Module 1

Bioethics Concepts and Skills

**Four Key Questions to Always Ask Yourself**

- What is the ethical question?
- What are the relevant facts?
- Who or what could be affected by the way the question gets resolved?
- What are the relevant ethical considerations?

**Ethical Considerations Relevant to This Supplement**

<table>
<thead>
<tr>
<th>Ethical Consideration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respect for Persons</td>
<td>Never treating someone as a mere means to your own goals or ends. Two ways to show respect are enabling people to make their own choices and not undermining or disregarding those choices.</td>
</tr>
<tr>
<td>Harms and Benefits</td>
<td>Benefits are positive consequences, and harms are negative consequences. It is important to consider how one can minimize harms while maximizing benefits.</td>
</tr>
<tr>
<td>Fairness</td>
<td>Ensuring that benefits, risks (harms), resources, and costs are distributed equitably.</td>
</tr>
<tr>
<td>Authenticity</td>
<td>Achieving a goal in a manner consistent with what is valued about the performance and seen as essential (or true) to its nature.</td>
</tr>
</tbody>
</table>

See the Introduction

For more information about the four key questions, see the Introduction, page 5.
At a Glance

Purpose and Rationale

As a result of new scientific discoveries, students will be faced with challenging decisions, as citizens, as consumers, and maybe even as scientists. This module introduces bioethics concepts and skills that will help students think like bioethicists when confronted with an ethical question. With these tools, students will recognize the importance of providing reasons for their positions.

Overview

Module 1 introduces the interdisciplinary field of bioethics, which applies ethical reasoning to choices raised by advances in biology. Students learn about a way of thinking (using four key questions and paying attention to core ethical considerations) that they apply within all the Exploring Bioethics modules. Because Module 1 presents foundational concepts and ideas, it should be taught before any of the other modules.

Students examine how ethical considerations of respect for persons, minimizing harms while maximizing benefits, and fairness pertain to cases of enhancement, particularly in sports. They also look at the concept of authenticity, and then practice making strong justifications for a position based on all these ethical considerations, the scientific facts, and logic.

Learning Objectives

Students will

• understand that ethical inquiry uses a set of concepts and skills aimed at analyzing challenging situations and making decisions about the best course of action;
• distinguish ethical questions from scientific and legal questions and from questions of personal preference, custom, or habit;
• apply important ethical considerations, such as respect for persons, minimizing harms while maximizing benefits, and fairness, in analyzing bioethical problems; and
• recognize that while there can usually be several answers or approaches to an ethical question, it is important to present a strong, well-reasoned argument for one’s position.

Major Concepts

• Scientific breakthroughs and new biomedical technologies have brought great benefits to millions of people, but they also raise difficult ethical questions about when and how they should be used.
• The field of bioethics has developed concepts and skills for deciding what the best course of action is.
• Scientific thinking and ethical thinking share similarities but are also different. In general, scientists aim to understand what is the case, while ethicists aim to determine what should be the case.
• Bioethicists find four questions helpful: What is the ethical question raised by this issue? What are the relevant facts? Who or what will be affected by how the question is resolved? What are the relevant ethical considerations?
• Carefully considered ethical judgments usually take at least three core ethical considerations into account: respect for persons, minimizing harms while maximizing benefits, and fairness. There are often other important considerations as well, such as authenticity.

Assessment Outcome

Students will use the four key questions and core ethical considerations introduced in this module to analyze an ethical case about enhancement in sports. They will give sound reasons for their judgments.

Key Science Knowledge*

• Nature of science (empiricism)
• Steroids and hormones

*Bold items are explicitly addressed in this module.
Teaching Sequence Preview

Day 1—What’s in a Question?: Students are introduced to the field of bioethics, the need for critical thinking about ethical issues, and the importance of ethical reasoning. They learn about the concept of an ethical question through a sorting activity involving four types of questions (ethical, scientific, legal, and personal preferences). The activity allows students to learn not only about ethical questions, but also about what distinguishes them from other types of questions. For homework, students think about the types of questions raised in the case of Oscar Pistorius, the “Fastest Man with No Legs,” a differently abled athlete who wishes to compete in the Olympics.

Day 2—Four Key Questions: The Pistorius case is revisited in light of students’ understanding of different types of questions. A case-analysis strategy using the four key questions is introduced: What is the ethical question? What are the relevant facts? Who or what could be affected by the way the question gets resolved? What are the relevant ethical considerations? For homework, students apply the first three questions to a hypothetical case about teenage steroid use (Carl’s case).

Day 3—Core Ethical Considerations: In small groups, students explore how the core ethical considerations (respect for persons, minimizing harms and maximizing benefits, and fairness) are relevant in their own lives. They develop a conceptual understanding and working definitions of the considerations and then apply them to Carl’s case. Students complete their analysis of Carl’s case using the four key questions as the final assessment.
Copies, Equipment, and Materials

<table>
<thead>
<tr>
<th>Activity</th>
<th>Photocopies and Transparencies</th>
<th>Equipment and Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Day 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>—</td>
<td>1 overhead projector (optional) for teacher use</td>
</tr>
</tbody>
</table>
| 2        | • 1 copy *for each pair of students*, copied onto different colors of cardstock and cut:  
- Master 1.1  
- Master 1.2  
- Master 1.3  
- Master 1.4 (optional)  
• 1 copy *for each pair of students*:  
- Master 1.5 (optional)  
- Master 1.6 |                         |
| **Day 2** |                                 |                         |
| 3        | —                              | 1 overhead projector (optional) for teacher use |
| 4        | • 2 copies of Master 1.7 *for each student*  
• 1 copy of Master 1.8 *for each student* | 1 overhead projector (optional) for teacher use |
| 5        | —                              | Scratch paper *for students* |
| **Day 3** |                                 |                         |
| 6        | —                              | Large sheet of butcher paper (or 4 sheets of paper taped together) and 4 colored markers *for each group of four students* |
| 7        | —                              | —                       |
More on the Web

Be sure to check out Tips, Updates, and Corrections, available online at http://science.education.nih.gov/supplements/bioethics/guide.

Masters

Master 1.1: What Type of Question? Round 1—Ethical vs. Scientific
Master 1.2: What Type of Question? Round 2—Ethical vs. Legal
Master 1.3: What Type of Question? Round 3—Ethical Questions vs. Personal Preferences, Customs, or Habits
Master 1.4: What Type of Question? Round 4—Multiple Types
Master 1.5: What Type of Question? Round 4—Student Answer Sheet
Master 1.6: Oscar Pistorius—The Fastest Man with No Legs
Master 1.7: Four Key Questions and Statement of Position and Justification
Master 1.8: Carl’s Case

Teacher Support Materials*

Master 1.7 Answer Key for Oscar Pistorius’s Case
Master 1.7 Answer Key for Carl’s Case
Enhancement Cases and Background Information: Caffeine and Modafinil, Myostatin, Erythropoietin (EPO), Growth Hormone, and Beta-Blockers
Activity 6 Prompts: Understanding the Ethical Considerations
Activity 7 Questions: Applying the Ethical Considerations to Carl’s Case
Facilitating a Good Ethical Discussion of Carl’s Case:
  Sample Student-Teacher Dialogue
Point-Counterpoint: Should Performance-Enhancing Drugs Be Banned in Sport?
Sample Completed Point-Counterpoint Summary

*Available only online at http://science.education.nih.gov/supplements/bioethics/teacher.
Day 1: What’s in a Question?

Purpose
Day 1 introduces the role of bioethics in science and in society and the distinguishing characteristics of ethical reasoning. Students build a conceptual understanding of the nature of ethical questions, distinguishing them from scientific and legal questions and matters of personal preference, custom, or habit. Student misconceptions about ethics are brought to the surface and addressed.

Activity 1: Introducing Bioethics
Estimated Time: 15 minutes

Procedure
1. Provide a brief introduction to bioethics. Tell students that they will spend the next few days exploring bioethics. They’ll learn what bioethics is, some of the ways ethical considerations relate to biology, and some tools and questions to use when examining the choices they face as citizens of the 21st century.

2. Give examples of ethical questions raised by advances in biology.
   You may want to mention these:
   • Should there be limits to how much people modify the natural world using technology?
   • Should all students be required to have vaccinations?
   • If you take a genetic test, who should know the results?

3. Ask the class for other examples of bioethical questions, and write them on the board or a transparency.

   Responses may include
   • Should doctors provide fatal medicines to terminally ill patients who want to end their own lives?
   • Should scientists clone pets or animals for food?
   • How should doctors distribute scarce flu vaccines?
   • Whom should scientists test new medicines on?
You may wish to introduce some of the topics included in this supplement, especially the ones that you will be teaching later.

4. **Share with students that bioethics offers ways to think about, analyze, and make decisions about difficult ethical questions related to biology and its applications.**

5. **Provide the following working definition of ethics by stating it, writing it on the board or a transparency, or distributing it to students.**

   *Ethics* seeks to determine what a person should do, or the best course of action, and provides reasons why. It also helps people decide how to behave and treat one another, and what kinds of communities would be good to live in.

6. **Add that bioethics is the application of ethics to the field of biology.**

   *Ethics* addresses questions such as, Which actions should be permitted? and Which action is best? by providing arguments and reasons.

   *Bioethics* addresses ethical questions that arise with respect to biological advances, such as, Should running with an artificial limb be permitted in the Olympics?

7. **Describe a few other bioethical issues briefly, noting that students will need to face issues that their parents and teachers never had to.**

   - New inventions, medicines, and biomedical procedures are in the news daily. For example, what if a new genetic test was available for a fatal disease that you knew ran in your family? Should you have the test?
   - People who used to die due to organ failure can now continue living if they receive an organ transplant. But the number of available organs is limited. Who should receive an organ transplant? Should the organ go to someone who is sickest or someone who is most likely to live the longest if they receive it?

8. **Introduce the idea of enhancement as a bioethical issue. Tell students that they will be looking at some examples where people used technology to change their bodies.**

9. **Read this short case about enhancement and alertness aloud:**

   *A group of college students is staying up late together to study for exams. Several of them have been drinking coffee all day and are wide awake, although feeling jittery. One of the students, Lisa, mentions that she has recently started taking a prescription medication that helps her stay awake because of a medical condition. Lisa had previously been a heavy coffee drinker, consuming four or more cups of coffee a day in her struggle to stay awake. Since starting on the*
new medication, she is able to stay awake easily for more than 24 hours and is not experiencing any serious negative side effects. “It’s better than coffee,” she tells her friends, “but it is a lot more expensive.”

See Teacher Support Materials
More information about this case and additional enhancement cases—myostatin, erythropoietin (EPO), growth hormone, and beta-blockers—is available online at http://science.education.nih.gov/supplements/bioethics/teacher.

10. Write the following ethical question on the board or a transparency: Should Lisa give her friends her medication?

11. Give students two to three minutes to discuss the ethical question with a partner.

12. Ask three to five student volunteers to share some of their initial reactions to the case with the class, as well as their reasons why they think Lisa should or should not give her friends her medication.

13. Record students’ thoughts under the heading “Reasons” on the board or a transparency.

14. Focus students’ attention on the importance of providing reasons in bioethics. Tell them that ethics involves finding and giving reasons for positions.

Ethics helps people decide what to do in difficult cases; it focuses on analyzing situations and providing reasons for choices. People often have difficulty giving reasons, especially if strong feelings are involved. Simply stating “because it’s just wrong” or “I think it’s OK and that’s just what I believe” is not enough.

15. Ask students why they think ethics is important.

Thoughtful people will disagree, so they need to find ways of discussing conflicting ideas to arrive at the best answer.

16. Emphasize that ethics helps people discuss issues that need to be decided by individuals as well as members of communities.

For example, Lisa needs to decide whether she should give her friends her medication, and her friends need to decide whether they should take it. There are ethical questions at the societal level, too, though, such as whether that type of medication should be made widely available, whether policies to regulate and restrict its use should be put in place, or whether people who take the medication without a prescription should be penalized.
17. Note that identifying the ethical question that needs to be addressed is the first step in analyzing an issue.

It's not always so easy to identify the ethical question, but students will get better at it over time. Often, there are several ethical questions, and because class time is limited, students will be able to focus on only one.

18. Ask students whether they have any questions about the case. For example, do they want to know whether the medicine is addictive? Write this question on the board, and label it a scientific question.

19. Tell students that the next activity will help them think about and distinguish different types of questions.

**Activity 2: Identifying Types of Questions**

Estimated Time: 30 minutes; 40 minutes if Round 4 is completed

This activity helps students discover the difference between types of questions. Do not tell them which categories their cards are in until after they have completed each round. You should acknowledge that a few questions can fall into more than one category. If students discover questions that they think can be classified in more than one way, have them put those in a special pile and be prepared to explain their reasons for doing so.

**Procedure**

**Round 1: Ethical vs. Scientific Questions**

1. Remind students that different types of questions arose in Lisa’s case. Explain that they will now practice distinguishing different types of questions.

2. Ask students to form into pairs, and give each pair a set of cards made from Master 1.1: What Type of Question? Round 1—Ethical vs. Scientific. Tell students there are two main types of questions on the cards, but don’t tell them what the types are.

3. Ask students to sort the questions into two piles. Remember not to give any more information about the types of questions.

4. Ask students within each pair to identify, together, what two types of questions they think they have been sorting.

5. Call on students to share with the class what two types of questions they think they have been sorting.
6. Read the list of Round 1 questions from the Round 1 Answer Key (below) aloud, and ask students to raise their hands to indicate whether they thought each question was ethical or scientific.

**Round 1 Answer Key: Ethical (E) vs. Scientific (S) (Master 1.1)**

<table>
<thead>
<tr>
<th>Type</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>How does the human immune system recognize bacteria?</td>
</tr>
<tr>
<td>E</td>
<td>Should people who have a genetic test to see whether they are carriers of a genetic disease tell their family members about the results?</td>
</tr>
<tr>
<td>E</td>
<td>Who should receive a vaccine that is in short supply—a very young person or a very old person?</td>
</tr>
<tr>
<td>S</td>
<td>How do vaccines work?</td>
</tr>
<tr>
<td>S</td>
<td>How does the kidney’s structure relate to its function?</td>
</tr>
<tr>
<td>E</td>
<td>Must children be allowed to decide for themselves if they want to be involved in a test of a new treatment for a disease?</td>
</tr>
<tr>
<td>E</td>
<td>Should people who donate a kidney be allowed to choose who should receive it?</td>
</tr>
<tr>
<td>S</td>
<td>How can a gene from a human being be inserted into a plant?</td>
</tr>
<tr>
<td>S</td>
<td>How does a mutation in a gene alter the structure of the resulting protein?</td>
</tr>
<tr>
<td>E</td>
<td>Under what circumstances, if any, should people insert genes from one species into another?</td>
</tr>
</tbody>
</table>

7. Use the following points to engage students in a discussion of Round 1:

- Scientists seek to understand phenomena in the world—they want to describe what is. They answer scientific questions with observations and experimentation.
- Bioethicists seek to understand what people should or ought to do. They answer ethical questions with reasons, using both the facts at hand and relevant ethical considerations, such as respect for persons and fairness.
- The difference between “is” and “ought” is a good way to summarize a main difference between scientists (who seek to describe and understand the natural world) and ethicists (who seek to determine what one ought to do).
Round 2: Ethical vs. Legal Questions

1. Ask students to put aside the cards from Round 1 but to keep them in two piles for later.

2. Give pairs of students the cards made from Master 1.2: What Type of Question? Round 2—Ethical vs. Legal Questions.

3. Ask students to sort this next group of cards into two piles. Remember not to reveal the types of questions present.

4. Ask students within each pair to identify, together, what two types of questions they think they have been sorting.

5. Call on students to share with the class their two types of questions.

6. Read the list of Round 2 questions from the Round 2 Answer Key (below) aloud, and ask students to raise their hands to indicate whether they thought each question was ethical or legal.

Round 2 Answer Key: Ethical (E) vs. Legal (L) (Master 1.2)

<table>
<thead>
<tr>
<th>Type</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>Does your state allow parents to opt out of vaccinating their children?</td>
</tr>
<tr>
<td>E</td>
<td>Should healthcare providers ever vaccinate children whose parents object?</td>
</tr>
<tr>
<td>L</td>
<td>Does the United States permit the death penalty?</td>
</tr>
<tr>
<td>E</td>
<td>Is killing always wrong?</td>
</tr>
<tr>
<td>L</td>
<td>What is the law concerning abortion?</td>
</tr>
<tr>
<td>E</td>
<td>What kinds of rights should be granted to individuals whose brain development has stopped at the equivalent of a six-month-old child’s?</td>
</tr>
<tr>
<td>L</td>
<td>Is it illegal to sell a kidney in the United States?</td>
</tr>
<tr>
<td>E</td>
<td>Should people distribute spare organs to those who are the most likely to die without the transplant or to those who have the best chance of living longest after the transplant?</td>
</tr>
<tr>
<td>L</td>
<td>Is cloning of human embryos permitted in the United States?</td>
</tr>
<tr>
<td>E</td>
<td>Should people clone animals that have desirable traits?</td>
</tr>
</tbody>
</table>

7. Use the following points to engage students in a discussion of Round 2:
   - Ethical analyses should take the legal context and local laws into consideration, but something can be illegal yet ethical.
   - Something can also be legal and unethical, such as the Jim Crow laws that prohibited African Americans from using public water fountains used by whites. It is not illegal to lie about breaking a cereal bowl at your house, but it may be unethical.
• With respect to performance enhancers in sports, some interventions could be considered unethical even if they are not yet illegal and vice versa.
• The law typically sets the minimum standards to which people must adhere; ethical standards sometimes focus on ideals or what would be the best thing to do, and not just the minimum or what would be merely acceptable to do.

Round 3: Ethical Questions vs. Personal Preferences, Customs, and Habits

1. Ask students to put aside the cards from Round 2 but to keep them in two piles for later.

2. Give pairs of students the cards made from Master 1.3: What Type of Question? Round 3—Ethical Questions vs. Personal Preferences, Customs, and Habits.

3. Ask students to sort this next group of cards into two piles.
   Remember not to reveal the types of questions present.

4. Ask the students within each pair to identify, together, what two types of questions they think they have been sorting.

5. Call on students to share with the class their two types of questions.

6. Read the list of Round 3 questions from the Round 3 Answer Key (below) aloud, and ask students to raise their hands to indicate whether they thought each question was ethical or a matter of personal preference, custom, or habit.

Round 3 Answer Key: Ethical Questions (E) vs. Personal Preferences, Customs, or Habits (P) (Master 1.3)

<table>
<thead>
<tr>
<th>Type</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>What kind of ice cream flavor is the best?</td>
</tr>
<tr>
<td>P</td>
<td>Should your school pick yellow and green as school colors?</td>
</tr>
<tr>
<td>P</td>
<td>At what time should students brush their hair?</td>
</tr>
<tr>
<td>P</td>
<td>What hairstyle looks best on boys?</td>
</tr>
<tr>
<td>E</td>
<td>Should someone kill one person to save many?</td>
</tr>
<tr>
<td>E</td>
<td>Is it fair to punish every cheater to the same degree, no matter what the circumstances?</td>
</tr>
<tr>
<td>E/P</td>
<td>How should parents discipline their children?*</td>
</tr>
<tr>
<td>E</td>
<td>Is it fair to require everyone to wear a school uniform?</td>
</tr>
<tr>
<td>P</td>
<td>Which band's music do you like the most?</td>
</tr>
<tr>
<td>E</td>
<td>Should athletes be allowed to take steroids?</td>
</tr>
</tbody>
</table>
7. **Ask students to leave the cards from this round in two piles.**
   They should now have six piles on their desks.

8. **Use the following points to engage students in a discussion of Round 3:**
   - Ethical analyses should take customs into consideration, but something can be ethical and yet not in accord with personal preference, custom, or habit.
   - Something can be in accord with personal preference, custom, or habit but still be unethical. For example, not long ago in the United States, it was customary to discourage women from becoming business managers, but this was not ethical.

9. **Engage students in identifying the characteristics of an ethical question.** Start by asking students to look at the three piles containing the ethical questions from Rounds 1 through 3. Ask them what those ethical questions have in common, and develop these characteristics as a class:
   - Ethical questions are often about what we should or ought to do. (While the word should frequently appears in ethical questions, it is not always there.)
   - Ethical questions often arise when people aren’t sure what the right thing to do in a certain situation is or when there is a choice or a controversy about what is best.

**Round 4: Multiple Types (Optional)**

1. **Ask students to put aside the cards from the first three rounds.**

2. **Give pairs of students the cards made from Master 1.4: What Type of Question? Round 4—Multiple Types and one copy of Master 1.5: What Type of Question? Round 4—Student Answer Sheet.**

3. **Tell students that all four types of questions (scientific, legal, personal preference, and ethical) are present. Ask them to sort the cards into four piles.**

4. **Note that each question has been numbered. Ask students to check the appropriate box for each question number on their copy of Master 1.5.**

5. **Review the suggested Round 4 answers from the Round 4 Answer Key (page 1-15) with students.**

Some questions will not fall neatly into one category, which draws attention to the fact that questions are often complex. These questions are indicated with an asterisk (*) on the answer key.

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**Note**

If you have time and want to reinforce the distinctions among the types of questions, proceed with Round 4. It’s more difficult than Rounds 1 to 3 because it includes all four types of questions.

**Assessment**

If you carried out Round 4 with students, collect their completed copies of Master 1.5 to determine their ability to distinguish among different types of questions. You can also conduct a formative assessment by listening to students’ justifications as they sort the questions.
Point out that some of the questions in Round 4 pertain to topics students will explore in depth in subsequent Exploring Bioethics modules.

**Round 4 Answer Key: Multiple Types (Master 1.4)**

<table>
<thead>
<tr>
<th>Type</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>1. Which sport is the most exciting?</td>
</tr>
<tr>
<td>E/L</td>
<td>2. Should you credit the person who gave you an idea that you ended up becoming famous for?*</td>
</tr>
<tr>
<td>E/L/P</td>
<td>3. Whom should you marry?*</td>
</tr>
<tr>
<td>P</td>
<td>4. What breakfast cereal is the most flavorful?</td>
</tr>
<tr>
<td>L</td>
<td>5. Is it illegal to use someone else’s prescription drugs?</td>
</tr>
<tr>
<td>E/L</td>
<td>6. May students refuse to recite the Pledge of Allegiance?*</td>
</tr>
<tr>
<td>E/L</td>
<td>7. If a student tells a counselor confidentially that he or she is suicidal, does the counselor have an obligation to tell anyone else?*</td>
</tr>
<tr>
<td>S</td>
<td>8. How are embryonic stem cells different from adult stem cells?</td>
</tr>
<tr>
<td>E</td>
<td>9. Should embryonic stem cells be used in biomedical research?</td>
</tr>
<tr>
<td>S</td>
<td>10. How are plants that are resistant to pesticides created?</td>
</tr>
<tr>
<td>E</td>
<td>11. Should people create plants that are resistant to pesticides by combining genes from different species?</td>
</tr>
<tr>
<td>L</td>
<td>12. May scientists currently patent genes?</td>
</tr>
<tr>
<td>E</td>
<td>13. Should people allow genes to be patented?</td>
</tr>
<tr>
<td>E</td>
<td>14. Should you lie to protect the safety of your family?</td>
</tr>
<tr>
<td>E/L</td>
<td>15. A man is only alive because he is on life support. His wife wants the doctor to take him off life support. His children want the doctor to continue to keep him on it. The man left no instructions about his preferences. Should the doctor “pull the plug”?*</td>
</tr>
</tbody>
</table>

P = personal preference; E = ethical; L = legal; S = scientific.  
* Does not fall neatly into one category.

**Closure**

Ask students to reflect on why it is important to consider the ethical dimensions of new developments in biology. Remind them that the first step in thinking about a case is clarifying the ethical questions within it. During Day 2, students will learn how to take the analysis of a case further.

**Homework**

Ask students to read Master 1.6: Oscar Pistorius—The Fastest Man with No Legs and write down five questions the case raises. These could be scientific, ethical, or legal questions, for example. Students should indicate what type of question they think each one is. These questions will be used on Day 2 in Activity 3: Questions Raised by the Pistorius Case.
**Extensions (Optional)**

1. Ask students to write their own one-paragraph reflection about a time when they just weren’t sure what the right thing to do was. They should briefly describe the problem or choice they (or a family member or friend) faced and, at the end of the description, sum up the problem by putting it in the form of a question. For example, Should I do one action or another? Should (another person) do something? Would a policy that required certain actions be good? Was Mr. X right to do something? The purpose of the reflection is to see whether students can ask an ethical question based on their own experience and understanding.

2. You can either provide concept maps showing the relationship of various concepts described in this module or ask students to construct their own. Students could also make concept maps for homework. Concepts to connect could include ethics, bioethics, justification (argument), reasons, ethical questions, scientific questions, legal questions, personal preferences.
**Organizer for Day 1: What’s in a Question?**

**Activity 1: Introducing Bioethics**  
Estimated Time: 15 minutes

- Provide a brief introduction to bioethics.  
  - Page 1-7, Step 1
- Give examples of ethical choices raised by advances in biology.  
  - Page 1-7, Step 2
- Ask the class for other bioethical examples. Display students’ responses.  
  - Page 1-7, Step 3
- Tell students that bioethics offers ways to think about, analyze, and make decisions about difficult issues related to biology and its applications. Define ethics.  
  - Page 1-8, Steps 4–5
- Add that bioethics is the application of ethics to the field of biology. Briefly describe some other bioethical issues.  
  - Page 1-8, Steps 6–7
- Introduce enhancement as a bioethical issue. Read the case about college students, enhancement, and alertness.  
  - Page 1-8, Steps 8–9
- Write this for students to see: Should Lisa give her friends her medication? Give students two to three minutes to discuss the question with a partner.  
  - Page 1-9, Steps 10–11
- Ask three to five students to share some of their initial reactions with the class. Record their reasons on the board or a transparency under “Reasons.”  
  - Page 1-9, Steps 12–13
- Ask students why they think reasoning and ethics are important.  
  - Page 1-9, Steps 14–15
- Note that ethics helps people discuss issues that need to be decided by individuals as well as by members of communities, and that identifying the ethical question is the first step in analyzing an issue.  
  - Page 1-9 Steps 16–17
- Ask students whether they have any questions about the case.  
  - Page 1-10, Steps 18–19

**Activity 2: Identifying Types of Questions**  
Estimated Time: 30 minutes (40 minutes if Round 4 is completed)

- Round 1: Explain that students will practice identifying types of questions.  
  - Page 1-10, Step 1
- Ask students to form into pairs, and give each pair a set of cards made from Master 1.1. Tell them there are two main types of questions on the cards, but don’t tell them what the types are.  
  - Page 1-10, Step 2
- Ask students to sort the questions into two piles and then to identify the two types of questions. Then, ask them to share the types with the class.  
  - Page 1-10, Steps 3–5
- Read aloud the list of Round 1 questions from the answer key (on page 1-11), and ask students whether they thought each question was ethical or scientific.  
  - Page 1-11, Step 6
- Engage students in a discussion of Round 1.  
  - Page 1-11, Step 7
- Round 2: Ask students to put aside the two piles of Round 1 cards for now.  
  - Page 1-12, Step 1
- Give pairs of students a set of cards made from Master 1.2. Ask them to sort these cards into two piles.  
  - Page 1-12, Steps 2–3
<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tbody>
<tr>
<td>4−5</td>
<td>Read aloud the list of Round 2 questions from the answer key (on page 1-12), and ask students whether they thought each question was ethical or legal.</td>
</tr>
<tr>
<td>6</td>
<td>Engage students in a discussion of Round 2.</td>
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<tr>
<td>1</td>
<td>Round 3: Ask students to put aside the two piles of Round 2 cards for now.</td>
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<tr>
<td>2−3</td>
<td>Give pairs of students the cards made from Master 1.3. Ask them to sort the cards into two piles.</td>
</tr>
<tr>
<td>4−5</td>
<td>Ask students within each pair to identify, together, what two types of questions they think they have been sorting. Call on students to share their two types.</td>
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<tr>
<td>6</td>
<td>Read aloud the list of Round 3 questions from the answer key (on page 1-13), and ask students whether they thought each question was ethical or a matter of personal preference, custom, or habit.</td>
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<tr>
<td>7</td>
<td>Ask students to leave the cards from this round in two piles.</td>
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<tr>
<td>8</td>
<td>Engage students in a discussion of Round 3.</td>
</tr>
<tr>
<td>9</td>
<td>Ask students to identify the characteristics of an ethical question.</td>
</tr>
<tr>
<td>1</td>
<td>Round 4: Ask students to set aside the six piles of cards.</td>
</tr>
<tr>
<td>2−3</td>
<td>Give pairs of students the cards made from Master 1.4. Ask them to sort the cards into four piles, for the four types of questions.</td>
</tr>
<tr>
<td>4</td>
<td>Ask students to fill out Master 1.5.</td>
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<tr>
<td>5</td>
<td>Review with students the Round 4 answers from the answer key (on page 1-15).</td>
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<td></td>
<td><strong>Closure:</strong> Ask students to reflect on why it is important to consider the ethical dimensions of new developments in biology. Remind them that the first step in thinking about a case is clarifying the ethical questions within it.</td>
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<tr>
<td></td>
<td><strong>Homework:</strong> Ask students to read Master 1.6 and write down five questions the case raises and what type of question they think each one is.</td>
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</tbody>
</table>
|     | **Extensions (optional):**
|     | 1. Ask students to write their own one-paragraph reflection about a time when they just weren’t sure what the right thing to do was, and to sum up the problem with a question. |
|     | 2. Give students—or have them create—concept maps for the module. |
**Day 2: Four Key Questions**

**Purpose**

Day 2 introduces students to four key questions that will be useful to them in analyzing cases throughout all the modules in *Exploring Bioethics*. Students apply the four key questions to the Pistorius case, with special emphasis on three of the four questions: What is the ethical question? What are the relevant facts? Who or what could be affected by the way the question gets resolved? The fourth key question—What are the relevant ethical considerations?—is the focus of Day 3.

**Activity 3: Questions Raised by the Pistorius Case**

*Estimated Time: 10 minutes*

**Procedure**

1. Tell students that today they will be examining the Pistorius case. Remind them that yesterday for homework, they were asked to list five questions the case raises.

2. Begin by reviewing the questions students came up with in their homework, and write them on the board or a transparency as you go along.

3. Ask students to identify the types of questions raised. Write the type next to each question.

4. Identify any ethical questions.

   Examples could include
   - Should the International Association of Athletic Federations (IAAF) allow Oscar Pistorius to compete?
   - Should artificial limbs be permitted in organized sports competitions?
   - Should Pistorius be allowed to compete in the Olympics?
   - What alterations to the human body create an unfair advantage?

5. Tell students that ethical analysis begins with identifying an ethical question very clearly. Although they identified several ethical questions, today they will focus only on this one: Should Oscar Pistorius be allowed to compete in the Olympics?
Point out that this question needs to be answered not by an individual but by members of a particular community—in this case, the International Association of Athletic Federations. Students should imagine that they are members of the IAAF, having to make a considered judgment in the Pistorius case. Before they do that, though, tell them that you are going to share with them a way of approaching all kinds of ethical issues. They will be able to apply the method (four key questions to always ask themselves) to any case they confront in bioethics. Once they've been introduced to the four key questions, they will have the chance to use them in an analysis of the Pistorius case.

**Activity 4:**
**Four Questions to Always Ask Yourself**

Estimated Time: 10 minutes

**Procedure**

1. Tell students that since they now know what specific ethical question needs to be addressed, they are ready to take the next step in the analysis.

2. Point out that there are usually three other questions that bioethicists ask themselves and that these questions are important no matter what the topic is.

3. Display the poster and direct students’ attention to the four questions. You may want to mention the following definitions as you discuss the questions with students:

   **Ethical Questions:** These are about what a person should do, how people ought to interact, what sort of person one should be, and what kind of communities it would be good to live in.

   **Relevant Facts:** These are the biological, psychological, sociological, economic, and historical facts you need for thinking carefully about the ethical question and answering it.

   **Who or What Could Be Affected:** The people and entities affected by ethical decisions are considered stakeholders. Stakeholders are not always human beings or human organizations; animals, plants, organisms, or the environment might be affected by the way an ethical issue is decided, so they can also be stakeholders.

   **Relevant Ethical Considerations:** These are particular concepts in ethics that can help you analyze a case.
4. Emphasize that when bioethicists try to resolve an ethical question, they often tackle the problem by asking themselves these four key questions. As students confront new ethical problems, they will always be able to return to these four questions.

5. Tell students that they will now examine the Pistorius case by asking and answering these four key questions.

6. Distribute Master 1.7, pointing out that the same four questions are included in this master in Part 1. (Explain that Part 2 of the master is for describing a recommendation and providing reasons for it.)

7. Ask students to record the specific ethical question in the appropriate area of Master 1.7 (that is, Should Oscar Pistorius be allowed to compete in the Olympics?).

8. Ask students, “What relevant facts would you want to know to carefully assess what the IAAF should do?”

9. Ask students to spend five minutes individually recording the relevant facts (from Master 1.6) in the appropriate area of Master 1.7.

10. Have students share their relevant facts with the whole group, and record them for all to see. Ask students to add any relevant facts that they had not previously recorded on their copies of Master 1.7.

Students may come up with the following answers:

- Oscar Pistorius was born missing both fibulas.
- His parents chose to have both his legs amputated below the knees when he was less than one year old so that he could learn to walk with prosthetic legs and feet.
- Pistorius would have been wheelchair bound without the amputation and prosthetics.
- Pistorius is an excellent track athlete and trains to maintain and improve his running ability.
- He wears artificial limbs made of carbon fiber.
- The Paralympics is an alternative athletic competition for people with differently abled bodies.

See Teacher Support Materials
An answer key for Master 1.7 when used with the Pistorius case is available online at http://science.education.nih.gov/supplements/bioethics/teacher.
Pistorius competed in the Paralympics and set world records in track events.

Pistorius now requests the opportunity to compete in the Olympics.

Engineers disagree on whether the prosthetics give Pistorius an advantage with respect to speed over those athletes competing with flesh-and-blood legs.

11. Next, ask students, “Who or what might be affected by what the IAAF decides to do?” Help students brainstorm answers as a class and write ideas on the board or a transparency.

As students learned from the definition you provided in Step 3, individuals or groups who have a stake in the outcome of a decision are often called stakeholders. In addition, other things can be at stake—like the meaning that we want sports to have.

Possible answers include:
- Oscar Pistorius
- All athletes, whether they are differently abled or not
- Sports competitions in general
- Coaches
- Referees
- Young children (and others) with different abilities who are thinking about their future opportunities

12. Ask students to record the stakeholders in the appropriate area of Master 1.7.

13. Review the list, calling on individual students to briefly summarize how they think each stakeholder might be affected by the IAAF’s decision.

- What kinds of concerns does the stakeholder have?
- What is important to the stakeholder? What does the stakeholder care about and value?

14. Turn to the key question displayed on the poster and on Master 1.7: What are the relevant ethical considerations?

Tell students that they will spend more time learning about these ethical considerations in Day 3. Point out that for now, it is important for them to know that ethical considerations are issues that are morally relevant in a case and that ought to be taken into account when thinking about what the best course of action should be.
15. Ask students to list as many ethical considerations as they can on Master 1.7. Some students will undoubtedly note that the major ethical considerations in this case pertain to fairness (Will Oscar Pistorius have an unfair advantage?) and to respect for persons (Which course of action will demonstrate the greatest respect to Oscar? To the other athletes?). Authenticity is also a relevant ethical consideration.

16. Begin a brief discussion of the ethical considerations the students think are relevant to the Pistorius case. There will not be enough time to discuss these considerations in depth, but it’s important to leave the students with a sense of what the major considerations are. Let them know that in Day 3, there will be time to revisit these ethical considerations in greater depth.

**Activity 5: What Should the Committee Decide?**

*Estimated Time: 25 minutes*

**Procedure**

1. Have each student individually, on a separate sheet of scrap paper, write down what they think the committee should decide about the Pistorius case and why. Stress the importance of providing reasons. Give them four to five minutes to do this.

2. Collect the papers and select a few to share out loud with the class. Choose responses that represent diverse positions, and include ones with strong reasons.

3. Ask the class to respectfully listen to the ideas as you read them.

4. Read students’ responses, noting how a range of perspectives can help people think about a problem more deeply. They could discover a new point of view or hear support for views they already have.

5. Ask students whether any of the responses had particularly strong reasons. Ask, “Which ones?” Remind students of the importance of providing reasons for their responses.

6. Tell students that strong reasons draw on the facts of the case as well as on ethical considerations. But it’s not enough to say, “It’s just not fair.” Students must explain why something is fair or unfair.
7. Ask students to complete Part 2 of Master 1.7, including what they believe are strong reasons for their recommendation.

Tell students that in Day 3, they will have an opportunity to learn more about ethical considerations as they look at another case having to do with enhancement and sports.

See Teacher Support Materials
An answer key for Master 1.7 when used with the Pistorius case is available online at http://science.education.nih.gov/supplements/bioethics/teacher.

Closure
Tell students that they have briefly touched on all four of the key questions to always ask themselves and have seen how they can use the questions to clarify the issues related to the case. Review the questions again, noting that students can use these questions not only to help them think about bioethical issues raised in class, but also issues that arise in their own lives.

- What is the ethical question?
- What are the relevant facts?
- Who or what could be affected by the way the question is resolved?
- What are the relevant ethical considerations?

Homework
Give students Master 1.8: Carl’s Case and another clean copy of Master 1.7. Ask them to read Master 1.8 for homework and to answer, on Master 1.7, these three key questions about the case:

- What is the ethical question?
- What are the relevant facts?
- Who or what could be affected by the way the question is resolved?

Students will take up the last question—What are the relevant ethical considerations?—on Day 3.
**Organizer for Day 2: Four Key Questions**

<table>
<thead>
<tr>
<th>Activity 3: Questions Raised by the Pistorius Case</th>
<th>Estimated Time: 10 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review the homework with students, and display their questions.</td>
<td>Page 1-19, Steps 1–2</td>
</tr>
<tr>
<td>Ask students to identify the types of questions. Write the type beside the question.</td>
<td>Page 1-19, Step 3</td>
</tr>
<tr>
<td>Identify the ethical questions, and then tell students they’ll focus on one today: Should Oscar Pistorius be allowed to compete in the Olympics?</td>
<td>Page 1-19, Steps 4–5</td>
</tr>
</tbody>
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<thead>
<tr>
<th>Activity 4: Four Questions to Always Ask Yourself</th>
<th>Estimated Time: 10 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point to the four key questions on the poster. Tell students to start examining the Pistorius case by addressing the four key questions bioethicists usually ask themselves.</td>
<td>Page 1-20, Steps 1–5</td>
</tr>
<tr>
<td>Ask students to record the ethical question on Master 1.7. Ask, “What relevant facts would you want to know to carefully assess what the IAAF should do?”</td>
<td>Page 1-21, Steps 6–8</td>
</tr>
<tr>
<td>Tell students to record relevant facts (from Master 1.6) on Master 1.7.</td>
<td>Page 1-21, Step 9</td>
</tr>
<tr>
<td>Have students share their relevant facts with the class. Record the answers, and ask students to add any new ones to their copies of Master 1.7.</td>
<td>Page 1-21, Step 10</td>
</tr>
<tr>
<td>Ask, “Who or what might be affected by what the IAAF decides to do?” Record students’ answers, and ask them to add stakeholders to Master 1.7.</td>
<td>Page 1-22, Steps 11–12</td>
</tr>
<tr>
<td>Ask students how each stakeholder might be affected by the IAAF’s decision.</td>
<td>Page 1-22, Step 13</td>
</tr>
<tr>
<td>Ask, “What are the relevant ethical considerations?” Define ethical consideration.</td>
<td>Page 1-22, Step 14</td>
</tr>
<tr>
<td>Tell students to list as many ethical considerations as they can on Master 1.7. Then, briefly discuss the ones that are relevant to the Pistorius case.</td>
<td>Page 1-23, Steps 15–16</td>
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</tbody>
</table>

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<tr>
<th>Activity 5: What Should the Committee Decide?</th>
<th>Estimated Time: 25 minutes</th>
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<tbody>
<tr>
<td>Have each student write down what the Committee should decide and why.</td>
<td>Page 1-23, Step 1</td>
</tr>
<tr>
<td>Collect the papers, and choose some to read out loud with the class.</td>
<td>Page 1-23, Steps 2–3</td>
</tr>
<tr>
<td>Read the responses, noting how a range of perspectives can help people think about a problem more deeply.</td>
<td>Page 1-23, Step 4</td>
</tr>
<tr>
<td>Ask, “Did any of the responses have particularly strong reasons? Which ones?” Tell students that strong reasons draw on the facts and ethical considerations.</td>
<td>Page 1-23, Steps 5–6</td>
</tr>
<tr>
<td>Ask students to complete Part 2 of Master 1.7, providing strong reasons.</td>
<td>Page 1-24, Step 7</td>
</tr>
</tbody>
</table>

**Closure:** Review the four key questions and why they are useful. 

**Homework:** Read Master 1.8; answer the first three questions on Master 1.7 for Carl’s case.
DAY 3: Core Ethical Considerations

PURPOSE

On Day 3, students deepen their understanding of the core ethical considerations and then apply their understandings of the four key questions and the considerations to a new case. This gives them practice in making well-reasoned ethical arguments.

ACTIVITY 6:
Understanding the Ethical Considerations
Estimated Time: 30 minutes

PROCEDURE

1. Briefly review Carl’s case, which students read for homework. They should have answered the first three key questions on Master 1.7. Share with students that the next activity will build their understanding of the core ethical considerations of respect for persons, harms and benefits, and fairness. They will then apply the ethical considerations to Carl’s case and complete the remainder of Master 1.7 as a final assessment.

2. Make groups of four students each, and give each group four markers and a large sheet of paper. Ask one member of each group to use a marker to divide their sheet of paper into four quadrants. If possible, students should cluster around the paper, with one student in front of each quadrant.

3. Have each student in the group write one of the following terms at the top of each quadrant: respect, harms and benefits, fairness, and authenticity (being authentic). Share with students that each of these considerations is very important because each one is a different way to honor the moral standing of persons.

4. Instruct students to spend three to four minutes, working silently and independently, writing down examples of what these considerations could look like. Students should ask themselves, What are examples that illustrate the considerations or their opposite? Each student should write only in the quadrant in front of him or her.
Encourage students to share examples from their own experiences—if they are comfortable doing so. The following specific prompts may help:

**Respect:** When you show respect to someone, what do you do? What are examples of disrespectful actions?

**Harms and Benefits:** What are examples of harms? What are examples of benefits? Can you think of actions or policies that minimize harm? What are some examples of actions or policies that maximize benefits? (Framing this concept as ways to “make potentially dangerous situations safer” may be helpful. Examples of taking actions to minimize harms include establishing a minimum driving age, speed limits, and limits on the use of medications.)

**Fairness:** What are examples of fair actions or policies? Can you think of examples of unfair actions or policies?

**Authenticity:** What is it about a performance that we value? What makes a sports performance “authentic” (that is, valuable and true to its essential nature)? What might make it “inauthentic”?

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**See Teacher Support Materials**

If you’d like to make a transparency of Activity 6 prompts for understanding the ethical considerations, they are available online at http://science.education.nih.gov/supplements/bioethics/teacher.

5. Have students rotate the paper, or move to a new position, so they face a different quadrant. Ask them to think about their understanding and experiences related to the next consideration and to write down more examples. Give them three to four minutes to add to this one. Again, there should be no conversation.

6. Repeat the process for the last two quadrants, in silence.

7. Rotate the paper back to its original position. Tell students that they no longer need to be silent.

8. Have students take turns putting check marks next to the comments or ideas that they believe are particularly good examples, explaining to each other why they chose those examples. Give them about five minutes for discussion. Tell them that they will be sharing at least one good example from each quadrant.

9. Write each of the ethical considerations on the board or a transparency. Note that bioethicists often focus on the first three considerations, but other considerations (such as authenticity) sometimes factor in, too, as in this case.

10. Ask one person from each group to share an example of a respectful action. Record the relevant ideas and comments on the board or a transparency.
11. Repeat the process for the other three quadrants.

12. Tell students they will now try to distill their examples into working definitions. Prompt students for suggestions of working definitions, guiding them toward the following:

**Respect for Persons:** Not treating someone as a mere means to a goal or end.

This is often a matter of not interfering with a person’s ability to make and carry out decisions. In some cases, it is also a matter of enabling a person to make choices or supporting the person in the choices he or she makes.

**Minimizing harms while maximizing benefits:** Acting to lessen negative outcomes and promote positive outcomes.

This ethical consideration focuses on trying to promote positive consequences and lessen negative consequences. “First of all, do no harm” is a familiar expression of minimizing harms when practicing medicine. Even if a physician cannot help a patient directly, he or she should avoid actions that cause harm. “Do no harm” is sometimes referred to as “nonmaleficence.” A closely related concept, “beneficence” (“Do good”), stresses acting in the best interest of others, and being of benefit to them.

**Fairness:** Sharing benefits, resources, risks, and costs equitably.

Sometimes what is fair is described as giving each person an equal amount of something. Other times, it is described as providing according to each person’s need or according to each person’s merit or contribution.

**Authenticity:** Achieving a goal in a manner consistent with what is valued about the performance and seen as essential (or true) to its nature.

People sometimes use the word *authentic* to point out that there are certain ways of doing something that are considered essential to the action and are, therefore, highly valued as intrinsically important or “true.” For example, climbing a ladder to get the basketball through the hoop would not be considered an authentic way to play basketball. People might agree beforehand to create a new game of “ladder basketball,” but the use of the ladder, without such a change in the rules, would not be an authentic (or true) version of the ordinary game of basketball as we know it.

13. Have students record the working definitions on Master 1.7.
Activity 7: Using Ethical Considerations to Analyze Carl's Case
Estimated Time: 15 minutes

Procedure

1. Tell students that they will now consider how these four ethical considerations apply to Carl’s case. Pose the following questions for reflection. Ask students to simply listen and not answer at this point. The questions will help them think about Carl’s case.

   Respect for Persons
   • Should society respect a person’s choice to use an enhancement technology even when doing so will negatively affect the person’s health?

   Harms and Benefits
   • Are enhancements harmful or beneficial to individuals who use them?
   • Are enhancements harmful or beneficial to society when individuals use them?

   Fairness
   • Is it fair for an individual to use an enhancement?
   • Does fairness require that everyone in society have equal access to enhancements?

   Authenticity
   • Does using enhancements in sports performance violate what people most value about sports?

   See Teacher Support Materials
   These Activity 7 ethical-consideration questions for Carl’s case are available online and can be displayed on a transparency: http://science.education.nih.gov/supplements/bioethics/teacher.

2. Assign each group of four students one of the ethical considerations, and tell them to circle the name of that consideration on their large piece of paper.

3. Ask each group to think about arguments either for or against Carl taking the steroids, based on the ethical consideration they were assigned. Ask each group to have one person record these ideas in the appropriate quadrant on their large sheet of paper. Give students three to four minutes to discuss their ideas. Possible responses include the following:
Respect

• Society should respect Carl’s choices about his body, even if the use of steroids harms him, as long as no one else is physically harmed by his actions. He should have the liberty to make those decisions for himself.

• Society should respect Carl’s choices to a certain degree but should not allow Carl to make choices that can harm him physically or mentally.

Harms and Benefits

• The enhancement might be beneficial to Carl because it might help him win a scholarship, and that will have important benefits for his future.

• The enhancement might be harmful to Carl because he might develop breasts, acne, baldness, a weakened immune system, stroke, cancer, and “roid rage” (become prone to angry outbursts).

• The enhancement might benefit Carl’s school because Carl might be able to help his team win sports victories.

• Carl’s steroid use might hurt the school’s reputation and jeopardize its athletic standings. The school’s eligibility to participate in athletic events might be revoked.

Fairness

• It is fair for Carl to use the steroids because other players on his team, on other teams, or in the league are using them.

• It is fair for Carl to use the steroids because he is using them to compensate for an injury.

• It isn’t fair for Carl to use the steroids, because fairness in sports requires using your natural abilities, and taking steroids alters one’s natural abilities.

• Competitors who have not taken steroids are at an unfair disadvantage.

Authenticity

• The very things people value in the sport—such as natural talent—are undermined when competitors take steroids.

• Using steroids is no different from using other types of enhancements, such as specially designed swimsuits. Their use will not reduce what people value in the sport; Carl will still have to work hard and train consistently.

• Carl will still be his authentic self if he takes steroids. He would just be using more of a naturally occurring substance until his body recovers from the injury and gets back to its “normal” steroid levels.

• Carl will not be his authentic self when he takes steroids since he is altering his physical condition with something that creates a dramatic effect.
4. Ask a representative from each group to briefly share the points they discussed. Other students should record the ideas on Master 1.7.

5. List aloud the possible responses from Step 3 (page 1-30) that students don’t mention.

**Closure**

Remind students that they have learned how the four key questions can be used to think carefully about difficult bioethical issues. Today, they have also looked at what the core ethical considerations mean and how they can help provide reasons for a decision. These are powerful tools for understanding the implications of various decisions and for helping craft persuasive arguments.

**Homework**

Ask students to complete Part 2 of Master 1.7 for homework. Tell them to write down their final positions for what they think Carl should do, drawing on the information from the key questions and core ethical considerations. They should concentrate on providing reasons for their positions.

**Final Assessment**

Students’ responses to Master 1.7, filled out for Carl’s case, provide the final assessment for this module. The position and justification answers will help you assess the degree to which students are able to draw on the relevant facts, the implications for stakeholders, and the ethical considerations in crafting a well-reasoned position.

**Extensions (optional)**

1. Review with the class the first three key questions as they apply to Carl’s case before exploring the ethical considerations.

2. Discuss variations of Carl’s case. Pose variations on the scenario to help students explore how those differences in the situation might affect the analysis, such as these:
   - What if Carl has surgery for an arm injury and that surgical change later enables him to throw a ball with more force?
   - What if Carl has an opportunity to go to the Olympics? Would it be okay for him to take steroids to qualify?
   - What if, instead of steroids, Carl uses a supplement sold over the counter that is not illegal? Or has no known negative side effects?
• What if there is no way to test for the presence of the drug, and he could take it without anyone finding out?
• What if all the other players on the team are taking the steroid, and Carl's coach is asking him to do it for the good of the team?
• What if Carl's father asks him to take steroids?
• What if Carl ends up taking the steroids, and he breaks the high school record for home runs in one season? Should his record count?

You can also prompt students to consider the role of Carl's friend Joey, especially if students argue that Carl has a valid reason for taking steroids because of his broken leg.

• Is it permissible for Joey to take steroids?
• Is it permissible for him to pressure Carl?

You may want to revisit the distinction between the ethical choice that Carl must make and the ethical choices related to policies that affect others by asking questions such as these:

• Should all student athletes be tested for steroids?
• What should high school policies for steroid use in sports be?
• Do students feel that something is fine for an individual to choose but wrong as a school or sport policy?
• Should players using steroids be denied Most Valuable Player status?

### See Teacher Support Materials

3. **Ask students to compare and contrast the Pistorius and Carl cases.**

4. **Pose “big-picture” questions that deal with enhancement. Students can be asked to reflect on these in writing.**

   • Is it ethically permissible to do anything one wants to one’s own body?
   • Does someone’s intent or the nature of the activity they might be using the enhancement for make a difference?
   • Do some kinds of changes people can make to their own bodies make them somehow less authentic or true to themselves?

5. **Ask students to read and analyze the pro and con articles related to the use of drugs in sports that are in the Teacher Support Materials. Have students complete a point-counterpoint summary of the articles or fill out Master 1.7 based on the articles.**

### See Teacher Support Materials
The point-counterpoint articles and a sample completed summary are available online at [http://science.education.nih.gov/supplements/bioethics/teacher](http://science.education.nih.gov/supplements/bioethics/teacher).
### Organizer for Day 3: Core Ethical Considerations

#### Activity 6: Understanding the Ethical Considerations
**Estimated Time: 30 minutes**

- Briefly review Carl's case. Students should have answered the first three key questions on **Master 1.7**.
- Make groups of four students, and give each group four markers and a large sheet of paper. Ask one member of each group to use a marker to divide the paper into quadrants.
- Have each student in the group write one of the following terms on the top of each quadrant: respect; harms and benefits; fairness; authenticity (being authentic).
- Ask each student to write down, in silence, on one of the four quadrants examples of what the consideration could look like.
- Have students rotate the paper so they face a different quadrant. Ask them to repeat Step 4 for that consideration. Repeat the process for the last two quadrants, again in silence.
- Rotate the paper back to its original position. Tell students that they no longer need to be silent.
- Have students take turns putting check marks next to the comments or ideas that they believe are particularly good examples, explaining to each other why.
- Write the ethical considerations on the board or a transparency. Note that bioethicists often focus on the first three considerations, but other considerations (such as authenticity) may factor into a particular case, such as this one.
- Ask one person from each group to share an example of a respectful action. Record especially relevant ideas and comments on the board or a transparency.
- Repeat the process for the other three quadrants.
- Ask students to distill their examples into working definitions and then record working definitions on **Master 1.7**.

#### Activity 7: Using Ethical Considerations to Analyze Carl’s Case
**Estimated Time: 15 minutes**

- Tell students that they will now consider how these ethical considerations apply to Carl’s case: respect for persons, harms and benefits, fairness, and authenticity. Pose questions for reflection.
- Assign each group of four students one of the ethical considerations, and tell them to circle the name of that consideration on their large piece of paper.
Ask each group to think about arguments either for or against Carl taking the steroids, based on the ethical consideration they were assigned. Ask each group to have one person record these ideas in the appropriate quadrant on their large sheet of paper.

<table>
<thead>
<tr>
<th>Ask each group to think about arguments either for or against Carl taking the steroids, based on the ethical consideration they were assigned. Ask each group to have one person record these ideas in the appropriate quadrant on their large sheet of paper.</th>
<th>Page 1-29, Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask a representative from each group to briefly share the points they discussed. Other students should record the ideas on Master 1.7.</td>
<td>Page 1-31, Step 4</td>
</tr>
<tr>
<td>List aloud the possible responses from Step 3 that students don’t mention.</td>
<td>Page 1-31, Step 5</td>
</tr>
<tr>
<td><strong>Closure</strong>: Review what students have learned about two powerful tools: the four key questions and the core ethical considerations.</td>
<td>Page 1-31</td>
</tr>
<tr>
<td><strong>Homework and Final Assessment</strong>: Complete Part 2 of Master 1.7, concentrating on providing reasons.</td>
<td>Page 1-31</td>
</tr>
</tbody>
</table>
| **Extensions (optional)**:  
1. Review with the class the first three key questions as they apply to Carl’s case before exploring the ethical considerations.  
2. Discuss variations of Carl’s case.  
3. Ask students to compare and contrast the Pistorius and Carl cases.  
4. Pose “big-picture” questions that deal with enhancement. Students can be asked to reflect on these in writing.  
5. Ask students to read and analyze the pro and con articles related to the use of drugs in sports provided online. Have students complete a point-counterpoint summary of the articles or fill out Master 1.7 based on the articles. | Page 1-31 |