Albert Sabin and Bioethics: Testing at the Chillicothe Federal Reformatory

**Rationale:** Bioethics is incredibly relevant today. Since scientists have been able to alter life, people have questioned the ethical implications of these actions. Students can easily point to an array of bioethical issues that impact society today—performance enhancing drugs in sports, stem cell research, genetic issues like cloning, and many more. It is important for students to understand that bioethical issues have always been relevant, important aspects of scientific research. By examining the ethical implications of Dr. Albert Sabin testing polio vaccines on “volunteer” inmates in Chillicothe’s Federal Reformatory, students will be able to determine whether or not these actions were ethical. In this lesson, students will work to answer the four main questions of bioethics and determine whether or not Sabin acted ethically. These four questions are: What is the ethical question? What are the relevant facts? Who or what will be affected by the outcome? What are the relevant ethical considerations? Students will examine primary sources to help them answer these questions. As students work to answer these questions and come to their own conclusions, they will keep in mind the relationship between bioethical issues throughout the history of scientific research, experimentation, and discovery.

**Subject:** Biology

**Grade Level:** High School

**Length:** 2 standard periods (usually about 50 minutes)

**National Science Education Standards**
- Standard A: As a result of activities in grades 9-12, all students should develop understanding of:
  - Abilities necessary to do scientific inquiry.
  - Understanding about scientific inquiry.
- Standard G: As a result of activities in grades 9-12, all students should develop understanding of:
  - Science as a human endeavor.
  - Nature of Scientific knowledge.
  - Historical perspectives.

**Objectives**
1. Students will explain the importance of Dr. Albert Sabin.
2. Students will explain the effects of polio and the importance of the polio vaccine.
3. Students will define the term bioethics and will understand the four key questions of bioethics.
4. Students will analyze various documents dealing with the oral polio vaccine and the Federal Reformatory inmates.
5. Students will present their findings to the class through discussion.
6. Students will defend their position on Sabin’s use of prisoners to test the polio vaccine.
Assessments
- Students will record their findings about Albert Sabin and polio on their KWL charts.
- Students will take notes from the PowerPoint on bioethics.
- Students will complete their charts, answering the key bioethical questions about each document.
- Students will participate in discussions where they will defend their position in regards to the main bioethical questions, as well as other related bioethical questions.

Introduction
This lesson can be introduced in a variety of ways. One example would be to conduct a brief explanation/conversation of how President Franklin Roosevelt dealt with polio and the lengths he went to cover up his disability. A useful video to help introduce this is:

http://www.youtube.com/watch?v=ivlyBOvL5U4 (from PBS’s American Experience)

Bring into the discussion ethical issues surrounding FDR concealing the extent of his polio, the press’ role, and why Americans would not have elected a president in a wheelchair. This can provide a mini introduction to both polio and to ethical issues in science. It is also an example using bioethics and polio that students may be familiar with.

Another way to catch the attention of students would be to show intriguing images of people suffering from polio, people in iron lungs, etc.

Procedure
1. Before answering bioethical questions regarding Sabin’s use of the polio vaccine on inmates, students should have an understanding of who Sabin was and of what polio is. This can be done in multiple ways (lecture, independent reading, etc.). Having students do this research on their own is also beneficial.

Instruct students to fill out the first two sections of each chart (What do I know? What do I want to know?). After they have completed this, instruct students to do some basic research on Sabin and polio. Some helpful pages for this include:

- Albert B. Sabin exhibit website - http://sabin.uc.edu/
- Smithsonian exhibit on polio - http://amhistory.si.edu/polio/
- University of Cincinnati Digital Collection: (Poliomyelitis) http://drc.libraries.uc.edu/handle/2374.UC/664218 (Oral Poliovirus Vaccine) http://drc.libraries.uc.edu/handle/2374.UC/664216
Give students about 20 minutes to discover basic information about Sabin and polio. As students look up information, instruct them to fill in the final section of each chart (What have I learned?).

Ask students to share any interesting or important information they discovered.

Make sure to clarify any questions students may have or give further explanation on any points that students find confusing or don’t understand.

2. Through a brief PowerPoint, define bioethics, describe the key questions of bioethics, and provide examples of bioethical issues.

As instructed in the PowerPoint, have students brainstorm other examples of bioethical issues and bioethical questions.

3. Describe that the class will be using Albert Sabin’s use of rewards for inmates participation in polio vaccine studies at the Chillicothe Federal Reformatory as a case study to determine the bioethical implications of these actions.

**Bioethical Question: Was Albert Sabin justified in his use of rewards given to the inmates in return for their participation in the polio vaccination study?**

Students will be examining a series of documents that will give them a better understanding of Sabin’s work in the Federal Reformatory and will help them come to their own conclusion of whether or not the studies were morally justifiable.

Before having students work with each other to answer these bioethical questions, it could be useful to do one example as a class. While this lesson’s main focus is on Sabin’s work in the Federal Reformatory, it would be useful for students to examine another series of studies completed by Jonas Salk on children in the D.T. Watson Home for Crippled Children and the Polk School for the Retarded and Feeble Minded. This will give students a greater perspective on the types of bioethical questions that other scientists researching cures for polio faced.

Useful information on Salk’s studies with disabled children can be found in *Polio: An American Story* by David M. Oshinsky on pages 157-159. Read the selection as a class and then go over each of the bioethical questions. Students will get a better idea for how the rest of the lesson will work and will also another example of ethical issues that faced scientists trying to eradicate polio.

**Documents Students Will Examine:**
- Excerpt from *Polio: An American Story* (pages 245-247)
- Chillicothe Federal Reformatory Study background sheet
- Newspaper article:
- Letter to Dr. Lapp (describing the men needed for study) - http://drc.libraries.uc.edu/handle/2374.UC/701529
- Letter to Dr. Dewey MacKay (describing money & free time reward) - http://drc.libraries.uc.edu/handle/2374.UC/701501
- Letter from an inmate who participated in study - http://drc.libraries.uc.edu/handle/2374.UC/701502
- Letter responding to inmate who participated in study - http://drc.libraries.uc.edu/handle/2374.UC/701503

Put students in small groups and have them look at every document. Encourage group members to assist each other with analyzing the documents and discussing the issues with each other. While students look at the documents instruct them to take notes that will help them to answer the key bioethical questions.

4. Once all groups have finished analyzing the documents, explain that students will be having a discussion with each other where they will defend their position of whether or not the polio vaccine studies were ethical.

This can be done in a whole class discussion or in smaller group discussions. During the discussion(s) explain to students the importance of using facts to support their arguments. Guide the students in the discussion so that they work to answer and defend their position on the main bioethical question mentioned above. As the students talk ask them to consider other related bioethical questions such as:

- Why were these inmates selected to participate in the study?
- Do you think they were volunteers or that they were forced to participate?
- Why would these images participate in a study where they could possibly get sick?
- Should the prisoners have been offered rewards to participate in the study?
- Was finding a vaccine for the polio epidemic more important than the health of these prisoners?
- Was it acceptable because no one died during the study?

**Closure**
After the discussions have been completed have students write a defense of their opinion on the issue. This could be brief (a few paragraphs) or could be more detailed and extensive (possibly requiring outside research and additional information).

**Resources Used**
- KWL Chart (used for research on Sabin and polio)
- Bioethics PowerPoint
- Bioethical Questions Chart (used for analyzing documents)
## Worksheet 1

**Albert Sabin**

<table>
<thead>
<tr>
<th>What do I know?</th>
<th>What do I want to know?</th>
<th>What have I learned?</th>
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</table>

## Polio

<table>
<thead>
<tr>
<th>What do I know?</th>
<th>What do I want to know?</th>
<th>What have I learned?</th>
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</thead>
</table>
**Bioethical Question:** Was Albert Sabin justified in his use of rewards given to the inmates in return for their participation in the polio vaccination study?

<table>
<thead>
<tr>
<th>Source</th>
<th>What are the important facts?</th>
<th>Who or what will be affected by the outcome?</th>
<th>What are the relevant ethical considerations?</th>
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<tbody>
<tr>
<td>“…Anti-Polio Vaccine…” New York Times Article</td>
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