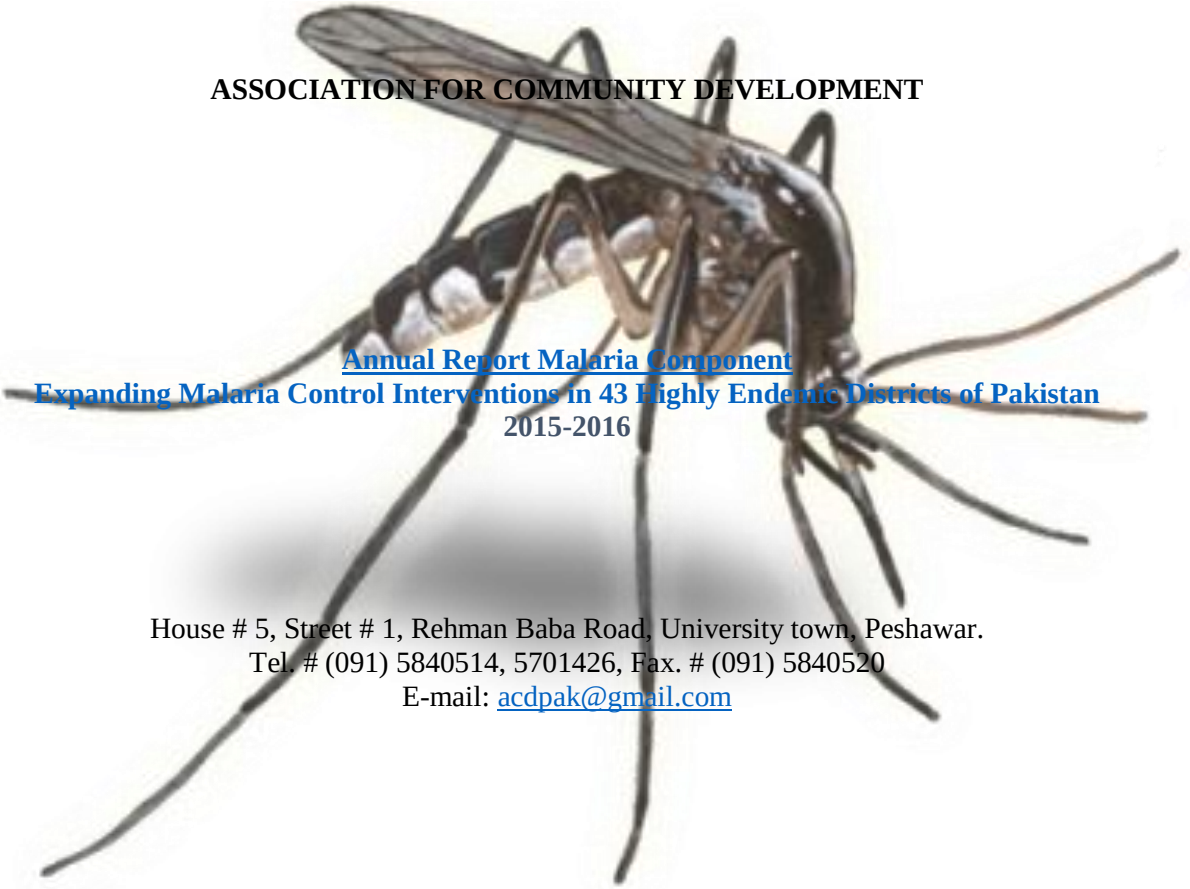
ASSOCIATION FOR COMMUNITY DEVELOPMENT



Annual Report Malaria Component
Expanding Malaria Control Interventions in 43 Highly Endemic Districts of Pakistan
2015-2016

House # 5, Street # 1, Rehman Baba Road, University town, Peshawar.
Tel. # (091) 5840514, 5701426, Fax. # (091) 5840520
E-mail: acdpak@gmail.com

Table of Contents

List of Tables

List of Figures

1. Project Background:

Pakistan has a population of 180 million inhabitants of which 177 million are at risk of Malaria.

With 3.5 million presumed and confirmed malaria cases annually Pakistan contributes 22% of total malaria disease burden in the Eastern Mediterranean Region (EMRO). The majority (80%) of malaria in Pakistan is caused by Plasmodium vivax, while the remaining 20% is caused by P. Falciparum.

The malaria indictor survey (MIS) was conducted in 2013 in 43 (GF R-10) highly endemic districts of the country showing highest prevalence rates in the region of Federally Administered Tribal Areas (FATA) (13.9%) followed by Balochistan (6.2%), and Khyber Pakhtunkhwa (KP) (3.8%). The DoMC 2012 data shows that the highly endemic districts are located in Balochistan with an average API of 7.68 ranging from 7 to 27, FATA with average API of 6.83 ranging from 6 to 11.8, Sindh with average API of 2.92 ranging from 5.2 to 12 and KP with average API of 2.76 ranging from 6 to 32, Punjab with average 0.19 and AJK 0.10. Malaria is typically unstable (seasonal) in Pakistan, with a peak starting from August to November for both P. vivax and P. Falciparum. The PV:PF ratio from 43 highly endemic districts is 84:16

Malaria endemicity is heterogeneous in Pakistan. Thirty-seven percent of malaria cases are reported from the districts and agencies of Federally Administered Tribal Areas (FATA) and Balochistan bordering Afghanistan and Iran. Malaria transmission is seasonal, with peaks in summer (June-September) for Vivax Malaria and late-summer and winter (August-November) for Falciparum Malaria. The Government of Pakistan is implementing Malaria Control Program (MCP) in 72 malaria endemic districts of Pakistan with the public sector resources and in 43 highly endemic districts with the support from the Global Fund (Round 10).

2. Objectives of the Project:

a. To ensure and sustain universal coverage of multiple prevention to population at risk in 10 target Agencies-FATA (Bajaur, Khyber, Kurram, North-Waziristan, Mohmand, South-Waziristan, FR-Bannu/Lakki, FR-Peshawar/Kohat, Orakzai, FR-Tank/D-I-Khan)) by 2017.

b. To ensure and sustain > 80% coverage for the provision of quality assured early diagnosis and prompt treatment services to population at risk in target districts by 2017.

c. To increase community awareness up to 80% on the benefits of early diagnosis, prompt treatment and Malaria preventive measures using health promotion, advocacy and BCC interventions by 2017.

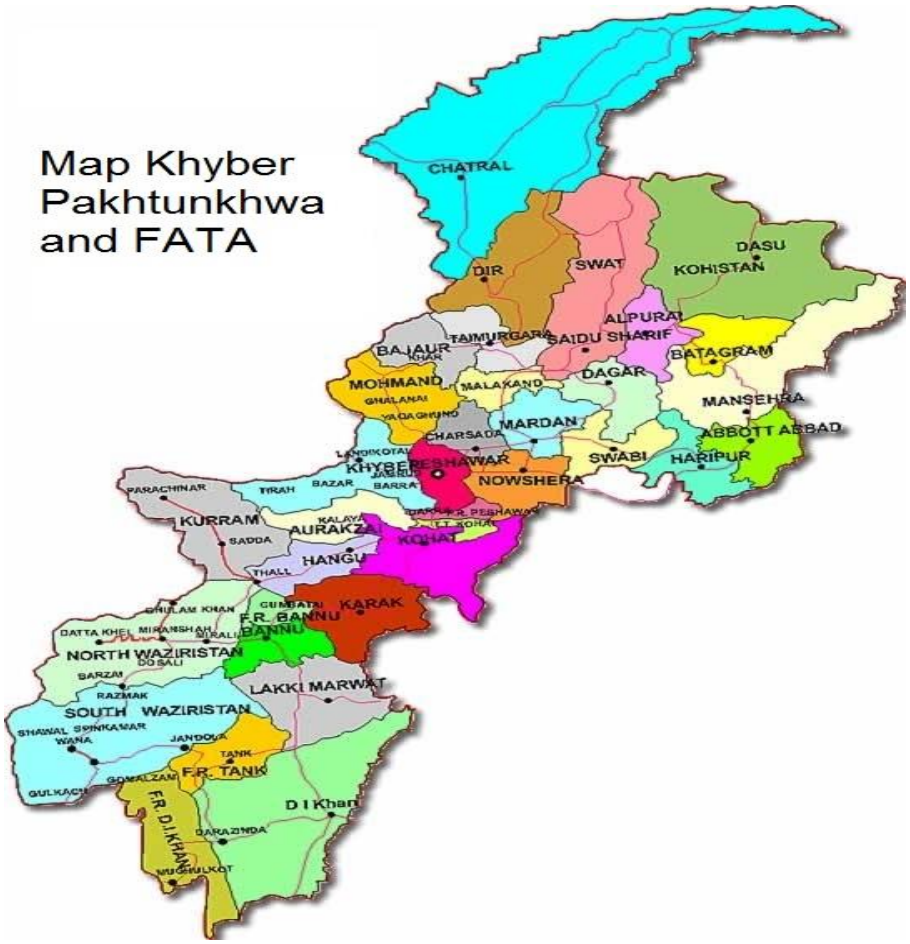
d. To ensure availability of quality assured strategic information (epidemiological, entomological and operational) for informed decision making.

e. To enhance technical and managerial capacities of malaria control programs in planning, implementation, management and M&E.

3. Target Agencies & FRs:

Following are the tribal Agencies & FRs for ACD operations;

1. Bajaur Agency
2. Kurram Agency
3. Orakzai Agency
4. South Waziristan Agency
5. Mohmand Agency
6. Khyber Agency
7. North Waziristan Agency
8. FR Peshawar/FR Kohat
9. FR Lakki/FR Bannu
10. FR D.I. Khan/FR Tank



4. Activities Description

i. Strengthen Existing Diagnostic Services:

ACD have supported the selected health facilities from existing public sector health facilities for diagnosis and treatment of Malaria. The support includes provision of microscopes, medicine, laboratory reagents, trainings and minor renovation of centers where needed. This support has enhanced the capacity for health centers for provision of Malaria programme services to the target communities.

ii. Establishment of Rapid Diagnostic Test (RDT) Centers at First Level Care Facilities (FLCFs)

ACD supports the existing First Level Care Facilities (FLCFs) designated as Rapid Diagnostic Test (RDT) Centers for Malaria diagnosis and treatment. These centers were provided RDT kits and anti-Malaria medicine for early diagnosis and prompt treatment.

iii. Prompt and Effective Anti-Malaria Treatment

ACD provides support to 399 Malaria diagnosis and treatment centers in FATA. Free of charge quality assured anti-malarial medicine are provided to patients needing Malaria treatment. The anti-malarial drugs include: tab. Chloroquine, tab. Primaquine, tab. Quinine, tab. ACT (Artesunate + SP), tab. Artemether + Lumafentrine. Provision of early diagnosis & prompt treatment with effective Anti- Malarial drug is the most efficient intervention in reducing parasite reservoir & overall morbidity & mortality.

iv. Enhancing the Capacity of Healthcare Providers in Proper Malaria Case Management Treatment

Malaria Case Management Treatment according to National Malaria guideline is essential for the provision of standardized and effective Anti- Malarial drugs & to avoid development of resistance. ACD has trained health care providers working in the public sector health facilities on the National guidelines and protocols for managing Malaria. These trainings are provided on Malaria Case management, rapid diagnostic test (RDT), Microscopy, Malaria information system (MIS).

v. Involvement of Private sector in Malaria diagnosis & treatment

Approximately 80% of patients in Pakistan are catered by private sector. However, 50% of Malaria patient in high endemic districts seek services of private sector (MIS 2013). Majority of Malaria cases in private sector are treated on clinical grounds without confirmatory tests. To involve private sector in malaria diagnosis and treatment ACD has established 90 RDT centers from the target of 100 private RDT centers in the target agencies and FRs of FATA.

vi. Prevention through universal coverage of LLlNs in target Agencies/FRs

According to WHO Long Lasting Insecticidal Nets (LLlNs) is the most effective mean of vector control in highly endemic areas. LLlNs distribution outlets established in the agencies and FRS have been used for smooth and timely distribution of the LLlNs to the neediest populations. LLlNs have been distributed on mass scale to achieve universal coverage so that more than 80% of population in stratum IA agencies i.e. Kurram, Khyber, North Waziristan, FRS are covered.

vii. Behavior Change Communication

To enhance Malaria awareness, case detection and adherence to treatment, ACD has implemented the National Malaria Program Advocacy, Behavior change communication (BCC) strategy through a coordinated approach in the FATA region. The activities included community, awareness sessions, health education & distribution of IEC materials. These activities have been carried out through LHWs, CBOs & ACD staff.

viii. Monitoring and Supervision

Regular Monitoring and Supervision of the field activities was carried out by the senior program management and monitoring team dedicated for the purpose. Monthly and quarterly review meetings at the national, provincial and district level were conducted for data validation and performance updates.

Table 1: Programmatic Achievements Malaria Prevention and Control Project

July, 2015- June, 2016			
Activity Description	Target	Results	Achievement
CM-2a: Proportion of confirmed malaria cases that received first-line antimalarial treatment according to national policy at public sector health facilities	80%	81%	101%
CM-2c: Proportion of confirmed malaria cases that received first-line antimalarial treatment according to national policy at private sector sites	70%	79%	113%
Number & percentage of upgraded and functioning health facilities, microscopy and RDT Centers Public in 10 Agencies of FATA-Pakistan	399	370	93%
CM-4: Proportion of health facilities without stock-outs of key commodities during the reporting period	370	351	95%
VC-1: Number of long-lasting insecticidal nets distributed to at-risk populations through mass campaigns	420474	171516	41%
VC-3: Number of long-lasting insecticidal nets distributed to targeted risk groups through continuous distribution	12036	0	0%
M&E-2: Proportion of facility reports received over the reports expected during the reporting period	4026	3813	95%
Health Care providers Trained on Case Management	345	334	97%
Malaria Technician trained on Malaria Diagnosis: RDT & Microscopy	271	263	97%
Behavior Change Communication: People reached through Advocacy and awareness through LHWs, NGO/CBOs/ and Religious leaders.	87267	84145	96%
Behavior Change Communication: Advocacy and Awareness Session Conducted by ACD	2991	3011	101%
Training of Health care providers on MIS and outbreak response	399	369	92%
Monthly Review Meetings at district level	160	160	100%

5. Objectives of Malaria Surveillance

Malaria surveillance connotes the maintenance of an on-going watch over the status of malaria in a group or community. The main purpose of surveillance is to detect changes in trends or distribution of malaria to initiate investigative or control measures. It provides a basis for measuring the effectiveness of anti-malaria programme. Malaria surveillance includes laboratory confirmation of presumptive diagnosis, finding out the source of infection and identification of all cases and susceptible contacts and still others who are at risk in order to prevent further spread of the disease. The ultimate objective of malaria surveillance is prevention and control of malaria in the community.

6. Malaria surveillance as an integral part of Primary Health Care system

'The disease load' or 'disease potential' of malaria in the community is governed by different parameters such as "infected persons", 'susceptible persons', and "vector and environmental conditions". Although the case detection and its treatment is not the end of all endeavors, early detection of a case and its radical treatment reduce the risk of infecting vector mosquitoes and thus reducing transmission of malaria in the community. The timely collection and examination of blood smear is the key element in the National Malarial Control Strategy. If all the detected cases are given radical treatment early, it will certainly lead to depletion of the human reservoir of malaria parasite in the community.

7. Passive Case Detection (PCD)

All the fever cases attending the hospital screened for malaria and given presumptive treatment. Malaria clinics are established in all the health institutions in high risk areas wherein the blood smears are examined on the same day and treatment is given according to National Malaria Case Management Guidelines.

Rapid Fever Survey: In case of an epidemic outbreak, every village in the suspected epidemic zone is covered in a short duration by deploying additional man power. House to house visits are undertaken and all fever cases are screened by taking blood smears. These blood smears are examined at the earliest preferably at a temporary field laboratory at the village level.

Mass Fever survey: As an alternative to Rapid Fever Survey, mass survey of the entire population may be carried out in the suspected epidemic zone. Here all the population irrespective of age, sex or fever status is screened by taking blood smear. Specially children and pregnant ladies must be included in survey.

8. Annual blood smears examination rate and its validity

Malaria surveillance presumes that every malaria case will present itself with symptoms of fever at some point of time during the course of infection. Therefore, if all fever cases occurring in the community are kept under surveillance over a period of time and their blood smears are examined for malaria parasite, the total malaria parasite load can be examined. However, there are some exceptions. Some of the malaria patients who give history of fever during the past fortnight but do not have the fever at the time of blood smear collection may not show microscopically detected parasitaemia in the peripheral blood. On the other hand, some afebrile persons can be positive for malaria parasite. On account of operational as well as technical reasons fortnightly surveillance is recommended.

This indicator provides information on overall diagnostic activity and can be useful in interpreting trends in malaria cases. While some past guidance suggested that the annual blood examination rate should be in the region of 10% in order to provide reliable trends, the empirical evidence for such a target is not strong. In high-transmission settings, the rate is likely to greatly exceed 10% (Source: Disease surveillance for malaria control WHO).

The level of (Annual Blood Examination rate) ABER depends on the number of fever case in the community. The fever rate in the community fluctuates widely from month to month and year to year. These fluctuations are due to other viral and bacterial infections prevalent in the area. For accurate estimates of malaria endemicity, the blood smear examination rate specially the Monthly Blood Examination Rate (MBER) rate should be equal to fever rate of the month in the community. Therefore, it is necessary to ensure that all persons having fever during malaria transmission months are included in the total blood slides examined during the year.

The MBER norms are 0.8 percent during non-transmission season and 1.2 to 1.8 percent during transmission season. ABER is the cumulative sum of monthly rates during the year.

While collecting ABER or MBER, total blood slides collected are taken into account except number of blood smears collected and examined during a mass survey and their results should not be included while calculating ABER or MBER.

$$\text{ABER} = \frac{\text{No. of blood smears collected during the year}}{\text{Population covered under surveillance}} \times 100$$

$$\text{MBER} = \frac{\text{No. of blood smears collected during the month}}{\text{Population covered under surveillance}} \times 100$$

ABER/ MBER is an index of operational efficacy of the programme. The Annual Parasite Incidence (API) depends upon the ABER. A sufficient number of blood slides are systematically obtained and examined for malaria parasite (accurate API).

9. Slide Positivity Rate (SPR):

The Slide Positivity Rate among the blood smears collected through both active and passive surveillance gives a more accurate information on distribution of malaria infection in the community over a period of time. This indicator can provide information on trends in malaria. In some settings, slide positivity rates have decreased from 30–60% to < 10% in response to control measures implemented in the previous 2–3 years. Test positivity rates can vary by season, and the peak test positivity rate seen during a year might be quite different from the annual average (Source: Disease surveillance for malaria control WHO).

Monthly SPR is calculated to find out the seasonal rise and fall in malaria prevalence in the community. The SPR of blood slides collected from cases currently having fever will be higher than the SPR of the slides collected from cases with history of fever. Therefore, higher positivity rates are obtained in blood smears collected at the passive case detection (PCD). Trends in SPR can be utilized for predicting epidemic situations in the area. If monthly SPR exceeds by 2 ½ times of the standard deviation observed in SPR of the preceding 3 years or preceding 3 months of the same year, an epidemic builds up in the area can be suspected. Monthly or yearly trends of SPR are utilized to study the impact of control operations.

SPR is measured as follows:

$$\frac{\text{No. of blood smears found positive for malaria parasite}}{\text{No. of blood smears examined}} \times 100$$

10. Annual Parasite incidence (API)

API is the total Number of confirmed malaria cases per 1000 population per year. The number of malaria cases fluctuates with the transmission season; it can be useful in assessing the success of preventive programs and demand for treatment in the public sector. The variable is, however, sensitive to changes in reporting rates, diagnostic practice and use of health facilities. Care should be taken to ensure that reporting has been consistent over time, by examining trends in health facility reporting rates, annual blood examination rates and total outpatient attendance. If these indicators have changed, it may be more informative to examine trends in test positivity rates (slide or RDT) or confine the analysis to a subset of health facilities that have reported consistently over time.

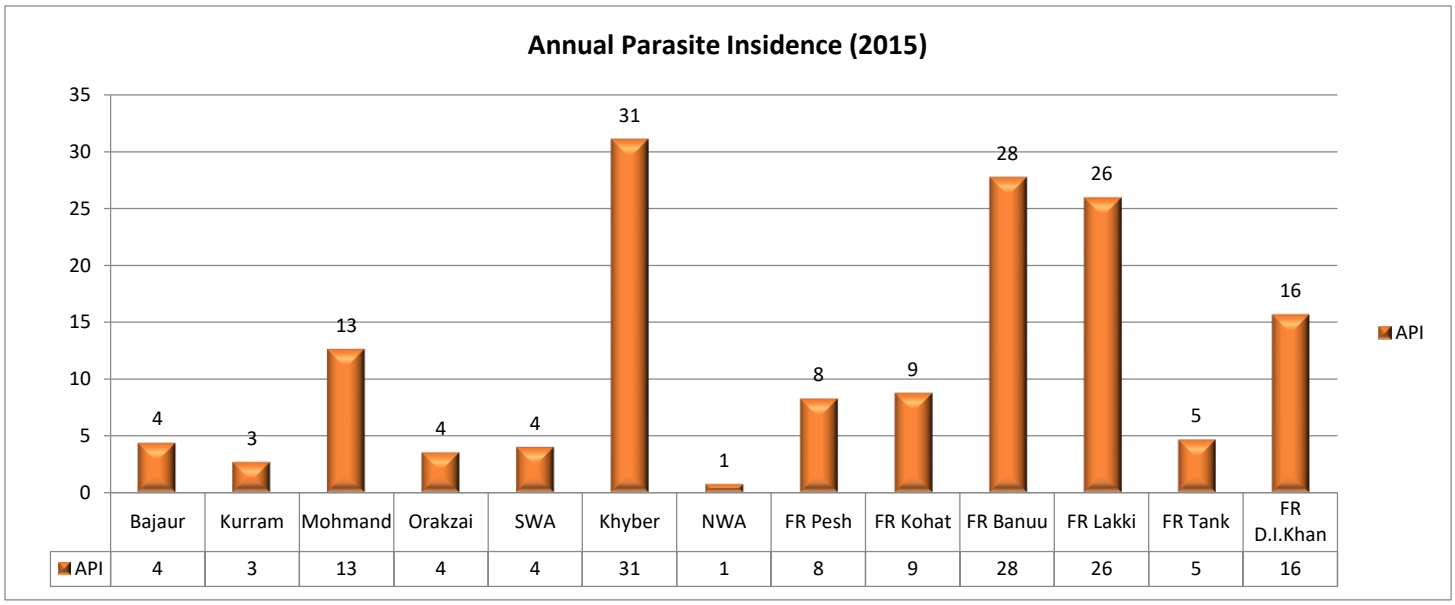
API is measured as follows:

$$\frac{\text{No. of confirmed malaria cases in a year}}{\text{Population of Community}} \times 1000$$

11. Malaria Situation FATA / Agencies Pakistan

Figure 1: Annual Parasite Incidence

The following figure shows API of 7 Agencies and 6 FRs in which ACD is implementing Malaria Control Program. The highest API: 31 recorded in Khyber while lowest API recorded in NWA is 1. Among 13 localities of Agencies/FRs, 7 Agencies/FRs are with API >5 which means parasite transmission is high in these areas while 6 Agencies/FRs are with moderate transmission that is with API <5.

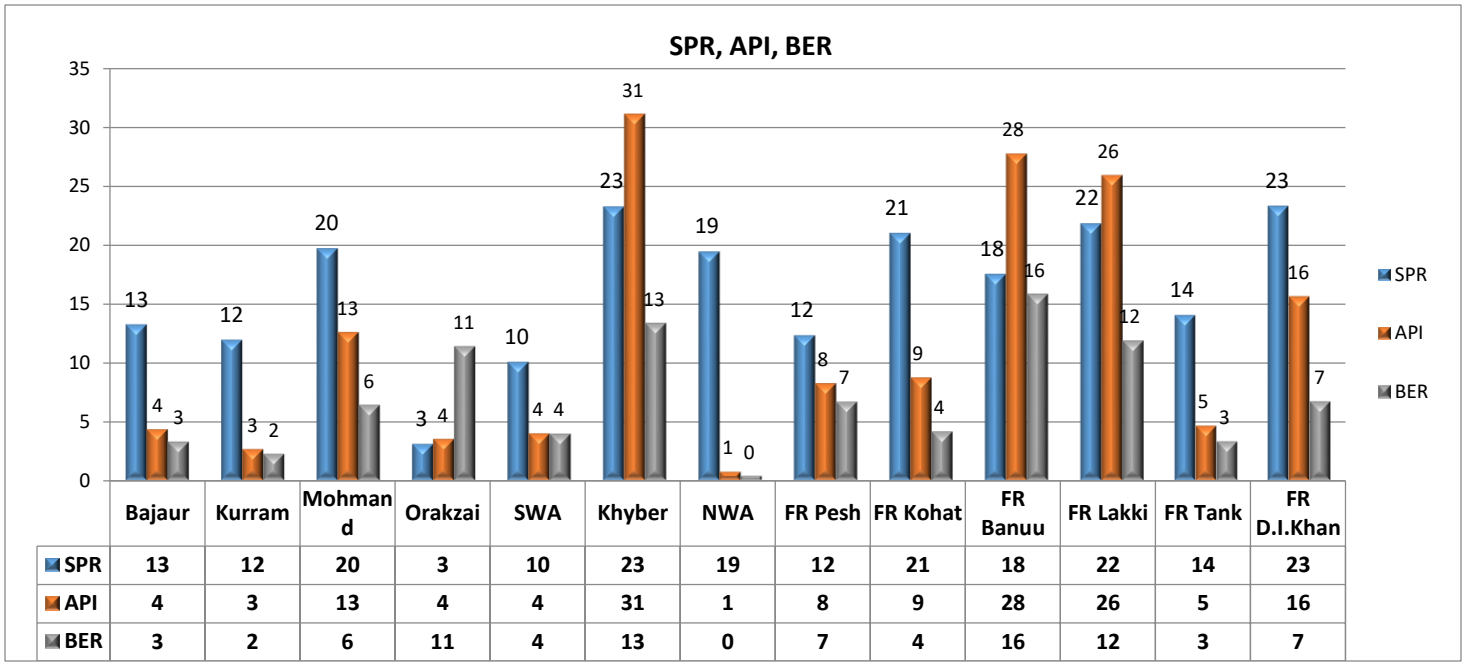


	Bajaur	Kurram	Mohmand	Orakzai	SWA	Khyber	NWA	FR Pesh	FR Kohat	FR Banuu	FR Lakki	FR Tank	FR D.I.Khan
API	4	3	13	4	4	31	1	8	9	28	26	5	16

Note: According to national malarial control strategy areas with > 5 API are included in stratum 1-A districts for vector control intervention (universal LLINs coverage). Areas with <5 are included in stratum 1-B because of moderate Malaria transmission.

.

Figure 2: Slide Positivity Rate (SPR), Annual Parasite Incidence (API) & Blood Examination Rate (BER)



	Bajaur	Kurram	Mohmand	Orakzai	SWA	Khyber	NWA	FR Pesh	FR Kohat	FR Banuu	FR Lakki	FR Tank	FR D.I.Khan
SPR	13	12	20	3	10	23	19	12	21	18	22	14	23
API	4	3	13	4	4	31	1	8	9	28	26	5	16
BER	3	2	6	11	4	13	0	7	4	16	12	3	7

The figure 2 shows us the SPR (Slide Positivity rate), API (Annual parasite incidence) and BER (Blood examination rate).

- API of the Khyber Agency is highest among all Agencies/FRs with high SPR but BER is satisfactory i-e > 10.
- FR Bannu and Fr Lakki API are >20 with >15 SPR but ABER is satisfactory >10.
- FR DI Khan and Mohmand Agency are with >10 API and > 20 SPR and ABER < 10, which reveals that ABER is less in these areas, with increase in BER the SPR will be decreased.
- FR Peshawar and FR Kohat API are >5 but <10, with SPR > 10, while BER is < 10 which shows BER is not satisfactory, SPR can be less with increase BER.
- Bajaur Agency, Kurram Agency, South Waziristan agency and FR Tank are with API <5 and SPR > 10 while BER is <10 which reveals that with increase in blood examination rate the SPR will fall down which will also effect API.
- Orakzai agency malaria control situation is good as API and SPR are <5 and BER is >10

Figure 3: PF: PV Ratio 2015

Epidemiologically, Pakistan is classified as a moderate malaria endemic country with a National API averaging at 1.08 (MIS, 2015). With wide diversity within and between the provinces and districts. Plasmodium Vivax and Plasmodium Falciparum are the only prevalent species of parasites detected so far, with P.vivax being the major parasite species responsible for >80% reported confirmed cases in the country.

The figure shows the ratio between P. Falciparum & P. Vivax of Agencies/FRs, which clearly shows that the disease burden of P. Vivax is more than P. Falciparum in the year 2015.

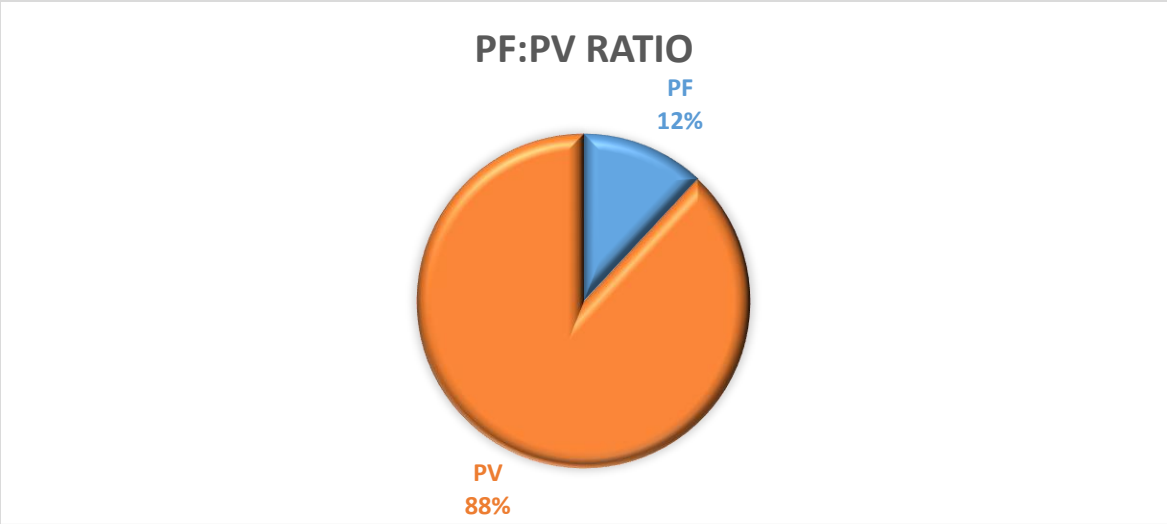
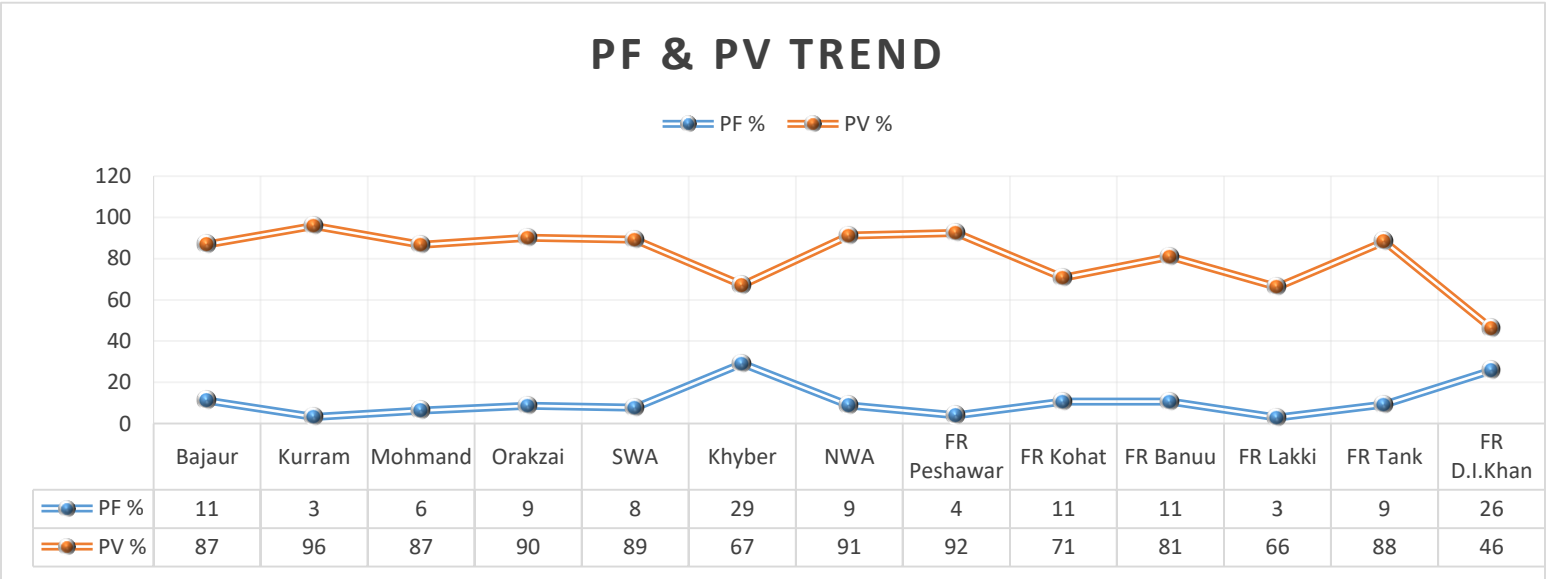


Figure 4: PF & PV Trend

Plasmodium Falciparum (PF) and Plasmodium Vivax (PV) trend graph Agency/FR wise shows that the overall disease burden of PF is comparatively low than PV.

The trend shows that Khyber agency, FR Kohat, FR Lakki and FR DIK have PV at the lower side as compared to other Agencies and FRs. Whereas Khyber agency and FR DIK is showing higher PF burden as compared to other Agencies and FRs.



	Bajaur	Kurram	Mohmand	Orakzai	SWA	Khyber	NWA	FR Peshawar	FR Kohat	FR Banuu	FR Lakki	FR Tank	FR D.I.Khan
PF %	11	3	6	9	8	29	9	4	11	11	3	9	26
PV %	87	96	87	90	89	67	91	92	71	81	66	88	46

The data reviled that Plasmodium Falciparum (fatal specie of malaria parasite) cases are below 15 % as compared to Plasmodium Vivax which means one of the core objective of Malaria control program is achieved with zero mortality reported due to malaria.

12. Malaria Activities Picture Gallery

Malaria Case Management Training

LLIN Distribution to beneficiaries

Behavior Change Communication Session

Malaria Information System Training

Malaria Case Management Training

Monthly Coordination Meeting

13. World Malaria Day:

The day was initially adopted as Africa Malaria Day in 2001, a year after the historic Abuja Declaration was signed by 44 malaria-endemic countries at the African Summit on Malaria. It was aimed at providing education and understanding of malaria as well as spreading information on implementation of national malaria-control strategies, including community-based activities for malaria prevention and treatment in endemic areas. It was later adopted by the World Health Assembly, World Health Organization (WHO)'s decision-making body, in its 60th session in May 2007.

The theme of this year's World Malaria day commemoration was '**End Malaria for Good'**. The theme reflects the vision of a malaria-free world set out in the "Global technical strategy for Malaria 2016- 2030" and adopted in May 2015 by the World Health Assembly. This strategy aims at dramatically reducing the global malaria burden over the next 15 years. It targets reducing the rate of new malaria cases as well as reducing malaria death each by at least 90 percent; eliminating malaria in at least 35 countries; and preventing a resurgence of Malaria in all countries that are Malaria-free. The timeline of 2016-2030 is aligned with the "2030 Agenda for sustainable development", the new global development framework endorsed by all UN member states.

14. Limitations:

ACD came across number of challenges during implementation of the Project as working in FATA brings various types of challenges with it. As our indicator about functionality of the centers came out to be 93%, whereas remaining 7% of the health facilities could not be made functional because of the Military Operation in North Waziristan Agency. ACD has been continuously working on functionality of the centers subject with ground position and security clearance from Military authorities. Another challenge faced was the incident of short circuit at our Regional warehouse damaging our LLINs, which affected our indicators VC-1 (41%) and VC-3 (0%) of LLINs distribution. ACD continued to work in the hostile conditions of FATA and went on to achieve the targets of the project. The indicator of Malaria Information Training during the year was 92%, and reason for that is the trainings of North Waziristan Agency which could not be achieved because of security situation as mentioned above. Even though ACD staff has to travel in FATA region, which is life threatening because of security situation of the region but the motivation to work for the community and the drive to achieve the desired results keep their moral high.

15. Acknowledgement:

We take this opportunity to thank all stakeholders who have supported ACD financially, technically and administratively in implementing the reported project during the project duration. I also thank ACD staff who despite of several challenges have put in tireless efforts to achieve the desired objectives and targets of the projects. We extend our sincere gratitude to public sector officials, Directorate of Malaria Control at the National and Provincial Level, Directorates of health in FATA, Agency health management teams for their cooperation and guidance during implementation of project activities. Our principle recipient and Global Fund for their timely and continuous support during the entire project duration.