TECHNICAL ASSISTANCE MANAGEMENT AGENCY
TO THE NATIONAL HEALTH AND POPULATION FACILITY, PAKISTAN

PROVINCIAL STRATEGIC PLAN
FOR MALARIA CONTROL PROGRAMME

NORTH-WEST FRONTIER PROVINCE
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACD</td>
<td>Active Case Detection</td>
</tr>
<tr>
<td>API</td>
<td>Annual Parasite Incidence</td>
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<tr>
<td>AFI</td>
<td>Annual Falciparum Incidence</td>
</tr>
<tr>
<td>AJK</td>
<td>Azad Jammu &amp; Kashmir</td>
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<tr>
<td>BOD</td>
<td>Burden of Disease</td>
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<tr>
<td>BHU</td>
<td>Basic Health Unit</td>
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<tr>
<td>CDCS</td>
<td>Communicable Disease Control Supervisor</td>
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<tr>
<td>DHDC</td>
<td>District Health Development Centre</td>
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<td>DHQ</td>
<td>District Headquarter</td>
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<tr>
<td>DEWS</td>
<td>Disease Early Warning System</td>
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<td>DOH</td>
<td>District Officer Health</td>
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<td>DFID</td>
<td>Department for International Development</td>
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<td>DOMC</td>
<td>Directorate of Malaria Control</td>
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<tr>
<td>EDO</td>
<td>Executive District Officer</td>
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<tr>
<td>FANA</td>
<td>Federally Administered Northern Areas</td>
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<tr>
<td>FATA</td>
<td>Federally Administered Tribal Area</td>
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<tr>
<td>FLCF</td>
<td>First Level Care Facility</td>
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<tr>
<td>GR</td>
<td>Geographical Reconnaissance</td>
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<td>GIS</td>
<td>Geographic Information System</td>
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<td>HMIS</td>
<td>Health Management Information System</td>
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<td>IMCI</td>
<td>Integrated Management of Childhood Illness</td>
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<td>ITNs</td>
<td>Insecticide Treated Nets</td>
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<tr>
<td>ITMs</td>
<td>Insecticide Treated Materials</td>
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<tr>
<td>IRS</td>
<td>Indoor Residual Spray</td>
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<tr>
<td>JICA</td>
<td>Japan International Cooperation Agency</td>
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<tr>
<td>LAMA</td>
<td>Left Against Medical Advice</td>
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<tr>
<td>LHW</td>
<td>Lady Health Worker</td>
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<td>MCP</td>
<td>Malaria Control Programme</td>
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<td>MDG</td>
<td>Millennium Development Goal</td>
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<td>MoH</td>
<td>Ministry of Health</td>
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<td>NFC</td>
<td>National Finance Commission</td>
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<tr>
<td>NGO</td>
<td>Non Governmental Organization</td>
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<td>NIMRT</td>
<td>National Institute of Malaria Research and Training</td>
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<tr>
<td>OPD</td>
<td>Out Patient Department</td>
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<tr>
<td>PCD</td>
<td>Passive Case Detection</td>
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<tr>
<td>PHDC</td>
<td>Provincial Health Development Centre</td>
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<tr>
<td>RBM</td>
<td>Roll Back Malaria</td>
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<tr>
<td>RHC</td>
<td>Rural Health Centre</td>
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<tr>
<td>RTT</td>
<td>Rapid Test Technique</td>
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<tr>
<td>SPR</td>
<td>Slide Positivity Rate</td>
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<tr>
<td>TAMA</td>
<td>Technical Assistance Management Agency</td>
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<tr>
<td>Acronym</td>
<td>Full Form</td>
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<tr>
<td>THQ</td>
<td>Tehsil Headquarters</td>
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<tr>
<td>TB</td>
<td>Tuberculosis</td>
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<tr>
<td>UNICEF</td>
<td>United Nations Children's Fund</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>WHO</td>
<td>World Health Organization</td>
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Executive Summary
Malaria Control has been one of the priorities in NWFP and was started as part of National Malaria Control activity in 1950. In 1961, the programme was turned into Malaria Eradication Programme under the auspices of WHO along with support from UNICEF and USAID. The major objective was interruption of malaria transmission by residual insecticides. The programme suffered set back in 1969 due to financial constraints, resistance to insecticides, and anti-malarial drugs. Failure of eradication programme prompted initiation of a five year National Malaria Control Programme (MCP) again using vector control as the main strategy. IN 1978 Malaria Control Programme was integrated with health services. In line with WHO strategy of Roll Back Malaria (RBM), the Government of NWFP developed a plan in 1999 to reduce malaria burden by 50 percent by 2010.

The government is committed to malaria control. It was considered imperative to develop a comprehensive strategic plan for national and provincial levels, including AJK for the next five years. Directorate of Malaria Control, Ministry of Health, developed national and provincial strategic plans with technical support from Technical Assistance Management Agency (TAMA), financed by DFID and USAID. Participatory approach was adopted and four provincial workshops at provincial headquarters and two at Islamabad were organized. These workshops were widely attended and represented by government officials from national, provincial, and district levels besides development partners and World Health Organization (WHO) representatives. Individual interviews with key stakeholders were conducted as part of the exercise.

Based on the current situation, existing strengths, and constraints at various levels, strategies and their activating actions to be adopted at national and provincial and district levels have been proposed for achieving malaria control goals set by the Ministry of Health.

The plan has identified seven distinct strategic areas to help control malaria within the province of NWFP. Strategic areas include Early Diagnosis and Prompt Treatment, Multiple Prevention through Integrated Approaches, Epidemic Preparedness, Behavioural Change Communication, Partnership Building, Monitoring Evaluation and Surveillance, and Malaria Related Research. Special attention will be given to the districts with high parasite rate of more than 10 percent and falciparum rate of more than 25 percent.

Salient features of the plan are as follows:

- Malaria treatment guidelines shall be widely circulated for adapting at all levels in public and private sectors and shall be periodically reviewed. Availability of drugs for use of standardized malaria treatment shall be ensured.
- Wealth of experience available within the programme had gradually diminished through retirement and ban on recruitment of new staff. Further inadequate malaria related training had adversely affected the situation. Posts of multipurpose staff shall be filled and appropriate training shall be imparted.
- Budgetary resources are limited and merely sufficient to maintain minimum level of activity of the programme. Malaria Control Programme requires transport to undertake extensive field work and regular supply of consumables like laboratory reagents, slides, insecticides, anti-malarial drugs, etc., and replacement of worn-out equipment. Sufficient budgetary support shall be made available to the programme and utilized appropriately in the context of decentralization and devolution.
• Information system and data collection is the backbone of any programme which helps in monitoring and evaluation of the situation as a whole. Information regarding morbidity and mortality is critical in epidemic preparedness. This helps to forecast epidemics, define risk groups, and take measures before damage is done. The monitoring capacity of Malaria Control Programme has eroded over time. A comprehensive HMIS, including Disease Early Warning System (DEWS) being designed with JICA assistance, will be supported and adapted under the proposed plan. Appropriate training of staff for collecting data and use of information by senior and mid-level management would be an essential prerequisite.

• Although a well developed infrastructure of health services through static centres, outreach, and community-based workers exists within the public sector, bulk of the patients with fever are managed by the private sector practitioners (75-80 percent). Involvement and participation of private sector has been adopted as an important strategy for malaria control initiative under the subject plan; motivating private hospitals and clinics to adapt standardized malaria management protocols; enhancing capacity of private sector for early detection and prompt treatment of malaria; involving private sector in social marketing of Insecticide Treated Nets (ITNs), anti-malarial drugs and insecticides for domestic use and enhanced awareness about malaria control to patients and their relatives attending private clinics.

• Behaviour change communication forms an essential component of the plan and has been considered to be essential for raising level of knowledge and changing attitudes of communities. The plan envisages production of standard Behavioural Change Communication (BCC) material for public and private health facilities, LHWs, CDC supervisors, and NGOs. Community shall be educated through mass media for using impregnated nets, curtains, and repellents for preventing transmission of malaria. Health workers shall be encouraged to organize communities for anti-malarial measures like improvement of environments, drainage of stagnant water, filling the depressions, and use of larvicides.

• Research is an important component of preventive programmes and steers programme implementation, explores new solutions, and provides basic material for promotional activities. Important areas for research have been identified in the plan for addressing problem areas. Operations research would form part of the strategy and provide basis for addressing the implementation issues.

Once the proposed strategies are adopted and activating actions initiated, it is expected that the burden of disease would be reduced by 50 percent by the year 2010. The plan would cost Rs. 51 million in the next five years (Annex-I).
Section I

Malaria in NWFP

Malaria has been a major public health problem in NWFP and will continue to pose serious threat to the people due to poor socio-economic conditions conducive to the spread of disease. Malaria eradication programme was started in 1961 which progressed well till 1968. The parasite rate fell down significantly from 21.5 percent in 1960 to 14 percent by 1968. However, this could not be sustained due to inter alia, inadequate funds, development of resistant strains, exclusion of cities and towns from the plan of action and led to the reintroduction of malaria disease.

In 1977 malaria eradication programme was provincialized and merged with the health services along with BCG and small pox eradication programme to create an organization known as ‘Communicable Disease Control Programme’. Provincial, divisional, and district programme managers were accordingly placed under the administrative control of respective tiers of the health department.

Functional integration of primary health care service providers of various vertical programmes is critical for more efficient and cost effective health service system. Although administrative integration of Malaria Control Programme (MCP) has been completed but functional integration has not been achieved. The main objective of MCP was to reduce the incidence of disease to less than 0.5 cases per 1,000 population. The dependence on vector control measures through residual insecticide spray continued, supported by disease surveillance measures, including Active Case Detection (ACD) and Passive Case Detection (PCD). In addition to the resources provided by the provincial government under the non-development budget, the support through development plans continued from federal level and resultantly the disease incidence was reduced.

In view of deteriorating global malaria situation, WHO and its partners initiated the Roll Back Malaria initiative in 1998 with specific goal of reducing malaria burden to 50 percent by 2010.

In NWFP, transmission is seasonal and epidemics have been reported in 1974-75. Current figures show Annual Parasite Incidence (API) as 1.57 per 1,000 population but these statistics are based on about 21 percent of the population that uses government facilities, while other 79 percent who use private facilities are not recorded. Private sector at present plays no role in sharing the information because it is largely unregulated and maintains no record system. It is, therefore, apprehended that the number of malaria cases is much higher than officially being reported. In NWFP, malaria cases occur on a large scale, especially in southern and north western parts of the province.

Current Situation

Though a major shift of Malaria Control Programme was planned from eradication to control programme structure and activities are still based on eradication strategy. The activities like limited Geographical Reconnaissance (GR) updating, ACD/PCD and mass blood surveys still continue. The malaria programme has continued to operate as a vertical activity, resulting in complex management structures. Among other things this means that there are multiple sources of drugs, consumables, and even budget and malaria is no one’s exclusive responsibility. There are currently no plans to integrate the role of malaria supervisors with those of other outreach workers, or to use existing laboratory technicians to read blood slides. In such a centralized and vertically organized programme, it is taking time for Roll Back Malaria (RBM) concepts, principles, and strategies to take roots.
Malaria is still a major public health problem for the province – a potential threat for millions of people. The key challenges include a natural susceptibility to malaria. The data analysis reveals that NWFP has an Annual Parasite Incidence (API) of 1.1 per 1,000 people and Annual Falciparum Incidence (AFI) of 0.1 per 1,000 people. API and AFI have significantly changed over past five years. Provincial malaria related index is given in Annex F.

<table>
<thead>
<tr>
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<tr>
<td>NWFP</td>
<td>0.9</td>
<td>0.8</td>
</tr>
<tr>
<td>Pakistan</td>
<td>0.77</td>
<td>0.74</td>
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The detailed analysis of available data reveals the following:

- The available data is based on public sector reporting that constitutes only 20 percent of coverage of curative services. The rest of 80 percent population gets services from the private sector that is not reporting. It is estimated that the actual disease incidence is five times of what is reported through the system.

- Inadequate quality control measures, supervision system, and data management mechanisms raise serious issues concerning data quality. The programme management makes use of this data for most of the decision-making but other stakeholders have little confidence in the data.

- There is wide variation of disease prevalence amongst different districts and even within a district. This indicates that malaria is posing varied levels of problems in different districts.

- The above table reveals that there is an increase in trend being reported in NWFP.

- There is significant variation of AFI amongst the districts indicative of diverse situation of disease. The proportion of falciparum ranges from 1.6 percent in Shangla to 32.7 percent in D.I Khan.

- Active Case Detection (ACD) is not supported under control strategy and is not cost effective. (One case detection costs about Rs. 750.)² ACD still contributes about half of the total slides collected with Slide Positivity Rate (SPR) below 2.3 percent on average. The SPR for PCD at an average is about 9.2 percent.

<table>
<thead>
<tr>
<th>Year</th>
<th>ACD</th>
<th>PCD</th>
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<tr>
<td></td>
<td>Slides</td>
<td>SPR %</td>
</tr>
<tr>
<td>2000</td>
<td>250,009</td>
<td>1.9</td>
</tr>
<tr>
<td>2001</td>
<td>184,001</td>
<td>1.5</td>
</tr>
<tr>
<td>2002</td>
<td>139,774</td>
<td>2.0</td>
</tr>
<tr>
<td>2003</td>
<td>215,374</td>
<td>4.7</td>
</tr>
<tr>
<td>2004</td>
<td>181,555</td>
<td>0.9</td>
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The reporting system of the Malaria Control Programme has eroded over time and the data generated needs to be used with caution. The findings of the consultative workshops and

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¹ National Malaria Control Programme.
key stakeholder interviews provide insight on current status of Malaria Control Programme in the province. Assignment for development of strategic plan is given in Annex B. Detailed analysis of strengths of health system as assessed in these workshops is given in Annexure H. The key findings are summarized as under:

1. Malaria control is a low priority in the province as compared to other health sector programmes in the province.

2. The devolution initiative of the government could not provide major advantage to Malaria Control Programme.

3. The wealth of experience available with this programme, which was the major strength, has gradually diminished through retirement of personnel and is nearing extinction. The persistent ban on recruitment of new staff to fill in the gap and low priority of malaria related training has seriously affected staff position in terms of numbers, skills, and motivation.

4. The budgetary resources for Malaria Control Programme are limited and fragmented. The devolution to districts has made it further difficult to effectively target the meagre resources.

5. There is a general lack of political commitment to uplift malaria control activities in the province.

6. The efforts to integrate vertical programmes of health sector hurt Malaria Control Programme the most, as the staff of this programme were made to contribute to non-malaria activities and the staff of other programmes were rarely asked to work for malaria control. The multi-purpose workforce trained for the integrated services delivery could never be put to their designed terms of reference.

7. The programme resources presently available are hardly sufficient to maintain minimum level of activities and fire fighting support. It may not be possible for the programme to combat any epidemic.

8. There is a huge communication gap between the Malaria Control Programme staff and the health services staff looking after management of malaria cases. The clinical management knowledge of the curative services providers needs continuous updating on effective drug regimen, drug resistance, preventive measures, and epidemic reporting requirements.

9. The private sector which is the major contributor for curative services is an unreachable area for Malaria Control Programme staff.

10. The province and districts have overtime developed dependency on the National Malaria Control Programme for all types of support and even funding for other programmes.

11. The knowledge about the disease prevalence/incidence of malaria and even the epidemics is limited due to unreliable data and low coverage of the programme (private sector not covered).

12. The infrastructure/equipment/transport for the Malaria Control Programme has worn out overtime and fresh supplies/support for this purpose during the past has either been limited or fragmented.

13. The Malaria Control Programme requires extensive field work which is not possible without adequate transport support. Limited staff mobility is the key issue of the programme. Transport is also the backbone for the supervision system.
14. Inter-sectoral and intra-sectoral coordination is another area that would require attention.

Strategic Framework
The assignment for the development of strategic plan for malaria control has been undertaken at a time when a large number of technical and management issues have to be addressed in a wider context. The existing structure of the Malaria Control Programme needs to be transformed from eradication to control focused. This has to be done with the main focus on functional integration with health delivery system and emphasis on public-private partnership and community participation.

The programme interventions will be designed around a strategic framework comprising the following basic principles:

1. Mission of the health sector is to meet needs of the individuals and communities. The strategic plan for malaria would be based on holistic view of the sector rather than focusing on fragmented malaria related services. It would be building upon principles of RBM and would be geared towards further consolidation of health care system.

2. Many activities required by successful malaria control programmes such as training of health workers, awareness campaigns, laboratory diagnosis, and improvement of drug availability are also essential components of other disease control programmes. Integration of malaria control activities with health care system would continue to be encouraged.

3. Vulnerable population such as pregnant women and children are the worst hurt by malaria and are the major beneficiaries of primary health care. The malaria control interventions would be implemented as part of primary health care as it is an established strategy that promotes equity and is pro-poor.

4. The quality of services provided is one of the factors affecting demand for services. Efforts will be made through health care system to improve quality of malaria related services. This will improve confidence of the people on the public health system that will lead to enhanced utilization of health services.

5. Strategic plan would benefit from devolution process to manage delivery of services to the people. The involvement of districts would be essential in planning process.

6. Plan would strengthen information flow and improve decision-making skills. It would foster culture for evidence based decision-making.

7. Malaria is a community disease and can be controlled through strong community action. Plan would explore possibilities for enhancing community participation.

8. Malaria requires multi-sectoral action and inter-sectoral coordination. Public-private partnership would be the priority focus for the interventions under this plan.

9. RBM is a partnership focusing on joint action for effective control. The internal partnership between federal, provincial, and district governments would be strengthened ensuring coherent understanding, atmosphere of mutual confidence, and supportive attitudes through strengthening vertical coordination.

Mission
The mission of the Malaria Control Programme is to reduce the burden of malaria in NWFP to the extent that it is no more a public health problem.
This will be done through implementation of RBM strategies, using effective interventions adapted to local needs, developing capacity of the health care system, building viable multi-sectoral and community partnerships, and through integration of malaria control in health sector.

Aims and Objectives

The proposed five year Strategic Plan is to reorient and strengthen capacity of health sector to support achievement of RBM goal to reduce malaria burden in NWFP at least by 50 percent by 2010 in pursuance of achieving MDGs. Plan will strive coordinated effort for implementation of RBM initiative in NWFP by 2010.

Following objectives will be achieved during the plan period:

1. Strengthening preventive, diagnostic, curative, and surveillance services of the health systems in the environment of decentralized health services delivery to ensure that quality, rapid, and adequate support is available for Malaria Control Programme.

2. Strengthening provincial and district programme capacity to plan and guide implementation of programme in the province. The proposed capacity should include technical guidance, advocacy in support of programme, operations research, and improved management.

3. Strengthening partnerships, including collaboration with donors, vertical coordination within programme, intra-sectoral coordination amongst health sector programmes, inter-sectoral coordination amongst related sectors, public-private partnership, and enhancing community support and involvement.

4. Integrating programme monitoring and surveillance system with the health care system in a way that all information requirements of the programme can be met and early detection of epidemics/outbreaks at appropriate level is ensured.

5. Developing sustainable system to support, coordinate, and mainstream malaria related research that ensures continuous support for effective programme implementation and provides adequate technical guidance.

Targets

Following targets are envisaged to be achieved in the province through implementation of the strategic plan by the year 2010:

- Proportion of malaria cases that are diagnosed and provided correct treatment within 24 hours of the onset of symptoms (at facility or community) will be raised to 60 percent.

- Malaria morbidity will be reduced by 50 percent during the plan period.

- \( P. falciparum \) will be kept less than 15 percent of all malaria infections in the province and develop separate targets for each district depending upon the situation.

- Initiate implementation of insecticide treated bed nets (ITNs) through public-private partnership in five malarious districts to be expanded to other high risk districts in the province.

- Epidemic prone districts will have capacity to detect and respond appropriately to malaria epidemics.

- To achieve province-wide implementation of RBM initiative through functional integration with health services by 2010.
Section II

Malaria Control Strategy

Control of malaria is a complex intra-sectoral and inter-sectoral activity requiring extensive support from other sectors. A well coordinated effort of all sections of health sector is also essential. The broad areas that need to be examined relate to technical interventions that are major concern for the Malaria Control Programme. The programme, either directly or indirectly, has to undertake or coordinate/oversee and technically support implementation of these interventions. The efforts under this category would cover four major areas in addition to case management and self protection: (a) measures to control vector; (b) minimization of the number of infective bites for a given mosquito population; (c) development and use of anti-malarial drugs/effective vaccine; and (d) extensive surveillance to avoid outbreaks.

Strategic Areas

Strategy for malaria control in NWFP would be based on the principles of National Strategic Plan of RBM and priority actions agreed in WHO-EMR meeting adapted to the situation and needs of the province.

Programme interventions would cover the following key areas:

1. Early Diagnosis and Prompt Treatment
2. Multiple Prevention through Integrated Approaches
3. Epidemic Preparedness
4. Behavioural Change Communication
5. Partnership Building
7. Malaria Related Research

Strategies indicated above will be discussed in detail in the following pages. The recommendations are based on the literature review, data analysis and outcome of the consultative workshops and key stakeholder interviews. However the districts with high parasite rate of more than one percent and falciparum rate of more than 25 percent will be given more attention (Annex F).

Strategic Area 1. Early Diagnosis and Prompt Treatment

Early diagnosis and prompt treatment of malaria cases, which is the backbone of the Malaria Control Programme, not only helps reduce morbidity, mortality, and human suffering, but also helps to check spread of the disease. This is particularly true for *Plasmodium falciparum* malaria, especially among children and non-immune populations due to the rapid onset of illness and severe health outcomes. Anti-malarial drug resistance has become a major challenge in providing an effective malaria treatment within many regions of the world. Combined strategy of early diagnosis and prompt treatment is a major tool to control malaria. Efforts to improve performance of the health care system in this area would help to enhance effectiveness in other areas as well.

Classical method for diagnosis is the examination of a blood smear under the light microscope. This technique is sensitive and specific, but labour intensive. It requires a good microscope, skilled personnel, and uninterrupted supply of consumable and electricity. The facilities and expertise may be lacking in most rural health facilities and even private urban clinics. The provision of diagnostic facility in each health services delivery outlet exclusively
for malaria may not be cost effective in areas where number of suspected malaria cases is not adequate. The remote location of facility that could take substantial time to provide results would not fulfil the objective for early diagnosis. The diagnostic centres designed for multiple programme support (TB, malaria, other simple tests) could be explored for this purpose. The recently developed rapid diagnostic tests are very useful for screening large number of patients. These tests are currently too expensive for individual diagnosis, remain positive after treatment, and do not accurately measure parasite density.

**Operational Strategies**

**Availability of Standardized MCP Guidelines**
- MCP standardized case management guidelines for adults and Integrated Management Childhood Illnesses (IMCI) treatment guidelines for children shall be made available at all health facilities and outreach workers throughout the province, including private sector. The guidelines would be reviewed and standardized under federal component.
- Case management guidelines which shall be periodically reviewed by the NMCP in the light of scientific evidence from within and outside country will be implemented in the province.

**Strengthening Laboratory Diagnostic Services**
- Diagnostic facilities shall be established/strengthened at health facilities (DHQ & THQ Hospitals, RHGs, BHUs, etc.) to ensure that at least 60 percent of the malaria cases are correctly diagnosed and provided radical treatment within 24 hours of the onset of symptoms by 2006.
- The selected Basic Health Units and all Rural Health Centres shall be made diagnostic centre for malaria in partnership with TB Control Programme. Each diagnostic centre will have its earmarked catchment area indicating number and names of health facilities to be catered. Every diagnostic centre will also have a declared alternate diagnostic centre and a laid down mechanism to refer cases to such alternate centre.
- A comprehensive quality control system as laid down in National Strategic Plan to ensure correct microscopic diagnosis shall be implemented to ensure that at least 10 percent of negative slides and all positive slides are cross examined at referral laboratories.
- All MCH centres will be linked with nearest BHU/RHC/hospital for laboratory diagnosis of malaria.
- In emergency situations and outbreaks when establishment of microscopy centre is not feasible, possibility to provide appropriate Rapid Test Techniques (RTT) would be explored.
- Public sector diagnostic facilities shall cater for malaria diagnostic needs of all patients referred by private sector institutions/service providers.
- Possibility for outsourcing diagnostic work to the private sector in urban areas would be explored to develop a comprehensive support system.
- CDC supervisors shall be trained in malaria microscopy and provision of essential diagnostic equipment and supplies/consumables shall be ensured.
**Strengthening Prompt Treatment**

- Training to implement MCP case management guidelines shall be provided to all health care providers, including private sector, in the province. The quality, relevance, and appropriateness of training would be given due importance. The motivation aspects of service providers will also be covered in these trainings.

- LHWs shall be trained regarding their roles in management of malaria cases and their skills in clinical diagnosis, preparing blood slides, treatment of malaria cases, and preventive treatment for pregnant women shall be enhanced.

- Advocacy for filling vacant posts and creation of new posts (where required) of malaria related staff shall be carried out to convince provincial/district governments.

- Availability of first line anti-malarials shall be ensured through district/provincial/federal government.

**Expected Outcomes**

- Provision of radical treatment to at least 60 percent of malaria cases within 24 hours of onset of symptoms.

- Time between onset of disease and diagnosis will be reduced to 24 hours.

- Malaria transmission reduced.

- Reduction in incidence of vivax and falciparum cases by 50 percent.

- Reduction in morbidity and mortality due to malaria.

**Strategic Area 2. Multiple Prevention**

Prevention is a part of Roll Back Malaria strategy to stop deterioration of malaria situation. The preventive measures shall be planned in a way that leads to sustainable results through effective use of resources. Possible preventive measures include selective vector control, focal insecticide spray, larviciding, use of insecticide treated bed nets, prompt medical treatment, and environmental control. Interventions shall be implemented to achieve interruption of transmission based on the principles of control ensuring minimizing wasteful use of resources. The implementation mechanisms encourage community action, inter-sectoral coordination, and integrated working of the health sector.

**Operational Strategies**

**Vector Control**

- Indoor residual focal spraying (IRS) shall be done on the basis of firm criteria in epidemic prone and high risk areas. Provincial Malaria Control Programme, in consultation with provincial and district officials, shall implement guidelines for rational targeting and evidence based IRS.

- Technical review of GR updating shall be undertaken in areas where massive operations for vector control are less likely. Proposed review should also explore possibilities for use of GR for other programmes.

- Pilot testing ITNs intervention focused on sociological aspects, marketing strategies, and distribution mechanism with the help of DOMC MoH. Social marketing will be encouraged to provide and promote use of ITNs. The NGOs and community based set up will be invoked to provide safety nets for the poor.
• The use of impregnated bed nets would be promoted, especially for the protection of children and pregnant women initially in high risk areas. The ITNs would be backed by a targeted subsidy scheme that could make it accessible to poor.

**Larviciding**
• Provincial Malaria Control Programme shall make use of innovative approaches to eliminate breeding places through rational larvicultural sprays and biological measures through inter-sectoral coordination.
• Use of chemical larvicides shall be restricted to selected urban localities on the basis of MCP larviciding guidelines. In rural communities with very few breeding sites (man-made), limited chemical larviciding may be considered on the basis of firm criteria. Use of larviciding chemical will be guided by the operational research focused on investigation of habitat characteristics.

**Environmental Management**
• Community based health workers (such as CDCSs, LHWs) shall encourage volunteer participation of the communities in the source reduction on large scale.

**Parasite Control**
• Early diagnosis and prompt treatment shall be improved as discussed under strategic area-1.

**Expected Outcomes**
• 60 percent households with at least one ITN.
• Guidelines for IRS implemented.
• Effect of focal spraying enhanced.

**Strategic Area 3. Epidemic Preparedness**
There is a growing realization of the need to implement programmes to predict and prevent malaria epidemics. This helps to prepare for management of epidemic effectively. The available and simple indicators (e.g. meteorological data and population movements) are not yet routinely used for predicting and preventing epidemics. There is insufficient collaboration with other sectors, particularly the meteorological and agriculture services in the province. This lack of inter-sectoral collaboration is delaying the establishment of an efficient prediction system. The use of remote sensing technologies for this purpose is a new opening and could be explored in combination with others interventions. The high speed computing has made it possible to analyze huge amounts of data and develop epidemic prediction models.

**Operational Strategies**

**System Development**
• Implement Disease Early Warning System (DEWS) through provision of training to health care providers.
• Emphasis on early treatment of all current or recent fever cases (and their household contacts) through community level health workers and the network of health facilities.
• Undertake extensive vector control measures in affected areas.
• Disseminate malaria-related knowledge and information to press and media to raise awareness about the disease and epidemics.

**Improving Surveillance**

- Private sector and communities would be involved in the process for early warning and preparedness for response. LHWs would be trained for this purpose.
- The malaria related staff would be trained in use of modern information technology, including remote sensing, GPS, and GIS for estimation of early signs of epidemics.
- Integration of malaria-related reporting system with comprehensive disease surveillance system being developed.
- Implementing existing data collection tools to collect data on variables of interest for malaria epidemic detection. The malaria morbidity trend would be monitored at health facility, district, and province levels.
- Establish and operationalize sentinel sites in all DHQ hospitals with adequate networking.
- Specially designed survey shall be conducted to collect information regarding RBM indicators.
- The district level health officers (EDOs & DOs) and other managers would be trained to monitor malaria occurrence and plan/coordinate the epidemic control activities in a district.

**Provision of Resources for Effective Implementation of Epidemic Measures**

- Adequate revolving resources shall be provided by NMCP to province as epidemic control reserve.

**Expected Outcomes**

- Timely detection of outbreaks and epidemics.
- All reported epidemic responded in minimum reaction time.
- Reported epidemics effectively controlled.

**Strategic Area 4. Behaviour Change Communication**

Behaviour change communication is an essential part of all preventive programmes, especially for phases when existing practices for case management, prevention, and control are being changed. Health education has proven success stories in other programmes in the health and population sector.

**Operational Strategies**

**Strengthening of Health Education activities at Provinces and Districts**

- Provincial health education unit shall be strengthened by providing deficient staff, equipment, etc.
- Health education units would be created at all districts to provide BCC services for all health programmes, including malaria control.
- The expertise available in the private sector (business and institutions) would be exploited for BCC campaigns and research.
Material Development
- Supply of material and messages for malaria control, developed by federal level to districts and other levels.
- Development of material and messages to cater for local needs.

Social Mobilization
- Celebration of National Malaria Day.
- Develop provincial plan for health education with a strong component of behaviour change communication for malaria control. The proposed plan would be developed through provincial consensus and identify major programme areas, responsibilities of provincial, district, and community level along with identified resources support.
- Launch BCC campaign using all available channels.
- Advocacy to motivate districts for allocation of sufficient budget and resources to support BCC and social mobilization activities in the district in the local context.

Expected Outcomes
- Improved knowledge and attitudes of communities regarding preventive measures and care seeking behaviours for Malaria.
- Motivation of health care providers, both public and private sector, for active participation in malarial control activities.

Strategic Area 5. Partnership Building
The philosophy of Roll Back Malaria is to strive for development of partnerships for collaborative action against malaria. Partnership development is critical for those programmes that heavily depend on contribution from other sectors. Malaria control requires a multi-sectoral and coordinated effort that is not possible without establishment of good working partnerships.

Malaria control would also benefit from improved community-based systems. The family is the first hospital for any child with high fever. Improved home management of malaria will, therefore, have a positive impact on treatment and control. Proper pre-packaged drugs with trained shopkeepers may bring about drug dosage compliance, and improve malaria treatment in the communities. Adequate health education on how to reduce human-vector contact, proper use and treatment of bed nets with insecticides, correcting myths that surround many diseases including malaria at the community level would help to boost malaria control.

The communities can be motivated to improve environments with a view to reduce breeding places for mosquitoes. Community organization will support programme activities like distribution of ITNs, spray operations and even distribution of drugs. While community-based interventions offer hope for the future, the choice of interventions that could be implemented through community support is a major challenge for the Programme managers. The process for community based programme implementation is slow and must be backed by extensive operational research.

Malaria control depends heavily on disease surveillance and diagnostic and curative services. The private sector attains the key role in malaria control in those countries where communities’ dependence on private sector services providers is the highest. NWFP has well developed private sector with estimated curative services coverage of 75-80 percent.
Unfortunately, private sector is working in isolation and its interaction with provincial MCP and even the public health services is limited. Implementation of MCP without involving private sector would not be possible. The programme should explore possibilities to build a good partnership with the private sector.

**Operational Strategies**

**Integration with Other Programmes**

- Concept for functional integration of programmes at services delivery level will be implemented. The health facility, outreach workers, and LHWs headed by in charge of health facility would be netted together and made responsible for all health problems, including malaria.
- The integration would require formulation of revised service structure and development of new job descriptions for all staff members of the team in the province.
- Joint monitoring, supervision and information systems would be developed based on the concept of joint responsibility of the entire team of the 'health area'.

**Inter-sectoral Coordination**

- Health team working in the area shall identify areas of coordination and define specific activities that require collaborative action from other sectors.
- The districts would be encouraged to develop district level coordination forum for the key social sector departments where coordination areas/issues could be discussed and actions agreed. Similar forums could be developed at provincial level.

**Public Private Partnership**

- Develop extensive networking for early diagnosis, prompt treatment, and disease surveillance between public and private sectors. Both sectors will share responsibility for standardization of malaria case management protocols and share information. The public sector will provide training to all services providers on malaria case detection, management, and reporting.
- Partnership would be developed with private sector and NGOs for promotion, marketing and distribution of insecticide treated materials, including bed nets.
- The private sector would be encouraged to participate and support preventive services as an essential part of their services delivery.
- Explore possibilities to outsource some of the activities of provincial MCP to NGOs and private sector, especially those where operations under public sector are not cost effective.

**Community Participation**

- The ‘health house’ will be developed as first contact for management of malaria cases and would be effectively linked with the rest of the health sector through referral system for diagnosis and treatment of complicated malaria cases. LHWs will be trained to clinically diagnose, take blood slides, and also provide first line treatment for uncomplicated malaria cases. They will also be trained to identify complicated malaria case and refer such cases to the nearest health facility for management.
• Malaria situation review should be essential part of the agenda of the meeting of the village health committee.

• Social mobilization would be done to raise awareness of communities about management and control of malaria in their area. The communities would be motivated to undertake malaria control as joint responsibility and technical support would be provided to the communities from the nearest health facility.

• Community awareness and organization would be included in the training of all community level health workers.

• The Citizen Community Boards will be sensitized for malaria control and encouraged to include community based malaria control measures in their development projects.

**Expected Outcomes**

- Enhanced community ownership for malaria control activities.

- Active participation of private sector.

- Improved inter-sectoral coordination.

**Strategic Area 6. Monitoring, Evaluation, and Surveillance**

Epidemiological information systems are an essential part of all malaria control activities to contentiously assess malaria situation, forecasting of epidemics, define risk groups, and monitor programme progress.

The health information system is the key sub-system in the health sector that provides support to decision-making process. Malaria-related information is mostly collected through programme staff and some information is reported in routine HMIS. Integration of programme with the mainstream health care system would require inclusion of routine programme reporting in HMIS which is being reviewed with support from JICA. A discussion note highlighting areas requiring attention of programme management that would require collaboration with HMIS design team is placed in Annex D.

Malaria surveillance helps to assess impact of disease on population and is a major tool for early detection of epidemics. However, surveillance should be done in the context of integrated disease surveillance instead as a vertical, isolated programme. There are different and multi-sectoral sources for information required for surveillance, e.g., epidemiological information and recent climatic records (seasonal rainfall and temperature patterns) may provide evidence of a potential malaria problem. Other factors are climatic variables, indicators reflecting population movement, and breakdown of health services may also help predict outbreaks or epidemics.

Programme monitoring and evaluation shall focus on a number of broad areas. First of all, basic surveillance data is necessary to determine the level of endemicity, assess the seasonality of transmission, and identify the level of risk in different population groups and geographic areas.

The second important area is the study of existing health care system to assess its competencies and limitations in the context of malaria control programme. Adequate knowledge about drug efficacy is essential to understand the relative prevalence of antimalarial drug resistant parasites, and to develop effective treatment and chemoprophylaxis policies.
An understanding of local attitudes and beliefs relating to different interventions and disease is also important, since these affect the acceptability of some interventions, particularly those that depend on changing human behaviour.

Finally, entomological studies to identify the principal vectors and their behaviour are necessary for selecting appropriate vector control option.

The monitoring capacity of the Malaria Control Programme has eroded overtime. The capacity for evaluation of programme interventions has almost diminished. The support areas for monitoring and evaluation include HMIS, disease surveillance system, malaria related research, and decision-making system. The support available for malaria M&E from these areas is extremely limited. Management of any programme without monitoring and evaluation is just playing in dark and results in wastage of resources.

The choice of indicators for surveillance and monitoring the programme depends on requirements of the province and the programme. The following are some important areas that can be considered in the development of indicators: (i) malaria mortality; (ii) ratio of *Plasmodium species*; (iii) target groups, etc.

Calculation of most of the indicators depends on population as denominator which is difficult to estimate when catchment areas are not clearly defined. A broad list of indicators for malaria M&E has been developed and is given in Annex E.

**Operational Strategies**

**Integration of Management Information System**

- Management of malaria would be integrated with the health care system and each care provider (public or private) will be made responsible to notify malaria cases to the nearest health facility of the public sector.

- Malaria reporting system will be integrated in HMIS which is under review and modification by the federal government and will be supplied to the province.

- Support would be provided to design and implement comprehensive and integrated supervision and monitoring system, including malaria. Supervisory checklists will be implemented and reporting mechanism will be improved.

**Support to Provinces and Districts**

- Positioning of surveillance officers in provincial headquarters through Directorate of Malaria Control, MoH.

- As prime responsibility to implement health programmes, including malaria, rests with the districts, support will be provided to build capacity to analyze and use data collected through HMIS and surveillance reporting in decision-making in districts.

- Continuous training of staff for improvement of data quality, coverage, and use would be made part of normal operations of the district and provincial health system.

- Provision of appropriate transport to staff working for surveillance and monitoring activities at various levels.

- Establish and operationalize sentinel sites in all DHQ hospitals with adequate networking as already indicated under strategic area-2.
**Evaluation Surveys**
- Provision will be made to conduct entomological surveys, longitudinal surveys, parasite and mosquito susceptibility surveys, etc.
- Malaria prevalence survey(s) to identify the true burden of the disease and get the baseline will be implemented. This survey will be repeated every five years to assess performance of the programme.

**ACD/PCD**
- Passive Case Detection (PCD) would be the main strategy for detection of malaria cases. The use of Active Case Detection (ACD) would be limited to the areas of high epidemiological importance such as flood affected areas and epidemics/outbreaks.

**Expected Outcomes**
- Functional Integrated HMIS.
- Timely availability of monitoring reports.
- Improved surveillance system.
- Evidence based decision-making.

**Strategic Area 7. Malaria Related Research**
Research is an important component of preventive programmes and steers programme implementation, explores new solutions, and provides basic material for promotional activities. Research takes more prominent position in health programmes that are deficient in terms of availability of quality information and undergoing major transformation for operational mechanism and organization adjustments. RBM puts a major challenge for broadening research base for its successful implementation in NWFP. Entomological studies, malaria surveys, epidemiological studies, etc., are helpful to focus interventions and operations. Operational research needs to be stressed in the province at the initial stages to improve efficiency of programme interventions. The following areas could be included in the research package.

- Insecticide treated materials: Treated bed nets, curtains, and meshes are the major materials used as ITMs. The usefulness of ITNs is well established technically. The studies need to focus on social aspects, distribution, and re-treatment issues. For instance, mosquito net distribution strategy effectiveness in different phases: the range of delivery strategies (e.g., clinics, LHWs, mobile teams, private sector) needs to be further developed and evaluated with respect to costs and cost effectiveness; uptake, coverage and equity achievable; best IEC methods for stimulating demand creation and appropriate use; ‘essential protection kits’, single dose sachets, etc.
- Impact and acceptability of different vector control measures and insecticide resistance are major areas of interest.
- The private sector contributes to services delivery for malaria but with little sense of accountability or responsibility. Research could cover identification of strategies that could help bringing private sector into reporting system. Case management practices, protection of poor and different sociological aspects could be covered.
- Better understanding of different communities’ beliefs and treatment-seeking behaviours is essential for developing appropriate treatment policy. This could be taken as research area.
• Monitoring drug efficacy and assessing the efficacy and practicality of newer treatment regimes continues to be necessary.

• Strategies to protect pregnant women are available but more research needed in complex emergencies. Research on various interventions would be valuable.

The detailed recommendations and situational analysis relating to malaria related research is available at Annexure A.

**Operational Strategies**

- Provincial level consensus would be reached amongst key stakeholders on prioritized agenda for malaria related research. The proposed plan will identify priority research areas, roles and responsibilities of different levels, and expected contribution from different institutions.

- The important research areas like vector resistance studies, entomological studies, vector susceptibility tests, drug resistance in parasites, prevalence of disease, prevalence of falciparum, malaria species research, operational research, etc., would be included in the proposed plan.

- Malaria partners would be requested to pledge resources for the research programme.

- Sufficient provision of funds would be ensured in national, provincial and district plans for malaria control to support research agreed in the national plan.

- Research centres will be established at all provincial levels, including NWFP.

**Expected Outcomes**

- Refined strategies/interventions for malaria control.

- Improved case management practices.
Section III

Implementation Strategy

The discussion in the last section spells out a need for change of programme implementation philosophy to be client focused rather than interventions driven. Programme management should concentrate more on programme impact rather than on accomplishment of planned/designed tasks. Operational sphere of the programme has to be expanded to include private sector and communities and promote public ownership. The programme should include a social perspective of malaria and be better directed towards poor and disadvantaged groups. The programme has to be transformed from broad-based 'eradication' vertical structure to well-focused, integrated, and decentralized RBM partnership. This programme transformation is a complex task and would force programme management to simultaneously work on a number of fronts to ensure that the programme starts delivering in minimum possible time and plan objectives are achieved.

Aspects of the Strategic Plan covered so far include strategic options, situational analysis and the recommendations in the form of operational strategies. Plan implementation matrix based on the operational strategies is given in Annex G.

This section will focus on replying the question 'how to do' or implement the recommendations and would cover the following areas:-

- Decentralization
- Roles and responsibilities
- Integration
- Training
- Referral System
- Technical Support and Research

Decentralization

The programme is implemented countrywide with an established organisational set up at federal, provincial, and district levels. Decentralization of programme is long overdue since its transformation from an eradication programme to control programme. Decentralization of provincial authority to districts requires redefining roles and responsibilities of the three levels, i.e., federal, provincial, and district.

In NWFP, there is a Director of Malaria Control Programme under the DGHS who is responsible for Malaria Control Programme in the province.

At district level, the Executive District Officer Health is responsible for entire health services delivery, including malaria control activities. Specific responsibility for malaria rests with the DOH/DDOH who is the focal person for malaria control activities in the district. Delivery and management of malaria control has been integrated with district healthcare services so that continuing care can be provided close to the patient’s home. DOH is supported by two malaria officers, i.e., a Communicable Disease Control Officer and an Assistant Entomologist, who assist him in looking after malaria control activities in the district. Down the stream, malaria management is integrated in the health services with Malaria Supervisor providing field support through outreach work at community level.
Roles and Responsibilities
Defining roles and responsibilities is essential as it would form the basis for the programme structure and responsibility for provision of funds/inputs. Similar work needs to be done for the lower tiers and individual contributors which should be done by the provinces during implementation of the Strategic Plan. Sharing of roles and responsibilities for three managerial levels of Malaria Control Programme would be based on following guiding principles:

1. Programme has to be structured in a way that it can effectively respond to the implementation requirements of Roll Back Malaria. Programme hierarchy would work as partnership rather than command structure.
2. Verticality of the programme would be avoided and integrated delivery of malaria services and information flow would be ensured.
3. Standardization shall be the responsibility of Directorate of Malaria Control, MoH.
4. Dynamics of the devolved management structure would be kept in view to avoid any authority conflicts.
5. Decision-making would be taken close to the programme operations as far as possible and uniformity in implementation of agreed policies/standards/protocols would be maintained.
6. Programme monitoring will be separated from programme operations as far as possible to develop culture for objective reporting.
7. Roles and responsibilities should be clearly earmarked to a specific level and gaps/overlapping should be avoided.
8. Resource availability for the programme activities would be from single source and certain to avoid fragmented supplies.

The suggested list of Roles and responsibilities for, provincial and district levels is given in Annex E.

Integration
Provision of malaria related services through integrated health care system is one of the key components of Roll Back Malaria as it ensures sustainability of the gains. Following areas would be focused for the proposed integration.

- Integration of malaria related data collection in the HMIS.
- Redefining roles and responsibilities of malaria related workforce in the field.

There seems no second opinion about integration of malaria reporting system with HMIS. Integration efforts in the past focused on provision of multi-purpose health workers for the outreach work of the health sector. This dream could not be made reality due to a number of complex human resource issues. The strategic shift from ACD to PCD, multiple source malaria case management, and lowering utility of GR updating under Roll Back Malaria approach suggests that role of CDC Supervisor needs to be redefined. CDC supervisor should be re-trained as a multipurpose worker with emphasis on his becoming an educator and community mobilizer. He would play a major role in expanding ITN and other community based and inter-sectoral programmes. He could be trained for malaria and TB related microscopy and other simple tests at health facilities. Past experience guides that a well planned effort would be required for this purpose. It is recommended that a taskforce should be constituted to work on this issue and submit its recommendations.
Training
The training for the malaria can be broadly placed under two categories. Malaria related technical training and training relating to implementation of malaria related guidelines and development of case management skills. First category should continue to be the responsibility of the National Programme unit through NIMRT whereas second type of training should be the provincial responsibility. Provincial Malaria Control Programme will plan and coordinate implementation training programmes through PHDC/DHDC network. Required finances will be provided through provincial budget and districts will contribute staff time (both trainers and trainees).

Referral System
A referral system is already in position in the health sector but its functioning is not standardized and responsibilities are not clearly defined. It would be difficult to exploit Roll Back Malaria initiative to redesign and enforce referral system. However, the district health system would have to ensure the following.

- Management of complicated malaria cases, especially involving infants, children, and women referred by any care provider (public or private) would be given top priority in hospital emergencies.
- LHWs will be trained to identify complicated malaria cases and their timely referral. The referral from LHWs would be entertained at facility level and feedback provided to her for any follow up required.

Technical Support and Research
The transformation of MCP on the basis of Roll Back Malaria approach would require major organizational change which needs to be provided with technical support. MCP, like other health programmes, is human resource intensive and requires wide range of skills. The programme requires medics for diagnosis and case management, entomologists to study behaviour of the vector and sociologist to mould community response to malaria. Malaria is a public health issue in which professionals like economists, planners, researchers, and managers all have their roles. Provincial MCP has basic responsibility to provide technical support to districts where actual implementation takes place. These units need to be equipped with expertise and links that would ensure availability of required support as and when it is required. Following recommendations are made for this purpose:

i. The Pakistan Medical Research Council Centres in various medical colleges in NWFP are another venue that can support malaria related research and institutional links need to be established with this organization.

ii. Provincial MCP should aim to develop capacity to identify technical support research areas and establish links with the institutions/organization that could provide support. The programme should have technical and managerial capacity to integrate technical support and research within decision-making and its operations.

iii. In house technical capacity should be developed for technical support and research through training.

iv. Provincial Steering Committee comprising all the stakeholders, i.e., representatives of health department, research institutions, politicians, provincial MCP manager, NGOs and private sector should be formed to oversee programme/management changes being introduced and requirement of technical support.
v. A Malaria Working Group at provincial level should be formed to look into the technical and managerial problems of malaria control and operations, training, and research activities. Composition should be flexible to accommodate changing needs and external experts may be co-opted to this group. The Malaria Working Group would implement recommendations of the Malaria Steering Committee regarding development and implementation of malaria control strategies made by NMCP.
Annex A

Introductory Note
Malaria Control and RBM

Background
It was once thought that the disease came from fetid marshes, hence the name mal aria (bad air). In 1880, scientists discovered the real cause of malaria was a parasite called plasmodium. Later, it was discovered that the parasite is transmitted from person to person through mosquitoes. Our understanding of malaria has significantly developed since then and considerable achievements have been made to combat this menace in the world, including eradication of this deadly disease from a number of countries and substantially reducing its impact in other countries.

Malaria Transmission
The malaria parasite enters the human host when an infected female anopheles mosquito takes a blood meal to nurture her eggs. Inside the human host, the parasite undergoes a series of changes as part of its complex life-cycle. The understanding of the transmission cycle of parasite from mosquito to human and again to mosquito is extremely important to control this disease. The malaria causative organisms include Plasmodium falciparum and Plasmodium vivax. The form of the parasite that can infect mosquitoes is called gametocyte. Gametocytes start developing in capillaries of the inner organs of infected persons after the invasion of the blood by merozoites. Mature gametocytes, which are infective to mosquitoes, appear in the peripheral blood some three (in the case of P. vivax) to 10 days (P. falciparum and P. malariae) later. The female anopheles mosquito ingests malaria gametocytes when it takes a blood meal from an infected person. The parasite then needs a period of development in the mosquito before it can infect other people again. The length of this period (sporogonic cycle) depends on the Plasmodium species and the ambient temperature.

Malaria is most commonly transmitted through the bite of an infected female anopheline mosquito. There are approximately 400 species of anopheles in the world but only about 60 are vectors of malaria under natural conditions and about 30 are of major importance. There are four types of human malaria: (a) Plasmodium vivax; (b) P. malariae; (c) P. ovale; and (d) The P. falciparum. P. vivax and P. falciparum are the most common and falciparum the most deadly type of malaria infection. Plasmodium falciparum malaria is most common in Africa and south of the Sahara whereas vivax is more common in other parts of the world. The spread of P. falciparum malaria into new regions of the world and its reappearance in areas where it had been eliminated is a worrying indication.

Typically, malaria produces fever, headache, vomiting, and other flu-like symptoms that are easily confused with common illnesses making early diagnosis difficult. If drugs are not available for treatment the infection can progress rapidly to become life-threatening. Malaria can kill by infecting and destroying red blood cells (anaemia) and by clogging the capillaries that carry blood to the brain (cerebral malaria) or other vital organs.

In highly endemic areas, persons who have been repeatedly infected with malaria acquire a degree of immunity to malaria which suppresses most clinical symptoms. These people may carry gametocytes in their blood that will infect the mosquitoes biting them. In non-immunes, clinical symptoms will usually have developed before gametocytes appear in the peripheral bloodstream. Malaria infected persons who donate blood before the onset of clinical symptoms, but after merozoites have entered the blood stream from the liver, can
unknowingly transmit malaria through their blood donation. Blood donations from (semi)immune persons without clinical symptoms may also contain malaria parasites. Similarly, malaria may be transmitted by contaminated needles and syringes. Congenital transmission of malaria is another possibility where parasites are transmitted from mother to child before and/or during birth.

Malaria can be prevented by avoiding contact with mosquitoes, for example, by using insecticide-treated mosquito nets, eliminating mosquito breeding sites or spraying households with insecticide to repel or kill mosquitoes. Malaria can be treated with anti-malarial drugs at home but patients with severe disease and complication may require hospitalization.

Malaria Epidemics
Epidemics occur when malaria attacks vulnerable populations with little or no immunity, including those living in areas where successful control measures have not been consolidated or maintained. In such situations, people of all age groups are at risk of death or severe disease. Factors which may precipitate a malaria epidemic fall into two categories:

- Natural: climatic variations, natural disasters.
- Man-made: agricultural projects, dams, mining and logging, population displacement, failure of malaria control programmes, drug resistance, etc.

An increasing number of malaria epidemics have been recently documented throughout the world. Improved forecasting, adequate preparedness, and prevention can help avoid human tragedy or at least minimize the effects of epidemics.

Target Groups for Malaria
Malaria is known to be both a disease of poverty and a cause of poverty. Children and pregnant women are at greatest risk of malaria-related morbidity and mortality, especially in areas of stable transmission. Pregnant women and their unborn children are also particularly vulnerable to malaria.

1. **Malaria and Pregnancy:** Pregnant women suffer decreased immunity to malaria, quadrupling their chances of contracting malaria and doubling their risk of death. Pregnant women with malaria are at increased risk of anaemia. Maternal malaria increases the risk of stillbirths, premature delivery, low birth weight babies, and intrauterine growth retardation. Low birth weight babies are much less likely to survive their first year of life.

2. **Malaria and Children:** 71 percent of all deaths from malaria are in children under 5. The children are at risk of congenital transmission of malaria before and/or during birth. A child's most vulnerable period begins at six months, when the mother's protective immunity wears off and before the infant has established its own robust immune system. Once infected, a child's condition can deteriorate quickly and children can die within 48 hours after the first symptoms appear. It also indirectly contributes to the illness and deaths of children from respiratory infections, diarrhoeal diseases, and malnutrition. Besides significant mortality, severe forms of malaria result in neurological disorders and disability which has a significant impact on cognitive learning, especially among children.
3. **Malaria and Poverty:** Malaria-endemic countries are caught in a vicious circle of disease and poverty. Impoverished countries suffer the most from malaria and malaria is a contributing cause of their poverty. Malaria disproportionately affects poor people due to a number of reasons.

- Poor people are at greater risk of complications and death because their access to effective treatment is limited. Approximately 60 percent of all deaths from malaria in the world occur among the poorest 20 percent of the world’s population. This is a higher percentage than for any other disease.

- Malaria depletes family resources by increasing health care expenditure, decreasing income through sickness, and absenteeism. Households have to spend significant sums (US$ 0.39 to 3.84/capita per year) to prevent and treat malaria. Malaria also contributes to poverty by reducing the productivity of infected people and their caretakers. Efforts to reduce malaria are clearly pro-poor.

- Malaria frequently occurs at harvest time. Families burdened with malaria harvest fewer crops than healthy families. Where there is a risk of malaria, farmers tend to plant less labour-intensive subsistence crops rather than more profitable cash crops. Malaria depletes a country’s human resources by hampering children’s learning through missed school days and also by reducing the amount families spend on education. Repeated attacks of malaria also hinder a child’s long-term physical and cognitive development.

- It has been estimated that malaria has slowed economic growth in African countries by 1.3 percent per year. Compounded over 35 years, this amounts to a 32 percent reduction in the GDP of countries in Africa where malaria is endemic.

- Malaria forces countries to divert foreign reserves for purchase of drugs and insecticides. Malaria discourages foreign investment and tourism, discourages the development of internal trade, and adversely affects the choice of economic activities.

**Malaria – A World Threat**

Malaria still affects over 100 countries worldwide and even now is one of the major public health problems across the globe with about 40 percent (about two billion people) of world’s population living in areas of malaria risk. Estimated 300–500 million malaria episodes and about one million malaria deaths occur annually. The annual economic loss to the world economy due to malaria exceeds US$12 billion. Ninety percent of all malaria deaths currently occur in sub-Saharan Africa (SSA) whereas malaria is endemic within most tropical and subtropical regions of the world. Malaria, together with HIV/AIDS and TB, is one of the major public health challenges undermining development in the poorest countries in the world.

The disease was sometimes widespread but it was successfully eliminated from many countries with temperate climates during the mid-20th century. Malaria has been reintroduced to areas where eradication was achieved in 1950s and 1960s. It is now found in areas previously free of disease; and the number of epidemics in Africa, Southeast Asia, and South America are increasing. The malaria situation is worsening due to drug resistance to most commonly used low cost anti-malarials and pesticide resistance economical and effective pesticides. The limited access to health services, especially the poor and population in the remote areas limits success of malaria control programmes, worsening the situation.
Roll Back Malaria

There is evidence of a worsening global malaria situation. Malaria mortality rates in Africa are rising. The malaria parasite is increasingly resistant to commonly used anti-malarial drugs. New epidemics are reported - some of them in countries that have, until recently, been free of the disease. In many countries, the resources of malaria control programmes are stretched to the limit. The new emerging issues such as AIDS are further diluting the resource availability for malaria control. Malaria contributes to widespread human suffering, particularly among the poorest billion people in the world. It is a major constraint to economic and social development. A partnership support was needed to tackle malaria wherever it occurs.

Responding to this situation, a global partnership emerged as Roll Back Malaria (RBM) in 1998. RBM partners, World Health Organization (WHO), the United Nations Development Program (UNDP), the United Nations Children’s Fund (UNICEF), and the World Bank, committed to contribute their skills and resources to maximize the impact of RBM on malaria control. Its aim is to halve the world’s malaria burden by 2010. RBM partnership in its wider context includes national governments, civil society and NGOs, research institutions, professional associations, United Nations and development agencies, development banks, private sector, and media.

The main objective of RBM is to reduce the global malaria burden significantly through interventions adapted to local needs and strengthening of the health sector. The basic concept of the initiative revolves around the idea that malaria as a priority health issue within the context of health sector development that promotes inter-sectoral collaboration and engages the community as partners. It shifts focus from vector and parasite to affected patient and puts emphasis on cost-effective and sustainable strategies. Roll Back Malaria interventions are outcomes/impacts targeted just inputs. It looks for integration of health service provision, especially disease control activities.

RBM partnership is actively putting pressure on international community to provide funds required for fighting malaria. At country level Roll Back Malaria is working to ensure that up-to-date drug policy is adhered to, ensuring drugs used are appropriate to the local malaria situation. RBM is also working in partnership with pharmaceutical companies to develop new, affordable, and effective drugs, appropriately pre-packaged to promote compliance with the correct dosages. RBM advocates promotion of home/community based management of malaria by training mothers, shopkeepers, and communities to recognize the symptoms of malaria and to supply and administer appropriate anti malarial drugs.

Principles of Roll Back Malaria

RBM partnership is based on the following broad principles:

- This partnership is not a project or programme but is a social movement that is part of broader societal action for health and human development.
- RBM strategy builds on past experience, is evidence-based, and focuses on outcomes.
- Community and country priorities should drive actions to RBM.
- The interests of the people, particularly people in poor communities and especially their children and women, are at the centre of this movement.
• This movement is supported by partners, who function independently but would contribute where they have a comparative advantage or interest.

• RBM movement is about building and strengthening the capacity of health services to help communities tackle all illnesses that undermine their well-being.

• RBM looks for an inter-sectoral action involving education, agriculture, water, sanitation, irrigation, etc.

• RBM is an opportunity for joint action to tackle the threat of malaria for human development.

• RBM has wide health sector and development context and recognizes the need for strengthening the health sector and partnerships for joint and effective action in coordination with other sectors and countries.

**Elements of RBM Strategy**

There are six essential elements of strategy to Roll Back Malaria. These elements are based on successful past experiences and have received widespread support. These elements need to be taken forward within an enabling environment of strong in-country institutions and cross-sectoral collaboration.

- Rapid diagnosis and treatment of malaria cases through effective use of microscopy.
- Effective management of malaria outbreaks through early detection and rapid treatment.
- Multiple and cost-effective means of preventing transmission of infection using ITMs, focal insecticides sprays and environments management.
- A well coordinated movement through stronger capacity to health sector and community-level effort.
- Focused research to develop and test new technologies/strategies.
- Coordinated movement focusing on developing stronger capacity of the health sector and involving community.
- A dynamic global partnership supported by a coalition of partners working within a common approach.

**RBM Technical Strategies**

RBM gives priority to four technical strategies: prompt access to effective treatment; promotion of ITNs, and improved vector control; prevention and management of malaria in pregnancy; and improving the prevention of and response to malaria epidemics and malaria in complex emergencies. It seeks to expand the use of interventions which are already known to be effective in tackling malaria and to encourage the research necessary for improved interventions to be developed and deployed in the future, including new and better drugs and insecticides as well as malaria vaccines.

1. **Rapid, effective treatment of persons with malaria at home or in a health facility within 24 hours of onset of symptoms:** As 60 percent to 80 percent of malaria cases are treated in the community, efforts must focus on ensuring that correct treatment is available at or near the home of patients. RBM promotes Integrated Management of Childhood Illnesses (IMCI) as a key intervention for improving management of children with fever at health facilities and in the community.
2. **Widespread use of insecticide-treated materials (ITMs) and other appropriate methods to limit human-mosquito contact:** In areas with high levels of malaria transmission, regular use of an insecticide-treated bed net can reduce mortality in children less than 5 years of age by as much as 30 percent and has a significant impact on anaemia. Similar or greater benefits have been achieved for pregnant women and in other regions.

3. **Prevention of malaria in pregnant women living in high transmission areas:** In areas in which malaria is highly endemic, the incidence of low birth-weight (a leading cause of neonatal mortality) can be reduced by as much as half through the use of intermittent presumptive treatment (IPT) with drugs such as sulfadoxine-pyrimethamine.

4. **Detection and appropriate response to epidemics within two weeks of onset:** Detection of epidemics requires timely, complete surveillance of malaria cases and monitoring of weather patterns. Reserve drug stocks, transport, and hospital capacity are needed to mount an appropriate response. In some epidemic zones, well-timed and targeted vector control activities have minimized the impact of epidemics.

**Focused Strategic Choices**

RBM is a broad based strategy requiring well focused and agreed action. The action should be based on consensus among the key stakeholders and well targeted. The following are the key considerations for this purpose.

1. **Target the population at-risk:** In areas with high-level malaria transmission, severe morbidity and mortality is mostly confined to children <5 years of age and pregnant women. All persons living in areas of low or moderate transmission and non-immune visitors to malarious areas are at risk.

2. **Promote evidence-based decision-making:** Because the epidemiology of malaria differs between and within regions, programme priorities must be based on relevant information gathered through routine surveillance and operational research. In particular, periodic drug efficacy studies are essential for guiding malaria treatment policies. Surveillance and HMIS systems also require strengthening.

3. **Improve quality of treatment:** Recognizing that most people seek treatment outside of public sector, strategies to improve treatment practices must include public, private, and NGO facilities, traditional healers, community practitioners, pharmacies, and drug sellers.

4. **Treatment at home:** Education campaigns to improve caretakers’ abilities to recognize illness and danger signs in their children, seek care appropriately, and provide correct treatment are essential components of any malaria control strategy.

5. **Malaria as vertical programme:** Many of the activities required by successful malaria control programmes (e.g., training of health workers, education campaigns, and improvement of drug availability) are also essential components of other disease control programmes. Integration and coordination of activities should be encouraged as it benefits malaria control activities.

6. **Capacity development through partnerships:** NGOs, communities, and the private sector may have clear comparative advantages in community education and social marketing campaigns and in distribution of essential commodities such as ITMs and insecticides. The public sector has the primary responsibility for policy-making, standard setting, quality control, targeted subsidies, and regulation.
7. Involve all actors and sectors: Malaria control strategies require collaboration of other actors in the health sector (e.g., maternal child health and reproductive health). Collaborative design of operations in other sectors (e.g., agriculture, water and power, infrastructure) can mitigate malaria risk. Education and information sectors have key roles in educational campaigns.

RBM Partnership in Action
For RBM partnership to be effective within malaria-affected countries, a range of actions at global and regional levels would be required.

- Initiate carefully planned processes to support consensus, establish partnerships, and support effective action within malaria-affected countries.
- Ensure that country and regional offices of different partner agencies (including WHO) have the capacity to support these processes.
- Arrange for countries to receive technical support, when they want and need it, in order to help develop in-country capacity to build on successes of the past and undertake appropriate action to Roll Back Malaria.
- Mobilize commitment and resources from the global partnership to help countries prepare their Roll Back Malaria strategies and to finance them as they move from conventional malaria control programmes to Roll Back Malaria.
- Implement a global advocacy strategy for Roll Back Malaria.
- Implement systems to monitor progress at country, regional, and global level.
- Further develop the global partnership at annual meetings and other events.

Make strategic investments in research and other initiatives to develop effective new products for diagnosis, treatment and prevention of malaria.

RBM and Pakistan
As part of its international commitment, WHO has been actively supporting advocacy for the implementation of RBM in Pakistan. The National Programme Managers in a regional meeting held in Damascus, Syrian Arab Republic, 1–3 April 2001, had agreed to place countries in the Eastern Mediterranean Region under four broad groups in the context of malaria control.

- **Group 1:** Countries that have achieved interruption of malaria transmission: Bahrain, Cyprus, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Palestine, and Tunisia.
- **Group 2:** Countries where malaria is firmly under control and which are aiming for complete eradication: Egypt, Morocco, Oman, Syrian Arab Republic, and United Arab Emirates.
- **Group 3:** Countries with a moderate endemicity and relatively well-established control programme: the Islamic Republic of Iran, Iraq, Pakistan, and Saudi Arabia.
- **Group 4:** Countries with a severe malaria problem and/or threatened by epidemics and complex situations: Afghanistan, Djibouti, Somalia, Sudan, and the Republic of Yemen.
The RBM programme in the Eastern Mediterranean Region was launched in 1999. Different countries in the region would have to follow diverse objectives depending on their level of malaria control. However, the overall objectives of the regional RBM programme are to:

- Halve the malaria burden (incidence, severity, and mortality) in countries with severe malaria problem and/or with damaged health systems by 2010 (Group 4: Afghanistan, Djibouti, Somalia, Sudan, and Yemen)
- Prevent malaria mortality and reduce malaria morbidity by 50 percent by 2010 in countries with low/moderate endemicity and with functional health systems and effective malaria programme (Group 3: Islamic Republic of Iran, Iraq, Pakistan, and Saudi Arabia)
- Eliminate residual foci of malaria by 2006 in countries where malaria transmission has been recently interrupted or where there are only a few residual foci for which eradication is feasible and sustainable (Group 2: Egypt, Morocco, Oman, and Syrian Arab Republic).
- Prevent re-establishment of malaria transmission in malaria-free countries (Group 1: Bahrain, Cyprus, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Palestine, Qatar, Tunisia, and United Arab Emirates)

The priority actions agreed for group 3 and group 4 countries (including Pakistan) are as follows.

- Ensuring early detection and management of cases.
- Predicting, early detection of and prompt control of malaria epidemics.
- Development of a system for continuous monitoring of the therapeutic efficacy of drugs.
- Reorientation of surveillance and information system towards the monitoring of morbidity and the incidence of severe malaria.
- Rationalization of vector control: Preventing and controlling malaria using sustainable vector control measures.
Annex B

Assignment for Development of Strategic Plan

All member countries of RBM are supposed to develop strategic plan to combat malaria problem as part of commitment with international community and to discharge their responsibility to protect their people from this deadly disease. The global movement for reduction of poverty (PRSPs and MDG) also requires focus on pro-poor investments. Malaria programmes are established pro-poor endeavours and are amongst the best strategic choices to combat poverty.

Justification for Government Intervention in Malaria Control

There are two main justifications for government intervention in malaria control – the first being equity. Lack of purchasing power is a fundamental constraint to effective malaria control interventions for much of the population. The research has indicated that poverty and malaria are highly correlated. The burden of disease can have important economic costs for very poor households, and complicated illness can drive households into poverty. Poor households are also likely to have access only to the more informal parts of the private sector, where quality is probably the lowest. They may not be able to afford preventive measures at all. Hence, poverty and equity considerations provide powerful justifications for a strong public role.

The second support for government action against malaria could be based on a range of market failures. This means that purely private delivery and financing of malaria control interventions would lead to inefficient outcomes from society’s point of view. There are three main sources of market failure in malaria control.

• **Public goods**: These have benefits which cannot easily be provided to some and withheld from others, meaning that they are unlikely to be provided at all in the private sector. Malaria control examples include environmental management at the community level, indoor residual spraying, provision of health education to the general population, and epidemic surveillance.

• **Externalities**: These arise when a service provides benefits to the community above and beyond those enjoyed by the individual. Examples include rational drug use, which provides positive externalities to future patients in the form of a reduction in the rate of growth of resistance. Insecticide-treated nets (ITNs) may also have positive externalities if they reduce malaria transmission. In making their choices, individuals will not take into account these additional positive effects and may consume less than the socially desirable quantity.

• **Information**: Free markets do not work well when buyers or sellers lack information, or when providers have significantly more information than consumers (‘asymmetric information’). For instance, patients lacking information may purchase inappropriate drugs or consume sub-therapeutic doses of anti-malarials.

Rationale for Development of Strategic Plan

There are a number of factors that have forced the Government of Pakistan to undertake the assignment for the development of Strategic Plan for the implementation of RMB in the province. Besides issues of sufferings, pain, misery, and discomfort attached with the health problems, the following basic considerations form basis for developing a programme to combat a particular health issue.
• The burden of the disease in terms of morbidity and mortality is an important consideration. The management of a disease with high incidence/prevalence under a programme provides opportunity to resolve the health problem in shorter period of time and helps to improve the health status of the people.

• The focus on target group worst hit by the disease could be one consideration for developing a plan/programme. Malaria is a known disease of poor and reduction of malaria helps to reduce poverty. The children and the pregnant women are another major target of this disease.

• The potential for creating epidemic is another consideration to prepare a disease focused programme. Malaria has the worst potential for epidemic that can be a major health problem and lead to serious human tragedy.

• The availability of technically feasible and socially acceptable solutions for cure and prevention are essential to design disease control programme. Malaria control interventions are well tested, cost effective and backed by international experience.

• There is a growing realization amongst the stakeholders and commitment of the government to invest resources for management and prevention of the disease. This commitment is demonstrated through Role Back Malaria partnership.

The current situation seems the most favourable for the development of Strategic Plan for control of malaria in NWFP.

• As part of government’s commitment to the RBM partnership.

• Realization about potential threat for epidemic, especially in the context of diminishing natural immunity due to low endemic level in most of the areas for sufficiently long period of time.

• Possibility of availability of additional resources and support for health sector, including malaria from the international partners and the Global Partnership partners.

• Population groups worst affected by malaria are the target groups for all major social sector programmes, including donor supported initiatives especially those relating to PRSP and MDGs.

• The development of strategic plan is one of the requirements of the DFID supported initiatives for National Health and Population Facility.

• The support for Roll Back Malaria is available from different international donors working in health sector in NWFP.

**Strategic Plan Development**

In response to this commitment, the Government of Pakistan has initiated a process to prepare Strategic Plan at the federal as well as provincial levels, including FATA and AJK. TAMA is supporting the process for the development of the plan. M/S Contech International Health Consultants has been charged with this responsibility. The assignment is to develop plan for the revival of a programme that has been exposed to a series of episodes of change processes in the past. The problem of malaria has changed a lot over two to three decades in terms of technology of solutions, behaviour of vector/parasites and even the sociology/economics of the human. The programme structure is partially intact but currently available solutions/technologies are not adequately known either to the decision-makers or to the services providers. The complexity of the assignment is further deepened by non availability of adequate and relevant information.
Assignment Scope
The consultancy assignment for revision of Provincial Strategic Plan, including costing has been designed as a part of overall plan to improve planning and implementation of federally supported programmes for the health and population sector under National Health & Population Facility (supported by DFID). The salient features of the assignment are as follow.

1. The assignment aims at development of Strategic Plan for implementation of RBM strategy in NWFP.

2. The proposed plans will derive basic stuff from the available plan, outcome of the consultations with the stakeholders, analysis of the available data from the secondary sources and other programme related documentation and the international experience.

3. The proposed plan would cover a period of five years – in line with the Five Year Plan.

4. The assignment would cover preparation of comprehensive Provincial Plan. The Provincial Plan would cover integrated vision, including cross-cutting issues and commonalities. The provincial plan would focus more on province specific programme issues.

5. The Plan would cover macro operations planning, broad costing and resources issues that would help to prepare cases (PC-1 forms or the budget proposals) for getting additional resources.

Assignment Methodology
A multi-disciplinary team was deployed by the consultant comprising team leader, a public health physician having extensive experience in malaria, and a financial expert. The team was supported by other professionals and support staff. The Technical Working Group constituted by the government involving MoH, WHO, Global Fund Partners technically supported and guided the assignment team.

The assignment comprised two basic components. Review and analysis of literature, documents, and secondary data related to malaria and malaria control programmes comprised the first component. The second component comprised soft information, opinions and wisdom of the stakeholders that will provide insight of the programme issues. Extensive involvement of key stakeholders in the development of the plan through consultative process was the basic methodology for the assignment. Consultative process included provincial and national consultative workshops with stakeholders and in depth interviews with key informants. The assignment team used the following techniques for the completion of various components of the assignment.

1. Literature/documentation review to develop clearer understanding of the current global, national, and provincial situation. This review has provided basis for the further work on the assignment.

2. Collection of relevant data from secondary sources including budgetary details, programme operations, programme outcomes, human resource data, etc.

3. Semi-structures group discussions with National Programme Management team to identify key stakeholders of the Programme.

4. Holding of provincial and national workshops using structured instruments with focus on identification of strengths and weaknesses of the health care system in the context of different RMB interventions. Broad recommendations for improvement were also provided by the participants.
5. In depth interviews with key stakeholders for more detailed information and learned opinions.

6. Continued interactions with programme team and Contech International for guidance and feedback.

7. Share preliminary findings with National and Provincial Programme Management and get feedback.
Annex C

Discussion with HMIS Design Team
Malaria Related Indicators Proposed for Inclusion in Revised HMIS

I. Malaria Specific Indicators
1. Malaria (suspected or confirmed) cases per 1,000 population.
2. Percentage of complicated (suspected/conformed) malaria cases admitted in the facility.
3. Deaths per 100 cases of malaria admitted in the facility.
4. Slide Positivity Rate.
5. Proportion of Falciparum cases out of total MP positive slides.
6. Annual Blood Examination Rate (ABER).

II. General Indicators
1. Percentage of facilities with functional equipments/units, e.g., dental unit, radiology, ECG, USG, anaesthesia machine, ambulances, vehicles. (Microscope could be added to this list.)
2. Percentage of staff positions those are filled/occupied, by staff category. (Malaria related staff could be added to this list.)
3. Stock out of tracer drugs and supplies. The tracer drugs can be Tablet Cotrimoxazole, Syrup Cotrimoxazole, Syrup Paracetamol, Cap Amoxycillin, Tablet Choloquine, Tablet Atenolol, Tablet Iron folate, ORS, ARV and ASV. For THQH and DHQH, the list would include more drugs and other consumables. (Malaria related drugs and consumables could be added to this list.)
4. Disease profile of discharged/LAMA/death cases from hospital indoors. This indicator may be stated as ‘Disease profile of admitted patients’. Yearly compilation of number of cases according to broad disease category (or ICD-10 classification) admitted in the hospital. (Malaria should be part of this list.)
5. Top five communicable disease cases and five non-communicable disease cases admitted in the wards. (Malaria should be part of this list.)
6. Top five communicable diseases and top five non-communicable diseases attended at the OPD (in case of BHU and RHC). In case of THQH and DHQH, top five diseases by each specialty. (Malaria should be part of this list.)
7. Percentage of deaths among admitted cases: Not appropriate for RHC level where serious cases are referred out to D/THQH. Appropriate for D/THQH. But if an RHC is well functioning, this indicator may be considered. (Malaria should be part of this list.)
8. Percentage of LAMA (Left Against Medical Advice) cases among total admissions. (Malaria should be part of this list.)
9. Number of cases of immediate notifiable diseases and unusual diseases/events (Malaria should be part of this list.)
10. Annual case load profile according to broad disease classification. (Malaria should be part of this list.)

11. Proportion of OPD patients attending the facility provided diagnostic (lab, X-ray) services. (Malaria should be part of this list.)

12. Percentage of referred cases as proportion of total OPD attendance. (Additional information, origin of the patient and disease segregation, may be considered. Malaria should be part of this list.)

13. Average daily OPD attendance. (Total attendance for both curative and preventive services should be included to depict total workload.)

14. Number of trained medical/paramedical staff specific topics (e.g., emergency care, emergency obstetric and newborn care, special programme related training, management training) – at the time of reporting. (Malaria case management and diagnostic skills/trainings could be included.)

15. Percentage of under 5 diarrhoea cases out of total under 5 patients attending OPD. (Similar indicator for malaria could be included.)

16. Diarrhoea case fatality rate among admitted under 5 years old patients. (Similar indicator for malaria could be included.)

17. Percentage of facilities with appropriate EPI cold chain. (Similar indicator for microscopy for malaria could be included.)
## Strategic Plan for Malaria Control Programme
### Programme Monitoring and Evaluation
#### Impact, Outcome, and Output Indicators

<table>
<thead>
<tr>
<th>Indicators/Area</th>
<th>Definition/Formula</th>
<th>Source of Data</th>
<th>Level</th>
<th>Frequency</th>
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<tbody>
<tr>
<td><strong>Impact Indicators</strong></td>
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</table>
| Reduction in overall incidence of confirmed malaria cases (reported cases) | **Numerator:** Total no. of confirmed reported malaria cases  
**Denominator:** total population in the catchments areas around the selected sentinel sites  
**Expressed as:** Rate per 1,000 population per year | HMIS/NMCP Surveillance data (Annual sentinel sites report) | Provincial | Quarterly |
| Reduction in malarial deaths in all age groups (probable and confirmed) | **Numerator:** Total no. of reported malaria deaths (probable and confirmed) per year among targeted groups  
**Denominator:** total population in the catchments areas around the selected sentinel sites  
**Expressed as:** number of malaria deaths per year | HMIS (Annual statistical report) | Sentinel Site | Quarterly |
| Reduction in severe malaria case fatality rate in sentinel hospitals | **Numerator:** Malaria deaths among admitted severe cases  
**Denominator:** total no. of admitted severe malaria cases  
**Expressed as:** Proportion | HMIS (Annual sentinel hospitals report) | Sentinel sites | Annually |
| Reduction in *P. Falciparum* incidence | **Numerator:** P. Falciparum cases  
**Denominator:** 1000 population malaria cases  
**Expressed as:** Rate | Routine malaria Data & HMIS | District | Monthly |
<table>
<thead>
<tr>
<th><strong>Outcome Indicators</strong></th>
<th><strong>Numerator</strong></th>
<th><strong>Denominator</strong></th>
<th><strong>Expressed as</strong></th>
<th><strong>Survey</strong></th>
<th><strong>Source</strong></th>
<th><strong>Frequency</strong></th>
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<tbody>
<tr>
<td>Children &lt; 5 with fever in last 2 weeks, who received anti-malarial treatment according to national policy within 24 hours from the onset of fever.</td>
<td>No. of children under 5 years old who had a fever (or reported having malaria) in previous 2 weeks who received anti-malarial treatment according to national policy within 24 hours from the onset of fever</td>
<td>total no. of children under 5 years old who had a fever in previous 2 weeks</td>
<td>Proportions</td>
<td>Households Survey</td>
<td>Community</td>
<td>Two yearly</td>
</tr>
<tr>
<td>Proportion of patients (all age groups) with fever in last 2 weeks, who received anti-malarial treatment according to national policy within 24 hours from onset of fever</td>
<td>No. of patients diagnosed (based on clinical or laboratory findings) as having malaria who have access to treatment at FLCFs (Public Sector) according to national treatment guidelines</td>
<td>total no. of patients diagnosed as having malaria</td>
<td>Proportion</td>
<td>Health facility data and household Survey</td>
<td>Facility</td>
<td>Monthly</td>
</tr>
<tr>
<td>Proportion of admitted severe malaria cases correctly managed at public hospital level.</td>
<td>No. of children under 5 years (and other targeted groups) admitted with severe malaria and correctly given anti-malarial drugs and supportive treatment according to national policy</td>
<td>total no. of patients (all age groups) admitted with severe malaria surveyed at hospital</td>
<td>Percentage</td>
<td>Health facility &amp; Household survey</td>
<td>Districts</td>
<td>Yearly</td>
</tr>
<tr>
<td>Metric</td>
<td>Numerator</td>
<td>Denominator</td>
<td>Survey Method</td>
<td>Frequency</td>
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<td>Proportion of 5 years old children, who slept under an ITNs the previous night in targeted areas</td>
<td>No. of children 5 years old (in targeted areas) who slept under a mosquito net the previous night, which has been treated in the last 6 months or has been permanently treated.</td>
<td>Total No. of children &lt;5 years old (in targeted areas) who slept in surveyed households the previous night</td>
<td>Households Survey</td>
<td>Community Two yearly</td>
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<tr>
<td>Proportion of pregnant women who slept under an ITNs the previous night in targeted areas</td>
<td>No. of pregnant women (in targeted areas) who slept under a mosquito net the previous night, who have been treated in the last 6 months</td>
<td>Total No. of pregnant women (in targeted areas) who reside in surveyed households</td>
<td>Households Survey</td>
<td>Community Two yearly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion of houses in targeted areas covered with IRHS</td>
<td>No. of houses sprayed (once or more) with residual insecticide last year in targeted areas</td>
<td>Total no. of breeding sites identified in the area</td>
<td>House hold survey</td>
<td>Selected locality/ Union council Yearly</td>
<td></td>
<td></td>
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<tr>
<td>Proportion of breeding sites targeted for larval control was treated using appropriate methods.</td>
<td>No. of breeding sites treated with the appropriate larval control methods last year</td>
<td>Total no. of breeding sites identified in the area</td>
<td>Programme vector control data &amp; Survey</td>
<td>Union council Yearly</td>
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<tr>
<td>Output Indicators</td>
<td>Numerator</td>
<td>Denominator</td>
<td>Expressed as:</td>
<td>Survey Frequency</td>
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</tbody>
</table>
| Proportion of mothers/caretakers are able to recognize signs and symptoms of a febrile disease in a child <5 years in target districts | **Numerator:** No. of mothers / care takers surveyed at health facility level and found to be properly respond to a febrile disease in a child <5 years at home
**Denominator:** All mothers surveyed during the presence of survey team at health facilities | **Expressed as:** Percentage                                               | Household survey | Community Two yearly |
| Proportion of FLCFs reporting stock-outs of anti-malaria drugs as per national guideline for more than one week in any quarter of the year | **Numerator:** No. of health facilities on the day of survey and with no stock outs of anti-malarial drugs in the last 3 months
**Denominator:** total no. of health facilities surveyed | **Expressed as:** Percentage                                               | Management survey Routine HI system | District HMIS report | Monthly |
| Proportion of laboratories/microscopy centres in public sector functioning according to national guideline | **Numerator:** No. of laboratories working according to nationally recommended guidelines on the day of survey and re-checked of the slides collected showed >90% sensitivity and specificity
**Denominator:** Total no. of laboratories surveyed | **Expressed as:** Percentage                                               | Management survey | District | Yearly |
| Proportion of Lady Health Workers at community level properly recognize and respond to a febrile disease at home | **Numerator:** No. of Lady Health Workers surveyed at community level and found to possessing the required level of skills and knowledge to diagnose clinical malaria & respond to a febrile disease in a child <5 years in the community
**Denominator:** All Lady Health Workers surveyed during the presence of survey team in the catchment area of health facilities | **Expressed as:** Percentage                                               | Survey | Facilities selected from districts | Biennially |
| Proportion of households with at least one ITNs in targeted areas | **Numerator:** No. of households surveyed with at least one ITN within the last 6 months  
**Denominator:** Total no. of households surveyed in targeted areas  
**Expressed as:** Proportion | Households Survey | Community | Biennially |
| --- | --- | --- | --- | --- |
| Proportion of epidemics detected within one weeks of onset and properly controlled locally. | **Numerator:** No. of epidemics detected at facility/district level within 2 weeks during the last 12 months and for which appropriate control measures have been initiated  
**Denominator:** No. of malaria epidemics recorded during the last 12 months in the epidemic prone districts  
**Expressed as:** Proportion | Management survey | Facility | Yearly basis |
Annex E

Pakistan Malaria Control Programme
Suggested Roles and Responsibilities for Different Levels

Federal Level
i. Formulation of programme policy, strategic guidelines, standard operational procedures and quality standards supporting implementation of roll back malaria interventions. These instruments would be developed in consultation with provinces. The agreed policy/guidance would be enforced by the provinces but monitored by the National Directorate of Malaria Control Programme. However, monitoring of implementation of standard operational procedures and quality standards would be the responsibility of the provincial Departments of Health.

ii. Provide technical support to the provinces for development of provincial/district malaria programmes, review drafts, and provide guidance for improvement.

iii. Provide technical assistance to provincial malaria control programmes, including technical and operational guidelines, development of training packages/materials, and training of master trainers. The reproduction of technical and operational guidelines and training material and conducting training would be the responsibility of the provincial governments who would arrange funding from the provincial resources for this purpose.

iv. Responsibility for inter-provincial coordination, including periodic situation review meetings, exchange visits, programme consultations, etc.

v. International coordination, including Roll Back Malaria partners and other bilateral/multilateral support agencies, overseas institutions, international NGOs, and malaria programme in other Asian countries.

vi. Monitoring and surveillance, including maintenance of database, preparation of periodic reports for international partners, drug resistance surveillance, etc.

vii. Arrange programme evaluation with help of partners as and when decided by the government.

viii. Advocacy, including the use of media and other occasions, development of education/advocacy strategies and materials, etc.

ix. Development of research guidelines and annual research plan in consultation with the provinces. Also work as clearinghouse for malaria related research to ensure that the research proposals are well focused and would contribute to improvement of the Programme performance. Also arrange funds for the studies of national characteristics/significance.

x. Procurement of major equipment and supplies for sake of standardization and economy.

xi. Develop capacity and update facilities and human resource for NIMRT Lahore and other research and public health institutions to revive specialized training to malaria staff for entire country.

Provincial Malaria Control Programmes
i. Plan province-wide implementation of roll back strategies/activities in light of national policy/strategy/guidelines in consultation with districts. The proposed plans will be shared with the National Malaria Control Programme for review/feedback.

ii. Provide technical guidance and facilitate districts to prepare district implementation plans for Roll Back Malaria.
iii. Coordinate and monitor implementation of district/provincial plans and facilitate implementation of province related activities of the national programme.

iv. Coordinate and facilitate districts for procurement of quality anti-malarial drugs, insecticides, and other supplies as per national policy.

v. Prepare annual analysis of resource availability for malaria control for different districts and take up the matter with provincial and the district government if some gross under-funding is identified.

vi. Plan, organize, and coordinate training programme for different malaria related trainings with districts, PHDC/DHDCs/NIMRT and other institutions. Develop system to monitor quality and contents of trainings.

vii. Supervise and monitor programme activities in the districts to ensure province-wide uniformity of case management practices.

viii. Prepare periodic reports for provincial review and provide data to the National Malaria Control Programme for national level reports. Also provide feedback to the districts on programme performance and guide for remedial measures.

ix. Develop system for quality control services of the microscopy network in the province and monitor its implementation.

x. Implement and co-ordinate advocacy/community awareness activities in the province by adapting national materials and messages to provincial context.

xi. Provide technical support to develop capacity in districts for early detection and control of malaria outbreaks/epidemics.

xii. Coordinate with governmental and non-governmental organizations working in malaria and other communicable disease control (such as TB) activities in the province. This also includes coordination with municipalities and local bodies for insecticidal spraying activities.

xiii. Develop and experiment innovative approaches for management of malaria in diverse situations in the province.

xiv. Design and conduct operational research and participate in the programme evaluation exercise.

**District level**
The district is the ultimate unit responsible for the management of health care programmes, including malaria control programme. The district would guide the actual implementation process for the malaria control interventions and responsible for the following functions.

i. Prepare annual work plan for malaria control for the district under the guidance of the Provincial Malaria Control Programme and secure adequate funds for its implementation from district, province, or other source.

ii. The EDO would facilitate the work of district focal person (i.e., District Officer Health or Deputy District Officer Health) for effective planning and implementation of RBM activities.

iii. Develop and implement system for supervision and monitoring of malaria related activities in the district as an essential and integrated part of health care system.

iv. Facilitate the delivery of quality malaria care through primary health care facilities and community-level health workers. Also coordinate between the primary and secondary level malaria care in the district to ensure proper management of referrals of malaria cases.

v. Facilitate and coordinate research activities in the district and provide required information support for provincial/federal programme monitoring system.
vi. Arrange, distribute, and maintain malaria supplies, including drugs, reagents, insecticides, slides, forms, guidelines, education materials, etc.

vii. Develop comprehensive early warning system and ensure epidemic preparedness for control of malaria in the district.

viii. Plan and implement trainings through DHDCs and relieve/recommend for trainings at provincial and national level.

ix. Develop public-private partnership in malaria control interventions, including promotion of ITNs.

x. Review other development projects in the districts to estimate their possible impact in health sector and follow up with the concerned authorities for remedial measures if required.

xi. Coordinate with other key stakeholders in the district, including district level departments, private sector health services providers, NGOs and communities to secure their support for malaria related activities in the district.

xii. Plan and implement health education and BCC activities in the district.

xiii. Participate in and facilitate the operational research activities in the district.

xiv. Identify microscopy centres and assess their strengthening needs, in terms of staff training, equipment, laboratory supplies, etc.

xv. Facilitate the selection of trainees from various health facilities for different training programmes.

xvi. Conduct entomological studies in the areas identified as 'potential risk localities' (basis: case records for previous year).

xvii. Identify localities for focal survey and arrange procurement of required insecticides and also plan/implement other vector control activities.
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<thead>
<tr>
<th>Districts</th>
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<th>Positivity</th>
<th>PCD Slides</th>
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<th>Positivity</th>
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<th>Other Classification</th>
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<th>Vivax</th>
<th>Falcip.</th>
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Strategic Plan for Malaria Control in NWFP
Malaria Related Data for NWFP
(2000-2004)
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<th>PCD Slides</th>
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<td><strong>168,927</strong></td>
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## NWFP Malaria Control Programme
### Strategic Plan for Malaria Control 2005-2010
### Plan Implementation Matrix

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<th>Strategic Area</th>
<th>Intervention Activities</th>
<th>Years</th>
<th>Responsibility</th>
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<td>I</td>
<td>II</td>
</tr>
<tr>
<td><strong>Availability of standardized MCP case management guidelines</strong></td>
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<tr>
<td>1.1</td>
<td>Supply of standardized case management guidelines for adults and children to province</td>
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<tr>
<td>1.2</td>
<td>Supply of standardized case management guidelines for adults and children to districts</td>
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<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Supply of standardized case management guidelines for adults and children at service delivery outlets, both public and private</td>
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<tr>
<td><strong>Strengthening Laboratory Diagnostic Services</strong></td>
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<tr>
<td>1.4</td>
<td>Needs assessment for establishment of microscopy centers</td>
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<tr>
<td>1.5</td>
<td>Revise PCI form in light of strategic plan</td>
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<td>1.6</td>
<td>Implementation of referral system for malaria microscopy and diagnosis</td>
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<td>1.7</td>
<td>Built provincial consensus on modified role of CDC/malaria supervisor in context of providing malaria control services through integrated health services</td>
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<td>1.8</td>
<td>Implementation of national policy for use and promotion of rapid testing techniques for public as well as private sectors</td>
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<td><strong>Strengthening prompt treatment</strong></td>
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<td>1.9</td>
<td>Assessment of vacancy position of malaria related posts and advocacy for recruitments</td>
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<td>1.10</td>
<td>Needs assessment for provision of antimalarial drugs and laboratory consumables</td>
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<td>1.11</td>
<td>Training of health care providers (public &amp; private) on case management guidelines</td>
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<tr>
<td><strong>Vector Control</strong></td>
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<td>2.1</td>
<td>Implement national policy and criteria for residual focal spraying</td>
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<td>2.2</td>
<td>Organize provincial discussion on GR updating including exploration of possibilities for use of GR for other programs and bring LHWs in the loop for updating GR</td>
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<td>2.3</td>
<td>Pilot implementation of impregnated bed nets with basic focus on social aspects, acceptability and access of poor and its gradual scaling up</td>
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<tr>
<td><strong>Larviciding</strong></td>
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**Annex G**
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<th>Strategic Area-4 Behavioral Change Communication</th>
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<td>2.4 Implement MCP larviciding guidelines</td>
<td>3.1 Develop plan to establish epidemic forecasting/ early warning system center making use of modern information technology</td>
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<tr>
<td>Provinces/Districts</td>
<td>Provinces/Districts</td>
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<tr>
<td>2.5 Experimentation of innovative approaches to eliminate breeding places in high endemic areas through rational use of larvicides and biological measures through intersectoral coordination</td>
<td>3.2 Build capacity of the health system managers and related services delivery staff for epidemic forecasting and effective response</td>
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<tr>
<td>Provinces/Districts</td>
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<tr>
<td>Environmental management</td>
<td>3.3 Develop plan for revolving resources reserve for epidemic control including policy for procurement of supplies, periodic replenishment and their disposal before expiry date. The modalities for funding and stocking would also be finalized</td>
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<tr>
<td>2.6 Encourage community based actions and volunteer participation in source reduction</td>
<td>National/Provinces</td>
</tr>
<tr>
<td>Provinces/Districts</td>
<td>3.4 Dissemination of malaria related knowledge and information to media</td>
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<tr>
<td>Parasite control</td>
<td>Improving surveillance</td>
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<td>2.7 Inter-sectoral coordination in environmental management</td>
<td>3.5 Implementation of Integrated of malaria reporting system with HMIS</td>
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<td>Provinces/Districts</td>
<td>Provinces/Districts</td>
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<tr>
<td>2.8 Improved early diagnosis and prompt treatment</td>
<td>3.6 Training of managers and health care providers (public &amp; private) on epidemic surveillance and control</td>
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<td>Districts</td>
<td>Provinces/Districts</td>
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<tr>
<td>System Development</td>
<td>Strengthening of Health Education activities at Province/Districts</td>
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<tr>
<td>3.1 Develop plan to establish epidemic forecasting/ early warning system center making use of modern information technology</td>
<td>4.1 Creation of Health Education units at all districts to provide BCC services for all health programs including malaria control</td>
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<td>Provinces/Districts</td>
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<td>3.2 Build capacity of the health system managers and related services delivery staff for epidemic forecasting and effective response</td>
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<td>3.3 Develop plan for revolving resources reserve for epidemic control including policy for procurement of supplies, periodic replenishment and their disposal before expiry date. The modalities for funding and stocking would also be finalized</td>
<td>4.2 Distribution of BCC material developed by DMCP</td>
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</tr>
<tr>
<td>3.4 Dissemination of malaria related knowledge and information to media</td>
<td>Social mobilization</td>
</tr>
<tr>
<td>National/Provinces/Districts</td>
<td>4.3 Develop provincial plan for health education with a strong component of behavior change communication for malaria control</td>
</tr>
<tr>
<td>Provinces</td>
<td>Provinces</td>
</tr>
</tbody>
</table>

46
| Strategic Area-5 | | | Provinces/District |
|----------------|-------------------|------------------|
| 4.4            | Launch BCC campaign using all available channels | | |
| 4.5            | Advocacy to motivate districts for allocation of sufficient budget and resources to support BCC and social mobilization activities in the district in the local context | | Provinces/District |
| 5.1            | Implementation of a comprehensive program with consensus for functional integration of programs at services delivery level | | Provinces/District |
| 5.2            | Develop and implement plan for intersectoral coordination, involvement of private sector and communities | | Provinces/District |

### Integration of Management Information System

| Strategic Area-6 | | | Provinces/District |
|-----------------|-------------------|------------------|
| 6.1             | Implement integrate malaria reporting modified design of HMIS being supported by JICA | | Provinces/District |
| 6.2             | Implement system for comprehensive and integrated supervision and monitoring for all programs including malaria. Supervisory checklists and reporting mechanism will be improved | | Provinces/District |
| 6.3             | Implement comprehensive surveillance system being developed by the government with technical support from WHO and World Bank | | Provinces/District |

### Support to District

| Strategic Area-6 | | | Province |
|-----------------|-------------------|------------------|
| 6.4             | Provide support for the districts to build capacity to analyze and use data collected through HMIS and surveillance reporting in decision making at district | | Province |
| 6.5             | Continuous training of staff for improvement of data quality, coverage and use would be made part of normal operations of the district and provincial health system | | Provinces/District |
| 6.6             | Develop plan for provision of appropriate transport to staff working for malaria surveillance and monitoring | | National/Provinces/District |

### Evaluation Surveys

| Strategic Area-6 | | | National/Provinces |
|-----------------|-------------------|------------------|
| 6.7             | Design and conduct malaria prevalence survey(s) to identify the true burden of the disease and get the baseline data. | | National/Provinces |
| 6.8             | Design and conduct entomological surveys, longitudinal surveys, parasite and mosquito susceptibility surveys, etc. | | National/Provinces |

### ACD/PCD

| Strategic Area-6 | | | Province/District |
|-----------------|-------------------|------------------|
| 6.9             | Implement Passive Case Detection (PCD) as main strategy and Active Case Detection (ACD) in areas of high epidemiological importance such as flood affected areas and during epidemics/out breaks | | Province/District |

### Strategic Area-7 Malaria Related Research

| Strategic Area-7 | | | Province |
|-----------------|-------------------|------------------|
| 7.1             | Develop provincial level prioritized agenda for malaria related research. Identification of priority research areas, roles and responsibilities of different levels and expected contribution from different institutions | | Province |
### Strategic Plan for Malaria Control
#### Analysis of Strengths and Weaknesses of Health System

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Situation on Early Diagnosis and Prompt Treatment</td>
<td></td>
</tr>
<tr>
<td>• The diagnosis of malaria is not new to health care system in Pakistan.</td>
<td>• The private sector that caters for the major part of curative services (75-80 percent) is</td>
</tr>
<tr>
<td>Comprehensive infrastructure in terms of health facilities, human resource,</td>
<td>operating independently and has minimum contact with public health care system, especially the</td>
</tr>
<tr>
<td>diagnostic equipment, knowledge, skills, funds, etc., is available in the</td>
<td>malaria related infrastructure. Resultantly, the activities of the private sector are not</td>
</tr>
<tr>
<td>public as well as private sector.</td>
<td>coordinated. The treatment policy/guidelines developed by the government are not adopted in the</td>
</tr>
<tr>
<td>• The required first and second line drugs are adequately available in the</td>
<td>private sector. The promotional activities of the drug industry are the key source of knowledge/</td>
</tr>
<tr>
<td>market. The medicine market is responsive and new products are quickly</td>
<td>information for the care providers in the private sector.</td>
</tr>
<tr>
<td>introduced in Pakistan. Adequate infrastructure and trained human</td>
<td>• The services provision in private sector is expensive, hence limiting access for the poor. Further,</td>
</tr>
<tr>
<td>resources are available for treatment of complicated cases.</td>
<td>it is not obligatory on the private care providers to participate in preventive activities or support</td>
</tr>
<tr>
<td>• The availability of LHWs is a new opportunity that can provide an</td>
<td>disease surveillance efforts of the government. The efforts to involve private sector in malaria</td>
</tr>
<tr>
<td>effective link with communities.</td>
<td>control in the past have been limited and fragmented.</td>
</tr>
<tr>
<td>• The network of DHDC/PHDC is a blessing. This network has adequate</td>
<td>• The public sector health care system has problems of absenteeism, poor resources availability</td>
</tr>
<tr>
<td>number of trained trainers/master trainers and training of the health</td>
<td>/management, poor referral system, fragmented information flow, and weak horizontal links. The</td>
</tr>
<tr>
<td>staff are being done through network.</td>
<td>non-availability of the staff at most of the services delivery facilities, especially those in the</td>
</tr>
<tr>
<td>• A comprehensive set up for the pre-service training and academic</td>
<td>rural areas, is a major constraint limiting access to services.</td>
</tr>
<tr>
<td>institutions also available.</td>
<td>• Training to introduce standardized malaria case management has been limited in public as well as</td>
</tr>
<tr>
<td></td>
<td>private sector. The skills of the relevant staff for malaria case management would require updating</td>
</tr>
<tr>
<td></td>
<td>as soon as national guidelines are finalized. Lack of agreed national treatment guidelines gives</td>
</tr>
<tr>
<td></td>
<td>rise to varied case management practices.</td>
</tr>
<tr>
<td>Strengths</td>
<td>Weaknesses</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>• The shortage, intermittent and fragmented supply of medicines and other consumables in the public sector institutions is another major issue. The position becomes more difficult in rural areas where pharmacy shops are few and provide limited services.</td>
<td></td>
</tr>
<tr>
<td>• Lack of monitoring, supervision, and accountability leaves serious concerns that must be addressed through strategic plan.</td>
<td></td>
</tr>
<tr>
<td>• The distribution of funds requires rationalization and decentralization. Lack of rational/long term planning, effective system for proper maintenance of diagnostic equipment are other issues require immediate attention.</td>
<td></td>
</tr>
<tr>
<td>• The emergence of drug resistance especially for cheap and commonly available drugs would pose serious problems for the programme.</td>
<td></td>
</tr>
<tr>
<td>• There is no incentive system for good performing staff that is leading to low level of staff motivation.</td>
<td></td>
</tr>
<tr>
<td>• The second and third line drugs are expensive. The malaria treatment might raise access issues for poor.</td>
<td></td>
</tr>
<tr>
<td>• The system for quality control and standardization is lacking for diagnostic procedures leading to low quality results. The poor staff skills further lower quality and lose confidence of the users.</td>
<td></td>
</tr>
<tr>
<td>• The MCH centres that are meant for health services for women and children do not provide diagnosis/treatment services for malaria.</td>
<td></td>
</tr>
</tbody>
</table>

**Current Situation on MULTIPLE PREVENTION**

| • The limited but focused lavigiding to eliminate breeding places and insecticides spray to manage vector densities in different areas is another advantage. The spray operations are politically attractive and have potential for |
| • The criteria for selection of sites and houses for focal sprays is not elaborate leaving space for political manoeuvrability. Resultantly, huge amount of resources are wasted. |
| • The activities relating to vector control |
### Strengths
- The base structure, knowledge, and experience for entomological and vector resistance studies is also available.
- Basic experimentation has recently been started for use of bed nets but it would require some time when Malaria Control Programme can benefit from this proven effective intervention in Pakistan. The culture for use of simple bed nets is not very strong and this intervention might not be socially acceptable. However, successful social marketing experience of some contentious products in the past is a potential worth depending.

### Weaknesses
- Measures are not planned properly and implemented by the field staff without any understanding of their possible impact.
- The malaria staff are inactive most of the time waiting for the supply of vector control materials. The insecticides are centrally procured and supply is mostly intermittent. The supply of other consumables is also fragmented, intermittent, and insufficient.
- There is general shortage of support budget and staff. Lack of transport is seriously hampering performance of both operational as well as supervisory staff. Staff training is lacking due to non-availability of budget.
- The available equipment is mostly outdated and worn out over time.
- The field staff have almost lost focus/interest and are working at low levels of motivation leading to poor quality of work.
- The ITNs and appropriate treatment materials are not available in the market and there is no public awareness. The government budgetary support for this intervention is limited to preparations for limited experimentation. Even if ITNs are made available, these would not be within access of the poor without some well focused subsidy intervention. The subsidy interventions have mostly bad track record in Pakistan.
- The knowledge of the communities about breeding places and locally available material that could be used as larvicides is limited leading to poor community level prevention.

### Current Situation on Epidemic Preparedness
- The support systems like disease surveillance, disease early warning systems, programme monitoring system, meteorological department, etc., are
- The data collection for malaria is fragmented, un-segregated, of poor quality, and delayed. This lowers responsiveness to epidemics. Most of
### Strengths

- HMIS is available and includes data collection relating to malaria. The Malaria Control Programme also has its own data collection system with limited number of indicators.
- The technical expertise to analyze data and recognize warning at early stages is available.
- The press/media are responsive and enjoy freedom for reporting outbreaks and abnormal disease situation.
- Skilled and experienced staff is available. The redeployment of the available staff is possible on short notice in case of outbreaks and epidemics.

### Weaknesses

- The provinces are still handling data manually and analysis is done mostly at the federal level.
- The knowledge and understanding of press/media about dynamics and complexities of malaria epidemics is limited. This gives rise to reporting of false epidemics, thus creating nuisance and wastage of resources.
- Separate resource provision is not available for responding to epidemic situations. The resources for epidemic control are arranged through adjustments at the time of epidemic. This lowers quick responsiveness as substantial time is wasted in arranging required resources.
- Early warning system for malaria epidemic has eroded over time. As frequency and severity of epidemics has come down, the responsiveness of the system has been lowered.
- Devolution has limited the authority of the province for temporary redeployment of malaria staff to epidemic areas.

### Current situation on Malaria Surveillance and Information System

- Adequate infrastructure in the form of network of health facilities and community level health workers, malaria surveillance system, and HMIS is available.
- The disease incidence data is being collected through programme staff as well as HMIS on regular basis and is available for analysis and review.
- A functional supervision and monitoring system is available.
- Budget allocation is available to support monitoring and surveillance activities.
- Tools for data collection and surveillance are available. Skilled staff to collect, process, analyze, and interpret data are available. Adequate computer literacy is

- The shortage of manpower for surveillance and monitoring activities as well programme operations leads to poor performance of the system. Frequent transfers of staff further worsen the situation.
- Most of the staff is not adequately skilled and has poor commitment for data collection and surveillance work.
- Resource availability for surveillance and monitoring is inadequate, intermittent, and fragmented.
- The reporting of data is poor both in terms of quality and coverage.
- PCD which is the major surveillance tool is limited to public sector with an estimated coverage of 20-25 percent.
<table>
<thead>
<tr>
<th><strong>Strengths</strong></th>
<th><strong>Weaknesses</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>there at all levels.</td>
<td>Incidence data is extremely underestimated as private sector does not report.</td>
</tr>
<tr>
<td></td>
<td>• The system for monitoring of disease prevalence and entomological surveillance is not available.</td>
</tr>
<tr>
<td></td>
<td>• The staff supervision system is not effective due to a number of complex reasons.</td>
</tr>
<tr>
<td></td>
<td>• The data collection system and tools require revision and updating to make them need based. MCP and HMIS reporting should be integrated to ensure consistency and coverage.</td>
</tr>
<tr>
<td></td>
<td>• Service provision and reporting is done by the same staff. The data reported is not usually based on ground reality to evade accountability. Alternate system to validate reported data is essential.</td>
</tr>
<tr>
<td></td>
<td>• There is no system for punishment or reward for the staff reporting data.</td>
</tr>
<tr>
<td></td>
<td>• The staff training for data reporting is limited to understanding of the instruments/tools, and processes and does not include ethics, usefulness, and dynamics of data collection.</td>
</tr>
</tbody>
</table>

**Current situation on Behavioural Change Communication**

- The availability of staff support for health education at district and provincial level is a strength available in the health care system.
- The programme support communication experience of EPI in use of media and traditional channels is a real asset. LHWs are an effective means of introducing BCC measures in the community. The available infrastructure is adequately supporting BCC related activities of all major health programmes/interventions.
- Adequate health education material in different forms for communication of messages for malaria control is
- The available infrastructure and resources are too meagre to effectively meet growing needs of the health programmes and new health challenges. The system’s capacity is limited in terms of skills, coverage, and effectiveness.
- The quality of BCC efforts depends on quality of information available on related health issues. The information available for the health sector issues is limited in terms of quality, relevance, depth, comprehensiveness, focus, and coverage.
- The staff availability lacks in terms of number as well as skills. Training opportunities in use of advanced
<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The presence of LHWs equipped with required skills, techniques, and material even in remote location is an excellent alternate to communicate BCC messages.</td>
<td>• The budgetary resources for BCC are limited both in health as well as malaria budget. BCC interventions are though most cost-effective but expensive (cost of media, transport, refreshments for community meeting, etc.).</td>
</tr>
<tr>
<td>• Field malaria staff and staff located at static centres are mostly unexploited potential for interpersonal communication that is an important tool for BCC.</td>
<td>• Poor literacy rate and uncaring attitude of the communities due to lack confidence in public sector services are major issue for BCC efforts.</td>
</tr>
<tr>
<td>• The potential available in private sector for message development, communication, and media research is a big strength. The recent examples of public-private partnership in social marketing of difficult to market services (family planning services) are encouraging.</td>
<td></td>
</tr>
</tbody>
</table>
Strengths | Weaknesses
---|---
department’s staff are available at almost all levels of the government system with potential for coordinating with other departments at that level. The health department’s collaboration with even LG/NGOs is limited.

- **Public-private partnership:** This partnership is inevitable from a number of reasons. The private health sector takes about 75-80 percent of the load of curative services and most of the malaria case management is done there. Unfortunately, private sector is predominantly curative with complex equity and access implications. The preventive care that is primarily public good has not major attraction for public-private partnerships. As private sector in Pakistan has no government control and partnerships remain the only option for collaborative working. A large number of NGOs providing health services are working in the private sector are interacting with the public sector. The policy commitments of the government favour exploring new venues for public private partnerships. Innovative approaches would be required for this purpose.

- **Community participation:** Malaria is a community based problem and can be best managed through community support. The institution of health houses supported by village health committees constitutes a community based network for services provision. The Citizen Community Boards (CCBs) as a part of devolution initiative would provide institutional framework for effective community participation. The communities are mostly cooperative and willing to participate in health delivery activities. The health department can make use of health education to bring about more collaborative working with communities. The present environments are ideally suitable for community based action against malaria.

---

**Current Situation on Malaria Related Research**

- Adequate skilled human resource and institutional support is available in the country that can undertake research assignment of different nature relating to malaria control and programme operations. Institutional support in the form of public health institutions, medical colleges, universities is there to carry out malaria related research. This strength is available in public as well as private sector.

- A number of research institutions such as PMRC, Institute of Malaria Research, etc. are working.

- A culture for evidence based decision-making is developing, creating demand for quality and relevant information. This is a supportive opportunity for research.

- Infrastructure and expertise for conducting surveys (community-based

- The research done is mostly fragmented and response to immediate needs. There is lack of agreed national research guidelines/plan that can guide the research process.

- Emerging drug resistance and resistance to pesticides are new challenges but sufficient scientific evidence is not forth coming for decision-making due to lack of focused research.

- There is a shortage of trained staff and laboratory equipment for specialized research. The capacity of the available staff is limited in terms of skills and experience.

- No malaria related information is being collected in the regular surveys being conducted by different agencies.

- Lack of motivation and incentives for research is another issue.
<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>and household) are available. A number of countrywide surveys are conducted on regular basis with potential to include malaria related question.</td>
<td>• The private sector though actively involved in provision of malaria related services but it is not linked with public sector malaria control activities. It is difficult to guide research in private sector due to this weak association.</td>
</tr>
<tr>
<td>• A number of studies have already been completed and a few more are in process. Quality research done in NWFP provides good experience base.</td>
<td>• The commitment and support of the government for research is unprecedented and researchers are willing to do research on different topics.</td>
</tr>
</tbody>
</table>
# Annex H-1

## Vacancy Position of NWFP

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of Post</th>
<th>NWFP</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>CDC Officer/ Malaria Superintendent</td>
<td>4*</td>
<td>All</td>
</tr>
<tr>
<td>2.</td>
<td>Senior Malaria Superintendent</td>
<td>1*</td>
<td>All</td>
</tr>
<tr>
<td>3.</td>
<td>CDC Inspector/Assistant Malaria Superintendent</td>
<td>-</td>
<td>All</td>
</tr>
<tr>
<td>4.</td>
<td>Entomologist</td>
<td>-</td>
<td>All</td>
</tr>
<tr>
<td>5.</td>
<td>Assistant Entomologist</td>
<td>1*</td>
<td>All</td>
</tr>
<tr>
<td>6.</td>
<td>Senior Microscopist</td>
<td>1*</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Non Medical Evaluator</td>
<td>-</td>
<td>All</td>
</tr>
<tr>
<td>9.</td>
<td>CDC Supervisor/Malaria Supervisor</td>
<td>400</td>
<td>150</td>
</tr>
<tr>
<td>10.</td>
<td>Parasitologist</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>11.</td>
<td>Health Education Officer</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>12.</td>
<td>Assistant CDC Superintendent</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*Malaria positions in NWFP declared as dying cadre.
## Annex I

### Malaria Control Programme: Strategic Plan 2005-2010 - NWFP

#### Cost Estimates Summary (All Figures in Million Rs.)

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Project Phasing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year I</td>
<td>Year II</td>
</tr>
<tr>
<td><strong>Early Diagnosis and Rapid Treatment</strong></td>
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<td>1.88</td>
</tr>
<tr>
<td><strong>Multiple Prevention</strong></td>
<td>0.25</td>
<td>0.25</td>
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<tr>
<td><strong>Epidemic Preparedness</strong></td>
<td>1.19</td>
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<tr>
<td><strong>Surveillance and Program Monitoring</strong></td>
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<td>1.20</td>
</tr>
<tr>
<td><strong>Behavioural Change Communication</strong></td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td>18.73</td>
<td>5.82</td>
</tr>
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</table>

#### Project Contingencies

<table>
<thead>
<tr>
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<th>Year I</th>
<th>Year II</th>
<th>Year III</th>
<th>Year IV</th>
<th>Year V</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td><strong>Physical Contingencies</strong></td>
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<td>0.29</td>
<td>0.32</td>
<td>0.35</td>
<td>0.39</td>
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<td><strong>Price Contingencies’ (pa)</strong></td>
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<td>0.94</td>
<td>0.64</td>
<td>0.70</td>
<td>0.77</td>
<td>0.86</td>
<td>5.03</td>
</tr>
</tbody>
</table>

| Grand Total         | 19.67  | 6.47    | 7.06     | 7.79    | 8.69   | 50.78 |
## Annexure-I

### Malaria Control Programme: Strategic Plan 2005-2010 - NWFP

#### Cost Estimates Summary

<table>
<thead>
<tr>
<th>Sr No</th>
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<th>Cost Estimates</th>
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<th>Year II</th>
<th>Year III</th>
<th>Year IV</th>
<th>Year V</th>
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<tbody>
<tr>
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<td></td>
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<td>10.90</td>
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</tr>
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<td>Early Diagnosis and Rapid Treatment</td>
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<td>Multiple Prevention</td>
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<td>1.19</td>
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<tr>
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<td>-</td>
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<tr>
<td></td>
<td>Surveillance and Program Monitoring</td>
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<td>1.39</td>
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<td>1.26</td>
<td>1.33</td>
<td>1.40</td>
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All Fig in Million (Rs.)
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<tr>
<th></th>
<th>Service Description</th>
<th>Duration 1</th>
<th>Duration 2</th>
<th>Duration 3</th>
<th>Duration 4</th>
<th>Duration 5</th>
<th>Total</th>
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<tr>
<td>1</td>
<td>Trainings</td>
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<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
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<td>Transportation</td>
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<td><strong>Behavioral Change Communication</strong></td>
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<td>Health education unit</td>
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