

# CPMC LABORATORY MEDICINE COURSE

## Group Session 11/10/98

A 42-year old female is transferred to University Hospital from a community hospital that was unable to find compatible blood. This patient's hemoglobin is 4.2 g/dL. She has no evidence of blood loss.

1. What history and laboratory tests would help characterize this patient's anemia?

Additional Information: The following laboratory testing was performed at University Hospital:

DAT	Positive with anti-IgG
Antibody Screen	Positive at IAT
Antibody identification	All cells reacting
Eluate	All cells reacting

A transfusion history obtained from the patient reveals that she was transfused 3 years ago when she suffered a fractured pelvis in a motor vehicle accident. She has had three term pregnancies with no history of hemolytic disease of the newborn. She has a history of hypertension controlled by medication.

2. From the above data, what do you believe to be the cause of this patient's anemia?

3. What antihypertensive drug could be implicated?

4. What factors are important in the decision to transfuse this patient?

5. What is the greatest risk in transfusing this patient and how should blood be selected?

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A 37-year old male was the victim of a hit-and-run accident on the interstate when he stopped to aid a stranded vehicle. He was admitted to University Hospital with bilateral fractures of the femur<sub>1</sub>, extensive abdominal and thoracic contusions, and a closed head injury. On admission he was hypotensive despite administration of 3 L of crystalloid en route to the trauma center. Three units of uncrossmatched group O, Rh-positive RBCs were administered to the patient before surgery. Upon testing, his blood type was found to be group A, Rh positive with a negative antibody screen. Two units of crossmatched group A, Rh-positive RBCs were administered during surgery. His post-transfusion hemoglobin was 7.2 g/L. Four days later, his hemoglobin was 6.2 g/L and he was symptomatic for anemia. A repeat antibody screen was negative and three units of crossmatch-compatible RBCs were infused. His post-transfusion hemoglobin and hematocrit was 9.2 g/dL and 27.8%, respectively. He was discharged and seen in the clinic 10 days after the accident with a hemoglobin of 7.1 g/dL and a hematocrit of 21.4%. Icterus was noted. Total and direct bilirubin were 3.2 and 1.9 mg/dL, respectively. There was no evidence of blood loss.

1. Why might the hemoglobin and hematocrit have fallen between this patient's last transfusion and his clinic visit?
2. What is your differential diagnosis? What additional information supports your hypothesis?
3. What is the expected hemoglobin and hematocrit increment from a unit of RBCs? Three units of RBCs?
4. What tests should be ordered to confirm the tentative diagnosis?
5. What additional history would support your tentative diagnosis?

Additional Information: An antibody screen was performed at the time of the clinic visit and was positive in the indirect antiglobulin test (IAT) phase only. The DAT was positive with polyspecific antiglobulin serum and with monoclonal anti-IgG, and anti-C3d. Anti-Jk<sup>8</sup> was eluted from the patient's RBCs.

6. What is the significance of a positive antibody screen reacting in the IAT phase?
7. What is the significance of the positive DAT?
8. What must be done by the transfusion service to provide subsequent RBCs for this patient?
9. What must be done to ensure that future RBC transfusions to the patient will be safe?