

Results Report

1. Title of Research and Development :

Comprehensive Etiological and Epidemiological Study on Acute Respiratory Infections in Children: Providing Evidence for the Prevention and Control of Childhood Pneumonia in the Philippines

2. Principal Investigator :

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4. Results of Research and Development:

The project is composed of five components, including 1) etiology study, 2) disease burden study, 3) risk factor analysis, 4) intervention study, and 5) publication and feedback. Due to the devastating Typhoon Yolanda, a one-year extension of the project period was approved. The cohort study and the intervention study started in February 2015 and July 2016, respectively. Useful data for the control of pediatric pneumonia were obtained from the project including those from the etiology and cohort studies.

1) Etiology Study

A total of 3,844 children were enrolled for the etiology study in four hospitals. Of these, 96 of the children died with a case fatality ratio (CFR) of 2.5%. The overall viral positive rate was 59.3% (2,281/3,844) and blood culture for bacteria identified possible pathogenic bacteria in 1.2% of cases (45/3,820). The most commonly detected virus was respiratory syncytial virus (RSV) (966/3,844, 25.1%). RSV was detected more frequently in hospitalized cases than mild cases. However, the CFR of RSV positive cases was low (0.6%). Although the positive rate of blood culture was low, CFR among blood culture positive cases was high (5/45, 11.1%). Also, CFR in virus negative cases (54/1,336, 4.0%) was significantly higher than virus positive cases (42/1,922, 2.1%), which suggests that bacteria might have been associated with virus and blood culture negative cases.

2) Disease Burden Study

The cohort study was initiated to calculate the incidence rate of childhood pneumonia in Biliran Province. A total of 3,917 children under 5 years of age were included in the analysis. The incidence rate for pneumonia and severe or very severe pneumonia was calculated as 0.3 / child-year. This incidence rate is two times higher than the estimate for developing countries by the World Health Organization (WHO), but similar to the data from cohort studies in other developing countries. It suggests that the real incidence rate of pneumonia may be much higher than previously thought.

3) Risk Factor Analysis

By analyzing the data from the etiology study, several risk factors associated with fatal outcome were identified, including younger age (< 6 months), weight for age, initial diagnosis on admission (very severe pneumonia), body temperature (>39°C), and SpO₂ (<90%). Risk factors were analyzed for the cohort study. The analysis of health seeking behavior indicates that visiting traditional healer may be one of the delaying factors for health seeking behavior.

4) Intervention Study

The intervention study was conducted at Rural Health Units (RHUs) and Barangay Health Stations (BHSs) in the cohort site. The main objectives of the intervention study include improvement of patient management and evaluation of the new Integrated Management of Childhood Illness (IMCI) guideline for pediatric pneumonia. The study is targeting local health personnel (mainly midwives). Using pulse oximeter, midwives were able to identify hypoxic patients (SpO₂ <90%) in 2% of the cases, who required oxygen therapy. This result indicates the usefulness of pulse oximeter.

5) Publication and Feedback

The feedback forums for the stakeholders in study hospitals were conducted to share the study outcome. The workshop for the stakeholders for the intervention study in Biliran Province and training sessions for local health personnel were also conducted.