

**Measles outbreak and response campaign in Fiji, 2006**

Measles is documented as having accounted for many deaths among the indigenous Fijian population in the late 1800s. Anecdotal evidence and reports exist of well-known mass gravesites in villages, where the unfortunate victims of measles epidemics were communally buried. Given the tragic historic impact of infectious diseases such as measles on our population, policy-makers, health professionals and the community should treat outbreaks with urgency and give them more attention.

The last documented outbreak of measles in Fiji was in late 1997–early 1998, when 955 cases were reported to the Ministry of Health (MOH). In 2001 there were increased notifications of measles cases from certain geographical areas in Fiji, based on fever and rash clinical case definitions. However, there was no laboratory documentation to support the serological diagnosis of measles. Instead, rubella was confirmed both serologically and clinically from the islands of Taveuni in the Northern division and Koro in the Central/Eastern division. Hence, a confirmed outbreak of rubella occurred in Fiji in 2001 and this was supported by similar outbreaks in the neighbouring Pacific countries of Tonga and Samoa.

Fiji's immunisation coverage for measles in 2005, as reported by the National Immunization Survey conducted that year, was 80%. This falls short of the 95% required to provide adequate population immunity to prevent measles outbreaks and eventually eliminate the disease. Initially, the measles antigen was given as a single dose at the age of nine months. Since 2003/2004, it has been given as a combined antigen with rubella, known as MR, at two different age schedules. The first MR dose (MR1) is given at age 12 months and the second dose (MR2) upon school entry, at around six years of age. Thus, as a response towards its goal of measles elimination by 2010, Fiji has introduced a second dose of MR into its routine EPI schedule.

**Current measles outbreak and mobilisation of response**

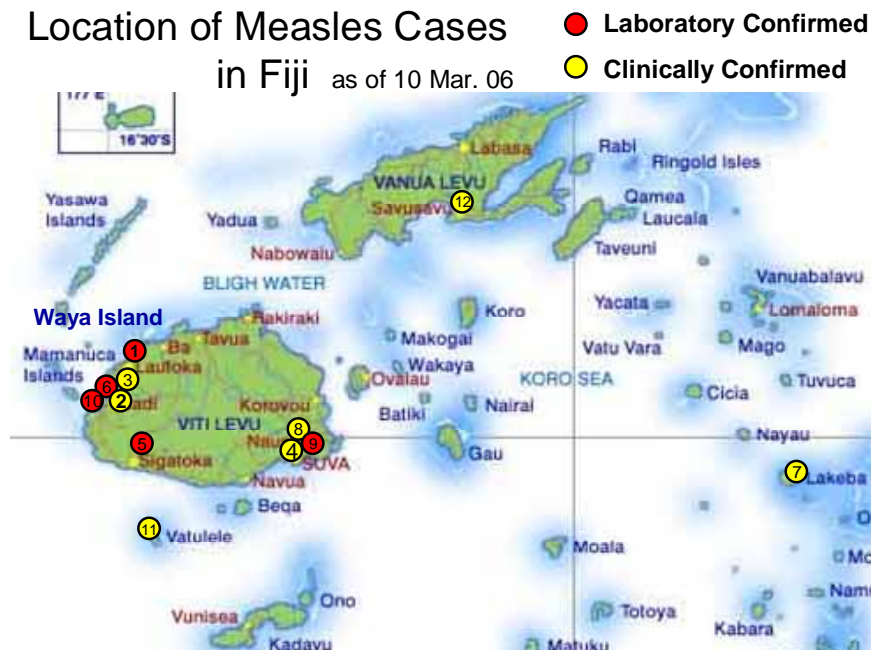
On 17 February 2006, Lautoka Hospital in the Western division reported to the Mataika House laboratories three cases of measles in children aged six months (one case) and 11 months (two cases), who had already been hospitalised. One case was from Lautoka and the other two had been referred from Nadi and Sigatoka hospitals. Interestingly, the case from Lautoka had developed the symptoms while in the Yasawa Islands, a group of islands frequently visited by tourists. Acute-phase sera were collected from the three cases for measles IgM enzyme-linked immunosorbent assay testing, and the specimens were transported to Suva. Only one of the three met the full criteria for clinical case definition. However, subsequent results of serology tests confirmed all of them to be positive for measles-specific IgM antibodies.

After discussions between the MOH Public Health (PH) Division, the three divisional health directors, paediatricians and WHO/UNICEF, it was agreed that a supplementary immunisation activity (SIA) – commonly referred to in Fiji as a mass measles vaccination (MMV) campaign – be planned and implemented. This led to the formation of a national measles outbreak taskforce (NMOT) comprising senior PH staff, the health services of the three geographical divisions (Western, Northern and Central/Eastern), Fiji Pharmaceutical Services and donor agencies WHO, UNICEF, JICA/J-PIPS and AusAID/Fiji Health Sector Improvement Program (FHSIP). The taskforce is chaired by the Director of Public Health.

Following the first meeting of NMOT, on 10 March in Suva, the three divisional health services were advised to make their own micro-plans to look into two major aspects of this outbreak: ongoing measles surveillance, and the implementation of MMV activities (SIA) to contain transmission within the country. By this time, the number of cases of measles had

increased to 12: seven from the Western division, four from Central/Eastern and one from Northern (see Figure 1). Since the outbreak had been confirmed through laboratory tests in both Fiji and Melbourne, Australia, a consensus was reached that no further blood investigation was necessary unless there were unusual cases, or a first case arose in a new location.

**Figure 1: Initial mapping of measles cases (as of 10 March 2006)**



NMOT agreed to make the target age group for the SIA from six months to six years, irrespective of previous history of measles infection or prior vaccination status. The campaign was to officially begin on 3 April and end on 3 May 2006. The three divisional health services were to finalise their plans with assistance from the MOH central office and donor agencies. Other major outputs from the meeting were:

- a decision to reprogramme funds from the PH budget to fund initial planning and implementation activities;
- a decision to conduct SIA training of all PH nurses throughout the country in cold chain integrity, vaccine potency, safety injection techniques, waste management, monitoring adverse events, and recording and reporting coverage data;
- that logistics support from agencies involved would include:
  - WHO – technical advice with SIA and epidemiological surveillance
  - UNICEF/CDC – vaccines and consumables
  - FHSIP/AusAID – technical advice and funding
  - JICA/J-PIPS – technical advice, equipment, vehicle; and
- that general practitioners and Suva Private Hospital would be involved in notification of measles cases and vaccination of children in the target age group.

By this time the three divisional health services were already planning their activities. Western Health Services was putting in place a network for notification and follow-up of all measles cases in the division, and a budget plan to trace and vaccinate all existing defaulters for MR1 and to urgently complete school coverage for MR2. They had confirmed that they would start two weeks earlier than the official campaign date. The other two

divisions were more focused on consolidating their micro-plans and starting on the official date set by the taskforce.

### **Communication and social mobilisation strategies**

With the management and coordination of a senior technical adviser from FHSIP and technical staff from the National Centre for Health Promotion, an implementation strategy was put in place to communicate important health messages and alerts to the media and the community through the “M-RIP” principles: Massive, Repetitive, Intensive and Persistent communication. The strategy comprised:

- two fact sheets on measles and health advice – one for the community (parents) and the other for health professionals;
- vaccination advice to health staff on eligibility criteria for the target age group;
- two press conferences for major media outlets;
- radio announcements giving health alerts and SIA campaign dates; and
- TV spots giving health advice and alerts.

The community fact sheets and radio announcements were translated from English into the two major vernacular languages – Fijian and Hindustani – while the TV spot was in English only.

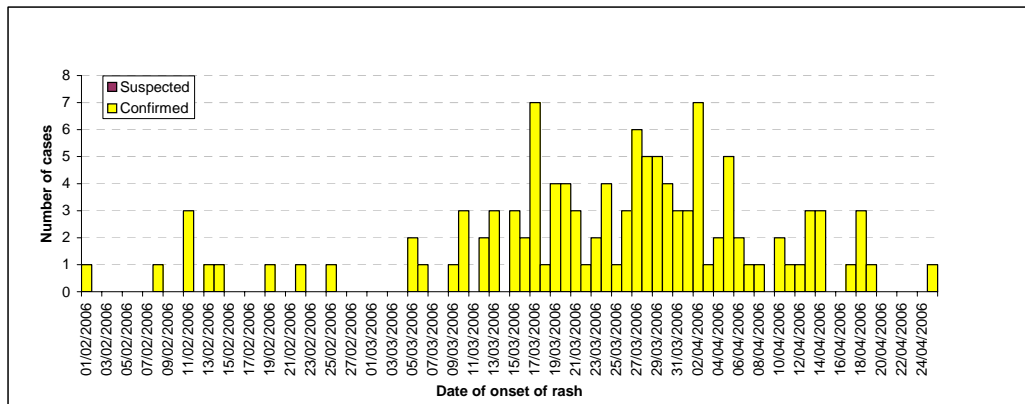
### **Disease surveillance**

A surveillance team set up an office in the MOH central office in Suva to coordinate the active surveillance of measles cases throughout the country, mainly targeting the 21 sentinel sites that are already in place for hospital-based active surveillance of acute flaccid paralysis for polio elimination in Fiji. The team consisted of a WHO epidemiologist and the National Adviser for Family Health. In six weeks, five epidemiologists were actively involved in the outbreak surveillance and response.

The active surveillance involved phoning a contact person at each of the 21 sentinel sites every week from 13 March (later, due to the increasing number of cases, this was done on a daily basis) to ask whether any measles cases had been seen on the previous day or weekend. All positive cases were investigated using a case investigation form and notified to the divisional office on a line listing form. The General Manager (Community Health) in the divisional office then consolidated all the data and emailed or faxed the final line listing to the surveillance team in Suva. Only cases notified through the line listing were officially accepted and counted.

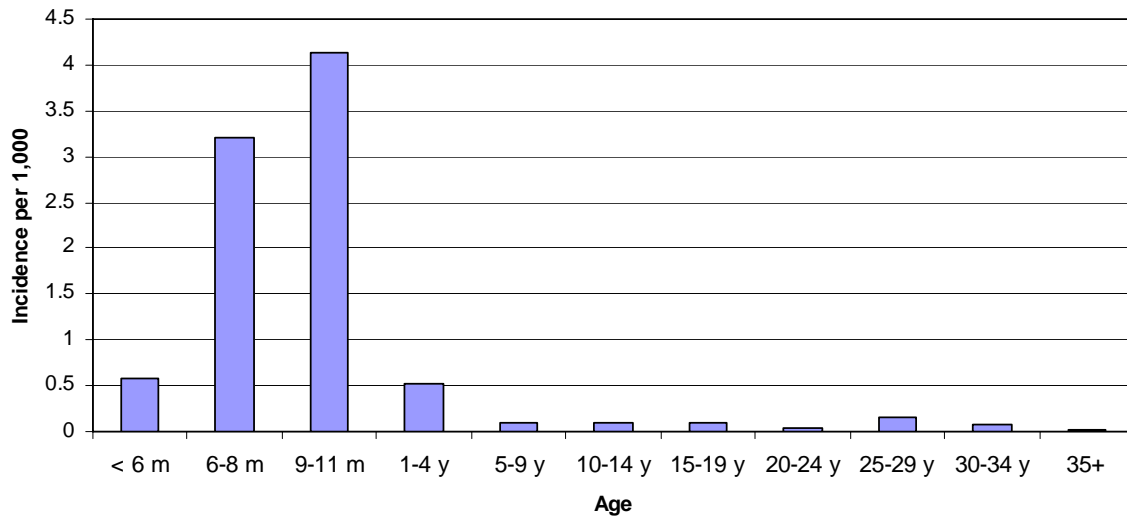
The surveillance team was thus responsible for analysing and posting summary updates of the outbreak to all stakeholders, including subdivisional medical officers (the main source of data), divisional managers, clinicians, partner agencies, PacNet, etc. The team was also involved with consolidating SIA coverage data from the subdivisions, in a process coordinated by an EPI senior technical adviser from WHO that allowed closer monitoring of the progress of the SIA in the various subdivisions, and provided constant feedback to the divisional managers on their coverage performance.

**Figure 2: Epidemiological curve for measles outbreak in Fiji**



\* Six cases are not shown in the figure due to unknown date of onset of rash at this stage

**Figure 3: Age-specific attack rates**



**Implementation of SIA**

Before the campaign start date, many health centres throughout the country were already busy with vaccinations of children who had responded to the media alerts, especially the first TV spot (aired on 24 March) on the measles outbreak situation and the need for parents to bring in any children within the targeted age group. The previous day, the two fact sheets were collected from the printers and dispatched to schools and health facilities – the two major distribution centres for the respective fact sheets.

On 3 April, the campaign was officially launched in the Northern and Central/Eastern divisions. The whole Western division and the Suva and Rewa subdivisions in Central division had started their campaigns 1–2 weeks earlier. Many clinics were vaccinating as many as 200–300 children a day, and in certain places the staff could barely cope with the influx. After the first two weeks of the campaign, the load at the clinics lessened. This was the signal to intensify outreach vaccination posts into the community, including house-to-house visits.

There were very few problems in terms of confusion about the target age group. Most of the initial setbacks were due to delays in the distribution time of vaccines from the storage facility (usually the subdivisional health centre) to vaccination outposts or health facilities in remote areas that have no refrigerators due to transport problems. There were hardly any reports of adverse side effects, undue wastage of vaccines, or refusal of parents to have their children vaccinated – though two incidences of the latter were reported from the Central/Eastern and Northern divisions, due to ignorance and strict religious beliefs.

### Summary results

Table 1: SIA Fiji coverage as of 28 April 2006

<b>Central</b>	<b>Target population</b>	<b>SIA doses given</b>	<b>Coverage</b>
Suva	20,723	17,184	83%
Serua/Namosi	2,100	2,041	97%
Rewa	8,439	8,046	95%
Tailevu	2,539	2,028	80%
Naitasiri	1,622	1,902	117%
<b>Total</b>	<b>35,423</b>	<b>31,201</b>	<b>88%</b>
<b>Eastern</b>	<b>Target population</b>	<b>SIA doses given</b>	<b>Coverage</b>
Lomaiviti	2,432	1,983	82%
Kadavu	1,550	981	63%
Lakeba	935	1,052	112%
Lomaloma	356	218	61%
Rotuma	278	271	97%
<b>Total</b>	<b>5,551</b>	<b>4,505</b>	<b>81%</b>
<b>Western</b>	<b>Target population</b>	<b>SIA doses given</b>	<b>Coverage</b>
Lautoka/Yasawa	10,247	8,783	86%
Nadi	7,116	6,593	93%
Ba	4,497	3,716	83%
Tavua	2,986	2,875	96%
Nadroga	5,584	5,262	94%
Ra	3,206	3,497	109%
<b>Total</b>	<b>33,636</b>	<b>30,726</b>	<b>91%</b>
<b>Northern</b>	<b>Target population</b>	<b>SIA doses given</b>	<b>Coverage</b>
Macuata	10,643	7,340	69%
Cakaudrove	3,903	3,483	89%
Bua	2,000	1,856	93%
Taveuni	2,103	2,025	96%
<b>Total</b>	<b>18,649</b>	<b>14,704</b>	<b>79%</b>
<b>National total</b>	<b>93,259</b>	<b>81,136</b>	<b>87%</b>

### Conclusion

As of 28 April 2006, 125 cases of measles had been reported in Fiji based on clinical case definition and laboratory tests. Of these, seven had epidemiological linkages to a laboratory-confirmed case, and 17 were further confirmed by positive measles-specific IgM serology. Twenty-six cases (21%) were admitted to hospital; these were mainly younger children

suffering complications of pneumonia. A pregnant mother was hospitalised with measles during her third trimester but delivered a healthy baby uneventfully. The baby subsequently developed measles without any complications. No deaths have been reported so far.

Among the 21 active sentinel sites at hospitals, 17 were reporting (including zero reporting) as of 27 April. The Western division, especially the Nadroga subdivision along the south-western part of the main island of Vitilevu, was the most affected area, due to poor routine measles coverage rates, poor accessibility to health services, and possibly low pre-existing herd immunity.

The current SIA campaign was implemented in a dramatic fashion compared to the last campaign, with many stakeholders' interest and involvement. The initial slow pace of the response was overtaken by enthusiastic managers, anxious public health staff, curious and willing donor agency partners, and a very receptive but cautious public. Achieving 87% coverage (over 81,000 doses administered) within 3–4 weeks of intensive vaccination activities was no easy feat (see Table 1). Credit must go to the PH nurses for their dedication and sacrifices in ensuring the successful implementation of the campaign.

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