

# Liver & Jaundice

## Study Group Module

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### **Liver & Jaundice**

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

**Note:** Study Group modules **Preeclampsia** is specific to the liver. Preeclampsia is not addressed in this module.

#### Description:

This module explores liver and jaundice 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 Objectives as an organized beginning to your study of this module. As you read the Learning Objectives, note keywords that 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.

- Identify the role of the midwife in assessing, supporting, and monitoring the well being of mother/birthing person and baby.
- Understand the basic anatomy and physiology of the liver.
- Identify the role of cholesterol in the body.
- Identify glycogenesis, glycogenolysis and gluconeogenesis.
- Identify specific health history and lifestyle details that can prompt you, as a midwife, to encourage a client to support their liver during pregnancy.
- Describe intrahepatic cholestasis of pregnancy (ICP).
- Identify appropriate care for ICP.
- Identify the changes in the baby's liver at birth and the links to neonatal jaundice.
- Understand how to identify jaundice in a newborn.
- Identify hemolytic and nonhemolytic jaundice types.
- Understand the causes of normal physiologic jaundice.
- Identify jaundice caused by Rh incompatibility.
- Identify jaundice caused by ABO incompatibility.

- Examine the nature of bilirubin.
- Identify screening mechanisms for jaundice.
- Identify how to monitor for increasing levels of jaundice, including danger signs.
- Define kernicterus.
- Identify current medical standards of practice for response to neonatal jaundice.
- Identify support measures for recovery from jaundice.
- Consider the effects of delayed cord clamping.
- Draft practice guidelines for responding to neonatal jaundice in your own practice.
- Demonstrate evaluation of jaundice, and respond appropriately

### 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
  - Create a client resource for liver support in pregnancy
  - Draft practice guidelines for Intrahepatic Cholestasis of pregnancy
  - Draft practice guidelines for newborn jaundice
- Submit work to Study Group Course Coordinator
- Reflect on feedback from Study Group Course Coordinator and re-submit work as needed

### Study Sources (print):

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):

- Human Anatomy and Physiology, Marieb
- Myles Textbook for Midwives, 17th edition
- Varney's Midwifery, 6th edition
- Holistic Midwifery, Vol. I, Frye
- Understanding Diagnostic Tests in the Childbearing Year, Frye
- Physical Assessment of the Newborn: A Comprehensive Approach to the Art of Physical Examination, Tappero, Honeyfield

### Optional Reading:

- Botanical Medicine for Women's Health, Romm
- Maternal, Fetal, & Neonatal Physiology, Blackburn
- Herbal for the Childbearing Year, Weed
- The Natural Pregnancy Book, Romm

- Homeopathic Medicines for Pregnancy and Childbirth, Moskowitz

### Study Sources (online):

See NMI website Liver & Jaundice module web resources section for current online study sources for this module.

### **Related Topics**

- Physical Assessment
- Preeclampsia
- Hepatitis
- Drug and alcohol use/abuse
- Digestion & Nutrition module
- Embryology and Fetal Development
- Fetal/Newborn Circulation
- Normal Pregnancy
- Charting

### 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 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 in 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.

**Liver & Jaundice**  
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.

## **Liver & Jaundice**

National Midwifery Institute, Inc.  
Study Group Coursework  
*Short Answer Questions*

### **Short Answer Questions Liver**

1. What is the role of the liver in the body?
2. Describe the location of the liver in the human body.
3. Describe a fully formed liver lobule. What is another name for a liver lobule?
4. How much bile does the liver produce daily?
5. What is the function of bile

## **Liver & Jaundice**

National Midwifery Institute, Inc.  
Study Group Coursework  
*Long Answer Questions for Deeper Reflection*

### Questions Requiring Longer, Thoughtful Answers & Explanations

6. Describe the steps used to physically assess pain in the liver region.
7. What is a portal triad?
  - a. Where are portal triads found?
8. How much of the cholesterol in our bodies is derived directly from diet? How is this related to the liver and function? What effect does a diet high in saturated fat have on the liver's management of cholesterol?
9. What does glycogen do?
10. How does the liver promote glycogenolysis? and What does the liver do during gluconeogenesis?
11. What is urea and why does the body produce urea?
12. If medication is not taken orally, but provided via transdermal, injection, or intravenous administration, can the liver still be affected?
13. Besides the consumption of certain foods and substances, what environmental factors irritate the liver?
14. Explain the issues around over-the-counter use of acetaminophen.
15. Define hepatomegaly.
16. Define Hepatitis. List the types of Hepatitis and what causes each.
17. How does alcohol affect the liver? What is cirrhosis of the liver? And what are some possible causes of cirrhosis.
18. Dandelion (leaf and root) is a time-honored nutritional remedy.
  - a. What are the benefits of this herb? And how is it most often used in pregnancy?
  - b. What liver-related conditions are known to reference dandelion as herbal support?
19. In addition to herbal support, what nutritional foods aid the liver's function?
20. What foods and digested substances irritate the liver?
21. Discuss the use of apple cider vinegar for pregnancy support.
22. What are the symptoms of gallstones?
23. What lab work may be done to assess liver function?

a. For each lab value listed in the above answer, briefly explain what the value indicates about what is happening in the pregnant body.

24. What is intrahepatic cholestasis of pregnancy (ICP)?

a. What are the significant symptoms during pregnancy?

b. What major symptom of ICP is often dismissed or minimally addressed as a “normal” part of pregnancy?

c. What is the difference between the extent of the symptom that can be a “normal” part of pregnancy, and the same symptom that indicates ICP?

d. When may symptoms of ICP begin to indicate a problem?

e. Are there risks to the baby when the pregnancy is affected by ICP?

f. What is the diagnostic lab test for ICP?

g. Is there medical pharmacologic treatment for ICP?

h. What is the intervention indicated for the baby when ICP is identified?

25. Midwives have multiple opportunities to identify when a newborn has a potential problem that involves the liver. What are those opportunities provided by midwifery care?

### Jaundice

26. What is jaundice?

27. Approximately how many newborns become visibly jaundiced?

28. What is another name for hemolytic disease of the newborn?

29. Define hemolysis.

30. What do red blood cells and the liver have to do with neonatal jaundice?

31. What is the significant difference between the fetal liver and the newborn’s liver?

32. Which forms of jaundice are hemolytic?

33. Which forms of jaundice are nonhemolytic?

34. When does physiologic jaundice normally appear?

35. What is the critically dangerous effect of bilirubin on tissue cells?

36. Where does bilirubin deposit in the body?

37. How does bilirubin leave the body?

38. What are the danger signs associated with high bilirubin?

39. Define kernicterus including the survival rate
40. Blood type incompatibility between mother/gestational parent and newborn can cause jaundice. There is a higher risk of jaundice if the mother/gestational parent's blood type is \_\_\_\_ .
41. Rh incompatibility between mother/gestational parent and newborn can cause severe jaundice and can be life-threatening. There is a higher risk of jaundice if the mother/gestational parent's blood factor is \_\_\_\_.

### **Liver and Jaundice**

National Midwifery Institute, Inc.

Study Group Coursework

*Long Answer Questions for Deeper Reflection*

#### **Questions Requiring Longer, Thoughtful Answers & Explanations**

42. What is the standard of practice in your local community for monitoring newborn jaundice levels?
43. What is the cause of newborn physiologic jaundice?  
Where on the baby's body does jaundice first appear?  
a. Describe the visible progression of jaundice on the baby's body.  
b. Can visual assessment of neonatal jaundice adequately screen for the risk of kernicterus?
44. Consult the N.I.C.E. (National Institute for Health and Care Excellence) guidelines for neonatal jaundice. Are the UK recommendations consistent with Midwives Model of Care? (see NMI website for Resources for the Jaundice Study Group Module)
45. What instructions would you give to the parents of a baby showing signs of jaundice on the second day postpartum?
46. If a baby is born with jaundice, what are the possible causes? Describe how you initiate treatment for a baby born with jaundice.
47. Why might a preterm or early baby have more jaundice than a full term baby?
48. Describe breast milk jaundice and the controversy surrounding its treatment.
49. Describe the controversy over the timing of cutting the umbilical cord at birth.

- c. What is your personal opinion or observation?
- d. What studies can you cite on either side of this discussion?

50. Herbs and homeopathy can support the clearing of jaundice. What remedies would you recommend to the breastfeeding person with a baby and which are specific to a baby?

### **Practical Scenarios**

51. Your client is Rh negative. They refused prenatal Rhogam and had normal antibody screens in their second and third trimesters. Yesterday they gave birth to a vigorous baby girl. You sent a cord blood sample to the lab because the gestational parent is Rh negative and you wanted to be able to inform them if postpartum Rhogam is indicated.

You are now holding the lab results:

Blood type: A

Factor: Neg

Coombs: Pos

- a. Does your client need to receive Rhogam?
- b. What is the likely explanation for the Coombs pos?
- c. What is your response?
- d. What is your professional responsibility regarding follow-up contact with the baby's pediatrician?
- e. What is the appropriate follow up in this scenario?

52. On day one postpartum, baby Maiyann is drowsy and has not nursed well since shortly after birth. When you press a finger against her cheek, you see the skin blanch yellow. What do you do?

53. Lucy is four days postpartum. Breastfeeding has become easier in the last 24 hours, and baby Rio has begun to pass thin yellow-green stool. What do you monitor during your home visit today?

### **Liver and Jaundice**

National Midwifery Institute, Inc.

Study Group Coursework

*Projects/Learning Activities*

Send completed projects with the rest of your course work for this module.

54. What recommendations may be suggested to clients regarding the use of herbal support for liver function in pregnancy? Be specific. Study the sources listed and consult local midwives about what herbs are appropriate and in common use. Not everyone will be familiar with using nutritional or medicinal herbs, and some answers may seemingly be in conflict. This topic can offer engaging interaction and learning opportunity.

55. 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.

### Poetic License

Doc Homer sat down opposite me. He clenched and unclenched his left hand, then spread it flat on the table and examined it abstractly, as if it were a patient... “Why do you suppose the poets talk about hearts,” he asked me suddenly. “When they discuss emotional damage? The tissue of hearts is tough as a shoe. Did you ever sew up a heart?”

I shook my head. “No, but I’ve watched. I know what you mean.” The walls of a heart are thick and strong, and the surgeons use heavy needles. It takes a good bit of strength, but it pulls together neatly. As much as anything it’s like binding a book.

“The seat of human emotion should be the liver,” Doc Homer said. “That would be an appropriate metaphor: we don’t hold love in our hearts, we hold it in our livers.” I understand exactly. Once in ER I saw a woman who’d been stabbed everywhere, most severely in the liver. It’s an organ with the consistency of layer upon layer of wet Kleenex. Every attempt at repair just opens new holes that tear and bleed. You try to close the wound with fresh wounds, and you try and you try and you don’t give up until there’s nothing left.”

*- an excerpt from Animal Dreams by Barbara Kingsolver.*

*This is a good story about a father-daughter relationship, family dynamics, loss and love between sisters. Worth reading in its entirety*



# 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.

## Intrahepatic Cholestasis of Pregnancy

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.

### Risk Factors

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### Identifying & Diagnosing

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

### Midwifery Management

Here you write step by step what you will do when you have confirmed a diagnosis of the condition.

### **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. 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.

## Newborn Jaundice & Hyperbilirubinemia

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.

### Risk Factors

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### Identifying Jaundice/Diagnosing Hyperbilirubinemia

Here you write how you, as a midwife, will identify jaundice, including signs and symptoms. Be sure to include visual jaundice assessment, as well as other newborn symptoms. How will you diagnose hyperbilirubinemia via bloodwork or other monitoring devices, 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 identify jaundice in a newborn.

**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. 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.