**Fetal/Newborn Circulation**

National Midwifery Institute, Inc.

Study Group Coursework

*Syllabus*

Description:

This module explores a neonates transition from fetal circulation to newborn circulation and its implications in midwifery practice 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 early stages of cardiovascular development and the human cardiovascular system
* Review Placenta module.
* Identify the physical structures of the fetal cardiovascular system.
* Examine the changes undergone at birth from fetal to newborn circulation.
* Identify the effect of lung breathing on the newborn heart, lungs and liver.
* Identify risk factors for and symptoms of newborn cardiac problems.
* Review Newborn Critical Congenital Heart Disease screening procedures and the use of a pulse oximeter.
* Identify cord clamping procedures and their effect on newborn cardiovascular transitions.
* Identify the role of APGAR scores in assessing newborn cardiovascular

transitions.

* Create Practice Guidelines for monitoring and responding to newborn cardiovascular adjustments during immediate postpartum.

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
	+ Examine the illustrations of fetal and newborn circulation.
	+ Draft Practice Guidelines for monitoring and responding to newborn cardiovascular adjustments during immediate postpartum.
* Submit work to Study Group Course Coordinator
* Reflect on feedback from Study Group Course Coordinator and re-submit work as needed

Study Sources (print):

The following texts are recommended for completion of this module. Use them to cross reference and build a more comprehensive understanding.

Using keywords from the Learning Objectives, search the index. 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, read the chapter headings in the Table of Contents, and 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.

* Human Anatomy and Physiology, Marieb
* Varney’s Midwifery
* Myles Textbook for Midwives
* Physical Assessment of the Newborn: A Comprehensive Approach to the Art of Physical Examination, Tappero, Honeyfield

Study Sources (online):

See NMI website Fetal/Newborn Circulation module web resources section for current online study sources for this module.

Related Modules:

* Embryology and Fetal Development
* Postpartum Care
* Physical Assessment of the Newborn
* Jaundice
* Fetal Heart Rate Patterns
* Placenta
* Apnea/Hypoxia/Respiratory Distress

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

Once your module has been e-mailed to us, you will receive an e-mail 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 n 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.**

|  | **Level 1** **(0 Points)** **Not Adequate** | **Level 2** **(1 Point) Developing Adequacy** | **Level 3** **(1.5 points)** **Meets Basic Expectations** | **Level 3** **(2 points) Exceeds Expectations** | **Student Score** |
| --- | --- | --- | --- | --- | --- |
| **Completion of module prompts and elements** | -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 |  |
| **Demonstrates Comprehension of module content and concepts** | - 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.  |  |
| **Analysis** | - 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 experiencein responses where possible | - Accurate definitions of key items       -Strong connections made between evidence, subtopics and clinical experience  |  |
| **Evidence** | - 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 |  |
| **Engagement with Learning Resources** | -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 excerpts from the NMI forms for assessment of midwifery skills, which include all skills identified and required by NARM. Review the following skills 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 forms *Form 52 - Assessment of Student’s Midwifery Skills* and *Form 53 - Student Self-Assessment of Midwifery Skills.*

2. General Health care Skills:

 D. Demonstrates the use of instruments and equipment including:

 2. Bag and mask resuscitator

 7. DeLee ® (or other tube/mouth suction device)

 12. Infant airway

 E. Is trained in adult/infant CPR/neonatal resuscitation (required for completion of program)

 F. Uses alternate health care practices (non-allopathic treatments) and modalities

 1. Herbs 2. Hydrotherapy (baths, compresses, showers, etc.)

 I. Administers Oxygen

 K. Administers the following pharmacologic (prescriptive) agents:

 2. Medical oxygen

 L. Establishes and follows emergency contingency plans for mother and/or newborn

4. Labor, Birth and Immediate Postpartum

 C. Demonstrates the ability to evaluate and support a laboring woman during the

 second stage of labor by:

 1. Demonstrating the ability to recognize and respond to labor and birth complications such as:

 c)Variations in presentation such as:

 1) breech presentation

 3) nuchal cord presentation

 a) looping a finger under the cord and sliding it over the newborn’s face,

 b) looping finger under the cord, sliding it over the

shoulder,

c) clamping the cord in two places, cutting the cord between the two clamps,

 d) preparing to resuscitate the baby

 4) Face and brow presentation:

 a) preparing for imminent birth by:

 i) preparing resuscitation equipment,

 ii) preparing treatment for newborn bruising and swelling,

 iii) administering Arnica,

 iv) positioning the mother in a squat,

 v) performing an episiotomy of needed,

 vi) preparing for potential eye injury

 5) Multiple birth presentation and delivery

 6) Shoulder dystocia:

 a) repositioning shoulder to oblique diameter, b) repositioning the mother to:

 i)hands and knees (Gaskin maneuver,

 ii)McRobert’s position,

 iii)end of bed,

 iv)squat,

 c) flexing the shoulders of the newborn, then corkscrewing,

 d) extracting posterior arm,

 e) applying supra-pubic pressure,

 f) applying gentle traction while encouraging pushing, g) sweeping arm across newborn’s face

 h) performing and episiotomy to allow the midwife to

insert hand,

 i) performing pelvic press,

 j) fracturing the newborn’s clavicle

 d) Management of meconium stained fluids by:

 1) eliciting the mother’s cooperation to deliver head quickly, 2) instructing the mother to stop pushing,

 3) wiping out the inside of the baby’s mouth,

 4) clearing the airway with suction of mouth and nose,

 5) preparing to resuscitate the baby

D. Assesses the condition of, and provides care for the newborn by:

 1 Keeping baby warm,

 2 Making initial newborn assessment

 4. Performing routine suctioning

 5. Keeping mother and baby together

 6. Monitoring respiratory and cardiac function by assessing:

a)the symmetry of the chest,

b) the sound and rate of heart tones and respirations,

 c) nasal flaring,

 d) grunting,

 e) retractions,

 f) circumoral cyanosis,

 g) central cyanosis (check color)

 7. Stimulating newborn respiration by:

 a) rubbing up the baby’s spine,

 b) applying percussion massage for wet lungs,

 c) encouraging parental touch and calling newborn’s name,

 d) flicking or rubbing the soles of the baby’s feet,

 e) placing baby in towel with hot water bottle or heating pad on top,

 f) rubbing skin with blanket,

 g) non-allopathic treatments

 8. Responding to the need for newborn resuscitation by:

 a) administering several mouth-to mouth breaths,

 b) applying positive pressure ventilation for 15-30 seconds,

 c) administering oxygen,

 d) consulting,

 e) transporting

 E. Demonstrates the ability to recognize and respond to labor and birth complicationssuch as:

 1. Abnormal fetal heart tones and patterns

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*Short Answer Questions*

Short Answer Questions:

1. What germ layer produces the heart?

2. Where do the first blood cells originate?

3. When does the fetal heart visibly begin beating?

4. When the heart first begins beating, how many chambers does it have?

5. When does the heart have four chambers?

6. What is the organ responsible for fetal “respiration”?

7. What natural phenomenon stimulates the newborn to begin lung breathing?

8. Why does the umbilical cord cease functioning after birth?

9. How would you describe the normal circulation to the fetal lungs and liver?

10. Describe the changes that occur in the baby’s circulation at birth or shortly after.

11. Name the major blood vessels leading to and from the newborn heart.

12. How may immediate or delayed cord clamping impact newborn cardiovascular circulation?

13. How might cord burning, lotus birth, and other extended periods of time between birth and detaching from the placenta impact newborn cardiovascular circulation?

14. List the symptoms newborns exhibit when they are having difficulty making the transition from intrauterine life.

15. Describe how the newborn cardiovascular transitions are represented and assessed in the APGAR scores at 1 and 5 minutes.

16. What causes transient cyanosis in a newborn?

17. Describe the relationship of maintaining a baby’s body temperature and

cardiovascular function. What can happen if a baby does not resolve cold stress?

18. Why is emerging research suggesting newborn resuscitation with an intact cord, rather than immediately clamping and cutting the cord? What do you think of this shift in practice?

19. How do you listen for a heart murmur in a newborn?

20. What is the significance of hearing a heart murmur in a newborn? How do you respond?

21. Define Critical Congenital Heart Disease and Critical Congenital Heart Disease Screening in newborns.

22. Describe the procedure of applying a pulse oximeter step-by-step for the purposes of CCHD screening in a newborn.

23. What is the optimal timing of CCHD screening with pulse oximetry? Why?

24. If a newborn fails a CCHD screen, what are your next steps?

25. What other conditions may have similar symptoms to congenital heart disease?

 Continued…..

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*Projects/Learning Activities*

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

(number continued from previous section).

26. Examine the illustrations of fetal and newborn circulation. Trace the flow of blood circulation until you feel comfortable with the details of each circulatory path. This is an exercise that does not require documentation.

27. Draft Practice Guidelines for monitoring and responding to newborn cardiovascular adjustments during immediate postpartum. This may be the beginning of your Practice Guidelines which will ultimately include newborn resuscitation, newborn exam and postpartum care. Include information on postpartum CCHD screening. Submit this draft and include it later in your Practice Guidelines projects (in the Charting and Practice Guidelines Module.)