Introduction
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Twentieth century has witnessed tremendous advances in the understanding of infectious diseases. Man's constant battle against microorganisms has resulted in many old diseases vanishing. At the same time infections caused by hither-to unknown organisms keep cropping up, or old organisms in new and more virulent forms emerge to continue the war. There is a constant need to remain vigilant in an endeavour to strike a balance with micro-organisms. This delicate balance is often at the risk of being disrupted by man made factors such as poverty, over-crowding, malnutrition, poor environmental sanitation, general apathy and ignorance.

Brunt of the preventable infectious diseases are borne by the developing world among whom 40-50% are constituted by the children, the most vulnerable population. Majority of them do not live to see their first birthday. Three major causes of mortality in these children are diarrhoea, malnutrition and respiratory tract infection¹.

Acute respiratory infection can be defined as an episode of acute symptoms and signs resulting from infection of any part of the respiratory tract or any related structure including paranasal sinuses, middle ear and pleural cavity.
It constitutes a complex of heterogenous group of illnesses consisting of bronchiolitis, bronchitis and pneumonia, which is primarily responsible for majority of ARI related deaths among children below five years of age.

A variety of respiratory pathogens are responsible for causing ARI (Upper and lower respiratory tract infection), bacteria (mainly Beta hemolytic Group A Streptococci, *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Staphylococcus aureus*, *Corynnebacterium diphtheriae*, *Bordella pertussis*), viruses (mainly respiratory syncital virus, influenza, para influenza, measles, etc.), *Mycoplasma pneumoniae* and *Chlamydia pneumoniae*.

In spite of being a preventable disease, deaths due to ARI among children is around 4 million each year, with 90% of them occurring in developing world according to an estimate by the World Health Organization\(^1\).

"Death toll from ARI is equivalent to that of a crash every 45 minutes of one jumbojet filled with children, with no survivors. When such an event occurs, it spurs extensive, prolonged and expensive investigation of the cause. Surely one such event every 45 minutes deserves no less" - Kenneth McIntosh (Childrens Hospital, Boston, Massachusetts).
Health care programmes have targeted diarrhoea and malnutrition, whereas Acute respiratory infections (ARI) have been largely ignored\textsuperscript{1}, inspite of recognising it as a major threat to child survival. Research and control programmes have not kept pace with the awareness. It is not known, through what mechanism or biologic chain ARI continues to persist in the developing world.

In order to bring ARI under control a multipronged approach is necessary to delineate various pathogens involved, overlapping clinical syndromes and interacting risk factors, responsible for morbidity and mortality due to ARI.

Pathogens are identified in only half the cases of ARI. This is further confounded by the fact that most of the common bacterial pathogens responsible for ARI are harboured in a healthy carrier\textsuperscript{1}. Therefore, an understanding of the agents involved requires a systematic approach to diagnose ARI in the susceptible population, isolate the pathogens, determine prevalence of common agents involved and recognise factors which will ultimately influence the control of ARI. Preventive strategies can be evolved based on data gathered from different geographical areas. This will result in meaningful control measures at the regional level of this global problem.
As primary health care programme expand and established case management procedures enable treatment of children with URI and ALRI, with antibiotics as a part of the strategy, there is an increased risk of emergence of resistant strains among the bacterial pathogens. Such a situation has already begun with increasing reports of antibiotic resistant H.influenzae and Streptococcus pneumoniae, as well as increased incidence of treatment failure cases due to Group A Streptococcal pharyngitis by penicillin tolerant strains. Cost of newer antimicrobials to tackle the resistant strains are too prohibitive for the developing countries thus increasing the burden of an already crowded health care delivery system.

ARI in the Indian scenario is not different from other developing countries, 15-34% of all childhood deaths are attributed to ARI\(^2\). In addition the burden imposed on society and health care system of the country in terms of morbidity, the pressure on the services of hospitals and health centres is considerable. Twenty to 40 percent children brought to outpatient department and 12-35% children admitted to hospitals on an average in India are due to ARI\(^3\). In a one year period, JIPMER Hospital recorded an admission of 15.5% of children due to acute respiratory tract infection in the paediatric ward. There is lack of information regarding the pathogens involved, their prevalence in sick and healthy children and other epidemiological features. Information on prevalence
of antibiotic resistance among common respiratory bacterial pathogens is also lacking. This lacunae is because of under reporting and absence of systematic documentation.

This study was designed to address some of the bacteriological factors involved in acute respiratory infections among a cross section of children below 15 years of age in Pondicherry. Attempt was made to get an insight into the occurrence, antibiotic susceptibility patterns and laboratory diagnostic technique of some of the common bacterial causes of acute respiratory tract infection among these children.