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## Point-of-Care Devices to Reduce Iatrogenic Anemia Among Preterm Infants

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## **Abstract**

In neonatal intensive care units (NICUs), the prevalence of anemia and required blood transfusions continues to rise. Blood testing is necessary in this population in order to accurately develop diagnoses and treatment options. However, blood loss in the NICU is the main cause of preterm neonatal anemia. Preterm infants tend to experience larger amounts of blood loss compared to other infants in the NICU. They are born with fewer red blood cells and are not able to rapidly reproduce these blood cells when needed, and multiple blood draws further deplete the infant's hemoglobin and hematocrit levels. In current practice, blood samples are typically obtained from a heel stick or a venous catheter, which results in frequent overdrawing of blood. It is crucial to research different blood testing strategies in order to reduce iatrogenic anemia in the NICU. A literature review was conducted to analyze six peer-reviewed studies that focus on the rates and effects of neonatal iatrogenic anemia, and interventions that could potentially decrease the development of anemia due to serial blood draws. The findings suggest that non-invasive continuous monitors, point-of-care devices, and smaller test tubes can produce accurate data while minimizing blood loss. The overall purpose of this study is to determine if point-of-care analyzing and monitoring devices can reduce the risks of iatrogenic anemia among preterm infants in the NICU. Preterm infants in a NICU will undergo necessary blood laboratory testing via a point-of-care analyzer and monitor device. Total amounts of blood loss, anemia, and blood transfusion rates will be collected and compared to those of preterm infants who will undergo blood testing via current common practices during a six month period. The results will be compared to decipher whether a point-of-care blood conserving device can be relied on in future practice to lower iatrogenic anemia rates.

**Keywords:** NICU, iatrogenic anemia, preterm, neonatal, red blood cells, transfusion, point-of-care