

## Rubella Outbreak in Tonga in 2002

### Introduction

A rubella outbreak started around April/May 2002 and peaked at the end of August and beginning of September 2002, on Tongatapu, the main island of Tonga. Rubella was confirmed serologically from blood tests sent to Auckland, New Zealand.

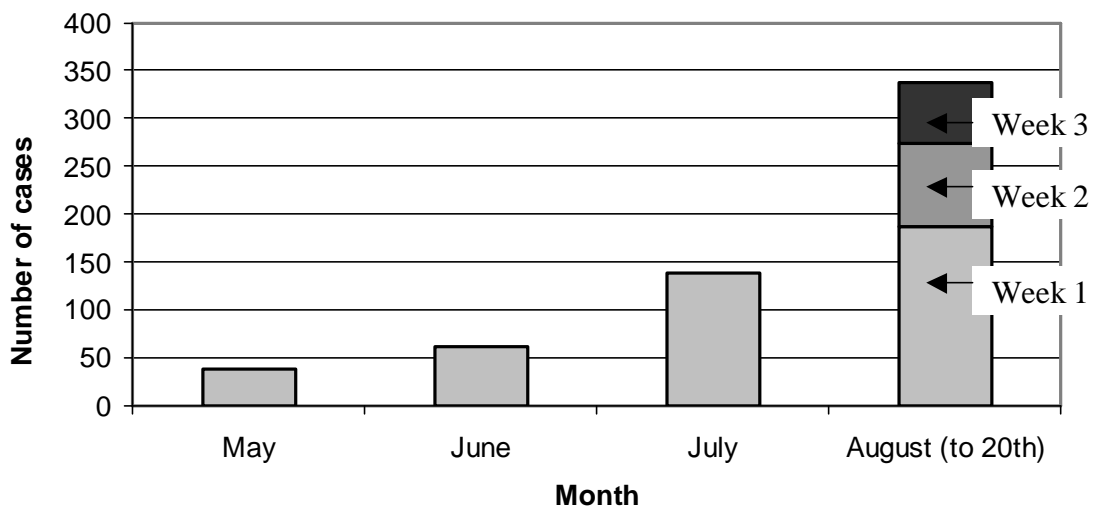
Serological results from the Central Laboratory Records showed there had been previous rubella outbreaks in Tonga in 1990 and 1996, but which differed in magnitude and response. The 1996 “measly” outbreak was significant and led the Ministry of Health to recommend a second dose of measles vaccinations at school entry.

Tonga’s total population is about 100,000 (97,784 1996 population census) with 50% under 20 years of age. The crude birth rate is about 30.3.

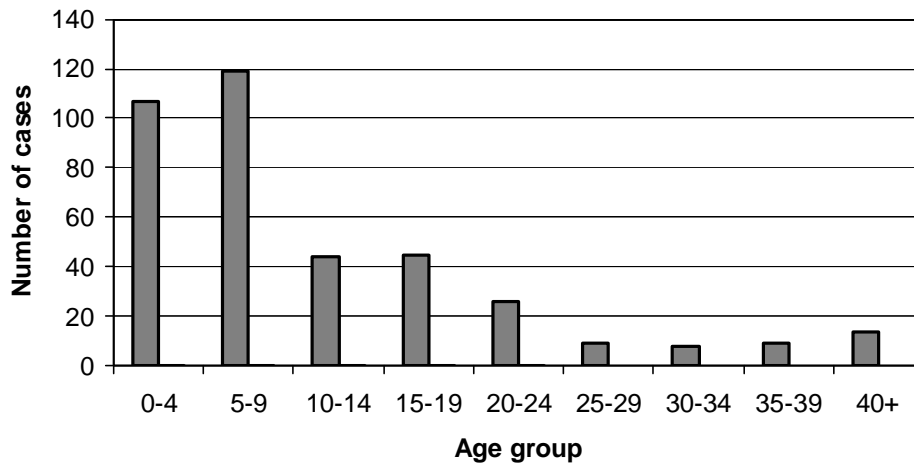
### Clinical characteristics and confirmation

Initially, community nurses (Maternal Child Health nurses) were seeing cases involving form of measles-like rashes with associated fever in young children and some older persons. Increasing numbers of children were seen at the paediatric ward of Vaiola Hospital, Nuku’alofa, which prompted the paediatrician there to send blood samples in for testing. A possible fever and rash type illness measles vs rubella was brought to national attention on June 02. By August, children, young adults and older people were seen with rashes, fever and lymphadenitis in homes, outpatient department of Vaiola Hospital, and other health centres on Tongatapu (Figs 1 and 2).

**Figure 1: Month of presentation of rash cases seen at Vaiola Hospital outpatients department from May to August 2002**



**Figure2: Age of rash cases seen at Vaiola Hospital outpatients department from May to August 2002**



**Symptoms and signs**

Although few children were admitted to the paediatric ward with encephalitis/meningitis in May and June, six children were admitted to the paediatric ward with *similar* symptoms and signs during the last two weeks of July. These children had some common histories of rashes, lasting for about three days, and fever prior to the onset of those symptoms and signs. Signs included delirium, fits, some degree of retardation and withdrawal, and somnolence. Other signs were typical painful lymphadenopathy of rubella, occurring around occipital and sub-occipital areas, and periauricularly.

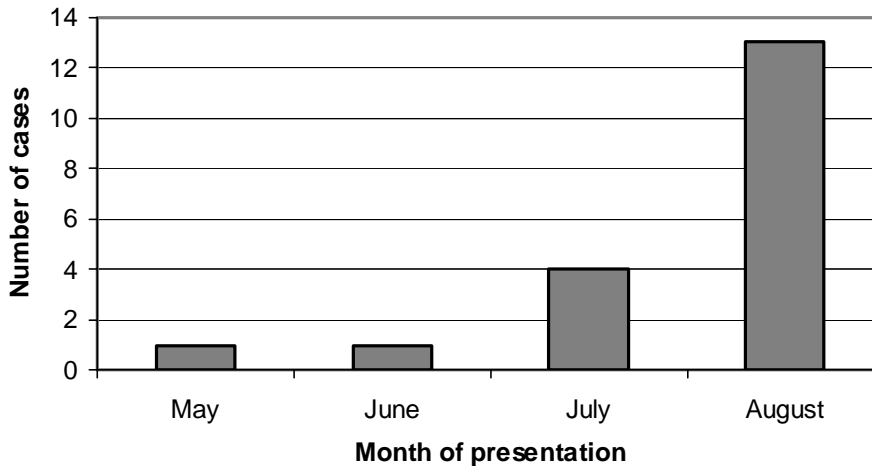
Four blood samples from these children aged 6 to 8 came back positive for acute rubella infection. Between 2 August and 23 October, there were about 40 suspected cases of encephalitis seen at paediatric wards on Tongatapu and Vava'u. Thirty-five of those were confirmed serologically to be due to rubella virus. This is the highest rate of encephalitis in a rubella outbreak ever reported according to the literature and the World Health Organization. The primary age group affected is mainly below 12 years of age, although there were two children aged 15 and 17 years.

Fortunately, almost all of these young patients recovered with no obvious sequelae except for one 10 year old who died from hemorrhaging due to peripheral trombocytopenia with an aplastic picture in the bone marrow aspirate. It was believed to be a rubella virus induced aplasia, but this has not been confirmed.

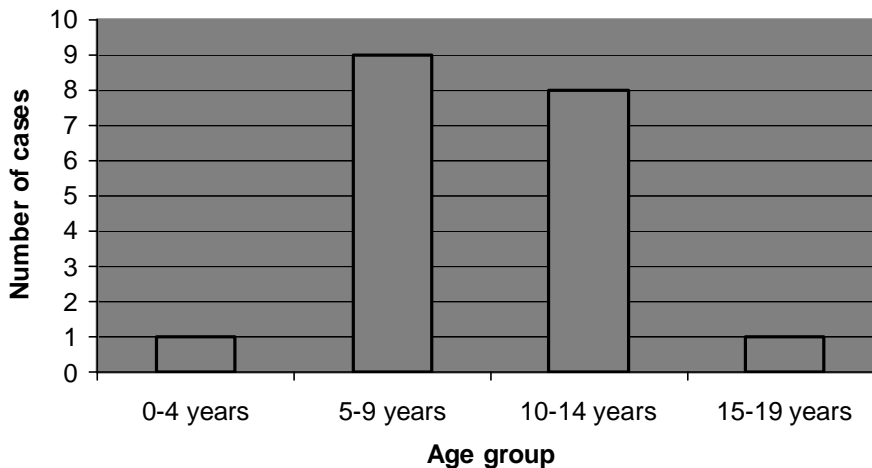
Towards the end of October the incidence of rubella plateaued off in Tongatapu though there were still few clinical rubella patients at the outpatient department of Vaiola Hospital and other health centres. At this time, the outer island groups reported clinical rubella cases, and even two encephalitis cases. Also, there were no

more encephalitis cases from the end of October onwards. The most isolated island of Niua Fo'ou, which is closer to Samoa than the capital, Nuku'alofa in Tongatapu, did not report any clinical rubella even up to the time the emergency campaign started.

**Figure 3: Month of presentation of cases of encephalitis at Vaiola Hospital from May to August 2002**



**Figure 4: Age of presentation of cases of encephalitis at Vaiola Hospital from May to August 2002**



**Pregnant Women**

Forty blood samples were taken from serological analysis from asymptomatic pregnant mothers from the outer islands of Vava'u, the second largest island group in Tonga. The results showed that about 30% of those pregnant mothers were not protected from the rubella virus.

## Response Strategy from the Ministry of Health

There has been much development in our response strategy, including:

- The formation of a Rubella Taskforce;
- Assess the situation and seek assistance for technical and monetary support;
- WHO was approached through the CLO, Tonga;
- Preparation to launch a National Emergency Rubella vaccination campaign;
- Establishment of the Congenital Rubella Syndrome (CRS) Surveillance;
- WHO provided tremendous assistance in terms of technical and monetary support by hiring a consultant and paying for the Measles Rubella (MR) vaccine supply. They were also instrumental in developing our local response plan.

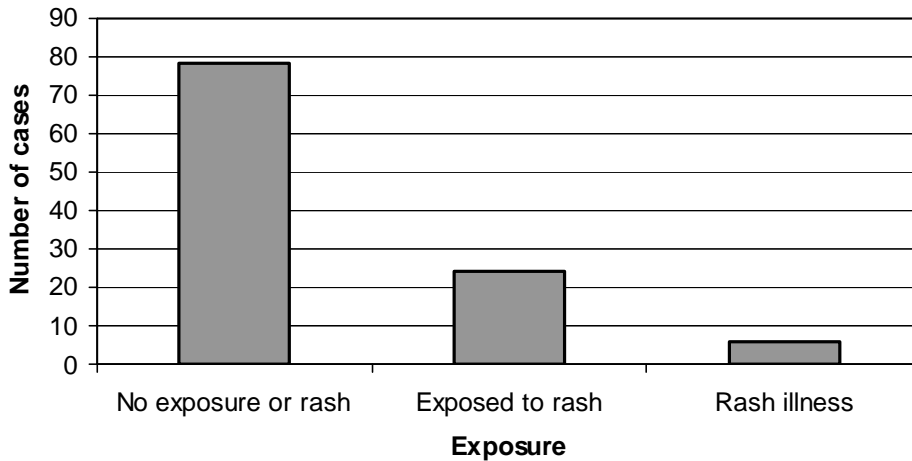
**1. An emergency MR vaccination campaign** was launched nationally on 5 November 2002:

- a. The target population is 1-19 years of age for all males and females, and 20-44 years of age for females only. WHO is assisting us financially (for vaccines and sending blood samples for serological tests in New Zealand). The target population will be about 67,000 persons.
- b. One of the small islands close to the main island of Tongatapu was used as a pilot project, starting in the week of 29 October with a target population of not less than 1000. The rest of Tonga will follow suit beginning with the schools until they break at 3 pm, followed by immunising the rest of the communities according to the household census.

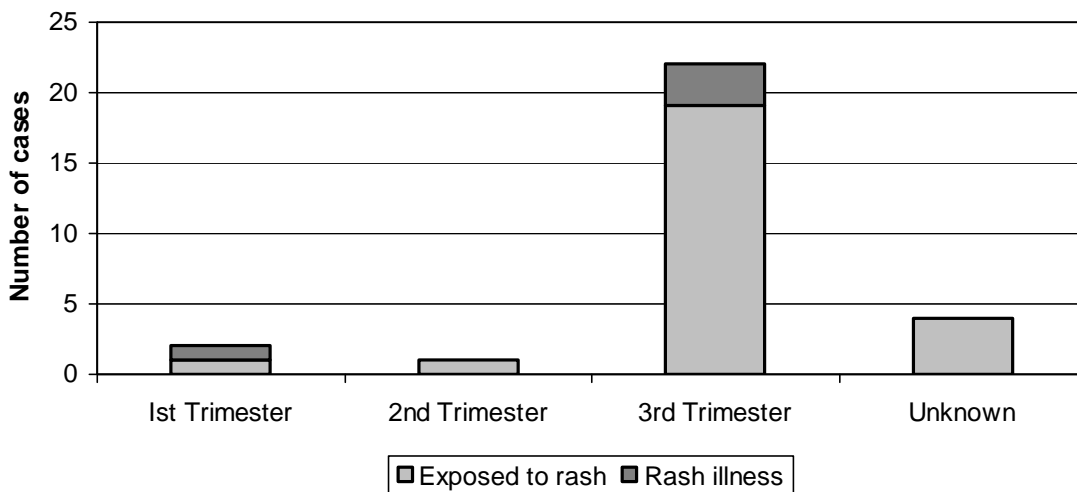
**2. Congenital Rubella Syndrome (CRS) Surveillance** has been established linking the main hospital at Vaiola with the rest of the hospitals of the outer island groups.

All pregnant women were asked whether they contracted clinical rubella or were exposed to someone who suffered rashes and fever. Their answers will be recorded in a red-stamped space provided at the front of all Antenatal Clinic charts. All babies of mothers with the positive answers to any of the two questions will be subjected to a cord blood sample to be sent for serological testing.

**Figure 5: Antenatal Clinic Survey, Vaiola Hospital week of 19 August 2002  
 Exposure or sufferer of rash illness (n=109)**



**Figure 6: Antenatal Clinic Survey, Vaiola Hospital week of 19 August 2002  
 Gestation of attendees and exposure status (n=109)**



**3. All pregnant women or those females who want to get pregnant** within a month of the MR vaccination campaign were advised to refrain from receiving the vaccines now and that they may have their MR vaccine after delivery but before being discharged from the hospital or health facility.

**4. Future/ongoing plan**

- a. All babies will be given their first MR vaccine at the age of 12 months and will have their second dose after four weeks.
- b. The CRS surveillance operation will be maintained.

***Acknowledgement with gratitude:***

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*Nova Store*

*All Members of Tonga Communities*

*Ministry of Health staffs*

Malo

**RUBELLA TASKFORCE**

**Ministry of Health**

**Tonga**

PS: For further information on the above paper, please contact Dr Seini Kupu, Senior Medical Officer, Communicable Disease Section, MOH, Tonga. Ph. (676) 23-200 ext 30 or email: <seinik@kalianet.to>