

# Oxytocin and Prolactin Dysregulation in Critically Ill Newborn Foals

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Sepsis, the leading cause of foal mortality, is a condition where bacteria multiply in the blood and set up widespread infection throughout the body. Septic foals have varying levels of survival depending on severity and duration of infection. In response to stress, the hypothalamus and pituitary gland release multiple hormones, including oxytocin and prolactin which are typically associated with delivery and mammary gland development. The role of oxytocin and prolactin in response to sepsis associated stress and neurological behavior is well documented in critically ill human neonates, but limited information exists in newborn foals. Hypoxic ischemic encephalopathy (HIE) occurs in foals during or shortly after parturition and is often associated with septicemia. The syndrome is characterized by abnormal neurologic behavior, loss of suckle reflex, depression, and seizures. The exact cause of HIE has not yet been determined; therefore association between oxytocin and prolactin concentration and neurological abnormalities remains to be evaluated. This project investigates concentration of oxytocin and prolactin in critically ill foals and examines associations with septicemia and likelihood of survival. Furthermore, we analyze correlation between HIE and oxytocin and prolactin concentration. We conducted a prospective, randomized study of three groups of septic, sick non-septic, and healthy foals of less than a week of age. We measured concentrations of oxytocin from foal blood samples using an Oxytocin Enzyme Immunoassay Kit, and we used an Enzyme-Linked Immunosorbent Assay to measure prolactin. Data collection is in progress, and results and interpretation will be available for presentation by February 19th. Currently, information regarding endocrine response to critical illness in foals is extremely limited. With a more comprehensive understanding of oxytocin and prolactin concentration, evaluation of novel therapy methods will become more competent. Findings will potentially prevent millions of dollars in losses to the US equine industry through increased survival rate.