Delivery Room Oxygen Data Collection Pilot

July 15, 2020

Webinar Logistics

- Attendees are automatically muted upon entry
- The "chat" function has been disabled. **Please utilize the Q&A box if you are having technical difficulties and to submit any questions you have for the presenters. We will answer as many questions as possible during the Q&A portion of the webinar.**
- The slides and webinar recording will be sent out after the webinar and will also be posted on the CPQCC website.

Delivery Room Oxygen Data Collection Pilot

July 15, 2020

Time	Topic	Presenter
12:00 PM	Welcome and Introduction	Henry Lee
12:05 PM	Clinical Importance	Henry Lee
12:15 PM	Latest Science	Anup Katheria
12:30 PM	Tips on Data Collection	Henry Lee
12:40 PM	Example of Data Collection	Group
12:45 PM	Q & A	Group
1:00 PM	Adjourn	Group

Delivery Room Oxygen Data Collection Pilot

Data Items

Mean Oxygen Saturation (SaO2) at 5 Minutes

The infant's average oxygen saturation (SaO2) as a percentage ranging from 0% to 100% at 5 minutes as noted in the Labor and Delivery record, if available.

Inspired Oxygen Concentration (FiO2) at 5 Minutes

The infant's inspired oxygen concentration (FiO2) ranging from 21% to 100% at 5 minutes as noted in the Labor and Delivery record, if available.

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Apgar Score and Risk of Neonatal Death among Preterm Infants

Sven Cnattingius, M.D., Ph.D., Stefan Johansson, M.D., Ph.D., and Neda Razaz, Ph.D.

ABSTRACT

BACKGROUND

Gestational age is the major determinant of neonatal death (death within the first 28 days of life) in preterm infants. The joint effect of gestational age and Apgar score on the risk of neonatal death is unknown.

METHODS

Using data from the Swedish Medical Birth Register, we identified 113,300 preterm infants (22 weeks 0 days to 36 weeks 6 days of gestation) born from 1992 through 2016. In analyses stratified according to gestational age (22 to 24 weeks, 25 to 27 weeks, 28 to 31 weeks, 32 to 34 weeks, and 35 or 36 weeks), we estimated adjusted relative risks of neonatal death and absolute rate differences in neonatal mortality (i.e., the excess number of neonatal deaths per 100 births) according to the Apgar scores at 5 and 10 minutes and according to the change in the Apgar score between 5 minutes and 10 minutes. Scores range from 0 to 10, with higher scores indicating a better physical condition of the newborn.

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N Engl J Med 2020;383:49-57.
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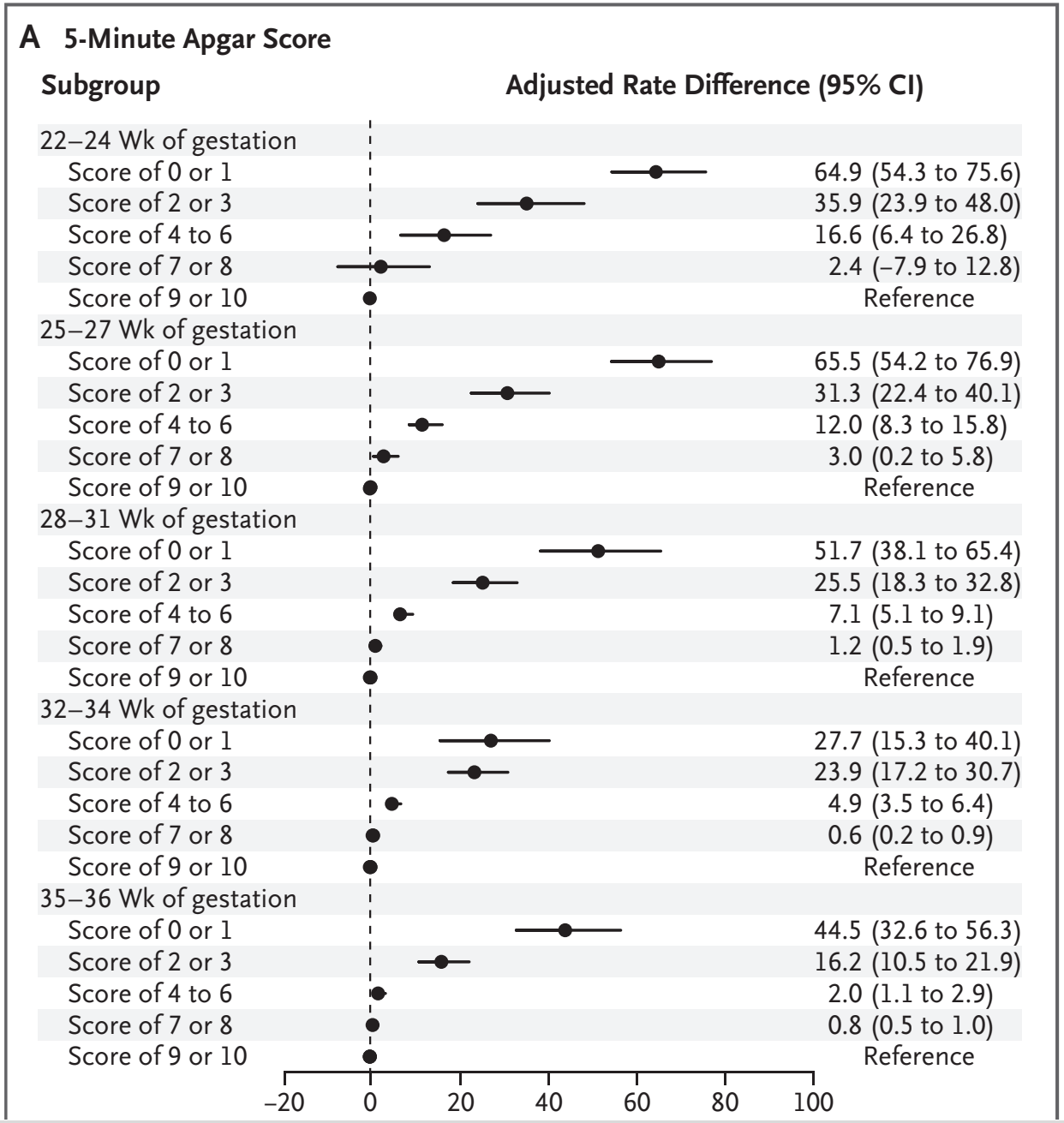

Potential limitations

of Apgar score in preterm infants

May reflect biological immaturity

Subjective nature

Interobserver variability

Questionable prognostic value

Does (or does not) take into account intervention

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FiO2 / O2 saturation at 5 minutes

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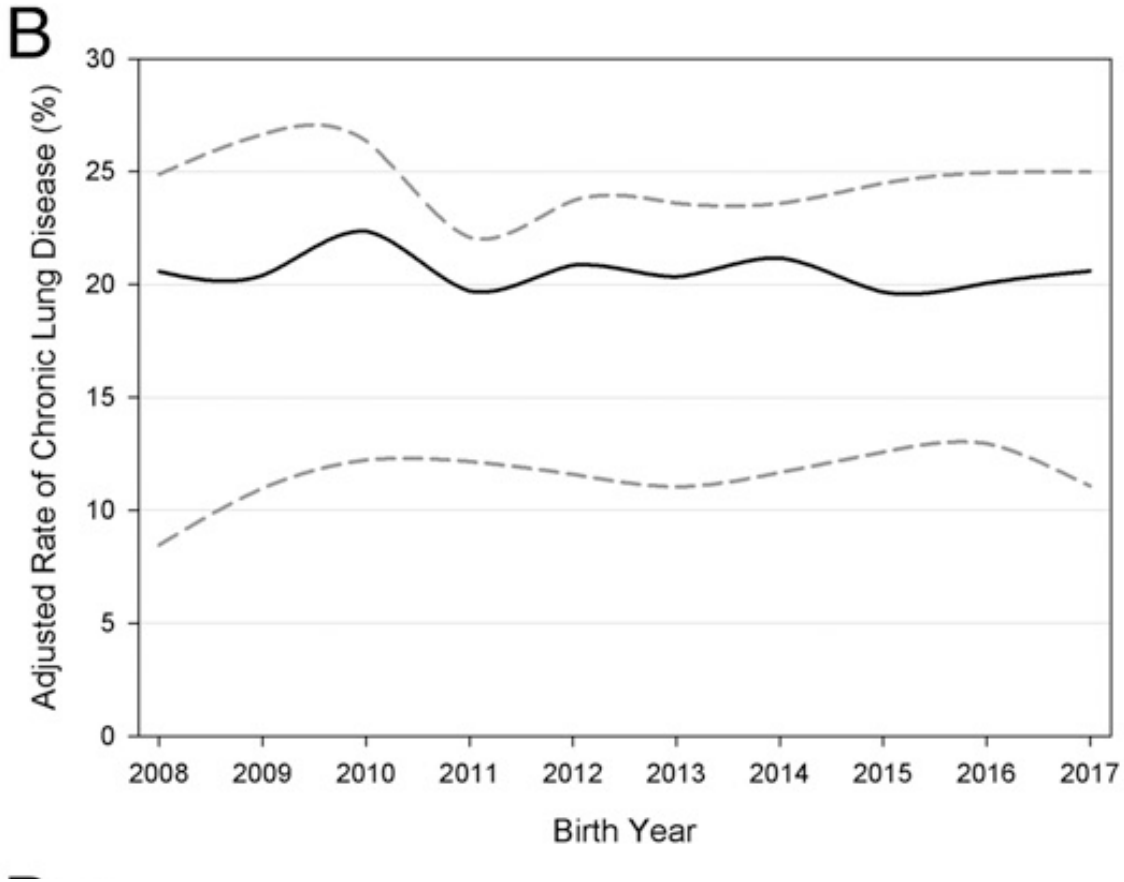
Pediatrics originally published online June 18, 2020;

Survival Without Major Morbidity Among Very Low Birth Weight Infants in California



Prognosis
Treatment

Initial Oxygen Concentration for Preterm Neonatal Resuscitation: (NLS 864) Systematic Review

Commenting on this CoSTR is no longer possible

ILCOR staff

Created: January 15, 2019 · Updated: February 20, 2020

Draft for public comment

To read and leave comments, please scroll to the bottom of this page.

This Review is a draft version prepared by ILCOR, with the purpose to allow the public to comment and is labeled “Draft for Public Comment". The comments will be considered by ILCOR. The next version will be labelled “draft" to comply with copyright rules of journals. The final Review will be published on this website once a summary article has been published in a scientific Journal and labeled as “final”.

Initial Oxygen Concentration for Preterm Neonatal Resuscitation

Treatment Recommendations

We **suggest** starting with a lower oxygen concentration (21-30%) compared to higher oxygen concentration (60-100%) for preterm (<35 weeks gestation) newborns who receive respiratory support at birth with subsequent titration of oxygen concentration using pulse oximetry (weak recommendation, very low certainty of evidence).

Knowledge Gaps

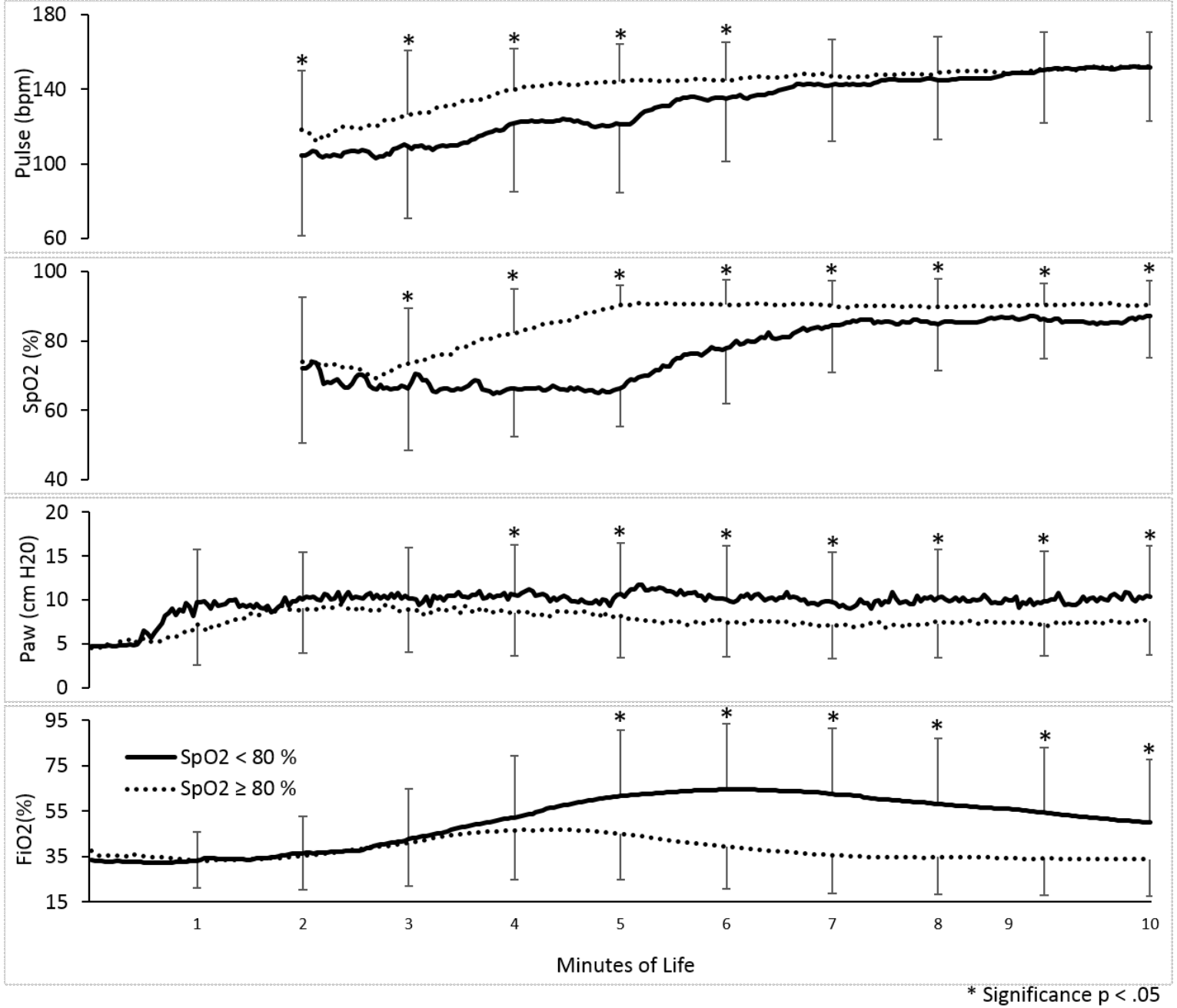
- As the 95% CI for the primary outcome includes both harm and benefit, further, high quality studies are needed to determine the effect size more precisely.
- Need long term NDI outcomes from more randomized studies.
- Current studies have not adequately addressed the possible oxygen requirements for specific gestational age groups
- Oxygen targets for preterm infants remain unknown
- How to best titrate oxygen in the delivery room for preterm infants is unknown
- Information regarding how cord clamping management impacts oxygen use following birth is needed

Demographics	SpO2<80 (n=100)	SpO2≥184 (n=184)	p value
Gestational Age, weeks	27.4 ± 2.6	28.0 ± 2.61	0.04
Birth weight, grams	882 ± 551	902 ± 568.7	0.70
Apgar 1 minute, Median[IQR]	5[3,7]	7[5,7]	<0.001
Apgar 5 minute, Median[IQR]	7[6,8]	8[7,8]	<0.001
Apgar 1 min <3	20 (20%)	21(11%)	0.049
Prenatal Care	98 (98%)	183 (99%)	0.81
Antenatal steroids	98 (98%)	175 (95%)	0.13
Caesarean section	85 (85%)	168 (91%)	0.18
Male	53 (53%)	85 (46%)	0.83
MgSO4	90 (90%)	160 (87%)	0.33
Chorioamnionitis	38 (38%)	68 (37%)	0.81
PIH	19 (19%)	55 (30%)	0.05
PROM >24 hrs	24 (24%)	35 (19%)	0.30

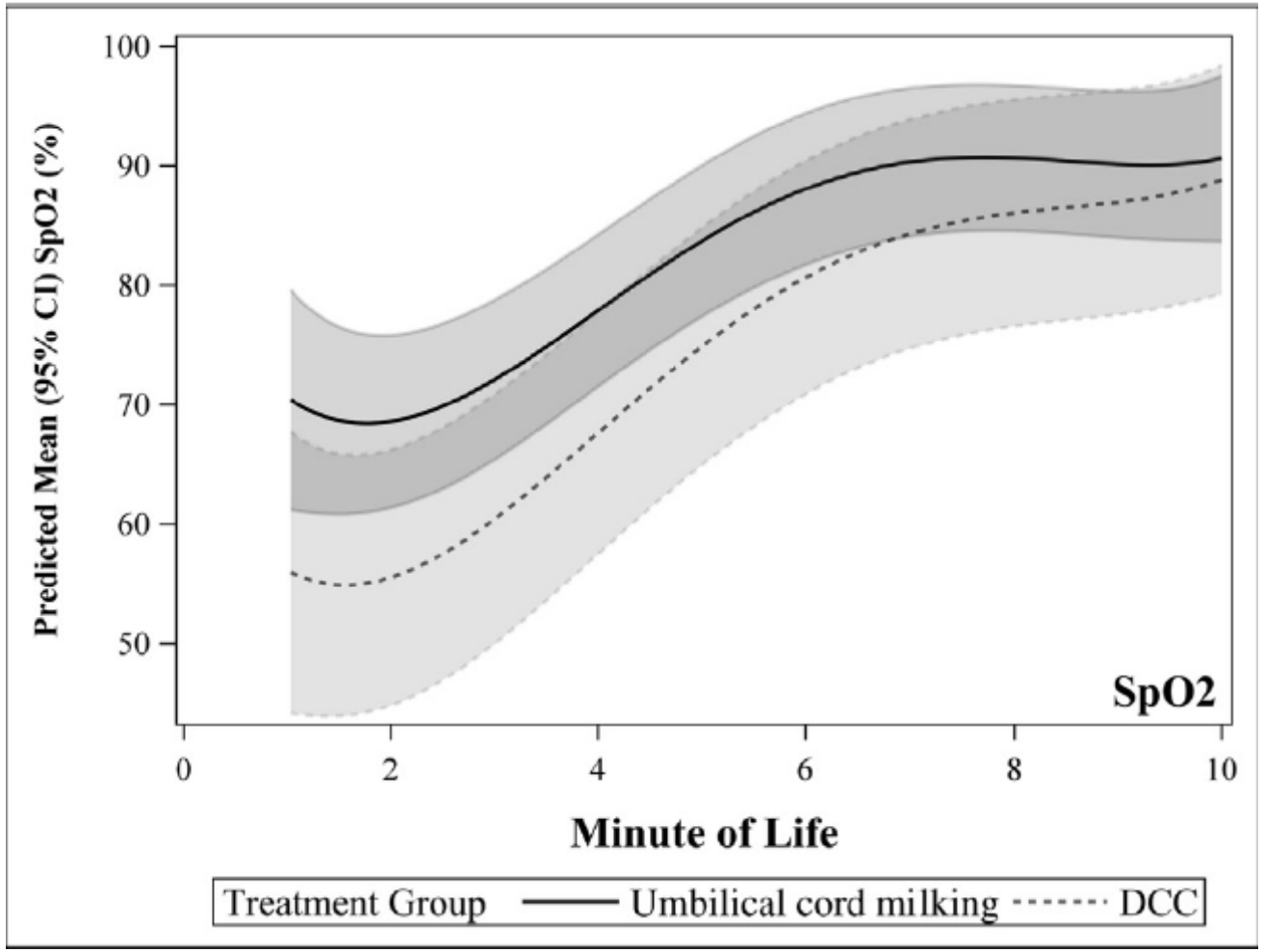
Katheria et al , J Perinatol 2019 Dec;39(12):1635-1639

Katheria et al , J Perinatol 2019 Dec;39(12):1635-1639

Neonatal Outcomes	SpO2< 80 (n=100)	SpO2≥80 (n=184)	p value
Started on CPAP	63 (63%)	147 (80%)	<0.001
Received PPV	75 (75%)	112 (61%)	<0.001
Intubated	61 (61%)	67 (36%)	<0.001
CPR*	2 (2%)	1 (<1%)	0.280
Mean time to Fio2 change (sec)	187 ± 96	175 ± 87	0.64
ROP	21(21%)	11 (6%)	0.12
PDA	26 (26%)	37(20%)	0.23
Any Grade IVH	24 (24%)	19 (10%)	<0.001
Severe Grade IVH	9 (9%)	6 (3%)	0.039
Death	16 (16%)	8 (4%)	<0.001
Severe IVH and Death	21(21%)	12 (7%)	<0.001



Katheria et al , J Pedaitr 20 Dec;39(12):1635-1639



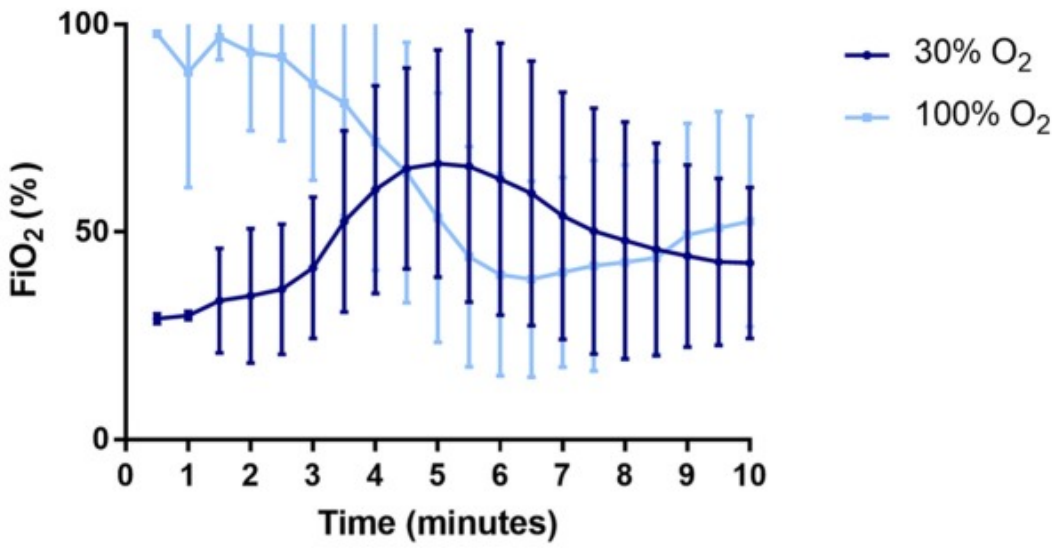
Katheria et al , J Peds 2020

	Studies *n*	Infants *n*	Type	Comparator	Gestation (weeks)	Death-short term	BPD	IVH	NEC	ROP	Disability at 2 years
Oei et al. (61)	8 RCT	504	IPD	$FiO_2 \leq 0.3$ vs. ≥ 0.6	<29	0.99 (0.52–1.91)	0.88 (0.68–1.14)	0.81 (0.52–1.27)	1.61 (0.77–3.36)	0.82 (0.46–1.46)	NR
Lui et al. (59)	10	914	Pooled	FiO_2 </≥ 0.4	<32	1.05 (0.68–1.63)	0.91 (0.72–1.14)	0.93 (0.51–1.71)	0.98 (0.51–1.87)	0.57 (0.24–1.36)	0.82 (0.49–1.35) 2 studies, $n = 208$
Oei et al.# (62)	8	706	IPD	SpO_2 <80% vs. >85%	<29	**2.1 (1.1–3.9)^**	1.2 (0.8–1.8)	**4.7 (2.1–10.2)^**	NR	1.6 (0.8–3.1)	NR
Welsford et al. (60)	10 RCT 4 cohorts	5,697**	Pooled	FiO_2 "lower" vs. "higher"*	<35	0.83 (050–1.37) $N = 968$	(0.71–1.40) $N = 843$	0.96 (0.61–1.51) $N = 795$	1.34 (0.62–2.84) $N = 847$	0.73 (0.42–1.27) $N = 806$	1.14 (0.78–1.67) $N = 389$
					<28	0.92 (0.43–1.94) $N = 467$	0.90 (0.64–1.28) $N = 467$	0.84 (0.50–1.40) $N = 441$	1.62 (0.66–3.99) $N = 441$	0.75 (0.43–1.33) $N = 441$	1.08 (0.58–2.03) 1 study, $N = 69$
Oei et al.# (63)	3 RCT	543 eligible	IPD	$FiO_2 \leq 0.3$ vs. ≥ 0.6 $N = 539$	<32	NR	NR	NR	NR	NR	Cognitive score <85: 0.8 (0.4–1.5) Any disability: 1.0 (0.8–1.3)
				SpO_2 <80% vs. ≥80% $N = 473$	3 < 32	NR	NR	NR	NR	NR	Cognitive score <85: **0.4 (0.2–0.8)^** Any disability: **0.6 (0.5–0.8)^**

*IPD, Individual Patient Data; BPD, bronchopulmonary dysplasia; IVH, Intraventricular hemorrhage, grades >3; NEC, necrotizing enterocolitis; ROP, retinopathy of prematurity; *exact FiO_2 undefined, **outcomes reported for RCTs only, ^$p < 0.05$.*

Data expressed as Risk Ratio (95% Confidence Intervals) except for # (Odds Ratio, 95% Confidence Intervals).

A



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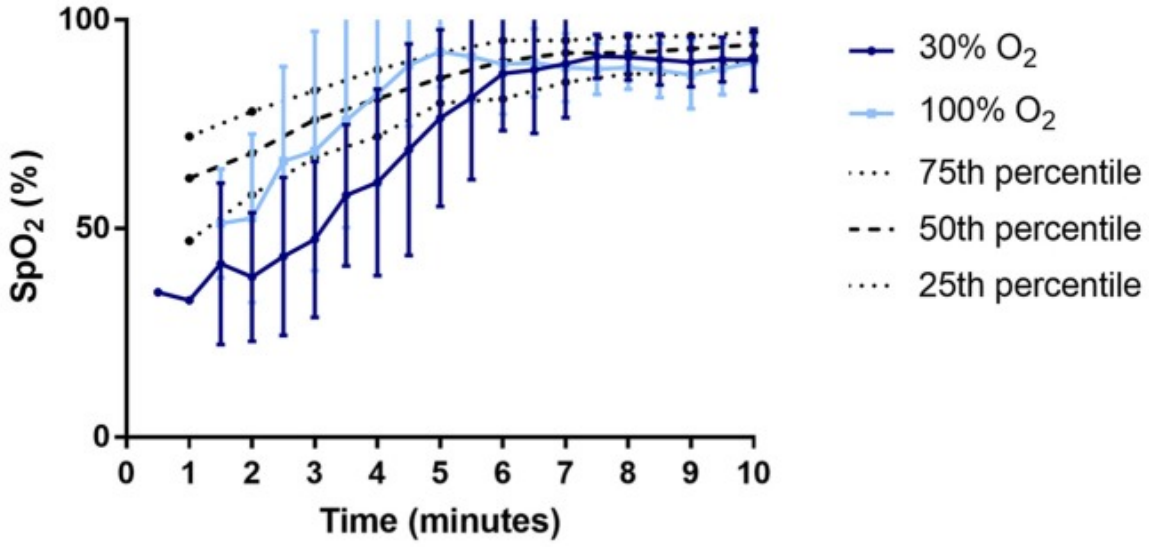

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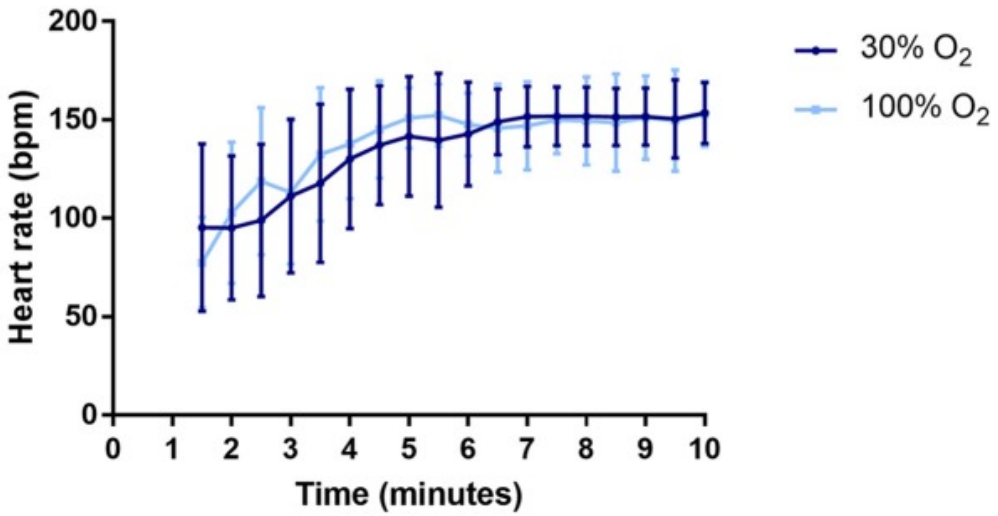
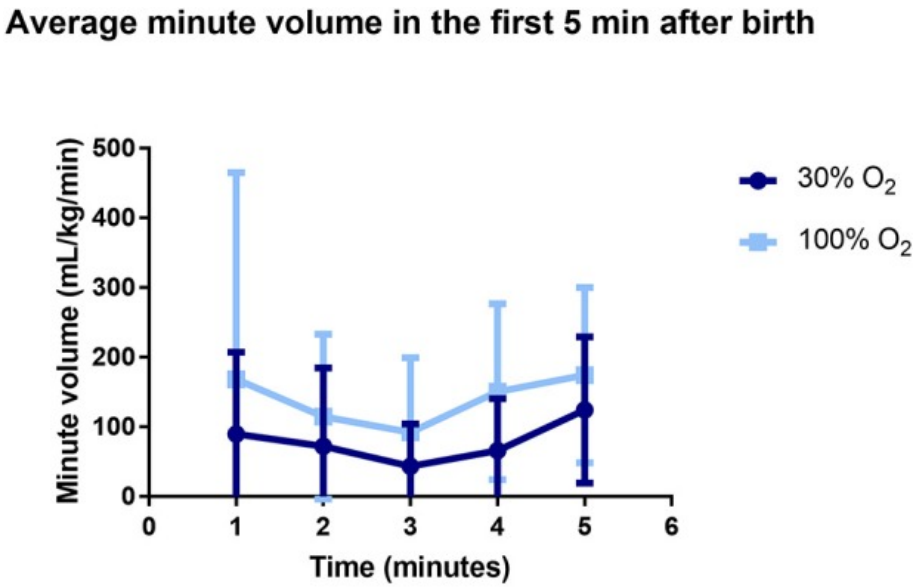
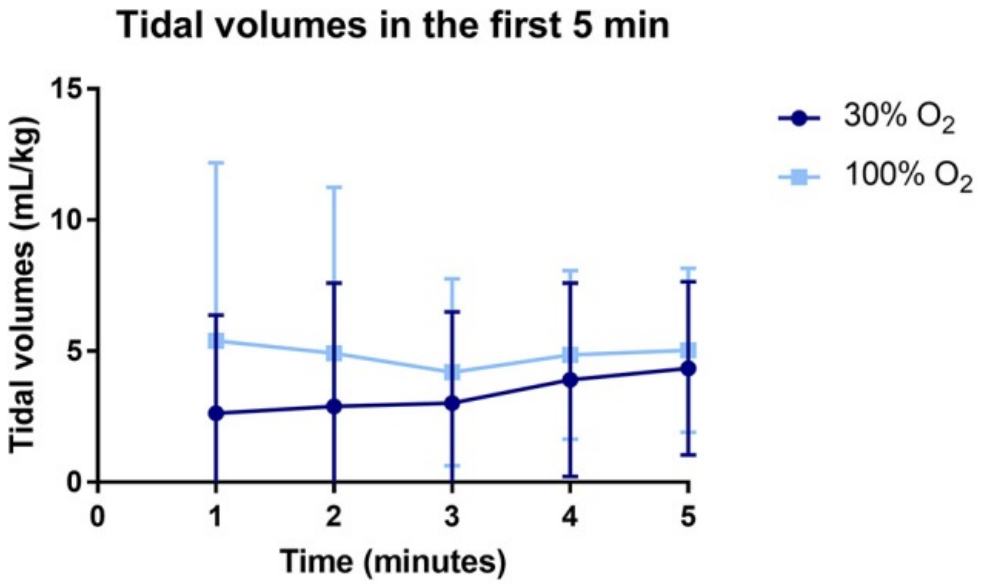
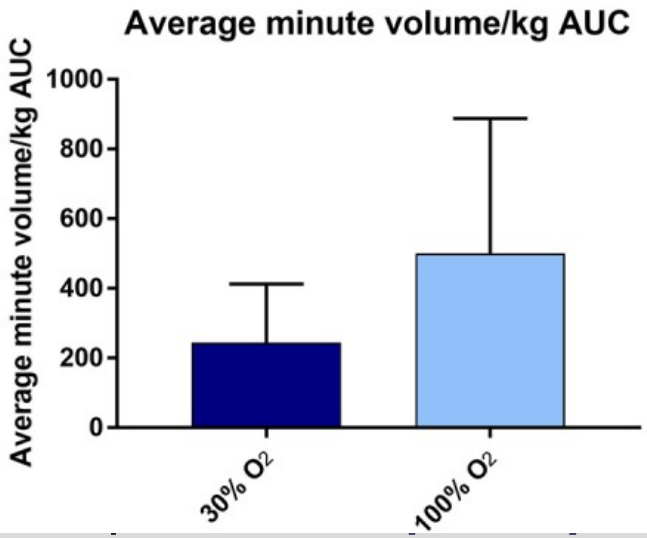


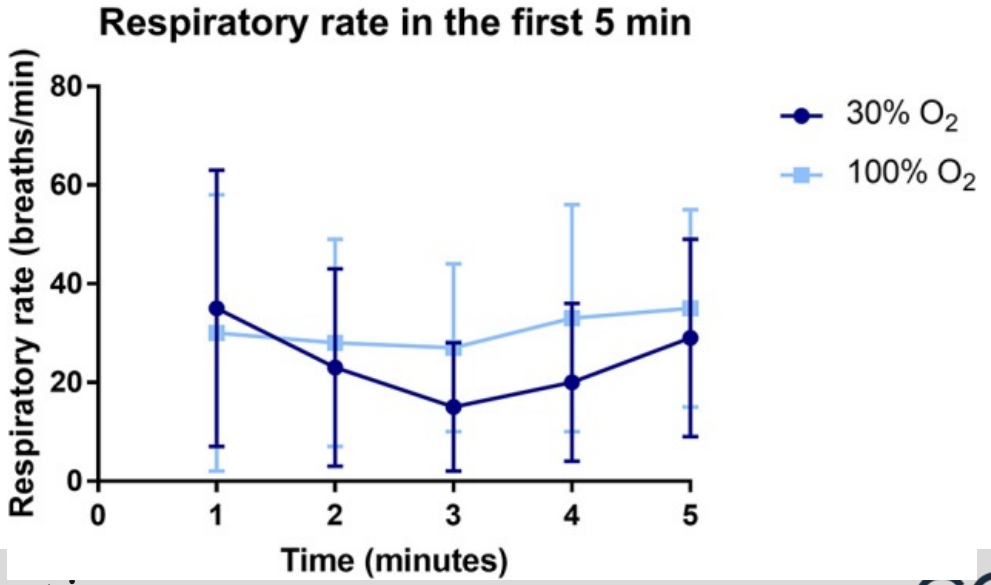
- <30 week infants (N=55)
- Randomized to initial O2 30 or 100%
- Assessed respiratory function in the first 10 minutes of life.

Dekker et al Front Pediatr. 2019 Dec 12;7:504.









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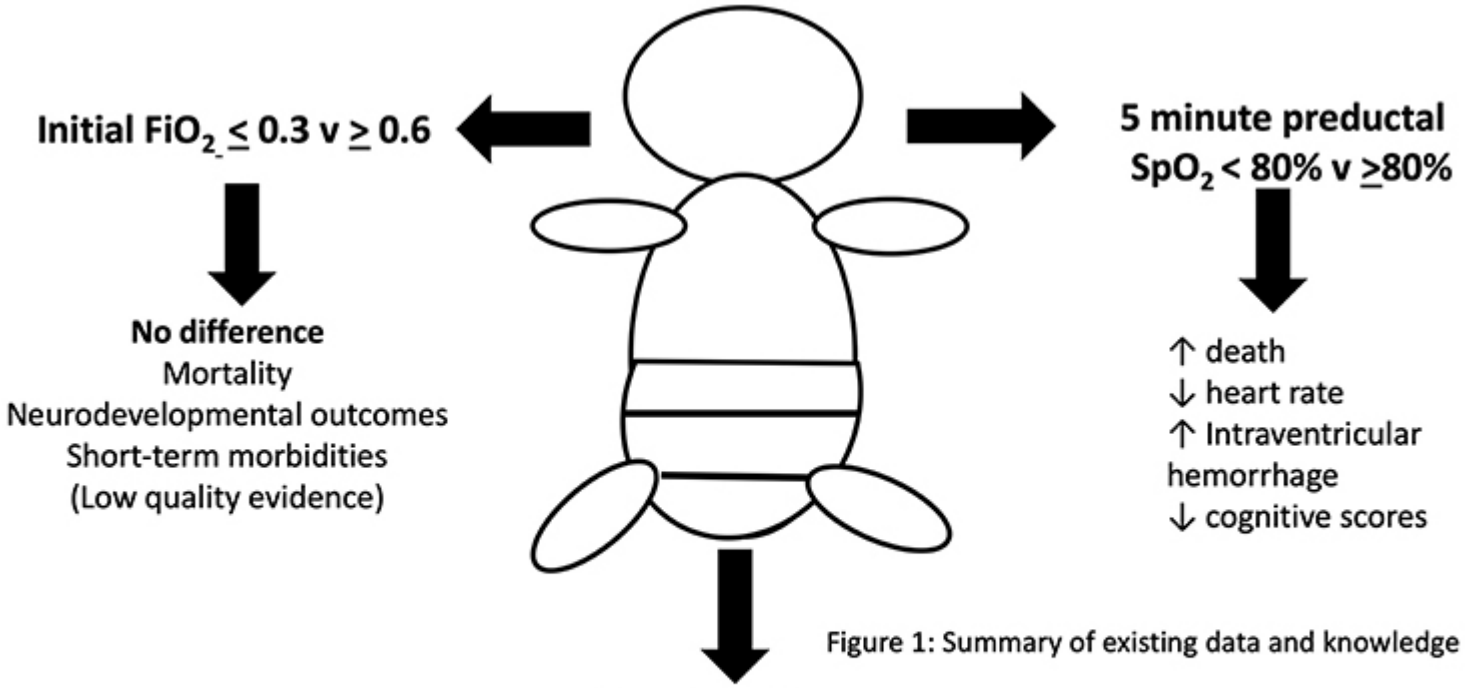


Figure 1: Summary of existing data and knowledge gaps

Delayed Cord Clamping (DCC) Tip Sheet

Implementing new data variables can be challenging. To assist our members with the upcoming 2018 mandated Delayed Cord Clamping data collection we have provided helpful tips that we have gathered from our quarterly Delayed Cord Clamping Webinars.

Getting Started with Delayed Cord Clamping (DCC) data collection:

1. The Medical directors should be informed as soon as possible.
2. Work on getting the "Buy-In" from the most important people on both Neonatal and OB staff early in the process (this may include, Medical Directors, nurse managers, OB Physicians, neonatologists, data abstractors etc.)
3. Do presentations at perinatal staff meetings or send a letter to the OB and staff informing them on the DCC instructions and DCC guidelines for the data collection.
4. **Work with your electronic health record team to include the DCC variables documentation into the "delivery summary" section that is filled in by the L&D/OB team or by the NICU team when they respond to the deliveries.**
5. **Having L&D / OB staff as part of the DCC team along with the NICU staff is key to DCC data collection success.**

6. We highly encourage all CPQCC members join the Delayed Cord Clamping Pilot Project (DCCPP) so that they can have an early start in DCC data collection. If you are interested in joining please contact janella@stanford.edu.
7. Review the DCC Manual and previous DCCPP webinars and materials. You can find these materials at https://www.cpqcc.org/perinatal-programs/cpqcc-data-center/2016-delayed-cord-clamping-pilot-project-dccpp.
8. Allow for 12 to 18 months for implementation.
9. Expect that there will be a learning curve. PLAN AHEAD for the problems you may encounter in your own facility based on your experience - only you know your OB & Neonatal potential roadblocks. For any additional help submit a ticket at the CPQCC Help Desk at www.cpqccsupport.org.

Delayed Cord Clamping (DCC), All NICU infants born in 2018

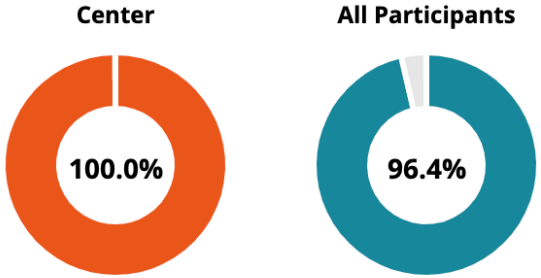
Demo NICU

This report is final for 2017 and 2018.

	Center (N = 199)			All CPQCC Centers (N Centers = 136)			Center-Network Comparison
	N	%	Last Year %	% Median	% Lower Quartile	% Upper Quartile	
Was delayed umbilical cord clamping performed?							
No	181	91.0	NA	55.0	38.0	67.9	
Yes	18	9.0	NA	45.0	32.1	62.0	
Total	199	100.0	NA				
How long was umbilical cord clamping delayed?							
<30 seconds	0	0.0	NA	0.0	0.0	0.0	
30 to 60 seconds	17	94.4	NA	89.2	71.4	97.3	
> 60 seconds (rmv.2019)	1	5.6	NA	10.8	2.7	28.6	
Total	18	100.0	NA				
Was umbilical cord milking performed?							
No	144	81.8	NA	91.7	77.7	97.6	
Yes	32	18.2	NA	8.3	2.4	22.3	
Total	176	100.0	NA				
Did breathing begin before umbilical cord clamping?							
No	57	30.0	NA	36.1	27.3	50.0	
Yes	133	70.0	NA	63.9	50.0	72.7	
Total	190	100.0	NA				

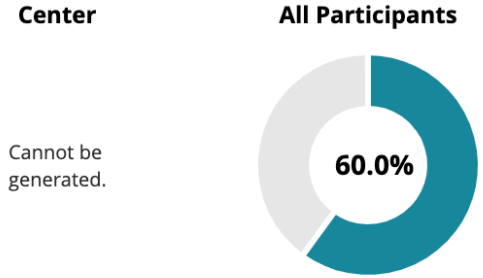
Maternal exposures focusboard

% of Infants for with Non-Pharmacologic Treatment



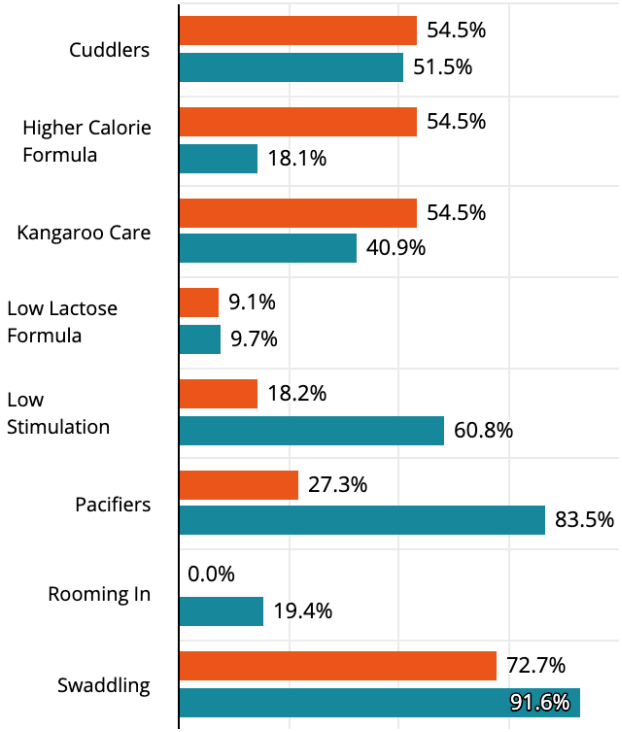
No missing or unknown responses for LPCH at Stanford.

% of Infants for whom a Structured Non-Pharmacologic Treatment Approach was Used

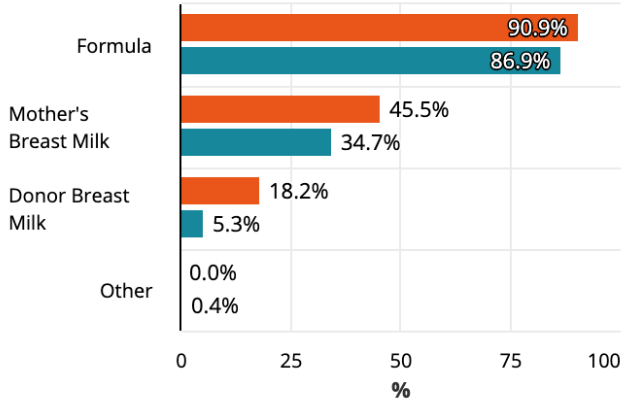


11 (100.0%) records for LPCH at Stanford with a missing or unknown response excluded.

Types of Non-Pharmaceutical Support Provided

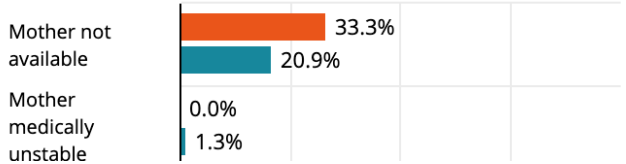


Infant Feed Types while Hospitalized



Multiple responses possible.
No missing or unknown responses for LPCH at Stanford.

Reasons why Infant was not Breastfed



Questions?

Please submit questions into Q&A box