

Problem 2.3.4: The Future of Diabetes Management and Treatment

Introduction

Every minute a new case of diabetes is diagnosed. Current research tells us that a sedentary lifestyle and a fast food diet, consisting of high amounts of carbohydrates and fat, have greatly influenced the incidence of Type 2 diabetes. Over the past twenty five years, medical science has made great strides in helping people deal with diabetes. A wider variety of treatment and management tools are available to diabetics, including insulin pumps, more accurate blood glucose monitors, and better resources on daily living. However, diabetes continues to cause serious health effects. Continued research and increased awareness are required to help diabetics see a brighter tomorrow.

Anna Garcia’s family is convinced that her diabetes played a role in her death. They do not want to see other families lose a loved one from this disease and experience this kind of pain. The family has decided to establish a grant to fund promising research or innovation in the field of diabetes treatment and management. This *grant* will be awarded to the group that proposes and defends the most innovative idea and design. With your team, come up with an idea that you feel will greatly improve the life of a diabetic. Think about all aspects of living with diabetes and brainstorm an innovation that helps diabetics treat, manage, or even cure their disease.

Equipment

* Computer with Internet access and presentation software
* ‘What to Expect’ guide from Activity 2.3.1
* Medicines That Backfire presentation
* Tips for Producing Effective Presentations template
* Laboratory journal
* PBS Course File
* Documentation Protocol
* Design Process Resource Sheet (optional)
* Various modeling supplies (if applicable)

Procedure

Part I: Innovative Design

1. With a partner, discuss some of the greatest concerns of diabetics. Begin to generate ideas for what other devices, medications, treatment plans, surgeries, or resources could help individuals who struggle with diabetes. Your task is to develop plans for an innovation you believe would help Type 1 or Type 2 diabetics.
2. Keep a list of your top ideas in your laboratory journal.
3. Complete initial research to get a better understanding of what is currently available for diabetics. Focus on available management and treatment options, such as insulin pumps and glucose monitoring devices. A large part of obtaining funding for a grant is justifying the “need” for your research or design work.
4. Discuss your research with your team and identify the need, the problem you would like to solve.
5. Refer to the Design Process Resource Sheet to help you brainstorm a solution to the problem and flesh out an innovation. You do not need to formally document each step, but use the steps to help guide your discussion and development.
6. Design your innovation with your team. Keep notes in your laboratory journal. Include a drawing or model of your idea (if applicable) or a detailed description of how the innovation would work in the body.

**Part II: Effective Presentations**

In the world of biomedical sciences, communication of information is vital. Medical breakthroughs, exciting research, or dangerous health risks are communicated in both print and spoken word. Scientists need to make sure that what they present is accurate and is communicated in a way that keeps interest and focus. They may have important information to disseminate, but if they cannot effectively convey that information to their audience, the public may not hear the message.

1. Open the *Medicines That Backfire* presentation.
2. Run the presentation and view each slide with your team. Make sure to turn on the volume of your computer.
3. Brainstorm weaknesses or problems with individual slides or with the presentation as a whole. Assess how well the slides visually communicate data or information.
4. Print out a handout of the slides and list problems with each slide on the side note-taking area. See how many problems or weaknesses you can identify.
5. With your group, review your notes on the slides and create a set of guidelines for the assembly of an effective presentation. Consider the dos and don’ts of assembling slides that support an oral presentation.
	* Example: Avoid distracting backgrounds.
6. Discuss your list with the class. Add any additional rules that come up in discussion.
7. Refer to your list of rules for an effective presentation. Design two to three slides that present information about the innovation you brainstormed and designed in Part I.
8. Show your slides to another group and listen to their feedback. Make appropriate changes based on their recommendations.
9. Answer Conclusion question 1.
10. Think about oral presentations you have given in the past. Reflect on your experience. In your laboratory journal, document your strengths and weaknesses as a presenter.
11. Discuss your reflection with a partner. Trade strategies for improvement.
12. Access Hamilton College’s Oral Communication Center, available from <http://www.hamilton.edu/oralcommunication/oral-communication-lab-guides-and-tips>. The website contains reference guides for public speaking and preparation for presentations and formal talks. Review information presented in the following guides.
	* Basic Principles of Oral Presentation
	* Using Visual Support in Oral Presentations
	* How to Engage Your Audience and Keep Them With You
	* Using PowerPoint Effectively in Oral Presentation
	* Tips for Effective Oral Delivery
13. Review the information presented in the TechSoup article *How to Deliver a Bad Presentation* available at <http://www.techsoupcanada.ca/learning_centre/articles/how_to_deliver_a_bad_presentation>.
14. Obtain a*Tips for Producing Effective Presentations* template from your teacher.
15. Use information from the resources in Steps 18 and 19 to help you create a *Tips for Producing Effective Presentations* resource sheet.
16. Decide with your team how to organize information under the three topic headings – *General Tips/Preparation, Delivery, and Structure/Slide Design*. Use bullet points for each tip. Keep your tips simple and clear and think about what would help a person who is anxious about giving a formal presentation. Add your PowerPoint slide tips from Step 12 to the *Structure/Slide Design* section of the resource sheet.
17. Refer to this presentation resource sheet as you make presentations during the year. File the Tips for Producing Effective Presentations Resource Sheet in the appropriate tab of your course file. Use the PBS Course File – Table of Contents as a guide.

**Part III: Pitching Your Design**

1. Note that you will present your idea and design to a panel of experts (the members of your class). You will only have 5 minutes to explain your idea. Make sure to defend how this innovation would improve the life of a diabetic.
2. Return to the slides that you prepared in *Part II*. Add additional slides as necessary to showcase your idea. Remember that members of Anna’s family will be on the panel. A person with a limited science background should be able to understand the basics of your idea.
3. Present your slides to the class using the techniques and tips that you learned in this activity and documented on your resource sheet.
4. Discuss the pros and cons of each innovation.
5. Update the classroom evidence board with information from Lesson 2.3.
6. Answer the remaining Conclusion questions.

Conclusion

1. You are a scientist presenting your latest discovery to two different audiences. On Monday you will present to the board of directors of your company. All of the members of the board are highly accomplished scientists who stay up-to-date with every medical breakthrough in your field. On Tuesday you will present your research to the company’s marketing and promotions department. This group of individuals is dedicated to designing a dynamic campaign that will maximize the number of physicians and consumers interested in the product. Explain how the presentation slides you use in each case may differ. Provide a specific example to illustrate how slide design and presentation style should relate to the audience.
2. If you were on a decision making board with the task of choosing which innovation to fund, what criteria would you use to make your decision? List two criteria and explain your rationale below.
3. Explain how the innovation you designed could have helped Anna Garcia.