NATIONAL MALARIA STRATEGIC VISION 2007-2016

SOLOMON ISLANDS

Key Deliverables

The National Malaria Strategic Vision 2007-2016 will;

- Reduce the national annual parasite incidence rate from 128 / 1,000 (2007) to 46 / 1,000 by 2014, and reduce the annual parasite incidence rate in the highest transmission rate provinces to less than 100/1,000 by 2014 (currently there are four provinces with an API of >155 / 1,000 as at December 2007)
- Reduce annual malaria related deaths from 7/100,000 (2007) to <0.1/100,000 by 2014
- Eliminate malaria in Temotu Province by 2016

Background

Epidemiology of malaria in Solomon Islands

History of malaria eradication/control in the Solomon Islands

During the malaria eradication era of the 1960s and 1970s malaria was brought to a very low level: not low enough to meet the definition of elimination but below 17 per thousand. The primary intervention in the 1970s was indoor residual spraying (IRS) using DDT. We know that the chief vector in Solomon Islands and Vanuatu *An farauti* had due to pressure of IRS changed its biting times from late to early evening and from indoors to outdoors so that by the late 1970s the effectiveness of IRS had been reduced. If at that time insecticide treated nets (ITN) had been available the needed level of pressure may have been applied to actually interrupt transmission.

At the same time as IRS was losing its effectiveness due to changes in the biting habits of the main vector[1] the effectiveness of chloroquine was starting to decline. We know that during the 1960s, chloroquine resistance emerged in the areas along the Thai Cambodian border but the first evidence of resistance was not seen in the Pacific until the late 1980s[2] and only in the past 10 years has it been necessary to change standard treatment regimens to include a combination of chloroquine and sulfadoxine /pyrimethamine. The situation is now at the point where a change to artemisinin combination therapy needs to be made.

[1] Taylor B, 1975; Changes in the feeding behaviour of a malaria vector, *Anopheles farauti* Lav., following use of DDT as a residual spray in houses in the British Solomon Islands Protectorate. *Trans Roy Entomol Soc Lond*, 127, 277-292.
[2] WHO (2005). Review of the malaria drug efficacy situation in 10 countries of the WHO Western Pacific Region, 1987-2003, 88 pp, WHO/WPRO.

It is only speculation but given the low level to which transmission had been reduced by IRS in the 1970s, that if the tools then available had remained fully effective and resources continued to be available that the sharp increase that was seen especially in the Solomon Islands in the 1980s may not have happened and elimination, not eradication, could have been attained.

There is strong evidence that insecticide treated mosquito nets can significantly reduce malaria transmission even in areas where *An farauti* has changed its biting habits. In areas where there has been good but not universal coverage with so-called conventionally treated nets meaning those that were treated with a pyrethroid twice a year transmission has been significantly reduced. Entomological evidence shows that this is due to the fact that even though the peak biting period for *An farauti* is early in the evening biting continues throughout the night. The mosquito biting early are the younger females that have not yet taken their first blood meals and therefore not likely to be infected whereas those biting later in the evening are the older females that will have taken multiple blood meals are therefore more likely to be infective. This data negates the idea that ITN are not effective in areas where *An farauti* is the main vector.

How the plan has evolved

The previous National Malaria plan for the Solomon Islands which covered the period 2001-2006, was derailed as a result of the civil unrest that severely impacted on the country leading to a virtual cessation of vector borne control activities for an extended period. Investment by both government and donor agencies through national and bilateral budget allocations was minimal during this period, other than for salaries of staff.

In 2003, the country with the support of WHO successfully applied for funding through the Global Fund to fight AIDS, Tuberculosis and Malaria as part of a two-country malaria control proposal funded under the second funding round. In the absence of other significant donor funded activities, the GFATM proposal effectively became the national strategy, with a major emphasis on re-establishing modest vector control activities commensurate with the situation once the period of civil unrest eased.

With the re-establishment of activities in the Solomon Islands, other stakeholders (principally Rotarians Against Malaria (RAM)) became involved in targeted interventions, contributing to a further scaling up of the intervention package funded through GFATM.

In 2006, the Solomon Islands received further funding from GFATM through a successful round five proposal, with an emphasis on further scaling up the range of interventions with the aim being to provide close to 100% long-lasting insecticide treated nets (LLIN) coverage by 2010 across the whole country, and increasing diagnostic coverage, again commensurate with the capacity of management and staff to implement the package of interventions at that time. The round five proposal was consistent with the objectives and broad activities of the earlier funded round, thus further consolidating and building on the 'strategy' that evolved from the earlier proposal.

By 2007, other partners had increasingly recognized the potential to significantly scale up malaria control activities in the Solomon Islands, building on the success and early impact that the rounds two and five (consolidated) grant has been able to achieve. AusAID committed funding for an initial four years to fill some of the gaps not covered under the GFATM funds, with a particular emphasis on infrastructure development (buildings, major renovations etc;) as well as a move towards elimination through the establishment of a pilot elimination program on Temotu province. Other partners including RAM and JICA committed additional resources (mostly 'in kind') in support of a scaled up vector control approach.

In mid-2007, with technical inputs from the WHO, Malaria Reference Group and the Pacific Malaria Support Centre that was established under the AusAID funded Pacific Malaria Initiative and the Secretariat of the Pacific Community, the Solomon Islands commenced updating its the malaria strategy. At an early stage of development, it was recognized that, although significant progress had been made with the resources available through the GFATM and other funds, the Solomon Islands would need to adopt an aggressive malaria prevention, control and treatment strategy in order to underpin any pilot elimination trial and that intensive investment in, and implementation of a wider range of interventions would need to be sustained over the medium term in order to bring down the annual parasite incidence rate to a level where elimination could over the longer term be considered a viable option for the country. This new strategic vision is the result of the inputs of a wide range of technical partners and other key stakeholders.

Reasons for scaling up

Historical data demonstrates that with the right level and mix of high quality, intensive, sustained interventions, it is possible to reduce the Annual Parasite Incidence rate in the Solomon Islands to very low levels.

The successes achieved over the past four years of Global Fund support to malaria control activities shows that the original mix of control strategies have been effective in reducing malaria significantly in the Solomon Islands from 199 per

thousand in 2003 to 128 per thousand at the end of 2007, although the reduction is not consistent across the country, with the three main population centres of Honiara, Guadalcanal, Malaita and Central Islands still showing high levels of transmission in 2007 (at 155, 193, 152 and 247 respectively), albeit reduced from 2003 levels. There are still problems with the quality and coverage of diagnosis and treatment, marked reduction in the effectiveness of existing treatment regimes and major population movements. This is complicated by the logistical challenges of delivering services to the more geographically remote areas that have yet to be effectively reached with the full package of interventions. There is of necessity a higher delivery cost associated with reaching all communities in these areas and the program is just moving into the more difficult phase in achieving equitable coverage to all population groups.

Management within the Vector Borne Disease control program has demonstrated good capacity in progressively scaling up activities in response to a consistent and increasing stream of funding, allowing it to move from ad-hoc interventions to longer term planning. With a consortium approach to the provision of multi-disciplined technical support by a range of technical partners / agencies, adopting a more aggressive strategy at this stage is appropriate.

The partnership with AusAID has provided a major incentive to take a more aggressive approach to control activities, with AusAID investment in critical infrastructure (including staff housing) resolving a significant limiting factor over the past few years in terms of placing and retaining staff in provinces.

The program has had some success in partnering with civil society for bednet distribution, community awareness and education. There is now an increased level of awareness within affected communities with regards to the causes and economic impact of malaria, and higher levels of participation.

With the reduction of cases already accomplished, the program needs to enter into the next phase which includes a change to totally parasite based diagnosis, introduction of ACT, expansion of IRS to include areas of continuing transmission, achievement and maintenance of close to 100 percent population coverage with LLINs, and intensified surveillance that is required to identify cases at low levels of transmission. History demonstrates that unless we move into this next phase, the gains achieved over the past few years will not be maintained, and the chance to move towards elimination will be lost.

Monitoring and evaluation in this next phase becomes critical and requires significant up scaling of investment to include the selective introduction of Global Information Systems and integrated databases, together with improved capacity to capture, analyse and modify program plans and interventions down to the household level.

The current proposal is designed to build on those successes and move toward a goal of 17 per thousand by 2016 and to eventually move towards elimination. At this point we need to consolidate the accomplish so far and in order to move head need to address the problem

Strategies

The new medium term strategic vision builds on the lessons learned over the past few decades of malaria interventions in the Solomon Islands, and provides linkages to national, regional and international commitments and priorities including;

- The Solomon Islands National Health Strategic Plan 2006-2010
- The Solomon Islands Medium Term Development Goals
- The Pacific Plan
- The Western Pacific Regional Malaria Strategy
- The Global Roll Back Malaria Strategy
- Millennium Development Goals

The strategy is an evidence based plan of action derived from Ministry of Health working papers and guidelines for case management, malaria in pregnancy, insecticide treated nets, indoor residual spraying and control of epidemics.

An Institutional Framework that;

Will ensure coordinated, multi-lateral national responses in line with the Solomon Islands priorities on health sector reform and poverty alleviation underpinned with the provision of quality technical assistance;

Five strategic approaches that:

1. Guarantees equitable and ready access for the total population to reliable diagnosis and quality and effective new generation malaria treatment to significantly reduce morbidity and mortality;

2. Achieves and maintains close to 100 percent bednet coverage / usage nationwide by the end of 2009 through the procurement and campaign based distribution of long lasting insecticide treated nets as a means of providing significant additional protection and to reduce the rate of malaria transmission;

3. Reduces transmission through an expanded IRS response by;
   (a) Providing focal indoor residual spraying within two weeks of identifying an outbreak across all provinces, and

(b) Pre-empts potential outbreaks through planned annual pre high-season quality blanket spraying in villages / zones defined as 'problem areas';

4. Provides malaria prevention measures and treatment to pregnant women;

5. Eliminates malaria in at least one province by 2016

Two vital cross cutting strategies that:

Mobilizes the population to take positive action that results in communities embracing the prevention strategies, and seeking earliest diagnosis and treatment in cases of fever;

Strengthens monitoring and evaluation systems and practices underpinning operational research that informs and directs future interventions based on sound evidence based approaches

The Institutional Framework

Malaria is one of the eight key strategic health areas prioritized in the Solomon Islands National Health Strategic Plan (NHSP) 2006-2010. Further integration between the Vector Borne Disease Control Program (VBDCP) and health service providers will guarantee the success of this malaria strategy.

Community Level

The engagement of local communities and gender mainstreaming underpins the 'people focus' approach of the NHSP by empowering communities to take more responsibility and participation in decision making for their health. At the village level, periodic health awareness talks are given by health workers. Planning and implementation involves local community leaders and local authorities, community groups (particularly women groups), religious organizations and other stakeholders.

The National Malaria Strategic Vision will as far as possible be integrated with activities of other health programs, particularly ante-natal clinics and pre-school immunization visits to clinics.

Provincial and District Level

Increasingly, the annual workplan of the VBDCP will be integrated and harmonized with the provincial health plan, through active participation and joint planning exercises together with the Provincial Health Director. This will improve operational planning and budgeting which previously has limited the VBDCP in its ability to achieve greater impact at the provincial and sub-provincial level because of under-funded operational budgets.

Over time, area health centres, rural health clinics and nurse aid posts will become the focal / distribution point for bednet replacement, freeing up the VBDCP resources to focus on other prevention strategies, including rapid response to outbreaks.

Provincial / district level work plans will provide the entry point to move away from parallel, vertical training systems provided by the VBDCP to a strategic, integrated approach to training of health staff.

National Level - VBDCP

The VBDCP will continue to be the operational arm of the Ministry of Health and Medical Services for vector control in the Solomon Islands and will represent the country's pool of expertise for partners in malaria control. Its role will be to:

- Implement the national strategy
- Provide training to increase the skills of the workforce to enable the quality delivery of the outputs in the strategy
- Provide national expertise in areas of in safe handling of insecticides and storage, entomology and vector control, procurement, GIS mapping, malaria information systems, M&E, pharmaco-vigilance, IRS, IPTp, support of the national malaria strategic vision
- Implement prevention and control strategies throughout the country
- Provide new and refurbished facilities for the national, provincial and regional programs to meet the needs for 10-15 years at the same time improving service delivery and developing cost effective and sustainable operations and management systems
- Monitor and evaluate program outputs and outcomes

The VBDCP will realign its structure during 2008 to reflect changes in both the scale and scope of the revised National Malaria Strategy.

Ministry of Health and Medical Services

The MHMS will provide significant support for human resource development, local staff, administrative support and maintain resources for national malaria control programme.

Its role will be to;

- Develop, approve and disseminate national policies and strategies and keep them up to date
- Develop, approve and disseminate national guidelines for all components of the strategy
- Monitor and evaluate impact of the strategy
- Finance basic operational (salary) costs of the VBDCP
- Advocate malaria as a priority disease

Coordination and Collaboration

The National Country Coordinating Mechanism (NCCM) will provide a forum for partners, stakeholders, donors, affected communities, civil society and other interested partners to exchange information and coordinate malaria activities and resources. The NCCM is made up of a broad range of stakeholders that includes the Permanent Secretary of Health (Special Duties).

National planning will be coordinated through an annual malaria planning workshop to be held in October each year. This will provide the platform for the submission of the next year's budget as part of the government budget planning cycle.

The design of this national plan and workplan makes a strategic shift from discrete project based workplans (normally based on the source of funding) to one of having a single national plan to which all actors contribute, thus improving coordination.

Underpinning the Pacific malaria initiative are two bodies that will provide the strategic direction (Malaria Reference Group, MRG) and the Pacific Malaria Initiative Support Centre, PacMISC). The MRG is an advisory body for AusAID. The formal arrangement for program support is between AusAID and PacMISC rather than between the MRG and PacMISC. The MRG has no authority over country NMPs but provides technical advice at very senior level and links this program into international picture.

PacMISC will be a highly flexible and responsive body, capable of tackling important operational issues as they arise, as well as supporting training, monitoring, evaluation and surveillance

The planning and coordination of malaria activities in-country will be undertaken through a single management team headed by the NMP Manager (National Malaria Programme) and consisting of the WHO in-country malaria staff (2), the SPC support staff (2) and the PacMISC support staff (1 or 2). The composition and role of the team is essentially a technical/operational one and must integrate into the existing management group. The team will work with the NMP Manager in planning, running, monitoring and evaluating the programme including field activities in the provinces.

Strategy 1: Prevention

The use of pyrethroid insecticide treated bednets has shown to give effective protection against malaria in the Solomon Islands. In 2003 the Solomon Islands government made the decision to switch from conventional to long lasting insecticide treated nets (LLINS). This was followed in 2006 with a decision to phase out the retreating of conventional nets. Currently there is a community preference towards PermaNets™ which have a field life expectancy of 3 years compared to Olyset™ nets with a life of five years. Modifying community perceptions will be an important element of the strategy in order to regain acceptance of nets with greater longevity.

National bednet usage data is still being compiled, although limited scale studies suggest that there generally a high utilization rate. Bednets have not been distributed equitably across all provinces, and have until now been distributed in limited numbers over a long period of time. There is currently an estimated (206,000) LLINs in the Solomon Islands at the end of 2007. Rapidly scaling up protection through a nationwide campaign and distribution of LLINs in 2009 underpins the prevention strategy. Demand for LLINs by communities already exists, and therefore the main challenge is to mount an effectively distribution strategy to get nets to all those who want them.

Indoor residual spraying has likewise proved an effective tool in providing protection against malaria as demonstrated during the 1970's when it was the main prevention strategy. Limited focal spraying principally confined to Honiara has been undertaken since 2004, although this has been not as effective as it could have been because of (a) IRS activities not always coinciding with the peak season either because of poor planning, (b) stocks of insecticides not being available at the right time, and / or (c) variable quality of spray application. There is widespread community acceptance of IRS.

Objectives

1.1 Achieve close to 100 percent coverage / use of long lasting insecticide treated bednets throughout all provinces by the end of 2009 and maintain this level throughout the remainder of the plan period
1.2 Ensure that not less than 90 percent of all pregnant women in the Solomon Islands are provided with intermittent preventative treatment (IPT) during pregnancy
1.3 Pre-emptive pre high-season indoor residual spraying in all identified hotspot areas in all provinces and focal spraying in outbreak areas.

Strategies

1.1.1 Long Lasting Insecticide Treated Nets

- A nationwide LLIN mass distribution campaign will be launched in 2009 following a change in the Government social marketing policy to ensure free nets for all. By the end of 2009, all villages throughout the Solomon Islands will have been visited and distribution effected.
- In 2010, emphasis will shift to establishing focal and access points for the replacement bednets through peripheral health delivery points (nurse aid posts, rural health clinics).
- A national LLIN replacement campaign will be undertaken in 2013.
- Based on results of operational research, a mass media campaign will be designed, field tested and launched to modify community acceptance of long lasting nets and improve compliance. Annual follow up national mass media campaigns will be conducted concurrent with the annual World Malaria Day.

Financial Cost of Strategy

The total cost (USD) associated with delivering this strategy is estimated as follows:

2008	2009	2010	2011	2012	2013	2014
2,338,670	717,370	326,890	47,200	317,170	332,170	3,250,090

Policy Implications

- Government will amend the national policy on Social Marketing of Bednets to make LLINs available to all sectors of the community during the initial penetration phase free of charge.

Monitoring Framework

- Revised monitoring systems will be developed and implemented by 2009 to ensure traceability of LLINs through to individual household level as part of establishing a viable bednet replacement strategy.
- GIS mapping of LLIN distribution will be progressively rolled out in all provinces commencing 2008 to assist in operational planning.
- Periodic household surveys sub-contracted through the National Statistics Office will feed into the monitoring and evaluation framework to assess bednet coverage. This will be reinforced through 'on the ground' observations and informal surveys carried out by VBDCP staff and women groups during routine village visitations.

Operational Research in Support of Strategy

- During 2008, operational research will be conducted to determine the attrition rate and efficacy of LLINs distributed during 2006 / 7 as a means of providing an evidence based model for determining replacement bednet forecasts.
- Operational research will also be conducted during 2008 to identify community perceptions, attitudes and beliefs that govern the preference and use of LLINs.
- Periodic operational research will assess the effectiveness of mass media campaigns, the findings of which will inform and modify future approaches.
- Surveys in randomly selected representative sample of communities will assess the coverage achieved by campaigns and topping-up efforts.
- Testing the main malaria vectors for insecticide resistance (using standard WHO bioassay kits) in 4 sentinel sites.

1.1.2 Malaria during Pregnancy

Objectives

- By 2014, at least 90% of pregnant women nationally will routinely sleep under an LLIN
- By 2014, at least 90% of pregnant women in the second and third trimester will receive IPT during pregnancy

Strategies

- By 2009, all ante-natal clinics will be provided with supplies of LLINs to be made available to newly confirmed pregnant women. Supplies will be maintained at appropriate levels throughout the plan period.

- IEC material on malaria in pregnancy to be produced and distributed nationally to all ante-natal clinics
- Randomized controlled trial to test effectiveness of IPTp with SP conducted in Honiara City Council. Based on the results of the 18 month trial, IPT to be progressively rolled out.

Financial Cost of Strategy

Cost of the strategy will be determined once the trial to test the effectiveness of IPTp has been completed and a decision made on whether to implement it as a part of the national malaria control strategy.

Policy Implications

- Government will amend the national policy on weekly chemoprophylaxis for pregnant women to make the new IPTp regimen available to all pregnant women attending antenatal clinics and health facilities free of charge.
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1.1.3 Indoor Residual Spraying – pre-emptive

Strategies

- A single annual high coverage indoor residual spraying campaigns using lambda cyhalothrin will be implemented in areas of continuing high transmission ahead of the peak season. This will include settlement areas in Honiara, plus large parts of Central, Guadalcanal and Malaita provinces.
- Other areas will be selected for focal spraying based on the results of routine surveillance data.
- Infrastructure for the safe storage and procedures for proper handling of the insecticide will be put in place at the national and provincial levels.
- Training will take place for spraymen, squad leaders and supervisors at the provincial level and a system of intensive supervision by squad leaders and provincial supervisors will be established.
- Susceptibility of testing for vector mosquitos will be done at regular intervals to ensure that both the insecticide applied to the nets and used for IRS is effective.
- Logistic support for spraying teams will include vehicles, boats plus personal safety protective gear. Use of the PPE will be enforced.
- Forecasting, supply management and logistics systems will be strengthened to ensure timely availability of insecticides in support of annual IRS plans.
- GIS mapping will support IRS campaigns.

Financial Cost of Strategy

The total cost (USD) associated with delivering this strategy is estimated as follows:

2008	2009	2010	2011	2012	2013	2014
785,895	748,895	750,191	769,720	788,736	788,736	-

Policy Implications

- Government will need to endorse the shift from selective focal spraying to an expanded multi-province approach.

Monitoring Framework

- Revised monitoring systems will be developed and implemented by 2009 to ensure traceability of IRS through to individual household level as part of establishing a viable expanded multi-province IRS strategy.
- GIS and household mapping of IRS will be progressively rolled out in all provinces commencing 2008 to assist in operational planning.
- Periodic household surveys sub-contracted through the National Statistics Office will feed into the monitoring and evaluation framework to assess IRS coverage. This will be reinforced through 'on the ground' observations and informal surveys carried out by VBDCP staff in randomly selected representative sample of communities to assess coverage achieved by teams (8 supervisors for 45 days including transport and accommodation).

Operational Research in Support of Strategy

- Operational research to determine factors that influence community members decision whether to permit full, partial or nil access to houses for conducting IRS, will be conducted, the results of which will inform and direct mass media campaigns to modify community perceptions regarding the conduct of IRS, and may also inform modified approaches to IRS by spray teams.

Strategy 2: Diagnosis and Treatment

Objectives

2.1 Increase access to quality diagnostic coverage to at least 100% percent of all registered health facilities by 2014; and

2.2 Ensure that all confirmed / suspected malaria cases receive prompt treatment and care in accordance with National Treatment Guidelines for malaria using new generation ACT based regimes

Strategies

2.1 Diagnostic Coverage

Strategies

- Progressive roll out[3] of RDTs to peripheral health centres / nurse aid posts, and replacement of community based microscopy services with RDTs through attrition as case numbers reduce to a level below which community microscopy services become unsustainable;
- Strengthening of supply channels to improve stock management / minimize stock outs of diagnostic consumables and equipment;
- Maintaining quality microscopy services in essential areas through regular quality control checks, refresher training, and implementation of a regular servicing and replacement policy for microscopes;
- Establishing an RDT quality assurance policy including supervision, batch testing and quality assurance training for supervisory staff.
- Upgrading laboratory facilities to meet established minimum standards.
- Developing a media campaign to build awareness amongst communities on new diagnostic tools being introduced;

Financial Cost of Strategy

The total cost (USD) associated with delivering this strategy is estimated as follows:

2008	2009	2010	2011	2012	2013	2014
1,184,319	1,327,250	905,250	332,389	799,370	814,870	632,750

Policy Implications

- Government health facilities will offer free diagnosis, but in the case of community microscopists, a small charge (determined by the communities) will be levied to provide incentive for the provision of microscopist services.

Monitoring Framework

- Progressively roll out GIS mapping to identify gaps in diagnostic coverage
- Strengthen reporting from peripheral health centres

[3] Roll out includes the training of health staff and others in the use of RDTs

- Strengthen monitoring of QA process at lower level diagnostic facilities

Operational Research in Support of Strategy

- Sensitivity and specificity assessments and field trials of newly launched multi-species RDTs for cost comparison purposes;
- Economic evaluation and cost consequence analysis of RDTs at nurse aid posts.

2.2 Treatment

Strategies

- Amendment and roll out of the national treatment guidelines to change to ACT as first line treatment;
- Strengthening forecasting and supply chain management to improve stock management / minimize stock outs of essential medicines and associated treatment consumables;
- Training of health staff in the treatment of malaria, including severe cases of malaria;
- Expand routine active case detection to all provinces;
- Institutionalize the routine use of artesunate suppositories as pre-referral treatment;
- VBDCP staff conduct therapeutic efficacy studies on first line drugs every two years
- Pharmacy staff conduct, supervise and promote pharmaco-vigilance of antimalarial medicines
- Establishment of Minilabs for testing of antimalarials
- Collaboration with the private sector on national treatment policies, procurement policies, and review legislation related to pharmaceutical standards.

Financial Cost of Strategy

The total cost (USD) associated with delivering this strategy is estimated as follows:

2008	2009	2010	2011	2012	2013	2014
416,069	660,880	223,735	116,000	181,305	128,968	184,983

Policy Implications

- The Government has recently drafted amendments to the national treatment guidelines. Final endorsement is required.

Monitoring Framework

- Progressively roll out GIS mapping to identify gaps in treatment coverage
- Strengthen reporting from peripheral health centres
- Strengthen monitoring of drug supply, usage and stock outs at all levels of health facilities.

Operational Research in Support of Strategy

- Therapeutic efficacy studies on first line drugs every two years in three sentinel sites
- Operational research to assess sociological factors affecting the use of ACTs.

2.3 Vector Control

Strategies

- VBDCP medical entomologist to undertake research to evaluate the impact of environmental modification on vector population ecology and disease transmission.
- Procurement and installation of steel pipelines in two coastal sites in north Guadalcanal province
- Maintenance of pipelines by the community.

Financial Cost of Strategy

The total cost (USD) associated with delivering this strategy is estimated as follows:

2008	2009	2010	2011	2012	2013	2014
150,000	7,500	7,500	7,500	7,500	7,500	7,500

Policy Implications

- The Government will review environmental modification policies of malaria control in rural communities and economic centres. Final endorsement is required.

2.4 Community Mobilization

Strategies

- Strengthening skills of health staff and partners to effectively deliver key health messages related to malaria control.
- Conduct annual mobilization campaign to support malaria control efforts at community level.
- Maintenance of audio-visual equipment for behaviour change and communication activities.

Financial Cost of Strategy

The total cost (USD) associated with delivering this strategy is estimated as follows:

2008	2009	2010	2011	2012	2013	2014
37,895	291,045	135,790	97,845	157,746	129,991	69,991

Policy Implications

- As part of the National Strategic Health Plan, 2006-2010, the Government has adopted a people-centred approach that emphasize a core value a people focus, the needs and aspirations of the Solomon Island people. Promotion of malaria awareness will enhance MOH values and capacity to build and develop trusting relationships with individuals and the communities to improve health and well being, which are essential prerequisites to recovery and for rebuilding social cohesion.
- Increased implementation of people focus and gender mainstreaming in health care services at all levels

Monitoring Framework

- Progressively roll out GIS mapping to identify gaps in community awareness coverage
- Strengthen planning, liaison, reporting and collaboration with church groups, NGOs and CBOs.

2.5 Capital works and Physical Infrastructure

Strategies

- VBDCP and MOH to undertake the development and maintenance of SIMTRI/VBDCP building, malaria provincial offices and laboratories, storage

sheds and staff housing to acceptable standards. The provision of new and refurbished facilities is essential to support both public health and curative health services and meet the needs for 10 to 15 years.
- Rotary Against Malaria in collaboration with PacMISC will draft a concept design and business plan for capital works of the SIMTRI/VBDCP building taking into account the functions of the new organogram
- Design, selection and procurement of kit set housing for provincial malaria staff.
- Management of construction and completion according to standards.
- Maintenance of buildings, sheds, laboratories and housing.

Financial Cost of Strategy

The total cost (USD) associated with delivering this strategy is estimated as follows:

2008	2009	2010	2011	2012	2013	2014
2,924,170	2,183,941	1,249,547	100,000	100,000	100,000	100,000

Policy Implications

- The Government will review new human resource inputs and accommodation regarding staff placements in Honiara and provinces. Final endorsement is required.

Monitoring Framework

- Progressively roll out GIS mapping to identify renovated health facilities and buildings and track human resources and their productivity.
- Strengthen planning, reporting and collaboration with health facilities.

2.6 Elimination

Strategies

- Political support and commitment from the national and Temotu provincial government
- Conduct baseline parasitological and entomological surveys. Additional blood spots for parasite genotyping studies. Mapping of all households to facilitate IRS and active case detection, including baseline surveys.
- Based on survey results and using detailed maps the province will be stratified. Current information indicates that some of the smaller islands

may already be malaria free so those will not be covered by the intensified elimination operations.

- Procurement of vehicles (4WD, motorbikes), outboard motor engines and canoes, office equipment, radio equipment, GPS-PDAs and computers. Hire of barges twice a year to transport and distribute supplies from Honiara to outer islands.
- Active case detection to identify and treat asymptomatic cases (carriers) and treatment conducted twice monthly during the transmission season (November to February), and monthly March to October. Home visits in all foci in the malarious area. Malaria surveys in and around sick persons' homes and among those absent at the time of earlier visits to ensure that transmission in the foci is contained.
- Passive case detection in the form of access to diagnosis and treatment is available daily at all health facilities throughout the Province.
- Screening of passengers at Lata airport and coastal points of entry. Blood samples will be taken for both rapid diagnostic tests and to make blood films from all arrivals. The RDTs will be used for on-the-spot screening. All positives detected by RDTs will be verified by microscopy and treatment given to all positives. The *P. falciparum* positive cases will be followed up monthly for 6 months and *P. vivax* cases for a year.
- Laboratory support – all blood slides taken by active case detection and cases examined at health facilities will be examined by qualified microscopists within 48 hours. Rapid diagnostic tests capable of identifying both and will be available at all health facilities for use when a microscopist is not on duty or in any other situation when a quick diagnosis is required. All slides and RDTs will be subjected to QA.
- Blanket indoor residual spraying (TOCOSURE) using an effective residual insecticide will be carried out in all villages in malarious areas of the province for a period of 4 years after which a decision will be made continue IRS based on the epidemiological situation.
- Case investigations will be done on all confirmed cases in order to determine the source of the infection i.e. imported, secondary to an imported case, or due to purely local transmission. If local transmission is identified or suspected, remedial measures in the form mass screening of all households in the immediate area of the case, focal IRS, and redistribution of LLIN to ensure 100% coverage will be carried out.
- Annual surveys of school children on the larger islands or for the smaller islands or the entire population will be conducted to measure the change of prevalence.
- Adult mosquito collections and larval surveys to be conducted as part of the investigation of any area or small island with demonstrated continued local transmission.
- Community awareness campaigns will be carried out on monthly basis to inform communities about malaria control interventions and to seek their

cooperation. This is especially important regarding new arrivals from outside the province. Community members should be encouraged to identify and report new arrivals to ensure that they were screened and any carrying malaria parasites are fully treated. Communities also need to be aware of the need to encourage anyone with fever to quickly seek diagnosis and treatment at the nearest health facility.

- Continuous quality assurance of all aspects of malaria elimination will be a key component of the pilot. This will include rigorous supervision of microscopy, and the use of RDTs. Regular checks will be carried out to ensure that people arriving in Temotu are screened, that positive are treated, and to verify coverage reports on LLIN and IRS. Entomological collections and mass screening activities will also be carefully supervised.
- Financial records will be rigorously checked and audits will be done by outside parties to ensure that funds are properly used and reports are filed on time. .

Financial Cost of Strategy

The total cost (USD) associated with delivering this strategy is estimated as follows:

2008	2009	2010	2011	2012	2013	2014
1,169,730	2,044,015	1,671,636	1,023,552	1,488,258	1,629,117	1,374,172

Policy Implications

- The Government and technical team will review the pilot elimination – baseline surveys, mid term review and end of pilot assessments, with a view to recommend rollout of elimination to the country. Final endorsement is required.

Monitoring Framework

- Intense monitoring and staff supervision visits to evaluate the elimination programme.
- Baseline surveys, annual prevalence surveys and mid-term reviews will provide critical information for decision-making.
- Strengthen planning, reporting and collaboration with health facilities.

Operational Research in Support of Strategy

- Needs-based research
- Clinical studies to identify appropriate drug regimen for radical cure of vivax malaria.

2.7 Monitoring and evaluation

Strategies

- Developing M&E framework in collaboration with malaria partners, NGOs, universities, government ministries, and other stakeholders.
- Upgrade of SIMIS and GIS mapping tool.
- Training of staff in SIMIS and M&E implementation at national and provincial levels
- Support for supervisory visits at quarterly intervals per year
- Developing a mapping tool in association with the Australian Pacific Malaria Initiative (PacMI).
- Establishment of a national malaria database.
- Conduct surveys on rational drug use in the public and private sectors every three years.
- Conduct annual cross-sectional prevalence surveys in a randomly selected representative sample of schools nationwide.
- Conduct large scale malaria indicator survey every three years.

Financial Cost of Strategy

The total cost (USD) associated with delivering this strategy is estimated as follows:

2008	2009	2010	2011	2012	2013	2014
124,680	744,190	714,360	212,430	294,360	314,360	694,360

Policy Implications

- Document and guide the NMCP in the reorientation progress from a control program to an elimination programme, and from an elimination programme to a programme focusing on prevention of reintroduction of malaria
- Document progress towards achievement of goals and objectives to support each programmatic shifts, e.g. to high IRS and ITN coverage, 100% diagnosis and treatment.
- Establish a credible information database for government, civil society and development partners.

Risks in implementing the strategy

Risk	Likelihood of Risk Occurring	Impact of Risk on Achieving Strategy	Main Impact	Risk Mitigation
Strategy is under-resourced	Low / Medium	High	Existing gains may be lost Inability to provide equitable service delivery in hard to reach areas	Maintain status quo
Lack of ability to implement at the required level / timeframe	Medium	High	Loss or reduction in funding Interventions more likely to favour 'easy to reach' areas	The RCC proposal places a high emphasis on strengthening management of the VBDCP. Multi-partner support unit is being established within the VBDCP
Too much resources being diverted to the elimination pilot project	Medium / high	High	Implementation of the main elements of the national strategy will be at risk	Dedicated 'stand alone' team to be posted in Temotu with clearly identified sub-set of resources Clear delineation of financial resources with strong financial oversight