Scenario Outline
This case presents a labor and birth complicated by meconium-stained amniotic fluid and a Category III fetal heart rate tracing. Learners are expected to prepare for the cesarean birth by asking the 4 pre-birth questions, assembling a resuscitation team based on assessment of perinatal risk, performing the equipment check, and coordinating the plan for delayed cord clamping with OB provider. Initial steps of newborn care are performed immediately, followed by positive-pressure ventilation. This newborn benefits from supplemental oxygen and CPAP for labored respirations. An orogastric tube is inserted to keep the stomach decompressed during CPAP. Learners are expected to be familiar with the setup and proper use of the T-piece resuscitator and/or the flow-inflating bag to administer CPAP.

Learning Objectives
Upon completion of the simulation, the learners will be able to:
• Demonstrate the correct interventions following the birth of a non-vigorous infant delivered through meconium-stained amniotic fluid
• Identify the newborn that requires PPV
• Demonstrate correct technique for administering PPV
• Demonstrate the steps for assessing response to PPV
• Demonstrate the ventilation corrective steps (MR. SOPA)
• Demonstrate correct technique for administering supplemental free-flow oxygen
• Identify indications and method for discontinuing PPV
• Demonstrate correct technique for administering CPAP
• Demonstrate correct technique for inserting an orogastric (OG) tube

Debriefing Points
Points for discussion during debriefing could include:
• Indications for administering PPV
• Indications for administering supplemental oxygen and CPAP
• Technique for administering CPAP
• Use of NRP Key Behavioral Skills

Reference Materials
Textbook of Neonatal Resuscitation, 8th edition, Lesson 3: Initial Steps of Newborn Care
Textbook of Neonatal Resuscitation, 8th edition, Lesson 4: Positive-Pressure Ventilation

Equipment
For setup:
• Damp, lightly blood- and meconium-stained blanket or towel
• Segment of simulated umbilical cord
• Simulated amniotic fluid or water
• Simulated blood
• Simulated meconium
For use during simulation:
• All items included in the NRP Quick Equipment Checklist
• Umbilical cord clamp

Setup & Preparation
• Setting: Operating room.
• Moisten the simulator’s skin with simulated amniotic fluid, meconium, and blood and insert the umbilical cord segment into the abdomen
• Wrap the simulator in a damp, lightly blood- and meconium-stained blanket or towel, without a diaper, and place it under a blanket or towel on the mother’s abdomen.

Learner Brief
Provide this information to the participants as they enter the simulation:
You’ve been asked to attend a cesarean birth of a term infant with category III fetal heart rate tracing. The obstetric provider is present and the baby is about to be delivered. Please prepare for the birth.

Additional Information
Provide this information to the participants, if asked during simulation:
Gestational age: 40 S/7 weeks
Amniotic fluid: Meconium-stained
Additional risk factors: We’re also seeing a Category III fetal heart rate tracing. We’re setting up for an emergency c-section. The mother has a functioning epidural in place, so we won’t need general anesthesia.
Estimated fetal weight: 3500 g (7 lb 11 oz).
Umbilical cord management plan: Plan to delay cord clamping for 30-60 seconds if baby is vigorous.
Before delivery
Cesarean section • 40 5/7 weeks gestation
• Meconium-stained amniotic fluid • Category III fetal heart rate tracing
• Estimated birth weight 3500 g
• Plan to delay cord clamping for 30-60 seconds

Starts PPV
Performs ventilation corrective steps
Provides PPV that moves the chest
Continues PPV that moves the chest for 30 seconds
Administers free-flow oxygen
Administers CPAP
End of simulation

Before delivery
Cesarean section • 40 5/7 weeks gestation
• Meconium-stained amniotic fluid • Category III fetal heart rate tracing
• Estimated birth weight 3500 g
• Plan to delay cord clamping for 30-60 seconds

Starts PPV
Performs ventilation corrective steps
Provides PPV that moves the chest
Continues PPV that moves the chest for 30 seconds
Administers free-flow oxygen
Administers CPAP
End of simulation

Ask the 4 pre-birth questions to assess perinatal risk:
• What is the expected gestational age?
• Is the amniotic fluid clear?
• Are there additional risk factors?
• What is our umbilical cord management plan?

Conduct pre-birth team briefing:
• Assemble team based on perinatal risk
• Identify leader
• Assign tasks

Perform equipment check
Apply gloves and personal protective equipment

Ask the 3 rapid evaluation questions:
• Term?
• Good muscle tone?
• Breathing or crying?

Move infant to radiant warmer for initial steps:
• Provide warmth, dry (and remove wet linen), put hat on baby’s head, and stimulate
• Position head and neck in sniffing position
• Clear secretions from mouth and nose with bulb syringe, anticipating PPV

Evaluate breathing
Initiate PPV with 21% oxygen within 60 seconds of birth

Note! The instructor may decide how many ventilation corrective steps the learners should go through before airway obstruction is turned off, but it should be off when pressure is increased at the latest, to keep focus on administering PPV via face-mask.

Limp
Motion
Vocal sound off
SpO2 68
SpO2 72
SpO2 85

CRITICAL PERFORMANCE STEPS

 Attach pulse oximeter sensor to right hand or wrist
 Request cardiac monitor (optional)
 Document resuscitation events. The scribe may note 30-60 second time intervals for checking HR and oxygen saturation
 Check HR after the first 15 seconds of PPV
 Announce, “HR is less than 100 bpm, not increasing, and chest is not moving.”

Start ventilation corrective steps (MR. SOPA):
• Mask Adjustment, Reposition head into sniffing position.
• Attempt PPV (for 5 breaths). If no chest movement:
  • Suction mouth and nose, Open mouth. Attempt PPV (for 5 breaths). If no chest movement:
    • Increase peak inspiratory Pressure by 5-10 cm H2O (to maximum of 40 cm H2O)
    Attempt PPV for 5 breaths after each pressure increase.

When chest movement is achieved, announce, “Chest is moving NOW. Continue PPV for 30 seconds.”

Monitor HR and oxygen saturation
Continue PPV that moves the chest for 30 seconds

Adjust oxygen concentration per target oxygen saturation table
Re-assess HR, after 30 seconds of PPV that moves the chest
Stimulate infant and gradually decrease PPV rate and pressure as the infant begins spontaneous breathing
Discontinue PPV when HR is consistently more than 100 bpm and infant has spontaneous respirations
Provide free-flow oxygen to maintain oxygen saturation in target range

Re-assess HR, oxygen saturation, and respiratory status
Administer CPAP at 5 cm H2O pressure via flow-inflating bag or T-piece resuscitator

Insert orogastric tube to decompress the stomach during CPAP
Wean and discontinue supplemental oxygen when saturation reaches and maintains target range
Continue CPAP
Continue ongoing evaluation of newborn’s respirations, HR, oxygen saturation, tone, activity, and temperature
Plan appropriate post-resuscitation care
Communicate effectively with the medical team and mother
Perform post-resuscitation debriefing