

## **Characterizing and controlling of residual malaria transmission areas of Southern Rakhine: Sa Don Village of Toungup Township**

Residual malaria transmission is defined here as all forms of malaria transmission that persist after full coverage with malaria case detection, treatment, effective LLIN and/or IRS interventions has been achieved.<sup>1,2</sup>

Sa Don village is situated under Ma Ei Rural Health Center of Toungup Township, Rakhine State. It is about 30-45 minutes' drive from Ma Ei village by motorbike and has about 180 households and 627 people.

Both quantitative and qualitative methods were applied for characterizing and appropriate controlling of residual malaria transmission areas of Sa Don village.

### **Receptivity of the village**

The village is situated at the foot-hill forested area. Gyoke Chaung and Thit Yinn Chaung creeks are located at the southern and northern parts of the village and Sa Don creek flows across the village. Mosquitoes are abundant especially in the rainy season and around the creeks. During the summer the streams are not dried up, and the villagers dig many small hand-dug wells along the side of the stream. Old wells there were no longer used became a favorable location for mosquitoes to breed.

### **Vulnerability of the village**

A lot of migrants from Minbya, Sittwe, Mrauk-U and Pauk Taw Townships were coming in and out of the village for logging and buying of wood from Sa Don village. An average 10-15 people come together each time in a month, and they stay about two weeks to two months. The next month, they will come again to buy wood. This repetitive routine occurs over the course of the whole season.

About 20% of the villagers work as wood cutters and go to sleep in the forest near to Thit Yinn Chaung forest which is about 6 to 7 miles from Sa Htone village. They work in the forest around 5-10 days before they come back to the village for two weeks. The process will then repeat for these wood cutters, but some people go to the forest and work for only a day.

The vulnerability of the area is impacted by inbound and outbound migrants working in the forested worksites.

### **Socio-economic and behavior background of the community**

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Household assessments were completed with 109 respondents where it was revealed that most of the respondents are of Rakhine ethnicity and usually work in farms (65%). Some of the respondents went to forest for timber extraction after their routine seasonal cultivation work was completed. During rainy season, they would grow rice or other crops near to the village. Key informants revealed that loggers have higher malaria attacks than farmers.

**Health care coverage in Sa Don Village**

A Village Malaria Worker (VMW) has been recruited and trained by CAP-M project since July 2013. The VMW is performing malaria cases detection and treatment regularly. During the past three years, 245 LLINs were distributed to 385 people. By detailed assessment, the availability of LLINs was only 63.9% and fully protected population fraction was only 57.1%. The assessment to 366 household members in 109 households revealed only 16.4% of people slept under LLINs in the previous night. The reasons of low utilization were based on the preference of ordinary bed-nets made of CYC which can protect against very small insects whilst LLINs cannot. According to a nation-wide mass LLIN distribution campaign, 330 LLINs were distributed recently by Township VBDC team in May 2019 (2 person/ per LLIN). Defeat Malaria township team promoted LLIN utilization by highlighting the importance of utilizing LLINs and imparting do and do not measures of LLIN usage.

The VMW performed monthly regular case detections and the results can be seen as followed:

(1) *Routine malaria case finding activities by VMW in Sa Don Village Oct 2013-Sept 2019*

Year	Population	Total Tested	Total Positive	Pf	Pv	Mixed	ABER	TPR	API
Oct 13 – Sept 14	528	85	21	21	0	0	16.1	24.7	39.8
Oct 14 – Sept 15	528	87	20	19	1	0	16.5	23.0	37.9
Oct 15 – Sept 16	885	213	18	17	1	0	24.1	8.5	20.3
Oct 16 – Sept 17	603	242	25	21	4	0	40.1	10.3	41.5
Oct 17 – Sept 18	627	361	6	5	1	0	57.6	1.66	9.6
Oct 18 – Sept 19	627	104	0	0	0	0	16.6	0.00	0.0

*P. falciparum* was more prevalent than *P. vivax* and seasonal distribution of malaria cases were not marked. But monthly distribution of malaria cases was mainly influenced by migration patterns of forest workers. Influx of people from other high endemic townships for work prevailed in Sa Don village. Their living behavior posed threat in malaria transmission not only in the village but also in the worksites related to the village.

### **Entomological findings of Sa Don village and Thit Yinn Chaung worksite**

During March-April 2018, the entomological assessment team of NMCP revealed there were *An. sudaicus* and *An. maculatus* mosquitoes collected by human landing outdoor collection in Sa Don village. But in the Thit Yin Chaung worksite, there were *An. minimus* and *An. maculatus* collected by human landing outdoor collection and light trap collection. Entomological findings supported that main efficient vector, *An. minimus* species were present at the forested worksites.

### **Impressions**

Residual malaria transmission of Sa Don village could be related with the influx of migrant carriers, outbound forest goers, the need of malaria service coverage at the nearby worksites, and protection of outdoor malaria transmission.

### **Additional interventions provided**

#### **1. Active fever surveillance among forest goers**

The VMW was instructed to monitor the mobility pattern of forest goers and to take blood test of those who were going to and from the forested areas. The VMW recorded at least one to a maximum of ten visits made by individual forest workers within a year by population mobility monitoring. There were no malaria positive results identified among forest goers who were suspected for malaria.

#### **2. Mosquito repellents distribution to forest goers**

Mosquito repellents were distributed to forest goers for protection of mosquito bites during outdoor works at night. A total of 50 repellents tubes have been distributed to forest goers up to the end of September 2019.

#### **3. Recruitment of Mobile Malaria Workers for malaria diagnosis and treatment services at the forested worksite**

Forest goers were encouraged to mobilize as mobile malaria workers for malaria diagnosis and treatment services for their forested areas in February 2019. Three mobile malaria workers (MMW) were trained for three days at village level for malaria diagnosis,

treatment and reporting. MMWs are continuously engaged with the VMW of Sa Don village for reporting, replenishment of RDT, antimalaria drugs and necessary commodities.

### **Story told by the VMW of Sa Don village**

U Hla Kyaw Myint, the VMW of Sa Don, said that he has worked as a Village Malaria Worker since the initiation of CAP-M project in July 2013. He is very proud of his work as a VMW for his village and appreciative of Defeat Malaria project and URC. He can build the confidence and the capacity for undertaking community-based malaria prevention and control activities after working six years as a volunteer for his village. Mosquito repellents distribution to the forest goers are effective and forest goers express their willingness to use the repellents. Defeat Malaria project activities are very remarkable and malaria cases are now going down due to the continuous support of Defeat Malaria staff with the goal of having no more transmissions. The project is also able to mobilize some forest goers into Mobile Malaria Workers (MMWs) to provide malaria related services in the forested worksites where the VMW cannot reach. The recruitment of MMWs could support the prevention of reintroduction of malaria cases into the village from the high receptive forest worksites. MMWs are now actively involved in malaria prevention, diagnosis and case management activities for the hard-to-reach forested worksites.

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