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| --- | --- |
| **KEY INDICATOR** |  |
| **API per 1000 population** |  |

|  |  |
| --- | --- |
| Ministry of Health & Medical Services National Vector Borne Diseases Control Program | SOLOMON ISLANDS ANNUAL MALARIA PROGRAM REPORT (2016) |



|  |
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| Epidemiological & Programmatic Report | Monitoring and Evaluation Unit |

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* 1. Acknowledgement

The National Vector Borne Diseases Control Program (NVBDCP) would like to acknowledge the contribution of malaria program staff both at national and provincial levels including the health staff in all health facilities in the country in providing feedback and data on the implementations related to the malaria program. The NVBDCP also appreciates very much the HIS division, NMS division and the Ministry of Health Procurement Unit in supporting the implementation of the malaria program at all levels.

The NVBDCP recognizes the strong support of the Ministry of Health Executive Board in providing the coordination support and guidance to the NVBDCP in interacting with other health divisions and the provincial health departments.

The NVBDCP would also extend their acknowledgement to the international communities and donors such as DFAT, GFATM, and WHO in providing either technical or financial support to the NVBDCP to maintain the program interventions for the benefit of people throughout the Solomon Islands.

Without feedback from all implementers involved directly or indirectly, the annual malaria program report would not be materialized.

* 1. List of Abbreviations and Acronyms

|  |  |
| --- | --- |
| ACD | Active Case Detection |
| AL | Artemether-Lumefantrine |
| AOP | Annual Operational Plan |
| API | Annual Parasite Incidence |
| DFAT | Department of Foreign Affairs and Trade |
| DHIS2 | District Health Information System 2 |
| DHS | Demographic Health Survey |
| HIS | Health Information System |
| HQ | Headquarter |
| IRS | Indoor Residual Spray |
| GFATM | Global Fund to fight AIDS, Tuberculosis, and Malaria |
| LLIN | Long Lasting Insecticide Nets |
| LSM | Larva Site Management |
| MCMR | Malaria Case Management Register |
| MHMS | Ministry of Health & Medical Services |
| NMS | National Medical Supplies |
| NVBDCP | National Vector borne Diseases Control Program |
| QA | Quality Assurance |
| RDT | Rapid Diagnostic Test |
| WHO | World Health Organization |

# Executive summary

After a decade of substantial and sustained investment in malaria control following the end of civil unrest, the Solomon Islands reduced the malaria burden, as measured as annual parasite incidence rate, or API, from 196 per 1,000 population in 2004 to 40.5 per 1,000 population in 2015.

2015 was a pivotal year for the Vector Borne Disease Control Program (VBDCP) on a number of fronts;

* A new funding model was introduced by the Global Fund to fight AIDS, Tuberculosis and Malaria (GFATM), replacing the previous ‘country led’ demand model with a strategic investment (allocation) model, resulting in substantially lower levels of investment becoming available for the program;
* The Ministry of Health and Medical Services (MHMS) took over the role of Principle Recipient for GFATM grants, with the grants becoming single country grants as opposed to part of a multi-country grant;
* The MHMS contracted with GFATM to operate under a Cash on Delivery (COD) model, where the Solomon Islands Government (SIG) ‘front-loads’ operational costs associated with the program, and retrospectively receives payment from GFATM based on performance against an agreed set of impact and outcome indicators;
* The VBDCP started implementing the MHMS reform process, with much of the responsibility for delivering the interventions being decentralized to the provinces, and the VBDCP at national level being realigned to the provision of technical support, policy and strategic guidance for planning, advocacy, monitoring and evaluation;
* A new Malaria Case Management Register (MCMR) was introduced in late 2015 to interface with the District Health Information System 2 (DHIS2) with the intention being to integrate malaria reporting into the broader health information system;
* The program commenced implementation of the new National Malaria Strategic Plan 2015-2020; and
* A new, more sensitive rapid diagnostic test (RDT) was ordered ahead of being rolled out in 2016

These events in 2015 set the scene for the 2016 program implementation and results as detailed throughout this report.

At the impact level, 2016 recorded a reversal of the steady downward trend in the malaria burden previously reported between 2004-2013, with the API increasing to 81 per 1,000 from 40.5 per 1,000 in 2015, calculated on the basis of there being 49,050 confirmed cases of malaria in 2016. While some may regard this as a disappointing result, and may question whether this is the result of a program failure, an analysis of the available data does not support this view.

At the outcome level, factors contributing to the increase in the 2016 API include:

**Improvements in data reporting compliance** as a result of the introduction and rollout of the MCMR during 2016. By the end of 2016, 82% of all health facilities were using the MCMR, and a total of 3,446 monthly facility reports were received out of an expected 4,020 (86%) compared to an 83% reporting compliance in 2015. Logically, the more facilities that report, the more malaria will be reported.

**Improved access to diagnostic coverage:** During 2016, 78% of functioning health facilities was able to provide diagnostic services compared to 64% in 2015 (after adjusting for inconclusive data)

**Improved RDT sensitivity** as a result of switching from ICT Malaria Dual test RDT’s to CareStartTM – G031 in 2016 which has a high sensitivity (94.3%) to low density P. vivax parasites compared to 40% for ICT Malaria Dual test. This can explain the significant increase in P. vivax cases reported in 2016 which were not being picked up previously with the lower sensitivity RDT in use during 2015.

**Reduced efficacy of vector control interventions:** The two prevention tools (have been used effectively in the past in the country) are long lasting insecticide treated nets (LLIN) and indoor residual spraying (IRS). LLIN’s provide coverage to 86% of all households nationally[[1]](#footnote-1), while IRS coverage to 17%-30% of households has been selectively provided in high endemic areas to complement the LLINs. The NetProtect® LLINs that were procured and mass distributed in 2013 have since been proven to be sub-standard with the insecticide content reducing substantially after one year in the field. Effectively, the LLIN’s failed to provide the level of protection stated in the manufacturer’s specifications. IRS ceased at the end of 2015 following the run-out of remaining insecticides.

**Unrealistic baseline API in prior years:** Improvements in program activities (i.e. diagnostic testing and reporting) in 2015 and 2016 have resulted in the original API baseline and targets being highly underestimated, although the overall trend remains valid.

A new mass distribution of LLIN’s commenced in mid-2016 and will continue into early 2017. The impact of this will show up in the 2017 API. With the distribution of the replacement LLIN’s continuing into early 2017, the program aims to provide coverage for more than 80% of the population by the end of the mass distribution campaign. The program acknowledges however that the country will not quickly reduce the malaria burden to pre-elimination levels or maximize the impact of investment in vector control activities unless it can increase the proportion of the population routinely **sleeping under a LLIN**, which is currently still low at just over 57% nationally. Changing practical behaviors in population requires long term education, provided that the knowledge on malaria prevention is high (84%), according to the malaria indicator survey in 2011 in Solomon Islands.

There is significant variation in the burden of malaria throughout the country, with five provinces[[2]](#footnote-2) accounting for 93% of confirmed malaria cases in 2016. This is similar to the burden distribution in 2015. Central Islands province in particular, bears a disproportionate disease burden with an API in excess of 280/1,000 in 2016 – the highest of any province in the country. Further investigation to understand the factors underpinning this issue needs to be commissioned, with the results of the research informing a stratified response subject to the availability of resources. Central Islands province is one of two provinces where possible insecticide resistance to permethrin has been identified.

The total number of malaria deaths reported in 2016 is 18 or 2.97 per 100,000 persons – an increase on 2015 (2.03 per 100,000). As a proportion of deaths reported through all causes, malaria deaths remain low at 1%. The introduction of the new death and certification system introduced in 2016 may have contributed to an overall increase in the number of malaria deaths reported.

The proportion of confirmed malaria cases due to Falciparum continues to decline at 36% in 2016 (50% in 2015) indicating that the program interventions continue to have a positive effect on malaria, given that P. falciparum is more susceptible to the interventions, although the introduction of the new RDT and its improved sensitivity to P. vivax will have also impacted on the ratio.

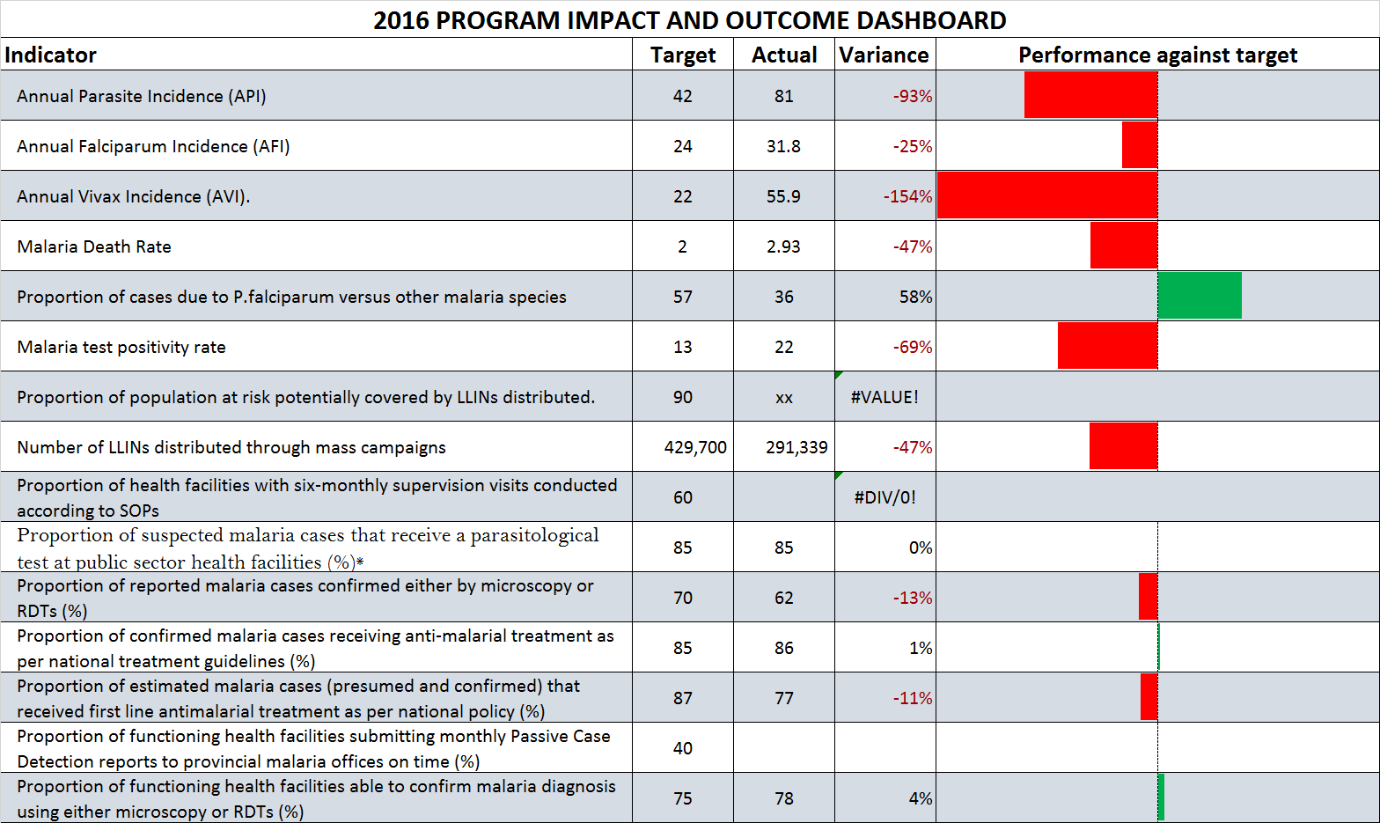
Across the country, supply chain management remains a challenge, especially in ensuring the lower level health facilities avoid stock-outs of essential supplies to diagnose and treat malaria. The program continues to work proactively with the national medical stores to monitor, anticipate and respond to low stock situations.

There has been a substantial improvement in data coverage and completeness during 2016 as a result of the full rollout of the MCMR. Of significance, with the rollout of the MCMR, the program for the first time now has access to data that allows it to ascertain whether confirmed cases are being treated correctly according to national guidelines or not. The program continues to provide assistance to provinces that are struggling to achieve timely entry of paper based MCMR records into the DHIS2 as a result of poor internet connectivity. The program is placing additional emphasis now on developing simple web-based tools that will provide near instant analysis and reporting at provincial / sub-provincial level.

**Program Performance Against Targets**

Program coverage indicators for 2016 were for the most part on target with the one exception being the mass distribution of LLIN’s which was originally planned to be completed in 2016, but continued on into the first part of 2017 due to a combination of delays in implementing in a couple of provinces. 2016 was the first time that provinces had assumed total responsibility for distribution.

Impact indicators are generally below target, although the reasons for this have been explained earlier in the executive summary, and in more depth in the body of the report.

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In summary, despite an increase in the 2016 API, the National Malaria Strategy 2015-2020 remains valid in its entirety and will be the guiding tool for determining program priorities and government and other stakeholder investments in malaria control and elimination in the Solomon Islands. With the continued implementation of the government reform process, policies and procedures need to be adapted and adopted to fully support the reform and the integration of the VBDCP into the broader public health responses in the Solomon Islands.

# Background

From 2007 to 2015, a significant reduction of malaria burden has been achieved under the intensified control phase. During that period, the parasite incidence (API) was noticeably reduced with annual fluctuation. This achievement resulted from substantial and sustained national and international investment, specifically from the Global Fund to fight HIV, Tuberculosis, and Malaria (GFATM) and the Australian Government currently operated through the Department of Foreign Affair and Trade (DFAT), together with committed resources from the country in intensifying primary control interventions such as in maintaining protective interventions, increasing access to early diagnosis and appropriate recommended treatment.

The main protective interventions were implemented through the distribution of long lasting insecticide treated nets (LLIN) and the selective indoor residual spraying (IRS) in high endemic areas. During that period, two cycles of nationwide distribution of LLIN was completed; the first cycle was in 2010, followed by the second cycle in 2013. The most recent cycle has been implemented in mid-2016 through to early 2017. The program aims to provide universal coverage of LLIN to the population in the country with an average people per net ratio of 1.5 per net distributed. This approach results in maximum coverage at the beginning of the distribution cycle and gradually reduced due to nets being damaged or net population growth. Additional top up distribution was achieved through the selective health facilities targeted to the pregnant women who consulted the health services throughout their pregnancy through to delivery.

The case management services were based on the availability and accessibility of recommended diagnosis and treatment at all health facilities in the country. With limited financial sustainability the coverage of health facilities with malaria microscopy services was reduced and replaced by the malaria rapid diagnostic test (RDT). All health facilities should have RDT in addition to microscopy service or in full diagnostic service using RDT. The first line regimen for malaria treatment is the combination of Artemether-Lumefanthrine (AL). The service for providing radical treatment of vivax cases is limited due to unavailable tool for identifying the G6PD status prior to prescribing the radical treatment. The malaria diagnostic and treatment commodities are distributed through the national supply chain management under the responsibilities of National Medical Supplies Network.

The previous malaria information management system (SIMIS) has been replaced with an integrated system and feedback channel with the national health information system using a common system platform, called DHIS2, a web-based system allowing the information entered at the provincial level and accessed by all authorized persons inside the system. The malaria information system is in the development process to accommodate different stages of program intervention and development.

The country health system has been undergoing a reform process since 2014 and it is moving towards an integrated and decentralized system. The technical teams of the national malaria program at the central level changed their roles and now focus on coordination, advocacy, technical guidance, monitoring and evaluation. The information management remains a core function of national malaria program who directly monitor, analyze, and provide feedback to the provincial malaria teams. The other supportive roles such as supply chain management, information feedback from health facilities, and financial management are supported from the respective units within the Ministry of Health and Medical Services (MHMS).

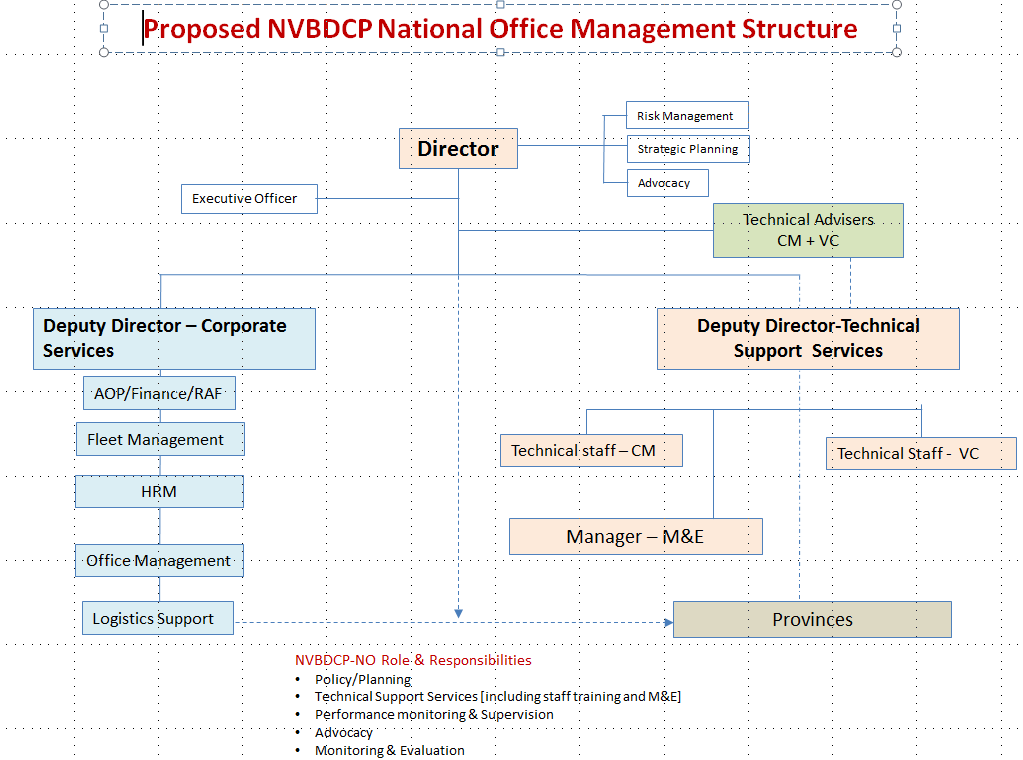
# Main activities implemented and results

Three main areas, such as program management, program implementation, and information management, were focused on in order to improve the effectiveness of program intervention. The change in financial landscape and funding model as well as the reform in the health sector requires the program to restructure its network in line with the MHMS in order to maintain and optimize the program performance.

## Program management and coordination

Since 2015, the National Vectorborne Diseases Control Program (NVBDCP) management was reorganized at both national and provincial levels to reflect an intensive decentralisation strategy focused on improved provincial based service delivery (Figure 2).

Figure 2: Proposed NVBCP national office management structure



At the national level, the program management structure has been simplified under two discrete operational units – corporate services and technical services. Both units are headed by a Deputy Director. The role and function of the national team is aligned to the provision of technical support, policy and strategic guidance for planning, advocacy, monitoring and evaluation (ref: following organogram) and the direct service delivery is now the responsibility of Provincial Health Directors.

From a provincial perspective, all provincial VBDCP staff now report directly to the Provincial Health Director through the Program Manager. In addition, Provincial Health Directors have been given delegated authority for the management and coordination of annual operational planning, financial/asset management and information management for decision.

## Program implementation

MHMS continues to implement the decentralized policy and the program has followed and coordinated in implementing the malaria program accordingly. The role of national team shifted from direct involving in the routine implementation to core managerial, policy and guideline development, and monitoring functions while at the provincial level, the implementation team has the responsibility to follow the national norm, strategies, and guidelines.

## Vector control implementation

Vector control intervention has mainly relied on the distribution of LLIN. In 2016, the full replacement distribution has been implemented as per the planned cycle, following on from the previous mass campaign’s distribution in 2013 (Figure 3). The implementation schedule was planned in mid-2016. During the year, a total of 291,339 LLINs were distributed or 68.3% of planned 426,700 LLINs were implemented and the remaining LLIN will be distributed in 2017.

The below tables 1 and 2 illustrate the number of LLIN planned and distributed in each province in 2016.

Table 1 LLIN planned and implemented in each province in 2016

|  |  |  |  |
| --- | --- | --- | --- |
| Geography | Planned | Implemented | % |
| Central Islands | 21,680 | 16,741 | 77% |
| Choiseul | 21,960 | 21,413 | 98% |
| Guadalcanal | 77,960 | 58,163 | 75% |
| Honiara | 53,800 | 53,556 | 100% |
| Isabel | 21,840 | 21,801 | 100% |
| Makira | 33,640 | 20,938 | 62% |
| Malaita | 114,600 | 31,574 | 28% |
| Rennel | 2,520 | 2,520 | 100% |
| Temotu | 17,760 | 8,222 | 46% |
| Western | 63,880 | 56,411 | 88% |
| Solomon Islands | 429,640 | 291,339 | 68% |

\*The implementation in Malaita and Temotu were lower than expected and it requires more guidance on the implementation approach.

Table 2: LLIN distributed by province in 2016

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Province | No Villages | Households covered | Population covered | LLIN distributed |
| Central Islands | 156 | TBC | 23,099 | 16,741 |
| Choiseul | 261 | 6,360 | 29,484 | 21,413 |
| Guadalcanal | 771 | 19,064 | 84,380 | 58,163 |
| Honiara | 89 | 15,370 | 82,691 | 53,556 |
| Isabel | 258 | 0 | 25,972 | 21,801 |
| Makira | 493 | 4,877 | 32,674 | 20,938 |
| Malaita | 387 | 15,790 | 42,314 | 31,574 |
| Rennel | TBC | TBC | TBC | 2,520 |
| Temotu | 141 | 2,552 | 11,895 | 8,222 |
| Western | 1,047 | 15,663 | 80,583 | 56,411 |
| Solomon Islands | **3,603** | **79,676** | **413,092** | **291,339** |

Note that there was low IRS intervention or less than 3% of countrywide households were covered in 2016 and it discontinued due to limited resources and technical challenges. The IRS discontinuation was decided at the beginning of implementing the current national strategy plan for malaria in 2015 when the program had to prioritize the resources allocation for the implementation.

### Case management component

**Diagnostic and treatment decision training**

Collective training of provincial trainers, on the principle of test, treat and track, was conducted in late 2015 and the trained trainers were to transfer the knowledge and skills to the targeted staff in their respective provinces with or without technical supports from the national program team.

Total of 376 staff from 203 health facilities were trained on the correct use of new RDT including clinical and treatment decision process for malaria case management. Those who were missed the organized training were trained during the supervisory visit later in 2016 and will be continued as routine refreshed knowledge through supervisory visit (Table 3).

Table 3: Health facilities with staff trained on using new RDT

|  |  |  |
| --- | --- | --- |
| Geography | Number of health facilities | Number of staff trained |
| Central Islands | 16 | 37 |
| Choiseul | 22 | 35 |
| Guadalcanal | 36 | 36 |
| Honiara | 9 | 83 |
| Isabel | 26 | 36 |
| Makira | 39 | 36 |
| Malaita | 0 | 0 |
| Rennel | 0 | 0 |
| Temotu | 12 | 33 |
| Western | 43 | 80 |
| Solomon Islands | 203 | 376 |

**Strengthen quality microscopy diagnostic services**

Quality assurance of malaria microscopy service needs to be continuously maintaining. The national program conducted additional training on quality assurance microscopy service to the remaining microscopists who were not participated in 2015 training. Total of 60 microscopists from 50 health facilities in seven provinces were trained and the results of training evaluation were satisfied. The average level of agreement is very high 96% and the average score for sensitivity (98%) and specificity (98%) were also satisfied (Table 4).

Table 4: Number of participants attended training on quality assurance microscopy service in 2016

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Province | Health facilities | Participants | Diagnosis Agreement  % | Sensitivity  % | Specificity  % |
| Central Islands | 8 | 9 | 98% | 99% | 97% |
| Choiseul | 8 | 10 | 92% | 98% | 97% |
| Guadalcanal | 0 | 0 |  |  |  |
| Honiara | 0 | 0 |  |  |  |
| Isabel | 5 | 5 | 96% | 98% | 99% |
| Makira | 8 | 8 | 97% | 97% | 98% |
| Malaita | 13 | 13 | 94% | 99% | 98% |
| Renbel | 0 | 0 |  |  |  |
| Temotu | 1 | 5 | 100% | 100% | 100% |
| Western | 8 | 10 | 95% | 95% | 98% |
| Total | 51 | 60 | 96% | 98% | 98% |

**Active case detection**

Active case detection (ACD) is part of the effort to reduce the burden of the malaria in the community where the accessibility to health care services is limited due to remoteness and transportation difficulties and where the malaria burden is relatively high in the respective province. It has been conventionally exercised and it will be subject to review the feasibility and the effectiveness of the intervention in regard to the elimination efforts.

In 2016, six provinces (Choiseul, Guadalcanal, Isabel, Malaita, Temotu, and Western) conducted the ACD in their respective province and the outcomes of the implementation shown that 454 villages were screened for malaria. A total of 25,580 people had their blood tested for malaria and 673 were confirmed malaria. The test positivity rate was varied from lowest rate 1% in Choiseul province to the highest rate 7% in Guadalcanal province. The average blood test positivity rate was 3% (Table 5).

Table 5: Summary of ACD outcomes in 2015, by province

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Province | Total number of | | | Blood test positivity rate |
| Villages | Screened population | Positive malaria |
| Central Islands | - | - | - | NA |
| Choiseul | 60 | 4,333 | 40 | 1% |
| Guadalcanal | 193 | 4,446 | 299 | 7% |
| Honiara | - | - | - | NA |
| Isabel | 10 | 1,049 | 16 | 2% |
| Makira | - | - | - | NA |
| Malaita | 87 | 11,501 | 203 | 2% |
| Rennel | - | - | - | NA |
| Temotu | 51 | 2,414 | 79 | 3% |
| Western | 53 | 1,837 | 36 | 2% |
| Solomon Islands | **454** | 25,580 | 673 | 3% |

## Information management

The malaria information system remains in the transitional development. However, the system platform was fully integrated in late 2016, which allows the system to conduct trend analysis in merging the aggregated platform with the case-based platform. The malaria program has shifted its information management system to embed in the national health information system (HIS) using DHIS2 platform, a web-based system. The current approach is to standardized data collection tools and integrated into the routine HIS report channel and its system platform. The revised malaria data recording and reporting tools includes the malaria blood test registers (one for RDT and another for microscopy) and the malaria case management register (MCMR) which is a reporting tool from health facilities and this tool. MCMR replaces all previous reporting forms from health facilities including the data in the routine HIS reporting monthly form. The contents of MCMR are designed to capture all key programmatic indicators derived from health facilities and in line with the program monitoring and evaluation framework.

So far, 82% of registered health facilities have used MCMR to report malaria information (Table 6). A few health facilities are still using the previous form to report and gradually they will use the common report form (MCMR) as guided from the HIS and the program networks.

Table 6: Implementation rate of new report tool (MCMR)

|  |  |  |  |
| --- | --- | --- | --- |
| **Provinces** | **Health Facilities** | | |
| **Registered in the system** | **Implemented MCMR** | **%** |
| Central Islands | 24 | 22 | 92% |
| Choiseul | 25 | 21 | 84% |
| Guadalcanal | 42 | 40 | 95% |
| Honiara | 19 | 17 | 89% |
| Isabel | 30 | 24 | 80% |
| Makira | 40 | 36 | 90% |
| Malaita | 80 | 59 | 74% |
| Renbel | 3 | 0 | 0% |
| Temotu | 17 | 15 | 88% |
| Western | 55 | 42 | 76% |
| **Solomon Islands** | **335** | **276** | **82%** |

Information platforms for capturing other program interventions, in particular vector control field activities have been designed and embedded in the DHIS2 but have not been utilized widely yet. The other forms related to elimination info will be developed and embedded in HIS|DHSI2 progressively.

## Logistics malaria commodities management

Supply chain management of malaria commodities such as anti-malarial drugs, malaria rapid diagnostic test (RDT), and other malaria microscopy commodities are managed by the national supply medical supplies’ network with collaborative support from the national malaria program. The national vector-borne diseases control program (NVBDCP) plays a complementary role in quantification and in monitoring clinical practice including quality assurance and quality control. It also provides feedback to the national medical supplies network on the availabilities of malaria specific commodities at the peripheral health facilities through routine supervisory visits and the routine monthly feedback using the revised reporting tool, the malaria case management register or MCMR. The stock movement at the National Medical Store (NMS) in 2016 is illustrated below (Table 7).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Table 7: Malaria commodities in-country supplies and stock status in 2016. | | | | | |
| Items | Opened Balance | Procured | In-country supplied | Closed Balance | Expiry date |
| ARTEMETHER 20MG + LUMEFANTRINE 120MG TABS. 6x1 | 1,110 | 58,410 | 51,813 | 7,707 | 30/09/2019 |
| ARTEMETHER 20MG + LUMEFANTRINE 120MG TABS. 6x2 | 27,390 | 29,285 | 50,843 | 5,835 | 30/09/2019 |
| ARTEMETHER 20MG + LUMEFANTRINE 120MG TABS. 6x3 | 34,770 | 41,370 | 66,355 | 9,785 | 30/09/2019 |
| ARTEMETHER 20MG + LUMEFANTRINE 120MG TABS. 6x4 | 38,820 | 37,365 | 68,481 | 7,704 | 30/09/2019 |
| PRIMAQUINE TABS 7.5MG | 142,3000 | 825,400 | 1,347,600 | 900,800 | 30/05/2020 |
| QUININE SULPHATE TABS 300MG | 64,000 | 765,000 | 278,000 | 551,000 | 30/03/2019 |
| CHLOROQUINE TABS 150MG BASE | 1,072,000 | 1,249,000 | 1,663,000 | 658,000 | 30/04/2019 |
| QUININE DIHYDROCHLORIDE INJ 600MG IN 10ML | 9,974 | 0 | 9,974 | 0 |  |
| QUININE DIHYDROCHLORIDE INJ 600MG IN 2MLS | 0 | 4,100 | 962 | 3,138 | 30/01/2018 |
| ARTESUNATE SUPPOSITORY 50MG | 0 | 0 |  | 0 |  |
| ARTESUNATE SUPPOSITORY 200MG | 0 | 0 |  | 0 |  |
| ARTESUNATE INJ 60MG | 17,015 | 26,095 | 28,970 | 14,140 | 30/06/2018 |
| RAPID DIAGNOSTIC TEST - CARESTART KIT MALARIA BOX/25 | 12,800 | 23,474 | 21,719 | 14,555 | 30/01/2019 |
| RAPID DIAGNOSTIC TEST (RDT) COMBO KIT MALARIA BOX/25 | 0 |  |  | 0 |  |

In 2016, LLINs (429,700 pieces) were procured through Global Fund pooled procurement mechanism in the reporting year. Effective coordination with PPM country support team ensures that arrangements were in place for the transhipment of LLIN supplies right down to 45 predetermined storage points at peripheral level. The involvement of a local private sector shipping company sets an innovative approach in the delivery of net supplies to 43 strategic locations throughout the country within a required timeline. Notwithstanding logistics challenges associated with the remoteness and scattered nature of the country.

Two program officers attend PPM Wambo.org training in Bangkok, Thailand in mid-2016. After that the programme was able to place orders for malaria commodities mainly LLINs and ACTs for the very first time using the electronic platform.

Support for local procurement of Vehicles, Boats, OBMs, and other equipment were done through implementing of an asset procurement and management plan as reflected in the AOP for the reporting year. The asset procurement and management plan was a result of the fixed asset register maintained and updated by the programme. In principle the VBDCP office is the only department within the whole of MHMS that can boast of having such a system in place.

**Challenges:**

Quantification of malaria commodities was coordinated through NMS. Data quality issues in the supply chain management impedes on the decision making process to support timely quantification and therefore placement of needed orders through PPM.

The programme use to have the dedicated facility for the proper storage of supplies and equipment such as insecticides, LLINs, Spray equipment, etc. The property was reclaimed by the landlord in a lawsuit in 2014. After that the programme had to find the alternative and temporary storage. This has not been without risk as moving the equipment between several places at times can be demanding.

The ailing age of the current vehicle fleet across the programme has been faced with a high cost for regular maintenance. The fleet is as old as 2006 and it should start replacing some of the old fleet. Even the national office has been struggling to maintain the few vehicles it has in its fleet (Annex: Inventory).

## 3.3 Challenges

The Ministry of health and Medical Services (MHMS) is undergoing a reform process and therefore affects the program during this transitional period especially with its systems. As of 2015, the program has been integrating within the MHMS organisation and operational structures at both national and provincial levels. The capacity management and coordination at provincial level is being strengthened but requires more support and guidance to fully implement the reformed policy and strategies.

1. 1. 1. **Coordination**

At the national level, the VBDCP will be a sub-set of the Environmental Health Directorate according to the new reform structure of the Ministry of health and Medical Services. As such, the program has redefined its roles and responsibilities in accordance with the MHMS strategic direction. The role and function of the national office has been clearly defined as policy, strategic planning, technical advice, M&E reporting, and advocacy. The VBDCP at national level currently reports to the Under Secretary, Health Improvement. In summary, all corporate service operational responsibilities are no longer the primary roles and responsibilities of VBDCP at the national level.

At the provincial level, the operational functions of VBDCP such as financial management, asset management, staff management, information management from health facilities to HIS platform, and health facility’ supervision are now the responsibility of the Provincial Management Team under the guidance of the Provincial Health Director who in turn reports directly to the Under Secretary Health Care. The NVBDCP office only provides technical support to the provincial level. Inherent with this devolution of powers is the lack or insufficient capacity to handle the increased delegation of these resources to the provinces.

* + 1. **Supportive functions**

The change in the programs’ role and functions has seen a reduction in the VDBCP staffing and resources at headquarter level and it will be integrated with other MHMS functions in the near future. Additional resources, supported by GF, are continued to be channeled through MHMS Finance, HRM, Procurement and ICT of the MOFT to strengthen capacity in terms of the programs integration approach. As such, the vast majority of corporate service implementation and reporting requirements now rest with the other MHMS divisions both at National and Provincial Levels. This simply means that ongoing corporate service activities associated with the Global Fund grant are now intertwined within day to day operational activities of the Ministry. The NVDBCP no longer has any direct involvement in many of these areas.

* + 1. **Communication**

In terms of data collection and data processing at both health facility and provincial level, the responsibility for this activity currently sits between the MHMS HIS Manager and MHMS Director of Nursing. For example, nursing staff at the facility who collect the malaria data, report directly to the Director of Nursing in Honiara, whereas the management of DHIS 2 data entry at provincial level is the responsibility of the MHMS HIS manager. This situation is further clouded with the responsibility of maintaining internet access at the provincial level resting with MOFT through the SIG ICT division. The delegation of powers in line with the decentralization policy to the Provincial Health Directors is yet to be realised within other divisions of the Ministry and hence the challenge of communication and reporting at the provincial level is yet to be resolved.

### Technical challenges

The transitional strategies in moving from intensified control to elimination efforts in the context of limited resources and health reforms create challenges in the implementation. The structure and capacity of systems are yet fully established. The implementation management is directed and managed at the provincial level under the provincial health management team.

Vector control intervention, specifically LLIN, is implemented in cycles according to the assumed lifespan of the product. It assumed that LLIN lifespan is three year, however, the study on net’s durability found that the preventive effect is substantially reduced in each subsequent year of uses. The findings from the net’s durability study provide a picture on the preventive effect in the population and the relevant solutions are needed to address the observed impact. Under current implementation arrangement, e.g. one every three year’s cycle, makes the program, specifically each province, to organize effectively to implement it. Additionally, the current approach tends to create the fluctuation of protective coverage in the entire country population as per attrition rate pattern. In this regards, the program is considering to reschedule their implementation from a nationwide three year cycle to one-third annual cycle. The new approach will in the long run maintain the protective coverage at population, measured at national level.

The passive case management intervention through health facilities requires more attention on improving the diagnostic reasoning process and best recording and reporting practices. It also requires maintaining adequate supplies of diagnostic and antimalarial commodities in all health facilities throughout country regardless of the malaria endemic level. Quality microscopy service needs to be monitored systematically as per QA microscopy standard operational procedures. The QA microscopy encountered many constraints including limited validator and national level and management support at the provincial level.

The malaria information management system is still developing and more efforts should be made to establish a user-friendly system for all users both at national and provincial level. The shift from aggregated data to case-based data and the limitation of DHIS2 platform to support processing the information makes the system limited to users. Thus only the technical team at national level can understand and use the information in the system effectively. Knowledge transfer from national team to the provincial team will be regularly conducted during the supervisory visit or an organized workshop if it is required. The quality of internet service can impede the capacity development at the provincial level and it also affects the program information development system.

## Monitoring Performance and Progress

In addition to routine interventions, the program conducted different assessments, surveys, or studies to collect relevant information to inform and revise strategic intervention as appropriate. In 2015, the nationwide household survey was conducted using the Demographic Health Survey (DHS) design. Other studies included on-going monitoring of insecticide resistance and nets durability study. The quality assurance on microscopy monitoring remained very limited.

### Access and usability of net in population

The program indicators derived from population survey are generally measured in five years or longer depending on the national schedules on household or population based surveys. The results of vector control intervention coverage, through Demographic Health Survey (DHS) conducted in 2015, are summarized below (Table 8).

Table 8: Selected key indicators of preventive intervention from household’s survey in 2015

|  |  |  |
| --- | --- | --- |
| Indicators | Sub-groups | Values |
| Households with at least one mosquito net | Any nets | 86.5% |
| LLIN | 85.9% |
| Average number of nets per household | Any nets | 2.6 |
| LLIN | 2.5 |
| Households with at least one net for every two persons who stayed in the household last night | Any nets | 58.1% |
| LLIN | 56.3% |
| De facto population with access to an ITN in the household | All | 71.2% |
| Slept under LLIN last night | Under-five | 69.5% |
| Pregnant women | 63.2% |
| All | 56.8% |
| Insecticide-treated nets (ITNs) that were used by anyone the night before the survey | All | 66.1% |
| Households with IRS in the past 12 months | All | 27.7% |
| Urban | 28.9% |
| Rural | 27.5% |
| Households with at least one ITN and/or IRS in the past 12 months | All | 88.0% |
| Urban | 76.6% |
| Rural | 90.3% |

It found that 85.9% of households owned at least one LLIN and the average number of LLIN per households was 2.5, with the average number of people in a household being 5.3. It reflects on the proxy-measured accessibility, e.g. households with at least one LLIN for every two persons who stayed in the households last night, was reduced to 56.3%. Furthermore, despite the LLIN available at home, only 66.1% of available LLINs were used. During the night prior to survey, only 56.8% of population slept under an LLIN during the night prior to survey. There is a significant gap between knowledge and practices in understanding the benefit of using the LLIN to protect them from potential malaria transmission. The knowledge on malaria transmission (83%) and use of LLIN to prevent malaria transmission (84%) are high in the population according to the Malaria Indicator Survey results in 2011.

Additionally, according to the household survey in 2015, 27.7% of households reported having their houses sprayed in the past 12 months prior to survey, and the scale of intervention was similar regardless of environmental setting, e.g. urban or rural. The combined coverage of LLIN and / or IRS was estimated at 88% with higher coverage in rural (90.3%) than in the urban settings (76.6%). This indicated that the accessibility to the program intervention on the preventive measures was higher in rural (where the vulnerability to malaria transmission is relatively high) than in urban areas.

### Monitoring the effectiveness of NetProtect®

Following the WHO advisory note in late 2013 on withdrawing NetProtect® from the public health goods in malaria intervention due to unsatisfied quality LLIN and also advised countries where NetProtect® were in use to monitor its quality, the program has conducted monitoring and evaluation on the LLIN (NetProtedt®) distributed in 2013 prior to receiving the WHO advisory note on their effectiveness in term of insecticide content and bio-efficacy.

The analysis of insecticide contents from the LLIN samples found that the chemical content in the NetProtect® kept at national warehouse in 2014 was 1.24g/Kg of mass products (or 77% of the manufacture standard – 1.88g/Kg of mass products). The chemical analysis of net samples from the community also in 2014 indicated that it contained only 0.93g/Kg of mass products or 49% of manufacture reference. In other words, the content of insecticide in NetProtect® was reduced by 51% after one year of use in the community. The net samples in 2015 and 2016 were sent to laboratory oversea and the results are pending (Figure 4).

In field condition, the result of insecticide susceptibility using WHO bio-assay test in 2014 was 89.8% (Abbotts adjusted mortality rate). Subsequent testing in field conditions, after two and three years in use, indicated that the result of insecticide susceptibility (Abbotts adjusted mortality rate), using WHO bio-assay test, was respectively reduced to 52.4% and 46.5% (Table 9 & Figure 5).

Table 9: Summary of bio-efficacy results in 2014-2016

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Year | Summary of bio-efficacy results | | | | | |
| Mosquitoes | | | | | |
| Number | Knock down at 60 min. | | Mortality at  24 hours | | Abbotts adjusted mortality |
| N | N | % | N | % | % |
| In 2014  (nets from warehouse) | 145 | 145 | 100% | 145 | 100% | 100% |
| In 2014  (nets from field) | 538 | 344 | 63.9% | 488 | 90.7% | 89.8% |
| In 2015  (nets from field) | 902 | 392 | 43.5% | 432 | 47.9% | 52.4% |
| In 2016  (nets from field) | 2,480 | 929 | 37.5% | 1,207 | 48.7% | 46.5% |
|  |  |  |  |  |  |  |

### Insecticide resistance monitoring

The program has also monitored the insecticide in different sentinel sites to inform the strategic vector control intervention (Table 10).

Table 10: Susceptibility status of *Anopheles farauti* in different sentinel sites (2013-2015)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Insecticide Class** | **Insecticide Types** | **Year of Collection** | **Localities Where Status Reported** | | |
| Confirmed Resistance | Possible Resistance | Susceptible |
| **Pyrethroid** | Permethrin | 2013 - 2015 | None | Guadalcanal Central Islands | Temotu, Western Choiseul |
| Deltamethrin | 2013 - 2015 | None | Guadalcanal | Temotu  Western |
| Lambda cyhalothrin | 2013 - 2015 | None | Central Islands  Malaita | Temotu  Western  Choiseul |
| **Organochlorine** | DDT | 2013 - 2015 | None | Central Islands Guadalcanal | Temotu  Western |
| **Organophosphate** | Malathion | 2013 - 2015 | None | None | Temotu |

The monitoring between 2013 and 2015 found that the possible insecticide resistance of the malaria vector, Anopheles farauti, to different insecticides has been emerged, specifically in Central Islands and Guadalcanal provinces (Table 10). The insecticide pyrethroid class is the main insecticide currently used for the malaria intervention in the last decade for vector control intervention through the insecticide treated nets and indoor residual spray interventions.

### Treatment seeking behaviors

The results from DHS household survey in 2015 (Table 11) found that amongst children under-five:

* 19.3% of them reported having fever experiences in the past two weeks prior to the survey and predominant in boys (21.6%) than girls (16.8%). No obvious difference between urban (20.5%) and rural (19%) was observed. It reflects on the fever prevalence in the population, specifically the children under-five, in the past two weeks. It can be used for extrapolating the annual all fever causes’ incidence.

Table 11: Treatment seeking behaviors obtained through DHS household survey in 2015

|  |  |  |
| --- | --- | --- |
| Indicators | Sub-groups | Values |
| Children under-five with fever in the two weeks preceding the survey | All | 19.3% |
| Male | 21.6% |
| Female | 16.8% |
| Urban | 20.5% |
| Rural | 19.0% |
| Percentage who had blood taken for testing | All | 38.5% |
| Male | 37.2% |
| Female | 40.3% |
| Urban | 56.1% |
| Rural | 34.4% |
| Percentage who took antimalarial drugs same or next day | All | 8.0% |
| Male | 8.6% |
| Female | 7.2% |
| Urban | 4.4% |
| Rural | 8.9% |

* 38.5% of those experienced fever in the past two weeks had their blood tested for malaria. It observed slightly different between boys (37.2%) and girls (40.3%) as well as between urban (56.1%) and rural (34.4%). Furthermore, it interpreted as at least 38.5% of children under-five was suspected as malaria and lead to have their blood tested for malaria.
* 8% of them took antimalarial drugs the same or next day after onset of fever. It interpreted as 8% of children under-five experienced fever in the past two weeks was treated as malaria, reflected on the degree of treatment decision practices in fever children in the past two weeks.

The routine monthly feedback from the health facilities where malaria patients generally seek diagnosis and treatment provides important information to the program to understand the intervention at the health facilities and the impact of program intervention.

### Proportion of suspected malaria received blood test in public health facilities

The first and most important indicator in diagnosis is the proportion of suspect malaria patients have their blood tested either by RDT or microscopy at the public health facilities (Figure 6).

\*Data directly generates from DHIS2 platform (Proportion of suspected cases tested)

Overall, the average national proportion of suspected malaria have their blood tested either by RDT or microscopy in the public health facilities was 85% in 2016 similar to the observation in 2015 (85%). The values of this indicator are fluctuated, but stable above 82%.

According to the available information in the HIS|DHIS2 platform, this indicator can be illustrated by province as follows (Figure 7):

\*Data with value greater than 100% indicates its data quality issue related to the designed property of aggregated HIS form. This irregularity can be avoided in the designed property of MCMR.

Overall, three provinces have its respective value of this indicator higher than the average national value (85%) and with exception one province (Rennel) where there is a management gaps in assuring the availability of malaria diagnostic service using RDT.

Despite overall accessibility to the blood test services, the detail analysis on performance indicated that the availabilities of diagnostic services were discontinued or inadequate. It found that 50% of monthly reports indicated having tested more than 75% of suspected malaria cases, slightly increased from 41% in 2015. The results indicated that the challenges were possibly either in supply chain management and or quality of record and report practices at the health facilities (Table 12).

Table 12: Proportion of health facility-months tested suspected malaria cases > 75%\*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Geography | 2012 | 2013 | 2014 | 2015 | 2016 |
| Central Islands | 55% | 44% | 42% | 70% | 59% |
| Choiseul | 38% | 48% | 50% | 45% | 49% |
| Guadalcanal | 33% | 37% | 36% | 49% | 68% |
| Honiara | 63% | 59% | 61% | 73% | 61% |
| Isabel | 71% | 70% | 77% | 50% | 42% |
| Makira | 16% | 24% | 17% | 22% | 19% |
| Malaita | 28% | 32% | 24% | 38% | 47% |
| Rennel | 4% | 0% | 0% | 0% | 0% |
| Temotu | 70% | 70% | 71% | 41% | 65% |
| Western | 47% | 55% | 56% | 44% | 55% |
| Solomon Islands | **39%** | **42%** | **38%** | **44%** | **50%** |

\*Data (Proportion of suspected malaria cases received a blood test) to be exported from DHIS2 and analyzed in Excel program.

The proportion of patients who received anti-malarial treatment and who had their blood confirmed positive result increased from 46% in 2015 to 62% in 2016. It indicated that the decision to treat malaria patient was improved and, likely resulted from the use of new RDT with high sensitivity to detect P. vivax (Figure 8).

The treatment decision practices are varied in times and places as indicated in below (Figure 9). The data quality needs to be improved to support interpreting this indicator.

\*If its value greater than 100%, it is data quality issue. The reported treated cases are less than the confirmed cases. It happened if the aggregated report form remained in use rather than using the MCMR form.

### Quality assurance on microscopy service monitoring

It is intended that all health facilities with malaria microscopy service should participate in the quality assurance microscopy service. Therefore, it expects those health facilities sending the predetermine number of slides to be cross-checked. It predetermines that in control intervention provinces, every month, send five positive slides and five negative slides randomly selected to the provincial level; and in the elimination intervention provinces, all slides should be sent for cross-checking similar to the control intervention provinces.

In 2016, 32 health facilities with microscopy services from six provinces participated in QA microscopy services (Table 13). It anticipated that approximate 3,840 slides should have sent to their respective provincial malaria offices for cross-checking. The number of slides sent/received was 37% (or 1,437 slides) of the anticipated slides and 68% (or 977 slides) were cross-checked at the provincial level.

Table 13: Slide cross checking by province in 2016

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Geography | No. of health facilities participated in QA | QA Slides | | | | |
| Expected | Received | % | Checked | % |
| Central Island | 10 | 1200 | 551 | 46% | 551 | 100% |
| Choiseul | 7 | 840 | 121 | 14% | 84 | 69% |
| Guadalcanal | 3 | 360 | 50 | 14% | 50 | 100% |
| Honiara | 10 | 1200 | 564 | 47% | 180 | 32% |
| Temotu\* | 1 | 120 | 131 | 109% | 92 | 70% |
| Western | 1 | 120 | 20 | 17% | 20 | 100% |
| TOTAL | 32 | 3,840 | 1,437 | 37% | 977 | 68% |

\*Elimination province requires sending all examined slides to be cross-checked

The cross-checking results are summarized in the below (Table 14). Although the statistical analysis was not conducted, the data seems not to be substantial differences between the results read at the health facilities by individual province and that read by the respective provincial slide validators. The slides read by health facilities in Central Islands seemed to have more false positive results compared to the results read by the slide validators.

Table 14: Slide cross checking results by province

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Geography | No. slides checked | Slides cross-checked results | | | | | | | | | |
| 1st Readers’ Results | | | | | Validators’ Results | | | | |
| PF | PV | Mixed | Other | Neg | PF | PV | Mixed | Other | Neg |
| Central Island | 551 | 89 | 193 | 25 | 0 | 244 | 97 | 170 | 9 | 0 | 275 |
| Choiseul | 84 | 16 | 28 | 0 | 0 | 40 | 4 | 23 | 0 | 0 | 57 |
| Guadalcanal | 50 | 6 | 19 | 0 | 0 | 25 | 6 | 19 | 0 | 0 | 25 |
| Honiara | 180 | 37 | 47 | 1 | 0 | 95 | 30 | 43 | 2 | 0 | 105 |
| Temotu\* | 92 | 0 | 2 | 0 | 0 | 90 | 0 | 2 | 0 | 0 | 90 |
| Western | 20 | 0 | 10 | 0 | 0 | 10 | 0 | 10 | 0 | 0 | 10 |
| TOTAL | 977 | 148 | 299 | 26 | 0 | 504 | 137 | 267 | 11 | 0 | 562 |

\*Elimination province requires sending all examined slides to be cross-checked

Slides cross-checking activity is very important for the program to monitor the quality of malaria case management and the impact of program intervention. It needs further improvement in this area to support the program in moving towards the elimination.

### Practical treatment decision and prescription

Through the implementation of new reporting tool, MCMR, the program is now able to monitor the quality of treatment decision and practices, not only in term of complying with the national recommended treatment policy but also allowing the program to monitor the possible logistics shortage to support the treatment decision at individual health facility at any specific month. It is first time that the program can provide this evidence and it will be used for further guidance and monitoring to improve the service quality. Overall, the proportion of (probable and confirmed) malaria patients received the first line as per national policy was 77% and the proportion of confirmed malaria received treatment as per national policy was 86%. These indicators informed the program of possible stock out of first line regimen rather than lack of knowledge on decision to prescribe the antimalarial as the current first line regimen had been introduced since 2009. The program will use these proxy-indicators to inform the supply chain management network to respond the operational gaps in its respective area.

### Supply chain monitoring

Monitoring the supply management for the program remains challenging due to the information supply chain management system being still under development. To monitor the malaria case management intervention, the supply chain information management is very important at all levels, from the national (or first) and provincial (or second) levels as well as at the health facility level.

The malaria program identifies proxy-indicators to monitor this function. It defines as if any routine monthly health facility report contained the information such as at least a blood sample was tested for malaria either by RDT or microscopy, it is classified as being able to provide confirmed malaria diagnostic services, otherwise it classified as not be able to provide such services in that specific reported month. The results of analysis found that 78% of health facility-months were able to confirm malaria diagnosis in 2016, which was better than the situation in 2015 (Table 15).

Table 15: Proportion of health facility-month able to confirm malaria diagnosis\*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Geography | 2012 | 2013 | 2014 | 2015 | 2016 |
| Central Islands | 87% | 85% | 87% | 86% | 93% |
| Choiseul | 76% | 83% | 76% | 59% | 74% |
| Guadalcanal | 74% | 79% | 76% | 81% | 95% |
| Honiara | 74% | 72% | 73% | 79% | 66% |
| Isabel | 63% | 58% | 54% | 53% | 52% |
| Makira | 46% | 61% | 51% | 43% | 51% |
| Malaita | 56% | 64% | 56% | 66% | 90% |
| Rennel | 6% | 3% | 0% | 0% | 0% |
| Temotu | 63% | 58% | 50% | 48% | 72% |
| Western | 70% | 76% | 69% | 69% | 86% |
| Solomon Islands | **65%** | **69%** | **64%** | **64%** | **78%** |

\*It is a proxy-measured indicator to determine whether a health facility is able to provide blood test service or not and the criteria is based on at least a blood sample was tested during the reported month. It measures as health facility-month unit. Data (Total HF-Months able to provide diagnostic service) is using HF monthly reports as denominator.

Similarly, another proxy-indicator is defined to monitor the availability of treatment service. It defines as if any health facility reported at least one malaria patient was treated, it classified as treatment service was available in that specific reported month. The analysis found that 66% of expected reports in 2016 recoding at least one malaria patient were treated while the report in 2015 indicated only 61% (Table 16).

Table 16: Proportion of Health Facility-Months reported treating malaria

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Provinces** | **HF registered** | **Expected reports** | **Report on treated cases** | | | |
| **2015** | | **2016** | |
| **N** | **N** | **N** | **%** | **N** | **%** |
| Central Islands | 24 | 288 | 211 | 73% | 240 | 83% |
| Choiseul | 25 | 300 | 164 | 55% | 154 | 51% |
| Guadalcanal | 42 | 504 | 425 | 84% | 433 | 86% |
| Honiara | 19 | 228 | 163 | 71% | 180 | 79% |
| Isabel | 30 | 360 | 82 | 23% | 91 | 25% |
| Makira | 40 | 480 | 335 | 70% | 337 | 70% |
| Malaita | 80 | 960 | 644 | 67% | 651 | 68% |
| Renbel | 3 | 36 | 24 | 67% | 19 | 53% |
| Temotu | 17 | 204 | 47 | 23% | 111 | 54% |
| Western | 55 | 660 | 370 | 56% | 441 | 67% |
| **Country** | **335** | **4020** | **2465** | **61%** | **2657** | **66%** |

The interpretation of this indicator is challenged due to the quality of recording and reporting practices. It needs to be strengthened and supported from the HIS and National Medical Supplies divisions to address these gaps.

Anecdotal observations and the feedback through supervisory visits to health facilities by the provincial teams indicated some issues with stock out at the peripheral health services on malaria diagnostic and treatment services were observed. The health facility supervisory check list tools for malaria program will provide some evidences to the program to understand the situation at the health facility level. The tools have not been yet widely used by the provincial supervisory team.

### Health information system performance

The current reporting tool, MCMR, was introduced in late 2015 and it continued implementing in 2016. Despite the effort to roll out the implementation, only 82% of registered health facilities (335) implemented the MCMR reporting form (Table 17).

Table 17: Progress in implementing MCMR by province

|  |  |  |  |
| --- | --- | --- | --- |
| **Provinces** | **Health Facilities** | | |
| **Registered in the system** | **Implemented MCMR** | **%** |
| Central Islands | 24 | 22 | 92% |
| Choiseul | 25 | 21 | 84% |
| Guadalcanal | 42 | 40 | 95% |
| Honiara | 19 | 17 | 89% |
| Isabel | 30 | 24 | 80% |
| Makira | 40 | 36 | 90% |
| Malaita | 80 | 59 | 74% |
| Renbel | 3 | 0 | 0% |
| Temotu | 17 | 15 | 88% |
| Western | 55 | 42 | 76% |
| **Solomon Islands** | **335** | **276** | **82%** |

Based on the integrated HIS|DHIS2 platform, the NVBDCP is able to manage and monitor the performance of health facilities in delivering the case management component. At current development, the program can generate all program impact indicators and most of malaria case management indicator as well as the supportive health system indicators.

Table 18: Status of health facilities operated by province in 2016

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Geography | Total HF registered in the system | Operational status | | | | | |
| Full | | Partial | | Closed\* | |
| Central Islands | 24 | 11 | 46% | 11 | 46% | 2 | 8% |
| Choiseul | 25 | 7 | 28% | 14 | 56% | 4 | 16% |
| Guadalcanal | 42 | 26 | 62% | 14 | 33% | 2 | 5% |
| Honiara | 19 | 16 | 84% | 3 | 16% | 0 | 0% |
| Isabel | 30 | 12 | 40% | 15 | 50% | 3 | 10% |
| Makira | 40 | 11 | 28% | 28 | 70% | 1 | 3% |
| Malaita | 80 | 46 | 58% | 17 | 21% | 17 | 21% |
| Rennel | 3 | 2 | 67% | 1 | 33% | 0 | 0% |
| Temotu | 17 | 7 | 41% | 9 | 53% | 1 | 6% |
| Western | 55 | 32 | 58% | 13 | 24% | 10 | 18% |
| Solomon Islands | **335** | **170** | **51%** | **125** | **37%** | **40** | **12%** |

\*Closed operation in the entire year

The information can be generated by province or area in the respective provinces. The total health facilities registered in 2016 are 335 health facilities. It indicated that 40 health facilities (or 12%) were closed in 2016; 170 (or 51%) health facilities were regularly operated throughout the year and 125 (or 37%) health facilities were partially operated due to many reasons such as unavailable staff (on leave or on duty travel) or renovation (Table 18).

Based on the registered health facilities (335), it anticipated that total of 4020 units of monthly reports should be submitted to the provincial level as per their operational status in 2016 (Table 19).

Table 19: Annual report (unadjusted\*) coverage by province in 2016

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Provinces | **Health Facilities' Report Coverage (Unadjusted)** | | | | | | | |
| Registered | Expected reports | HIS reports | | MCMR reports | | Either HIS or MCMR reports | |
|
| **N** | **N** | **N** | **%** | **N** | **%** | **N** | **%** |
| Central Islands | 24 | 288 | 241 | 84% | 218 | 76% | 244 | 85% |
| Choiseul | 25 | 300 | 220 | 73% | 204 | 68% | 247 | 82% |
| Guadalcanal | 42 | 504 | 447 | 89% | 442 | 88% | 463 | 92% |
| Honiara | 19 | 228 | 217 | 95% | 172 | 75% | 218 | 96% |
| Isabel | 30 | 360 | 282 | 78% | 147 | 41% | 296 | 82% |
| Makira | 40 | 480 | 402 | 84% | 291 | 61% | 416 | 87% |
| Malaita | 80 | 960 | 723 | 75% | 636 | 66% | 740 | 77% |
| Renbel | 3 | 36 | 28 | 78% | 0 | 0% | 28 | 78% |
| Temotu | 17 | 204 | 178 | 87% | 117 | 57% | 181 | 89% |
| Western | 55 | 660 | 507 | 77% | 453 | 69% | 537 | 81% |
| Country | 335 | 4020 | 3245 | 81% | 2680 | 67% | 3370 | 84% |

\*Based on health facilities registered in HIS|DHIS2 system

1. **Impact**
   1. **Parasite incidence**

Historically, the burden of malaria disease in Solomon Island in 1990s was very high and the annual parasite incidence (API) was 442 per 1,000 populations. Over more than two decades, the burden of malaria has progressively reduced and fluctuated due to unstable investment in the program intervention coupled with a period of civil unrest resulting in the cessation of most program activities for several years. Since 2004, when substantial and sustained financial resources became available over a ten year period, the burden of malaria has continued to trend downwards from 196 per 1,000 to 40.5 per 1,000 populations in 2015. However, it increased significantly to 81 per 1,000 populations in 2016 (Figure 10).

Data collected and reported at health facility level through the MCMR and entered into the DHIS2 platform indicate that a total of 79,375 malaria cases were treated in 2016 and of which 49,050 cases (or 61.8%) had their blood parasitically confirmed. In most provinces (with the exception of Choiseul and Isabel) the confirmed malaria cases) increased substantially and often doubled in comparison with the confirmed cases reported in 2015 (Table 20).

It is worth noting that the total number of treated malaria cases did not increase as high as the confirmed cases. The ratio between the treated cases in 2016 and 2015 was 1.53 (79,375/51,824) while the ratio between the confirmed cases in 2016 and 2015 was 2.04 (49,050/23,998). One possible explanation is that the increased access to better quality diagnostic services and / or better report coverage led to this increase while the overall transmission was only slightly changed.

Table 20: Compared malaria treated and confirmed cases in 2015 and 2016 by geography

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Geography | Total treated cases | | Total confirmed cases | |
| In 2015 | In 2016 | In 2015 | In 2016 |
|  | Central Islands | 5,374 | 11,917 | 4,639 | 8,588 |
|  | Choiseul | 1,272 | 1,320 | 493 | 533 |
|  | Guadalcanal | 8,994 | 15,315 | 4,396 | 11,498 |
|  | Honiara | 6,026 | 8,511 | 4,407 | 6,629 |
|  | Isabel | 348 | 415 | 143 | 188 |
|  | Makira | 8,274 | 9,718 | 2,601 | 4,422 |
|  | Malaita | 16,482 | 23,992 | 6,411 | 14,061 |
|  | Rennel | 249 | 216 | 0 | 0 |
|  | Temotu | 161 | 746 | 292 | 1,086 |
|  | Western | 4,644 | 7,225 | 616 | 2,045 |
|  | Solomon Islands | 51,824 | 79,375 | 23,998 | 49,050 |

By analyzing the data further, we can explore whether the increase is the result of the increase in access to diagnosis coupled with improved quality of the new RDT tool. The unadjusted analysis on the functional diagnostic service indicates that only 53% of expected monthly reports were classified as being able to provide diagnostic services in that specific reported months in those health facilities in 2015. This increased to 65% in 2016. Further adjusted analysis on this factor found that 64% and 78% of health facility-months were able to provide diagnostic services, respectively, in 2015 and in 2016. It can be interpreted that the functional diagnostic services measured as health facility-months increased by 20.8% when compared to the functionality of diagnostic services in 2015.

Furthermore, if it classifies by monthly performance of diagnostic service (e.g. suspected malaria patients had their blood tested more than 75%, between 50% and 75%, and less than 50%), the performances in 2016 were better than that in 2015. The health facility reports indicated testing suspected malaria cases more than 75% on monthly basis were 44% in 2015 and 50% in 2016. The health facility reports indicated testing suspected malaria cases between 50% and 75% were 10% in 2015 and 11% in 2016. The health facility reports indicated testing suspected malaria cases less than 50% were 10% in 2015 and 17% in 2016 (Table 21).

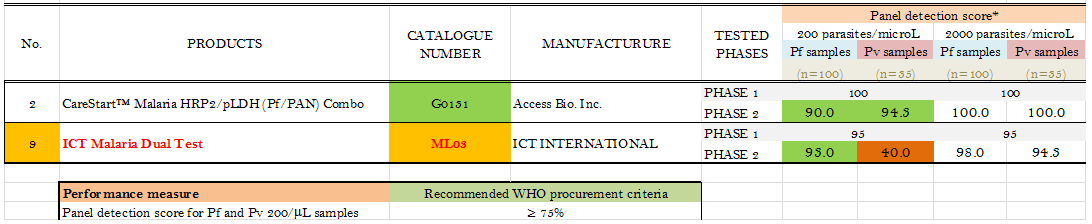
Table 21: Performance on diagnostic service coverage

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Performance categories | Unadjusted (%) | | Adjusted (%) | |
| 2015 | 2016 | 2015 | 2016 |
| Test more than 75% | 36% | 42% | 44% | 50% |
| Test between 50% and 75% | 8% | 9% | 10% | 11% |
| Test less than 50% | 8% | 14% | 10% | 11% |
| None | 29% | 19% | 36% | 22% |
| Inconclusive | 18% | 16% |  |  |
| Total | 100% | 100% | 100% | 100% |

It is also supported by the increase of annual blood examination rate (ABER) by 35% from 27% in 2015 to 36.5% in 2016.

The overall quality of RDT used in 2016 was better than the RDT used in 2015. The RDT used in 2015 (ICT Malaria Dual Test - ML03) had low sensitivity (40%) to detect P. vivax with low density while the RDT used in 2016 (CareStartTM – G031) has high sensitivity (94.3%), according to the results of WHO products testing of malaria RDT round 5 in 2013 (Table 22).

Table 22: Results of WHO products testing of malaria RDT – round 5



This can explain the significant increase of P. vivax cases reported in 2016 as well as the proportion of P. vivax cases detected by RDT, which increased from 42.6% in 2015 to 56% in 2016 (an increase of 34.6%) while there was a lesser increase in the proportion of P. vivax cases detected by microscopy from 55.8% in 2015 to 65.5% in 2016 (or increased 17.5%).

The burden of malaria is variable in the Solomon Islands. Five provinces contribute approximately 93% of the malaria burden in the country in 2016 (Figure 11). Those provinces are Central Islands (18%), Guadalcanal (23%), Honiara (14%), Makira (9%), and Malaita (29%). The malaria caseloads, in other five provinces (Choiseul, Isabel, Rennel, Temotu, and Western) attributed to the overall national malaria burden, are marginal (7%). This burden distribution in 2016 is quite similar to the burden distribution in 2015.

Many factors influenced on the variation of incidence, and particularly in 2016, report completeness, accessibility to diagnostic services, and quality of diagnostic services, and reduced preventive effects in population were the dominant factors.

The preventive effects in the population and its coverage in 2016 were reduced (Figure 12). LLIN’s and IRS were the two vector control interventions implemented during the past four years (2013-2016). LLINs have typically been mass distributed every three years and in between, the preventive IRS intervention was implemented in selected areas, covering around 25% to 30% of households to complement the LLIN intervention. As per the plan, IRS was discontinued in 2016 due to limited resources, technical and operational challenges. The nature of interventions explained the fluctuation of annual parasites incidence due to the fluctuating effect of preventive measures in the population.

A study on nets durability found that the LLIN’s that were procured and distributed in 2013 had been lost their effective preventive effect over time due to substandard LLIN product according to WHO criteria. The reduced preventive effect, measured through the results of bio-efficacy study, could explain and partly have contributed to the increased transmission, resulting in an increase in malaria cases. The results of Bio-efficacy monitoring found that the mosquito’s mortality rate (Abbott’s adjusted mortality rate) declined from 90%, to 52%, and then to 46%, respectively, in 2014, 2015, and 2016.

Many other factors determine the impacts of the program intervention including the vector component, e.g. biting pattern and / or emerging resistance to the insecticide. More evidence needs to be compiled and interpreted to explain the pattern of impact.

The increased malaria cases in Central Islands are compounded by many possible factors and needs further investigation (Figure 13). Factors that might contribute to the increased malaria cases are the emerging insecticide resistance in some places in the province, the reduction of protective effects as aforementioned and the accessibility and quality of diagnostic service. The annual blood examination rate in this province is significantly higher than the national average (ABER=77%)

Despite limited information on quality control monitoring, the results of QA microscopy monitoring in Central Islands province indicated that the quality of microscopy seems to be over confirmed cases (false positive results).

Paradoxically, the proportion of P. falciparum has continued to reduce in line with the national trend, as illustrated later on in this report.

* 1. **Proportion of P. falciparum**

The average national value of proportional P. falciparum in all species is 36%, significantly reduced relative to the previous year (53%). The reduction of proportional P. falciparum trend over the last four years indicates the success of program intervention despite the challenges in measuring the actual burden of the disease in a true figure (Figure 14).

Sub-nationally, it was observed that the proportion of P. falciparum reduced in most provinces, including Central Islands (Figure 15), indicating that the impact of the intervention remains positive, specifically in reducing the P. falciparum transmission.

* 1. **Malaria deaths**

Despite there still being incomplete records and reports in the system, some improvements in reporting malaria deaths can be seen since the introduction of the death registration system in late 2015. It is noted that in general the malaria deaths remain fluctuating and low relative to all causes of death. The malaria proportional deaths attributed in all causes of death remain around 1% since 2012. The malaria death rate reported in the system in 2016 was 2.97 per 100,000 populations[[3]](#footnote-3) (Figure 16).

The health information system introduced a death registration system in late 2015 and this is expected to address the gaps of under reported deaths. Malaria deaths were reported from six provinces (Central Islands, Choiseul, Guadalcanal, Makira, Malaita, and Western). Malaria death was under reported in Honiara due to a lack of data from the National Referral Hospital as its system is currently separate to, and is not yet synchronized with the common DHIS2 platform.

* 1. **Annual blood examination rate and blood test positivity rate**

The overall blood positivity and annual blood examination rates increased respectively to 22% and 37% in 2016 relative to 14% and 29% in 2015 (Figure 17).

* 1. **Sub-group analysis**
     1. **By sex**

Malaria affects all types of population, and it can be seen that in general the affected male and female populations were similar. According to the census data in 2009, the sex ratio (female to male) in the population is 95 and the observed sex ratio in malaria patients in 2016 is around 93 (Figure 18).

Therefore, it indicates that the female population is slightly less vulnerable and affected by malaria disease. In general, malaria affects equally both men and women in general context.

The pattern was observed in most provinces, with exception of Makira province where female population (53% of cases) is more likely to be affected by malaria than male population, provided that the proportion of female in the population in Makira is 49% according to the 2009 census (Figure 19).

* + 1. **By age-groups**

Further analysis on specific age groups were conducted and it observed that the proportion of under-five in the country population is estimated at15% and the proportion of confirmed malaria cases in children under-five in 2016 was 26% out of 49,050 confirmed malaria cases (Figure 20). It indicates that under-five children population remains vulnerable to malaria transmission, and is similar to 2015 transmission.

The pattern of under-five children affected by malaria varies slightly within the country and remains higher than the proportion in the population in the respective province, with the exception of Isabel province where the proportion of under-five children affected by malaria (5%) is lower than the proportion of under-five children in its provincial population (14%).

The pattern is also observed in Temotu province and Choiseul, in which the proportions of under-five children affected by malaria and in its provincial population were quite similar (14%). It might explain the low malaria transmission in those provinces (Figure 21).

* + 1. **By species**

Species analysis indicated that in 2016 the overall proportion of P. falciparum, confirmed by either RDT or microscopy, was 24%, and mixed infection with P. falciparum accounted for 30%. The proportion of non P. falciparum species, very likely P. vivax, was 46% (Figure 22).

An analysis on the species, confirmed by microscopy, indicated that the proportion of mixed infection with P. falciparum was only 2%, the proportion of P. falciparum was 32%, and that of P. vivax was 66% (Figure 23).

Similarly, the species analysis on RDT confirmed test indicated that proportion of mixed infection with P. falciparum accounted for 12% and that of P. falciparum was 44%. The non P. falciparum species was 44% relatively lower than that of microcopy tools (Figure 24).

Despite the trend of annual parasites incidence fluctuating periodically, the trend of proportion of P. falciparum continues progressively to reduce indicating the success of program interventions (Figure 25).

The distribution of parasite species varies between provinces (Figure 26). Most provinces have a low proportion of P. falciparum compared to the national average level (36%). The proportion of P. falciparum includes mixed infection with P. falciparum in the estimation.

1. **Conclusion**

Many challenges have been encountered during the transitional reform in the health system, which have directly and indirectly affected the program implementation. More time is needed to have the system reformed and accommodate the needs of malaria program in maintaining their effective operation. The API in 2016 (81 per 1000) increased by 105% relative to 2015 (40.5 per 1000). Many factors contributed to this such as increased access to diagnostic service, better diagnostic tools, improved information management, and the reduction of preventive effect in the population. Quality data remains a concern to confidently evaluate program impact. It is also a concern on the emerging insecticide resistance, which could pose a challenge to the program if the alternative solutions are not available or accessible to replace the current tools.

# Recommendations

It can be concluded that the general health system constraints affect the impact of the program. The support from other divisions within the health system, in the areas of supply chain management, information management and other supportive corporate services such as human resources procurement and finance is required to:

* Improve an effective supply chain management:
  + Both first and second levels of supply management system need to ensure adequately distribution of malaria commodities to all health facilities in the country according to the program strategic intervention.
  + Supply management information shall be made available and accessible in the common DHIS2 platform so that the program can support monitoring and coordination to improve quality of care services.
* Improve best clinical, recording and reporting practices
  + Recording and reporting practices shall be strengthened to improve both quality and completeness of the feedback from health facilities in compliance with the 3Ts principle test, treat and track.
  + More guidance shall be continuously provided to ensure nurses and physicians follow the program’s case management protocol and the importance of feedback on their clinical practices, test, treat, and track.
* Improve monitoring and evaluation
  + It is important that routine monitoring shall be regularly and effectively conducted to guide the intervention at all operational levels as per strategic interventions.
  + At provincial level, more capacity development needs to be provided to the management and monitoring team to improve their knowledge and skills in monitoring and using the information for action.
* Finance management
  + It is vital that Provincial Annual Operational Planning (AOP) must be properly established and aligned with National Health Planning and NVBDCP strategic plan (strategic objectives, goals and vision) processes to ensure funds are spent on the priorities of the ministry of health and that of the government of the day and to be led by the planning department of the Ministry.
  + Finance management should be legally delegated to Provincial Health Managers (Provincial health directors) by Ministry of Finance and Treasury to ensure effective, efficient and timely implementation of service delivery to the most affected communities.
* Human resources Management
  + The roles and responsibilities of the different levels of the Ministry including the program implementation in provinces needs to be further clarified with sustained integration into the general service delivery to achieve targets led by one Health Services Manager
  + Appropriately trained and recruited support services staff shall be scaled-up at the provincial level to cater for the increased resource delegation in line with the Ministry’s decentralization policy
* Coordination & Support Supervision
  + It is vital that this key activity must be strengthened both at national and provincial levels to see any major achievements and or challenges by the program, which needs appropriate and timely actions as we model through the transition phase of the overall ministry of health’s decentralization policy.

1. **ANNEXES**
   1. **Summary of annual report**

**Summary of malaria cases treated and confirmed (by sex and age-groups) in 2016**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Geography | All cases  treated | | Confirmed cases | | | | | | | | | |
| Total | | By sex | | | | By age-groups | | | |
| Female | | % | | Under-five | | % | |
| Central Islands | | 11,917 | | 8,588 | | 4,160 | | 48% | | 1,831 | | 21% |
| Choiseul | | 1,320 | | 533 | | 259 | | 49% | | 77 | | 14% |
| Guadalcanal | | 15,315 | | 11,498 | | 5,484 | | 48% | | 2,524 | | 22% |
| Honiara | | 8,511 | | 6,629 | | 2,966 | | 45% | | 1,452 | | 22% |
| Isabel | | 415 | | 188 | | 94 | | 50% | | 10 | | 5% |
| Makira | | 9,718 | | 4,422 | | 2,335 | | 53% | | 964 | | 22% |
| Malaita | | 23,992 | | 14,061 | | 6,918 | | 49% | | 2,944 | | 21% |
| Renbel | | 216 | | 0 | | 0 | | - | | 0 | | - |
| Temotu | | 746 | | 1,086 | | 475 | | 44% | | 138 | | 13% |
| Western | | 7,225 | | 2,045 | | 904 | | 44% | | 298 | | 15% |
| Solomon Islands | | 79,375 | | 49,050 | | 23,595 | | 48% | | 10,238 | | 21% |

**Summary of blood test and results (by species) – combined RDT and microscopy services**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Geography | Blood tested | Positive | P. falciparum | Mixed with Pf | Non-P. falciparum |
| Central Islands | 23,579 | 8,588 | 2,279 | 3,094 | 5,494 |
| Choiseul | 5,693 | 533 | 173 | 237 | 296 |
| Guadalcanal | 44,724 | 11,498 | 3,121 | 4,742 | 6,755 |
| Honiara | 57,891 | 6,629 | 3,412 | 3,619 | 3,010 |
| Isabel | 1,561 | 188 | 60 | 66 | 122 |
| Makira | 10,745 | 4,422 | 479 | 527 | 3,894 |
| Malaita | 50,104 | 14,061 | 5,022 | 6,273 | 7,762 |
| Renbel | - | - | - | - | - |
| Temotu | 3,835 | 1,086 | 79 | 101 | 984 |
| Western | 23,613 | 2,045 | 540 | 610 | 1,421 |
| Solomon Islands | 221,745 | 49,050 | 15,165 | 19,269 | 29,738 |

**Summary of blood test and results (by species) – microscopy services**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Geography | Blood tested | Positive | P. falciparum | Mixed with P.f | Non-P. falciparum |
| Central Islands | 12,475 | 3,919 | 1,008 | 191 | 2,720 |
| Choiseul | 3,514 | 368 | 113 | 25 | 230 |
| Guadalcanal | 17,178 | 3,168 | 1,064 | 92 | 2,012 |
| Honiara | 50,766 | 5,575 | 2,854 | 45 | 2,676 |
| Isabel | 1,094 | 91 | 16 | - | 75 |
| Makira | 6,730 | 3,494 | 254 | 10 | 3,230 |
| Malaita | 26,901 | 5,943 | 2,336 | 58 | 3,549 |
| Renbel | - | - | - | - | - |
| Temotu | 1,985 | 501 | 17 | 1 | 483 |
| Western | 11,017 | 736 | 73 | 7 | 656 |
| Solomon Islands | 131,660 | 23,795 | 7,735 | 429 | 15,631 |

\* Most of non-P. falciparum result (99.7%) in this table is P. vivax. Only 33 positive samples were P. malariae and 10 samples were other species. Mixed infection with P. falciparum is relatively low (1.8%), according to the blood test results examined by microscopic tool.

**Summary of blood test and results (by species) – RDT services**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Geography | Blood tested | Positive | P. falciparum | Mixed with P.f | Non-P. falciparum |
| Central Islands | 11,104 | 4,669 | 1,271 | 624 | 2,774 |
| Choiseul | 2,179 | 165 | 60 | 39 | 66 |
| Guadalcanal | 27,546 | 8,330 | 2,057 | 1,529 | 4,744 |
| Honiara | 7,125 | 1,054 | 558 | 162 | 334 |
| Isabel | 467 | 97 | 44 | 6 | 47 |
| Makira | 4,015 | 928 | 225 | 38 | 665 |
| Malaita | 23,203 | 8,118 | 2,686 | 1,193 | 4,239 |
| Renbel | - | - | - | - | - |
| Temotu | 1,850 | 585 | 62 | 21 | 502 |
| Western | 12,596 | 1,309 | 467 | 63 | 779 |
| Solomon Islands | 90,085 | 25,255 | 7,430 | 3,675 | 14,150 |

According to the results of blood tests examined by microscopy, mixed infection with P. falciparum is relatively low (1.8%). As such, the mixed infection with P. falciparum tested by RDT - HRP2/PAN(pLDH) is likely to be P. falciparum than true mixed infection. In that regards, the proportion of P. falciparum should be 42.3% rather than 29.4% (7,430/25,255).

**Burden of malaria in different geographies in Solomon Islands in 2016**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Geography | API rate | Treated cases | (%) | Confirmed cases | (%) |
| Solomon Islands | **81** | **79,375** | **100%** | **49,050** | **100%** |
| Central Islands | 280.6 | 11,917 | 15% | 8,588 | 18% |
| Choiseul | 17.2 | 1,320 | 2% | 533 | 1% |
| Guadalcanal | 104.7 | 15,315 | 19% | 11,498 | 23% |
| Honiara | 87.3 | 8,511 | 11% | 6,629 | 14% |
| Isabel | 6.1 | 415 | 1% | 188 | 0% |
| Makira | 93.1 | 9,718 | 12% | 4,422 | 9% |
| Malaita | 87 | 23,992 | 30% | 14,061 | 29% |
| Renbel | 0 | 216 | 0% | 0 | 0% |
| Temotu | 43.3 | 746 | 1% | 1,086 | 2% |
| Western | 22.7 | 7,225 | 9% | 2,045 | 4% |

* 1. **Core Programmatic Indicators – Annual period’s measurement**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| No. | IMPACT INDICATORS | 2012 | 2013 | 2014 | 2015 | 2016 |
| 1 | Parasite Incidence Rate per 1,000 persons | 41.5 | 43.6 | 30.3 | 40.5 | 81.0 |
| 2 | Falciparum Incidence Rate per 1,000 persons | 28.0 | 25.0 | 17.5 | 20.0 | 31.8 |
| 3 | Vivax Incidence Rate per 1,000 persons | 14.2 | 20.1 | 14.0 | 22.5 | 55.9 |
| 4 | Malaria Death Rate per 100,000 persons | 3.26 | 3.18 | 3.97 | 1.52 | 2.97 |
| 5 | Proportion of Cases Due to P. falciparum (%) | 66 | 53 | 53 | 50 | 36 |
| 6 | Malaria Test Positivity Rate (%) | 12 | 14 | 11 | 14 | 22 |

**Indicator’s interpretation and comments on the results between 2015 and 2016**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No. | IMPACT INDICATORS | BASELINE | TARGET | RESULT | CHANGED |
| 1 | Parasite Incidence Rate per 1,000 persons | 40.5 |  | 81.0 | 100% |
| Interpretation and comments:  Many factors influenced on the measurement of annual parasite incidence and those factors themselves kept also changing over time. The observed API in 2016 was 81 per 1,000 which is double API in 2015 which was 40.5%. The main factors affected this indicator include the report completeness (and its quality) due to changing of reporting tool, from the aggregated HIS to case-based MCMR tool. The implementation of MCMR report form reached 88% in 2016 while it was less than 10% in 2015. The MCMR tool tends to capture more accurate than the aggregated HIS due to its simplicity on reporting process. The proportion of reports indicated diagnostic services were available increased from 64% in 2015 to 78% in 2016, with more health facilities tested more than 75% on monthly basis in 2016 (50%) than that of in 2015 (44%). The proportion of P. vivax cases were also increased by 35% in the patients tested by new RDT used in 2016, which has more sensitivity in detecting P. vivax compared to the previous RDT used in 2015. The annual blood examination rate was also increased in 2016 (37%) relative to in 2015 (27%) indicated the increased access to diagnostic service. To some extent the reduction of preventive coverage in the population, both coverage and effectiveness, contributed in the increased transmission and thus increased API in 2016. | | | | | |
| 2 | Falciparum Incidence Rate per 1,000 persons | 20.0 |  | 31.8 |  |
| Interpretation and comments:  \*Two main coverage indicators affected this indicator, the report coverage and proportion of suspected malaria received a parasitological test. | | | | | |
| 3 | Vivax Incidence Rate per 1,000 persons | 22.8 |  | 55.9 |  |
| Interpretation and comments:  \*Two main coverage indicators affected this indicator, the report coverage and proportion of suspected malaria received a parasitological test. | | | | | |
| 4 | Malaria Death Rate per 100,000 persons | 1.52 |  | 2.97 |  |
| Interpretation and comments:  Malaria deaths remain low (less than 2%) relative to all causes of deaths. As the indicator is expressed as per 100,000, when it reached lower level, it will be fluctuated and sensitive to change with small change of number of deaths. The monitoring and measurement of this indicator remains a challenge as it depends on the quality of information management process and system. It anticipates that the HIS division will review and strengthen the death records and certificate system, and the program will benefit from the HIS performance. | | | | | |
| 5 | Proportion of Cases Due to P. falciparum (%) | 50% |  | 36% |  |
| Interpretation and comments:  Despite many program indicators shown fluctuated and increased in 2016 relative to 2015, the proportion of P. falciparum remains reducing continuously. It is conventionally interpreted as the success of program intervention in the context where P. falciparum is predominant species in the early stage of the program intervention as in general the P. falciparum species is more sensible to the program intervention. Furthermore, the change of RDT used in 2016 with improved sensitivity to detect P. vivax contributed in increasing P. vivax cases, which in turn decreasing the proportion of P. falciparum. | | | | | |
| 6 | Malaria Test Positivity Rate (%) | 14% |  | 22% |  |
| Interpretation and comments:  It observed that the malaria positivity rate in 2016 was 22% relatively increased compared to the value in 2015, which was 14%. The increased value of this indicator can be explained by the increased transmission in the population and partially due to improve the quality of diagnostic services, e.g. better sensitivity test service. It anticipates that the trend of test positivity rate should be progressively and slowly decreased. | | | | | |

* 1. **Operational or coverage indicators**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| No. | COVERAGE OR OPERATIONAL INDICATORS | 2012 | 2013 | 2014 | 2015 | 2016 |
| 1 | Proportion of suspected malaria cases that receive a parasitological test at public sector health facilities (%)\* | 82% | 86% | 82% | 86% | 85% |
| 2 | Proportion of reported malaria cases confirmed either by microscopy or RDTs (%) | 35% | 45% | 34% | 46% | 62% |
| 3 | Proportion of confirmed malaria cases receiving anti-malarial treatment as per national treatment guidelines (%) | - | - | - | - | 86% |
| 4 | Proportion of estimated malaria cases (presumed and confirmed) that received first line antimalarial treatment as per national policy (%) | - | - | - | - | 77% |
| 5 | Proportion of functioning health facilities submitting monthly Passive Case Detection reports to provincial malaria offices on time (%) \*\* | 0% | 0.7% | 3.9% | 14.6% | 18.4 |
| 6 | Proportion of functioning health facilities able to confirm malaria diagnosis using either microscopy or RDTs (%) | 64% | 69% | 62% | 64% | 78% |
| 7 | Health facility report coverage (%) \*\*\* | 75.2% | 78.6% | 81.7% | 80% | 84% |
|  |  | |  |  |  |  |
| 8 | Proportion of health facilities implemented MCMR in 2016 | |  |  |  | 82% |

\*Used proxy-measure to estimate the value of indicator

\*\*Report on time is no longer accessible in the system and it needs to be updated accordingly.

\*\*\*Report coverage in 2012, 2013, and 2014 were based on the contents in HIS; and the report coverage in 2015 is revised to unadjusted value for consistency.

**Indicator’s interpretation and comments on the results between 2015 and 2016**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No. | OPERATIONAL INDICATORS | BASELINE | TARGET | RESULT | CHANGED |
| 1 | Proportion of suspected malaria cases that receive a parasitological test at public sector health facilities (%) | 86% |  | 85% |  |
| Interpretation and comments:  This indicator provides an important feedback on the program intervention, specifically case management component. Higher value of this indicator indicates that suspected patients have accessed to proper case management process and specifically in line with best clinical practices in making diagnostic reasoning decision. It is also important for logistics forecast, procurement and for improving clinical best practices. It also affected by the quality of recording and reporting practices. Although the indicator is not directly affected by the report coverage, the interpretation of this indicator should take into account the quality of monthly HF reports on the content of malaria diagnostic services.  It observed that only 53% and 64% of expected reports (based on the number of health facilities registered in the system), respectively in 2015 and 2016, contained malaria diagnostic service information. One-third health facilities need to improve the quality of report in completing the malaria diagnostic information, provided that malaria is endemic in the country and it requires testing blood for malaria for patients with fever. Quality of MCMR report, e.g. recoding the number of tested blood, needs to be improved as it affects the interpretation of this indicator. | | | | | |
| 2 | Proportion of reported malaria cases confirmed either by microscopy or RDTs (%) | 46% |  | 62% |  |
| Interpretation and comments:  This indicator informed the program on quality of treatment decision, either based on clinical feature plus confirmed positive blood test result or else. In current moderate to high transmission settings, it anticipates that the proportion of treated malaria cases should be high. In low transmission setting, this indicator is not robust for the program to be monitored and it tends to be low value. The increased value of this indicator in 2016 relative to 2015 is correlated with the possible increased transmission (e.g. increased blood positivity rate) and increased quality of diagnostic tool, specifically RDT, used in 2016. The RDT used in 2015 was ICT Malaria Duo Test (ML03) and that used in 2016 was CareStart (G0131). The G0131 RDT has better sensitivity than ML03 product to detect low density of P. vivax infection (94.3% vs. 40%). The proportion of P. vivax cases detected by new RDT (CareStart) used in 2016 increased by 35%, which would have been detected in 2015 if the previous RDT (ICT Malaria Duo Test) had similar sensitivity as CareStart. | | | | | |
| 3 | Proportion of confirmed malaria cases receiving anti-malarial treatment as per national treatment guidelines (%) | N/A |  | 86% |  |
| Interpretation and comments:  This indicator can be only measured until the new revised reporting tool (MCMR) is implemented. This indicator informed the program on the accessibility to recommended treatment (specifically the confirmed malaria cases), prescription practices, and the availability of the recommended treatment at health facilities. | | | | | |
| 4 | Proportion of estimated malaria cases (presumed and confirmed) that received first line antimalarial treatment according to national policy (%) | N/A |  | 77% |  |
| Interpretation and comments:  This indicator can be only measured until the new revised reporting tool (MCMR) is implemented. This indicator informed the program on the accessibility to recommended treatment, prescription practices, and the availability of the recommended treatment at health facilities. | | | | | |
| 5 | Proportion of functioning health facilities submitting monthly Passive Case Detection reports to provincial malaria offices on time (%) | 14.6% |  | 18.4% |  |
| Interpretation and comments:  Although it shown a progress observed in 2016 (18.4%) relative to 2015 (14.6%), reporting on time remains a challenge in the information management in the Solomon Islands context due to limited infrastructure development to support this requirement. It anticipates remaining poor coverage unless new mechanism of feedback system is reviewed and adjusted according to the country conditions. This indicator is very important in the elimination phase when the feedback from the health facilities to the provincial and national levels requires within 48 hours after malaria confirmed case is detected. Due to upgraded system, this indicator is temporary unavailable, and it will be updated accordingly. | | | | | |
| 6 | Proportion of functioning health facility month reports able to confirm malaria diagnosis using either microscopy or RDTs (%) | 64% |  | 78% |  |
| Interpretation and comments:  This indicator provides a proxy-measure on the functional malaria diagnosis in the health facilities, specifically on the operational supply chain management of the malaria diagnostic commodities, the practical status on malaria diagnostic service, and record & report practices. It is important to have supply data to support interpreting this indicator meaningfully. This indicator can be distorted by the quality of recording and reporting practices on related reported variables. It measures in term of health facility-month unit and defined as at least having one blood sample tested for malaria and reported in the required reporting period. According to the data in HIS|DHIS2 system, the adjusted proportion of health facilities able to confirm malaria diagnosis using RDT or MIC was 64% in 2015 and it increased to 78% in 2016. It can be reflected to the challenges encountered in the supply chain management and the feedback from health facilities regarding to the availability and use of diagnostic services. The more health facilities report on their diagnostic the more confirmed malaria cases increased. This increased report of diagnostic service availability also partially contributed into the increase of confirmed malaria cases in 2016, thus increased API in 2016. | | | | | |
| 7 | Health facility report coverage (%) | 80% |  | 84% |  |
| Interpretation and comments:  The trend of report coverage is fluctuated and quite stable over the last few years. The report coverage designed in the system is inflexible and it does not reflect to the operational definition defined by the health information system. The operational definition of monthly health facility report coverage is defined as, for numerator, cumulative monthly reports received from the health facilities and, for denominator, cumulative monthly functioned health facilities in the specific period and the defined geographic coverage such as health facility, area, and province. Based on the default system, the report coverage of health facilities in 2015 was 80% and that of in 2016 was 84%. Thus it was slightly progress, but maintained at acceptable level as per program forecasted in their monitoring plan. | | | | | |
| 8 | Proportion of health facilities implemented MCMR in 2016 |  |  | 82% |  |
| Interpretation and comments:  The MCMR tool was introduced in late 2015 and progressively implemented in 2016. Some health facilities were not yet utilized the new reporting tool and the provincial teams are encouraged to implement MCMR in all health facilities in their respective province. | | | | | |

**Specific analysis on some performance indicators**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No. | COVERAGE OR OPERATIONAL INDICATORS | 2013 | 2014 | 2015 | 2016 |
| + | Annual Blood Examination Rate or ABER (%)\* | **32%** | **26%** | **27%** | **37%** |
|  | Proportion of monthly suspected malaria cases that receive a parasitological test at public sector health facilities (%) \*\* | UNADJUSTED ANALYSIS | | | |
|  | Satisfied (75% or more tested) | 23% | 22% | 36% | 42% |
|  | Tested between 50% and 75% | 8% | 8% | 8% | 9% |
|  | Tested less than 50% | 7% | 7% | 8% | 14% |
|  | None | 16% | 19% | 29% | 19% |
|  | Inconclusive performance | 46% | 45% | 18% | 16% |
|  |  | ADJUSTED ANALYSIS | | | |
|  | Satisfied (75% or more tested) | 43% | 39% | 44% | 50% |
|  | Tested between 50% and 75% | 16% | 14% | 10% | 11% |
|  | Tested less than 50% | 12% | 12% | 10% | 17% |
|  | None | 29% | 34% | 36% | 22% |
|  |  | |  |  |  |

\*Used proxy-measure to estimate the value of indicator for logistics forecast

\*\*Monthly performance analysis at health facility unit and the data in 2015 were corrected after refining, synchronizing, and integrating the datasets of different report forms (aggregated HIS and case-based MCMR report forms in the common DHIS2 platform).

**Core Programmatic Indicators – Annual period’s measurement at provincial level**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No. | IMPACT INDICATORS | 2013 | 2014 | 2015 | 2016 |
| 1 | Parasite Incidence Rate per 1,000 persons – **Solomon Islands** | **43.6** | **30.3** | **40.5** | **81.0** |
|  | Central Islands | 55.5 | 72.1 | 155.1 | 280.6 |
|  | Choiseul | 41.3 | 23.2 | 16.3 | 17.2 |
|  | Guadalcanal | 64.0 | 33.6 | 40.9 | 104.7 |
|  | Honiara City Council | 69.9 | 52.6 | 59.4 | 87.3 |
|  | Isabel | 5.8 | 4.3 | 4.8 | 6.1 |
|  | Makira | 80.6 | 59.0 | 56.1 | 93.1 |
|  | Malaita | 35.9 | 24.2 | 40.6 | 87.0 |
|  | Rennel | 0.6 | 0.0 | 0.0 | 0.0 |
|  | Temotu | 9.9 | 6.3 | 11.9 | 43.3 |
|  | Western | 11.9 | 8.0 | 7.0 | 22.7 |
| 2 | Proportion of Cases Due to P. falciparum (%) – **Solomon Islands** | **55%** | **55%** | **50%** | **36%** |
|  | Central Islands | 49% | 47% | 43% | 33% |
|  | Choiseul | 70% | 78% | 67% | 40% |
|  | Guadalcanal | 46% | 49% | 41% | 36% |
|  | Honiara City Council | 64% | 67% | 58% | 53% |
|  | Isabel | 25% | 17% | 32% | 34% |
|  | Makira | 36% | 31% | 48% | 12% |
|  | Malaita | 77% | 74% | 64% | 41% |
|  | Rennel | 100% | NA | NA | NA |
|  | Temotu | 14% | 30% | 25% | 9% |
|  | Western | 32% | 34% | 43% | 29% |
| 3 | Malaria Test Positivity Rate (%) – Both Microscopy and RDT – **Solomon Islands** | **14%** | **11%** | **14%** | **22%** |
|  | Central Islands | 15% | 17% | 27% | 36% |
|  | Choiseul | 7% | 6% | 6% | 9% |
|  | Guadalcanal | 19% | 15% | 16% | 26% |
|  | Honiara City Council | 12% | 10% | 8% | 12% |
|  | Isabel | 7% | 5% | 7% | 12% |
|  | Makira | 18% | 20% | 23% | 41% |
|  | Malaita | 16% | 12% | 20% | 28% |
|  | Rennel | 25% | NA | NA | NA |
|  | Temotu | 12% | 11% | 16% | 28% |
|  | Western | 5% | 4% | 5% | 9% |
|  | Microscopy – **Solomon Islands** | **13%** | **10%** | **12%** | **18%** |
|  | Central Islands | 13% | 10% | 6% | 31% |
|  | Choiseul | 6% | 5% | 20% | 10% |
|  | Guadalcanal | 18% | 13% | 12% | 18% |
|  | Honiara City Council | 12% | 10% | 8% | 11% |
|  | Isabel | 7% | 4% | 5% | 8% |
|  | Makira | 18% | 21% | 23% | 52% |
|  | Malaita | 15% | 10% | 17% | 22% |
|  | Rennel | NA | NA | NA | NA |
|  | Temotu | 9% | 7% | 12% | 25% |
|  | Western | 5% | 4% | 4% | 7% |
|  | RDT – **Solomon Islands** | **16%** | **17%** | **23%** | **28%** |
|  | Central Islands | 20% | 32% | 42% | 42% |
|  | Choiseul | 13% | 10% | 7% | 8% |
|  | Guadalcanal | 21% | 18% | 21% | 30% |
|  | Honiara City Council | 15% | 13% | 15% | 15% |
|  | Isabel | 5% | 8% | 10% | 21% |
|  | Makira | 14% | 11% | 22% | 23% |
|  | Malaita | 21% | 18% | 29% | 35% |
|  | Rennel | 25% | NA | NA | NA |
|  | Temotu | 17% | 21% | 23% | 32% |
|  | Western | 6% | 5% | 6% | 10% |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No. | COVERAGE OR OPERATIONAL INDICATORS | 2013 | 2014 | 2015 | 2016 |
| 1 | Proportion of suspected malaria cases that receive a parasitological test at public sector health facilities (%)\* – **Solomon Islands** | **86%** | **82%** | **86%** | **85%** |
|  | Central Islands | 88% | 88% | 96% | 84% |
|  | Choiseul | 92% | 94% | 91% | 84% |
|  | Guadalcanal | 88% | 84% | 85% | 89% |
|  | Honiara City Council | 93% | 92% | 97% | 96% |
|  | Isabel | 91% | 93% | 91% | 83% |
|  | Makira | 83% | 76% | 66% | 63% |
|  | Malaita | 75% | 67% | 76% | 81% |
|  | Rennel | 3% | 0% | 0% | 0% |
|  | Temotu | 98% | 101% | 108% | 108% |
|  | Western | 85% | 85% | 77% | 78% |
| 2 | Proportion of reported malaria cases confirmed either by microscopy or RDTs (%) – **Solomon Islands** | **45%** | **34%** | **46%** | **62%** |
|  | Central Islands | 52% | 56% | 86% | 72% |
|  | Choiseul | 47% | 45% | 39% | 40% |
|  | Guadalcanal | 58% | 44% | 49% | 75% |
|  | Honiara City Council | 61% | 52% | 73% | 78% |
|  | Isabel | 42% | 40% | 41% | 45% |
|  | Makira | 45% | 38% | 31% | 46% |
|  | Malaita | 32% | 19% | 39% | 59% |
|  | Rennel | 1% | 0% | 0% | 0% |
|  | Temotu | 86% | 114% | 181% | 146% |
|  | Western | 22% | 19% | 13% | 28% |
| 3 | Proportion of functioning health facilities able to confirm malaria diagnosis using either microscopy or RDTs (%) – **Solomon Islands** | **69%** | **64%** | **64%** | **78%** |
|  | Central Islands | 85% | 87% | 86% | 93% |
|  | Choiseul | 83% | 76% | 59% | 74% |
|  | Guadalcanal | 79% | 76% | 81% | 95% |
|  | Honiara City Council | 72% | 73% | 79% | 66% |
|  | Isabel | 58% | 54% | 53% | 52% |
|  | Makira | 61% | 51% | 43% | 51% |
|  | Malaita | 64% | 56% | 66% | 90% |
|  | Rennel | 3% | 0% | 0% | 0% |
|  | Temotu | 58% | 50% | 48% | 72% |
|  | Western | 76% | 69% | 69% | 86% |
|  | Health facility report coverage (%) \*\* – **Solomon Islands** | **75%** | **78%** | **80%** | **84%** |
|  | Central Islands | 70% | 77% | 81% | 85% |
|  | Choiseul | 76% | 74% | 72% | 82% |
|  | Guadalcanal | 77% | 84% | 88% | 92% |
|  | Honiara City Council | 66% | 68% | 89% | 96% |
|  | Isabel | 71% | 74% | 82% | 82% |
|  | Makira | 80% | 77% | 83% | 87% |
|  | Malaita | 76% | 84% | 74% | 77% |
|  | Rennel | 89% | 83% | 100% | 78% |
|  | Temotu | 82% | 87% | 88% | 89% |
|  | Western | 74% | 72% | 78% | 81% |
|  |  | |  |  |  |
|  |  | | **2014** | **2015** | **2016** |
| 5 | Proportion of health facilities implemented MCMR in 2016 – **Solomon Islands** | | **NA** | **27.2%** | **82%** |
|  | Central Islands | | NA | 15.8% | 92% |
|  | Choiseul | | NA | 16.4% | 84% |
|  | Guadalcanal | | NA | 79.8% | 95% |
|  | Honiara City Council | | NA | 27.6% | 89% |
|  | Isabel | | NA | 0.0% | 80% |
|  | Makira | | NA | 0.0% | 90% |
|  | Malaita | | NA | 0.0% | 74% |
|  | Rennel | | NA | 0.0% | 0% |
|  | Temotu | | NA | 0.0% | 88% |
|  | Western | | NA | 75.7% | 76% |

\*Used proxy-measure to estimate the value of indicator

\*\* The report coverage in 2013 and 14 were based on the contents in HIS|DHIS2 platform and that of 2015 was adjusted with functional health facilities.

**Specific analysis on some performance indicators**

**Province: Central Islands**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | COVERAGE OR OPERATIONAL INDICATORS | 2014 | 2015 | 2016 |
| + | Annual Blood Examination Rate or ABER (%) | **42%** | **58%** | **77%** |
| + | Proportion of monthly suspected malaria cases that receive a parasitological test at public sector health facilities (%) \* | ADJUSTED | | |
|  | Satisfied (75% or more tested) | 42% | 70% | 59% |
|  | Tested between 50% and 75% | 20% | 6% | 17% |
|  | Tested less than 50% | 22% | 10% | 17% |
|  | None | 15% | 15% | 7% |

\*Monthly performance analysis at health facility unit and the data in 2015 were corrected after refining, synchronizing, and integrating the datasets of different report forms (aggregated HIS and case-based MCMR report forms in the common DHIS2 platform).

**Province: Choiseul**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | COVERAGE OR OPERATIONAL INDICATORS | 2014 | 2015 | 2016 |
| + | Annual Blood Examination Rate or ABER (%) | **41%** | **25%** | **18%** |
| + | Proportion of monthly suspected malaria cases that receive a parasitological test at public sector health facilities (%)\* | ADJUSTED | | |
|  | Satisfied (75% or more tested) | 50% | 45% | 49% |
|  | Tested between 50% and 75% | 14% | 9% | 10% |
|  | Tested less than 50% | 8% | 8% | 15% |
|  | None | 28% | 37% | 26% |

**Province: Guadalcanal**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | COVERAGE OR OPERATIONAL INDICATORS | 2014 | 2015 | 2016 |
| + | Annual Blood Examination Rate or ABER (%) | **23%** | **25%** | **41%** |
| + | Proportion of monthly suspected malaria cases that receive a parasitological test at public sector health facilities (%) \* | ADJUSTED | | |
|  | Satisfied (75% or more tested) | 36% | 49% | 68% |
|  | Tested between 50% and 75% | 15% | 17% | 15% |
|  | Tested less than 50% | 22% | 15% | 12% |
|  | None | 28% | 19% | 5% |

**Province: Honiara City Council**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | COVERAGE OR OPERATIONAL INDICATORS | 2014 | 2015 | 2016 |
| + | Annual Blood Examination Rate or ABER (%) | **53%** | **64%** | **76%** |
| + | Proportion of monthly suspected malaria cases that receive a parasitological test at public sector health facilities (%) \* | ADJUSTED | | |
|  | Satisfied (75% or more tested) | 61% | 73% | 61% |
|  | Tested between 50% and 75% | 9% | 0% | 1% |
|  | Tested less than 50% | 4% | 1% | 3% |
|  | None | 26% | 26% | 34% |

**Province: Isabel**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | COVERAGE OR OPERATIONAL INDICATORS | 2014 | 2015 | 2016 |
| + | Annual Blood Examination Rate or ABER (%) | **8%** | **7%** | **5%** |
| + | Proportion of monthly suspected malaria cases that receive a parasitological test at public sector health facilities (%) \* | ADJUSTED | | |
|  | Satisfied (75% or more tested) | 77% | 50% | 42% |
|  | Tested between 50% and 75% | 5% | 4% | 2% |
|  | Tested less than 50% | 4% | 3% | 8% |
|  | None | 14% | 43% | 48% |

**Province: Makira**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | COVERAGE OR OPERATIONAL INDICATORS | 2014 | 2015 | 2016 |
| + | Annual Blood Examination Rate or ABER (%) | **30%** | **24%** | **23%** |
| + | Proportion of monthly suspected malaria cases that receive a parasitological test at public sector health facilities (%) \* | ADJUSTED | | |
|  | Satisfied (75% or more tested) | 17% | 22% | 19% |
|  | Tested between 50% and 75% | 18% | 8% | 11% |
|  | Tested less than 50% | 13% | 11% | 21% |
|  | None | 52% | 58% | 49% |

**Province: Malaita**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | COVERAGE OR OPERATIONAL INDICATORS | 2014 | 2015 | 2016 |
| + | Annual Blood Examination Rate or ABER (%) | **21%** | **20%** | **31%** |
| + | Proportion of monthly suspected malaria cases that receive a parasitological test at public sector health facilities (%) \* | ADJUSTED | | |
|  | Satisfied (75% or more tested) | 24% | 38% | 47% |
|  | Tested between 50% and 75% | 15% | 13% | 12% |
|  | Tested less than 50% | 15% | 15% | 31% |
|  | None | 45% | 34% | 10% |

**Province: Rennel**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | COVERAGE OR OPERATIONAL INDICATORS | 2014 | 2015 | 2016 |
| + | Annual Blood Examination Rate or ABER (%) | **0%** | **0%** | **0%** |
| + | Proportion of monthly suspected malaria cases that receive a parasitological test at public sector health facilities (%) \* | ADJUSTED | | |
|  | Satisfied (75% or more tested) | 0% | 0% | 0% |
|  | Tested between 50% and 75% | 0% | 0% | 0% |
|  | Tested less than 50% | 0% | 0% | 0% |
|  | None | 100% | 100% | 100% |

**Province: Temotu**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | COVERAGE OR OPERATIONAL INDICATORS | 2014 | 2015 | 2016 |
| + | Annual Blood Examination Rate or ABER (%) | **6%** | **8%** | **15%** |
| + | Proportion of monthly suspected malaria cases that receive a parasitological test at public sector health facilities (%) \* | ADJUSTED | | |
|  | Satisfied (75% or more tested) | 71% | 41% | 65% |
|  | Tested between 50% and 75% | 11% | 2% | 4% |
|  | Tested less than 50% | 1% | 2% | 3% |
|  | None | 17% | 54% | 28% |

**Province: Western**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | COVERAGE OR OPERATIONAL INDICATORS | 2014 | 2015 | 2016 |
| + | Annual Blood Examination Rate or ABER (%) | **19%** | **16%** | **26%** |
| + | Proportion of monthly suspected malaria cases that receive a parasitological test at public sector health facilities (%) \* | ADJUSTED | | |
|  | Satisfied (75% or more tested) | 56% | 50% | 55% |
|  | Tested between 50% and 75% | 13% | 17% | 15% |
|  | Tested less than 50% | 6% | 10% | 17% |
|  | None | 26% | 23% | 14% |







## 7.4 Inventory

Inventory list of transport, equipment, health equipment, safety equipment, accessories, lab reagents/instruments, and insecticides supplied to provinces in 2016.

Table xx: Vehicle, Boat, OBM, and safety marine equipment supplied in 2016

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Province** | **Vehicle** | **Boat** | **OBM** | Personal Location Beacon | Life Jacket |
| Temotu |  | 1 (23ft Bray Yamaha) | 1 (15HP Yamaha)  1 (40HP Yamaha) | 1 | 6 |
| MUP |  | 1 (23ft Bray Yamaha) |  | 2 | 12 |
| Malaita |  |  | 1 (40HP Yamaha) | 4 | 24 |
| Central Islands |  |  |  | 3 | 18 |
| Guadalcanal | 1 (Land Cruiser 2D) |  |  | 4 | 24 |
| Isabel |  |  |  | 3 | 18 |
| Western |  | 1 (23ft Bray Yamaha) | 1 (60HP Yamaha) | 3 | 18 |
| Choiseul |  |  |  | 2 | 12 |
| HCC |  |  |  |  |  |
| Total issued | 1 | 3 | 4 | 22 | 132 |

Table xx: Specialised Health equipment issued in 2016

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Province | Spray pump | Service kit | Hand operated ULV/ Mist | Hand operated fogging | Microscope |
| Temotu | 6 | 2 | 0 | 0 | TBC |
| MUP | 0 | 0 | 0 | 0 | TBC |
| Malaita | 1 | TBC | 1 | 0 | TBC |
| Central Islands | 2 | 2 | 0 | 0 | TBC |
| Guadalcanal | TBC | TBC | TBC | 2 | TBC |
| Isabel | 6 | 3 | 1 | 0 | TBC |
| Western | 4 | 3 | 1 | 0 | TBC |
| Choiseul | 0 | 0 | 0 | 0 | TBC |
| HCC | 6 | 3 | 2 | 2 | TBC |
| **Total issued** | **25** | **13** | **5** | **4** | **TBC** |

Table xx: Other equipment and accessories

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Province | Ear muff | Safety Google | Safety helmet | Rain Goat (Life jacket) | Wooden Buddle | Jerry Can-20L fuel safe | Aluminium Bucket | Portable Yamaha Genset |
| Temotu |  |  |  |  |  |  |  |  |
| MUP |  |  |  |  |  |  |  |  |
| Malaita |  |  |  |  |  |  |  |  |
| Central Islands |  |  |  | 5(3) | 2 | 3 |  |  |
| Guadalcanal |  |  |  |  | 2 | 3 | 1 |  |
| Isabel |  |  |  |  |  |  |  |  |
| Western |  | 3 |  | 2 | 2 | 1 | 1 |  |
| Choiseul |  |  |  |  |  |  |  |  |
| HCC | 25 | 25 | 15 |  |  | 2 | 1 |  |
| HQ |  |  |  |  |  | 2 | 2 | 3 |
| **Total issued** | **25** | **28** | **15** | **7(3)** | **6** | **11** | **5** | **3** |

Table xx: Lab reagents and instruments issued

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Province | Giemsa stock | Immersion oil | Measuring Cylinder | Lens tissue |  |
| Temotu |  |  |  |  |  |
| MUP |  |  |  |  |  |
| Malaita |  |  |  |  |  |
| Central Islands |  |  |  |  |  |
| Guadalcanal |  |  |  |  |  |
| Isabel |  |  |  |  |  |
| Western |  |  |  |  |  |
| Choiseul |  |  |  |  |  |
| HCC |  |  |  |  |  |

# The information to be provided by Adam

Table xx: Insecticides issued

|  |  |  |  |
| --- | --- | --- | --- |
| Province | ICON Revival for indoor residual spray (160 sachets per box) | Aqua for ULV space spraying (1L Bottle) | Other |
| Temotu | 5 Boxes |  |  |
| MUP |  |  |  |
| Malaita |  | 5 Bottles? |  |
| Central Islands | 2 Boxes |  |  |
| Guadalcanal |  | 4 Bottles? |  |
| Isabel | 5 Boxes | ?? |  |
| Western | 11 Boxes | ?? |  |
| Choiseul |  |  |  |
| HCC | 6 Boxes | 31 Bottles |  |

#the amount of Aqua for ULV to be confirm with Vector Control team

**List of Equipment and other supplies**

The following new equipment was procured through ministerial tender board:

1. One and only unit of Land Cruiser -2D (issued to Guadalcanal VBDCP office)
2. Two and only pieces of Yamaha OBM -40HP (issued to Lata, and Auki VBDCP offices)
3. One and only pieces of Yamaha OBM -60HP (issued to Gizo VBDCP Office)
4. Three and only pieces of Yamaha Bray Boat -23ft (issued to Gizo, Lata, and Kirakira VBDCP offices)
5. 132 and only pieces of Lifejackets (issued to all provincial VBDCP offices)
6. 22 and only pieces of Personal Location Beacons (issued to all provincial VBDCP offices)
7. Other emergency equipment was coordinated through the WHO in-country office as follows:
8. 4 and only pieces of hand operated thermal fog
9. 5 and only pieces of hand operated ULV back pack
10. Coordination of other logistics support to the peripheral centres has been successful. These includes supporting both the ordering process and supplying of spare parts for vehicles and OBM, repair kits for boats, new replacement spray pumps and service kits, malaria lab supplies and reagents, and stationaries.
11. 29 and only pieces of insecticide boxes (Revival for IRS spraying) were issued to Lata, Gizo, Buala, HCC, and Yandina VBDCP offices.
12. 25 and only pieces of spray pumps (Hudson Xpert) were issued to Lata, Gizo, Buala, HCC, Yandina, and Munda VBDCP offices.
13. 13 and only pieces of service kits for spray pumps were issued to Lata, HCC, Buala, Yandina, Gizo, and Munda VBDCP offices.
14. 40 and only pieces of insecticide bottles (Aqua for dengue outbreak response) were issued to HCC, GP, and Auki VBDCP offices.
15. 12 and only pieces of Jerry cans (fuel safe) were issued to HQ, HCC, Tulagi, and Munda VBDCP offices.
16. Other equipment issued includes safety eye goggles, face musk, ear muffs, lifejackets, gum boots, coveralls, polythene canvas sheets, and wooden paddles.
17. The following primary registers book were procured and issued to all health facilities in conjunction with the M&E unit of the programme.
18. 460 MCM Register for OPD, 150 MCM Register for IPD, 360 RDT Register, 150 Lab Register.
19. Other achievement includes a timely preventive maintenance of national office vehicles arranged through special agreement with one of the provincial office.

1. 2015 Demographic Health Survey [↑](#footnote-ref-1)
2. Malaita, Guadalcanal, Central, Honiara and Makira (in descending order of burden) [↑](#footnote-ref-2)
3. The malaria death rate in 2015 was reported as 1.52 in the annual program report 2015 and updated from 1.52 to 2.03 after consolidating the information. [↑](#footnote-ref-3)