**Subject area/course**: Science/Anatomy & Physiology, Biology

**Grade level/band**: 11-12

**Task source**: Educational Policy Improvement Center (EPIC); Original Author: Donna Carter

**Investigating Medical Mistakes**

**TEACHER'S GUIDE**

1. **Task overview**:

As potential future healthcare providers (and healthcare recipients), students should be aware that medical mistakes are fairly common, and can be very costly to both care providers and patients. In this task, students will research three examples of related medical mistakes and write a journal article detailing their findings. The article should cover common issues and/or causes of the medical mistake, the impact of the mistake on the human body, the costs/consequences to all parties involved, and possible prevention strategies.

1. **Aligned standards:**
2. **Common Core State Standards**

[CCSS.ELA-Literacy.RST.11-12.1](http://www.corestandards.org/ELA-Literacy/RST/11-12/1/) Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

[CCSS.ELA-Literacy.RST.11-12.2](http://www.corestandards.org/ELA-Literacy/RST/11-12/2/) Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

[CCSS.ELA-Literacy.RST.11-12.7](http://www.corestandards.org/ELA-Literacy/RST/11-12/7/) Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

[CCSS.ELA-Literacy.W.11-12.1](http://www.corestandards.org/ELA-Literacy/W/11-12/1/) Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

[CCSS.ELA-Literacy.W.11-12.2](http://www.corestandards.org/ELA-Literacy/W/11-12/2/) Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

[CCSS.ELA-Literacy.W.11-12.5](http://www.corestandards.org/ELA-Literacy/W/11-12/5/) Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

[CCSS.ELA-Literacy.W.11-12.8](http://www.corestandards.org/ELA-Literacy/W/11-12/8/) Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

1. **Critical abilities**

Research: Conduct sustained research projects to answer a question (including a self-generated question) or solve a problem, narrow or broaden the inquiry when appropriate, and demonstrate understanding of the subject under investigation. Gather relevant information from multiple authoritative print and digital sources, use advanced searches effectively, and assess the strengths and limitations of each source in terms of the specific task, purpose, and audience.

Analysis of Information: Integrate and synthesize multiple sources of information (e.g., texts, experiments, simulations) presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to address a question, make informed decisions, understand a process, phenomenon, or concept, and solve problems while evaluating the credibility and accuracy of each source and noting any discrepancies among the data.

1. **Next Generation Science Standards**

[HS-LS1.A-2](http://www.nextgenscience.org/hsls1-molecules-organisms-structures-processeshttp%3A//www.nextgenscience.org/hsls1-molecules-organisms-structures-processes): Structure and Function. Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level.

[HS-LS1.A-3](http://www.nextgenscience.org/hsls1-molecules-organisms-structures-processes): Structure and Function. Feedback mechanisms maintain a living system’s internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system.

1. **Time/schedule requirements:**

This task will take approximately eight days to complete (if conducting research in class) and will likely require some out of class work. A suggested timeframe is listed in the Teacher Instructions section, but can be modified to fit different student and classroom needs.

1. **Materials/resources:**
* Suggested task opener: Oprah episode on medical mistakes – summary can be seen here:
	+ <http://www.oprah.com/health/The-Medical-Mistake-That-Almost-Killed-Dennis-Quaids-Twins-Video>
* Video/sound capabilities for projecting video
* Access to Internet for students to conduct research
* Word processing software for students to complete journal articles
1. **Prior knowledge:**

Students should be able to:

* Conduct research using the Internet and/or library resources
* Manage time wisely and use effective organizational strategies
* Analyze and evaluate resources for strengths and weaknesses
* Collaborate and have constructive discussions in a team setting
* Use MLA or APA citation style correctly
1. **Connection to curriculum:**

This task could be used at the end of a unit in a biology or anatomy and physiology class where human body systems and homeostasis/interdependence are covered. It would also be appropriate for use in a health sciences class after a discussion of ethics and issues in the healthcare fields.

1. **Teacher instructions:**

Day 1:

* Introduce the task by watching the short Oprah video on medical mistakes to generate interest and create a framework for the task.
* Discuss students' current awareness of medical malpractice and distribute the student prompt. Have a class discussion in small groups about their reaction to the video. Have groups share out the main points from their discussions.
* Review materials related to the interdependence of human body systems. Have students predict how a medical mistake that originates in one body system may cause complications/consequences for other body systems.
* Additionally, you may wish to introduce different a few types of incidents (e.g., dentistry, wrong-site surgery, drug allergies, postoperative instrucment retention, etc.) to get students thinking about different types of medical mistakes or malpractice than could occur.

Days 2-4:

* Have students individually research in the computer lab, bookmarking sites, taking notes, and/or printing necessary information.
* Have students select their area of interest.
* Some students will have strong research skills, but some will need guidance in the determination of appropriate sources and where to look for them. It is important to spend class time in review of what constitutes an appropriate source in advance of their independent work.

Days 5-6:

* Students will analyze their research findings, making the appropriate assessments, predictions, suggestions, etc.
* Students will complete a first draft of their journal articles. If students need additional time to produce their draft, they may complete the draft for homework.
* Confer with individual students who require additional support with the writing process. Provide specific suggestions for drafting, editing, and revision.

Day 7:

* Have students do a peer review of the journal article drafts to provide constructive feedback to one another.

Days 8-9:

* Students will revise and finalize journal articles. If students need additional time, they may complete final journal article for homework.
1. **Student support:**
* Allow students to work with a partner or in groups to research cases.
* Shorten the number of cases to research to two related medical mistake cases.
* Some students may struggle with analyzing “costs” beyond financial costs, and predicting long-term impacts of the mistakes, which are not specifically addressed in the cases they research. You may start a class discussion to get students thinking beyond the information provided in the cases they read about.
* For students struggling with correct citation methods, direct students to ‘Son of Citation Machine’ to assist students with APA citation http://citationmachine.net/index2.php
* If you choose to have students present the results of their research, allow small group work on the final presentation. Students can combine similar topics or create debate panels if they have opposing viewpoints.
1. **Extensions or variations:**
* Have students specifically assess and compare the related costs to both the patient and practitioner in all the following areas: financial, physical, emotional, and professional.
* Have students complete a formal presentation of their research findings in addition to the journal article. The teacher could find local medical professionals to attend the presentations and provide feedback to students.
* Students could present the results of their research to the class via an oral or multi-media presentation. This project would lend itself well to poster presentations with a gallery walk and Q&A session afterwards. The use of technology for the presentation would also work well.
1. **Scoring instructions:**

This task can be scored using the SCALE Scientific Literacy Rubric, Grades 11-12.