

Factors associated with inter-institutional variations in sepsis rates of very-low-birth-weight infants in 34 Malaysian neonatal intensive care units

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Abstract

INTRODUCTION:

This study aimed to determine whether patient loads, infant status on admission and treatment interventions were significantly associated with inter-institutional variations in sepsis rates in very-low-birth-weight (VLBW) infants in the Malaysian National Neonatal Registry (MNNR).

METHODS:

This was a retrospective study of 3,880 VLBW ($\leq 1,500$ g) infants admitted to 34 neonatal intensive care units (NICUs) in the MNNR. Sepsis was diagnosed in symptomatic infants with positive blood culture.

RESULTS:

Sepsis developed in 623 (16.1%) infants; 61 (9.8%) had early-onset sepsis (EOS) and 562 (90.2%) had late-onset sepsis (LOS). The median EOS rate of all NICUs was 1.0% (interquartile range [IQR] 0%, 2.0%). Compared with NICUs reporting no EOS ($n = 14$), NICUs reporting EOS ($n = 20$) had significantly higher patient loads (total live births, admissions, VLBW infants, outborns); more mothers with a history of abortions, and antenatal steroids and intrapartum antibiotic use; more infants requiring resuscitation procedures at birth; higher rates of surfactant therapy, pneumonia and insertion of central venous catheters. The median LOS rate of all NICUs was 14.5% (IQR 7.8%, 19.2%). Compared with NICUs with LOS rates below the first quartile ($n = 8$), those above the third quartile ($n = 8$) used less intrapartum antibiotics, and had significantly bigger and more mature infants, more outborns, as well as a higher number of sick infants requiring ventilator support and total parenteral nutrition.

CONCLUSION:

Patient loads, resuscitation at birth, status of infants on admission and treatment interventions were significantly associated with inter-institutional variations in sepsis.