

Testing a New Drug 1

Task Information

Subject: Biology

Content:

- MST Framework Reference:
Standard 4 - Science: The Human Organism
Standard 1 - Analysis, Inquiry, & Design: Scientific Inquiry
- Regents Biology Syllabus: Unit III: Topic II.B.1.a
- Variance Biology Program Guide: Energy, Matter and Organization: Transport

Format: Paper/Pencil: individual or cooperative group

Purpose: To establish the conditions under which a new experimental drug will be tested.

Skills:

Primary: Hypothesizing, Controlling variables
Secondary: Predicting, Communicating

Time: 20 - 35 min.

Materials: Paper for rough copies, pencils, pens

Preparation:

This activity can be done independently by students or in cooperative groups.

The students should be encouraged to be as original as possible in their write up. Emphasize that the students are to act out the role of the chief research scientist and to write the explanations as a report going to a committee for approval. Therefore, it is important that the responses be detailed, and very clear in their meanings.

Safety: N/A

Extensions/Modification:

As an extension to this assessment, students could form committees to read each others report and to grant, or not to grant, approval for the implementation of the test design.

Please Continue on the Next Page

3. Since there are several contributing factors that can affect high blood pressure, list five factors that will be kept constant between the experimental and the control groups.

I would have to put the people into categories, male, female, race, weight, etc. Then I would see how it affected each person. Then I would know ~~who~~ ^{who} would be able to take the drug w/o a problem.

4. Based on the factors list in Question 3, using complete sentences explain why certain criteria need to be used in choosing the participants in this study.

The categories would have to be chosen to match up the people in the two different groups.

5. Once the list of participants has been created, using complete sentences explain how they will be selected to be a member of either the experimental or the control group.

I would just divid them up hit and miss -

Please Continue on the Next Page

6. Using complete sentences, explain the characteristics of what must be given to the control group in place of the experimental drug to act as a placebo, and why the participants should be given this substance. Note: The drug Alamain is to be developed as a pill to be taken orally with water.

The placebo would be a pill the same as the real thing but with nothing really in it. This will make it so that no one really knows who is getting the real drug.

7. Using complete sentences, suggest how often the drug is to be administered to the experimental group, and the placebo to the control group.

Both groups would get the pill once a day.

8. Using complete sentences, explain what measurements and/or tests will be made on the experimental and control groups to judge the efficiency of Alamain, and how often the measurements and/or tests will be taken.

I would check their blood pressure and heart rate at least once a day. Also I would check to see if they felt good too.

9. Using complete sentences, explain what criteria will be used to indicate the success or failure of the drug Alamain to reduce high blood pressure in humans.

I will decide if the drug was successful or not by how it helped each person. The drug might end up helping only women, for example, and then the drug would only be available for them.

Student ID: BIO-ND-2 Testing A New Drug - Scoring Form
Male / Female (circle one)

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

- | | | | | | | |
|---|---|---|---|---|---|---|
| 1. Stating a hypothesis | 0 | 1 | 2 | 3 | 4 | |
| 2. Size of control and experimental groups | 0 | 1 | 2 | 3 | 4 | |
| 3. Listing contributing factors | 0 | 1 | 2 | 3 | 4 | 5 |
| 4. Explanation of need for criteria | 0 | 1 | 2 | | | |
| 5. Selection of participants | 0 | 1 | 2 | | | |
| 6. Identifying characteristics of the placebo | 0 | 1 | 2 | 3 | | |
| 7. Establish a timetable for administering the drug | 0 | 1 | 2 | | | |
| 8. Explaining measurements, tests, observations | 0 | 1 | 2 | 3 | 4 | |
| 9. Explaining the criteria for the drug's success | 0 | 1 | 2 | 3 | | |

Total Points: _____

19pts

Total possible score - 29 points

Testing a New Drug

Task: At this station, you will be establishing the conditions under which a new experimental drug will be tested.

Background

The drug ALAMAIN has been developed by the Gentronic Drug Company to lower blood pressure in people whose blood pressure is too high. The drug has been thoroughly tested on animals with positive results. The Gentronic Drug Company feels it is now time for the drug to be tested on humans, and have contacted the Human Improvement Laboratory to do the testing.

Directions

As chief research scientist at the Human Improvement Laboratory (HIL) you have been assigned the task of developing the human testing program for the new high blood pressure drug Alamain. You and your assistants are to confer on the experimental design of this testing program, and to write a report outlining the program. The report is to be submitted to the chairperson of the HIL Drug-Testing Committee for approval. Complete the following sections as you would included them in your report.

1. Using complete sentences state the hypothesis to be tested.

Will the drug Alamain effect blood pressure?

2. A. How many people will be included in the experimental and the control groups.

100 people

- B. Using complete sentences explain your answer.

With 100 people you could split them up in to two groups of 50 people each.

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3. Since there are several contributing factors that can affect high blood pressure, list five factors that will be kept constant between the experimental and the control groups.

*Their blood pressures, weight
how much exercise they get,
where they live, what they eat.*

4. Based on the factors list in Question 3, using complete sentences explain why certain criteria need to be used in choosing the participants in this study.

*Because you have to know
what kind of people you want.*

5. Once the list of participants has been created, using complete sentences explain how they will be selected to be a member of either the experimental or the control group.

*some of each type in both
groups.*

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6. Using complete sentences, explain the characteristics of what must be given to the control group in place of the experimental drug to act as a placebo, and why the participants should be given this substance. Note: The drug Alamain is to be developed as a pill to be taken orally with water.

It would be unfair to some people not to get anything even if the Alamain was only a pill.

7. Using complete sentences, suggest how often the drug is to be administered to the experimental group, and the placebo to the control group.

I would think the pill would be given everyday.

8. Using complete sentences, explain what measurements and/or tests will be made on the experimental and control groups to judge the efficiency of Alamain, and how often the measurements and/or tests will be taken.

Their blood pressure should be taken every week.

9. Using complete sentences, explain what criteria will be used to indicate the success or failure of the drug Alamain to reduce high blood pressure in humans.

The pill would be successful if it lowered the people's blood pressure who took it.

Student ID: BIO - ND - 3 Testing A New Drug - Scoring Form
Male / Female (circle one)

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

- | | | | | | | |
|---|----------|----------|----------|----------|---|---|
| 1. Stating a hypothesis | 0 | 1 | 2 | <u>3</u> | 4 | |
| 2. Size of control and experimental groups | <u>0</u> | 1 | 2 | 3 | 4 | |
| 3. Listing contributing factors | 0 | <u>1</u> | 2 | 3 | 4 | 5 |
| 4. Explanation of need for criteria | 0 | 1 | <u>2</u> | | | |
| 5. Selection of participants | <u>0</u> | 1 | 2 | | | |
| 6. Identifying characteristics of the placebo | <u>0</u> | 1 | 2 | 3 | | |
| 7. Establish a timetable for administering the drug | 0 | <u>1</u> | 2 | | | |
| 8. Explaining measurements, tests, observations | 0 | <u>1</u> | 2 | 3 | 4 | |
| 9. Explaining the criteria for the drug's success | 0 | <u>1</u> | 2 | 3 | | |

Total Points: _____

9 pts

Total possible score - 29 points

Testing a New Drug

Task: At this station, you will be establishing the conditions under which a new experimental drug will be tested.

Background

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1. Using complete sentences state the hypothesis to be tested.

If the drug Alamain will cure or help
lower high blood pressure.

2. A. How many people will be included in the experimental and the control groups.

10

- B. Using complete sentences explain your answer.

10 people with high blood
pressure. - I am not sure. would
not know how many to test.

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3. Since there are several contributing factors that can affect high blood pressure, list five factors that will be kept constant between the experimental and the control groups.

(amounts)
The people and the material you used to help lower the high blood pressure. I don't know how I would do it. Keep the amounts constant.

4. Based on the factors list in Question 3, using complete sentences explain why certain criteria need to be used in choosing the participants in this study.

The people would all need to have about the same blood pressure.

5. Once the list of participants has been created, using complete sentences explain how they will be selected to be a member of either the experimental or the control group.

people with high blood pressure.

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6. Using complete sentences, explain the characteristics of what must be given to the control group in place of the experimental drug to act as a placebo, and why the participants should be given this substance. Note: The drug Alamain is to be developed as a pill to be taken orally with water.

The control group would only get water

7. Using complete sentences, suggest how often the drug is to be administered to the experimental group, and the placebo to the control group.

every day - not sure. I don't know how long the medicine takes to work.

8. Using complete sentences, explain what measurements and/or tests will be made on the experimental and control groups to judge the efficiency of Alamain, and how often the measurements and/or tests will be taken.

how many amounts to lower high blood pressure, each person's blood pressure should be recorded from start to finish.

9. Using complete sentences, explain what criteria will be used to indicate the success or failure of the drug Alamain to reduce high blood pressure in humans.

The people's blood pressure went down, if not the drug did not work and I would try again.