Report of Financial Assistance given to Short Term Research Projects (STRP) in the financial year 2020-2021

S. No.	Project title	Principal Investigator	Institute
1.	A study on challenges in implementing artificial intelligence in diagnosing and managing respiratory diseases in tertiary health care setting in Tamil Nadu	Dr. S. Sangeetha	Department of Community Medicine, VMKV Medical CollegeHospital,VMRFDU,Salem, Tamil Nadu
2.	Artificial Intelligence model for Epidemiology of Tuberculosis	Dr. Nupur Giri	Dept. of Computer Engineering,VESIT, HAMC, Collector's Colony, Chembur, Mumbai
3.	Assessing physical and chemical properties of saliva among tuberculosis patients on anti-tuberculosis treatment- An observational study	Dr. Vidya G Doddawad	Department of Oral Pathology and Microbiology JSS Dental College and Hospital A Constituent College of JSS Academy of Higher Education & Research Mysore, Karnataka, India
4.	Vulnerability Mapping for Pulmonary Tuberculosis Among Elderly Receiving Palliative Care in Kochi Corporation	Dr Sambhu Ramesh	Amrita Institute of Medical Science, Kochi
5.	Clinical characteristics and early outcome of bedaquiline containing regimens for the treatment of MDR and XDR-TB	Dr. Mirunalini R	Assistant Professor, Pharmacology, JIPMER
6.	Role of CB NAAT in diagnosis of tubercular Synovitis: A prospective study of 20 cases	Dr. AmitLakhani	Associate Professor , Orthopaedics AIMS ,Mohali
7.	Coverage Evaluation of BCG, MR and New vaccines (Fipv, Fractional dose Inactivated polio vaccine) under Universal Immunization Program and optional vaccines in the rural India	Dr. Snigdha Pattnaik	Apollo Medical College, Hyderabad

S. No.	Project title	Principal Investigator	Institute
8.	Proposal for TB Free Madanapalli	Dr. B. Wesley	Arogyavaram Medical Centre, Andhra Pradesh
9.	Proposal for Care & Support Education & Counselling of TB patients	Dr. B. Wesley	Arogyavaram Medical Centre, Andhra Pradesh

PROJECT 1

A study on challenges in implementing artificial intelligence in diagnosing and managing respiratory diseases in tertiary health care setting in Tamil Nadu.*

Results: Majority of participants were from General medicine (54%) department. The mean age of participants was 33 years. Male 48(75%), Female 16 (25%). Out of 57 people responded, 37(77%) heard about AI.Sources of Knowing AI: Internet (50%), Conference & Seminar(28%), Friends(10 %), Others equipment's, chatbots etc. (12%).
In Average 58% responded positively for AI, 22% have undecided and 67% have agreed AI can be useful generally. Over all 83% agree some form of disadvantages while using AI and 68% have agreed AI can be useful in Healthcare and 90% in respiratory care.Among respondents, 47% positive impression of using AI in respiratory tract care and 23% strongly.Many agree that AI can be implemented in health care centers after capacity building and laid down some regulations.
Qualitative study by FGD reveals participants showed mixed comments on AI use. But 75% were given the postice comments on the use of AI in health care. Ai can be used in respiratory trach disease management mainly symptoms screenings, monitoring of treatment and follow up. The areas of allergen identification, Tb adherence, air pollution monitoring, assessment of spirometry, heart and lung sound assessment, ICU, bronchoscopy, X ray screening, ECG and cancer screening AI can be useful.

Conclusion: The use AI is advantages in respiratory care, but certain level of resistance is prevailing among health care providers and limited availability of algorithm for hospitals. The use AI is advantages in respiratory care, but certain level of resistance is prevailing among health care providers and limited availability of algorithm for hospitals.

*Dr. S. Sangeetha.
Department of Community Medicine, VMKV Medical College Hospital,VMRFDU,Salem,TN

PROJECT 2

Artificial Intelligence model for Epidemiology of Tuberculosis*

Conclusion: Tuberculosis can prove to be a grievous cause of death for a large number of people falling under a certain demographic of comorbidities. The strain of contagious diseases on human lives is greatly influenced by climatic and pollution factors. As these parameters form the main constituents of epidemiology of a disease, it is necessary to do a comprehensive analysis on the impact these criterias will have on the Tuberculosis spread rate. The prediction model will assist in setting a precursor for the Government and health agencies to take appropriate actions before an epidemic breaks out which will immensely help in reducing the number of fatalities.

* Dr. (Mrs.) Nupur Giri
Dept. of Computer Engineering,
VESIT, HAMC, Collector's Colony,
Chembur, Mumbai

PROJECT 3

Assessing physical and chemical properties of saliva among tuberculosis patients on anti-tuberculosis treatment- An observational study *

Results: There is a significant decrease in the flow rate (0.34±0.06) and pH(5.89±0.37)of unstimulated saliva of patients and the flow rate(0.38±0.07) and viscosity (1.34±0.28)of stimulated saliva among the case group compare to the control group. All the electrolytes' concentrations such as sodium, potassium, calcium, and phosphorous values were significantly altered in stimulated and unstimulated saliva of the case group compared to the control group in which p-value < 0.05 was considered.

Conclusion: There are significant changes in physical and chemical properties of both stimulated and unstimulated saliva which has an effect on taste perception inpatient with anti-tuberculosis medications. Hence, salivary flow rate, pH, viscosity, and salivary electrolytes of tuberculosis patients should be considered as important parameters in guiding the diet, so that there will be an improvement in their taste perception and medication protocol, thus maintaining their nutritional status which leads to improving their health.

*Dr. Vidya G Doddawad,
Department of Oral Pathology and Microbiology
JSS Dental College and Hospital
A Constituent College of JSS Academy of Higher Education & Research
Mysore, Karnataka, India

PROJECT 4

Vulnerability Mapping for Pulmonary Tuberculosis Among Elderly Receiving Palliative Care in Kochi Corporation*

Conclusion: Palliative elderly population is identified to be one of the most vulnerable groups for contracting TB. This study identified elderly palliative care patients vulnerable to Tuberculosis who are receiving palliative home care from Kochi Corporation palliative care project. The vulnerable patients were identified by training the palliative care nurses on data collection process and vulnerability assessment. The nurses were able to identify patients from their respective palliative care unit who are vulnerable to TB using the semi structured questionnaire. Among all the possible vulnerable factors studied, the most common factor identified was presence of an elderly person in the house apart from the patient. Previous history of tuberculosis was found to be statistically significant when compared with current TB specific symptoms. TB specific symptoms were identified from 12% of the patients. However, sputum testing was done only for 15% of the patients from those who were identified to have symptoms. Some of the possible factors for poor sputum collection were, additional burden exerted by the study, difficulties from patients and caretakers like stigma and fear, personal issues faced by the nurses, barriers due to health care system like lack of dedicated vehicle for routine home care and Covid-19 pandemic. A greater majority of the palliative care patients enrolled into this study were new patients who were receiving care for less than 1 year. Hence, a continuous monitoring of those patients for early symptoms of TB is required. The study also identified that previous knowledge about the disease among palliative care nurses were less and most of the palliative care nurses doesn't had previous experience in handling a TB patient. The training provided through the study enabled the nurses to develop skill and confidence for conducting vulnerability mapping. Major recommendations from the study are routine screening for TB for the vulnerable patients and their caretakers also to integrate vulnerability mapping to all palliative care units after providing adequate training for the palliative home care team. This will also increase the professional capacity of all the palliative care nurses and will definitely contribute for the elimination of Tuberculosis.

*Dr. Sambhu Ramesh
Amrita Institute of Medical Science, Kochi

PROJECT 5

Clinical characteristics and early outcome of bedaquiline containing regimens for the treatment of MDR and XDR-TB*

Results: A total of 19 patients who received oral bedaquiline regimens were studied, of which 14 were male,and five were female. The outcomes were categorized into favorable and unfavorable based on thecure and microbiological smear report at the completion of bedaquiline therapy in their regimen.

There was a higher preponderance of unfavorable outcomes among female patients (80%) and patients with past history of TB (81.2%), and history of intake of drugs for drug-resistant TB (83.3%).

It was also identified that the patients with unfavorable outcomes had a higher number of missed

doses.

Conclusion: In this study we observed that 73.7% had an unfavorable outcome as contrary to the national statistics. Though this data is from limited patients, we need to look back to the factors pointing towards this and follow up with larger group. Probably the need for pharmacokinetics and genetic analysis in the patients on bedaquiline and also a qualitative perspective of the regimen implementation may address the difference in the outcome.

*Dr. Mirunalini R
Assistant Professor, Pharmacology, JIPMER

PROJECT 6

Role of CB NAAT in diagnosis of tubercular Synovitis: A prospective study of 20 cases*

Results: In our department out of 20 cases of non-resolving synovitis, 9 cases were diagnosed tubercular positive with CBNAAT within two hours and then result was confirmed with histopathological evidences.This has shown the positive correlation among the diagnosis accuracy of CBNAAT when compared with histopathological evidence(8 positive) of tissue which remain as a gold standard for both its specificity and sensitivity of EPTB
Among these 8 cases -3 cases are of knee, 2 cases of wrist, 2 cases of ankle, 1 case of hip and 1 case of Shoulder were diagnosed with CB NAAT.

	TRUE POSITIVE	TRUE NEGATIVE
CBNAAT POSITIVE	8	1
CBNAAT NEGATIVE	0	12

Sensitivity =100%
Specificity = 92.30%
Conclusion: In endemic countries, identification of granulomatous inflammation with or without caseation and Langhan's giant cells on histology are considered and treated as TB. Here comes the role of Nucleic acid amplification tests (CB NAAT) for rapid TB diagnosis within 2 hours , which is being used aggressively now a days for pulmonary TB as per US CDC and WHO recommendations However, no recommendation exists on their usage in the investigation of patients suspected of having EPTB as the evidence base is limited .In our short term study, we found sensitivity of CB-NAAT as 100 % and specificity 92.3%. Since CB NAAT test is highly available, we recommend the CB NAAT test for early diagnosis of EPTB which will be helpful in Achieving the goal on complete eradication of Tuberculosis in India by 2025 (A national Program by (GOVT OF INDIA).Secondly we also instigate the long term with Larger sample size studies on this aspect . limitation of our study was small sample size, lack of comparative group and covid-19 pandemic
we also further want to investigate proteomics in synovial fluids of active tuberculosis patients and co relate with the specific protein signature of active TB patients was characterized by an accumulation of proteins related to complement activation, inflammation and modulation of immune response and also by a decrease of a small subset of proteins, including apolipoprotein A and serotransferrin, indicating the importance of lipid transport and iron assimilation in the progression of the disease. Biomarker discovery in biological fluids using high-resolution proteomics allows researchers to identify the modulation of cellular pathways when comparing

different disease progression states. Studying M.tb, causative agent of tuberculosis (TB), at the proteomic level can contribute to the identification of proteins which can be considered as potential targets for developed drugs and can help us in better understanding the pathogen physiology.

* Dr Amit Lakhani
Associate Professor , Orthopaedics AIMS ,Mohali

PROJECT 7

Coverage Evaluation of BCG, MR and New vaccines (Fipv, Fractional dose Inactivated polio vaccine) under Universal Immunization Program and optional vaccines in the rural India *

Results: The mean age of study participants was 21.44 months (SD=2.4months)(table 1). It ranged from 16 to 31 months and 89% were less than 2 years of age. Majority (62.4%) of them were males. In our study area BCG coverage was 100%. But for IPV and MMR, majority was partially vaccinated. Only a single dose of IPV and MR vaccine was taken by 84% and 80% of children respectively. Among those partially immunized, reason was elicited for both IPV and MMR separately. Lack of motivation due to rumors or no faith in immunization was found to be the most common reason for vaccines i.e, 44.9% for IPV and 46.5% for MMR. The second most common reason was obstacles like far place of vaccination, unavailability of vaccines, ill child etc which was noted among 42.8% children for MR vaccine and 32.4% for IPV vaccine. Lack of information regarding vaccines was comparatively less among our sample. 22.7% of partially immunized for IPV and 10.7% of those partially immunized for MR mentioned unawareness regarding subsequent doses to be a reason for their vaccination status. Gender was found to be having statistically significant association with IPV vaccination status. Majority of female children were vaccinated for IPV compared to males (p value=0.001). Similarly higher proportion of vaccination was found among female children for MR vaccine as well but it was not statistically significant. There was no significant difference in the mean age of partially and completely immunized children for both IPV and MR.

During covid Pandemic ,the study was undertaken for vaccine coverage survey .The Universal vaccination programme was uninterrupted .Neverthless impact of airborne infection was felt in rural areas and continuity of logistic supply. Main reason for partial and unimmunized subjects was the non- availability of fractional dose Inactivated Polio Vaccine. In Measles-Rubella vaccine, Child being ill was the main reason among the partially and unimmunized subjects. There is a need to ensure a regular supply of fIPV to bring down the dropout rates. Supplementary immunization activities can help achieve the goal of 95% coverage for Measles Rubella vaccine to reach elimination. Mass media can highlight the significance of vaccination and allay fear and apprehension among the general public.

*Dr. Snigdha Pattnaik
Apollo Medical College, Hyderabad

PROJECT 8

Proposal for TB Free Madanapalli *

CARE & SUPPORT FOR TB PATIENTS:

We have been giving free care and support for TB Patients admitted in 119 free beds and also for HIV Co-infected Patients admitted in 20 beds. We have done sputum testing and CBNAAT testing for all the Patients. We have also conducted awareness programmes on the importance of regular medications. The number of in-patients have come down in the last 2 years because of COVID-19 crisis. We have given care and support for 271 in-Patients from February 2021 to till date. We have also provided high-protein, nutritive food to these Patients.

TB FREE MADANAPALLI:

Arogyavaram Medical Centre formerly known as Union Mission Tuberculosis Sanatorium is actively involved in case finding and advocacy in Madanapalli town by doing door to door survey.

We have been doing sputum testing, with CBNAAT at Government Hospital Madanapalli and the diagnosis is made at Arogyavaram Medical Centre. The infected Patients were started treatment on the Revised National Tuberculosis Control Programme.

The total number of Patients - 10264

The annual Report from January 2020 to till date is 383 & Positive cases – 66.

The World TB Day was celebrated on 24th March 2022 in a grand scale. A rally: "Run for Tuberculosi" was organized in the surrounding village. All the Doctors , Staff , Nursing Students , the well wishers of AMC and the Government Hospital Staff participated in the run which culminated at St. Mark's Church, Enumulavaripalli where a public meeting was held.

*Dr. B. Wesley
Arogyavaram Medical Centre, Andhra Pradesh

PROJECT 9

Proposal for Care & Support Education & Counseling of TB patients *

REPORT Anti TB Week was observed in our Institution from 17th to 23rd February 2022. Health education to the Patients and Workshop on Tuberculosis was held for Students. On the 1st day of the week . 17th February 2022, a group of 1st year B.Sc. Nursing Students along with the Tutor Mrs. Soundarya Nelson gathered in the TB Ward. A general awareness was given to all about the disease , and discussed about the different , specific signs and symptoms. The importance of regular medication is emphasized. The danger of discontinuing the medication leads to MDR for which the treatment is expensive with lot of complications. These are explained with posters. On 18th February another group of Patients were addressed in Medical Ward. Mrs. Mamatha- M.Sc. Medical Surgical Specialty addressed the gathering. She explained about the extra pulmonary TB, where the disease occurs and how it is associated with some of the Immuno suppressive diseases like Diabetes, HIV and Chronic illness like Cancer. The importance of continuation of medication was explained. On 19th February Mrs. Alice Rani, a Senior Nurse gave a health talk to the Patients. 1 Printed by BoltPDF (c) NCH Software. Free for non-commercial use only. On 21 st February Ms. Prathyusha, B.Sc. (N) addressed the Students about lung parenchyma, the anatomical structure gas exchange, etc.. On 22 nd February a lecture was given by Mr. Pavan Prabhu M.Sc. Microbiology about the cause and structure of the organism, various stains that are used in the Lab and how the bacillai is identified and what are the different medicines.

*Dr. B. Wesley
Arogyavaram Medical Centre, Andhra Pradesh