Nationwide Children's
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Center for Clinical Excellence

Clinical Pathway for Delivery Management: Planned Delivery of Neonates in Fetal Center

Inclusion criteria:
- All pregnant patients:
  - Evaluated in the Fetal Center at Nationwide Children's Hospital (NCH)
  - Scheduled for elective c-section at NCH

  and/or
  - Admitted as an inpatient to Fetal Services for a fetal intervention

Exclusion criteria:
- Pregnant patients not evaluated in the Fetal Center or outpatient Fetal Center patients presenting in active labor.
  - Fetal center patients who go into spontaneous labor as outpatients should go to a labor and delivery hospital.

NICU Delivery Team (Team members may be adjusted based on specific diagnosis or resuscitation needs)
- 2 RNs
- 2 APNs
- 1 RT
- 1 Neo Fellow
- 1 PAA delivery team Neo

Pregnant Patient evaluated in the Fetal Center by multidisciplinary Team- PAA Neo, NCH MFM and other NCH consultants

Additional Team Members based on fetal Dx may include
ENT
Pediatric Surgery
Cardiology
Cardiac Intensive Care
Pediatric Anesthesiology
Others as needed

Potential Candidate* for scheduled C/S delivery at NCH?

No → Exit Pathway

Yes

*Candidacy determined based on fetal diagnosis and maternal health status

Multidisciplinary discussion with Fetal Center team and primary/referring MFM

+Baby consents
- Admission
- Blood
- PICC
- +/- ECMO
- +/- Clinical Trials
- +/- Genetic Testing
- +/- postnatal surgery and anesthesia consents

Final decision for NCH delivery? (based on fetal Dx and maternal health status)

No → Exit Pathway

Yes

1. Transfer of care documentation completed by Fetal Center Staff
2. Fetal Center RN coordinator creates fetal chart
3. Set delivery date (determined by NCH MFM, PAA Neo, surgery, additional team members and family)

1. PAA Fetal consult Neonatologist assigns Neo delivery team members
2. NCH PAA delivery attending completes Resuscitation Planning template #
3. Dry Run/walk through scheduled as clinically indicated by Fetal Center Staff

Maternal visit to Fetal Center one day prior to delivery to obtain maternal and baby consents+ and estimated fetal weight (EFW)

NCH delivery order set completed in Fetal Chart under NICU admission encounter by NCH delivery team APN, Fellow, or PAA Neo, using EFW for medication orders

1. Delivery team arrives to OR 60-90 minutes prior to c-section start time
2. Check equipment/medications as per Delivery Team Resuscitation Plan#

C-section performed and neonate delivered

Resuscitate neonate per Delivery Team Resuscitation Plan#

Neonate needing immediate surgery?

Yes → Transfer to adjacent OR for postnatal intervention. Neonatal Team signs out to peds anesthesia and surgery

No

Transfer to NICU on warmer bed for ongoing NICU care. Neonatal team signs out to Primary NICU Team

#See Resuscitation planning templates (Appendix 1A-C)

End Pathway

***This document reflects planning for the care of the neonate. Pregnancy/ peripartum care is provided by the Obstetrics (OB)/Maternal-Fetal-Medicine (MFM) team, per their policies and procedures.**

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Clinical Pathway for Delivery Management: Unexpected Delivery following Fetal Intervention

Center for Clinical Excellence

Inclusion criteria:
- All pregnant patients:
  - Evaluated in the Fetal Center at Nationwide Children's Hospital (NCH)
  - Scheduled for elective c-section at NCH

  and/or
  - Admitted as an inpatient to Fetal Services for a fetal intervention

Exclusion criteria:
- Pregnant patients not evaluated in the Fetal Center or outpatient Fetal Center patients presenting in active labor.
  - Fetal center patients who go into spontaneous labor as outpatients should go to a labor and delivery hospital.

Pregnant patient scheduled for Fetal Intervention procedure

*Fetus deemed viable at time of procedure?

No → **Exit Pathway**

Yes

1. Proactive Safety plan[+] entered into maternal chart by OB Team after Pre-Admission Safety Huddle
2. NICU Code Pink Team completes potential Resuscitation plan for the neonate [#]

Pregnant patient admitted for Fetal Intervention

Pre-Procedure
OB Team communicates maternal/fetal status to NICU Charge RN as outlined in the communication plan[‡]

*Viability determined by Fetal Center Team based on:
- Gestational Age
- Diagnosis
- Type of procedure planned

+: Appendix 2
#: Appendix 3
‡: Appendix 4

Post-Procedure
BID updates from OB team to NICU team while mother remains inpatient, as outlined in the outlined in the communication plan[‡]

Delivery Imminent?

Yes → H5A Clerk or OB Charge RN activates Code Pink via vocera

No

NICU Code Pink Team includes:
- Designated PAA Delivery Attending
- Fellow
- Charge APP
- Charge RN
- Additional RN designated by Charge RN
- Charge RT

Broadcast urgent message to CODE Pink:
"Code Pink, [location of delivery]"

NICU Code Pink Team proceeds with newborn resuscitation

Mother Discharged?

No

Yes

Neonate delivered by vaginal or C/S depending on circumstances

Transfer infant to NICU on warmer bed for ongoing management

End Pathway

***This document reflects planning for the care of the neonate. Pregnancy/ peripartum care is provided by the Obstetrics (OB)/ Maternal-Fetal-Medicine (MFM) team, per their policies and procedures.**

Inclusion & Exclusion Criteria

Inclusion criteria:

- All pregnant patients evaluated at The Fetal Center at Nationwide Children's Hospital (NCH) who are scheduled for elective c-section at NCH, and/or who are admitted as an inpatient to Fetal Services for a fetal intervention

Exclusion criteria:

- Pregnant patients not evaluated in the Fetal Center or outpatient Fetal Center patients presenting in active labor.
  - Fetal center patients who go into spontaneous labor as outpatients should go to a labor and delivery hospital.

***This document reflects planning for the care of the neonate. Pregnancy/peripartum care is provided by the Obstetrics (OB)/Maternal-Fetal-Medicine (MFM) team, per their policies and procedures.**

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Diagnosis & Definition

Fetal Diagnoses considered for delivery at NCH (this list is not entirely inclusive)

- Upper Airway Obstruction necessitating Ex Utero Intrapartum Therapy (EXIT) or anticipated difficult airway
  - Neck masses, oropharyngeal masses
  - Severe microretrognathia, severe macroglossia
- Critical Congenital Heart Disease
  - Fetal cardiac intervention in current pregnancy
  - All Level 4 and 5a cardiac deliveries
  - D-transposition of the great arteries with intact ventricular septum
  - Tetralogy of Fallot with absent pulmonary valve
  - Mediastinal Teratoma with concern for cardiac compromise
- High Risk Fetal Lung Lesion:
  - Affected lung tissue representing >50% of total fetal lung volume (TFLV) or cyst volume ratio (CVR) >2.0 at >33 weeks GA
  - Risk for hyperinflation postnatally (macrocystic congenital pulmonary airway malformation (CPAM), congenital lobar emphysema/overinflation)
  - Severe mediastinal shift
- Type I sacrococcygeal teratoma (SCT)
- Any SCT with concern for hydrops or combined cardiac output (CCO) > 625 ml/min/kg
- Left congenital diaphragmatic hernia (CDH) with observed to expected (O:E) TFLV <25-30% and/or liver herniation index >20% at 32-34 weeks
- Right CDH with O:E TFLV <40% at 32-34 weeks
- Current pregnancy in which open fetal surgery was performed
- Additional diagnoses as considered and discussed by the multidisciplinary Fetal Center team caring for the patient, in conjunction with the patient's primary obstetrician and/or maternal-fetal-medicine physician

Fetal/Maternal Diagnoses that should be discussed as relative contraindications

- Placenta accreta spectrum
- Excessive Body Mass Index (BMI) >40
- Maternal cardiac disease
- Maternal Pulmonary disease
- Maternal Hematologic disorder
- Maternal Malignancy
- Maternal HIV
- Maternal Anesthesia risk; airway assessment; sleep apnea
- Aneuploidy (Trisomy 13 or 18) or other potentially life-limiting condition in fetus
- Confirmed fetal genetic diagnosis with expected poor prognosis

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Testing

- Fetal diagnostic workup specific to individual fetal anomalies.
- Fetal monitoring per protocol for inpatient pregnant patients

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Admission Criteria

- This pathway only applies to the delivery management of newborns born to patients scheduled for cesarean section or admitted for a fetal intervention.
- Neonates: All newborns delivered either by scheduled c-section or following unanticipated delivery will be admitted to the appropriate ICU based on diagnosis (NICU or CTICU)

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Assessment & Monitoring

Pregnant patient and fetal monitoring per protocol.

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Recommended Treatments

Appropriate postpartum and neonatal care as indicated.

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Deterioration & Escalation of Care

- The Fetal Center has developed protocols for management of maternal obstetric emergencies.
- All neonates delivered at NCH (planned or unanticipated) are considered high-risk, and our NICU/CTICU teams are capable of providing all necessary evaluation and treatment

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Discharge Criteria & Planning

- Delivery is complete and baby is transferred to the appropriate ICU
- Postpartum care, discharge, and follow up per OB policies/procedures

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Patient & Caregiver Education

Counseling during Fetal Center visits based on diagnosis.

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Risk Awareness & Zero Hero

- The Fetal Center has created several risk awareness policies (maternal policies as directed by OB), including proactive safety huddles for all patients prior to admission.
  - Proactive safety huddle will take place the day prior to planned admission to Fetal Services (H5A-FS) for scheduled c-section or fetal procedure, and a proactive safety plan will be entered into the chart.
  - For fetal interventions, if the fetus is deemed viable, this will be noted in the proactive safety plan (Appendix 2), and the code pink team will complete a resuscitation plan (Appendix 3) .
- During and following a fetal intervention, Fetal Center OB nursing will keep NICU team apprised of maternal/fetal status until discharge as outlined in the Communication Plan (Appendix 4)
- H5A-FS representative reports status of inpatients on the daily safety call
- Inpatients on H5A-FS inpatients are discussed in the daily NICU huddle/daily NICU huddle email.
- Regular simulations for both code pink unplanned deliveries and scheduled high risk deliveries

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Key References

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Planned Delivery Algorithm

Unexpected Delivery Algorithm

Quality Measures

- Process:
  - Utilization of admission order sets
  - Compliance with entry of Apgar scores into delivery summary by NICU team
  - Compliance with entry of delivery room attendance note entered by NICU team
- Quality:
  - ‘Golden Hour’ metrics: Admission temperature obtained upon arrival to NICU and blood glucose within 60 minutes of admission.

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Potential Areas for Research

- Maternal and fetal/neonatal outcomes following delivery in a free-standing children's hospital
- Impact of simulation on team preparedness for rare/complex deliveries

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Pathway Team & Process

Pathway Development Team:

Leaders:

Neonatology:
Roopali Bapat, MD, MSHQS
Ruth Seabrook, MD

Director Fetal Services:
Mickey Johnson

Members:

Neonatology:
Cecilie Halling, MD
Molly Ball, MD
Jason Jackson, DO
Amy Schlegel, MD
Jennifer Thompson
Julie Gutentag
Shama Patel, MD, MPH

NICU Respiratory Care:
Erin Wishloff
Amee Elgin
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Nurse Practitioner Clinical Leaders:
Tria Shadeed, NNP
Leslie Thomas, NNP
Jill Jones, NNP

Nursing Clinical Leaders:
Lisa Miller, RN
Lauren Giles, RN
Emily Brinkman, RN

Education Services:
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Kim Samson, RN

Surgery Services:
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Program Coordinators:
Tahje Brown, MBA
Joaquin Serantes, BA

Clinical Pathway Approved:

Medical Director – Associate Chief Quality Officer, Center for Clinical Excellence:
Ryan Bode, MD, MBOE

Advisory Committee Date: *December, 2022*

Origination Date: *December, 2022*

Next Revision Date: *December, 2025*

Clinical Pathway Development

This clinical pathway was developed using the process described in the NCH Clinical Pathway Development Manual Version 6, 2022. Clinical Pathways at Nationwide Children's Hospital (NCH) are standards which provide general guidance to clinicians. Patient choice, clinician judgment, and other relevant factors in diagnosing and treating patients remain central to the selection of diagnostic tests and therapy. The ordering provider assumes all risks associates with care decisions. NCH assumes no responsibility for any adverse consequences, errors, or omissions that may arise from the use or reliance on these guidelines. NCH's clinical pathways are reviewed periodically for consistency with new evidence; however, new developments may not be represented, and NCH makes no guarantees, representations, or warranties with respect to the information provided in this clinical pathway.

For more information about our pathways and program please contact:
ClinicalPathways@NationwideChildrens.org

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Appendix 1A

NCH Complex Delivery Team Planning Sheet—High Risk CDH

Planned delivery Date:

Mothers Name/MRN:

Baby Name/MRN:

EFW:

Special Equipment

Stocked/set up warmer bed, Neopuff, airway box, delivery room cart

- Standard High-risk Resuscitation set up with 50% O2, starting pressures of 20/5 via Neopuff
- Will have flow inflating bag as back up

Use air/O2 sockets on OR boom for Panda warmer, keep tanks on warmer for transport, RT to have back up tanks available

Large bore OG tube (10F Salem Sump preferred)

Suction catheters for ETT

Pneumo kit

Surfactant (FETO patients only)

XR cassette in drawer (depending on XR machine) /XR tech on call to OR

STAT UVC tray—place if additional resuscitation needed (fluid, epi, etc)

PIV supplies—preferred access if needed only for sedation in OR/prior to transport

If mother is COVID+, standard COVID precautions for Delivery team apply. N95 masks are available in the NICU

NICU Team and Roles: NICU Team to arrive at _____AM (60-90 minutes prior to mother's arrival in OR)

Role	Name	Responsibilities
Team Leader (Neonatology attending and/or fellow)		• Complete delivery room order set prior to delivery date • Supervise bed set up
		• Confirm "go status" during time out • Scrub to receive baby and transport to warmer • Direct resuscitation • Aid with procedures if needed
Head of Bed (Neonatal Fellow or APN 1)		• Intubate and initiate PPV via neopuff • Trouble shoot ventilation • Transition to other procedures as needed
APN 1 or 2		• Help secure ETT and place OG tube • Auscultate for HR and breath sounds • Place hat • PIV placement if needed • Assist with compressions/procedures if needed
APN 2 or 3 (if available)		• Ensure STAT UVC prepped, insert if needed • Assist with compressions if needed • Assist with additional procedures if needed
RNs (2)		• Ensure meds/ fluids /PIV supplies prepped • Warm/dry and remove wet linens • Place CR monitor and pulse ox leads, temp probe • HR check • Place PIV (limit to 2 attempts) • Document Resuscitation • Be prepared to provide compressions if needed; if progresses to code, will need to rotate out help with meds, recording
RT		• Assist with bed set up • Ensure XR plate in place • check airway/respiratory equipment • Adjust neopuff PIP and FiO2 as needed during resuscitation • Help secure ETT • Suction airway if needed • Take over provision of PPV via neopuff as needed.
Pharm D		• Ensure meds drawn up from orders, help with additional doses as needed

Additional Medications for Neo team (should be pre-ordered using NCH delivery order set, in fetal chart, under inpatient admission encounter)

- Fentanyl 2 mcg/kg IV x2
- Vecuronium 0.1 mcg/kg IV x2

- Atropine 0.02 mg/kg IV
- Versed 0.2 mg/kg IN x2
- Fentanyl 1mcg/kg IN x2
- NS bolus 10mg/kg x3
- 1 unit O neg blood on call
- Code Epinephrine (0.1mg/kg ETT x2, 0.02mg/kg IV x2), epi gtt
- (defer Vit K and erythro admin until after transfer to NICU)
- Other meds per delivery attending preference

Resuscitation Goals prior to Transfer to NICU

- HR >100, ideally saturations >70-80%
- ETT confirmed via CXR
- PIV in place – if needed

NICU Admission Plan

- Administer Vit K and erythromycin in NICU
- UAC/PAL placement, DL PICC placement
- Document ETT position via CXR.
- Fluids, labs, antibiotics as dictated by clinical status.

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Appendix 1B

NCH Complex Delivery Team Planning Sheet—EXIT

Planned delivery Date:

Mothers Name/MRN:

Baby Name/MRN:

EFW:

Special Equipment

Stocked/set up warmer bed, Neopuff, airway box, delivery room cart

- Standard Resuscitation set up with 21% O2, starting pressures of 20/5 via Neopuff
- Will have flow inflating bag as back up
- Utilize transwarmer as baby will be exposed/wet for some period of time before transfer to warmer bed

Use air/O2 sockets on OR boom for Panda warmer, keep tanks on warmer for transport, RT to have back up tanks available

Suction catheters for ETT

XR cassette in drawer—ensure XR tech on call to OR

Surfactant

STAT UVC tray—place if additional resuscitation needed (fluid, epi, etc)

PIV supplies—preferred access if needed only for sedation in OR

If patient is COVID+, standard COVID precautions for Delivery team apply. N95 masks are available in the NICU

Overview of fetal monitoring and care while on placental support:

- NICU APN or RN sterile at OR table for PIV placement/resuscitation support
- Place sterile hat to help maintain temperature
- OB places pulse ox on wrist and hands off cable to OB anesthesia
  - Pulse oximeter located by OB anesthesia. If that is not picking up a signal, use the portable pulse oximeter that is placed in a sterile bag on the field
- HR monitoring via US probe—performed by OB or cardiologist
- Medication administration: Anesthesia will hand off fetal cocktail to MFM
- Medical control of Fetus
  - Sterile self-inflating bag with peep valve should be on the sterile field. If resuscitation needs to be initiated, ENT and Neonatal RN/APN can coordinate provision of PPV
  - Parameters at which procedure should be aborted should be determined among all group members prior to initiation

  - Should code meds need to be given, EXIT will be aborted and an emergent UVC should be placed by the fellow and medications should be administered. ETT Epi should also be available

NICU Team and Roles: NICU Team to arrive ____ (60-90 min prior to maternal arrival in OR)

Role	Name	Responsibilities
Team Leader (Neonatology attending and/or fellow)		• Complete delivery room order set prior to delivery date • Supervise bed set up • Confirm "go status" during time out • Direct resuscitation • Aid with procedures if needed
Head of Bed (Neonatal Fellow or APN 1)		• Dry head, face • Start PPV via Neopuff • Transition to UVC placement if needed
APN 1 or 2		• Scrub to help with IV access and/or PPV while on placental bypass • Assist ENT with the transfer of the baby—ENT to maintain control of airway/ETT until secured • Help secure ETT with ENT and RT once transferred to warmer • Dry head and place new hat • Place PIV (if infant stable; limit to 2 attempts) • Transition to UVC placement if needed for resuscitation
RNs (2)		• Ensure meds/ fluids /PIV supplies prepped • Warm/dry and remove wet linens • Place CR monitor and pulse ox leads, temp probe • HR check • Warm/dry and remove wet linens once ETT secured • Place PIV (limit to 2 attempts) • Document Resuscitation • Be prepared to provide compressions if needed; if progresses to code, will need to rotate out help with meds, recording • Place PIV (if infant stable; limit to 2 attempts)
RT		• Assist with bed set up • Ensure XR plate in place • check airway/respiratory equipment • Help secure ETT with ENT and APN
		• Suction airway if needed • Adjust neopuff PIP and FiO2 as needed during resuscitation • Take over provision of PPV via neopuff as needed.
Pharm D		• Additional med doses available for Neo team admin (see med lists) if needed ○ Note, OB Anesthesia will prepare fetal IM cocktail for use on sterile field

Resuscitation Pearls

- MFMs will attempt to apply pulse to arm (whichever is most easily delivered at the time of uterine incision). POC US will also be available to monitor HR during procedures, or scalp electrode may also available. Focus on fetal heart rate, not saturations, while fetus remains on placental bypass, as expected saturations will be fetal levels (50-75% acceptable, as long as fetal HR appropriate)
- Infant will be late preterm, without onset of labor (hopefully). Also infant will not cry at delivery prior to securement of airway. Anticipate need for airway suctioning to clear fluid, *potentially higher initial inflation pressures to recruit.*
- Dry head/face well to allow for ETT securement; ***defer lifting infant to remove wet blankets until ETT is secured.***
- Consider surfactant after initial attempts to clear airways with suctions and recruit with PPV. Confirm ETT placement (either with direct visualization by ENT or via CXR) prior to administration, due to potentially abnormal length of trachea
- Transfer of maternal volatile anesthetics to fetus may cause fetal/neonatal vasodilation, consider fluid boluses
- Transfer on warmer bed. Drape with warm blankets for privacy during transport to NICU
- Ensure adequate sedation prior to transport (consider additional dose of paralytic for transport)

Fetal Anesthesia Cocktail: IM **(have enough for 2 rounds)**—Mixed by OB anesthesia, handed off to MFM
Will need to be redosed after ~20 min, if still on placental bypass

Fentanyl: 5mcg/kg

Vecuronium: 0.1 mg/kg

Atropine: 0.02 mg/kg

Additional Medications for Neo team after termination of placental bypass—to be drawn up by PharmD

- Consider having an ADDITIONAL fetal cocktail ready for single IM injection
- Surfactant
- Fentanyl 2 mcg/kg IV x2
- Vecuronium 0.1 mcg/kg IV x2
- Atropine 0.02 mg/kg IV
- Versed 0.2 mg/kg IN x2
- Fentanyl 1mcg/kg IN x2
- NS bolus 10mg/kg x3
- D10 bolus x2
- 1 unit O neg blood on call
- Code Epinephrine (0.1mg/kg ETT x2, 0.02 mg/kg IV x2)
- (defer Vit K and erythromycin admin until after transfer to NICU)

NICU Admission Plan

- Administer Vit K and erythron in NICU: ensure ETT is WELL SECURED before applying erythromycin
- Consider umbilical line placement based on clinical status/respiratory support needs
- Document ETT position via CXR.
- Fluids, labs, antibiotics, as dictated by clinical status.

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Appendix 1C

NCH Complex Delivery Team Planning Sheet— Generic

Planned delivery Date:

Mothers Name/MRN:

Baby Name/MRN:

Fetal Diagnosis:

EFW:

Special Equipment

Stocked/set up warmer bed, Neopuff, airway box, delivery room cart

- Unique aspects of delivery room management/Adjustment to NRP algorithms based on diagnosis:

Use air/O2 sockets on OR boom for Panda warmer, keep tanks on warmer for transport, RT to have back up tanks available

NICU Team and Roles: NICU Team to arrive at 60-90 min prior to planned C-section start time

Modify Role Assignments as needed based on diagnosis and anticipated resuscitation needs

Role	Name	Responsibilities
Team Leader (Neonatology attending and/or fellow)		• Complete delivery room order set prior to delivery date • Supervise bed set up • Confirm "go status" during time out • Scrub to receive baby and transport to warmer • Direct resuscitation • Aid with procedures if needed
Head of Bed (Neonatal Fellow or APN 1)		• Intubate and initiate PPV via neopuff • Trouble shoot ventilation • Transition to other procedures as needed
APN 1 or 2		• Auscultate for HR and breath sounds • Place hat • PIV placement if needed • Assist with compressions/procedures if needed
RNs (2)		• Ensure meds/ fluids /PIV supplies prepped
		• Warm/dry and remove wet linens • Place CR monitor and pulse ox leads, temp probe • HR check • Place PIV if needed (limit to 2 attempts) • Document Resuscitation • Be prepared to provide compressions if needed; if progresses to code, will need to rotate out help with meds, recording
RT		• Assist with bed set up • check airway/respiratory equipment • Adjust neopuff PIP and FiO2 as needed during resuscitation • Help secure ETT • Suction airway if needed • Take over provision of PPV via neopuff as needed.
Pharm D		Ensure meds drawn up from orders, help with additional doses as needed

Order Potential Medications for Neonatal Resuscitation

- Should be pre-ordered using NCH delivery order set, in fetal chart, under inpatient admission encounter)

Resuscitation Pearls Based on Diagnosis:

Receiving Unit Post-Resuscitation: NICU CTICU OR

Physiologic Goals Prior to Transfer:

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Appendix 2

Call Element	Responsible Party	Completed?	Notes
Brief clinical overview	Maternal Fetal Medicine Physician	[ ] Yes [ ] No	
Procedural plan or review	Maternal Fetal Medicine Physician	[ ] Yes [ ] No	
Anesthesia plan or review	Anesthesiologist	[ ] Yes [ ] No	
Diagnostics review (*for pre-procedural calls, may discuss prior to "Procedural plan or review") **Echocardiography** **Advanced Imaging** **Fetal U/S** **Fetal MR**	Primary Surgeon	[ ] Yes [ ] No [ ] NA [ ] Yes [ ] No [ ] NA [ ] Yes [ ] No [ ] NA	
Input from other services (as needed)	Maternal Fetal Medicine Physician requests input from other services as needed	[ ] Yes [ ] No [ ] NA	Team(s) Involved: Preop OR PACU NICU PICU H5A Fetal Nursing Pharmacy Patient Safety
Maternal Current risks or concerns: **Hemorrhage Risk: Low, Medium, High** **Type/Screen x 2 sent?** **Positive antibody screen?**	Primary Surgeon/Anesthesia	[ ] Yes [ ] No	
Maternal Anticipated concerns and mitigation plans Procedural: Post-procedural: Postpartum care: Adult Hospital for transfer: **Fetal Anticipated concerns and mitigation plans** Is the fetus viable: yes or no If viable please include any special considerations for resuscitation:	Primary Surgeon to lead the discussion	[ ] Yes [ ] No	
Summary **Proactive Safety Plan – was this ordered in Epic ?** Specify which adult hospital for transfers and any triggers for early transfer.	Primary Surgeon or PICU Faculty	[ ] Yes [ ] No [ ] Yes [ ] No*	

Proactive Safety Huddle: Key Element Checklist

Patient Name: _____ **Date:** _____

Timing of call: [X] Pre-Procedure [ ] Immediate Post-Procedure [ ] Prior to floor transfer [ ] Other (specify)_____

Preferred Timing of Calls (if team available) weekdays between **PM, weekends **PM
Immediately Post-procedure: 1 hour after arrival (if patient stable) POD#1/prior to floor transfer: _____

Proactive Safety Huddle – Maternal Fetal Medicine

Purpose of proactive safety huddles:

- Mitigate risk and concerns
- Enhance communication across multidisciplinary teams
- Raise situational awareness to improve patient outcomes

Huddle Participants:

Role	Participant
Primary Surgeon	Oluseyi Ogunleye
Surgeon	
Clinical Lead and Education Nurse Specialist	Lisa Miller
Fetal Center Nurse Coordinator	Becky Corbitt; Beth Swartz
Fetal Nurse	
Fetal Ultrasound Technologist	
Scrub Nurse	
Anesthesiologist	Vanessa Olbrecht; Seth Hayes
Anesthesia tech	
OR Nurse Manager	Nicole Henson
OR Charge Nurse/Circulating Nurse (Must)	Janet Nikolovski
OR circulating Nurse	
Neonatologist (if viable fetus)	
Neonatal Nurse Practitioner (if viable fetus)	
NICU RN (if viable fetus)	
PICU Attending	Tensing Maa
PICU Fellow	
PICU Nurse Manager	Jessica Dopkiss
PICU Nursing Clinical Leader	Lori Humphry
Huddle Facilitator	
Medication Safety Officer or Jackie Magers (Clinical Pharmacist) -- (ad hoc if related to risk mitigation with medications) Preop Nurse Manager PACU Nurse Manger PACU Educator H5A Nurse Manager Surgical APPs Patient Safety Specialist	 Jackie Magers, Troy Kienzle Lisa Carney Renee Wolfe Natalie Friess Ann Hoffman Nicole Jenkins Summer Dougherty, Rebecca Cook, Maria Moauro

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Appendix 3

NCH Code Pink Team: Resuscitation plan for unplanned delivery following fetal intervention

Mothers Name/MRN:

Baby Name/MRN:

EFW:

EGA at time of fetal procedure:

Special Equipment

Stocked/set up warmer bed, Neopuff, Fetal Nursing team to set up and do initial check on H5 and OR warmer beds when mother is admitted for fetal procedure, including checking that tanks on warmer bed are full

- Consider use of air/O2 sockets on wall (H5A-FS) or on boom (OR), and reserving tanks for transport

RT to have back up tanks available

Airway Bag, Emergency Medication Box, and Go-bag stocked in NICU

General Resuscitation Needs:

ETT size: ☐2.0 ☐2.5 ☐ 3.0 ☐ 3.5 ☐4.0

Laryngoscope blade size: ☐ 000 ☐ 00 ☐ 0 ☐ 1

Face mask size: _____

LMA available? ☐ Y ☐ N

☐ FETO balloon puncture kit

Other Resuscitation Pearls (Dx -specific)

To be discussed during Proactive Safety Huddle

NICU Team and Roles:

Role	Responsibilities
Team Leader (Code Pink PAA Neonatology attending)	• Team Leader, Direct resuscitation
Head of Bed (Neonatal Fellow or APN)	• Dry head and place Hat • Manage airway— suction, CPAP/PPV, intubation as needed • Transition to UVC placement or compressions if needed
APN or Fellow	• Auscultate HR and Breath sounds • Compressions if needed • Transition to STAT UVC if needed
RNs (2)	• Warm/dry and remove wet linens or help secure in bag as needed • Place CR monitor and pulse ox leads, temp probe • Document Resuscitation • Be prepared to provide compressions if needed; if progresses to code, will need to rotate out help with meds, recording •
RT	• Adjust neopuff PIP and FiO2 as needed during resuscitation • Held secure ETT • Suction airway if needed • Take over provision of PPV via neopuff as needed.

Planned Delivery Algorithm

Unexpected Delivery Algorithm

Appendix 4

Fetal Center Patient-NICU/Code Pink Team Communication

Population: Fetal center inpatient procedure with viable fetus

Day prior to admit:

A. Maternal Pre-Admission Huddle
   a. Location: Fetal Center
   b. Participants:
      i. Fetal Center team
      ii. NICU Code Pink responder team
B. NICU Code Pink Huddle
   a. Location: NICU
   b. Participants:
      i. NICU Code Pink team, leadership
C. Day to night-time sign-out of impending am maternal admission
   a. MD level: 16:00 sign-out
   b. NNP level: 18:30 sign-out
   c. Charge Nurse level: 18:30 sign-out

Admission/Procedure Day:

A. Fetal Center Nurse provides real-time updates/status changes to NICU Charge RN via vocera
B. Real-time updates on Epic Storyboard
C. PM daily huddle: ~20:30pm
   a. Fetal Center Nurse reports status update of in-house fetal patient via vocera to nighttime NICU Charge RN
   b. NICU Charge RN relays updates to overnight Code Pink Team

Post-procedure Day 1 through Maternal Discharge:

A. AM daily Fetal Center Daily Safety Call: 08:30 (no weekends or holidays)
   a. Fetal Center Director reports in-house Fetal Center Patients
B. AM daily NICU Huddle: 08:30 (09:15 weekends and holidays)
   a. Fetal Center Nurse provides patient updates to Code Pink Team
   b. NICU Charge RN reports updates within daily post-huddle email
C. Fetal Center Nurse reports relevant status changes to NICU Charge RN via vocera
D. Real-time updates on Epic Storyboard
E. PM daily huddle: ~20:30
   a. Fetal Center Nurse reports status update of in-house fetal patient via vocera to nighttime NICU Charge RN
   b. NICU Charge RN relays updates to overnight Code Pink Team
F. @ maternal discharge, Fetal Center Nurse notifies NICU Charge RN via vocera

Planned Delivery Algorithm

Unexpected Delivery Algorithm