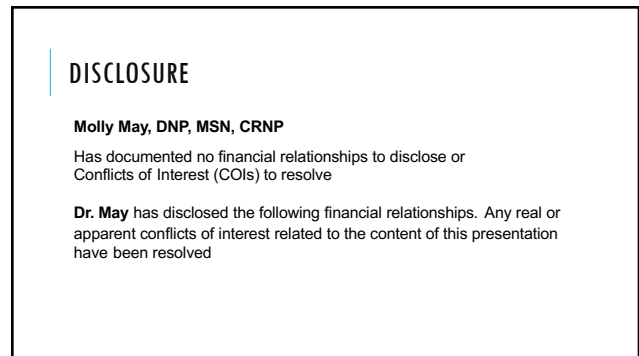
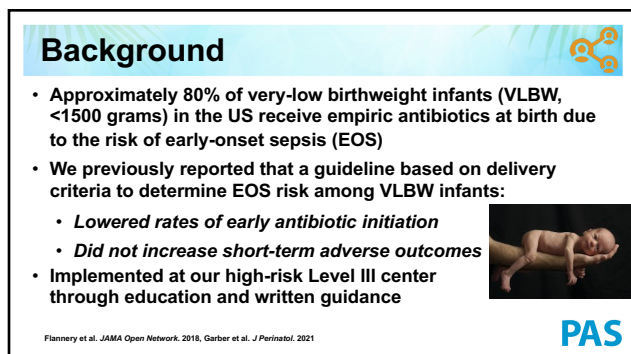


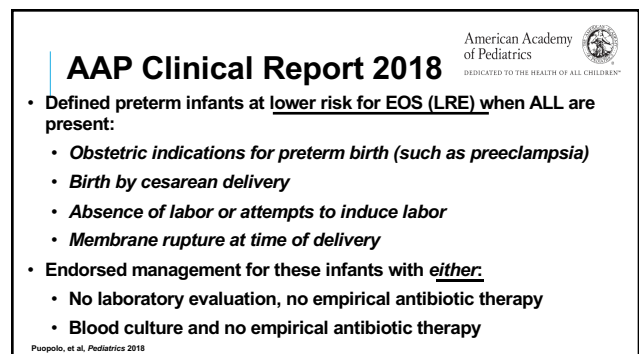
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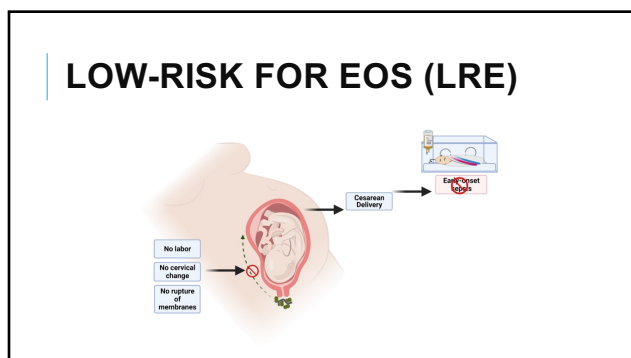
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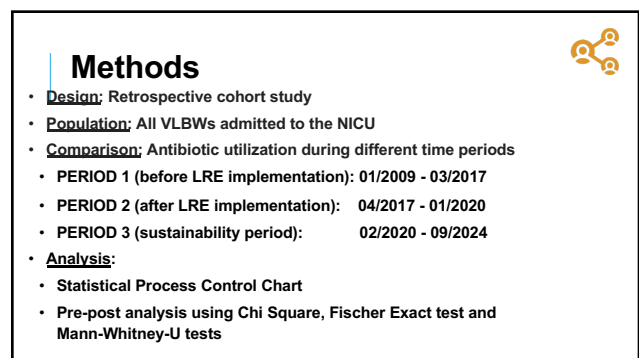
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5



6

## OUTCOMES



Primary Outcome	Balancing Measures
<ul style="list-style-type: none"> <li>Proportion of all and of low-risk VLBWs administered antibiotics ≤3 days after birth</li> </ul>	<ul style="list-style-type: none"> <li>Proportion of VLBWs with antibiotics initiated on Days 4-7</li> <li>Blood or CSF culture-confirmed infection on Days 4-7</li> <li>Death or transfer by Day 7</li> </ul>

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## STUDY COHORT



N (%) or Median (IQR)	Period 1 n=727	Period 2 n=191	Period 3 n=277	p-value 1 vs. 2	p-value 2 vs. 3
Birth weight (grams)	1085 (820 – 1320)	1105 (795 – 1335)	1065 (815 – 1340)	0.74	0.98
VLBW infants	297 (40.9)	85 (44.5)	124 (44.8)	0.36	0.96
Gestational age (weeks)	28 (26, 30)	28 (26, 30)	28 (26, 30)	0.98	0.75
Female	365 (50.2)	107 (56.0)	138 (49.8)	0.15	0.19
Cesarean delivery	564 (77.6)	137 (71.7)	201 (72.6)	0.09	0.84
ROM at delivery	491 (67.5)	128 (67.0)	181 (65.3)	0.89	0.71
Low-risk criteria infants	298 (41.0)	83 (43.5)	103 (37.2)	0.54	0.17
Low risk VLBW	120 (16.5)	38 (19.9)	46 (16.6)	0.27	0.36

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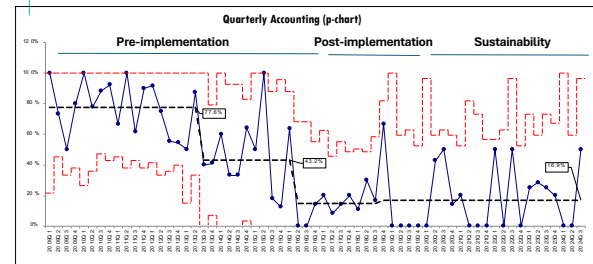
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## ANTIBIOTIC INITIATION AMONG LOW-RISK VLBW INFANTS



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## SUSTAINED REDUCTION IN ANTIBIOTIC INITIATION: VLBW INFANTS



N (%) or Median (IQR)	Period 1 n=727	Period 2 n=191	Period 3 n=277	p-value 1 vs. 2	p-value 2 vs. 3
Day 0-3 after birth					
Blood culture obtained	643 (88.4)	117 (61.3)	185 (66.8)	<0.001	0.22
Antibiotic initiation	590 (81.2)	113 (59.2)	185 (66.8)	<0.001	0.09
Antibiotic initiation: ELBW infants	281/297 (94.6)	56/85 (65.9)	93/124 (75.0)	<0.001	0.15
Blood culture positive for a pathogen	9 (1.2)	2 (1.1)	7 (2.5)	1.0	0.32

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## SUSTAINED REDUCTION IN ANTIBIOTIC INITIATION: VLBW INFANTS



N (%) or Median (IQR)	Period 1 n=727	Period 2 n=191	Period 3 n=277	p-value 1 vs. 2	p-value 2 vs. 3
Day 4-7 after birth					
Blood culture obtained	130 (17.9)	25 (13.1)	17 (6.1)	0.12	0.01
Antibiotic initiation	67 (9.2)	22 (11.5)	16 (5.8)	0.34	0.03
Blood culture positive for a pathogen	15 (2.1)	3 (1.6)	3 (1.1)	1.0	0.69
Deceased/Transferred by 7 days age	36 (5.0)	10 (5.2)	14 (5.1)	0.87	0.93

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### SUSTAINED REDUCTION IN ANTIBIOTIC INITIATION: VLBW INFANTS

N (%) or Median (IQR)	Period 1 n=727	Period 2 n=191	Period 3 n=277	p-value 1 vs. 2	p-value 2 vs. 3
Day 4-7 after birth					
Blood culture obtained	130 (17.9)	25 (13.1)	17 (6.1)	0.12	0.01
Antibiotic initiation	67 (9.2)	22 (11.5)	16 (5.8)	0.34	0.03
Blood culture positive for a pathogen	15 (2.1)	3 (1.6)	3 (1.1)	1.0	0.69
Deceased/Transferred by 7 days age	36 (5.0)	10 (5.2)	14 (5.1)	0.87	0.93

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### SUSTAINED REDUCTION IN ANTIBIOTIC INITIATION: LOW-RISK VLBW INFANTS

N (%) or Median (IQR)	Period 1 n=298	Period 2 n=83	Period 3 n=102	p-value 1 vs. 2	p-value 2 vs. 3
Day 0-3 after birth					
Blood culture obtained	225 (75.5)	14 (16.9)	19 (19.6)	<0.001	0.63
Antibiotic initiation	185 (62.1)	11 (13.3)	19 (19.6)	<0.001	0.25
Antibiotic initiation: ELBW infants	105/120 (87.5)	8/36 (22.2)	16/45 (35.6)	<0.001	0.19
Blood culture positive for a pathogen	0	0	0	-	-

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### SUSTAINED REDUCTION IN ANTIBIOTIC INITIATION: LOW-RISK VLBW INFANT

N (%) or Median (IQR)	Period 1 n=298	Period 2 n=83	Period 3 n=102	p-value 1 vs. 2	p-value 2 vs. 3
Day 4-7 after birth					
Blood culture obtained	61 (20.5)	9 (10.8)	6 (5.9)	0.05	0.22
Antibiotic initiation	34 (11.4)	9 (10.8)	6 (5.9)	0.89	0.22
Blood culture positive for a pathogen	6 (2.0)	1 (1.2)	0	1.0	0.45
Deceased/Transferred by 7 days age	11 (3.7)	2 (2.4)	2 (2.0)	0.74	1.00

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### CONCLUSIONS

- Our Level III NICU sustained use of a VLBW EOS risk-stratification guideline over 7 years without safety concerns
  - Lower proportion of VLBW infants administered empiric antibiotics from birth
  - No increase in culture-confirmed infection or transfer or death in the first week after birth
- Lower rate of antibiotic initiation at 4-7 days in the sustainability period may suggest greater confidence in the guideline over time

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### TAKE HOME POINTS

- LRE criteria should NOT be used to determine obstetric management
- Consider written guideline for use of LRE criteria
  - Essential in trainee facilities where the specifics of LRE can challenge
- Be careful with application to infants born 22 weeks' gestation
  - Largest study of preterm LRE (Puopolo, et al. *Pediatrics* 2017) included 15,433 infants born 22-28 weeks' gestation
    - 617/15,433 (4%) were born 22 weeks' gestation
      - 16/617 (2.6%) were deemed LRE
    - In contrast: 5759/15433 (37%) of the overall cohort was LRE

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### ACKNOWLEDGEMENTS

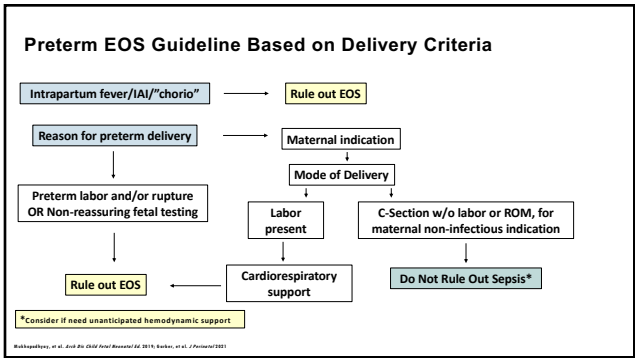
#### CHOP/PENN Perinatal Infectious Diseases research group

- Dustin Flannery, DO, MSCE
- Sagori Mukhopadhyay, MD, MMSc
- Samuel Garber, MD
- Alvaro Zevallos Barboza, MPH
- Karen Puopolo, MD, PhD



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**LRE INFANTS ADMINISTERED ANTIBIOTICS (N=19)**

		Reason
Change in clinical status	8	Change in clinical status without hypotension (most commonly worsening respiratory status)
Hypotension	5	Hypotension unresponsive to volume administration <i>Specified in guideline: not a deviation</i>
Bilious emesis	1	Persistent bilious emesis
Anomalies	1	Multiple congenital anomalies including duodenal atresia
Esophageal perforation	1	Esophageal perforation noted on admission radiograph
Line manipulation	1	Malpositioned umbilical artery catheter (no associated harm)
Unclear	2	Reason for initiating antibiotics not specified

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