

# Jaundiced baby

This is a Patient-Oriented Problem-Solving session designed for four students. You should have previously studied the pretest and a set of objectives designed to help prepare you for this session. Each of you has one of four booklets labelled "A" through "D". Read these booklets and follow the directions. If your group has only three students, one of you should have two booklets.

## PRETEST: CORRECT ANSWERS

**You have the answers to some of the ten pretest questions, and other members of your group have the remainder. This arrangement is designed to encourage all members of your group to actively exchange ideas and concepts. First, study the answers in your booklet and then EXPLAIN them to your group. Please don't just read them to your classmates, and don't let your classmates read their answers to you. In explaining something to another person, most people gain a better understanding of it and often transmit a better understanding. The pretest discussion and patient-oriented problem-solving parts of this activity are "open book". Be sure to refer to textbooks, notes, and other written resources whenever questions arise.**

**You will probably want to make notes on your pretest to help you review questions that you missed. Avoid "collecting pages" for "later study and understanding." Learn the concepts now so that later you will only need to review them.**

7. A normal person, whether Rh+ or Rh-, does not have antibody to antigen D, the chief antigenic determinant of the Rh+ antigen complex. When the mother is Rh- and the child is Rh+ it is possible for fetal RBCs to enter the maternal circulation during childbirth and elicit production of IgG that, in future pregnancies, can cross the placenta and cause hemolytic anemia. Occasionally, IgM will be produced, but it cannot cross the placenta. D is therefore the correct answer.

9. The antibody isotypes able to cause complement-mediated red cell hemolysis in a test tube are those able to activate complement by the classical pathway, i.e., IgG (subclasses 1 and 3) and IgM. Of these two isotypes, however, IgM is the most efficient complement activator, since a single molecule can form the duplet structure necessary for C1q binding and C1 activation. Therefore, E is the correct answer.

10. Anti-idiotypic antibodies react with target epitopes associated with the antigen-binding site of immunoglobulin molecules. Portions of the variable regions of both light and heavy chains determine the antigen-binding site of most immunoglobulin molecules. The answer, therefore, is E.

### INSTRUCTIONS FOR THE CLINICAL PROBLEM

Ms. Jones had had problems with her pregnancies. . The last three of Ms. Jones' five previous pregnancies had resulted in stillbirths. Her newborn, a baby girl by the name of Debbie, was born with jaundice that became more severe during the first few hours of life.

On the next page you have one fourth of the data needed to solve the problem. Your colleagues have the remainder. Turn to the data on the next page and determine the blood type and other relevant data. Then share this information with your colleagues and begin answering the group questions in the next section of the workbook.

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## DATA FOR THE CLINICAL PROBLEM

### Blood Typing by Hemagglutination

Use the controls to determine which pattern (⊙ vs. ●) represents agglutination or non-agglutination

#### Child's Blood (age 9 months)

Saline + child's RBCs	⊙
Anti-A + child's RBCs	⊙
Anti-B + child's RBCs	⊙
Child's serum + A RBCs	●
Child's serum + B RBCs	●
Saline + child's RBCs	⊙
Anti-D + child's RBCs.	●
Child's serum + D RBCs	⊙
Saline + child's RBCs	⊙
Anti-M + child's RBCs	●
Anti-N + child's RBCs	⊙
Anti-S + child's RBCs	●
Anti-s + child's RBCs	⊙
Child's serum + M RBCs	⊙
Child's serum + N RBCs	⊙
Child's serum + S RBCs	⊙
Child's serum + s RBCs	⊙

#### Direct Coombs Test

Rabbit anti-human IgG + child's RBCs ⊙

#### Indirect Coombs Test

Type O Rh+ RBCs + child's serum + rabbit anti-human IgG ⊙

Type O Rh- RBCs + child's serum + rabbit anti-human IgG ⊙

**Review your data, and then fill out the "Group Question Sheet."**