**Subject area/course**: Science/Biology

**Grade level/band**: 9-10

**Task source**: Stanford Center for Assessment, Learning, and Equity (SCALE); author: Susan Schultz

**Medical Mysteries**

**STUDENT INSTRUCTIONS**

1. **Task context:**

Doctors at Inspiration State Medical Center have been unable to determine the cause of death of a young college student who collapsed and died at the university (see “Inspiration Daily News” article). The case has been referred to Dr. Barry Barn at Stanford Trauma and Teaching Hospital (STTH) in California. Dr. Barn is a maverick physician whose unconventional thinking and flawless instincts have afforded her a great deal of respect. An infectious disease specialist, she's a brilliant diagnostician who loves the challenges of the medical puzzles she must solve in order to save lives.

**Your Task**

A group of doctors (including yourself) will be assigned to the case and your performance will determine whether you get an internship with Dr. Barn. Your team will need to use all your medical knowledge and some good deductive reasoning to determine why this healthy-looking young man died. The Head Resident (your teacher) will continuously supply you with new information.

You will construct an argument with a claim about what you think is the probable cause of death. Your argument should be based on the information provided in the case and your previous knowledge of the possible causes and effects of various diseases on the body systems. To fully develop your argument, you must justify why your claim is the “best,” providing multiple sources of evidence to support your claim. You must also explain and refute any alternative causes of death using evidence, and identify the limitations of your own argument.

1. **Final product:**

For this task, you will need to work collaboratively with a team of students to:

* Share what you learned about the possible causes of the victim’s death.
* Construct an argument with a claim about the probable cause of death, provide multiple sources of evidence to support your claim, explain and refute alternative causes of death, and identify the limitations of your own argument.
* Present the data and information using appropriate graphs, tables, visuals, etc.
* Make an oral presentation that provides a clear overview of your research (purpose, procedures, analysis, and findings).

Individually you will:

* Keep a daily journal of personal reflections and data collected
* Write a medical case study report that clearly explains the victim’s symptoms and justify your argument on the primary cause of death. Your argument will include a claim supported by multiple sources of evidence, identify and explain alternative causes of death, justify with evidence why your claim is the “best”, and discuss the limitations of your argument.
* Reflect and share what you learned from this task.

**ADDITIONAL INFORMATION**

1. **Knowledge and skills you will need to demonstrate on this task:**

* Identify the possible causes and effects of various diseases based on your previous knowledge of the body systems and evidence from the victim’s symptoms.
* Construct an argument on the probable cause of the victim’s death based on the information provided (newspaper article and autopsy) and the analysis of lab data.
* Construct an argument based on valid and reliable evidence obtained from a variety of sources.
* Identify a possible cause of death that is well supported by evidence.
* Provide constructive feedback to your peers on their draft lab reports and take into consideration feedback they provide you.
* Prepare a medical case study report that details the information of the case, summarizes your research, provides an argument for the probable cause of death, and correctly cites your sources.
* Communicate your argument – and the evidence for it – coherently and convincingly.

1. **Materials needed:**

You will need access to the Inspiration Daily News article, the victim’s autopsy (Resource Card 1), and the Internet for research. As you discuss various causes of death, you may want more information. The Head Resident (your teacher) does have some additional lab tests that you may find helpful. You may ask for the lab test results after you have compiled data that leads you to a variety of possible options causing the death of the student. You will also need access to presentation software or poster-making materials for your presentation.

1. **Time requirements:**

Your teacher will provide the due dates for completing each portion of the task.

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| **Due Date** | **What You Need To Do** | **Product** |
|  | Review the information provided and brainstorm the possible causes of the patient’s death | Medical Case Study Report |
|  | Research one potential cause of death based on the patient’s symptoms and identify what additional information you would need to make an accurate diagnosis |
|  | Review and analyze the patient’s autopsy results and re-evaluate the possible causes of death |
|  | Conduct an in-depth research of one of the possible causes of death based on the autopsy report |
|  | Construct and justify an argument on the probable cause of death (claim, evidence, justification, and limitations) |
|  | Write a draft medical case study report |
|  | Get peer feedback on your draft medical case study report |
|  | Prepare final medical case study report |
|  | Group Presentation | Oral Presentation |
|  | Reflect on Learning | Essay |

1. **Scoring:**

You work will be scored using the Scientific Literacy Rubric and the SCALE Effective Communication Oral Presentation Rubric (see both rubrics before beginning the project). You should make sure you are familiar with the language that describes the expectations for proficient performance.