

Bharati Vidyapeeth (DU) Medical College, Pune

Bharati Hospital & Research Centre, Pune

Clinical Research Unit

Research is one of the core competencies of the medical field. Clinical research including **drug/vaccine trials** has become an essential part of medical progress. Conducting clinical trials needs more than medical knowledge i.e. training in Good Clinical Practices (GCP), knowledge of Ethics and National regulations. This knowledge needs to be updated regularly. Clinicians usually find it difficult to have time to conduct research in the midst of patient management. To sensitize and encourage faculty for conduct of research, department of Pediatrics had established a **Pediatric Clinical Research Cell** for conducting clinical research in the year 2005.

This unit was primarily involved in conducting pediatric vaccine trials and disease surveillance programs. However, with the increase in Adult vaccine and drug trials, gradually this unit expanded as a **Clinical Research Unit** covering both adult and pediatric research. This unit conducts clinical trials and other funded or non-funded research of Public Health importance.

Team and Infrastructure:

The unit has a **dedicated team** of researchers, coordinators, nurses, pharmacists, laboratory technicians, and social workers. Along with the dedicated staff, it has dedicated space and well-equipped infrastructure e.g. continuous electricity with backup, internet connections, specific refrigerators, and deep freezers. It has a separate **Cold Storage room** for storage of study vaccines, drugs and sera samples. There is a continuous **Temperature Monitoring System** to monitor all the refrigerators and deep freezers in the cold storage room.

Training:

The researchers and other team members are trained on **Good Clinical Practices (GCP)** –both, International Conference on Harmonization (ICH) and Indian, **ICMR guidelines for conducting Biomedical Research and New Drugs And Clinical Trials (NDCT) Rules 2019**. The unit has various **Standard Operating Procedures** for conducting clinical trials which are reviewed annually and amended periodically.

The dedicated researchers from the unit not only conduct clinical trials on their own but also assist the other departments in conducting trials or other kind of clinical research.

Thrust areas:

Vaccine trials, drug trials, infectious disease surveillance, and growth and development of children.

Vaccine Trials:

This unit is primarily involved in conducting vaccine trials. It conducts vaccine trials from phase I to phase IV. In last five years (2018 to 2023), the unit has conducted **37 vaccine trials including many Covid vaccines.**

Dengue and Chikungunya are infectious diseases of **Public Health importance.** We have conducted **phase I trials for Dengue, and Chikungunya vaccines.**

The details of the phase wise vaccine trials are as follows:

Phase I- 5; Phase II- 2; Phase II/III- 13; Phase III- 14 and Phase IV-3

The vaccines studied during the period 2018-2023 are: Covid vaccines (Covishield, Covovax, Gemcov, ZyCov-D), Dengue vaccine, Chikungunya vaccine, Respiratory Syncytial virus (RSV) Vaccine, 20 V Pneumococcal Conjugate vaccine, Meningococcal Conjugate vaccine, Pentavalent vaccine (DPT-HepB-Hib), Hexavalent vaccine, Tdap vaccine, Pneumococcal Conjugate Vaccine, Rotavirus vaccine, Human Papilloma Virus vaccine, Hepatitis A vaccine, and MR vaccine.

COVID vaccines:

Covishield vaccine manufactured by Serum Institute of India, played an important role in fighting the battle against COVID 19 in India. **Bharati Vidyapeeth (DU) Medical College and Hospital was the first to start enrollment in this clinical trial.** The site also participated in adult COVID vaccines manufactured by **Genova and Reliance Life Sciences** Along with this we also participated in clinical trials of the **Covovax vaccine of Serum Institute of India and ZyCov-D vaccine of Cadilla Healthcare** which were **primarily used for children.**

The unit has worked with many **national and multinational companies:**

Multinational Companies:

- Sanofi Pasteur
- GlaxoSmithKline Biologicals
- Pfizer

Indian Companies:

Serum Institute of India Pvt. Ltd.
Shantha Biotechnics Private Ltd.
Human Biologicals Ltd.
Cadila Healthcare Ltd.
Bharat Biotech

Vaccines which received license:

Covishield, Covovax, Gemcov, Pneumosil (Pneumococcal conjugate vaccine), Rotasil (Rotavirus vaccine), Cervavac (HPV) vaccine, Shan6 (Hexavalent vaccine), Mebella (MR) vaccine, Havisure (Hep A) vaccine

Public Health impact of these trials:

Covishiels and Covovax vaccines were used by the government during the Pandemic. Vaccines like Pneumosiil, and Rotasiil are being used in the National Immunization schedule. Government is also planning to vaccinate the adolescent girls in the country with Cervavac vaccine, the first indigenous HPV vaccine of the country.

Publications through these trials:

There are **over 30 publications** in **international journals** through the vaccine trials in last five years. journals.

- **The HPV vaccine trial of SIIL has been published in Lancet Oncology journal having impact factor of 51.1 (Dec 2023)**
- **The Covovax vaccine for children- JAMA Pediatrics, Impact factor 26.1 (Jul 2023)**
- **Covishield vaccine in EClinical Medicine, Impact factor 15.1 (Dec 2021)**
- **Influenza vaccine of GSK has been published in Lancet Child Adolescent Health journal having impact factor of 36.4 (Mar 2018)**

A few of the vaccine trials have been **inspected by the Central Drugs Standard Control Organization (CDSCO) office** and has not received any major finding.

The unit promotes interdepartmental and interdisciplinary collaboration within Bharati University. It actively conducts collaborative research with IRSHA, an in-house dedicated Research institute of Bharati Vidyapeeth.

Research During Covid-19 Pandemic:

During the Covid-19 Pandemic, this unit collaborated with IRSHA for many studies and provided the clinical data and material in the form of blood samples or throat Samples for bench research. **The work started immediately when the Pandemic hit India.** As initially Bharati hospital was not a Covid Center, the clinical samples (throat swabs and blood samples) were obtained from patients **admitted in Naidu Hospital** with prior permission from the health authorities. Various studies were conducted on Covid patients admitted in the hospital.

Covid related clinical trials:

In the beginning, when none of the Covid vaccines were manufactured, site participated in the clinical trial of the efficacy of **Recombinant BCG vaccine** (Serum Institute of India) in reducing infection incidence and disease severity of SARS-COV-2 among high-risk subjects, the health care workers. After obtaining DCGI and EC approvals, the trial had **started on 2 May 2020.**

Thereafter the unit participated in **Covishiled vaccine** trial, and vaccines manufactured by **Genova and Reliance Life Sciences.** Along with this we also participated in clinical trials of

Covovax vaccine of Serum Institute of India and ZyCov-D vaccine of Zydus Cadilla which were primarily **used for children.**

Solidarity Trial:

Along with vaccine trails, we also participated in a very important trial conceptualized **by WHO and coordinated in India by ICMR NARI.** It was a global randomised controlled trial with an adaptive clinical design platform for evaluation of therapeutics in treatment of COVID-19. **Department of Critical Care, Bharati Vidyapeeth Deemed University Medical College and Hospital was amongst the initial few participating centres.**

The first phase of trial evaluated efficacy of Remdesivir, Hydroxychloroquine , Interferon and Lopinavir (fixed-dose combination with Ritonavir). Solidarity Plus trial evaluated other agents like Artesunate, Imatinib and Infliximab.

WHO Solidarity trial consortium is the largest clinical trial platform (405 hospitals cross 30 countries) contributing significantly to drug evaluation during COVID-19 pandemic. **This study changed the drug utilization pattern for Covid.** The results of this study were published **in high impact journals like NEJM, Lancet with more than 3000 citations.**

A few drug trials related to Covid were also conducted by Critical Care department.

Other Covid related research work:

- The unit collaborated with **National Institute of Virology (NIV)** for assessing **“Cost of illness analysis of COVID-19 cases in Maharashtra, India”** and **“to assess possible route of transmission of SARS-CoV-2 through faecal material of positive patients and their potential role in persistent fecal viral shedding in the environment”.**
- With IRSHA, we conducted a prospective study on health care workers who were provided Covid Vaccine from the Government in the initial phase. It was to study **“Immune response of adult COVID-19 vaccine recipients with special reference to immunological memory, T cell response and persistence of neutralizing antibodies.”**

ICMR-NITM Clinical Trial Network for Integrative Health:

ICMR-National Institute of Traditional Medicine, Belagavi, Karnataka ICMR-NITM has established a **Clinical Trial Network** for execution/implementation of clinical trials on integrative therapies or trials that include **treatment arms from both allopathy and AYUSH systems.** Based on the availability of both modern medicine & AYUSH facilities under one roof, and experience in randomized controlled trials, they have selected 11 sites from the country (August 2023). Bharati Vidyapeeth DTU Medical College and Hospital has been selected as one of these sites in the **Clinical Trial Network.**

Oncology Trials:

Department of Medicine conducts oncology trials and the unit helps them in the smooth conduct of the trial. One bioequivalence study is completed and one drug trial for Lung cancer is ongoing.

Surveillance programs:

The unit has conducted two **Investigator initiated studies 1) seroprevalence of Measles, Mumps, Rubella and Varicella Antibodies 2) sero-prevalence of Hepatitis A antibodies.** Hepatitis A seroprevalence study was a **multicenter study** conducted at Pune, Kolkata, Chennai and Ludhiana. Site also participated in **Pertussis and Rotavirus surveillance studies.**

CUSP study: Implementing the Comprehensive Unit-based Safety Program to Reduce Healthcare Associated Sepsis in the Neonatal, Intensive Care Unit in Pune, India

This quality initiative study was done in our NICU along with **John Hopkins University** in the year 2018- 2019. Four cycles of plan do study act (PDSA) were done and incidence of sepsis was reduced after intervention. The study is published in the journal *Frontiers in Pediatrics*. Looking at the effect of the study interventions in reducing the sepsis, the investigators have continued with the weekly meetings for sepsis reduction.

Collaborations for the Research

1. International:

- Johns Hopkins Bloomberg School of Public Health (JHSPH)
- World Health Organization (WHO)

2. National:

- Indian Council of Medical Research (ICMR)
- Department of Health Science
- National Institute of Virology (NIV)

54 Publications in High impact factor International journals through the work done by this unit till 2023