Malaria Update

Inside this issue

Malaria affected Riga Village, Ward No. 8 & 10 in Khatyad G.P. at Mugu district.

Malaria case in Mugu: Endemic or Epidemic?

Mugu located in Karnali Province of Nepal in an altitude ranging from 1,201 meters to 6,717 with latitude of 29◦25' – 29◦59' and longitude of 81◦44' – 82◦59' saw a major outbreak of malaria in fiscal year 2074/75 with total of 133 out of 143 cases reported mainly from Riga village, Ward no. 8 & 10 of Khatyad Rural Municipality (source: HMIS/district linelisting). 48 cases were reported just in the month of Asadh. In the current fiscal year (2075/76), 76 cases were recorded in Shrawan representing a high alert situation in Mugu. A total population of 3,204 in 2 wards at Khatyad were affected where a high number of children below 10 years were found malaria positive.

Intensive surveillance and interventions were done in the community. Community engagement was strongly advocated and ACD of febrile cases were routinely performed with quality ensured tests to track & treat the cases. ACD was continued throughout the region which successfully picked up an additional 26 cases in Riga.

Malaria Microstratification in 2013 and 2016 had classified Mugu as a malaria risk free district. No case was reported from Mugu in fiscal year 073/74 as per the record in HMIS. There were no significant number of cases in the past years. Hence, there was hardly any surveillance done. Program activities were also limited with no malaria trained laboratory staffs at the health facilities. As the program was scaled up nationwide and surveillance was intensified, and laboratory personnel were trained for malaria microscopy with quality assured laboratory commodities supplied at the health facilities, it was then that the cases started to get detected in the area.

Based on interviews with the locals, the disease called "Palo Jyoro", (fever coming in intervals and episodes at different time points of their lives) is very common in the village. They consider this a usual seasonal event affecting children indicating they were ready to become adults. Almost everyone in the village had experienced such episodes of fever at least once in their lives. Due to lack of knowledge in the community, diagnosis in the village was with or without laboratory evidence. Visits to public health facilities by locals were very uncommon. However, small private clinics available locally usually received febrile patients during the monsoon. As these private health facilities did not have standard drugs of malaria as per NMTP, they only used to provide drugs that may have subsided the disease but not cleared the disease completely.

People from Mugu often go to Bajura for their daily needs. Bajura is another district where malaria outbreak took place in 2074/75. As per the conversation with local people, there is also a high influx of people from India to Mugu. These people often have had previous history of malaria with unknown treatment status.

Malaria Trend in the year 2075 (2018) at Mugu
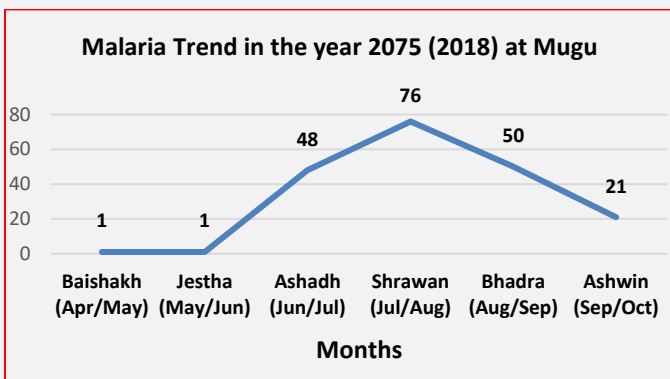
Mugu has a long history of malaria transmission with mostly being seasonal transmission. In studies dated 1970, it was found that the potential vectors of malaria *An. fluviatilis* and *An. willmori*, a member of the *An. maculatus* complex, were the dominant vectors. The study done by Pradhan et.al. (1970), on malaria transmission in high mountain valleys of Western Nepal indicated the first recording of *Anopheles maculatus willmori* as a third vector of malaria. It is therefore possible that the lower threshold of malaria outbreaks in the region was always there but was not visible in the past years due to limited program activities including SMART surveillance. There could also be low density carriers in the community from where the transmission could have been established time and time again. Using most sensitive tools during ACD, the program found 15% of symptomatic submicroscopic cases which were undetected in RDTs and microscopy but found in PCR indicating the possibility of lower density infections in the given areas.

With all these backgrounds, it is quite evident that the region always had a lower threshold of transmission in all these years making it moderate to high endemic zone. However, in the lack of evidence and detail investigations, the unusual occurrence of cases observed in very short span of time justifies the outbreak in Mugu as an EPIDEMIC. In addition to interventions, it is realized that evidence-based approaches should be timely conducted to control the disease and clear the reservoirs. Otherwise, the district may have to face similar episodes in time & time again.

According to Prof. Dr. Francois Nosten, Director from SMRU, studies regarding drug compliance, frequency of relapse and burden of Low Density Infection (LDI) in the community and vector surveillance are utmost to address similar outbreaks in coming years. Quality ensured tests, trained manpower and surveillance both ACD/PCD must be in place throughout the year. Community engagement plays a pivotal role in containing the disease more effectively.

Meeting with Int'l. Malaria Expert

Epidemiology & Disease Control Division (EDCD) organized a meeting with international malaria expert Prof. Dr. Francois Nosten, Director of Shoklo Malaria Research Unit (SMRU), Thailand on 30th July 2018. The meeting was attended by Dr. Bibek Kumar Lal, Director of EDCD, technical experts from EDCD, WHO, Jhpiego and Save the Children/Malaria Program. The objective of the meeting was to share expert experience on program modality in elimination setting and to know the focus/priority area in context to Mugu outbreak. From elimination point of view, Prof. Nosten suggested to engage the communities in the program and to conduct research/evidence generating studies and produce data, which will be helpful to predict and analyze the situation. He also assured to provide technical support from SMRU for research studies including resistant studies.

Malaria Microstratification 2018

Malaria microstratification 2018 is the latest document that depicts the various risk and malaria endemic areas of Nepal. This stratification is a part of a regular yearly update based on the verified line listings and case investigation forms of last 3 years (16th July 2015 to 15th July 2018). A ward level stratification was conducted based on new federal structure of the country. This microstratification identified 49 high risk wards scattered across 13 districts and 153 moderate risk wards in 19 districts.

This study defines the malaria risk areas and provides the strategic information for informed decision making for planning and implementation of interventions at ward level. The malaria risk stratification was based on three key variables: disease burden (API –malaria cases per 1000 risk population) in the last 3 years, receptivity (ecology) that determine the presence of the vectors, relative efficiency of vectors in malaria transmission, duration of transmission in ecological zones and vulnerability means population movement in risk areas. *(See page 3 for risk areas)*

List of High & Moderate Risk Areas (Malaria Microstratification 2018)

❖ **Province 1:** **Total High Risk Wards = 0**, **Total Moderate Risk Wards = 1**

Districts	Municipalities (Wards)	Risk Type
Jhapa	Gauriganj (6)	Moderate (1)

❖ **Province 2:** **Total High Risk Wards = 6**, **Total Moderate Risk Wards = 8**

Districts	Municipalities (Wards)	Risk Type
Bara	Jitpur Simara NP (6)	Moderate (1)
Dhanusa	Ganeshman Charnath NP (1, 3, 9); Mithila NP (3, 4, 11)	High (6)
	Ganeshman Charnath NP (6); Sabaila NP (3)	Moderate (2)
Saptari	Bodebarsaien NP (2); Saptakoshi NP (11); Surunga NP (9)	Moderate (3)
Sarlahi	Ishworpur NP (1, 2)	Moderate (2)

❖ **Province 3:** **Total High Risk Wards = 1**, **Total Moderate Risk Wards = 1**

Districts	Municipalities (Wards)	Risk Type
Sindhuli	Kamalamai NP (14)	High (1)
	Dudhouli NP (9)	Moderate (1)

❖ **Gandaki Province:** **Total High Risk Wards = 0**, **Moderate Risk Wards = 1**

Districts	Municipalities (Wards)	Risk Type
Nawalparasi (East)	Gaidakot NP (18)	Moderate (1)

❖ **Province 5:** **Total High Risk Wards = 3**, **Total Moderate Risk Wards = 31**

Districts	Municipalities (Wards)	Risk Type
Banke	Raptisonari (3)	High (1)
	Bajnath (1, 2, 4); Duduwa (2); Narainapur (3)	Moderate (5)
Bardiya	Thakurbaba NP (2)	High (1)
	Bansgadhi NP (1, 2, 5); Barbardiya NP (6); Thakurbaba NP (1, 3)	Moderate (6)
Dang	Babai (5, 7); Rapti (9); Shantinagar (6); Tulsipur NP (13)	Moderate (5)
Kapilbastu	Maharajgunj NP (4)	High (1)
	Buddhabhumi NP (7); Krishnanagar NP (7); Maharajgunj NP (7, 10); Mayadevi (1, 6); Shivraj NP (10); Yasodara (6)	Moderate (8)
Rupandehi	Devdaha NP (9, 11); Kothimai (7); Lumbini Sanskritik NP (6); Sammarimai (4); Siddharthnagar NP (1, 3)	Moderate (7)

❖ **Karnali Province:** **Total High Risk Wards = 8**, **Total Moderate Risk Wards = 20**

Districts	Municipalities (Wards)	Risk Type
Mugu	Khatyad (8, 10)	High (2)
	Khatyad (11)	Moderate (1)
Salyan	Kalimati (3)	High (1)
Surkhet	Barattaal (2); Chaukune (5, 8); Panchapuri NP (4, 10)	High 5)
	Barattaal (4); Bheriganga NP (1, 6); Birendranagar NP (2, 9, 10, 11); Chaukune (4, 6, 7); Chinghad (3); Ghurbhakot NP (7, 11, 14); Lekhbesi NP (9, 10); Panchapuri NP (3, 5, 8)	Moderate (19)

❖ **Sudurpashchim Province:** **Total High Risk Wards = 31**, **Total Moderate Risk Wards = 91**

Districts	Municipalities (Wards)	Risk Type
Baitadi	Melauli NP (1, 6, 7); Pancheswor (6); Shibnath (6)	High (5)
	Melauli NP (3); Pancheswor (3); Shibnath (4)	Moderate (3)
Bajura	Budinanda NP (1, 5, 6, 7)	High (4)
	Budinanda NP (2); Himali (6)	Moderate (2)
Dadeldhura	Parsuram NP (4, 5, 6, 12)	High (4)
	Aalital (2, 5); Parsuram NP (3)	Moderate (3)
Kailali	Bhajani NP (5); Dhangadi NP (9); Godawari NP (4, 10, 11, 12); Janaki (6); LamkiChuha NP (4, 5, 6, 8, 10); Tikapur NP (4, 8, 9)	High (15)
	Bardagoriya (1, 2, 5); Bhajani NP (2, 3); Chure (3, 4); Dhangadi NP (1, 2, 4, 5, 7, 12, 14, 15, 19); Gauriganga NP (1, 2, 6, 7, 9); Godagodi NP (3); Godawari NP (1, 2, 3, 5, 6, 8, 9); Janaki (1, 2, 3, 4, 8, 9); LamkiChuha NP (1, 2, 3); Tikapur NP (1, 2, 5, 6, 7)	Moderate (43)
Kanchanpur	Belauri NP (1); Bhimdatta NP (9); Mahakali NP (3)	High (3)
	Bedkot NP (3, 4, 6); Belauri NP (2, 3, 4, 6, 7, 8, 9, 10); Beldandi (2); Bhimdatta NP (3, 4, 6, 7, 13, 18); Krishnapur NP (2, 4, 5, 6, 7); Laljhandi (2); Mahakali NP (1, 4, 7, 8); Purnabash NP (4, 7, 8, 9, 11); SuklaPhanta NP (1, 2, 4, 5, 7, 8, 12)	Moderate (40)

Map of Malaria Risk Area

Legend:
- High
- Moderate
- Low
- No
- Others*
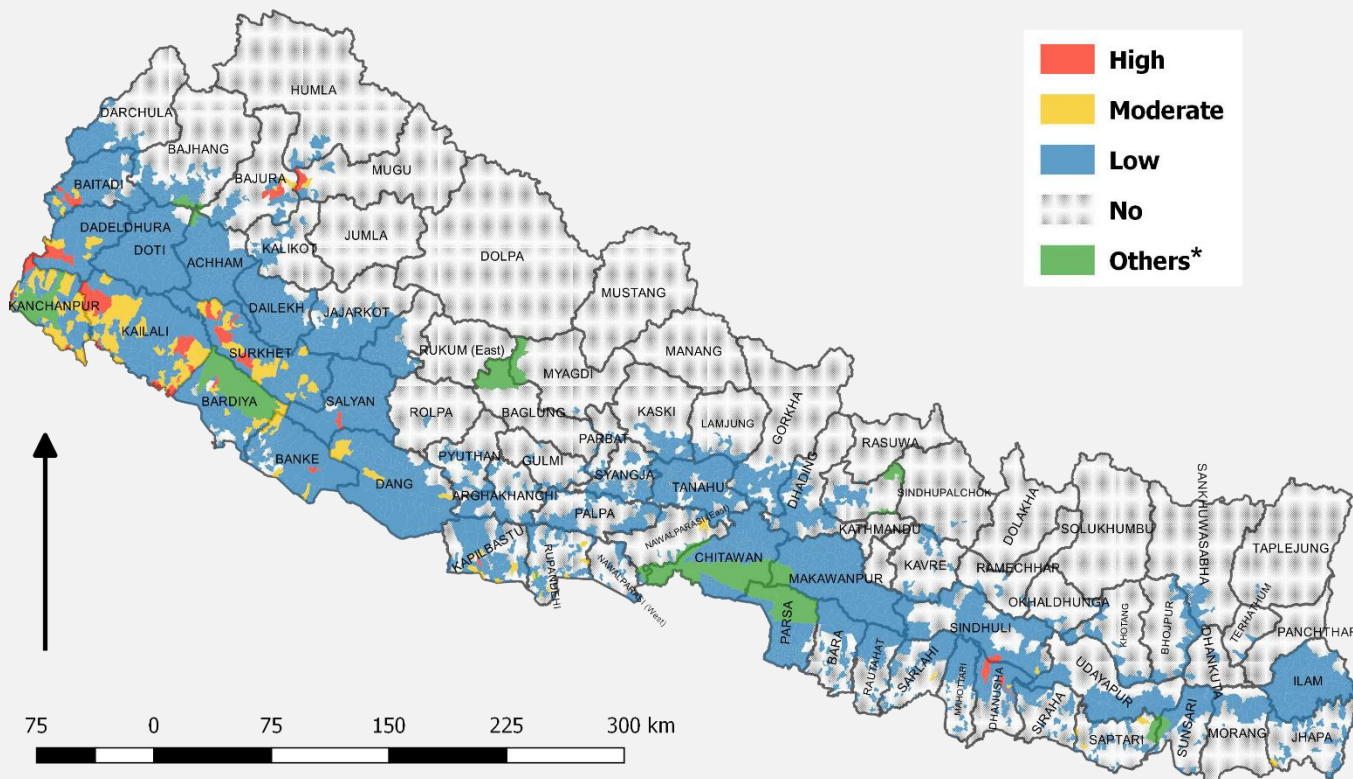
Others*: National Parks, Conservative areas, Wildlife Reserve etc.

(Source: Malaria Micro-stratification Report- 2018)

Glimpse of Program Activities

Storing of Long Lasting Insecticidal Nets (LLINs) in warehouse at Birgunj.

Onsite coaching on malaria diagnosis and treatment by showing treatment protocol.

Laboratory visit at Bijaypur Hospital at Dharan in Sunsari district.