Evaluation of Core Metric Discrepancies Between High and Low Socioeconomic Status (SES) - Maternal Drop in Hemoglobin After Vaginal Delivery: A Single Site Analysis

Maitreyi Narayan, BS; Barbara Orlando, MD, PhD, FASA; Seena John, MSN, CVRNII - BC, FACCN, SSBBP; Bela Patel, MD, CMQ, FCCP; Statistical & Data Analysis: Kavitha Gopal, MS; Swaroop Gantela, MD; Michelle Narat, MS;

Background
- Memorial Hermann Hospital (MHH) in the Texas Medical Center (TMC), Houston, TX is a Level 4 maternal facility with over 4400 deliveries per year
- Core Metrics are routinely collected and analyzed to assess the quality of care between different groups i.e gender, race, socioeconomic status
- One such core metric is the change in Hemoglobin before / after vaginal delivery and its correlation with transfusion rate
- Of the 50 top Academic Medical Centers, 9/50, including MHH - TMC ranked at 17, have failed in this metric, making it the most failed core metric

For our institution, there has consistently been a statistically significant difference in this core metric between high and low socioeconomic status: High SES having a greater rate of hemoglobin drop than that of their lower SES counterparts.

Objective:
- Identify and isolate the cause of the difference in hemoglobin drop after delivery, and suggest a new process to prevent this

Methods
- The Vizient Equity Domain interface was used to collect and report core metrics
- Low SES defined as: Payer classification of Medicaid, county medically indigent, charity, uninsured, Title V maternal or child health
- High SES defined as all other types not described above
- Eligibility criteria for this core metric was outlines as the following:
  - Vaginal Delivery
  - Age >18
  - Lack of high-risk features including hypertensive spectrum disorders of pregnancy (pre-eclampsia, eclampsia, HELLP syndrome)
  - Lack of Premature or Premature prolonged rupture of membranes
  - Lack of Prematurity (Gestational age < 37weeks)
- Fallout was defined as those patients with a change of > 1 g/dL drop in Hgb after delivery

Results
- Variables tested for between the two SES groups include:
  - Rate of gestational HTN
  - Episiotomy Rate
  - Gestational Diabetes
  - Transfusion rates
  - Manual Perineal Protection Rate
  - Substance Use
  - Medicare Severe Diagnosis – Related Groups

Fallout Rates are higher for high SES (orange) as compared to low SES (blue)
None of the variables outlined above account for this discrepancy

Conclusion
Although there is a well described, statistically significant difference in the rate of fallouts between these two SES groups, none of the variables tested seem to explain this discrepancy.

Further Data Analysis
We have found statistically significant associations between the following:
- High SES fallouts have an overall lower total blood volume and BMI than low SES fallouts without a significant difference in their absolute quantitative blood loss
- 71% of high SES patients are seen by private physicians
- Looking at timing of post delivery CBC data is vague and stipulates “within 48h of delivery”

This raises the question if there is a difference in the fluid resuscitation protocols between these two groups, that could introduce a bias or a difference in the time elapsed before the second Hgb is drawn post delivery for those with lower BMIs

We are currently chart reviewing in order to outline hydration protocol, and plan to finish analyzing additional data by July 2022.