**Aim:** Our aim was to implement several Golden Hour strategies including admission temperature $\geq 36^\circ C$, and within 60 minutes: initiate IV fluids, administer antibiotics, and obtain an initial point of care glucose and to improve the percent compliance to 80% in each practice from September 2014 to May 2015 for inborn infants less than or equal to 32 weeks 6 days gestation or weighing less than or equal to 1500 grams at birth.

**Setting:** The NICU at the Children’s Hospital of Mississippi is an academic, tertiary-care, 102 bed, level IV NICU with approximately 2159 deliveries per year. On average, there are 933 (265 VLBW) NICU admissions yearly, of which 72% are inborn and 28% are outborn.

**Mechanisms:**

![Key Driver Diagram](image)

**Methods:** We began the Golden Hour project in May 2014 as a quality improvement initiative aimed at standardizing our initial management and improving our efficiency with the admission process. Upon review, our baseline records revealed that from September to October 2014, 11% of VLBW infants were hypothermic on admission. While this falls within VON's 1st and 3rd quartiles, we felt there was room for improvement. Similarly, 33% of VLBW infants had hypoglycemia (glucose < 40 mg/dl) and the average highest time for completing all three tasks (obtaining a glucose level, initiating IV fluids, and administering antibiotics) was 162 minutes. We centered our focus on delays in IV fluids and antibiotics, hypoglycemia, and hypothermia.

**Measures:** All measures were collected in real time and reviewed at biweekly meetings. The following outcome measures were set: (1) Percent of babies with an admission temperature $< 36^\circ C$, (2) Percent of infants with IV fluid times $< 60$ minutes, (3) Percent of infants with an initial point of care glucose obtained in $< 60$ minutes (4) Percent of infants with antibiotic administration times $< 60$ minutes

**Results:** A total of 120 inborn infants were analyzed between September 2014 and May 2015. We observed that at least 80% of the time, admission temperature was above 36°C excluding the most recent month achieving 100% compliance with normothermia (Figure 3). In addition, our compliance for time to initiation of IV fluids at less than 60 minutes showed an upward trend with improvement close to 80% compliance, from our initial compliance of only 33% (Figure 4). Our compliance for obtaining an initial point of care glucose improved by 31% from our baseline compliance to May 2015 and compliance for time to initial antibiotics increased from only 6% baseline to 12% by May 2015 (Figures 5 & 6).
Finally, our overall compliance with all Golden Hour strategies (achieving all three time goals within 60 minutes and no hypothermia in the baby) showed consistent improvement up to 25% (Figure 6).

**Discussion:** We successfully implemented Golden Hour strategies to standardize our delivery room management and admission process in our practice. To start, we set our initial goal for all strategies to be at least 80% compliant each month. This helped us establish the key drivers for advancing each objective toward our goal. We encountered many challenges along this journey, however providers remaining at the bedside for the first 60 minutes and implementation of a Golden Hour checklist and algorithm contributed to the overall improvements. In an effort to avoid delays and expedite IV fluid delivery prior to the infant’s arrival, we were obligated to explore solutions for delivering IV fluids to the bedside without a medical record number. Prior to the recall of infant warming mattresses, we also struggled with methods to avoid our infant’s from becoming hyperthermic while simultaneously attempting to prevent hypothermia. In addition, we faced challenges with training a large group of nurses to obtain labs by heelstick while initiating education on the correct use of the new point of care machines. We are a teaching hospital, therefore the influx of students and new nurses at any given time creates a significant challenge in meeting our goals and ensuring our policies and practices are routinely followed. Our focus in the coming months will be shifting toward reducing hyperthermia and consistently maintaining our goal of 60 minutes regarding time to IV fluids, antibiotics, and initial point of care glucose to above 90% compliance. We hope that by standardizing delivery room resuscitation and NICU care during admission, we can decrease morbidity and mortality, improve neonatal outcomes, and decrease length of stay.

**Team Acknowledgement**
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![Figure 2: Timeline of Golden Hour Project](image-url)
Figure 3: (A) Attribute control chart - Admission temperature compliance. Chi-square test: $p=0.46$; Linear-by-Linear association: $p=0.48$ (B) Variables control chart - Admission temperatures for all the babies during the study period.
Figure 4: (A) Attribute control chart- IV fluid initiation compliance. Chi-square test: p=0.005; Linear-by-Linear association: p=0.10

Figure 5: (A) Attribute control chart- Initial glucose check compliance. Chi-square test: p=0.07; Linear-by-Linear association: p=0.025
A. Percent with antibiotics initiation at less than 60 minutes

Figure 6: (A) Attribute control chart- Antibiotics initiation compliance. Chi-square test: $p=0.39$; Linear-by-Linear association: $p=0.078$

Overall percent compliance with Golden Hour Project

Figure 7: Attribute control chart: Overall compliance process for all four goals of Golden Hour Project. Shows consistent and statistically significant improvement trend. Chi-square test: $p=0.212$; Linear-by-Linear association: $p=0.019$. 

Issued first Golden Strategies newsletter

Educated providers on ordering admission antibiotics “stat”

Began sending biweekly Golden Strategies Newsletter

Baseline November 14 December 14 January 15 February 15 March 15 April 15 May 15

Percent (%)

0.0 0.2 0.4 0.6 0.8 1.0

Began data collection

November 2014 Created Golden Strategies newsletter

January 2015 Initiated IV fluid paper order set

January 2015 Educated providers on ordering initial antibiotics “stat”

March 2015 Created a glucose task force

March 2015 Created umbilical line protocol

April 2015 Educated bedside nurses to heelstick

April 2015 Installed unit wide point of care machines

May 2015 Implemented medication bin for “stat” antibiotics

September 2014

0.0

0.1

0.2

0.3

0.4

0.5

Overall compliance with Golden Hour Project