Preventing Early-Onset Neonatal Sepsis: A Collaborative Approach to Promoting Adaptation

Wendi Gines, DNP, RN
Samford University

BACKGROUND

1. Early-Onset Neonatal Sepsis (EONS)
   A. Group B streptococcal (GBS) (CDC, 2019)
   B. Escherichia coli (E. coli) (CDC, 2019)
2. Occurs in neonates less than 7 days of life (DOL) (Simonsen, Anderson-Berry, Delair, & Davies, 2014)
3. Leading cause of neonatal mortality and morbidity (Simonsen, Anderson-Berry, Delair, & Davies, 2014)
4. Antibiotic Stewardship
   A. Challenge for perinatal healthcare professionals (CDC, 2019)
   B. Timely initiation of antibiotics reduces mortality and morbidity (CDC, 2019)
   C. Clinicians prescribe antibiotics unnecessarily 20-50% (CDC, 2019)

SIGNIFICANCE

1. Incidence of EONS in the U.S. between 2005-2008 (Shane & Stoll, 2014)
   A. CDC reported 3,30 cases (Shane & Stoll, 2014)
   B. Overall rate of EONS is 0.77/1,000 live births (Shane & Stoll, 2014)
   C. Overall rate of death associated with EONS is 10.9% (Shane & Stoll, 2019)
   D. 400 deaths were attributed to EONS (Shane & Stoll, 2014)
2. Interprofessional Collaboration aids in improved patient outcomes (Busari, Moll, & Duits, 2017)

PROBLEM

1. Inconsistent identification of neonates at risk for EONS
2. Inconsistent treatment of neonates with EONS
3. Delayed initiation of antibiotics when ordered
4. Absence of standardized protocols for identifying EONS

OBJECTIVES

- **IDENTIFY NEWBORNS AT RISK** — Develop a process to increase compliance with early identification of neonatal risk for EONS
- **COLLABORATIVE PROTOCOL** — Develop and implement interprofessional collaborative protocols
- **EDUCATION** — Develop and provide education for the healthcare team in the perinatal setting

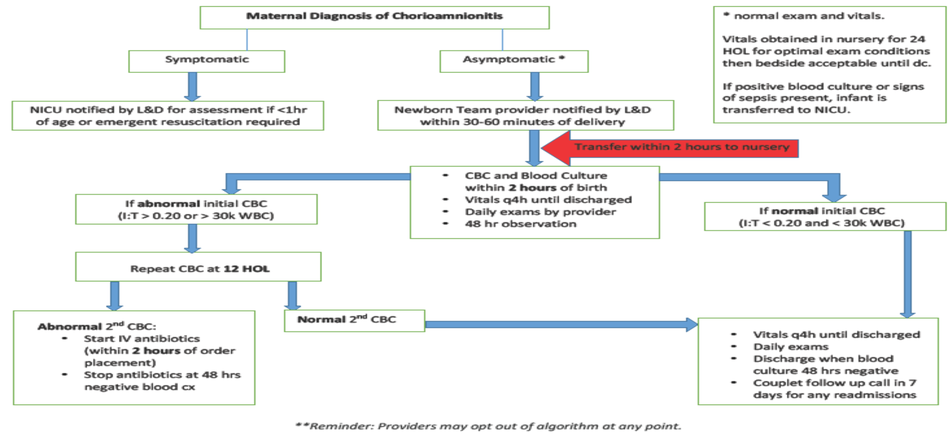
METHODOLOGY

Kotter's Steps 1-3
Meet with stakeholders
Identify WHO, WHAT, WHEN, HOW (chart reviews)
Begin spreading the word
Establish interprofessional team
Develop an institutional algorithm

Kotter's Steps 4-6
Education campaign Develop EONS interprofessional committee team and meet monthly
Establish perinatal nurse champions
Demonstrate benefits

Kotter's Steps 7-8
Ongoing evaluation and data analysis
Improve practices based on evaluation of results
Embed practices into organizational culture throughout healthcare system

INSTITUTIONAL ALGORITHM



RESULTS

Pre-Algorithm Data (Retrospective)

MONTH	1st WBC ≥30	1st IT >0.2	Should get 2nd CBC	Got 2nd CBC	2nd CBC ≥30	2nd IT >0.2	NICU ADMIT	Should get Antibiotic	Received Antibiotics	Blood Culture Positive	Followed Algorithm
SEPTEMBER N=14	2	1	3	5	1	0	0	1	14	0	1
OCTOBER N=10	0	3	3	4	0	0	2	2	10	0	2 (NICU ADMIT)
NOVEMBER N=10	1	1	2	4	0	0	0	0	10	0	0
DECEMBER N=14	2	2	4	5	0	0	1	1	14	0	1 (NICU ADMIT)
JANUARY N=8	2	1	3	3	0	0	0	0	8	0	0

Post-Algorithm Data (Prospective)

MONTH	1st WBC ≥30	1st IT >0.2	Should get 2nd CBC	Got 2nd CBC	2nd CBC ≥30	2nd IT >0.2	NICU ADMIT	Should get Antibiotic	Received Antibiotics	Blood Culture Positive	Followed Algorithm
February to March N= 6	2	0	2	2	2	0	0	2	1	0	3

IMPLICATIONS

The Chorioamnionitis Institutional Algorithm:
1. Supports interprofessional collaboration
2. Provides a standardized protocol for identification, management, and treatment for EONS
3. Promotes antibiotic stewardship
4. Integrates a diverse set of variable using variety of criteria

BARRIERS

- Chorio-phobic prescriber practices
- Physician and nurse resistance to change

FACILITATORS

- Positive Response from NBN Nurses
- First Interprofessional algorithm

LIMITATIONS

- Competing attention for JACHO readiness
- COVID-19

RECOMMENDATIONS

1. Ongoing training and awareness of the impact of EONS on neonates
2. Development of discharge instructions packet to include:
   A. Signs and symptoms of EONS
   B. Signature to confirm teach-back of discharge instructions
3. Develop a short phone survey to evaluate neonatal status at 7 DOL post-discharge
4. Develop process for tracking and evaluating post-discharge call data
5. Initiate follow-up phone calls at 7 DOL to evaluate neonatal status utilizing short survey
6. Expand the EONS Institutional Algorithm to other perinatal units within hospital system
7. Perform a cost-analysis for decrease in antibiotic administration
8. Ongoing data collection

Wendi Gines
Email: wgines@Samford.edu

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