|  |  |
| --- | --- |
| **Case Title**  | Frozen Chest |
| **Scenario Name** | Neonate Frozen Chest post Fentanyl +/- Sepsis RIH NICU Case #1 |

|  |
| --- |
| **Learning Objectives -** [**Use action words**](http://ubccpd.ca/sites/ubccpd.ca/files/Accreditation_Learning%20Objectives_%20Verbs.pdf) |
| **Knowledge:**1. Recognize abnormal blood gases & relate to respiratory pathophysiology
2. Recognize signs and symptoms of Frozen Chest
 |
| **Skills:**1. Management of Frozen Chest
2. Prepare and administer RSI medications for intubation
3. Demonstrate full clinical assessment of Neonate on a ventilator
 |
| **Attitude/Behaviours:**1. Demonstrate Team skills
2. Demonstrate Situational awareness
3. Demonstrate Graded Assertiveness
 |
| **Scenario Environment** |
| **Location** | NICU |
| **Monitors** | Cardiac Monitor |
| **Props/Equipment** | Intubation supplies; Meds: Fentanyl, Atropine, Succinylcholine; RSI Kit (from NICU); Ventilator; Overhead warmer; PPO & admission pack; IV & syringe pump |
| **Make-up/Moulage** |  |
| **Potential Distractors** |  |

|  |
| --- |
| **Case Introduction:** |
| Baby born at 38 weeks +4 gestation. His mother, who is now G-2, P-1, had previously attempted a home delivery and labored for over 26 hours before she reconsidered and went to the hospital. She experienced SROM approximately 20 hours prior and developed chorioamnionitis; the fever and uterine pain lead her to seek medical treatment. While in the labour suite, it was determined that she was GBS+ and then quickly received a dose of IV antibiotics, just 30 minutes before delivery. Babe appears to be having difficulty breathing right after being placed on skin-to-skin bonding; now brought to the warmer. NICU was called to second in. |

| **Patient Parameters** | **Effective Management** | **Notes** |
| --- | --- | --- |
| **Phase 1: Assessment** **Condition: Critical****Initial Assessment*** **Heart Rhythm: Sinus**
* **HR: 76**
* **RR: 4**
* **Inspiration%: 25%**
* **SP02: Preduct 60%, Postduct 60%**
* **T: 38.5**
* **CNS: tone – limp, mouth – relaxed, fontanelle – N**
* **Chest: Normal sounds**
* **CVS: Heart sounds Normal, volume 3**
* **Integ: cyanosis 50%; cap refill 3 secs**
* **Weight: 4000gm**
 | 1. **Take a focused history** (see Notes column)
2. **Medical Management**
* Engage resuscitation team; assign roles
* Start timer at birth
* Warm, dry, stimulate x30 seconds
* Open airway, position head & neck for respiration
* Initiate PPV
* Apply cardiac & SpO2 monitoring

**Consequences of ineffective management*** If no effective IPPV – go to phase 9
* Declining HR etc. (PPV rate must be above 50)
 | 1. **Focused history:**
	1. Gestational age?
	2. How many babies?
	3. Fluid clear?
	4. Other risk factors?
2. Term? Tone? Breathing/Crying?
3. MRSOPPA started
	1. If getting to second “(P)ressure increase” & greater than 2 mins since start, Code should be called
 |
| **Phase 2: 2 mins post delivery****Physical Examination*** **Heart Rhythm: Sinus**
* **HR: 123**
* **BP: 69/46**
* **RR: 12**
* **SP02: pre 62%, post 62%**
* **CNS: tone – reduced both, mouth – relaxed, fontanelle – N, eyes – closed**
* **Chest: normal sounds**
* **CVS: Heart sound volume 3**
* **Integ: Cyanosis 6%**
 | 1. **Patient Reassessment** (see Notes column)
2. **Medical Management**
* Recognize need to continue EFFECTIVE IPPV
* Consider transfer to NICU from L&D suite
	+ Call for support (RT, peds if not already called, etc)
* Attempt CPAP & move back to IPPV within 15 secs

**Consequences of ineffective management*** If they stop IPPV or go to CPAP for greater than 30 secs – go to Phase 9
 | Completed MR & SO, recognize current controlled situation, initiate transfer to NICU |
| **Phase 3: Transferred to NICU****Physicial Examination*** **Heart Rhythm: Sinus**
* **HR: 130s**
* **BP: 67/45**
* **RR: 16**
* **Throat sounds: Soft grunting, volume 4**
* **Retractions: mild**
* **SPO2: preduct 71%, postduct 71%**
* **T: 38.8**
* **CNS: tone – reduced, mouth – relaxed, fontanelle – Normal, eyes – blink 10/min**
* **Chest: Normal, volume 2**
 | 1. **Patient Reassessment** (see Notes column)
2. **Medical Management**
* Oxygen titration to SpO2 goal of >90%
	+ 0.30 or greater
* Anticipate intubation & RSI
	+ Draw up meds
* Initiate IV access

**Consequences of ineffective management**Under 30% O2 sats low 80’s.  | * **If haven’t anticipated intubation, peds to suggest**
 |
| **Phase 4: Ready for intubation****Physical Examination*** **Heart Rhythm: Sinus**
* **HR: 143**
* **BP: 66/46**
* **RR: 16**
* **Throat sounds: soft grunting, volume 4**
* **Inspiration%: 35%**
* **SP02: Preduct 94%, Postduct 94%**
* **T: 38.9**
* **CNS: tone – reduced both, mouth – relaxed, fontanelle – N, blink state – 10 blinks/min**
* **Chest: Normal – volume 2**
* **CVS: Heart sounds Normal, volume 3**
* **Integ: cap refill 2 secs**
 | 1. **Patient Reassessment** (see Notes column)
2. **Medical Management**
* Have meds prepared
* Ensure team is ready and aware of plan
* Start Fentanyl on pump
* Prepare to give Atropine
* Recognize temp & identify need for possible Abx

**Consequences of ineffective management** | **When Atropine give, move to Phase 5** |
| **Phase 5: Frozen Chest****Physical Examination*** **Heart Rhythm: Sinus**
* **HR: 70 (transition over 30secs)**
* **BP: 69/45**
* **RR: 0**
* **Lung resistance/compliance: ON/1**
* **Ventilatory options: inspiratory effort**
* **Inspiration%: 0%**
* **SP02: 50s% (transition over 30secs)**
* **T: 38.9**
* **CNS: tone – limp, mouth – relaxed, fontanelle – N, blink state – closed**
* **Chest: Normal, volume 0**
* **CVS: Heart sounds Normal, volume 3**
* **Integ: normal, cap refill 2 secs**
 | 1. **Patient Reassessment** (see Notes column)
2. **Medical Management**
* Recognize need for Succinylcholine STAT to be given, and have at bedside
	+ Identify Succ ready to go to team leader
* Succinylcholine given
* IPPV to stabilize (Phase 6)

**Consequences of ineffective management** | **If moving to intubate prior to drugs given, confederate peds unable to tube & request Succinylcholine be given** |
| **Phase 6: Stabilization & Intubation****Physical Examination*** **Heart Rhythm: Sinus**
* **HR: 130s (transition over 1min with effective IPPV)**
* **BP: 69/45**
* **RR: 0 – 15 with intubation**
* **Lung resistance/compliance: ON/1**
* **Ventilatory options: inspiratory effort**
* **Inspiration%: 0%**
* **SP02: Preduct 90%, Postduct 90%**
* **T: 38.9**
* **CNS: tone – limp, mouth – relaxed, fontanelle – N, blink state – closed**
* **Chest: Normal volume 2**
* **CVS: Heart sounds Normal, volume 3**
* **Integ: normal, cap refill 2 secs**
 | 1. **Patient Reassessment** (see Notes column)
2. **Medical Management**
* Intubation by peds or RT
* Post tube xray
* Ventilator attached
	+ Appropriate vent settings
		- PRVC, RR 40, Vt 20, i time 0.4, fiO2 0.25

**Consequences of ineffective management** | **Maintained on ventilator, start down the sepsis treatment route?****If challenging intubation, sats start to decrease. Aim for IPPV after 30sec attempt**  |
| **Phase 7: Stabilization & on Vent****Physical Examination*** **Heart Rhythm: Sinus**
* **HR: 130s**
* **BP: 51/33**
* **RR: 40**
* **Lung resistance/compliance: ON/1**
* **Ventilatory options: inspiratory effort**
* **Inspiration%: 0%**
* **SP02: Preduct 93%, Postduct 93%**
* **T: 38.9**
* **CNS: tone – limp, mouth – relaxed, fontanelle – N, blink state – closed**
* **Chest: Normal volume 2**
* **CVS: Heart sounds Normal, volume 3**
* **Integ: normal, cap refill 4 secs**
 | 1. **Patient Reassessment**
2. **Medical Management**
* Call RT due to CBG result
* Identify ventilator changes to reflect gas results
	+ Increase RR to 50s
 | **CBG: 7.20, pCO2 58, BE -5, HCO3 18, fiO2 0.25** |
| **Phase 8: Respiratory stabilized, Sepsis management****Physical Examination*** **Heart Rhythm: Sinus**
* **HR: 130s**
* **BP: 51/33**
* **RR: 40**
* **Lung resistance/compliance: ON/1**
* **Ventilatory options: inspiratory effort**
* **Inspiration%: 0%**
* **SP02: Preduct 93%, Postduct 93%**
* **T: 38.9**
* **CNS: tone – limp, mouth – relaxed, fontanelle – N, blink state – closed**
* **Chest: Normal volume 2**
* **CVS: Heart sounds Normal, volume 3**
* **Integ: normal, cap refill 4 secs**
 | 1. **Patient Reassessment** (see notes column)
2. **Medical Management**
* Maintain current management
* Identify need for LP
* Initiate Abx if not already given
 | **CBG: 7.32, pCO2 47, BE 2, HCO3 23** |
| **Phase 9: INEFFECTIVE MANAGEMENT****Physical Examination*** **Heart Rhythm: Sinus**
* **HR: 70s**
* **RR: 5**
* **Inspiration%: 0%**
* **SP02: Preduct 50%, Postduct 50%**
* **CNS: tone – limp, mouth – relaxed, fontanelle – N, blink state – closed**
* **Retractions: Severe with air hunger**
* **Chest: Normal volume 1**
* **CVS: Heart sounds Normal, volume 3**
* **Integ: Cynaosis 100%, cap refill 5 secs**
 | 1. **Patient Reassessment** (see notes column)
2. **Medical Management**
* **Provide effective PPV**
* **MRSOPPA**
 | \*Once effective PPV established move to end of last phase |

**Insert more lines if more phases required.**

|  |  |
| --- | --- |
| **Expected Patient Management** | **Debriefing Points** |
| 1. **RN**
	1. **Anticipate treatment/management plan**
	2. **Provide IPPV**
	3. **Act as team leader PRN**
	4. **Medication management**
2. **RT**
	1. **Intubation**
	2. **Ventilator changes**
 | * **Debrief between Phase 6 & Start of Phase 7**
* **Communication between team members (RN to RT, etc)**
* **Frozen chest & Succinylcholine**
 |