

Field Deliveries July 2021-current
Multi-Disciplinary Case Discussion –
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 **SUNRISE**
CHILDREN'S
HOSPITAL
A Sunrise Health System Hospital

Nevada Chapter
OF THE AMERICAN ACADEMY OF PEDIATRICS

Objectives

- 1 Understand the increased incidence of unplanned Out-of-Hospital Birth or Field Deliveries in Las Vegas and Nationally
 - 2 Recognize the increased morbidity and mortality associated with Field Deliveries and the unique challenges of Newborn Resuscitation and Transport (NRT) for EMS providers
 - 3 Understand the Principles and Practices of the course – The ABCs of NRT-Easy as 1, 2, 3 and how it can increase EMS providers confidence in providing NRT
- Conflict- No conflicts to declare

EMS call at 3 am

24-year-old pregnant patient with contractions.
Feeling the need to push



WHEN YOU GET A 911 CALL AT 3 AM
AND TRY TO LOOK PROFESSIONAL

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Out of Hospital Births- Field Deliveries Low Frequency High Risk Event

OOHB increasing in US
Higher mortality rate.

Nevada 1.8% of birth

Las Vegas 450+/year

EMS calls 200+/year

**Sunrise NICU 1-3
admits/month**



Data on OOHB at Sunrise Childrens Hospital

July 21-> Current

93 Field Deliveries

11 fetal demises

9 Previabile < 22 wk

2 Extremely preterm 23-27.6 wk

2 deaths- ED- 23 and 31 wk

39 to NICU

2 deaths- NICU- 25 and 30 wk

41 went to well baby.

Take home messages of Sunrise Field Deliveries

- 1 POOR PROGNOSIS IF BORN VERY PRETERM < 32 weeks
 - 6 of 8 Died
 - 2 of 8 Severe impairment.
 - All came in receiving chest compressions
 - Only 3 mentioned ET tube
 - IV or I/O access only mentioned in 2
 - Epinephrine only mentioned in 2
- 2 Increased rate of premature births- 28%
- 3 No Prenatal Care 63%
- 4 Increased Substance use (Tox screens done in 66%)
 - 64% with illicit substance not including THC, Many polypharmacy
 - 72% amphetamine
 - 41% opiates – of note standard tox screen did not detect Fentanyl
- 5 Respiratory distress is some form in 28%
 - EMS detected/addressed in 60% or not detected in 40%
- 6 Hypothermia present in 43% on admit to hospital

EMS training and comfort level

- Globally EMS providers have low confidence and high anxiety regarding OOHB
- In Nevada and other states in the US, paramedics are not required to maintain current up to date NRP training.
- Low frequency and high risk.
- Perceived by EMS as very high stress provoking but little on going training
- NRP has a different focus than PALS and ALS

ABCs of Neonatal Resuscitation

- A Anticipate and Plan.
 - Airway, meds, warming methods
- A Airway
- B Breathing- **GOLDEN MINUTE**
- C Circulation
- D Drugs
- D Drill I/O or IV
- E Environmental- temp
- F Fluids, Foot length-estimated wt
- G Glucose

Green-stable
Yellow-risk
Red-critical

ABC Easy
as 123

		1 Intervention Required	2 May Require Intervention	3 Standard care
7 cm	Term	Anticipate		
	3 kg	Estimate Size and PLAN -Airway adjuncts -Medication doses -Warming methods		
5 cm		Airway 1+2 =3	ETT 2.5 @ 7	ETT 3.0 @ 8 i-gel 1
		Breathing "Breath, 2, 3"- 40-60 MR. SOPA	-RR > 80 -SpO2 <80%	-RR >60 -SpO2 80-85%
		Circulation "1, 2, 3, Breath" 120	--HR <60 -CPR -Lines	-HR >100
1 kg		Drugs Drill I/O	1 kg	2 kg
		Environment	<96.8 F	< 97.7 F
			-Dry and warm infant -Wrap in dry blankets, hat -Place emergency blanket -Heating mattress -AC off - CONSIDER SKIN TO SKIN	
		Foot Length	<27 weeks < 5cm <1kg	27-33 Weeks 5-7 cm 1-2 kg
0 cm		Glucose	< 25 g/dL	> 45 g/dL
		ABCs of Newborn Resuscitation & Transport- easy as 123		

ABCs of Newborn Resuscitation & Transport- easy as 123



		Meds	1 kg Extreme Pre-Term	2 kg Pre-Term	3 kg Term
7 cm	Term	Epi 1:10,000 ETT	1 mL	2 mL	3 mL
	3 kg	Epi 1:10,000 IV	0.2 mL	0.4 mL	0.6 mL
5 cm	Pre-term	NS Bolus	10 mL	20 mL	30 mL
	2 kg	D10W	2 mL	4 mL	6 mL
		Dextrose (oral)	0.5 mL	1 mL	1.5 mL
	1 kg	APGAR	0	1	2
	Extreme Pre-term	Appearance	Cyanotic	Peripheral cyanosis	Pink
		Pulse	0	<100	>100
		Grimace (reflex/irritability)	No response to stim.	Weak cry with stim.	Cry with stim.
		Activity (tone)	Floppy	Some flexion	Well flexed and resists extension
0 cm		Respirations	Apnea	Slow irregular breathing	Strong cry



Keep Warm

Patch Information

- Approximate Gestational Age
- Sex
- Time of delivery
- Delivery complications
- APGAR scores
- VS
- Glucose
- Interventions

Clinical Pearls

- Most infants respond well to PPV
- PPV (40-60/min.)
- Consider early LMA/i-gel
- CPR 3:1 (120 event/min.)
- Consider I/O
- Clamp 6 in and 4 in, cut between clamps with clean instrument



Course schedule

Didactic presentation

1 hour

The ABCs of NRT- Easy as 1, 2, 3

Skill stations

1.5 hour

1. Anticipation/Airway
2. Breathing PPV with MR.SOPA
3. Breathing- Advanced Airways including LMA- More PPV
4. Compressions- Difference from NRP and PALS/ALS
5. Drugs/Drill
6. Environment, Fluids-Foot length, Glucose

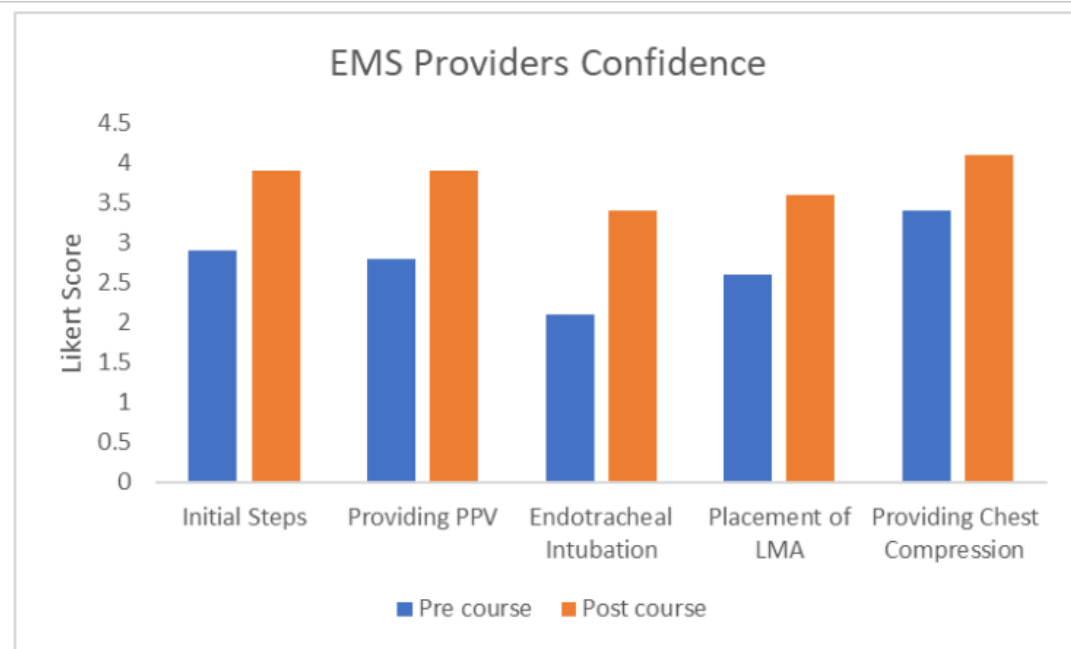
SIMULATIONS/Debriefing and Testing 2 hours

1. Term - warm, dry, stimulation. maternal eclampsia
2. Late Preterm- PPV, hypothermia
3. Term- PPV, intubation, compressions, I/O, Meds
4. Testing-Preterm PPV, continued resp support, thermoregulation
5. Testing- Late Preterm Abruptio- Full code

Pre and Post Survey NRP Likert

Rate your skill and experience with the following:	Little or no experience.	Need to review.	I am pretty comfortable.	I am very good at this.	I am an expert.
Prepping the team and the equipment based on perinatal risk factors					
Performing initial steps, including interpreting pulse oximetry and administering free-flow oxygen					
Positive-pressure ventilation (PPV), including ventilation corrective steps					
Positive-pressure ventilation and continuous positive airway pressure (CPAP) with T-piece resuscitator					
Endotracheal intubation					
Placement of laryngeal mask					
Chest compressions					
Preparing/assisting with placement or placing emergency umbilical venous catheter					
Ordering, preparing, or administering epinephrine and volume via the umbilical venous catheter					
Using NRP Behavioral Skills to enhance teamwork and communication					

Novel Newborn Resuscitation and Transport (NRT) training course



Eighty one of the 116 students filled out the survey. Paired t tests of the responses showed improved confidence in all areas that were statistically significant.

Performing initial steps of resuscitation	Pre- 3.0	Post- 3.9	p < .001
Providing PPV with corrective steps	2.8	3.9	p < .001
Endotracheal intubation	2.1	3.4	p < .001
Placement of laryngeal mask	2.6	3.6	p < .001
Providing chest compressions.	3.4	4.1	p < .001

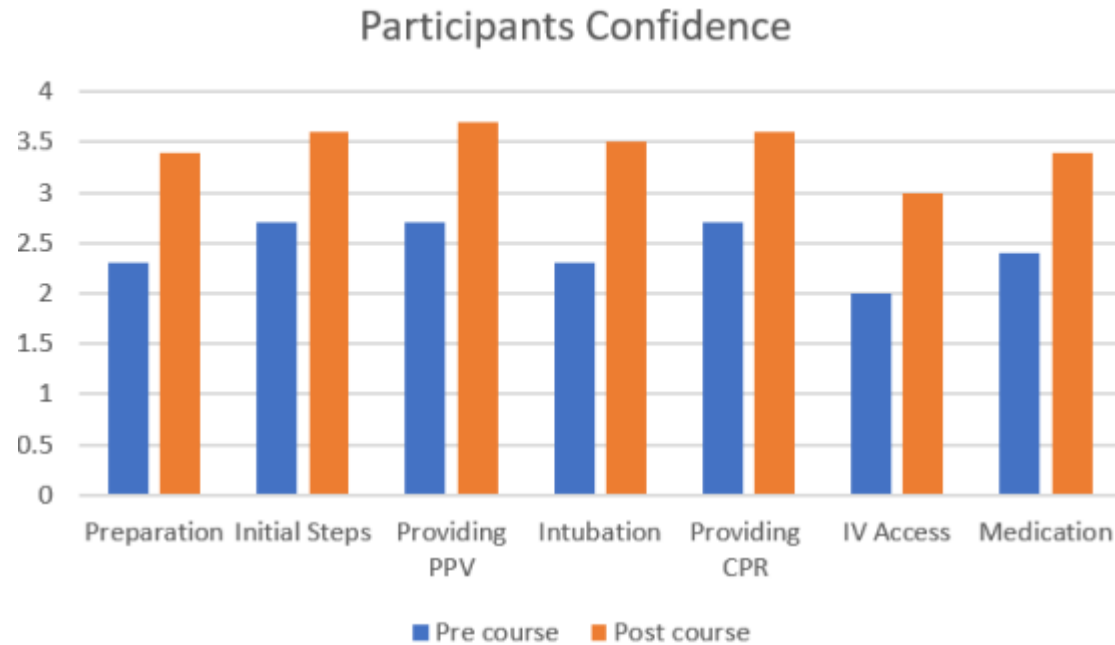
All of these results indicate that the EMS providers felt more confidence in providing these critical skills after the course.



MOUNTAIN VIEW
PARAMEDIC INSTITUTE

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NRT training course in Latin America



Twenty of the 36 students filled out the survey. Paired t tests of the responses showed improved confidence in all areas that were statistically significant.

Preparation for delivery	Pre- 2.3	Post- 3.4	p < .001
Performing initial steps of resuscitation	2.7	3.6	p < .001
Providing PPV with corrective steps	2.7	3.7	p < .001
Endotracheal intubation	2.3	3.5	p < .001
Providing chest compressions	2.7	3.6	p < .001
Obtaining IV access	2.0	3.0	p < .001
Administering medications	2.4	3.4	p < .001

All of these results indicate that providers felt more confidence in providing these critical skills after the course.



**Sociedad
Dominicana
de Pediatría**

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Proposal

Pilot Project with Southern Nevada Health District

The ABCs of NRT-Easy as 1, 2, 3 presented to EMS providers who cover Sunrise Hospital area.

In-person vs Virtual didactic session with Hands-on skills & simulations

Develop data collection for all OOHB as a QI project

Update the newborn resuscitation protocol.

Conclusion

The ABCs of NRT – Easy as 1, 2, 3 is proven to increase the confidence of EMS providers in newborn resuscitation and transport.

When empowering EMS providers with the specific knowledge of NRT with opportunity to practice clinical skills, they are more likely to provide appropriate care to field-delivered infants during transport to the hospital.

This course focused on

- 1- Importance of providing PPV to Newborn
- 2- Preventing and addressing hypothermia
- 3- Recognizing the critically ill newborn and unique challenges with placement of advanced airways, appropriate chest compressions and medication administration in the newborn.

References

- Watterburg K, Committee on Fetus and Newborn. Providing care for infants born at home. *Pediatrics* 2020;145(5):e20200626
- Gregory et al; Changes in Home Births by Race and Hispanic Origin and State of Residence of Mother: United States, 2019-2021. *Natl Vital Stat Rep.* 2022 Nov;71(8):1-10
- Way et al; Out-of-Hospital births and infant mortality in the United States: *Paediatric Perinat Epidemiol.* 2022 May; 36(3);399-411.
- Hill et al; Paramedic training, experience, and confidence with Out-of-Hospital Childbirth in Australia: *Australas Emerg Care.* 2023 Jun; 26(2):119-125.
- Eisenbrey et al; Describing Prehospital Deliveries in the State of Michigan: *Cureus* 2022 July; 14(7)

Put in case at sunrise L/D- the call from charge nurse to OB and to NICU

- OB Management
- Peds management
 - Dr Jensen
- Presented in labor at ?
- Prenatal info
- Limited Prenatal Care-
- Hx Eclampsia with prior pregnancy
- Past Hx Genital HSV- no active -Acyclovir
- Prior C section.

Lets go back to the delivery-where the care for the dyad starts