

Measles outbreak in Fiji, February-May 2006

Prior to February 2006, Fiji was regarded as having interrupted transmission of indigenous measles virus. From 2002 to 2004 Fiji reported 304, 305 and 35 measles cases, respectively, although no confirmatory laboratory testing was conducted but rubella was confirmed in the Pacific during those three years. The last previous documented outbreak of confirmed measles in Fiji was in late 1997 and early 1998, with a total of 955 cases reported.

A national measles campaign was held in 1997. It targeted children nine months to 14 years old with reported coverage of 85%. However, the actual number of children targeted was uncertain and the estimated coverage may have been as low as 58%. In 2001, a measles campaign was held targeting children nine months to five years old with reported coverage of 86%. Routine measles vaccine coverage averaged 83% from 2001 to 2004. A scheduled second dose of measles vaccination in the form of measles-rubella (MR) vaccine was introduced in 2003 as a school entry requirement. However, the second-dose coverage has never been reported. In 2005 it was discussed at the annual Pacific Immunization Programme Strengthening meeting that Fiji could expect a measles outbreak in 2006 given the increasing number of children susceptible to measles infection resulting from less than optimal measles vaccination coverage rates.

In mid-February 2006, three cases of measles were confirmed by serologic testing for the presence of anti measles immunoglobulin M (IgM) antibody at the national laboratory in Fiji and at the WHO Measles Regional Reference Laboratory in Australia. The three cases were from the western side of the main island. The Ministry of Health reported that one of the cases developed symptoms while on an island frequently visited by tourists. This case is most likely imported as the genotype perfectly matches the Shanghai/Taiwan H1 genotype.

Following confirmation, measles surveillance was enhanced in Fiji by us-

gion. Simultaneously, measles surveillance from the 19 sites in the Pacific region were increased from monthly to weekly reporting and posted on the Pacific Public Health Surveillance Network.

The Ministry of Health promoted isolation of children with AFR by developing and disseminating triaging guidelines for all health facilities. Providing vitamin A to measles cases in health facilities was difficult because vitamin A is not part of the National Drug Formulary and was not available in hospitals or health centres.

To ensure adequate and appropriate immunization response to the measles outbreak, the Ministry of Health formed a task force that included various departments (e.g. clinic and hospital paediatric care, Fiji Pharmaceutical Services and Center for Health Promotion). The task force also included representatives of the United Nations Children's Fund, the Japan International Cooperation Agency, the Australian Agency for International Development, the Fiji Health Sector Improvement Program, the New Zealand Agency for International Development, the Secretariat of the Pacific Community, the United States Centers for Disease Control and Prevention and WHO, who provided technical and financial support.

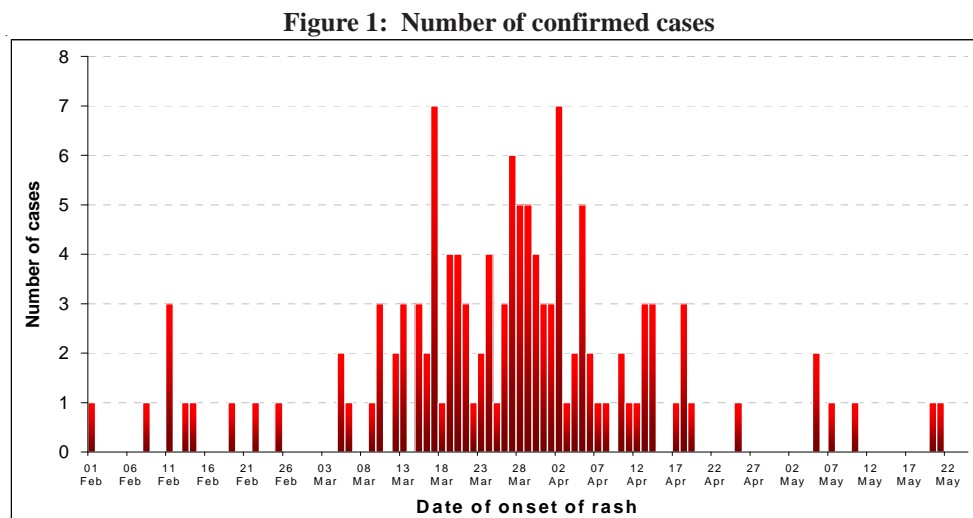
To improve population immunity, the



ing the case definition (acute fever and rash, or AFR) and cough, coryza, or conjunctivitis with daily telephonic active surveillance of 21 hospitals throughout the country. Daily feedback on the course of the outbreak was disseminated widely within Fiji. On 2 March a notice was sent to the Pacific Public Health Surveillance Network to alert the re-

Ministry of Health task force recommended that children entering primary school in 2006 immediately be provided MR vaccine rather than a gradual implementation throughout the school year. The western division, where the outbreak started, was the first division to implement this recommendation; other divisions followed. In addition, the task force planned a nationwide immunization campaign targeting approximately 100 000 children, six months to six years of age. The vaccinated schoolchildren were not identified as part of the national campaign and were not included in the denominator of children targeted. In spite of the limited time to prepare and coordinate the microplanning, social mobilization, training, monitoring and logistics management, Fiji implemented the campaign over a period of four weeks beginning 3 April. Most areas were completed within four weeks; the more challenging areas took up to six weeks.

A post campaign rapid coverage assessment was undertaken to identify and vaccinate children not vaccinated during the campaign. Most parents who failed to vaccinate their children during the campaign stated they were "too busy" to take their child to a health facility. The as-



essment process identified another weakness in the health programme; there was not a systematic method to follow up non-compliant children and communities. Among an estimated target population of 91 600 children, age six months to six years, 89 750 (98%) received MR vaccine during the campaign.

As of 2 June 2006, the Ministry of Health of Fiji reported a total of 132 measles cases (see Figure 1); 117 were from the western division and 13 from the central/eastern division. Over 60% were children from the target age group, with the highest incidence occurring in the nine- to 11-month age group (4.1 per 1000). Pneumonia was the most serious

outcome and no deaths were reported. The current status of Fiji in terms of measles elimination is defined by the WHO Weekly Epidemiological Record¹ and the Field Guidelines for Measles Elimination as a stage of "sustained measles transmission" as long as cases continue to be reported and confirmed. Endemicity will be re-established if transmission continues uninterrupted for six months or more.

¹ Monitoring the interruption of indigenous measles transmission, Cape Town meeting, 14 October 2003. *Weekly Epidemiological Record*, 2004, 7:70-72



WHO Western Pacific Region Measles Laboratory Network Update - Accreditation

To attain measles elimination in the Region, a highly sensitive surveillance system needs to be established to detect measles cases without delay and omission in reporting and to help identify transmission pathways by providing the initiative with genetic information of measles virus. As remarkable success has been achieved in controlling measles, and as the elimination phase is close at hand, laboratory diagnosis of suspected cases becomes more critical. It is estimated that clinical diagnosis of



acute measles virus infection may have a positive predictive value of barely 5% in this later stage.

The WHO measles laboratory network in the Region maintains strong progress. A hands-on measles laboratory workshop, held in March in Hong Kong (China), largely focused on conventional ELISA assay and measles virus isolation in a bid to reinvigorate capacity-building and strengthening the service of the designated national measles laboratories. In addition to providing training, the network has set a WHO accreditation scheme in an effort to ensure and monitor quality of its services as agreed in its inaugurating meeting in 2004.

While the regional reference

laboratories (RRL) in Melbourne, Australia and Beijing, China are already fully accredited in their category, the WHO regional measles laboratory network has been striving to extend the necessary groundwork and procedures allowing full assessment of the accreditation status of the national level measles laboratories (NML).

Accreditation of NMLs are reviewed annually by the WHO Regional Office based on laboratory performance during the immediately preceding 12 months. Accreditation is given for the forthcoming year, if findings prove that the laboratory successfully satisfies the six criteria for accreditation as shown below:

1. Test results are reported by the laboratory on at least 80% of measles IgM samples within seven days of receipt.

Should the country concerned require a shorter turnaround time for its NML, this would override the seven-day requisite.

2. Serological tests are performed on at least 50 serological specimens annually.

To maintain skills in performing serological assays, virus laboratories should maintain appropriate reagents and assay kits to have capacity to test continually through the year. Any ELISA assays similar to the one for measles IgM detection can be counted for this requirement.

3. The accuracy of measles and

rubella IgM detection is at least 90%. Accuracy is determined by the agreement in test results on sera submitted by the NML to the RRL during the 12-month review period. The percentage of samples sent for validation is dependant on the quality of the laboratory and could range from 10% to 100%. Samples for validation should be representative of all results (positive, negative and equivocal) and outbreaks, and should be sent to the RRL at regular intervals, preferably twice a year.

4. Internal quality control procedures for IgM assays are implemented.

Appropriate quality control procedures are in place and followed.

5. The score on the most recent WHO approved proficiency test is at least 90%.

Proficiency test results to be reported within 10 days of panel receipt to receive full credit.

6. The score from the annual on-site review of laboratory operating procedures and practices is at least 80%.

All the national and regional reference laboratories participating in the proficiency test programme have passed for two distinct sets of the panel for 2004 and 2005 with excellent scores. Some of the laboratories have already undergone an initial on-site review and have shown their competency to external reviewers. Confirmatory testing also has been arranged for each laboratory within the network so as to complete the full assessment of the accreditation of the laboratories for the first time. It is expected that full accreditation status will be conferred to certain laboratories shortly and that this milestone will be reached by all the remaining laboratories in due course.

Pacific Immunization Programme Strengthening Workshop

May 2006

The UNICEF/WHO Pacific Immunization Programme Strengthening Workshop was held in Fiji from 8 to 12 May 2006 and was attended by Ministry of Health representatives from 16 Pacific island countries and areas, and by regional and international experts in the field of immunization.

The meeting helped to place immunizations in the forefront of health services delivery in the Pacific, as the Ministry of Health representatives reiterated their commitment to the regional twin goals of measles elimination and hepatitis B control by 2012. The twin goals challenge all Pacific countries and areas to ensure that their health services reach every newborn and provide life-

saving vaccines and other health interventions within their first year of their life.

The group engaged in discussions and sought solutions to common issues, such as the continuous exodus of health staff that has hampered the delivery of health services and immunizations in particular. The meeting also featured current issues such as the recent importation of the measles virus into Fiji, which has served as a reminder of the continued threat posed by infectious diseases such as measles and polio, and the important protection that vaccines can provide children in the Pacific. The group also engaged in expert discussion on fully understanding congenital rubella syndrome in the Pa-

cific. A parallel session of the Subregional Committee for the Certification of Poliomyelitis Eradication in the Pacific island countries and areas enabled several joint sessions and discussions among the two groups.

The second annual workshop was co-organized by the Australian Agency for International Development, the Japan International Cooperation Agency, the New Zealand Agency for International Development, the Secretariat of the Pacific Community, the United States Centers for Disease Control and Prevention, the United Nations Children's Fund and WHO.

International Finance Facility for Immunization

The International Finance Facility for Immunization (IFFIm) is a new international development financing institution that is supported by several donor countries - Brazil, France, Italy, Norway, Spain, Sweden and the United Kingdom. The central aim of IFFIm is to save more children's lives and to do so quickly. By investing the majority of resources up front—"frontloading"—this innovative funding programme will increase significantly the flow of aid to ensure reliable and predictable funding flows for immunization programmes and health systems development until 2015. An anticipated IFFIm investment of US\$ 4 billion is expected to prevent five million child deaths between 2005 and 2015, and more than five million future adult deaths.

IFFIm has recently agreed to fund the "Measles Investment Case" proposed by the Global Alliance for Vaccines and Immunization (GAVI). As part of this initiative, GAVI will contribute US\$ 37 million to the United Nations Foundation for support of measles supplementary immunization activities/catch-up campaigns. This will trigger a US\$ 9.25 million matching grant from the United Nations Foundation.

The WHO Regional Office for the Western Pacific submitted a proposal to fund primarily measles SIA activities, and to a lesser degree measles surveillance activities and activities supporting strengthening of routine EPI. The proposal identifies the four largest GAVI eligible countries in the Region (Cambodia, the Lao People's Democratic Republic, Papua New Guinea and Viet Nam) and would cover the period of 2006-2007. If funded, the support provided by this project grant would significantly boost the efforts of these countries in meeting the measles elimination goal of 2012.

Table 1. Regional Measles Monitoring of Country Surveillance Data (January-December 2005)*

	Reported suspected cases	Classification							Indicators		Latest date reported by country	Type of report
		Confirmed cases			Incidence rate ^o (Total confirmed)		Discarded	Pending	Suspected cases immunized ^o	Deaths		
		Laboratory confirmed	Epi-linked	Clinical	2004	2005						
Australia	11	11 [†]	0	0	0.23 (45)	0.06 (11)	0	0	36% (4)	0	24-Jan-06	case data
Brunei Darussalam												
Cambodia	264	3	0	143	2.55 (352)	1.06 (146)	118	0	45% (120)	0	26-Jan-06	case data
China												
Hong Kong (China)	83	48	1	16	0.73 (51)	0.93 (65)	18	0	16% (13)	0	26-Jan-06	case data
Japan ^x	546	-	-	-	6.84 (8,752)	0.43 (546)	-	-	-	-	14-Oct-05	aggregate
Lao People's Democratic Republ	295	7	73	209	25.74 (1,491)	4.99 (289)	6	0	33% (96)	0	11-Jan-06	aggregate
Macao (China)	5	0	0	0	0.00 (0)	0.00 (0)	5	0	80% (4)	0	09-Jan-06	case data
Malaysia	2,078	120		1,067	23 (5,729)	4.68 (1,187)	891	0	-	0	02-Jun-06	aggregate
Mongolia	4	0	0	0	0.00 (0)	0.00 (0)	4	0	75% (3)	0	25-Dec-05	case data
New Zealand	20	3	1	16	0.83 (33)	0.50 (20)	0	0	20% (4)	0	17-Jan-06	case data
Papua New Guinea	1,403	-	-	-	24 (1,385)	-	-	-	-	1	26-May-06	aggregate
Philippines ^x	210	0	0	118	3.7 (3,025)	0.14 (118)	92	0	40% (80)	0	28-Mar-06	case data
Republic of Korea	63	6	0	1	0.02 (11)	0.01 (7)	56	0	67% (42)	0	05-Jun-06	case data
Singapore	33	33	0	0	2.25 (96)	0.77 (33)	0	0	-	0	09-Jan-06	case data
Viet Nam	14024	196	241	137	0.26 (217)	0.68 (574)	12845	605	57% (7,971)		02-Jun-06	case data
Pacific Island Countries:												
American Samoa												
Cook Islands	0	0	0	0	0.00 (0)	0.00 (0)	-	-	-	0	07-Apr-05	zero-reporting
Fiji												
French Polynesia												
Guam												
Kiribati												
Marshall Islands												
Micronesia, Federated States of												
Nauru	0	0	0	0	0.00 (0)	0.00 (0)	0	0	-	0	07-Jul-05	zero-reporting
New Caledonia	0	0	0	0	0.00 (0)	0.00 (0)	0	0	-	0	07-Sep-05	zero-reporting
Niue												
Northern Mariana Islands	0	0	0	0	0.00 (0)	0.00 (0)	0	0	-	0	05-Sep-05	zero-reporting
Palau	0	0	0	0	0.00 (0)	0.00 (0)	0	0	-	0	02-Aug-05	zero-reporting
Samoa												
Solomon Islands												
Tokelau	0	0	0	0	0.00 (0)	0.00 (0)	0	0	-	0	06-Sep-05	zero-reporting
Tonga												
Tuvalu												
Vanuatu												
Wallis and Futuna												
Western Pacific Region	19039	427	316	1707			14035	605		1		

* Data are based on country reports and other sources available to EPI/Western Pacific Regional Office.

^o Incidence rate per 100 000 population (population figures from World Population Prospects: The 2004 Revision, New York, United Nations, 2005).

^o Suspected cases immunized does not distinguish between 1 or 2 doses.

[†] Lab confirmed or epidemiologically linked to a laboratory confirmed case

^x Sentinel surveillance system

Table 2. Regional Measles Monitoring of Country Surveillance Data (January-June 2006)*

	Reported suspected cases	Classification							Indicators		Latest date reported by country	Type of report
		Confirmed cases			Incidence rate ^o (Total confirmed)		Discarded	Pending	Suspected cases immunized ^q	Deaths		
		Laboratory confirmed	Epi-linked	Clinical	2005	2006						
Australia	97	97 [†]	0	0	0.04 (8)	0.48 (97)	-	-	14% (14)	0	02-Jun-06	case data
Brunei Darussalam												
Cambodia	110	0	0	74	0.30 (43)	0.52 (74)	34	2	36% (40)	0	26-May-06	case data
China												
Hong Kong (China)	38	15	0	14	0.55 (39)	0.41 (29)	9	0	39% (15)	0	30-May-06	case data
Japan ^x												
Lao People's Democratic Republ	22	0	0	18	4.56 (258)	0.30 (18)	0	4	18% (4)	0	05-Jun-06	aggregate
Macao (China)	2	1	0	0	0.00 (0)	0.22 (1)	1	0	50% (1)	0	05-Jun-06	case data
Malaysia	383	33	0	91	3.60 (879)	0.48 (124)	259	0	-	0	09-Jun-06	aggregate
Mongolia	9	0	0	0	0.00 (0)	0.00 (0)	9	0	89% (8)	0	23-May-06	case data
New Zealand	7	0	1	3	0.18 (7)	0.10 (4)	0	3	0% (0)	0	26-May-06	case data
Papua New Guinea												
Philippines ^x												
Republic of Korea	65	21	0	0	0.00 (0)	0.04 (21)	37	7	52% (34)	0	05-Jun-06	case data
Singapore	16	16	0	0	0.42 (18)	0.37 (16)	-	-	-	0	25-May-06	case data
Viet Nam	1029	75	44	0	0.02 (19)	0.14 (119)	756	154	59% (611)	0	02-Jun-06	case data
Pacific Island Countries:												
American Samoa												
Cook Islands	0	0	0	0	0.00 (0)	0.00 (0)	0	-	-	0	15-May-06	zero-reporting
Fiji	132	22	0	110	-	15.57 (132)	-	-	6% (8)	0	02-Jun-06	case data
French Polynesia												
Guam	1	0	0	0	0.00 (0)	0.00 (0)	1	-	-	0	15-May-06	aggregate
Kiribati	0	0	0	0	-	0.00 (0)	0	-	-	0	15-May-06	zero-reporting
Marshall Islands												
Micronesia, Federated States of	0	0	0	0	0.00 (0)	0.00 (0)	0	-	-	0	15-May-06	zero-reporting
Nauru	2	0	0	0	0.00 (0)	0.00 (0)	2	-	-	0	15-May-06	aggregate
New Caledonia	1	0	0	0	0.00 (0)	0.00 (0)	1	-	-	0	15-May-06	aggregate
Niue	0	0	0	0	0.00 (0)	0.00 (0)	0	-	-	0	15-May-06	zero-reporting
Northern Mariana Islands	0	0	0	0	0.00 (0)	0.00 (0)	0	-	-	0	15-May-06	zero-reporting
Palau	0	0	0	0	0.00 (0)	0.00 (0)	0	-	-	0	15-May-06	zero-reporting
Samoa												
Solomon Islands	0	0	0	0	-	0.00 (0)	0	-	-	0	15-May-06	zero-reporting
Tokelau	0	0	0	0	0.00 (0)	0.00 (0)	0	-	-	0	15-May-06	zero-reporting
Tonga	0	0	0	0	0.00 (0)	0.00 (0)	0	-	-	0	15-May-06	zero-reporting
Tuvalu	0	0	0	0	0.00 (0)	0.00 (0)	0	-	-	0	15-May-06	zero-reporting
Vanuatu	0	0	0	0	-	0.00 (0)	0	-	-	0	15-May-06	zero-reporting
Wallis and Futuna	0	0	0	0	-	0.00 (0)	0	-	-	0	15-May-06	zero-reporting
Western Pacific Region	1914	280	45	310			1109	170		0		

* Data are based on country reports and other sources available to EPI/Western Pacific Regional Office.

^o Incidence rate per 100 000 population (population figures from World Population Prospects: The 2004 Revision, New York, United Nations, 2005).

^q Suspected cases immunized does not distinguish between 1 or 2 doses.

[†] Lab confirmed or epidemiologically linked to a laboratory confirmed case

^x Sentinel surveillance system

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