

## Exploring the Cause of an Outbreak of Neonatal Sepsis Following Ventilator-Associated Pneumonia in a Base Hospital, Sri Lanka

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**Introduction:** Hospital-acquired infections (HAIs) are defined as infections which were not present or incubating at the time of admission but occur during the process of care in a hospital or other healthcare facility. HAIs are one of the major causes of the increasing number of mortality and morbidity in hospitals. Ventilator-associated pneumonia (VAP) has been identified as one of the four common types of nosocomial (HAI) infections. VAP is defined as parenchymal lung infection occurring more than 48 hours after initiation of mechanical ventilation and nebulization. Though VAP starts as local infection, it could complicate into sepsis. An outbreak of sepsis was reported in seven babies, who were admitted and ventilated at the premature baby care unit (PBU) of Base Hospital, Wathupitiwala within a period of three weeks since 30<sup>th</sup> July 2017.

**Objective:** To identify the causative agent/s of the outbreak of neonatal sepsis occurred in PBU, Base Hospital, Wathupitiwala.

**Method:** Blood culture isolates, which were detected within 24 hours of incubation at BacT/Alert automated blood culture system from seven affected babies, were tested further to identify whether the neonatal sepsis occurred due to a common pathogen. Initial Gram staining and oxidase test were followed by species-level identification using RapID NF plus system (remel RapID system). In brief, pure cultures of causative organisms were grown on blood agar after incubation at 37<sup>o</sup>C for 24 hours. Testing was performed according to the manufacturer's instructions. Six-digit microcode obtained at the end of the test was interpreted using electronic RapID compendium (ERIC<sup>TM</sup>) database to obtain species-level identification. Further biochemical tests (catalase test, oxidation & fermentation (OF) of glucose & lactose) were performed to refine the diagnosis.

**Results:** All seven, blood cultures grew Gram-negative, oxidase positive bacilli. All blood culture isolates got the same identification via RapID NF plus system with the same microcode (400216). Interpretation via ERIC<sup>TM</sup> database suggested three possible organisms as *Pseudomonas pseudoalcaligenes*, *Pseudomonas stutzeri* and *Burkholderia cepacia*. Further biochemical tests namely positive catalase test, growth on MacConkey agar, green coloration of glucose well in RapID NF plus system and positive OF test for glucose and lactose, confirmed the diagnosis of the isolates as *B. cepacia*.

**Conclusion:** The aetiological agent for the outbreak of neonatal sepsis was identified as *B. cepacia*. Since all babies had the risk factor of being ventilated, there was a possibility of having the source related to ventilator equipment, solutions, drugs etc. It is important to investigate for possible source/s of an outbreak in order to curtail it as early as possible.

**Keywords:** VAP, Neonatal Sepsis, Burkholderia Cepacia

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