

## Problem

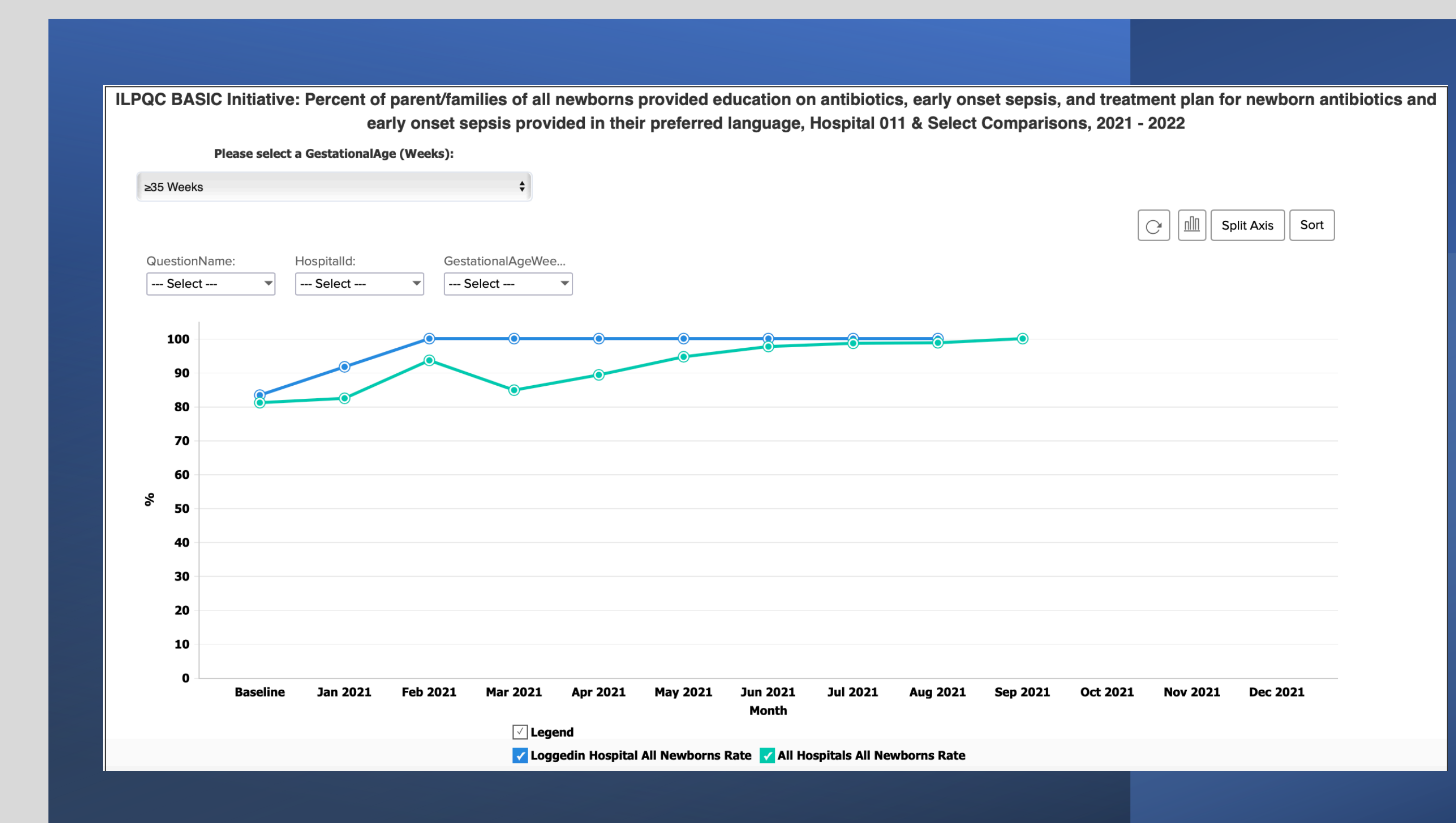
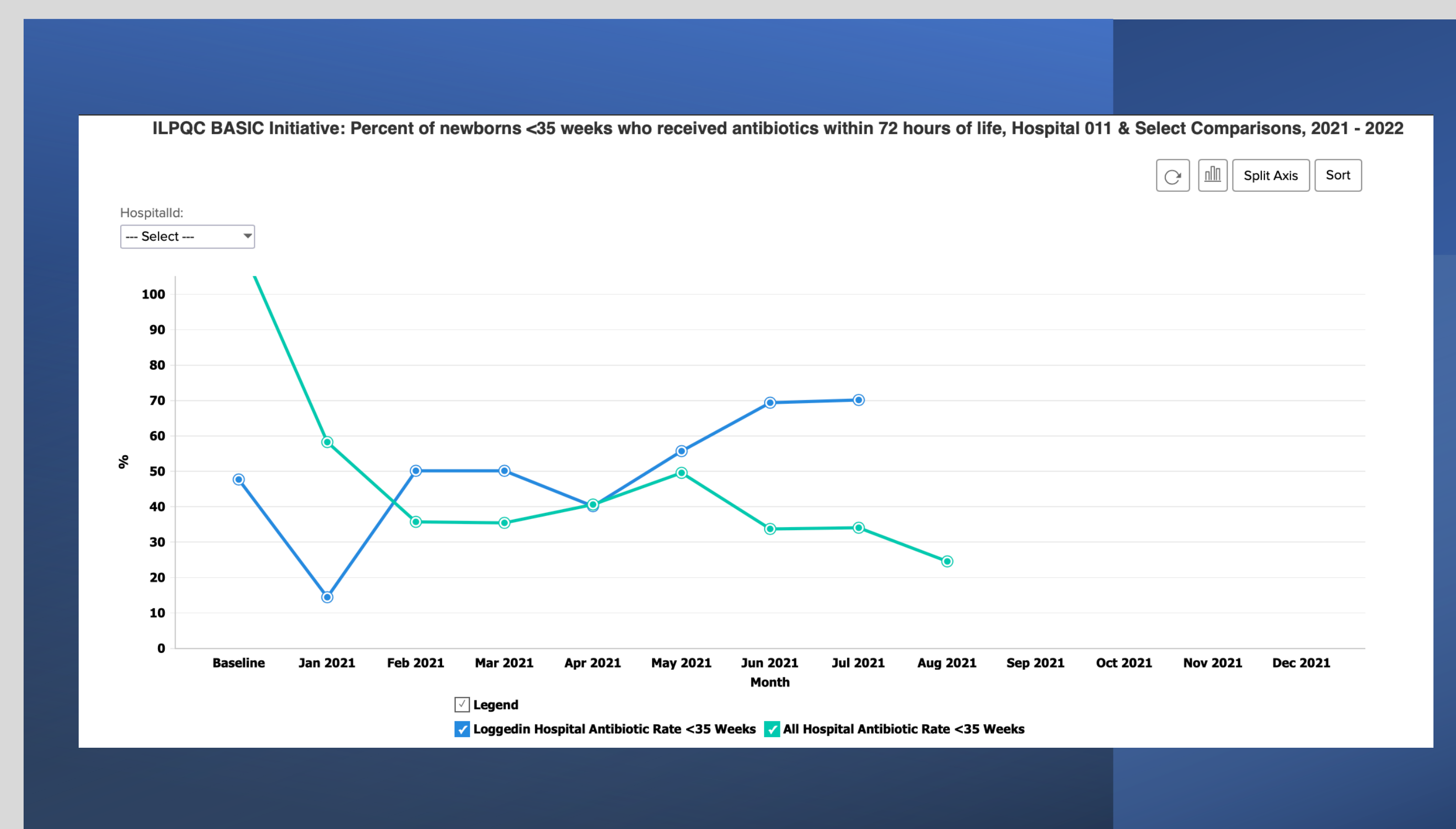
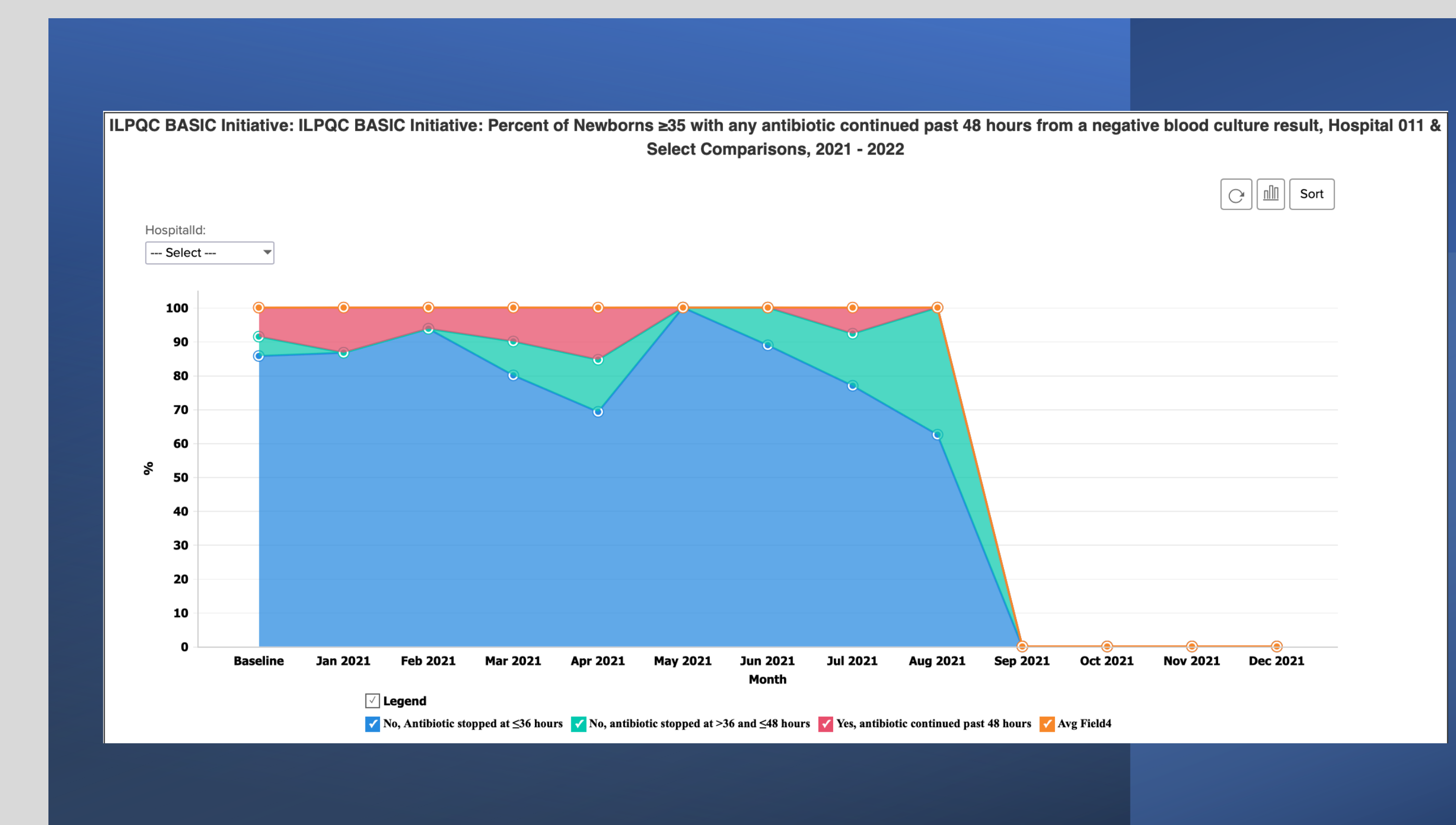
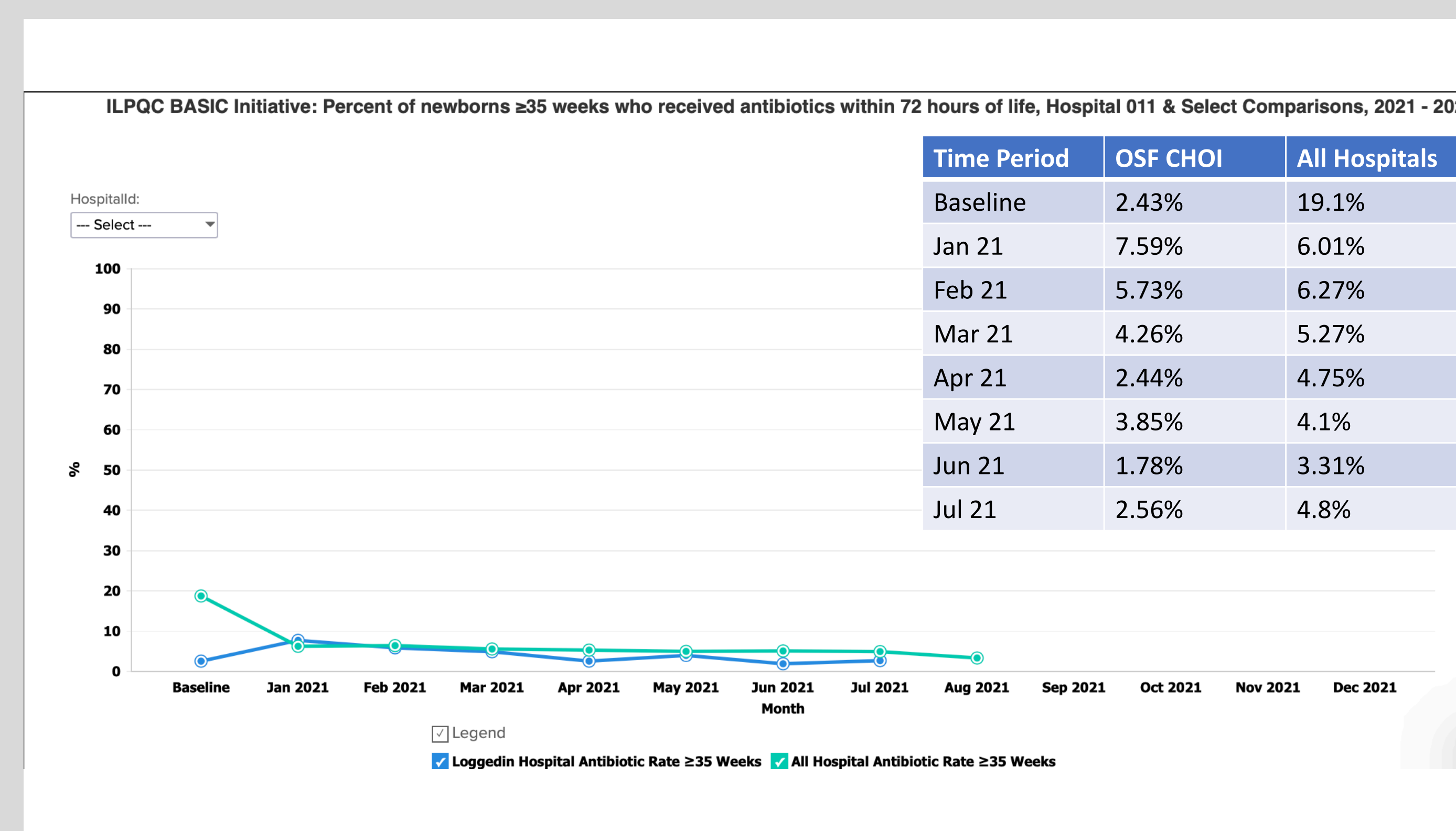
- Optimizing antibiotics has been a priority for our level 3 hospital over the last 5 years. Inappropriate antibiotic usage has been linked to late onset sepsis, necrotizing enterocolitis, maternal/infant separation, as well as problems such as obesity, asthma, and allergies later in life.
- We recognized that although we have made great strides at improving antibiotic usage, we still had an opportunity to reduce antibiotics given beyond 36 hours in patients with a negative blood culture and standardize parental education.
- Our AIMS for this project were to:
  - maintain our current antibiotic usage
    - 2.43% of neonates  $\geq$  35 weeks
    - 47% of neonates  $<$  35 weeks
  - reduce the % of patients  $>$  35 weeks receiving antibiotics beyond 36 hours with a negative culture by 20% to a goal of 10% by September 2021
  - increase the percentage of parents receiving appropriate antibiotic education by 20% to a goal of  $>$ 90% by September 2021.

## Project Implementation

- A QI Team was formed comprised of neonatal/newborn nursery physicians and RNs, PharmDs, unit nursing educators, and hospital network educators.
- Baseline data was collected between October-December 2020. During baseline data collection, multiple PDSA cycles were performed to optimize data collection and divide up work between team members.
  - It was noted blood culture collection times were often not documented accurately and time of blood culture draw for patients transferred in were often not available. Education was provided to nursing staff and edits were made to transport RN documentation to correct these issues.
  - Reports were developed to easily identify patients receiving antibiotics and blood cultures in the first 72 hours of life for ease of data collection.
- Healthcare teams were educated on best practices
  - Residents and physicians had previously received education, but this was reinforced during monthly orientation lectures for new residents on newborn nursery and NICU rotations.
  - Standardized EOS algorithms for premature infants and term infants made available in physician work areas.
  - Dotphrases incorporating EOS algorithms were created to include in provider documentation, including algorithm decisions and improved documentation of parental education.
  - Standardized education for nursing staff was developed and administered via Healthstream to ensure 100% completion by nursing staff.
  - Data and opportunities for improvement were shared with providers monthly via email.
  - Lippincott hospital procedures were reviewed by physicians and nurse educators to ensure accuracy and updated information.
  - Currently in the process of developing ministry-wide education for providers.
- Administer and de-escalate antibiotics
  - Order sets were updated by gestational age to implement automated stop times. Multiple PDSA cycles were needed during this process as these had to be approved ministry-wide by all provider groups as well as hospital administration. It was also noted during this time that the ordersets were updated to include a 36 dose stop time as opposed to 36 hour stop time which had to be corrected.
- Improve family education
  - Family education sheets were adapted from ILPQC. Through PDSA cycles the sheets were approved by the ministry and made available ministry wide for download. Education sheets were dispersed to families by pharmacists during weekdays and provider teams on weekends.

## Results

- Throughout the project, our team maintained our baseline antibiotic administration for patients  $<$  35 weeks as well as patients  $\geq$  35 weeks with expected month-to-month variation.
- We have not yet reached our goal of decreasing antibiotic usage beyond 36 hours with a negative blood culture, however we have improved the % of patients receiving antibiotics beyond 48 hours with a negative blood culture.
- Automated stop times were implemented in August and then required correction as they were unintentionally placed for 36 doses as opposed to 36 hours. We have achieved our goal of ensuring parental education  $>$  90% of the time.



## Conclusions

- Throughout this project we identified opportunities to improve education and standardize documentation ministry-wide.
- Our order sets have now been corrected to include automated 36 hour stop times for antibiotics and we will continue to monitor this progress.

## Acknowledgements/Hospital Team

- We would like to acknowledge all the NICU and newborn nursery residents, physicians, APNs, and nurses as well as the pediatric pharmacists for their assistance in this project.
- We would like also to acknowledge hospital leadership on prioritizing the safety and optimization of outcomes for all neonates within the ministry.