

CASE TEACHING NOTES *for* "A Case of Iron Deficiency Anemia"

by

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INTRODUCTION

The most common cause of anemia is iron deficiency. Iron is needed to form hemoglobin, and hemoglobin is the pigment in the cytoplasm of red blood cells that transports oxygen. The majority of the symptoms of Iron Deficiency Anemia (IDA) relate directly to the decreased oxygen carrying capacity of the blood that results from a deficiency of hemoglobin. However, the relationship of other symptoms (e.g., the desire to chew ice and a swollen tongue) to iron deficiency is unclear.

Objectives

Upon completion of the case, students will have learned the following:

- The structure of hemoglobin and the role played by iron in the transport of oxygen.
- The means by which iron is transported and stored in the body.
- The incidence and causes of IDA.
- The red blood cell indices and how they are used to characterize anemia.
- How IDA is prevented and treated.

This case study has been used in a sophomore-level course in human anatomy and physiology taught to pre-med and nursing students. In addition, it has been used in a senior-level elective course in general physiology taught primarily to pre-med students.

CLASSROOM MANAGEMENT

Students receive a printed copy of the case after completion of the lectures covering the unit on blood and one week prior to the class in which the case will be discussed. Students are asked to review the concepts covered in the unit that are pertinent to the case, and then answer the questions to the best of their ability. Classes range in size from 20 to 30 students. Although I don't arrange the students in groups, I encourage them to work together in preparing the case. Reference materials are available on reserve in the college library, but most students use the Internet as their primary source for answers to the questions.

Students are not required to turn in written answers to the questions, but, rather, are called upon at random to answer the questions during the class discussion. Often, the discussion of the answer to each question goes beyond the initial scope of the question. Interestingly, students who tend to not ask or answer questions during the lecture portions of the course are often the most participatory when discussing the case studies. Also, I have never failed to learn something new from the students, regardless of how many times I have used a particular case study.

Questions concerning the material covered in the case study are included in the next regularly scheduled examination. The questions are in the form of short-answer essays, requiring a short paragraph to answer.

Typically three case studies will be covered on each 100 point exam, with one question per case study valued at 5 points each. Though they are not verbatim, the questions follow very closely those that the students were required to answer prior to the class discussion of the case.

Answer Key

Answers to the questions posed in the case study are provided in a separate answer key to the case. Those answers are password-protected. To access the answers for this case, go to [the key](#). You will be prompted for a username and password. If you have not yet registered with us, you can see whether you are eligible for an account by reviewing our [password policy](#) and then apply online or write to answerkey@sciencecases.org.

REFERENCES

Print

Kreko, W., et al. 1994. *A Guide to Laboratory Tests*. Hudson, Ohio: Lexi-Comp. Inc.

Guyton, A.C., and J.E. Hall. 2000. *Textbook of Medical Physiology* (10th ed). Philadelphia: W.B. Saunders Co.

Schilling, J.A., et al. 2004. *Handbook of Diseases* (13th ed). Philadelphia: Lippincott Williams & Wilkins.

Cahill, M. 1998. *Handbook of Signs & Symptoms*. Springhouse, Pennsylvania: Springhouse Corporation.

Internet

Iron Deficiency Anemia; Mama's Health.com.

<http://www.mamashealth.com/nutrition/anemia.asp>

Blood Diseases: Iron Deficiency Anemia; The University of Maryland Medical Center.

<http://www.umm.edu/blood/aneiron.htm>

Iron Deficiency Anemia; eMedicine. *Registration required.*

<http://www.emedicine.com/med/topic1188.htm>

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