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Mr. Speice

Independent Study and Mentorship

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### Original Work Proposal

Comprising a significant portion of neurology, patient case studies are important in understanding how different neurological conditions relate to one another, and it also induces collaborative efforts among neurologists. For one, many neurological conditions are complicated, and they often involve a variety of different organs since the nervous system controls all parts of the body. Because of this, there is ample disagreement on how or why different neurological symptoms arise. In order to explain these points of contention, ample research and multiple tests must be used to diagnose a patient. However, once a conclusion is reached, many neurologists share their findings by writing a patient case study and publishing it in a Neurology-focused academic journal. Thus, the purpose of this project will be to analyze certain patients who have complex yet similar neurological problems and write two case studies to explain my findings. The different conditions will then be compared and contrasted in order to learn more about different biological mechanisms and their relevance in neurology. Finally, in order to make my research more accessible, an infographic over the conditions will be created so that patients can learn about the disease that they have been diagnosed with in a more engaging way.

The inspiration for this proposal came from Dr. Dike, who suggested that I do such a project after I stated that my ultimate goal was to help others while also gaining a more hands-on experience in the field of neurology. Since Dr. Dike sees many patients that suffer from complex neurological problems, I will have access to many different patient records, and he is okay with sharing such confidential data as long as I do not violate HIPPA regulations.

To start off this project, I will need to do research on the various types of tests that are administered in neurology to diagnose a patient and learn the basic trends in each test that can be used to come up with a conclusion. Some of the tests that I will need to familiarize myself with are electromyography (EMG) scans, computed tomography (CT) scans, and magnetic resonance imaging (MRI) scans. In addition, I will need to attain a general background on the different types of neurological conditions, and I have already started working towards this with my research and interview assessments. Each week, I have focused on a different condition, so it has been helpful in establishing a general background. After completing the research phase of this project, Dr. Dike will assign me some of his patients that have similar conditions, and he will allow me to read tests and come up with my own conclusions. In order to test my accuracy, Dr. Dike will provide me with feedback and explanations for topics that I find confusing. During this part, I will be using the higher level thinking skills of evaluating and analyzing because I will have to make my own judgements based on the given data. Since the process of analyzing scans are quite complex and often dependent on past experience, it will be important that I stay on par with current research in the field of neurology by talking to Dr. Dike often. After coming up with my own conclusions about the patient scans, I will discuss my findings with Dr. Dike and note the aspects that I may have overlooked. Next, I will make an infographic comparing the

conditions of the patients from the two case studies. This portion of the original work will require me to use the higher level thinking skill of synthesis since I must compare and contrast the different patient case studies. Finally, Dr. Dike will help me edit the article in order to make it worthy of publishing in an academic journal. Since Dr. Dike is a part of many different professional neurological organizations, he can help find the resources needed to get my article published.

Through this original work project, I will be able to enter a more hands-on sector of neurology. I can truly see what it is like to be a doctor and have the responsibility of reading scans and sharing my findings using case studies. Furthermore, this project will require ample research in medical technology, and since society is becoming increasingly digitized, this knowledge will be quite helpful in the future—in medical school and beyond. This project will also meet the requirement of using higher level thinking skills because analysis, evaluation, and synthesis will all be used in different parts of the project, as aforementioned. Finally, my original work will be helpful to other neurologists or even those who are simply interested in the field because my case studies will be presenting another scenario of a patient diagnosed with a condition. Since much is yet to be discovered in the field of neurology, reviewing case studies from different doctors can help find a trend or explanation. As a result, professionals could use my research as a guide or as an affirmation of their results and diagnoses. In addition, the infographic that I create about the different conditions will be helpful to my mentor and his patients because he can use it explain a condition to someone who has been recently diagnosed.

Until now, my main exposure to the medical field has been simply observing healthcare workers. However, through this original work project, I can broaden my perspectives and gain a more hands-on experience.