

Minimally invasive care of neonates in SCABU and NICU in resource-limited settings

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EDITORIAL

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Infection prevention and control (IPC) is the mainstay of management for neonates admitted to Special Care Baby Units (SCABU) and Neonatal Intensive Care Units (NICU). Healthcare-associated infections remain an important cause of morbidity and mortality among hospitalized neonates, particularly in low- and middle-income countries. Multidrug-resistant organisms such as *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Acinetobacter* spp., *Escherichia coli* and other Gram-negative organisms are important causes of neonatal sepsis and septic shock in hospital settings.¹

Neonates frequently require peripheral IV catheters for fluids, antibiotics, glucose and medications. However, repeated insertion attempts and prolonged catheter dwell time increase the risk of phlebitis and catheter-associated infection.² Minimizing peripheral IV catheter placement, removing IV catheters promptly when no longer clinically indicated and maintaining strict hygiene combined with aseptic injection practices are essential to reduce healthcare-associated infections.³

The workload and staffing pattern of neonatal units may also influence compliance with infection-prevention practices in resource-limited settings. Nursing staff frequently work under considerable workload and variable staffing conditions across different shifts. Such workload-related pressures may adversely affect consistent implementation of essential IPC measures, particularly during periods of limited staffing. Therefore, infection prevention should be supported not only through individual compliance but also through adequate staffing, training, supervision, standard operating procedures, skill development and regular monitoring of IPC practices.³

Routine or prolonged prophylactic antibiotic therapy should not be used indiscriminately to prevent neonatal sepsis. Evidence regarding prophylactic systemic IV antibiotics in neonates has not been sufficient to recommend their routine use, particularly because of concerns regarding antimicrobial resistance and the absence of demonstrated mortality benefit.⁴ Antibiotic therapies should instead be guided by clinical assessment, appropriate cultures where feasible, local antimicrobial susceptibility patterns and established neonatal sepsis guidelines. The updated WHO recommendations provide specific antibiotic regimens for hospitalized young infants with suspected serious bacterial infection.¹

Early enteral feeding is an important component of supportive neonatal care. WHO recommends initiating feeds as early as possible in preterm and low-birth-weight infants, preferably with their mother's own milk, when clinically appropriate.⁵ Enteral feeding may also be considered in mechanically ventilated neonates after assessing respiratory status, airway protection and gastrointestinal tolerance. Feeding should be individualized according to clinical stability and contraindications such as intestinal obstruction, necrotizing enterocolitis or severe gastrointestinal pathology.⁵

Very recently, two pilot observations conducted in the SCABU and NICU of Bangladesh Shishu Hospital & Institute and Universal Medical College Hospital suggested lower infection rates and improved survival among neonates managed with early enteral feeding, judicious use of oral medications and minimal IV access or early withdrawal of IV catheters when no longer clinically indicated. Some neonates were able to maintain

blood glucose levels with small amounts of enteral milk, supplemented, when necessary, with IV glucose or orally administered 10% dextrose in 0.45% normal saline. Reported survival increased from approximately 50-60% to 70-90%. These preliminary findings are encouraging but require confirmation through well-designed prospective studies with large sample size before routine implementation in SCABU and NICU settings.

There is also evidence from Bangladesh, Pakistan, India and other low-resource settings that simplified antibiotic regimens incorporating oral antibiotics can be effective in selected young infants with clinical severe infection when referral or hospitalization is not feasible. Randomized trials have assessed regimens containing oral amoxicillin or oral cotrimoxazole, either alone or in combination with limited parenteral antibiotic therapy.⁶⁻⁸ The updated WHO recommendations similarly permit simplified regimens containing oral amoxicillin plus gentamicin in specific circumstances when hospital referral is not possible.^{1,5} However, these findings should not be interpreted as evidence that oral antibiotics can routinely replace parenteral antibiotics in critically ill neonates admitted to NICU.

The proposed approach emphasizes minimally invasive neonatal care, rather than complete avoidance of invasive treatment. Its key principles include early enteral feeding with mother's own milk, oral medications, minimal IV access, prompt removal of IV catheters, strict hand hygiene, antimicrobial stewardship and careful monitoring may improve the survival rate of neonates admitted in SCABU and NICU in low-resource setting.

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