

# RISK FACTORS AND OUTCOMES OF VENTILATOR-ASSOCIATED PNEUMONIA FROM A NEONATAL INTENSIVE CARE UNIT, THAILAND

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**Abstract.** Neonatal ventilator-associated pneumonia (VAP) is a serious problem. A case-control study was carried out during 2014-2016 in a Thai neonatal intensive care unit to identify risks and outcomes for VAP in neonates. Of 10,394 live births, 1,498 required admission and 34% were endotracheally intubated. Cumulative incidence and incidence density of VAP was 3.4% and 4.5 per 1,000 ventilator-days, respectively. Based on Cox proportional hazards model, VAP in neonates is significantly associated with extremely low birthweight [hazard ratio (HR) = 2.03,  $p < 0.001$ ], Apgar score  $< 3$  at 5 minutes (HR = 1.46,  $p = 0.02$ ), midazolam use (HR = 2.33,  $p < 0.001$ ), reintubation (HR = 3.74,  $p < 0.001$ ), persistent pulmonary hypertension (HR = 1.75,  $p = 0.001$ ), patent ductus arteriosus (HR = 2.22,  $p < 0.001$ ), previous surgery (HR = 2.21,  $p < 0.001$ ), and central line insertion (HR = 1.75,  $p < 0.001$ ). Neonates with VAP had a greater risk of bronchopulmonary dysplasia (odds ratio = 8.2,  $p < 0.001$ ), which required longer hospital stay and higher daily cost. Modifiable risk factors associated with VAP were sedative use, reintubation and central line catheterization. In conclusion, neonatal VAP results in a high clinical and economic burdens and risk prevention must be applied to intubated neonates.

**Keywords:** cross infection, mechanical ventilator, neonatal intensive care unit, neonatal sepsis, ventilator-associated pneumonia

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