

# Apnea/Hypoxia/Respiratory Distress

## Study Group Module

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## **Apnea/Hypoxia/Respiratory Distress**

National Midwifery Institute, Inc.  
Study Group Coursework  
*Syllabus*

### Description:

This module explores newborn apnea, fetal hypoxia and respiratory distress and its implications and treatments from a midwifery perspective. It includes recommended reading materials in print and online, and asks students to complete short answer questions for assessment, long answer questions for deeper reflection, and learning activities/projects to deepen your hands-on direct application of key concepts.

### Learning Objectives:

Review the following Learning Goals as an organized beginning to your study of this module. As you read the Learning Goals, note key words which will aid you in finding the information in the texts. When you complete the module, revisit this list and check for areas that require further investigation.

- Review Fetal Heart Rate Patterns module and identify indications of hypoxia.
- Understand the physiology of recovery from a hypoxic episode.
- Understand the proper application of CPR in pregnant clients experiencing respiratory distress.
- Understand the physiology and chemistry behind hypoxia, hypoxemia, and asphyxia.
- Differentiate between primary and secondary apnea.
- Understand the use of a fetal scalp blood sample and cord blood gases in determining blood pH.
- Identify the symptoms, risk factors, and available therapies for respiratory distress and Respiratory Distress Syndrome (RDS).
- Review Meconium module, meconium aspiration, and current recommendations for appropriate response.
- Define transient tachypnea of the newborn.
- Review of NRP flow and procedures and their application for newborn apnea.
- Understand the use and appropriate application of positive pressure ventilation, suction, oxygen therapy, alternate airways, chest compressions, pulse oximetry, and medications in treating newborn apnea and respiratory distress.

- Identify non-allopathic remedies for treating newly born infants in crisis.
- Identify possible iatrogenic effects of NRP interventions.
- Demonstrate competent application of neonatal resuscitation.
- Demonstrate competent application of CPR for adults.
- Draft practice guidelines for adult and newborn resuscitation in your own practice.

### Learning Activities:

- Research and read appropriate study sources, seeking out additional study sources where needed
- Complete short answer questions in attached module document for assessment
- Complete long answer questions for deeper reflection in attached module document for assessment
- Complete learning activities listed in attached module document for assessment
  - Complete a class in adult and infant CPR
  - Complete, and become certified, in NRP, (advanced course)
  - Draft practice guidelines for adult CPR and newborn resuscitation
- Submit work to Study Group Course Coordinator
- Reflect on feedback from Study Group Course Coordinator and re-submit work as needed

### Study Sources:

Use keywords from the Learning Objectives to search the table of contents and index of the required reading listed below. Read those pages listed, and read the chapter in which they are found. Establish a context for the information so that you understand how other topics are related. In addition, flip through each text to familiarize yourself with the content of chapters. As you work through Study Group modules, you will eventually read each text in its entirety.

### Required Reading (print):

- **Neonatal Resuscitation Program 8th edition handbook (need for NRP class)**
- Varney's Midwifery, 6th edition
- Myles Textbook for Midwives, 17th Edition
- Birth Emergency Skills Training, Gruenberg
- Printed materials from chosen adult CPR course

### Study Sources (online):

See NMI website Apnea/Hypoxia/Respiratory Distress module web resources section for current online study sources for this module.

### Related Modules:

- Basic Life Science
- Fetal Heart Rate Patterns

- Fetal / Newborn Circulation
- Meconium
- Transporting
- Pregnancy Loss: Abortion, Miscarriage, and Stillbirth
- Holistic and Traditional Health and Healing

### *Additional Areas of Focus:*

- Cardiopulmonary Resuscitation (CPR)
- Neonatal Resuscitation Program, (NRP)

### Submitting Module for Assessment:

Study Group modules are accepted electronically in PDF format *only*. We encourage you to submit modules as you complete them throughout each quarter of enrollment.

Please e-mail your completed Study Group module to:

Study Group Course Work Instructor [nmistudygroup@nationalmidwiferyinstitute.com](mailto:nmistudygroup@nationalmidwiferyinstitute.com)

Once your module has been emailed to us, you will receive an email confirmation that we have received it. Study Group modules are reviewed and returned in digital format as PDF documents. Modules can take up to 1 month from submission to be reviewed and returned to you. We will return your module as an e-mail attachment. Each module includes an Evaluation Sheet at the end of the pdf. The module's page on the student portal also includes a link to a fillable online module evaluation sheet. Please take the time to fill out the module evaluation sheet and return it to us for each module, it helps us to improve our course work.

Please follow these formatting guidelines when submitting modules:

- Your first initial and last name in title of PDF, along with name of module. Example: "ERyanFirstStage.pdf"
- Title of module on the document's front page
- Your name on the document's front page
- Provide the text of each question, followed by a blank line and then your thoughtful answer (without the question, you have commentary without context)
- Blank line between the answer for a question and the next question: question, blank line, answer, blank line, question, blank line, answer...
- Please leave margin space for our comments!
- Don't use script or cursive writing style text
- Font size not smaller than 12
- Credit sources of direct quotes

### Completion Requirements and Feedback:

In order to complete this module for graduation purposes from National Midwifery Institute you must review all resources, complete the attached short answer questions for assessment, long answer questions for deeper reflection, and learning activities/projects,

and submit them as detailed above. Upon return to you, your coursework may have feedback or ask for additional information or exploration on certain topics. Your work will be evaluated based on the following Rubric (pasted below). You must achieve a minimum score of **7.5** in order to move on to your next module, though we encourage all students to strive for a **10**.

	<b>Level 1 (0 Points) Not Adequate</b>	<b>Level 2 (1 Point) Developing Adequacy</b>	<b>Level 3 (1.5 points) Meets Basic Expectations</b>	<b>Level 3 (2 points) Exceeds Expectations</b>	<b>Student Score</b>
<b>Completion of module prompts and elements</b>	-Module not completed	-Major Elements of module are missing	-All aspects of module elements present, with some minor questions unanswered or missing	-All aspects of module elements present and answered completely	
<b>Demonstrates Comprehension of module content and concepts</b>	- Lack of comprehension	- Responses are unclear and do not reflect basic comprehension of module concepts	- Responses are clear and reflect basic comprehension of module content and concepts	- Responses are clear, well written, and reflect in-depth comprehension of module content and concepts. Added subpoints and additional reflections demonstrate a deeper knowledge and curiosity.	
<b>Analysis</b>	- Key terms not defined	-Inaccurate definitions of key items -Limited connections made between evidence, subtopics and clinical experience	-Accurate definitions of key items -Connections made between evidence, subtopics and clinical experience -Incorporation of original ideas and incorporates some clinical experience in responses where possible	- Accurate definitions of key items -Strong connections made between evidence, subtopics and clinical experience	

<b>Evidence</b>	- No research evidence used	-Research not used -Research not clearly connected to questions asked in module	-Research is present but limited -Research presented is weak or not relevant to communities served by midwives	-Research is abundant -Research is compelling and relevant to communities served by midwives	
<b>Engagement with Learning Resources</b>	-Evident study sources were not utilized	-Evident study sources were partially utilized	-Evident that study sources were fully utilized	-Evident that study sources were fully utilized and independent research was undertaken -Full incorporation of original ideas, personal analysis and incorporates relevant clinical experience in all areas possible	

Skills

Following are Skills Logs which meet MEAC and NARM requirements for assessment of clinical readiness for entry-level practice upon graduation. Review the skills in each of the skills logs and consider how they each relate to the content of this module. If you are currently working with a preceptor, take this opportunity to focus on these areas. During Supervised Primary Care you will formally evaluate these skills together using the NMI Complete Skills Logs: Prenatal Skills Log, Labor & Birth Skills Log, Newborn Exam Skills Log, Postpartum Skills Log, and the Additional Skills Log. To Download the Complete Skills Logs go to the [Apprenticeship Page](#) on the Student Portal.

**Apnea/Hypoxia/Respiratory Distress**

National Midwifery Institute, Inc.  
 Study Group Coursework  
*Module Submission Attestation*

All students must complete **one attestation form along with each module submission**. This reminds students of submission guidelines and expectations. It is also a MEAC requirement. Please put your name, read the fine print, and check each box as indicated. Thank you!

**First and Last Name:**

**Email:**

**I have submitted my module by email** (required)

I have emailed my module to [nmistudygroup@nationalmidwiferyinstitute.com](mailto:nmistudygroup@nationalmidwiferyinstitute.com). I have made sure I followed submission and formatting instructions carefully, as outlined in the module syllabus. I have submitted a .pdf document, and all project attachments as requested.

I have read the fine print. I have emailed my module.

### **The work I have submitted is my original work** (required)

I have not plagiarized my work, rather, my work is in my own words and reflects my own unique ideas. When sourcing ideas from others, I have quoted, cited, and/or attributed their ideas properly. If there is any question about the originality of my work, a Study Group Coursework Coordinator will contact me.

I have read the fine print. I certify that I have submitted original work.

### **I have submitted a module feedback form** (required)

I understand I must submit at least ten module feedback forms throughout my time completing Study Group Coursework. These module feedback forms solicit student feedback in order to improve modules and keep them relevant and up-to-date for optimum student education.

Yes, I submitted a module feedback form for this module

No, I have not chosen to submit a module feedback form for this module.

## **Apnea/Hypoxia/Respiratory Distress**

National Midwifery Institute, Inc.

Study Group Coursework

*Short Answer Questions*

### Short Answer Questions

1. Define the following terms:

- a. apnea
- b. primary apnea
- c. secondary apnea
- d. hypoxia
- e. acidosis

- f. asphyxia
- g. respiratory distress
- h. respiratory distress syndrome

2. List possible causes of adult respiratory distress or hypoxia in a pregnant client.
3. If you are present with a pregnant client when the episode of adult respiratory distress or hypoxia occurs, what are your steps for management?
4. If a pregnant client is experiencing an episode of adult respiratory distress or hypoxia, what risk might this pose to the baby? How/when might you monitor the baby?
5. Describe modifications to hand placement in adult CPR for chest compressions in an adult with a large pregnant belly.
6. Can AED be used on pregnant people?
7. List the possible iatrogenic complications of providing CPR to a pregnant woman/gestational parent.

### Baby

8. List possible causes of fetal apnea during pregnancy or labor.
9. When does a fetus transition between primary and secondary apnea?
10. What is the expected response difference between a baby born that has experienced primary apnea during labor vs. a baby born that has experienced secondary apnea during labor?
11. Describe the physiology of a fetus experiencing the following sequence: primary apnea leading to secondary apnea leading to hypoxia leading to metabolic acidosis.
12. How does the baby's body conserve oxygen when faced with an episode of hypoxia?
13. Describe the fetal scalp blood sample drawing procedure.
14. How is the fetal scalp blood sample used to determine blood pH? What might be done with this information?
15. What is considered an acceptable fetal blood pH range?

16. What is the estimated number of infants who will need some form of resuscitation immediately following birth?
17. What initial assessments do you make after birth to determine if an infant needs help breathing? If you determine a baby needs resuscitation immediately following birth, what are your first steps?
18. How long do you give an infant to transition on their own before intervening and resuscitating? Do you take any steps at stimulation during this time?
19. Describe the relationship of maintaining a baby's body temperature and cardiopulmonary function.
20. Discuss mouth-to-mouth resuscitation on newborns.
  - a. Describe proper mouth placement.
  - b. How much pressure do you need to use while breathing?
  - c. What do you need to take into consideration when doing mouth-to-mouth?
  - d. In what situations might mouth-to-mouth be the preferred method of ventilations in a newborn?
21. Describe what "inflation breaths" are, before PPV is started.
22. Discuss positive pressure ventilation.
  - a. Describe the physiology of how PPV works
  - b. When do you decide to give PPV?
  - c. What is MR SOPA?
23. What does the current research say on oxygen supplementation during neonatal resuscitation? When do we give oxygen? Do OOH midwives work with oxygen blenders?
24. What is the oxygen content of room air? What is the oxygen content of air passed in mouth-to-mouth resuscitation?
25. What are current recommendations regarding suctioning secretions from baby's mouths, noses, and throats?
  - a. Do we routinely suction on the perineum?
  - b. Do we routinely suction at all?
  - c. Do we suction in the presence of meconium?
  - d. What equipment can be used for suctioning?
  - e. What are the concerns with suctioning?
26. What role may a pulse oximeter play in neonatal resuscitation? Describe its correct application to newborn extremities.

27. When using a pulse oximeter, what are the targeted oxygen saturation values for baby at 1 min? 2 min? 3 min? 4 min? 5 min? 10 min? What do you do if baby is not meeting these saturation targets?
28. When do you decide to start chest compressions during a newborn resuscitation?
29. What ratio of compressions to breaths do you employ for a newborn resuscitation? Why is this different than adults?
30. Discuss neonatal intubation and “alternate airways” established during resuscitation.
  - a. Describe intubation. Are midwives in your area doing this at home?
  - b. Describe alternate oral airways, including ET tubes and LMAs. Do you carry this equipment to home births?
31. List some possible long-term effects from an episode of prolonged hypoxia.
32. List the possible iatrogenic complications of providing ventilations and NRP on a newborn.
33. What is respiratory distress, after a baby has made an initially normal transition to extrauterine life?
  - a. what are the symptoms of respiratory distress?
  - b. what are the possible causes of respiratory distress?
  - c. what are the risk factors for respiratory distress?
34. What is the difference between respiratory distress and respiratory distress syndrome?
35. What is the appropriate response to respiratory distress syndrome?
36. What is transient tachypnea of the newborn (TTN)? What is the appropriate response to TTN?
37. Discuss blow-by or free-flow oxygen.
  - a. how is it administered at home?
  - b. when is it administered at home?
38. Why are preterm babies at greater risk for respiratory distress?
39. List indications for use of the following homeopathic remedies in newborn resuscitation:
  - a. Carbo Veg
  - b. Camphora
  - c. Antimonium Tartar
  - d. Aconitum

40. What other traditional, alternative, or holistic medicine remedies have you seen employed during an adult or neonatal resuscitation?

### **Apnea/Hypoxia/Respiratory Distress**

National Midwifery Institute, Inc.

Study Group Coursework

*Long Answer Questions for Deeper Reflection*

41. You determine you need to call emergency medical services to attend to a pregnant client of yours who has is having severe respiratory distress following an allergic reaction. Describe this phone call in detail.

- a. What exactly would you say to the dispatcher? What are the most important pieces of information?
- b. How long do you stay on the phone with EMS?
- c. How do you keep a family and supporters calm while waiting for EMS?
- d. What steps do you take while waiting for EMS?

42. You determine you need to call emergency medical services to transport a baby to hospital who requires more extensive resuscitation than you can provide at home. The baby has been born and is not breathing. Describe this phone call in detail.

- a. what exactly would you say to the dispatcher? What are the most important pieces of information?
- b. how long do you stay on the phone with EMS?
- c. how do you keep a family and supporters calm while waiting for EMS?
- d. what steps do you take while waiting for EMS?

43. You determine you need to call emergency medical services to transport a baby to hospital who is breathing after birth, but is not transitioning well. The baby appears dusky unless being supplemented with oxygen, and is grunting, and occasionally stops breathing and needs PPV before coming around easily again. You and the family in collaboration have decided it's best to have the baby checked out in hospital. You have called EMS. Describe this phone call in detail.

- a. what exactly would you say to the dispatcher? What are the most important pieces of information?
- b. how long do you stay on the phone with EMS?
- c. how do you keep a family and supporters calm while waiting for EMS?

d. what steps do you take while waiting for EMS?

44. Your client is finally fully dilated and pushing after an exhausting 20-hour labour. In between contractions while listening with a doppler you hear baby's heart rate dropping to 80 bpm and slowly recovering. Upon emergence, baby is limp, pale, has a heart rate of 100 bpm, and makes no attempts at breathing.

- a. What are your first steps?
- b. How do you communicate with the parents and/or others in the room?

45. After your initial steps, the baby has still made no effort toward breathing, is still pale, and has poor tone. It has been 45 seconds since birth.

- a. What are your next steps?
- b. How long do you continue these steps?
- c. What are your evaluations of this baby? How often are you making them?

46. After initiating PPV and determining effective ventilations, there has been no increase in heart rate. Heart rate is now 90 bpm. It has been 1 minute and 45 seconds since birth.

- a. What are your next steps?
- b. How long do you continue these steps?
- c. What are your evaluations of this baby? How often are you making them?

47. It has been 2 min 20 seconds and the baby is now vigorous and crying, pinking up, and breathing on its own. What do you do to help baby, parents, supporters, and yourself re-ground and calm down after a resuscitation?

### **Apnea/Hypoxia/Respiratory Distress**

National Midwifery Institute, Inc.

Study Group Coursework

*Projects/Learning Activities*

**Projects** (send completed projects with the rest of your course work for this module)

48. Complete a class in adult and infant CPR, and get certified as a provider. We strongly recommend you take a course intended for healthcare professionals. Cross reference the NARM NRP and CPR Requirements to ensure your course and certification will be accepted by NARM should you choose to pursue a CPM through NARM after your completion with NMI. Copy both sides of your certification card and send it with your course work.

49. Complete, and become certified, in NRP. Make sure your study and course is using the most up-to-date edition of NRP, as it changes every few years. When possible, ask around to local midwives where they take NRP and see if you can find an NRP instructor who will

speak to the specificity of homebirth and NRP. Cross reference the NARM NRP and CPR requirements to ensure your course and certification will be accepted by NARM should you choose to pursue a CPM through NARM after your completion with NMI. (For example, the advanced course has been required for NRP). Copy both sides of your certification card and send it with your course work.

50. Complete the attached Practice Guidelines worksheets. These worksheets will serve as the basis for your professional Clinical Practice Guidelines you will draft before graduation. Fill them out as if you are a midwife in primary practice, and fill them out in the way *you* plan/want to practice. For additional guidance on Practice Guidelines, see the Practice Guidelines page on the NMI Student Portal.

 <p><b>Practice Guidelines Worksheet</b></p> <p><i>Practice Guidelines form the blueprint for your rationale and procedures of your future midwifery practice. They should lay out your midwifery management plans for selected topics in enough detail that you can follow, share, and turn to them for guidance - but not too much detail as to be potentially incriminating if you don't follow them to the letter. Your submission here is a first draft, upon which we will provide feedback. You are expected to revise, reformat, and compile <u>all</u> your Practice Guidelines in your final submitted module at NMI: "Charting and Practice Guidelines". This macro Handbook of Practice Guidelines is also required by NARM and many state licensing agencies.</i></p>	
<b>Adult Cardiopulmonary Resuscitation (CPR)</b>	
<i>Drafted by: [your name]</i>	<i>Date:</i> <i>Date of Next Review: [typically in 3-5 years]</i>
<b>Background</b> Here you write a quick summary that introduces the topic, why you care about it as a midwife, and includes any pertinent definitions that may need to be cited for terms used in your guideline. Statistics of frequency or rarity in practice may also be welcome here. This is typically 1-2 paragraphs.	
<b>Qualifications of Birth Attendants</b> Here you list whether (or not) birth attendants in your future practice (midwives, students, assistants, etc.) need to have current NRP certification, equivalent training, etc.	
<b>Risk Factors</b> What typically causes respiratory distress or need for CPR in an adult - who is this more likely to happen to? •	

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**[Identifying/Diagnosing]**

Here you write how you, as a midwife, will identify the condition. Include signs and symptoms and anything else you find relevant. This can be paragraphs, or a list.

**Midwifery Management**

Here you write step by step what you will do when you have confirmed the need for CPR intervention.

**Consult & Transfer of Care**

Here you write under what conditions you would seek urgent or non-urgent consult or transfer of care with a physician (and/or transport to hospital. Be sure to reference relevant midwifery law (if relevant in your area) and write specific procedure for how to facilitate this consult/transfer-of-care.



## Practice Guidelines Worksheet

*Practice Guidelines form the blueprint for your rationale and procedures of your future midwifery practice. They should lay out your midwifery management plans for selected topics in enough detail that you can follow, share, and turn to them for guidance - but not too much detail as to be potentially incriminating if you don't follow them to the letter. Your submission here is a first draft, upon which we will provide feedback. You are expected to revise, reformat, and compile all your Practice Guidelines in your final submitted module at NMI: "Charting and Practice Guidelines". This macro Handbook of Practice Guidelines is also required by NARM and many state licensing agencies.*

### Neonatal Resuscitation

*Drafted by: [your name]*

*Date:*

*Date of Next Review: [typically in 3-5 years]*

#### Background

Here you write a quick summary that introduces the topic, why you care about it as a midwife, and includes any pertinent definitions that may need to be cited for terms used in your guideline. Statistics of frequency or rarity in practice may also be welcome here. This is typically 1-2 paragraphs.

#### Qualifications of Birth Attendants

Here you list whether (or not) birth attendants in your future practice (midwives, students, assistants, etc.) need to have current NRP certification, equivalent training, etc.

#### Risk Factors

What makes a baby more likely to need resuscitation?

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**Identifying the Need for Resuscitation**

Here you write how you, as a midwife, will identify the condition. Include signs and symptoms and anything else you find relevant. This can be paragraphs, or a list.

**Midwifery Management**

Here you write step by step what you will do when you have confirmed that a newborn needs resuscitation

**Consult & Transfer of Care**

Here you write under what conditions you would seek urgent or non-urgent consult or transfer of care with a physician (and in this case, transport to hospital). Be sure to reference relevant midwifery law (if relevant in your area) and write specific procedure for how to facilitate this consult/transfer-of-care.