

## **Prepare To Protect: A Quality Improvement Project to Enhance Antenatal Corticosteroids and Magnesium Sulfate Use in Preterm Deliveries**

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**Introduction** - Antenatal corticosteroids and magnesium sulfate (MgSO<sub>4</sub>) are proven to improve outcomes in preterm neonates. Corticosteroids reduce respiratory and neurological complications, while MgSO<sub>4</sub> offers neuroprotection and lowers the risk of cerebral palsy when administered prior to early preterm delivery. Despite strong international guidelines, inconsistent administration persists in real-world settings due to logistical and systemic challenges.

**Objectives** - The objective was to improve the rate of appropriate antenatal corticosteroid and MgSO<sub>4</sub> administration in mothers delivering before 34 weeks of gestation. Specifically, the project aimed to increase corticosteroid use from 59.3% to over 80%, and MgSO<sub>4</sub> administration (bolus ± infusion) from 41.6% to over 70%.

**Methods** - A retrospective audit from January to June 2023 revealed that 57 out of 96 eligible mothers (59.3%) received a full course of antenatal corticosteroids, and 40 (41.6%) received a MgSO<sub>4</sub> bolus, while only 32 (33.3%) received both bolus and infusion. A QI intervention was implemented from September to December 2023 using PDSA cycles. Key actions included multidisciplinary staff education, protocol development, a bundled checklist for preterm labour management, and SBAR-based communication. Appropriateness was defined as a full course of corticosteroids with the last dose administered within 24 hours before delivery, and MgSO<sub>4</sub> administration (bolus ± infusion) within 24 hours of delivery. Prospective data were collected from January to December 2024. Exclusion criteria included stillbirths, major congenital anomalies, and out born transfers.

**Results** - Post-intervention, corticosteroid use increased to 88.9% (160/180). MgSO<sub>4</sub> administration rose to 84.4% for bolus (152/180) and 77.7% for bolus plus infusion (140/180). Reasons for non-administration included late maternal presentation and rapid labor progression.

**Discussion** - The “Prepare to Protect” QI initiative significantly improved timely administration of antenatal corticosteroids and MgSO<sub>4</sub>. Bundled protocols, staff training, and simplified workflows contributed to sustainable adherence in the care of preterm deliveries within a peripheral tertiary care setting.

**Keywords** - Antenatal corticosteroids; Magnesium sulfate; Preterm birth; Quality improvement