
**Hospital Based Surveillance for Radiological Pneumonia in children under 5 years of age in
Uttar Pradesh and Bihar (BMGF Grant No. OPP1118005)**

Background and rationale: Pneumonia is responsible for about 2 million deaths in children under five years of age. Most of the deaths occur in developing countries, India being one of them. Within India the states of Uttar Pradesh and Bihar are reporting some of the highest rates of infant and under-five mortality. Dedicated efforts are required to improve health systems in these states as well as to focus on strategies to reduce pneumonia specific mortality.

Aim: To estimate the incidence of radiological pneumonia in children under five years of age

Objectives:

1. To estimate the annual incidence of radiological pneumonia in children between 2 – 59 months of age, residing in a pre-specified district.
2. To document the clinical and demographic characteristics of cases of WHO defined community acquired pneumonia (CAP) with lower chest indrawing (LCI) and severe CAP, by establishment of hospital-based surveillance network.
3. To preserve 5 ml urine of cases with radiological pneumonia at -20 degrees Celsius for future antigen testing

Study design: In a prospective design, surveillance for radiological pneumonia will be done in two districts each of Uttar Pradesh and Bihar. In a pre-specified district, cases will be enrolled from those admitted a tertiary teaching hospital as well as reported from a pneumonia surveillance network of other public and private hospitals. All x-rays will be digitalized and archived electronically. An independent panel of radiologists, specifically set up for this project, will read and interpret the x-rays. Five ml of urine of cases with radiological pneumonia at -20 degrees Celsius for future antigen testing.

In Phase I, procedures will be standardized by development of standard operating procedures, quality control measures, central training, round the year quality assurance checks and web-based data entry by a central coordinating unit established in King George's Medical University (KGMU), Lucknow. These will pilot tested in KGMU site and then recruitment will begin here. Once the project components (radiological surveillance and annual health survey) get rolling in

KGMU, the Phase II will be initiated in Rural Medical Institute of Medical Sciences (RIMS), Etawah, Uttar Pradesh and Medical Colleges of Patna and Darbhanga, Bihar.

Sample size: We have assumed that the incidence of radiological pneumonia is 3.0/100 child years of observations. Then for a margin of error of 1.5/100 child years of observation, incidence of pneumonia in the community of 20/100 child years of observation, alpha level of 0.05, and power of 90% when the estimated population of children under 5 years of age in Lucknow district is 750,000; 693 cases have to be included in radiological surveillance study.

Implications: Baseline incidence of radiological pneumonia in high infant mortality states will be estimated which could form the basis of taking evidence based informed decisions for instituting control measures.