Verification of elimination of lymphatic filariasis as a public health problem in Vanuatu

Summary

General description:

Vanuatu consists of an archipelago of Melanesian islands with a land area of 12,195 sq km and a population of 234,023 (National Statistics Office Vanuatu, 2009) that had an annual growth rate of 2.3% over the ten year period. The number of households increased from 36,415 in 1999 to 47,373 in 2009. The average household size is 4.8 persons. The total population in Vanuatu was considered to be at risk of LF from the beginning of the elimination programme.

In 2011, the GDP was $760 million, showing a steep increase from 2000 where the GDP was at $272m. Vanuatu ranks as a lower middle-income country according to the World Bank. The household income and expenditure survey results of 2007 found a poverty gap ratio of 5.6% (3.8% in the rural areas and 10.4% in Port Vila) indicating severe poverty levels in the capital. Sixteen per cent of the total population was living below the basic needs poverty line and 7 per cent were experiencing food poverty.

There are five main hospitals; one in each of the five larger provinces. The two key referral hospitals are located in Port Vila (Vila Central Hospital) and Luganville (Northern District Hospital), offering inpatient and outpatient care. Vanuatu has recently installed a new health information system (HIS) for reporting from all levels of health facilities. The new HIS form includes a line for LF cases and numbers are being reported, but the case definition is unclear.

The vector of LF in Vanuatu is Anopheles farauti. This is present throughout the islands. It is a night-time biting mosquito that feeds both inside and outside houses. It breeds in water on the ground, for example swamps, ditches, puddles and along stream banks.

Vanuatu receives visitors travelling mostly from Fiji, Papua New Guinea and the Solomon Islands. Whilst the Solomon's have eliminated LF as a public health problem, it is still prevalent in Fiji and PNG.

2. History of lymphatic filariasis

The prevalence of filariasis recorded in Vanuatu before 1950 was 30%. There are records showing 20 surveys of LF in Vanuatu with sample sizes of 1 to 732 persons tested, with prevalence ranging from 0% to 60% (excluding one survey site with 1 tested, 1 positive).

In the 1950's, surveys on 12 islands or island groups showed a prevalence of 21.7% positive (N=396). In adults (>15 years) it was 24.5% (N=343) and in children (<15 years) 3.8% (N= 53).

No further studies were conducted until the Pacific Programme to eliminate LF (PacELF) started in 1998. A nationwide PacELF baseline survey of Vanuatu in 51 villages in 1997 to 1998 found the Mf prevalence to be 2.5% (N=4569) and ICT prevalence to be 4.8% (N=4362). All of Vanuatu was considered endemic.

In 1998 the country conducted a baseline survey throughout the six provinces using convenience sampling of persons of all ages residing in 51 villages. A total of 4,362 blood samples from 48 villages were tested with ICT, giving national antigenaemia prevalence of 4.8%. Meanwhile a total of 4,269 Mf blood slides were collected at night from 49 villages, giving 2.5% national Mf prevalence.

Penama province had the highest ICT prevalence with 15.0% (N= 784), followed by Torba province with 10.2% (N=227), then Malampa province at 7.1% (N=894) and Tafea 2.5% (N=952). Shefa and Sanma provinces had low levels of ICT positives: 0.1% (N=640) and 0.3% (N=833) respectively. The island of Ambae

(Penama province) had the highest ICT prevalence of 18% (N=311). Males had a higher ICT prevalence overall than females: 5.8% in males and 3.9% in females.

3. Interventions

Nation-wide mass drug administration was carried out once a year from 2000 to 2004 using a community based approach with directly observed treatment using DEC (6mg per body weight) and albendazole (400mg per person). Household registers were developed and used to track the MDA coverage when books were returned to the national office. Vanuatu was separated into three EU's, covering six provinces.

Coverage for each round was reportedly above 75% of total population, using 1999 census data adjusted by estimated population growth for total population data.

An additional, geographically limited MDA occurred following the results of 2004 spot-check site monitoring in North Ambrym, Malampa province (1999 census population: 3,899). Follow-up MDA was implemented there in 2008, 2009, and 2010 with coverage rates of 76%, 78%, and 79%.

Since 2003, morbidity kits have been provided to visiting health care staff. The team trained the family members of the LF patients and the health workers in the area on how to assist LF patients to care for the affected part on a daily basis and during acute attacks.

4. Assessment of interventions

Eight sentinel sites were selected from the villages included in the baseline survey. The overall prevalence across these sites in 1998-1999 was 22% ICT and 11% Mf (N= 561). In 2002, after 2 MDA rounds, sentinel site monitoring of 1,171 persons of all ages in the 8 villages found 8% antigen positivity and 0.8% microfilaremia positivity. Thus there was a significant decrease between 1998 and 2002.

For Shefa and Sanma provinces, tests were conducted over a one month period in 2003. No positives were detected at Vila Central hospital but in Santo, 4.1% of 73 tested was positive.

In 2004, spot-check site monitoring in North Ambrym in Malampa province found a 19.2% antigen level in 551 samples from all ages. All ICT positives were treated directly after the microfilaremia blood slides were collected.

Based on these results, the programme decided to implement three further rounds of MDA in North Ambrym. This MDA started in 2008 and lasted until 2010. Directly after MDA in 2008, a spot-check site assessment found a 2.3% antigen level in 1,368 samples from all ages in North Ambrym.

In 2008, spot-check site monitoring found a 2.9% antigen level in 456 samples from all ages in South Pentecost and west Ambae sites in Penama province. Both sites found zero microfilaremia positives among those who tested positive for antigen; all ICT positives were treated immediately.

A Transmission Assessment survey was implemented between 2007-2011 across three EUs. These sites were TORBA and SANMA provinces (1), PENAMA and MALAMPA provinces (2), SHEFA and TAFEA provinces (3). The prevalence reported respectively is 0.2%, 0.3%, 02% (using a 95% CI). These figures would suggest that is Vanuatu is either not having on-going transmission or having insignificant transmission much below the standard cut off level.

5. Surveillance

Morbidity surveillance were inserted into the MDA registration book, requesting the health workers and MDA team leader to report the existing LF cases in their area during the MDA campaign. The outcome of this

was a total of 95 reported morbidity cases of which 67% were lymphedema cases, 24% were hydrocele cases and 7% were mixed lymphedema and hydrocele together. Men were twice as likely to be affected as women, and the majority of the cases were found in Penama province.

LF surveillance activities have been ongoing in the form of C surveys and Transmission Assessment Surveys. The results of these surveys have shown a declining trend of prevalence throughout the course of Vanuatu's involvement in PacELF.

LF is now a notifiable disease in Vanuatu with the inception of the HIS. Surveillance is ongoing in Sanma and Shefa provinces, where all suspected malaria patients reporting to the two main hospitals are also tested for LF antigenemia using ICTs. As of December 2011, 1100 samples had been tested, with 0 LF-antigen positives found.

6. Additional data that support the absence of LF transmission.

In addition to ICT testing for LF, stool surveys have been collected for intestinal parasites hookworm, *Ascaris lumbricoides* and *Trichuris trichiura* in children aged 6-16 on Efate Island in 2002, before and after the third round of LF MDA, partly as a means of assessing the impact of LF MDA. . The prevalence of soil transmitted helminths decreased by 66% after the survey compared to before (N=55).

LF and malaria are transmitted by the same mosquito vector in Vanuatu (*An. farauti)*. The Malaria Control Programme in Vanuatu targeted universal long-lasting bednet distribution coverage by 2011. National LLN net was 61% in 2010 and 100% in 2011. In 2009-2011, three rounds of indoor residual spraying (IRS) occurred in the entire province of Tafea (which is working towards malaria elimination) with 95% of households being sprayed. In 2011, IRS occurred in one of the high-risk malaria areas in Shefa province with 92% of 1040 households being sprayed; however, this is not the LF high-risk area included in baseline LF mapping. One round of spraying has also been conducted in Torba province in 2012.

The malaria annual parasite incidence has declined from 2009 to 2012 and is now at 13 per 1000 per year with 60-70% of cases being *P.vivax*.

7. Process it has gone through to date

This dossier was prepared by the Ministry of Health Palau with assistance from an external LF expert. It was submitted to the WPR NTD Regional Programme Review Group (RPRG) for review in July 2013. RPRG reviewed it and suggested further improvements. Current dossier is the revised version resubmitted for further by the RPRG.