Top Science Webinar Series Session I

Moderated by Vivien Yap, MD

12:00 PM - Welcome and Introductions by Planning Committee Chair, Dr. Lori Billinghurst

12:05 PM - High Blanket Temperature During Therapeutic Hypothermia is Associated with Death or Disability for Infants with Hypoxic Ischemic Encephalopathy, ***Dr. John Flibotte, Children's Hospital of Philadelphia***

12:15 PM - Defining Transitional Oxygen Physiology for Newly Born Infants with Cyanotic Congenital Heart Disease, ***Dr. Alyssa Thomas, Children's Hospital of Philadelphia***

12:25 PM - Gestational Exposure to E-Cigarette Carriers Alone Results in Compromised Postnatal Growth with Right Ventricular Hypertrophy, ***Dr. Pedro Rivera-Hernandez, University at Buffalo SUNY***

12:35 PM - Intraosseous as Compared to Umbilical Venous Epinephrine in Perinatal Ovine Asphyxial Arrest, ***Dr. Sara Berkelhamer, University at Buffalo SUNY***

12:45 PM - The Roadmap to Success: Creating Unit-Based Teams to Increase Family Centered Rounding and Improve Care Team Communication, ***Drs. Sarah Calardo and Nadia Chaudhry-Waterman, Inova Fairfax Hospital***

CONTROL ID: 3384044

TITLE: High Blanket Temperature During Therapeutic Hypothermia is Associated with Death or Disability for Infants with Hypoxic Ischemic Encephalopathy

DIGITAL OBJECT IDENTIFIER (DOI):

ABSTRACT STATUS: Sessioned

PRESENTER: John Flibotte

AUTHORS/INSTITUTIONS: J. Flibotte, S.B. DeMauro, E. Eichenwald, E. Jensen, K. Dysart, Pediatrics/ Neonatology, Children's Hospital of Philadelphia, Philadelphia, Pennsylvania, UNITED STATES|N. Research Network, Pregnancy & Perinatology, National Institute of Child Health and Human Development, Bethesda, Maryland, UNITED STATES|A.R. Laptook, Pediatrics, Alpert Medical School of Brown University, Providence, Rhode Island, UNITED STATES|S. Shankaran, Pediatrics, Wayne State University, Detroit, Michigan, UNITED STATES|S. McDonald, RTI International, Raleigh, North Carolina, UNITED STATES|M. Baserga, Pediatrics, University of Utah, Park City, Utah, UNITED STATES|E.F. Bell, Pediatrics, University of Iowa, Iowa City, Iowa, UNITED STATES|C.M. Cotten, Pediatrics, Duke University, Durham, North Carolina, UNITED STATES|A. Das, Biostatistics and Epidemiology, RTI International, Rockville, Maryland, UNITED STATES|T. DuPont, Pediatrics, University of New Mexico, Albuquerque, New Mexico, UNITED STATES|R. Heyne, Pediatrics, U. Texas Southwester Med Center, Dallas, Texas, UNITED STATES|K.P. Van Meurs, Pediatrics/ Neonatology, Stanford University, Palo Alto, California, UNITED STATES|

CURRENT CATEGORY: Neonatology

CURRENT SUBCATEGORY: Neonatal Medicine: Clinical Trials

ABSTRACT BODY:

Background: Recent trials of therapeutic hypothermia (TH) for infants with hypoxic ischemic encephalopathy (HIE) demonstrate improved but persistent rates of death or disability near 30%. Blanket temperature (BT) necessary to maintain a sub-physiologic target temperature of 33.5^{O}C has not been studied as a biomarker of outcome. Because body temperature is centrally regulated, BT necessary to maintain 33.5^{O}C is a plausible indicator of brain injury.

Objective: Determine whether BT during maintenance phase of TH associates with death or disability at 18-22 months for infants with HIE.

Design/Methods: Retrospective study of infants who received TH at 33.5^{O}C for 72h in the Neonatal Research Network's Induced Hypothermia and Optimizing Cooling trials. Maintenance phase of TH began when infant esophageal temperature was 33.5+0.1^{O}C after equilibration from any overshoot in the first 4h. BTs were recorded during TH: at baseline, every 15 min during the first 4-5h, hourly until 12h, and then every 4h through rewarming. We rank ordered each infant's BTs and divided them into quartiles. The mean of the upper quartile (Q4, ≥ 75%) was used as the highest BT. Logistic regression was used to determine if death or moderate/ severe disability was associated with high BT, adjusting for initial Sarnat stage, center, trial, and maternal education. Similar analyses examined associations between outcome and BT using: the overall median; mean of the lowest quartile; and, burden of consecutive blanket temperatures above 33.5^{O}C in the first 24 and 48h of TH.

Results: 197 infants received TH at 33.5^{O}C for 72h (Table 1); 187 had adequate data. Of these, 37% (69/187) died or survived with disability. Results from analysis of BT quartiles appear in Table 2. Each 0.5^{O}C increase above 33.5^{O}C in the upper quartile mean was associated with a 58% increase in the adjusted odds of death or disability (aOR 1.58, 95% CI 1.14-2.19). aOR of death/ disability based on persistence of high BTs appear in Table 3. Infants with >8 consecutive BTs above 33.5^{O}C in the first 48 hour of TH had an aOR of death/ disability of 7.51 (95% CI 2.42-23.2). Figure 1 depicts rates of death/ disability based on number of consecutive BTs above 33.5^{O}C in the first 24 and 48h of TH.

Conclusion(s): Higher BT during maintenance phase of TH is associated with death or moderate/ severe disability among infants with HIE and may be an early, clinically useful biomarker to inform prognosis and treatment.

(no table selected)

IMAGE CAPTION:

Table 1: Neonatal characteristics stratified by trial of enrollment

Characteristic	**NICHD Induced Hypothermia (IH) Trial 2005, n=102**	**Optimizing Cooling (OC) Trial 2014, n=95**	**Total n=197**
Age at baseline (hours)	5.0 ± 1.2	5.2 ± 1.1	5.1 ± 1.1
Transferred from birth hospital *	48 (47%)	59 (62%)	107 (54%)
Male sex	51 (50%)	52 (55%)	103 (52%)
Apgar score ≤ 5			
At 5 min	92/101 (91%)	79 (83%)	171/196 (87%)
At 10 min *	80/95 (84%)	54/78 (69%)	134/173 (77%)
Birthweight	3385 ± 617	3230 ± 528	3310 ± 579
Continued resuscitation at 10 MOL	95 (93%)	82 (86%)	177 (90%)
Time to respirations ≥ 10 min*	69/97 (71%)	41/89 (46%)	110/186 (59%)
Cord blood			
pH *	6.9 ± 0.2 (N=72)	6.9 ± 0.2 (N=77)	6.9 ± 0.2 (N=149)
Base deficit *	18.5 ± 6.7 (N=62)	15.7 ± 8.1 (N=59)	17.1 ± 7.5 (N=121)
Seizures at <6h	43 (42%)	27 (28%)	70 (36%)
Anticonvulsants			
Prior to intervention *	49/99 (49%)	25/92 (27%)	74/191 (39%)
At time of intervention	41 (40%)	16 (17%)	57 (29%)
Severity of HIE at <6h of Age			
Severe	32/101 (32%)	21 (22%)	53/196 (27%)
Moderate	69/101 (68%)	74 (78%)	143/196 (73%)
Outcomes			
Primary Outcome			
Death or moderate or severe disability*[1]	45 (44%)	27/92 (29%)	72/194 (37%)
Secondary Outcomes			
Death during intervention *	15 (15%)	1 (1%)	16 (8%)
Death prior to discharge *	19 (19%)	7 (7%)	26 (13%)
Death through 18-22 months *	24 (24%)	8/93 (9%)	32/195 (16%)
Moderate disability[1]	2/78 (3%)	1/84 (1%)	3/162 (2%)
Severe disability[1]	19/78 (24%)	18/84 (21%)	37/162 (23%)
Cerebral Palsy	19/77 (25%)	16/85 (19%)	35/162 (22%)
Blindness	5/75 (7%)	7/85 (8%)	12/160 (8%)
Severe hearing impairment	4/77 (5%)	4/85 (5%)	8/162 (5%)

*Significant at P<0.05.

[1]Moderate disability was cognitive score 70-84 (Bayley III in OC or MDI Bayley II in IH) and gross motor function classification system level (GMFCS) 2, active seizures or hearing with amplification. Severe disability was cognitive score or Bayley II MDI <70, GMFCS 3-5, blindness or profound hearing loss.

Table 2: Logistic regression model of death/ disability by blanket temperature

Blanket Temperature	aOR (95% Confidence Interval)		
	Death or Disability	Death	Moderate to Severe Disability
Highest quartile*	1.58 (1.14-2.19)	1.40 (0.92-2.12)	1.46 (1.02-2.09)
Median**	1.30 (1.02-1.65)	1.03 (0.82-1.30)	1.58 (1.10-2.28)
Lowest quartile***	1.15 (1.00-1.32)	1.11 (0.92-1.34)	1.16 (0.97-1.38)

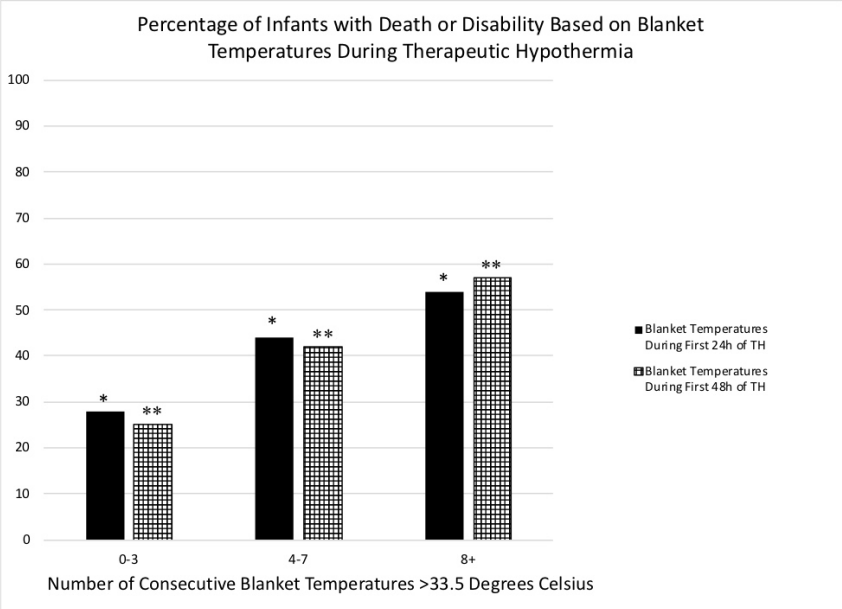
Report aOR for each 0.5ºC that the blanket is above 33.5ºC.
Adjusted for: Sarnat stage, center of enrollment (as a random effect), maternal education, trial enrolled.
*Highest quartile temperature was defined as the average of the highest quartile of blanket temperatures per infant; **Median was the median of blanket temperatures for each infant; ***Lowest quartile was defined as the average of the lowest quartile of blanket temperatures per infant.

Table 3: Logistic regression model of death/ disability by persistence high blanket temperature

Time blanket temperature trends above 33.5°C	**Adjusted OR**	**95% Confidence Interval**	**P-value**	**# of infants**
Within first 24 hours*				
0-49% > 33.5	REF			98/185
50-74% >33.5°C	3.84	1.52-9.67	0.005	62/185
75-100% >33.5°C	2.82	0.75-10.7	0.13	25/185
0-3 consecutive >33.5	REF			93/185
4-7 consecutive >33.5°C	2.39	0.95-6.00	0.06	64/185
8+ consecutive >33.5°C	5.25	1.60-17.2	0.007	28/185
Within first 48 hours*				
0-49% > 33.5	REF			113/187
50-74% >33.5°C	7.59	2.75-21.0	0.0001	55/187
75-100% >33.5°C	1.92	0.39-9.45	0.42	19/187
0-3 consecutive >33.5	REF			85/187
4-7 consecutive >33.5°C	2.45	0.96-6.23	0.06	67/187
8+ consecutive >33.5°C	7.51	2.42-23.2	0.0006	35/187

Report aOR for each hour that blanket is above 33.5°C. *Temperatures during induction of hypothermia would be excluded.
Adjusted for: Sarnat stage, center of enrollment (as a random effect), maternal education, trial enrolled.

Figure 1



Depicts death or moderate/ severe disability stratified by number of consecutive blanket temperatures above 33.5ºC in the first 24 hours of TH (solid) as well as the first 48 hours of TH (checkered). Trends for greater number of consecutive blanket temperatures associating with increased death or disability were significant for both the first 24h of TH (*p=0.006) as well as the first 48h of TH (**p=0.0005) by Cochrane-Armitage trend tests.

CONTROL ID: 3382134

TITLE: Defining transitional oxygen physiology for newly born infants with cyanotic congenital heart disease

DIGITAL OBJECT IDENTIFIER (DOI):

ABSTRACT STATUS: Sessioned

PRESENTER: Alyssa R Thomas

AUTHORS/INSTITUTIONS: A.R. Thomas, A.L. Ma, D.D. Weinberg, M. Huber, A. Ades, J. Rychik, E. Foglia, Children's Hospital of Philadelphia, Philadelphia, Pennsylvania, UNITED STATES|

CURRENT CATEGORY: Neonatology

CURRENT SUBCATEGORY: Neonatal Cardiac Physiology/Pathophysiology

ABSTRACT BODY:

Background: Established minute to minute pulse oxygen saturation (SpO_2) ranges during the immediate postnatal period are used to guide delivery room (DR) resuscitation. These SpO_2 ranges were established in non-anomalous infants. Transitional oxygen saturation trends in newborns with cyanotic congenital heart disease (CCHD) have not been characterized.

Objective: To define SpO_2 trends during the first twenty minutes after birth among newborns with CCHD causing abnormal mixing of oxygenated and deoxygenated blood. Secondarily, to characterize the resuscitative interventions performed during DR stabilization of infants with CCHD.

Design/Methods: Retrospective single-site study of infants with gestational age ≥ 32 weeks and prenatally diagnosed transposition of the great arteries (TGA) or hypoplastic left heart syndrome (HLHS) delivered between March 1, 2016 and December 31, 2018. Neonates were excluded for major non-cardiac congenital anomalies or missing resuscitation records. Infants intubated in the first 20 minutes of life (MOL) were excluded from pulse oximetry analyses. Demographic information, pulse oximetry values, and resuscitative interventions were abstracted from DR records, which include vital signs documented in real-time. Smoothed curves of the 25^{th}, 50^{th}, and 75^{th} percentiles for pre-ductal SpO_2 values measured in the first 10 MOL were plotted. Normative SpO_2 values for non-anomalous infants published by Dawson et al. (Pediatrics, 2010) were overlaid for comparison.

Results: Among 112 eligible infants, 51 had TGA and 61 had HLHS (Table 1). Among infants with HLHS, the median SpO_2 value was 76% (IQR 71-80%) at 5 MOL and 82% (IQR 77-87%) at 10 MOL (Fig.1). Among infants with TGA, the median SpO_2 value was 61% (IQR 53-66%) at 5 MOL and 71% (IQR 63-78%) at 10 MOL (Fig.2). Median SpO_2 curves for both groups were below the median values in Dawson et al. Among all infants, 53 (47%) were given supplemental oxygen and 60 (54%) required non-invasive respiratory support, of which 83% received Continuous Positive Airway Pressure and 33% received non-invasive Positive Pressure Ventilation. 1 infant with HLHS and 30 infants (59%) with TGA were intubated (Table 2).

Conclusion(s): Pulse oximeter values for newborns with HLHS and TGA do not follow those developed in non-anomalous newborns. Newborns with CCHD frequently require respiratory interventions in the DR. Understanding the different pulse oximeter curves, saturation goals, and high need for respiratory support will inform optimal DR resuscitation of these patients.

(no table selected)

IMAGE CAPTION:

Table 1. Demographic data and clinical characteristics

	All (N=112)	HLHS (N=61)	TGA (N=51)
Gestational age (GA), weeks, av. (SD)	38.8 (1.0)	38.9 (0.9)	38.8 (1.0)
Preterm (32-36 wk), N (%)	5 (5)	2 (3)	3 (6)
Birth weight, grams, mean (SD)	3325 (502)	3257 (475)	3406 (525)
Birth weight < 10th percentile corrected for GA, N (%) *based on Fenton Growth chart	8 (7)	6 (10)	2 (4)
Male sex, N (%)	80 (71)	43 (70)	37 (73)
Race/ethnicity Black or African-American White Hispanic All others	 9 (8) 69 (62) 14 (13) 34 (30)	 8 (13) 37 (61) 7 (11) 16 (26)	 1 (2) 32 (63) 7 (14) 18 (35)
Singleton, N (%)	111 (99)	61 (100)	50 (98)
Non-epidural opioid or benzodiazepine administered to mother during labor, N (%)	3 (3)	2 (3)	1 (2)
General anesthesia administered to mother during labor, N (%)	3 (3)	3 (5)	0 (0)
Birth type, N (%) Vaginal Caesarean section	 54 (48) 58 (52)	 27 (44) 34 (56)	 27 (53) 24 (47)
TGA: Ventricular septum intact? N (%)	N/A	N/A	Intact septum: 32 (63) Septal defect: 19 (37)

Table 2. Delivery room interventions

	All (N=112)	HLHS (N=61)	TGA (N=51)
Supplemental oxygen FiO_2 >21% used, N (%*)	53 (47)	10 (16)	43 (84)
Subjects receiving any non-invasive respiratory support, N (%*)	60 (54)	16 (26)	44 (86)
Type of non-invasive respiratory support used, N (%**)			
Blow by oxygen	20 (33)	4 (25)	16 (36)
Nasal cannula	10 (17)	2 (13)	8 (18)
CPAP	50 (83)	13 (81)	37 (84)
PPV	20 (33)	3 (19)	17 (38)
Indication for non-invasive respiratory support, N (%†)			
Bradycardia	9 (9)	2 (9)	7 (9)
Hypoxemia	37 (37)	6 (27)	31 (40)
Increased work of breathing	23 (23)	6 (27)	17 (22)
Other/not reported	39 (39)	10 (45)	29 (37)
Intubation, N (%*)	31 (28)	1 (2)	30 (59)
Indication for intubation, N (%‡)			
Persistent bradycardia	1 (3)	0 (0)	1 (3)
Apnea/irregular respiration	5 (16)	0 (0)	5 (17)
Hypoxemia	16 (52)	0 (0)	16 (53)
Hypercarbia	1 (3)	0 (0)	1 (3)
Other/not reported	15 (48)	1 (100)	14 (47)
Apgar 1 min, median (IQR)	8 (8-8)	8 (8-8)	8 (7-8)
Apgar 5 min, median (IQR)	8 (8-9)	9 (8-9)	8 (8-8)
Prostaglandin administered, N (%)	111 (99)	61 (100)	50 (98)

HLHS= Hypoplastic left heart syndrome
TGA= Transposition of the great arteries

*% of total cohort
**% of subjects using any respiratory support (total exceeds 100% because individuals may have had multiple respiratory interventions)
† % of all instances of non-invasive respiratory support use
‡ % of all intubations

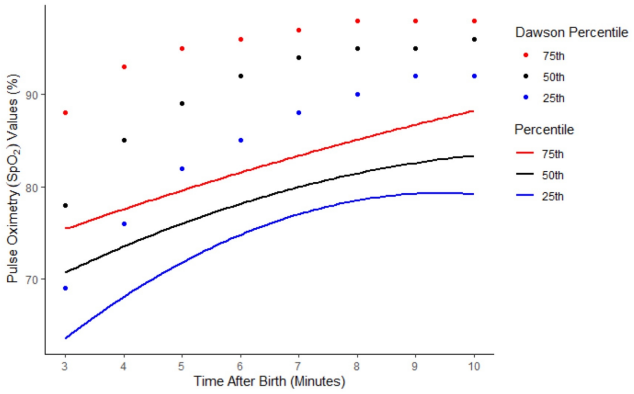


Fig 1. Pulse oximetry trends in HLHS patients (N=61) in the first 10 minutes after birth.
Overlying dotted lines represent values published by Dawson et al., 2010.
Individual subjects may have received respiratory support or supplemental oxygen.

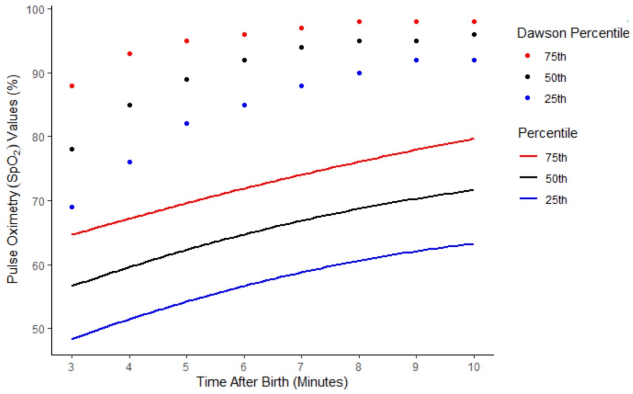


Fig 2. Pulse oximetry trends in TGA patients (N=42) in the first 10 minutes after birth.
Overlying dotted lines represent values published by Dawson et al., 2010.
Individual subjects may have received respiratory support or supplemental oxygen.

CONTROL ID: 3385871

TITLE: Gestational Exposure to E-Cigarette Carriers Alone Results in Compromised Postnatal Growth with Right Ventricular Hypertrophy

DIGITAL OBJECT IDENTIFIER (DOI):

ABSTRACT STATUS: Sessioned

PRESENTER: Pedro Javier Rivera-Hernandez

AUTHORS/INSTITUTIONS: P.J. Rivera-Hernandez, N. Hpa, J. Helman, B. Preroff, S. Gugino, C. Koenigsknecht, S. Berkelhamer, Pediatrics, University at Buffalo SUNY, Buffalo, New York, UNITED STATES|

CURRENT CATEGORY: Environmental Health

CURRENT SUBCATEGORY: None

ABSTRACT BODY:

Background: E-cigarette (EC) use is growing among pregnant woman and women of child bearing age. This trend may attributed to misconceptions that ECs are a safer alternative to tobacco. Prevalence studies suggest that 5-15% of women report EC use during pregnancy. However, the impact of gestational exposures remains poorly characterized, including the impact of exposure to the carriers propylene glycol/vegetable glycerin (PGVG) alone.

Objective: To determine the impact of gestational exposure to aerosolized PGVG on pregnancy success rates, fetal and postnatal growth as well as brain and cardiopulmonary development.

Design/Methods: C57Bl/6 mice were bred with daily surveillance for copulation plugs. Females were exposed to aerosolized nicotine and flavoring-free 50%/50% PGVG from embryonic day 0 (E0 or day of plug) through delivery (E19) in a CH Technologies programmable exposure system. Treatment included 10 x 70 ml puffs of PGVG aerosol delivered every 30 min x 16 cycles to parallel published clinical use. Outcomes were compared with sham-handled controls. Rates of pregnancy, litter size, offspring birthweight (BW), and head weight (HW) at birth as well as postnatal growth were evaluated. All litters were culled to comparable size with collection of brain from select offspring at postnatal day 0 (P0) . Heart and lung tissue were harvested at P14 with micro-dissection of hearts for assessment of right ventricular hypertrophy (RVH = weight RV/LV+S) as well as inflation fixation of lungs for morphometric analysis.

Results: Comparable pregnancy rates (80% [PGVG] versus 85% [control]) and litter size (8 ± 1 [PGVG] and 8 ± 0.8 [control]) were observed with exposure. While a trend towards lower BW was noted with PG/VG, this difference was not significant (1.22g ± 0.07 [PGVG] versus 1.29g ± 0.13 [control]). PGVG offspring had lower HW (0.300g ± 0.005 [PGVG] versus 0.342g ± 0.008 [control]), suggestive of compromised brain growth (Fig 1). Gestational exposure to PGVG also resulted in compromised postnatal growth with 8.2% growth failure by P14 (Fig 2). RVH was also present at P14 in PGVG offspring (0.37 ± 0.09 [PGVG] versus 0. 29 ± 0.05 [control]). Morphometric analysis of brain and lung tissue remains pending.

Conclusion(s): In a model paralleling clinical use of ECs, gestational exposure to PGVG alone resulted in postnatal growth failure, RVH, and possible compromised brain growth. These data advocate for further evaluation of the safety of gestational exposure to common constituents present in ECs.

(no table selected)

IMAGE CAPTION: Figure 1: Birth and head weight following gestational exposure to PGVG. * p < 0.05.
<!--[if !supportLineBreakNewLine]-->
<!--[endif]--> **Figure 2: Postnatal growth following gestational exposure to PGVG as compared to sham-handled controls.** * p < 0.05 by 2-way ANOVA with Bonferroni post-hoc analysis.

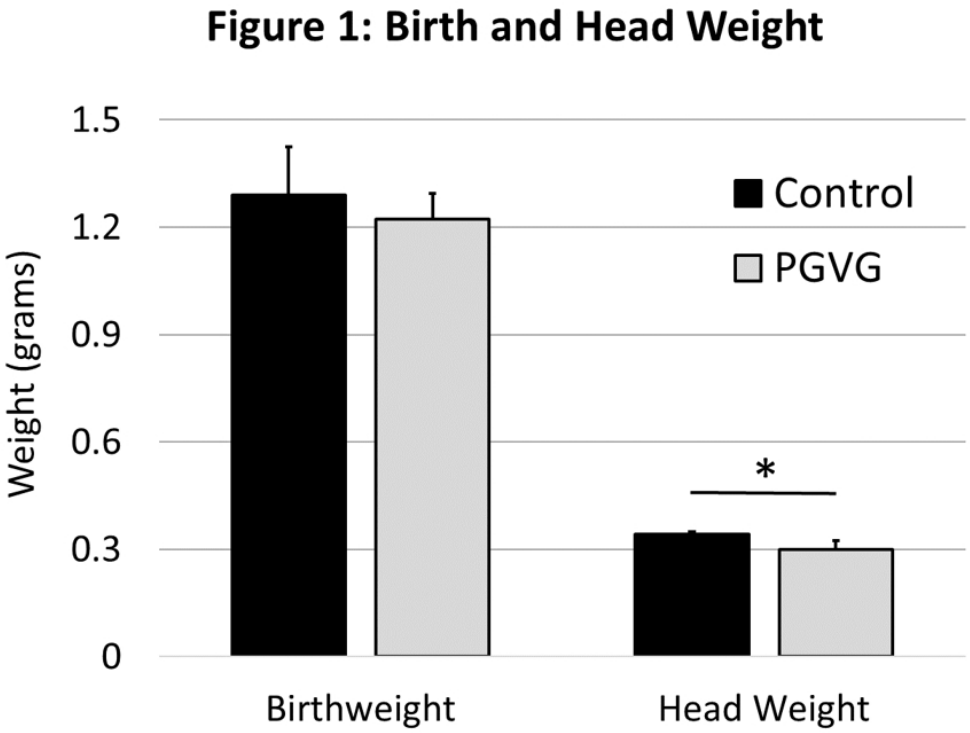


Figure 1: Birth and head weight following gestational exposure to PGVG. * p < 0.05.
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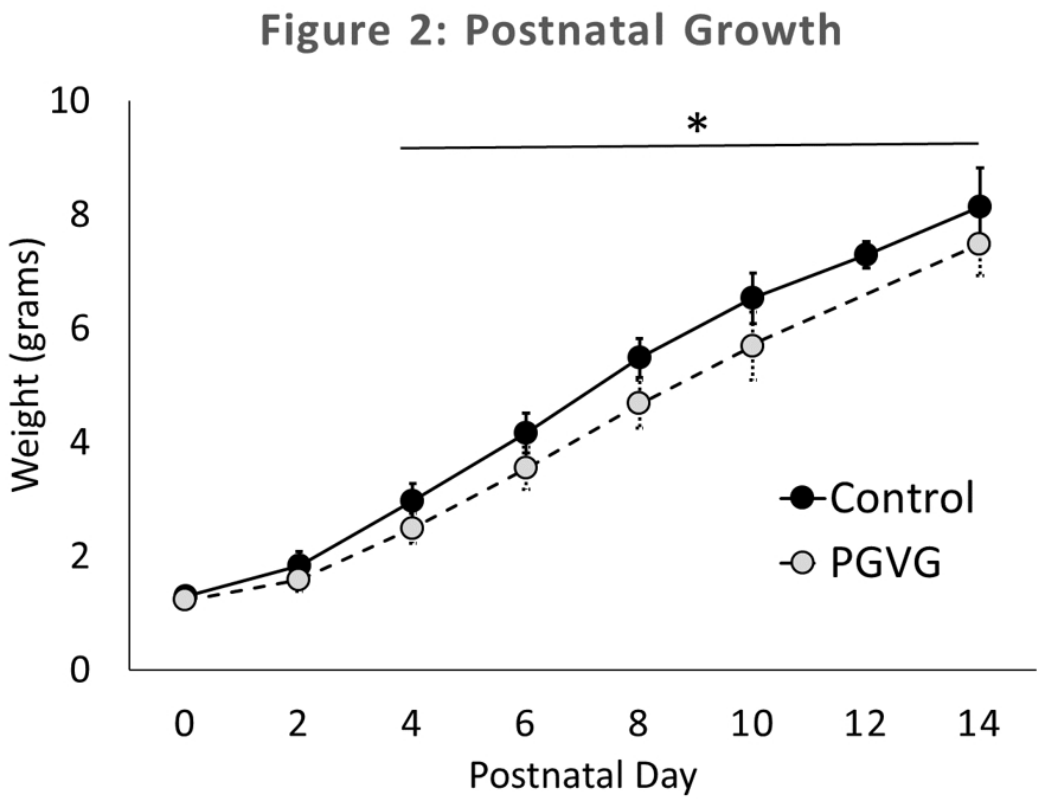

Figure 2: Postnatal growth following gestational exposure to PGVG as compared to sham-handled controls. * $p < 0.05$ by 2-way ANOVA with Bonferroni post-hoc analysis.

CONTROL ID: 3385841

TITLE: Intraosseous as Compared to Umbilical Venous Epinephrine in Perinatal Ovine Asphyxial Arrest

DIGITAL OBJECT IDENTIFIER (DOI):

ABSTRACT STATUS: Sessioned

PRESENTER: Sara Berkelhamer

AUTHORS/INSTITUTIONS: S. Berkelhamer, P.J. Rivera-Hernandez, J. Nair, M. Rawat, P. Chandrasekharan, J. Helman, C. Koenigsknecht, L. Nielsen, S. Gugino, Pediatrics, University at Buffalo SUNY, Buffalo, New York, UNITED STATES|S. Lakshminrusimha, University of California Davis, Sacramento, California, UNITED STATES|

CURRENT CATEGORY: Neonatology

CURRENT SUBCATEGORY: Neonatal/Infant Resuscitation

ABSTRACT BODY:

Background: The Neonatal Resuscitation Program recommends administration of epinephrine by umbilical venous (UV) catheter or intraosseous (IO) needle for bradycardia not responding to positive pressure ventilation and chest compressions at birth. Relative pharmacokinetics and efficacy of IO as compared to UV administration in a perinatal asphyxia model remain unknown.

Objective: To determine efficacy, absorption, bioavailability and pharmacokinetics of IO as compared to UV epinephrine in a neonatal ovine asphyxia model

Design/Methods: 17 term lambs were instrumented and delivered by c-section prior to umbilical occlusion to induce asphxial arrest. IO and UV access were established during asphyxia and confirmed by blood aspiration. Lambs were randomized to receive epinephrine (0.03 mg/kg followed by 2 mL flush) via IO or UV route. Resuscitation was initiated after 5 min of asystole (+ 2 min for PEA with heart rate > 40/min) following NRP guidelines. Blinded administration of epinephrine (or concurrent saline via alternative route) was performed at 5 min and every 3 min thereafter with ongoing chest compressions. Continuous hemodynamics were monitored with serial blood sampling for blood gas analysis and determination of epinephrine concentrations by ELISA. Data were analyzed by 2-way ANOVA with post-hoc Bonferroni.

Results: 17 lambs were studied with comparable demographics in the IO and UV cohorts. There were no differences in rates of return of spontaneous circulation (ROSC) or average number of epinephrine doses. However, there was a trend towards earlier ROSC in the IO cohort with median time (IQR) to ROSC of 363 (353-368) and 432 (365-469) sec for IO and UV respectively ($p = 0.058$) (Table 1). Epinephrine levels were comparable at ROSC with IO and UV administration (Figure 1), however comparison of concentrations from lambs who received only one dose of epinephrine identified higher peak with UV administration (Figure 2). While route of administration did not impact systolic BPs, less tachycardia, higher diastolic BPs, and higher carotid artery flows were present after IO epinephrine. Slightly lower pulmonary artery flows were also noted (Figure 3).

Conclusion(s): IO epinephrine resulted in comparable pharmacokinetics and efficacy to UV administration with tendency towards early ROSC and improved hemodynamics, supporting the use of this alternative route of administration in neonatal resuscitation (particularly by non-neonatal emergency medical providers unfamiliar with UV catheter placement).

(no table selected)

IMAGE CAPTION: TABLE 1: Baseline Characteristics and ROSC
Data are presented as mean ± SD or median (IQR). Epi = epinephrine, ROSC = return of spontaneous circulation, PPV = positive pressure ventilation.

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<!--[endif]--> **Figure 1: Plasma epinephrine concentrations in relation to time of ROSC**
Data are presented as mean ± SD. Vertical grey bar denotes time of ROSC.
<!--[endif]--> **Figure 2: Plasma epinephrine concentrations following single dose of epinephrine**
Data are presented as mean ± SD. * $p < 0.05$ by 2-way ANOVA with post-hoc Bonferroni.
<!--[endif]--> **Figure 3: Hemodynamic parameters following ROSC**

Data are presented as mean ± SD. p values by 2-way ANOVA. Carotid, pulmonary and ductal data represent mean flows.

	IO (n = 8)	UV (n = 9)	p value
Weight (kg)	3.8 ± 1.4	3.7 ± 0.6	ns
Gender (F:M)	5:3	6:3	ns
Gestation *(singleton : first twin : second twin)*	1:4:3	4:2:3	ns
Baseline ABG			
pH	7.21 ± 0.16	7.17 ± 0.18	ns
$PaCO_2$ (mmHg)	67 ± 17	77 ± 28	ns
PaO_2 (mmHg)	21 ± 3	24 ± 5	ns
HCO_3 (mEq/L)	25 ± 4	26 ± 3	ns
Lactate (mM/L)	6.1 ± 5.1	5.4 ± 3.0	ns
Time to asystole (min)	11.7 (6.9-16.6)	15 (6.8-23.0)	ns
ROSC, n (%)	5 (62.5%)	6 (66.6%)	ns
ROSC with first dose of epi, n (%)	5 (62.5%)	5 (55.6%)	ns
Seconds to ROSC from onset of PPV	363 (353-368)	432 (365-469)	0.058
Seconds to ROSC from first dose of epi	39 (37-44)	98.5 (47-149)	0.060
Doses of epi	2.1 ± 1.6	2.1 ± 1.5	ns

TABLE 1: Baseline Characteristics and ROSC
Data are presented as mean ± SD or median (IQR). Epi = epinephrine, ROSC = return of spontaneous circulation, PPV = positive pressure ventilation.

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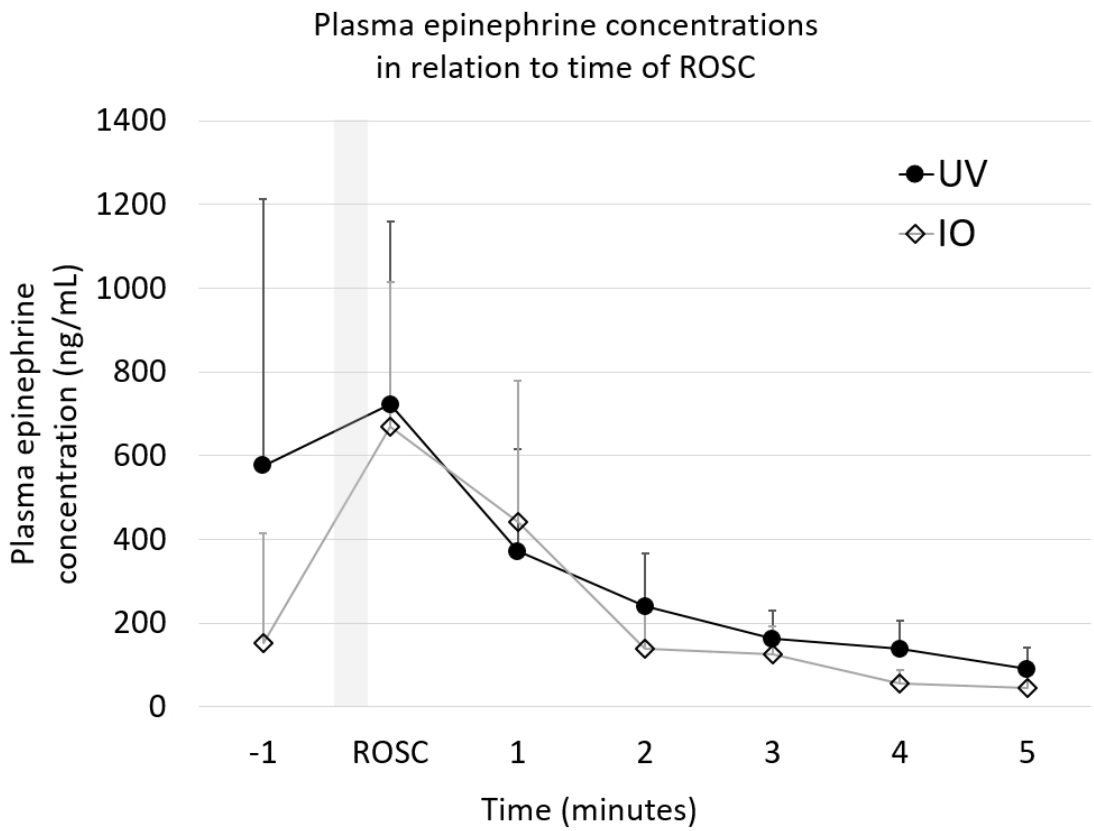

Figure 1: Plasma epinephrine concentrations in relation to time of ROSC
Data are presented as mean ± SD. Vertical grey bar denotes time of ROSC.
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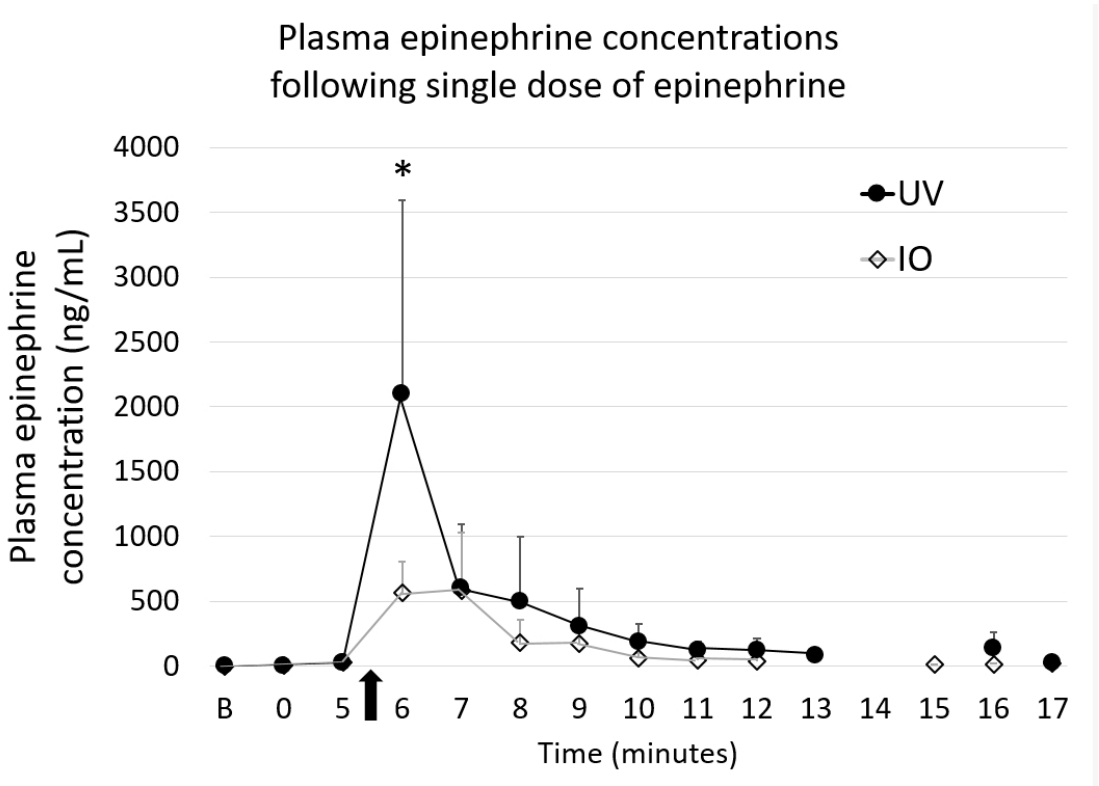

Figure 2: Plasma epinephrine concentrations following single dose of epinephrine
Data are presented as mean ± SD. * p < 0.05 by 2-way ANOVA with post-hoc Bonferroni.
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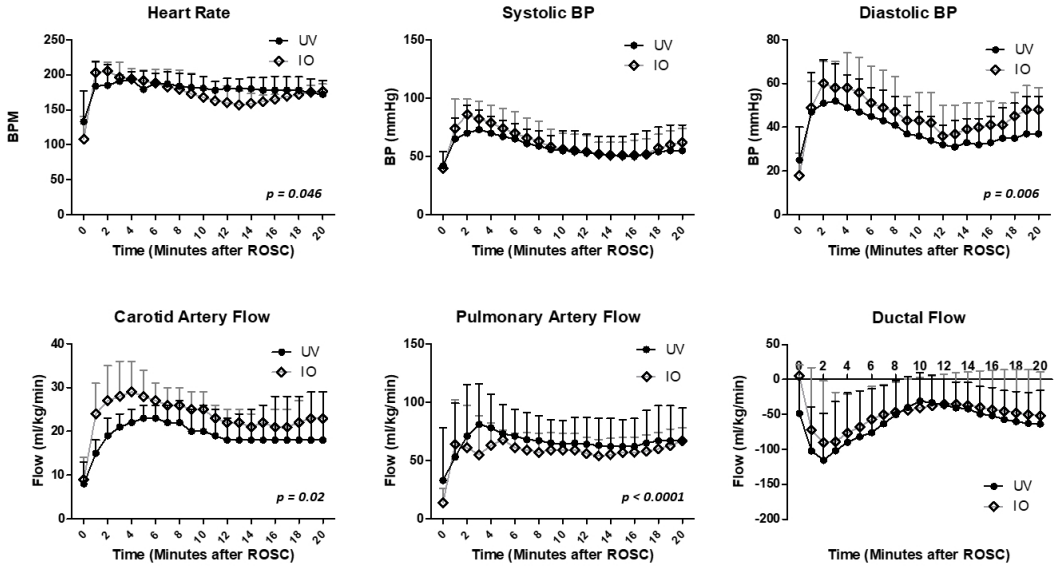


Figure 3: Hemodynamic parameters following ROSC

Data are presented as mean ± SD. p values by 2-way ANOVA. Carotid, pulmonary and ductal data represent mean flows.

CONTROL ID: 3378514

TITLE: The Roadmap to Success: Creating Unit-Based Teams to Increase Family Centered Rounding and Improve Care Team Communication

DIGITAL OBJECT IDENTIFIER (DOI):

ABSTRACT STATUS: Sessioned

PRESENTER: Sarah J Calardo

AUTHORS/INSTITUTIONS: S.J. Calardo, N. Chaudhry-Waterman, L. Tomlinson, C. Port, Pediatrics, Inova Fairfax Hospital, Fairfax, Virginia, UNITED STATES|

CURRENT CATEGORY: Quality Improvement/Patient Safety

CURRENT SUBCATEGORY: Hospital-based Quality Improvement: General

ABSTRACT BODY:

Background: Family Centered Rounding (FCR) allows the medical team to partner with patients and families in medical decisions, improving patient satisfaction, advocacy, communication, and safety. However, daily implementation is uncommon due to lack of time, lack of training, and lack of standardization.

Objective: This project's aim was to increase the percentage of patients receiving FCR from 59% to 90% in 6 months.

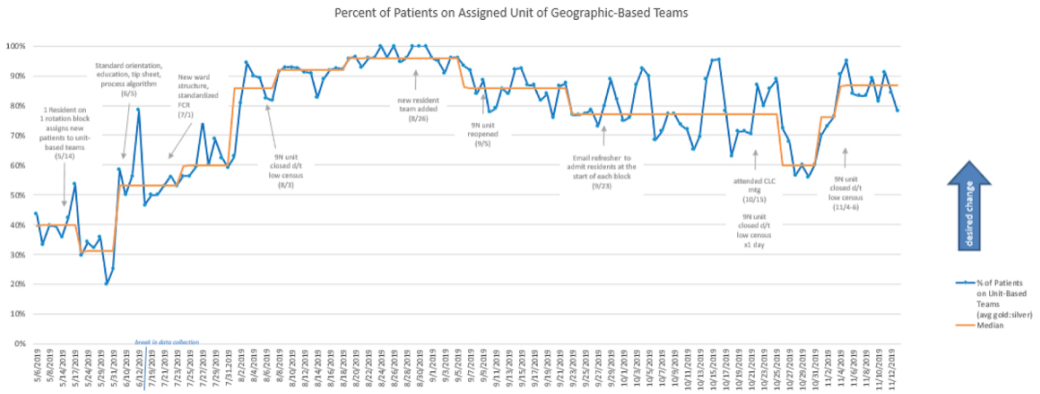
Design/Methods: The Model for Improvement and sequential PDSA cycles were utilized. The process of assigning patients to physician teams was delineated, teams were restructured, and FCR was standardized. The percentage of patients on their geographic team-based unit (process measure) was collected daily. Convenience sampling was used to obtain the frequency of FCR, care team communication measured via "trio rounding" between physician, nurse, and caregiver (outcome measures), and duration of rounds (balancing measure).

Results: The percentage of patients geographically assigned improved from a median of 40% (25th, 75th percentiles 38, 41) to 96% after PDSA Cycle 4 (25th, 75th percentiles 95, 100). However, with frequent admitting resident turnover, rising patient census, and competing priorities, this percentage dropped to below 90% in later months. To combat these barriers to geographic-based placement, changes were made via PDSA cycles and geographically assigned patient placement improved to 87% (25th, 75th percentiles 82, 89) (figure 1). Patients receiving FCR increased from 93 (59%) to 136 (93.6%), achieving the project's aim by PDSA Cycle 4. However, this measure also experienced a small decline that later stabilized at 189 (87%) after PDSA Cycle 6 (figure 2). Trio rounding frequency significantly improved with an increase from 35% (n=33) to 81% (n=93) (figure 3). Implementation of unit-based teams and FCR, rounds exceeding the allotted time decreased from 36% (n=5) to 21% (n=5), by PDSA Cycle 6 (figure 4).

Conclusion(s): By increasing the percentage of patients on unit-based teams, 30% more patients received FCR (95% CI 19, 40) without prolonging rounding time. Results may be generalizable to similarly sized hospitals and residency programs. Future interventions will focus on improving FCR effectiveness and maintaining change implemented.

(no table selected)

IMAGE CAPTION: Figure 1: Percent of Patients on Assigned Unit of Geographic-Based Teams. The percentage of patients on assigned unit of geographic-based teams increased from a baseline median of 40% (25th, 75th percentiles 38, 41) to 96% (25th, 75th percentiles 95, 100) by PDSA Cycle 4. However, with frequent admitting resident turnover every 4 weeks, rising patient census, and competing priorities, this percentage dropped several times. New changes were implemented utilizing PDSA cycles, allowing the most recent percentage of geographically assigned patients to improve back to 87% (25th, 75th percentiles 82, 89). The median line was adjusted when trends and shifts were met according to run chart rules. Figure 2: Percent of Patients Receiving Family Centered Rounds (FCR). Patients receiving FCR increased from 93 (59%) to 136 (93.6%), achieving the project's aim by PDSA Cycle 4. PDSA Cycle 5 reflected the similar decrease in geographically based teams, but PDSA Cycle 6 showed improved FCR frequency, with 87% (n=189) of patients receiving FCR. *Data was not collected for PDSA Cycle 3. Figure 3: Percent of Patients Receiving Trio Rounds. The second outcome measure involved improving physician-nursing communication utilizing trio (physician, nurse, caregiver) rounds. There was a 48% increase in trio rounds since implementing geographic-based teams and increasing daily FCR. *Data was not collected for PDSA Cycle 3 and 4, but we continue to collect data for our current PDSA cycles. Figure 4: Percent of Rounds Exceeding Allotted Time. This balancing measure looked at the time it took to conduct rounds. The percentage of rounds exceeding the allotted time decreased from a baseline of 36% (N=5) to 21% (N=5) as of PDSA Cycle 6. *Data was not collected for PDSA Cycle 3. Unit-based teams potentially allowed for more efficient rounding as more patients received FCR without increasing the duration of rounds.



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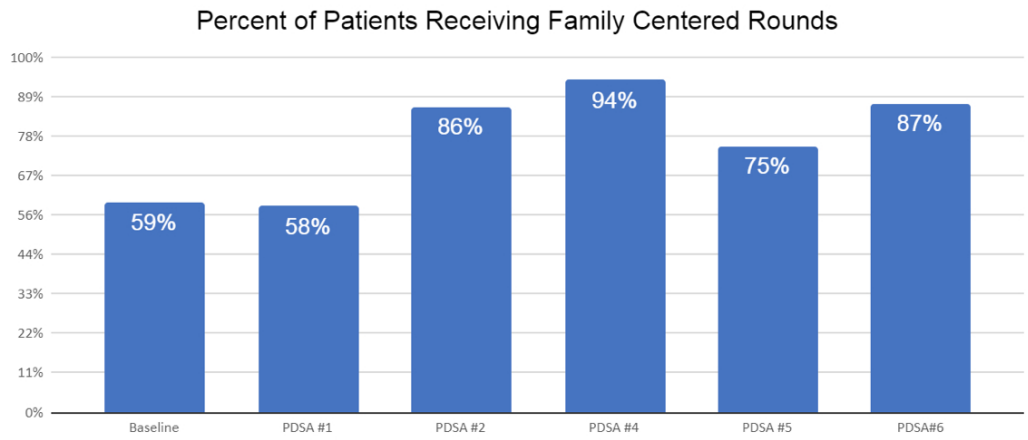

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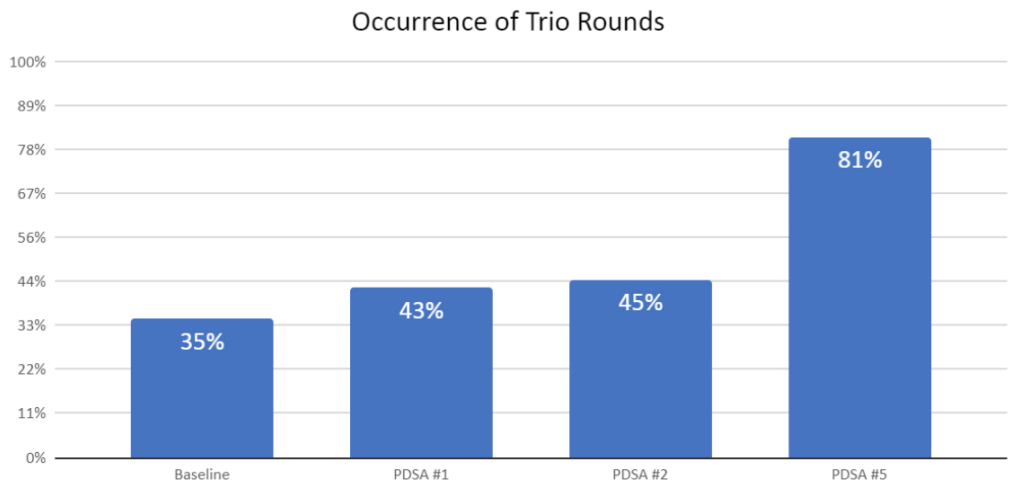

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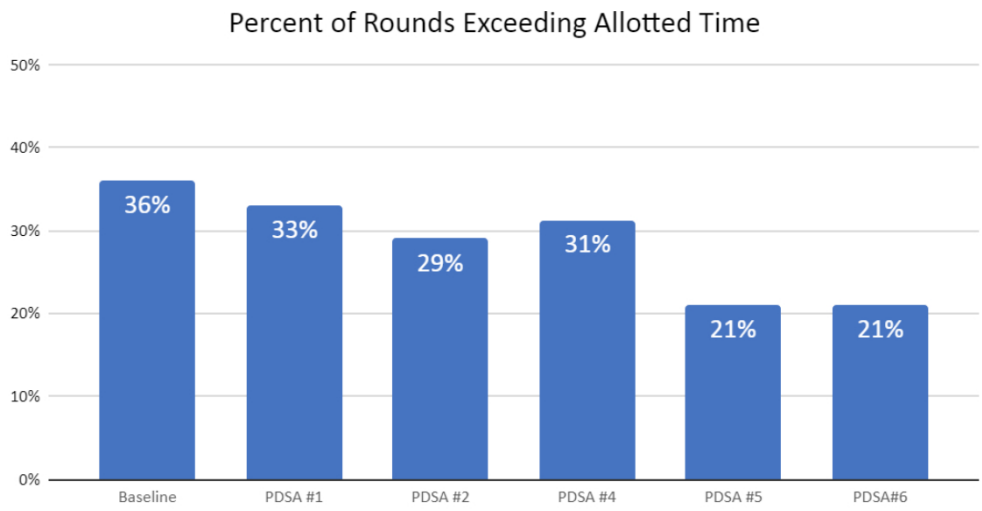

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