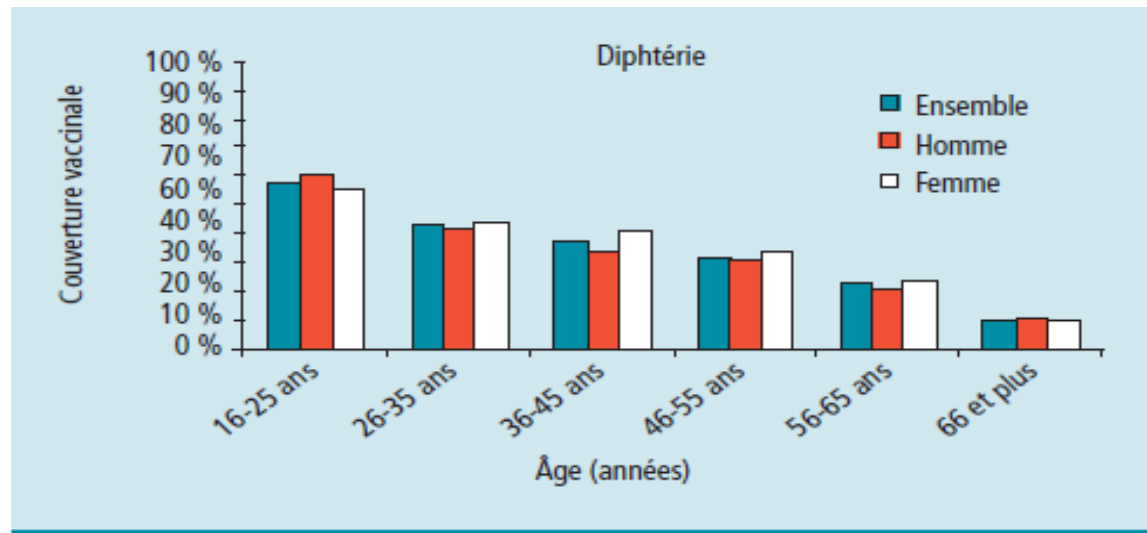
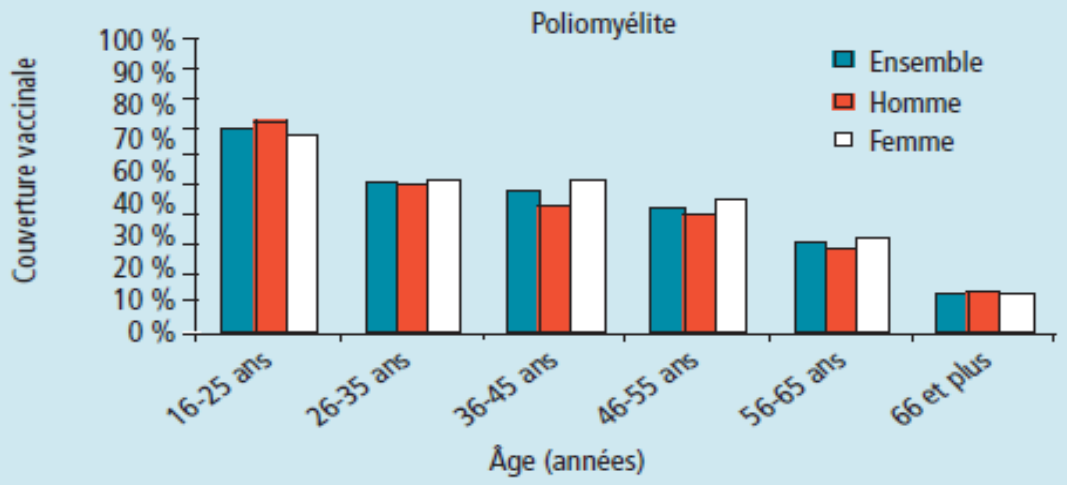
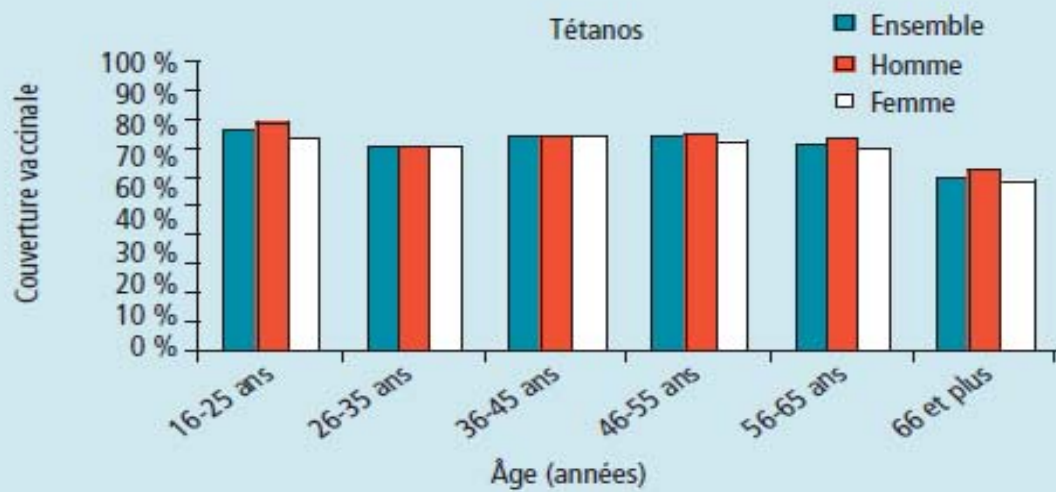
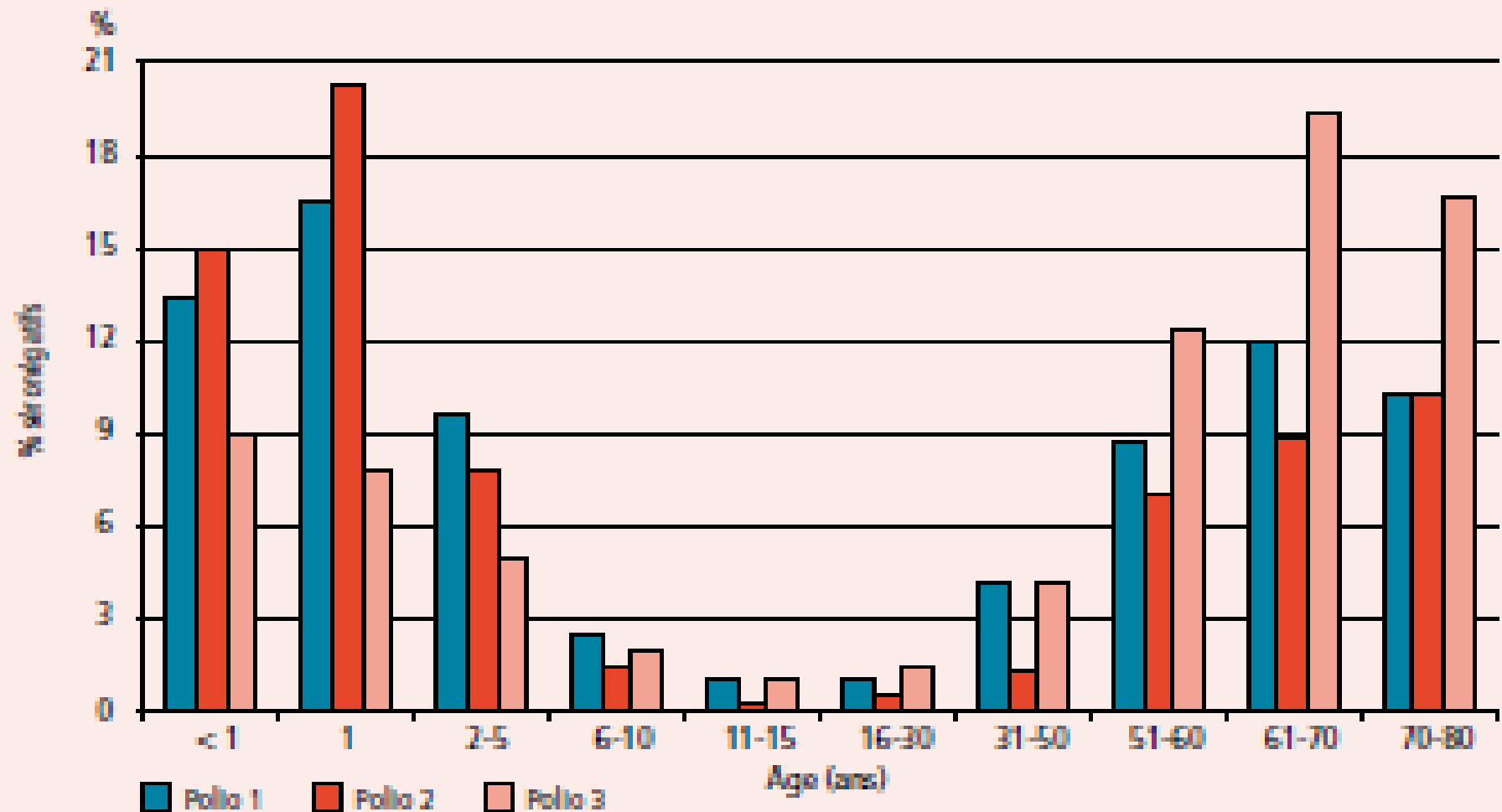


Figure 2. Séronegativité vis-à-vis des trois sérotypes de poliovirus, en fonction de l'âge, Enquête ESEN, France, 1998 (seuil au 1/10) / *Figure 2. Poliovirus seronegativity according to three poliovirus serotype and age, ESEN Survey, France, 1998 (1/10 threshold)*



Enquête nationale soignants

Vaxisoin Couverture vaccinale

rappel dTPolio (source BEH 35-36/2011)

Profession (Nb)	Vaccins à jour	Non documenté
Médecins (74)	86%	14%
Infirmiers/res (99)	94%	6%
Sages Femmes (55)	99,7%	0,3%
Aides soignants (95)	95,5%	1%
TOTAL (323)	95,5%	4,5%

Etudiants AP/HP Studyvax

Couverture vaccinale dTP confirmée par document (Source BEH 35-36/2011)

- Enquête sur 432 étudiants

Etudes	CV dTPolio à 18 ans
Médecine (178)	95,6%
Infirmiers/res (147)	96,8%
Sages femmes (107)	93,7%
TOTAL (432)	95,9%

Situation de la vaccination dans certains pays industrialisés (utilisent tous IPV)

Pays	CV à 24 mois	dernier rappel polio en pop générale*
Autriche	83%	24 mois
Belgique	99%	5-7 ans
Allemagne	95%	9-17 ans
Italie	96%	5-6 ans
Pays Bas	97%	9 ans
USA	90-93%	4-6 ans
Royaume Uni	98%	13-18 ans
Suisse	95%	4-7 ans
Canada	80%	4-6 ans

* Recommandée plus tard pour les voyageurs

Les sources d'introduction

- Migrants et touristes
- Enfants adoptés
- Retour de zones d'endémie pour les enfants

Boues et eaux résiduaires (120 échantillons)

Bilan 2012

Type cellulaire	Nombre de souches virales isolées /5 ml	Nombre de souche de poliovirus / Nombre de souches virales soumise à l'identification de poliovirus	Autres souches virales identifiées				
			Cox A	Cox B	ADV	Réo	Echo
Hep	688	0 / 552	0	56	34	0	10
BGM	1129	0 / 734	0	83	0	17	0
Total	1817	0 / 1286	0	139	34	17	10

Wild Poliovirus 2005 - 2011

Country or territory	Wild virus confirmed cases										Wild virus reported from other sources ²						Adoptions		
	Total						01 Jan - 05 Apr ¹		Date of most recent type 3	Date of most recent type 1	Total						Date of most recent virus	2009	2010
	2005	2006	2007	2008	2009	2010	2010	2011			2006	2007	2008	2009	2010	2011			
Pakistan	28	40	32	117	89	144	12	26	18-Nov-10	15-Mar-11				18	79	24	12-Mar-11	1	1
DRC**	0	13	41	5	3	100	0	28	24-Jun-09	08-Mar-11								42	41
Nigeria	830	1122	285	798	388	21	1	5	26-Feb-11	03-Mar-11								9	23
Chad**	2	1	22	37	64	26	3	20	16-Feb-11	28-Feb-11								5	1
Angola**	10	2	8	29	29	33	1	2	17-Nov-08	04-Feb-11								0	0
Congo**⁴	0	0	0	0	0	384	0	1	NA	22-Jan-11								29	18
Niger ***	10	11	11	12	15	2	0	1	19-Jan-11	28-May-09								6	7
Gabon*	0	0	0	0	0	0	0	1	NA	15-Jan-11								9	3
India	66	676	874	559	741	42	19	1	22-Oct-10	13-Jan-11	2	13	33	2	19		10-Nov-10	18	21
Afghanistan	9	31	17	31	38	25	7	1	11-Apr-10	11-Jan-11	1			2			27-Jul-09	0	0
Uganda*	0	0	0	0	8	4	0	0	NA	15-Nov-10								0	0
Russian Federation	0	0	0	0	0	14	0	0	NA	25-Sep-10								288	301
Mali*	3	0	0	1	2	4	1	0	17-Sep-10	01-May-10									
Liberia*	0	0	0	0	11	2	0	0	NA	08-Sep-10									
Nepal**	4	5	5	6	0	6	0	0	15-Oct-08	30-Aug-10				1			12-Jul-10	3	19
Kazakhstan*	0	0	0	0	0	1	0	0	NA	12-Aug-10								0	0
Tajikistan*	0	0	0	0	0	458	0	0	NA	04-Jul-10								0	0
Turkmenistan*	0	0	0	0	0	3	0	0	NA	28-Jun-10									
Senegal*	0	0	0	0	0	18	9	0	NA	30-Apr-10									
Mauritania[§]	0	0	0	0	13	5	3	0	NA	28-Apr-10									
Sierra Leone*	0	0	0	0	11	1	0	0	NA	28-Feb-10									
Guinea*	0	0	0	0	42	0	0	0	NA	03-Nov-09									
Burkina Faso*	0	0	0	6	15	0	0	0	NA	25-Oct-09									
Cameroon*	1	2	0	0	3	0	0	0	15-Oct-09	06-Dec-06									
Burundi*	0	0	0	0	2	0	0	0	NA	12-Sep-09									
CAR**	0	0	0	3	14	0	0	0	09-Aug-09	30-Dec-08									
Côte d'Ivoire**	0	0	0	1	26	0	0	0	NA	06-Aug-09								68	75
Kenya*	0	2	0	0	19	0	0	0	NA	30-Jul-09									
Sudan**	27	0	1	26	45	0	0	0	16-Dec-08	27-Jun-09	1		1				09-Jan-09		
Benin**	0	0	0	6	20	0	0	0	01-Dec-08	19-Apr-09									
Togo*	0	0	0	3	6	0	0	0	NA	28-Mar-09									
Ghana**	0	0	0	8	0	0	0	0	NA	08-Nov-08									
Ethiopia**	22	17	0	3	0	0	0	0	NA	27-Apr-08									
Myanmar**	0	0	11	0	0	0	0	0	NA	28-May-07									
Somalia**	185	35	8	0	0	0	0	0	06-Oct-02	25-Mar-07									
Bangladesh**	0	18	0	0	0	0	0	0	23-Oct-99	22-Nov-06									
Namibia*	0	19	0	0	0	0	0	0	NA	26-Jun-06									
Indonesia*	303	2	0	0	0	0	0	0	NA	20-Feb-06									
Yemen*	478	1	0	0	0	0	0	0	NA	02-Feb-06									
Total	1979	1997	1315	1651	1604	1293	56	86			3	14	35	23	99	24			
Total wild virus type 1⁵	1716	1666	321	976	482	1206	21	81											
Total wild virus type 3	263	331	994	675	1122	87	35	5											
Tot. in endemic countries	934	1869	1208	1505	1256	232	39	33											
Tot. in non-end countries	1045	128	107	146	348	1061	17	53											
No. of countries	16	17	12	18	23	20	9	10											
No. of endemic countries	6^{§§}	4	4	4	4	4													

Countries highlighted in yellow are endemic.

Countries highlighted in pale yellow are considered to have active transmission (i.e. within the previous 6 months) of an imported poliovirus.

¹Data in WHO HQ on 05 Apr 2010 for 2010 data and 05 Apr 2011 for 2011 data. ²Wild viruses from environmental samples, contacts and other non-AFP sources.

³The 2010 total includes 317 cases with inadequate specimens that have been exceptionally classified as confirmed polio based on their association with the WPV1 outbreak. ⁵Includes 2 cases in 2008 & 2006 and 3 in 2009, 2007, 2005 with a mixture of W1W3 virus. *All cases are importation related. NA. Most recent case had onset prior to 1999. **All cases from 2003 onward are importation related. ***All cases from 2005 onward are importation related. [§]In 2005, no endemic circulation occurred in Egypt or Niger but their status remained endemic.

Data in WHO HQ
as of 05 Apr 2011

Circulating Vaccine-derived Poliovirus*, 2000-2011

Country	Type	cVDPV												Most recent case	Adoptions		
		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011		2009	2010	
Nigeria	VDPV 2						1	21	68	63	153	27	4	15-Feb-11	9	23	
Afghanistan	VDPV 2												5	1	20-Jan-11	0	0
Chad***	VDPV 2												1		10-Nov-10	5	1
Ethiopia	VDPV 3											1	6	04-Nov-10	445	352	
DR Congo	VDPV 2								14	4	14			13-Oct-10	42	41	
Niger***	VDPV 2							2					1	01-Jun-10	6	7	
India	VDPV 2											15	1	18-Jan-10	18	21	
Somalia	VDPV 2									1	4			24-Dec-09			
Ethiopia	VDPV 2									3	1			16-Feb-09			
Myanmar	VDPV 1								1	4				06-Dec-07			
Cambodia	VDPV 3							1	1					15-Jan-06			
Indonesia	VDPV 1							46						26-Oct-05			
Madagascar**	VDPV 2		1	4				3						13-Jul-05			
China	VDPV 1					2								11-Nov-04			
Philippines	VDPV 1		3											26-Jul-01			
DOR/Haiti	VDPV 1	12	9											12-Jul-01			

**Madagascar: two different outbreaks (2001/02 and 2005)

***Niger 2006, Niger 2010, Chad 2010 cVDPVs are linked to the Nigeria outbreak

*Circulating Vaccine-derived poliovirus (cVDPV) is associated with 2 or more cases of AFP.
Cases with less than 10 nt genetically related to these outbreaks and cases of ambiguous Vaccine-derived Poliovirus (aVDPV) are not reported here.
Figures exclude VDPV from non-AFP source. Figures may include different chains of transmission.

Au total

- L'éradication est en marche; aucun cas de polio3 dans les 12 derniers mois (14-5-12) et aucun polio2 depuis 2001
- La ré-introduction se fait par des migrants venant de zones d'endémie
- Il peut s'agir de souches sauvages ou de vDPV
- Elle est possible si l'immunité de la population est inférieure à 40%
- En France (comme en Europe) le risque est faible sauf pour les populations mal vaccinées.
- La surveillance vise à identifier les sources potentielle (eaux usées, adoptions, etc...)

Remerciements

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• Genevieve Billaud
 - Francis Delpeyroux
 - Vincent Carlier
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- Laboratoire d'hygiene de la ville
de Paris
- Comité Francais de certification
d'éradication polio