DATE: NAME: CLASS:

CHAPTER 8 HANDOUT	When Red Blood Cells Go Wrong!	BLM 8.2.3

Red blood cells (erythrocytes) carry oxygen to the cells of the body. A condition called hypoxia (low oxygen) can result if the number of red blood cells is diminished or if there is a problem with the hemoglobin within the red blood cells.

Study the chart below, and match the condition with the correct patient. Please note that the information in the chart refers only to the patient's systemic circulation.

Patient	**Condition**	**Hemoglobin (grams Hb/100 mL blood)**	**Oxygenated blood (mL O_2/100 mL blood)**	**Deoxygenated blood (mL O_2/100 mL blood)**	**Cardiac Output (L/min)**
1	Normal	15	19	15	5.0
2	Hypoxic	15	15	12	6.6
3	Hypoxic	9	9.5	6.5	7.0
4	Hypoxic	16	21	13	3.0
5	Hypoxic	15	19	18	No information given.

1. Which patient might be suffering from a dietary iron deficiency? How do you know?

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2. Which patient may be experiencing heart failure and thus poor blood circulation? How do you know?

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3. Which patient may recently have experienced high altitude (hiked up a mountain) where air is lower in atmospheric oxygen? How do you know?

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4. Which patient may have been exposed to a poison that prevents the cells from using oxygen? How do you know?

5. Patient 2 is experiencing increased breathing. Describe the mechanism responsible.

6. Answer the following questions in relation to Patient 1:

   a) How much blood is flowing through the lungs each minute?

   b) How much oxygen (in mL) is transported to the lungs each minute? Explain.

   c) How much oxygen (in mL) is carried away from the lungs each minute? Explain.

   d) Use the answers from b) and c) to calculate the oxygen consumed each minute. Show and explain all of your work.