V. OPERATIONAL RESEARCH

Research plays an important role in the design of new strategies to ensure optimal utilization of resources and maximize the programme outcomes. Research is a key strategic area identified in the National strategic and operational (PC1) plans as well as the new END TB strategy (pillar III) Pakistan. The strategy describes operational researchers as a core component of NTP work. Designing and conducting locally relevant operational researchers can help in identifying problems and workable solutions, testing them in the field and planning for the scaling up of activities.

The main objectives of the unit are:

- Providing research leadership to establish National research/development agendas, attract resources, new researchers and research groups, and develops Institutional networks
- Capacity building activities of NTP and PTP staff on research and surveillance including data management and analysis
- Providing management capacity for carrying out specific research projects to ensure relevance, quality, timeliness, efficiency and accountability
- Developing Critical mass of personnel with Up-to-date R&D skills
- Enabling the Means and opportunities for participating in international R&D
- Developing road maps for new researches based on need and priority of NTP
- Develop Collaborations with international academic institutes to perform international standard Quality Research.

Main Achievements (2016)

1. Successful completion of Pakistan Structured Operational Research and Training Initiative course (SORT IT) in 2016.

National TB Control Program -Pakistan is developing capacity of new researchers and in search of performing good quality Research. We have a well-defined Research unit headed by a qualified trained epidemiologist and researchers who has already got benefit from the Operational Research courses arranged by the Union.

Research Unit, National TB Control Program, Pakistan has a honor to successfully complete the first international SORT IT Operational Research course in Pakistan under the joint collaboration of Global Fund and WHO-TDR. Course was conducted organized in Islamabad. The course was facilitated by the two international(UNION) Dr. Sven Gudmund Hinderaker (Norway), Dr. Einar Heldal (Norway), and Dr. Ajay MV Kumar (India) and three national facilitators and Dr Razia Fatima (Pakistan) and Co-facilitated by Aashifa Yaqoob and Mahboob-ul-Haq from NTP Pakistan. Module 1 & 2 was conducted from 21st March – 2nd April, 2016 (Proposal writing & Data analysis) and Module 3 on 11th – 18th November, 2016 (Manuscript preparation).

Among six participants who successfully completed the course, 5 have already published their paper in international scientific journals and one is under review process.

2. National inventory study to measure TB under-reporting in children in 12 selected districts in Pakistan.

Every day, up to 200 children lose their lives to tuberculosis, which is a preventable and curable disease. In 2015, there were an estimated 1 million children who developed TB and above 60% were missed from health systems.
TB in children is often missed or overlooked due to non-specific symptoms and difficulties in diagnosis. This has made it difficult to assess the actual magnitude of the childhood TB epidemic, which may be higher than currently estimated. Most patients in Pakistan visit at least 4-5 healthcare providers before receiving TB diagnosis, resulting in long treatment delays. Pakistan inventory study carried out in 2012 showed that 27% of TB cases were not notified to NTP and underreporting was 2.5 times higher in age group < 15 years.

NTP, Pakistan conducted a National inventory study in collaboration with WHO with the aimed to quantify the level of under-reporting to the national surveillance system, among diagnosed childhood TB cases. A surveillance system was established among all non-NTP providers in randomly selected 12 districts across Pakistan from April to June 2016. Record linkage was done to measure the underreporting.

Out of 8,056 enumerated children, 7125 were presumptive TB cases. Among the presumptive child TB cases, 5,096 child TB cases (about 10% of them bacteriologically-confirmed and the rest clinically diagnosed) found as part of the study and not reported to NTP and an additional 159 cases that were reported to NTP. Under reporting from the private sector was about ¾ of children that missed from national surveillance system. The study estimated that the proportion of cases notified to the NTP was low. TB surveillance should be strengthened to reduce under-reporting in children.

3. GIS based Innovative strategies to enhance yield from contact tracing among drug resistant TB in Rawalpindi and Islamabad.

WHO recommends contact investigation in close contacts is defined as “living in the same household with TB index cases, either with drug-susceptible TB or with MDR-TB”. Currently in Pakistan there is no standardized routine implementation of household or community-based contact tracing. A pilot study in 2013-15 under the TB Reach Wave 3 project detected more than 4000 TB cases. Based on this experience NTP is now conducting GIS based Innovative strategies to enhance yield from contact tracing among drug resistant TB patients. The project introduces active contact investigation in Rawalpindi and the Capital Territory utilizing all drug resistance notified cases as index cases.
Household contacts, i.e. those normally resident or sharing the same airspace, are verbally screen initially, followed by a widening circle of close community contacts (50 m). The project test all presumptive TB cases by Gene-Xpert identified in the screening for which the evidence available in published articles suggest there is 60% increase expected. The project has started the contact tracing from 1st October 2016. All the data is being entered in GIS enabled mobile phone.

Till 31st May 2017, total of 1918 individuals within household and 50M around the index cases of DR TB patients are screened for TB. Among them 370 are found presumptive TB cases and out of them 16 are found TB positive. This activity will continue till the end of September 2017.

4. Effectiveness and feasibility of 2 months hospitalization (hospital based) and 1 week hospitalization (community-based delivery of care) for multi-drug resistant tuberculosis (MDR-TB) in Pakistan: A randomized controlled trial

NTP is conducting a randomized controlled trial study entitled: Effectiveness and feasibility of 2 months hospitalization (hospital based) and 1 week hospitalization (community-based delivery of care) for multi-drug resistant tuberculosis (MDR-TB) in Pakistan:

The aim is to enable the program to effectively implement multi-component MDR TB management. Two types of service delivery models namely community based (1week hospitalized and early discharge to peripheral care) and hospital-based (2 months hospitalized and late discharge to peripheral care) will be studied for its effectiveness and cost-effectiveness in the low resource settings of Pakistan. In 2016, 100% of the sample (patients) has been enrolled in the study in three tertiary care hospitals i.e. Gulab Devi Lahore, OJHA Karachi and Samli Sanatorium Murree. 90% of the patient’s outcomes have been declared and the remaining are being followed for treatment outcomes.

5. KNOWLEDGE, ATTITUDE AND PRACTICES (KAP) REGARDING HOUSEHOLD INFECTION CONTROL PRACTICES AMONG MDR/XDR TB PATIENTS, IN PAKISTAN

This Research study “Funded by SAARC Tuberculosis and HIV/AIDS (STAC) is facility based cross-sectional survey to assess Knowledge, Attitude and Practices of household infection control measures among MDR/XDR-TB patients and family members. Data were collected through a structure questionnaire regarding household infection control measures from 150 patients and 150 household members who were under treatment in five selected Programmatic Management of Drug-resistant TB (PMDT) sites. These sites were; Gulab Devi Hospital, Lahore, Samli Sanatorium Muree, Ojha Hospital Karachi, LRH Peshawar and Leprosy Hospital Rawalpindi. Each hospital remained with 30 MDR/XDR patients and 30 households which were selected using random sampling from the hospital register.

The median age of respondent was 30 with majority of males (66%) than females. The overall knowledge level of the patient’s family members was better (94.7%) as compare to patients (85.3%), known that tuberculosis is contagious and were aware about precautions. The majority of respondents had several misconception about TB transmission, 26.9% of patients and 37.3% family members responded that the source of TB transmission is sharing food with infected person.

These findings demonstrate the need to improve the knowledge attitude and practices among drug resistant patients and also standardize infection control infrastructure in drug-resistant TB setting. Furthermore, the TB control program needs to consider advocacy, communication, and social mobilization for addressing these gaps.
Participation in UNION Conferences:

The 47th Union World Conference on Lung Health was held in Liverpool, UK, from 26 to 29 October 2016. Research Unit presented the published article i.e. “Yield of Facility-based Verbal Screening amongst Household contacts of Patients with Multi-drug Resistant Tuberculosis in Pakistan” and “Extending Contact Tracing into the Community within a 50-Metre Radius of an Index Tuberculosis Patient Using Xpert MTB/RIF in Urban, Pakistan: Did It Increase Case Detection?”.

In addition the international Ethics Advisory Board meeting by the Union was attended by Dr Razia Fatima as member of EAG Union.

Articles Published in 2016 :- All publication can be accessed at [http://www.ntp.gov.pk/resource.php](http://www.ntp.gov.pk/resource.php)

Below is list publication in 2016

Way Forward:
The future activities of the Research in collaboration with M&E Unit in 2017 will be as follows:

- Implementation of second Pakistan SORT IT course in 2017
- DHIS 2 Training workshop for online TB data in the country with support of WHO Geneva HQ.
- Final report writing of Child TB Inventory study to detect Under-reporting of child TB Cases supported from WHO in 12 Districts
- Analysis and report writing of "Effectiveness and feasibility of 2 months hospitalization (hospital based) and 1 week hospitalization (community-based delivery of care) for multi-drug resistant tuberculosis (MDR-TB) in Pakistan: A randomized controlled trial”
- To collaborate with international institutions such as University of Bergen, London school of hygiene, John Hopkins University and University of York to enhance capacity at National level.