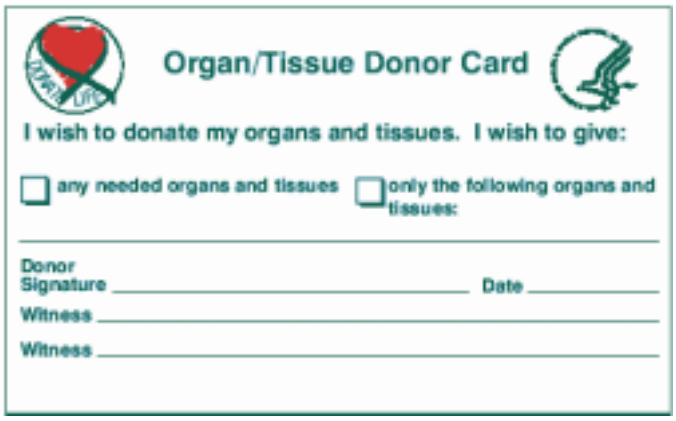

CASE TEACHING NOTES for "A Bad Reaction: A Case Study in Immunology"

by
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INTRODUCTION/BACKGROUND

This case study is designed for a course in human physiology, a combined course in human anatomy and physiology, or an introductory course in immunology. Students should have a basic understanding of the various components of the immune system, including the various types of immune cells, the concept of antigen and antibody, and the difference between the specific and non-specific defenses. The case involves the transfer of a peanut allergy to a patient that received a combined kidney and liver transplant from a donor that had died from an allergic reaction to peanuts. In addition to illustrating the various roles of immune cells, the physiology of anaphylaxis, and the function of antibodies in immune physiology, the case involves concepts related to histocompatibilities, organ donation and organ rejection.

This case is presented in two parts. For adoption into a course, Part I and Part II can stand alone as distinct activities. Part I is a sort of "medical mystery" game that challenges the students to come up with a diagnosis for the three different patients involved in the case. To do this, small groups review patient records and look for clues to uncover the connection between the death of the organ donor and the subsequent allergic response suffered by one of the organ recipients. In their search, the students are limited by the number of different records that they may review in an attempt to collect information to solve this "mystery." This limitation forces students to strategize their efforts.

Part II is a directed case study relating to a report that appeared in 1997 in the September 18th issue of the *New England Journal of Medicine*. The report describes the transfer of symptomatic peanut allergy to the recipient of a combined liver and kidney transplant. In this part of the case, students review various pieces of this report and then are directed to answer questions designed to help them understand immune physiology. At the end of Part II, the students are asked to review the medical records that were made available during Part I.

Objectives

By working through this case, the student will be able to understand:

- the difference between antigen and allergen.
- the physiology related to the sensitization to an allergen.
- the physiology related to the allergic response that is produced during a secondary exposure to an antigen that an immune system is sensitized to.
- the difference between immediate, subacute, or delayed hypersensitivity.
- the symptoms of anaphylaxis and the systemic manifestations of an immediate hypersensitivity reaction.

- the various classes of immunoglobulins and the role of IgE in an allergic response.
- the role of T and B cells in the specific immune response.
- how an allergen, helper T cells, B cells, IgE, and basophils interact during an allergic response.
- the role of HLA (MHC) in organ compatibility, donation, and rejection.

In addition, students will be asked to:

- Explain the connection between an organ donor and an allergy that develops in one of the organ recipients, and then describe an experiment that could be used to test their explanation.
- Collect and summarize the evidence for the transfer of a peanut allergy from donor to recipient using patient records and physiological data.
- Explain how the liver could be associated with the transfer of an allergy from donor to recipient.

CLASSROOM MANAGEMENT - PART I

Supplies:

- Copies of patient records (enough copies to supply each group with every record).
    - supplied with case materials (see “Patient Records”)
- File folders (records should be placed in individual labeled file folders).
    - school supplies or local supply store
    - file folders add realism to the medical record
- Play money (enough to supply each group with $1200).
    - toy store or local general merchandise/department store
    - if play money is not available, teams can work on “credit”
- Data recording sheets (each group needs a set of data recording sheets.
    - supplied with case materials (see “Data Sheets”)
- Record description sheets (each group needs a sheet describing each record).
    - supplied with case materials (see “Record Contents”)

Part I is set up as a “medical mystery” game that introduces students to the three people involved in the case. In this part of the case, students are simply looking to establish a physiological connection between the organ donor and the two organ recipients. The class can be divided up into small groups of six to eight students. Before the case is given out to the students, the instructor should explain that he/she is the Director of Grants and Research at a local hospital who has hired them as teams of researchers (the small groups) to examine the records of the patients in an attempt to uncover the connections.

The instructor should then provide a brief introduction that includes a review of:

- the project goals;
- the case presentations for the three patients;
- the diagnosis that needs to be made;
- an experiment proposal;
- the contents and cost of individual records;
- the evaluation criteria; and
- the time limitation for completion.

If resources are available, a PowerPoint presentation can be produced that contains a slide for each of the bulleted points listed above. The following section describes the information that should be included in this introduction.

Project Goals

- You have been awarded a grant in the amount of $1200.
- Your research team is to use this grant to cover the costs of examining the case histories of three patients.
- Your goal is to make a diagnosis from these records and design a testable experiment that can be used to obtain future funding.

Case Presentations

Note to Instructors: These case presentations should be presented quickly to the teams. If the cases are presented on an overhead or PowerPoint slide, then the students should be warned that they will have very little time to read and review the information. Student teams will need to take notes and record as much information as they can while the cases are presented.

Case #1
November 18, 1989
22-year-old male
The patient presented to the ER with complaints of nausea, diarrhea, dizziness, and abdominal cramps. Three hours after being admitted, the patient suffered a cardiorespiratory arrest which resulted in cerebral anoxia, coma, and brain death. Multiple organs were procured for transplant and no autopsy was performed.

Case #2
March 2, 1990
35-year-old male
Patient is a recipient of a liver and right kidney transplant from the patient in case #1. Three months after the transplant, the patient presented in the ER with complaints of dizziness, shortness of breath, nausea, and skin rashes. The patient was interviewed (transcripts available). Several tests were run to determine the general health of the patient and the condition of the transplanted organs. NO DIAGNOSIS AT THIS TIME.

Case #3
March 15, 1990
27-year-old woman
Patient #3 was called into the ER for assessment in response to the clinical observations made in case #2. Patient #3 is a recipient of a left kidney and pancreas from Patient #1. The patient was interviewed (transcripts available) and a complete physical was done along with an assessment of the transplanted organs. There are no apparent manifestations of any illness or disease in this patient at this time.

Diagnosis

Your team must deliver:

- A diagnosis for Patient #1 and the major pieces of evidence that you used.
- A diagnosis for Patient #2 and the major pieces of evidence that you used.
- An explanation for why Patient #3 appears normal. What are the major pieces of evidence that you used to account for this?
- Each patient record contains a reference number. When recording a piece of evidence to back up your diagnosis of a patient, you must reference the record number that you used to obtain that piece of evidence.

Experiment Proposal

Your team must produce:

- A testable hypothesis to back up your diagnosis of the three patients.
- A description of an experiment that can be performed to test your hypothesis.

Contents and Costs of Records

Individual records cost $200.00. This is what is available for each patient:

- Medical History—information on lifestyle, surgeries, allergies, and past medical problems.
- Interview transcripts—transcripts taken from interviews with the patients after being admitted to the hospital.
- Vitals and tests—Blood pressure, heart rate, blood counts (CBC), blood gases, and results from any tests that were run.
- Organ assesment—assesments of kidney, liver, and pancreatic function.

You have been provided with a sheet that describes the contents of each of the records. Your grant provides you with enough money to purchase six of the 12 records that are available for these three patients.

Evaluation Criteria

The performance of your group will be evaluated on the following criteria:

- Your diagnosis for the three patients and the value of the evidence that you have used.
- Your proposal for your experiment.
- Residual grant funds (spending less money gives you a higher score).

Time Limitations

- All information should be recorded on the data sheets provided.
- Your applications are due at [TIME].

Note to Instructors: It is important that students be given a reasonable amount of time to complete their work, but it is also important that time becomes a factor in their decision making. The time limitation forces the teams to develop an efficient strategy for assembling their information. If time permits, 30 to 40 minutes will give the groups a reasonable time constraint.

Group Strategies

After this very quick introduction, student groups will begin to organize the information that they were able to collect from the initial case presentations. From this point, they will begin to develop a strategy for purchasing records. Their decisions will be based on their initial impressions and their desire to uncover evidence to support an initial diagnosis that they may have made. Some groups will develop a strategy where they buy as many records as they can and then review the records to look for clues. With residual grant money being one of the evaluation criteria, most groups will develop a more fiscally responsible strategy that involves the purchase of one record at a time.

Most student groups will initially explore the possibility of a problem related to organ rejection. It is important to note that the students have not been provided with any background information related to this case. The only information available to them is the notes that they were able to collect during the presentation of the three cases in the introduction. Although the case involves the transfer of an allergy

through an organ transplant, the students are only given the symptoms that each patient presents with, and therefore, they are not even aware of the fact that the patient in case #1 has a food allergy. They will also not be aware of the fact that the patient in case #2 has no food allergy listed in his medical history. This activity is designed as a physiological “puzzle” that the groups must assemble using the data that they collect from the individual medical records.

Evaluating Group Work

At the end of the time provided, the data sheets should be collected and the records returned. Make a note of how much money each group was able to save during the activity since this is one of the evaluation criteria. Groups are evaluated on three criteria:

- Quality of the diagnosis and supporting evidence for each of the three patients (three scores).
- Quality of the proposed experiment to test their diagnosis (two scores).
- Residual grant money (one score).

A simple ranking system can be used to develop a point system. Each group will receive three scores for their diagnoses (one for each patient), one score for their experiment, and one score for the residual grant money. For example, if there are four groups, rank each group for each patient and give the top proposal a score of 4 for that patient, 3 for second, etc. Do this again for Patient #2 and then again for Patient #3. The total possible points that a group could get in this example is 12. This same process is repeated for the experiment proposal and the residual grant money. In this example, the total number of points a group could receive for the entire activity would be 20.

Class Discussion

The evaluation can be used in a class discussion to understand how the top group was able to obtain their diagnoses. The instructor and students from other groups can be given an opportunity to ask the top group questions relating to their strategy. In addition, the information collected by other groups can be reviewed to understand where the evidence may have led them astray. Individual pieces of evidence that can be highlighted during this discussion include:

- Patient #1 has food allergies and consumed a meal that contained all of those foods (medical history and transcript).
- Patient #1 has many signs and symptoms of anaphylaxis (vitals and blood tests).
- Patient #2 had a meal with peanuts prior to presenting in the ER (transcript).
- Patient #2 has some signs of a hypersensitivity reaction.
- Patient #2, who received a combination liver and kidney transplant, probably received the peanut allergy through the liver because Patient #3 also received a kidney and does not show signs of this allergy (she eats peanut butter and jelly sandwiches).
- Organ rejection does not seem probable since the organ assessments for patients #2 and #3 are normal.

Go to Master List of Patient Records **Go to Master List of Data Sheets**

CLASSROOM MANAGEMENT - PART II

Supplies

- Copies of the case report and questions for each student.
- A copy of each of the records for the three patients provided to each group.
- The data sheets returned back to the student groups (if Part I was completed).
- Course textbook or other text references.
- Classroom Internet access (if possible).

Part II of this case study was designed as a follow-up activity to Part I. Some time should be devoted in class to discuss the results from Part I before beginning Part II. Part II can be used as a stand-alone exercise and does not require the activity that was completed in Part I. If Part I was not completed, then students will have to be broken up into small groups of six to eight students. If Part I was completed, then the same groups should be assembled.

Part II is a directed case study involving the actual report that appeared in the New England Journal of Medicine. Before beginning the activity, the case presentations should be reviewed in class. If Part I was not completed prior to this introduction, then it will be important to devote some time to discussing the details of each of the case presentations before beginning.

As an introduction to Part II, explain to the students that teams of doctors have been working on this case, and that a team led by Dr. Christophe Legendre has produced a report that describes the details of what they believe is a transfer of a peanut allergy with a combined kidney and liver transplant. The medical records for each of the patients should be made available during the entire time that the student groups work on Part II. As they begin to understand the physiological details relating to immediate hypersensitivity, they will want to look for evidence of this in the medical records of the three patients. The last set of directed questions asks the student groups to revisit these records when the details of the "allergy transplant" are understood.

Part II was designed so that students could complete a preliminary analysis in class, collect information outside of class, and then reconvene to discuss their findings and formulate a complete understanding of the details relating to the case. This can be accomplished in several different ways. One of the possible methods is described below.

KWL Activity

This type of delivery works well if the classroom is limited for resources (text and Internet) and the class period is short (one hour or less). Much of the work associated with this type of delivery will be done outside of class. A KWL activity asks students "What do you know?" (K), "What do you want to know?" (W), and "What have you learned?" (L).

The case report and questions are broken down into four sections (A-D). The fourth section (D) should be reserved as an in-class discussion when the students reconvene at a later class period. Before they begin reading, ask students to assign one student the task of recording the information that will be collected. A different recorder can be assigned to each of the three sections that the group will deal with (A-C).

For sections A-C, have the student groups perform the following steps:

- Have the recorder make a table that contains three columns. Column one contains a list of the questions for that section (or question number). Column two is labeled “What do we know?” and column three is labeled “What do we want to know?” (an example can be found below for Section A of the case report).

Question	What do we know?	What do we want to know?
A1		
A2		
A3		
A4		
A5		

- Have the students read the text from the report for the section that they are working on.
- Address one question at a time for that section.
- For each question, have the recorder write down everything that the group knows about the individual question in column two. Depending on how much background material on immunology has been presented in the class, some groups may find that they have no knowledge relating to a specific question.
- Encourage students to help each other as they explain their answers to the group.
- For each question, have the recorder write down everything that the group decides that they would like to know to understand the question more completely in column three.
- Repeat this procedure for all three sections (A, B, and C). Section D will be reserved for a class discussion when the class reconvenes.
- Students should address questions in the third column outside of class time. This can be done by having every student address every question or by having individuals in the group take responsibility for individual questions (jigsaw approach).
- If time and resources permit, the students may be able to research and collect information in class to help answer the “What do we want to know?” questions.
- The student groups should reconvene (near the end of the class period or the next class meeting time) to discuss the information they have collected.
- For each question that was generated in the “What do we want to know?” section of the table, have the recorder write down what the group members have discovered in their explorations. This information becomes the “L” of KWL, or “What have we learned?”

As a final activity, have the student groups discuss the answers to the questions found in Section D of the case. The students will be reviewing the records of the three patients to look for evidence for the conclusions of the report. The recorder should write down the details of the evidence as it is discussed within the group.

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.

Assessment Items

There are a variety of different assessment items that can be developed for Part II of this case. These include, but are not limited to:

- A formal written report from the group or from each student with answers to the questions listed in sections A-D of the case.
- A copy of the notes from the recorder from each group.
- A classroom presentation from each group. Groups may present the entire case or may be assigned one of the sections from the case.

REFERENCES

Primary References

The specifics of this case, and the actual report that appeared in the *New England Journal of Medicine* can be found in:

Legendre, C., *et al.* 1997.
Brief Report: Transfer of Symptomatic Peanut Allergy to the Recipient of a Combined Liver-and-Kidney Transplant. *New England Journal of Medicine* Sep 18; 337(12):822-824.

Secondary References

Bellou, A. *et al.* 1997.
Transfer of Atopy Following Bone Marrow Transplantation. *Annals of Allergy, Asthma, & Immunology* May; 78: 513-516.

Goldsby, R.A, *et.al.* 2000
Immunology, 4th ed. New York: W. H. Freeman and Co.

Tortora, G.J., *et.al.* 1995.
Microbiology, 5th ed. New York: Benjamin/Cummings Publishing Co.

Marieb, Elaine M. 2001.
Human Anatomy and Physiology, 5th ed. New York: Benjamin/Cummings Publishing Co.

eAllergy.net—A division of Allergy Services Inc. [An extensive collection of allergy resources (best viewed with Internet Explorer).]
http://www.eallergy.net/

Allergy Dietitian—The Food Allergy and Food Intolerance Information Site
http://users.bigpond.net.au/allergydietitian/index.html

AtAllergy.com [A resource for understanding allergies; contains a searchable database of articles.]
http://www.atallergy.com/allergy/

Allergy Resources on the Web [A list of links maintained by the Mayo Clinic's Allergic Diseases Division.]
http://www.mayo.edu/int-med/allergy/pat-ed.htm

AAAAI Patient/Public Resource Center-Tips to Remember: Food Allergy.
http://www.aaaai.org/public/publicedmat/tips/foodallergy.htm

Anaphylaxis
http://health.yahoo.com/health/dc/000844/0.html

Anaphylaxis
http://www.rxmed.com/illnesses/anaphylaxis.html

Understanding the Immune System
http://rex.nci.nih.gov/PATIENTS/INFO_TEACHER/bookshelf/NIH_immune/html/imm19.html

Clinical Diagnostics for the Determination of Allergen Induced Basophil Degranulation [A test kit for allergy testing using a basophil degranulation test; this Product site of ORPEGEN Pharma contains information on basophils and their role in allergies.]
http://www.orpegen.com/basodes.htm

HLA and the Immune Response [The role of HLA (MHC) in immune physiology.]
http://www.ama-assn.org/special/hiv/newsline/briefing/hla.htm

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Image Credit: Facsimile of Organ/Tissue Donor Card obtained from http://www.organdonor.gov/.
Date Posted: 2/27/02 nas

Patient Records

Data Sheets

RECORD #: AKIT003

PATIENT INTERVIEW TRANSCRIPT	FL Community Hospital 4355 Lakeshore Drive Canandaigua, NY 14424 394-3500

Personal Information			
Name:	Alexander Kolineski, AGE 22	**Date:**	November 18, 1989
Social Security Number:	080-99-8819		
Home Address:	99 Lycoming Avenue		
City, State Zip:	Masepequa, MI 19989		
Home Phone:	242-3344	**Business Phone:**	none

DOCTOR: How long have you had your symptoms?

PATIENT: I think the dizziness started around 2 hours ago, just after I finished dinner. I thought it might be food poisoning.

DOCTOR: What did you eat for dinner.

PATIENT: I figured that you would ask me that so I wrote it down exactly as it appeared in the menu at the restaurant I ate at. It said:

"Satay Shrimp: Jumbo shrimp, sliced and simmered in satay sauce and topped with shredded cheddar cheese"

(Patient excused himself from interview with complaints of diarrhea - before the interview could be completed, the patient began to show signs of cardiorespiratory distress).

Consultation of references was completed to identify "satay sauce" as peanut oil.

RECORD CONTENTS

MEDICAL HISTORY:

Information on lifestyle, surgeries, allergies and past medical problems.

INTERVIEW TRANSCRIPTS:

Transcripts taken from interviews with patients after being admitted to the hospital.

VITALS AND BLOOD TESTS:

Blood pressure, heart rate, blood counts (CBC), blood gases, immunology, blood glucose, and results from any tests that were ordered by hospital doctors.

ORGAN ASSESSMENT:

Assessments of heart, liver, kidney, lungs and pancreas.

RECORD #: AKPH001

MEDICAL HISTORY

FL Community Hospital
4355 Lakeshore Drive
Canandaigua, NY 14424
394-3500

Personal Information

Name:	Alexander Kolineski, AGE 22	**Date:**	November 18, 1989
Social Security Number:	080-99-8819		
Home Address:	99 Lycoming Avenue		
City, State Zip:	Masepequa, MI 19989		
Home Phone:	242-3344	**Business Phone:**	None

References

and Medical Information

LIFESTYLE: *Smoker (8 years), moderate alcohol consumption (3 drinks/week)*

SURGERIES:

11/84 - Reconstruction of Left Anterior Cruciate Ligament

5/87 - 7 stitches for laceration above left eye. Patient fell and struck his head after becoming unconscious during an allergic reaction.

ALLERGIES:

DRUGS: Penicillin, Allegra, Zantac

FOOD: peanuts, shellfish, dairy products

OTHER: 11/84 - treatment of esophageal ulcer

RECORD #: AKVB004

PATIENT VITALS AND BLOOD TESTS	FL Community Hospital 4355 Lakeshore Drive Canandaigua, NY 14424 394-3500

Personal Information			
Name:	Alexander Kolineski, AGE 22	**Date:**	November 18, 1989
Social Security Number:	080-99-8819		
Home Address:	99 Lycoming Avenue		
City, State Zip:	Masepequa, MI 19989		
Home Phone:	242-3344	**Business Phone:**	None

VITALS

BP:	90/45
HR:	112 beats per minute

BLOOD TESTS

CBC:	elevated white blood cell count
BLOOD GAS:	elevated pCO_2 (60) and blood pH of 7.0
IMMUNO:	elevations of histamine, IgE, complement and non-specific defense markers (complement)
HEMATOCRIT:	normal
GLUCOSE:	elevated

Noted low blood pressure and increased heart rate. Respiration is labored. Blood tests reveal symptoms of Anaphylaxis. Immune system markers show signs of immediate hypersensitivity reactions (immune complexes and complement). Histamine levels are well above normal, which confirms hypersensitivity. Anaphylaxis onset related to allergens of unknown type and origin. Patient interview will be conducted to determine source.

RECORD #: AKAO002

PATIENT ASSESSMENT OF ORGANS	FL Community Hospital 4355 Lakeshore Drive Canandaigua, NY 14424 394-3500

Personal Information			
Name:	Alexander Kolineski, AGE 22	**Date:**	November 21, 1989
Social Security Number:	080-99-8819		
Home Address:	99 Lycoming Avenue		
City, State Zip:	Masepequa, MI 19989		
Home Phone:	242-3344	**Business Phone:**	None

Complete assessment of the organs was completed within 30 minutes of death from cardiorespiratory failure. Assessment of the heart, liver, kidneys, lungs and pancreas was performed. Patient has been identified as an organ donor.

HEART: extensive tissue necrosis
LIVER: normal, procured for transplant
KIDNEYS: normal, procured for transplant
LUNGS: extensive swelling and bronchospasm was noted prior to procurement
PANCREAS: normal, procured for transplant

Viability of kidneys, liver, and pancreas was noted and transplant candidates were identified within 1 hour of time of death.

RECORD#: JFPH001

MEDICAL HISTORY

FL Community Hospital
4355 Lakeshore Drive
Canandaigua, NY 14424
394-3500

Personal Information

Name:	Jonathan Forken, 35 year old male	**Date:**	March 2, 1990
Social Security Number:	080-77-3423		
Home Address:	107 Marchland Road		
City, State Zip:	Masepequa, MI 19989		
Home Phone:	242-7764	**Business Phone:**	242-8876

References

HISTORY:

9/70 – subacute glomerluonephritis
3/80 – appendectomy
5/81 – left kidney transplant
3/84 – needle biopsy of right kidney
3/87 – liver cirrhosis due to active hepatitis C infection
11/89 – Liver and right kidney transplant

ALLERGIES:

DRUGS: Penicillin

FOOD: None

OTHER: 10/70 - 11/89 dialysis treatments

RECORD#: JFIT003

PATIENT INTERVIEW TRANSCRIPT	FL Community Hospital 4355 Lakeshore Drive Canandaigua, NY 14424 394-3500

Personal Information			
Name:	Jonathan Forken, 35 year old male	**Date:**	March 2, 1990
Social Security Number:	080-77-3423		
Home Address:	107 Marchland Road		
City, State Zip:	Masepequa, MI 19989		
Home Phone:	242-7764	**Business Phone:**	242-8876

DOCTOR: How has your health been in the last three months with the liver and kidney transplant?

PATIENT: I've been feeling great except for this problem I had today with the dizziness, nausea, and strange skin rashes.

DOCTOR: What were you doing just prior to experiencing these symptoms?

PATIENT: I was watching football with a bunch of friends in my house.

DOCTOR: What did you eat?

PATIENT: The only thing I ate was some peanuts and ice water. I am pretty sure that I do not have any allergies, so do you think this thing I have is some type of food poisoning?

DOCTOR: I'm not sure. We will run some tests on the transplanted organs to be sure they are in good shape. We will also get some blood tests and vitals to see what this reaction might be.

RECORD#: JFVB004

PATIENT VITALS AND BLOOD TESTS	FL Community Hospital 4355 Lakeshore Drive Canandaigua, NY 14424 394-3500

Personal Information			
Name:	Jonathan Forken, 35 year old male	**Date:**	March 2, 1990
Social Security Number:	080-77-3423		
Home Address:	107 Marchland Road		
City, State Zip:	Masepequa, MI 19989		
Home Phone:	242-7764	**Business Phone:**	242-8876

VITALS

BP: 125/85
HR: 72 beats per minute

BLOOD TESTS

CBC: elevated white blood cell count
BLOOD GAS: normal pCO_2 and pO_2; blood pH of 7.35
IMMUNO: elevations of histamine, IgE, complement and non-specific defense markers (complement)
HEMATOCRIT: normal
GLUCOSE: normal

Normal blood pressure and heart rate. Respiration is normal. Immune system markers show signs of immediate hypersensitivity reactions (immune complexes and complement). Histamine levels are well above normal, which confirms hypersensitivity. Symptoms of anaphylaxis appear to be related to an allergen of unknown type and origin. A review of patient history will be done to determine sensitivity to known allergens. Patient interview will be conducted to determine source.

RECORD#: JFAO002

PATIENT ASSESMENT OF ORGANS	FL Community Hospital 4355 Lakeshore Drive Canandaigua, NY 14424 394-3500

Personal Information			
Name:	Jonathan Forken, 35 year old male	**Date:**	March 2, 1990
Social Security Number:	080-77-3423		
Home Address:	107 Marchland Road		
City, State Zip:	Masepequa, MI 19989		
Home Phone:	242-7764	**Business Phone:**	242-8876

A complete assessment of the heart, liver, kidneys, lungs and pancreas was performed:

HEART: normal
LIVER: normal
KIDNEYS: normal
LUNGS: normal
PANCREAS: normal

RECORD#: MJPH001

MEDICAL HISTORY

FL Community Hospital
4355 Lakeshore Drive
Canandaigua, NY 14424
394-3500

Personal Information

Name:	Melissa Jachowiz, 27 year old female	**Date:**	March 15, 1990
Social Security Number:	080-99-5545		
Home Address:	8889 9th Street		
City, State Zip:	Canandaigua, NY 14424		
Home Phone:	394-9999	**Business Phone:**	394-3500

References

LIFESTYLE: *History of diabetes in her family, diagnosed with diabetes at age 7*

SURGERIES:

10/70 – diagnosed with type I diabetes mellitus
01/88 – chronic renal failure related to diabetes
02/88 – dialysis treatments
11/89 - Transplant of pancreas and left kidney

ALLERGIES:

DRUGS: Penicillin

FOOD: None

OTHER: Insulin treatments since age 8, dialysis treatments from 2/88 –11/89

RECORD#: MJIT003

PATIENT INTERVIEW TRANSCRIPT	FL Community Hospital 4355 Lakeshore Drive Canandaigua, NY 14424 394-3500

Personal Information			
Name:	Melissa Jachowiz, 27 yr old female	**Date:**	March 15, 1990
Social Security Number:	080-99-5545		
Home Address:	8889 9th Street		
City, State Zip:	Canandaigua, NY 14424		
Home Phone:	394-9999	**Business Phone:**	394-3500

DOCTOR: Have you had problems related to your blood sugar, or urine output since your transplant in December of last year?

PATIENT: I don't think so. I have never felt better. The transplant has been great.

DOCTOR: What has your diet been like since your transplant?

PATIENT: I usually have cereal for breakfast, OJ, and coffee. My lunch hasn't changed since I was a child. I bring a peanut butter and jelly sandwich, carrots, a piece of fruit, and a glass of V8. My dinner varies.

DOCTOR: What have you done in the last 24 hours in terms of diet, and activity?

PATIENT: I worked all day yesterday. My diet was the usual that I just told you about. I went out for dinner last night and had lobster.

DOCTOR: How would you describe your general health in the last hour?

PATIENT: I feel great.

RECORD#: MJVB004

PATIENT VITALS AND BLOOD TESTS	FL Community Hospital 4355 Lakeshore Drive Canandaigua, NY 14424 394-3500

Personal Information			
Name:	Melissa Jachowiz, 27 yr old female	**Date:**	March 15, 1990
Social Security Number:	080-99-5545		
Home Address:	8889 9th Street		
City, State Zip:	Canandaigua, NY 14424		
Home Phone:	394-9999	**Business Phone:**	394-3500

VITALS

BP: 128/85
HR: 72 beats per minute

BLOOD TESTS

CBC: normal
BLOOD GAS: normal
IMMUNO: no abnormal elevations
HEMATOCRIT: normal
GLUCOSE: normal

Vitals are in the normal range. A complete blood count was done and found to be in the normal range for age and sex of patient. There were no signs of organ rejection in the immunological report. Antibody levels and histamine levels are in the normal range. Blood glucose level in the normal range. No signs of non-specific immune response.

RECORD#: MJAO002

PATIENT ASSESSMENT OF ORGANS	FL Community Hospital 4355 Lakeshore Drive Canandaigua, NY 14424 394-3500

Personal Information			
Name:	Melissa Jachowiz, 27 yr old female	**Date:**	March 15, 1990
Social Security Number:	080-99-5545		
Home Address:	8889 9th Street		
City, State Zip:	Canandaigua, NY 14424		
Home Phone:	394-9999	**Business Phone:**	394-3500

A complete assessment of the heart, liver, kidneys, lungs and pancreas was performed:

HEART: normal
LIVER: normal
KIDNEYS: normal
LUNGS: normal
PANCREAS: normal

DATA SHEET FOR PATIENT #1

Group names:

DIAGNOSIS:

RECORD REFERENCE #	EVIDENCE FOR DIAGNOSIS

DATA SHEET FOR PATIENT #2

Group names:

DIAGNOSIS:

RECORD REFERENCE #	EVIDENCE FOR DIAGNOSIS

DATA SHEET FOR PATIENT #3

Group names:

DIAGNOSIS:

RECORD REFERENCE #	EVIDENCE FOR DIAGNOSIS

Data Sheet for Experiment Proposal

Group names:

HYPOTHESIS:

PROPOSED EXPERIMENT: