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THE IMPACT OF EARLY INTERVENTION TO DECREASE CHRONIC LUNG DISEASE: ONE INSTITUTION'S EXPERIENCE.

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Despite improved technology and knowledge, chronic lung disease (CLD) continues to be a significant problem for infants in Neonatal Intensive Care Unit (NICU) settings. Many new management strategies have been developed in hopes of reducing the incidence and consequences of CLD. In our Level III NICU, we instituted such a strategy called "The Golden Hour" Guideline. Important components of the Golden Hour Guideline are: use of the Neopuff^{TM} device in the delivery room (DR) and during transport to the NICU, surfactant administration in the DR before 15 minutes of life, and attempted DR extubation if the infant $\geq$ 28 weeks gestational age and/or 1 kg in weight. Specific aims of this project were to examine the impact of this guideline on: incidence of CLD, number of ventilator hours, rates of infant steroid use, and number of continuous positive airway pressure (CPAP) hours, oxygen use at time of discharge, and rates of extubation failure. The sample was comprised of infants who were $\leq$ 31 weeks gestation on admission to the NICU between January, 2001 and January, 2004. This group was subdivided into two subgroups: infants admitted before the institution of the Golden Hour Guideline (July, 2002) and those admitted after. Data collected included: infant demographics (e.g., gender, ethnicity, gestational age, birth weight, etc.), maternal demographics (e.g., maternal age, ethnicity, medical conditions, medications, etc.), total number of ventilator hours, postnatal steroid use, total number of CPAP hours, number of surfactant doses, oxygen use at time of discharge, number and reasons for reintubations (extubation failures), and presence of CLD. The Vermont Oxford Network (VON), along with chart review, was used for data collection. Extubation failure was defined as reintubation within 72 hours of extubation. Chronic lung disease was defined as continued oxygen dependency at 36 weeks post-conceptual age. Data collection is almost complete. Data analysis will evaluate between-group differences (pre and post-guideline) using chi-square, t-test, and Mann-Whitney U test as appropriate. The results of this study will provide important information on the efficacy of the Golden Hour Guideline in decreasing CLD and will provide direction for further refinements in neonatal care.

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DYSTROGLYCAN EXPRESSION AND GLYCOSYLATION IN PEDIATRIC SOLID TUMORS.

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Dystroglycan is an integral membrane protein that has been found in a variety of cell types including muscle, epithelial, and neural cells. Dystroglycan helps to link the extracellular basement membrane, cell membrane and cytoskeleton, thereby contributing to cellular membrane integrity. Dystroglycan can also mediate cell adhesion to the extracellular matrix, stimulate extracellular matrix formation, and mediate signal transduction pathways. Made from a single gene product (*DAG1*), the dystroglycan protein is post-translationally cleaved to comprise two protein chains, α and β; α dystroglycan undergoes further post-translational modification which results in heavy glycosylation of the dystroglycan molecule. The binding of cells via dystroglycan to extracellular matrix proteins has been shown to be dependent on this glycosylation. Abnormalities of dystroglycan glycosylation have been clearly implicated in muscular dystrophy, neuronal migration disorders and ocular malformations. While its importance in development and in disease is well known, it is only recently that dystroglycan function has been considered in tumor biology. Recent studies have shown that altered dystroglycan expression is a feature of certain cancer cell lines and of some adult primary tumors. These alterations have been implicated in both tumor invasiveness and metastatic potential.

To date, no such investigations have been reported for pediatric cancers. Determination of whether dystroglycan glycosylation and expression factor in pediatric tumorigenesis may provide the insight needed to exploit this molecule as a novel diagnostic and therapeutic target. Various tumor samples have been obtained from the Pediatric Division of the Cooperative Human Tissue Network at Children's Hospital, Columbus, OH. The expression pattern and glycosylation of dystroglycan was analyzed using immunohistochemistry and immunoblotting techniques. The results of the investigation, which is funded by the Samuel J. Roessler Memorial Scholarship, will be presented at the conference.