**Supplemental Table 1: Detailed matrix of outcomes and data collection**

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|  | Video review | Video debrief feedback evaluation | End of pilot period caregiver survey | End of pilot period instructor survey | End of pilot period focus group |
| Limited efficacy testing   * Caregivers’ perception on learning & enhancing patient safety * Impact on desired organizational outcome   + Create learning environment   + Enhance patient safety |  | X | X | X | X |
| Acceptability and Demand @   * Management # * Caregivers * Parents * Instructors |  | X | X | X | X |
| Usability analysis to assess team behaviors, debrief & identify system issues   * Videorecording & Videoreview software technology # * Instruments | X | X |  | X | X |
| Resource needs\*\*\*   * Initial * Maintenance |  |  |  |  | X |
| Unintended adverse or beneficial effects\*\*\* | X | X | X | X | X |
| Sustainability   * Feasibility criteria * Adaptations before widespread adoption |  |  |  | X | X |

**Supplemental Table 2: Challenges identified during video recording and debriefing program**

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| **Challenges** |
| Reminding care providers about team huddle, debriefing or turn-on the video recording |
| Conflict with my other work (e.g. NICU service, etc) |
| Reviewing videos in time |
| Engaging care providers during debriefing |
| Reviewing videos recorded in night |
| Providing feedback to caregivers who could not attend debriefing |
| Completing team huddle, video review and debrief templates in time |
| Completing the weekly report template |
| Interpreting the audio to assess team communication |
| Identifying debrief issues arising from videos for debriefing |
| Time for video debriefing (60 mins) |
| Informing parents about video debriefing in a timely manner, once the video recording has happened |
| Delay in implementing project on time |
| Reinforcing expectations, providing opportunities for learning especially with rapid turnover of caregivers and trainees in a tertiary centre |

**Supplemental Table 3: Policy, caregiver roles and latent safety threat issues noted during**

**3A: Pre-resuscitation briefing**

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| **Issues** | **Solution** |
| When do I call an attending for help during resuscitation? | Whenever chest compression is initiated |
| Can I transfer the first twin from resuscitaire to a basinet and then receive the next twin on the same resuscitaire? | No! Two separate resuscitaire should be kept ready |
| Why should I know the indication for a laboring mother receiving meropenam and opioids? | To decide on appropriateness of using Naloxone, neonatal isolation and performing a septic work up |
| Where is the main surgical OR where a C-section is happening on a mother with placenta increta?  What special preparation is necessary? | To ensure resuscitation team members reach the OR in time.  Higher room temperature, familiarization with the new environment and all necessary equipment should be ensured |
| What are the indications for admitting a newborn with fetal arrhythmia to NICU? | Arrhythmia noted on connecting to a multi channel monitor in stabilization room |
| How do I create beds for four less than 28 weeks, anticipated high-risk deliveries? | Efficient problem solving and triaging |
| What worst case scenario should I anticipate while attending a delivery in a mother with Spinal Muscular Atrophy, unexplained IUGR and non reassuring fetal heat rate | Hypoplastic lung with difficulty in resuscitation |
| What is the role of learners (clerks, residents, others) during resuscitation? | Team leader should assign roles on a case by case basis during the team huddle |
| Who is responsible for gathering all information on an anticipated high-risk delivery and case specific preparation? | The expectation is that the neonatal fellow covering the Labor and Delivery unit is responsible for gathering information and case specific care planning. The dedicated resuscitation nurse is responsible for calling a team huddle before attending a high risk delivery |
| How should the family’s preference for resuscitating a 23 or 24-week infant be documented in antenatal consults and handed over? | Family’s preference for resuscitation should be documented in written and handed over at every shift. If family’s preferences change, the revised plans should be documented in written |
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**3B: Issues noted during video reviewing**

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| **Communication** | **Potential problems/negative impact** |
| Not-verbalizing the reasons for initiating an intervention. E.g. Intubation, chest compression etc. | Lack of understanding limits team members ability to provide suggestions |
| Chest compression and PPV rhythm not verbalized “one and two and three and breathe” | Lack of synchronization delays neonate’s response to resuscitation |
| Heart rate is not verbalized after auscultating | Delay in making a decision on initiation/non initiation of chest compression |
| Excessive reliance on non-verbal communication e.g. asking for a suction catheter by “stretching hands” after inserting the laryngoscope orally, as opposed to a “verbal request” | Delay in receiving suction catheter causes frustration in the intubator and delays the resuscitation efforts |
| Silencing alarms and not communicating the alarm to the team leader | Lack of awareness impedes accurate decision making and timely initiation of interventions |
| Team members not communicating assertively e.g. Considering a higher peak inspiratory pressure in a non responding infant | Delay in trouble shooting leading to ineffective resuscitation |
| Not sharing of relevant obstetric information with neonatal resuscitation team during resuscitation of a depressed infant e.g. MSL, abruption, Morphine | Delay in considering appropriate interventions e.g. ET suction, fluid bolus and Naloxone respectively |
| **Leadership** |  |
| Leader was totally passive | Leads to momentary assumption of role by another member. Often results in delayed decision making, team losing focus, excessive indulgence in unnecessary interventions e.g. suctioning, and lack of assessment of response to interventions |
| Fixation error e.g. Making decisions of intubation and chest compression in a nonresponsive infant without ensuring good seal during mask ventilation | Unnecessary invasive interventions with a potential for adverse events |
| Lack of evaluation of plans during resuscitation | Prevents team members ability to provide suggestions |
| **Team members positioning/configuration** |  |
| Hands free team leader standing at the head end and RRTs who are on one side of the infant | Leader impedes effective delivery of mask ventilation |
| Initiating chest compression with the side walls up | Impedes effective performance of chest compression |
| **Technical** |  |
| Ineffective seal around the mask during mask ventilation | Delay in responding to resuscitation |
| Attempting nasal intubation while resuscitating an unresponsive infant with severe bradycardia | Potential delay in intubation |
| Not venting stomach after a prolonged mask PPV | Secondary deterioration in SpO2 and heart rate |
| Not vigilant about FiO2 during resuscitation. Started 100% FiO2 only after 90 seconds of chest compression | Delay in response to resuscitation |
| Extubation while securing the ET tube as ET tube is not held firmly against the hard palate during taping | Potential for secondary deterioration or delay in resuscitation |

**3C: System issues noted during video debriefing**

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|  | **Suggestions/solutions** |
| No response from NICU front desk when called for additional help by resuscitation team in infant stabilization room | Avoid unmanned NICU front desk all the time |
| Preterm infant on CPAP transferred directly to NICU as opposed to stabilization in infant stabilization room and then to NICU | Transfer through stabilization room ensures that a ventilator and incubator is always ready for stabilization |
| Person attending resuscitation is different from the one who participated in team huddle | Case specific preparation and management plans discussed during team huddle becomes redundant |
| Difficulty in paging the resuscitation team members as the composition of resuscitation team changed during a shift | Dedicated resuscitation pagers to be carried by resuscitation team members as opposed to individual personal pagers. |
| Infant stabilization room stocking was exhausted when 3 deliveries happened during a shift. Health care aides were replenishing stocks once a shift | Health care aides will be called to replenish stocks when necessary |
| Delay in sending the blood samples from infant stabilization room to lab | Tube system restored |
| Needle stick injury to a resuscitation team member while setting up the resuscitaire | Educate all caregivers to remove sharps after the procedures |
| Fall and injury to foot while running to attend a pink code in labor and delivery unit | Educate caregivers on taking precautions to avoid injury |
| Undue delay in starting a PIV in infant stabilization room due to non availability of personnel | Educate RN team members about creating a back up support to establish PIV in time |
| Who is the first responder (MD/NP) to attend labor and delivery calls during handover? (8-9am and 5-6pm) | The day resuscitation team (MD/NP) members. |
| Pending high-risk deliveries and family’s preference for resuscitation was not passed on to day team. Thus the day team was unclear about their roles when called to attend delivery | Should be an essential part of handover |

**3D: Skills related questions posed by care givers during video debriefing**

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| How do I communicate assertively? |
| How do I develop leadership skills? |
| What do I do when a RRT/TT member/Resident asks for intubation when the fellow is almost about to intubate? |
| How do I provide constructive feedback to team members during resuscitation? |
| When should I be “hands-on” and “hands-off” during resuscitation? |
| How can I ensure that I get others input during a difficult resuscitation? |
| It is very difficult to maintain a global perspective during resuscitation. How do I maintain it? |
| How do I deal with a member passing sarcastic comments/gestures during resuscitation? “Wish you all the best” |