Diseases

Repetition often serves as a model for the natural world. For example, when there is an outbreak of Ebola, its spread and subsequent containment will often follow the same model; the differences in each outbreak usually lie in the number of individuals infected. It is also possible to reflect, in this general model, whether the outbreak is small and easily contained, or wide-spread. Such models can be generated for many different types of outbreaks and contagions, provided that historical data is available for the disease you wish to model. For this you are required to research an outbreak-- whether local, epidemic, or pandemic-- and its subsequent containment (if applicable) and model its behavior with an exponential, linear or polynomial equation. Some outbreaks might still be on the rise and other might have been completely eradicated. If you select a disease that has not yet been contained, be sure to conduct enough research to determine whether it has been successfully contained in the past, as this may affect which equation type correctly applies. You are to create a report for an appropriate government agency (CDC, Department of Public Health, etc.) to help them predict and prepare for the future behavior of the disease you have selected, assuming the agency is able to enact and enforce the necessary public health guidelines and treatment patterns to begin to control the outbreak. In addition, you should discuss the scope and likely growth pattern of the disease if the agency is unable to achieve any useful intervention. This step will require some research into the historical progression of the disease prior to treatment being discovered, or, if none exists, the progression of disease following a similar model for the purposes of general comparison. Please create a final paper of three to five pages, double-spaced, addressing these requirements. Your paper should include the following: An introduction to the problem, including some context on the disease you have chosen and any relevant history of its progression, and containment if applicable. The equation type-- exponential, linear, polynomial-- that best model the disease’s progression. The specific equation that can be used to predict the disease’s behavior. A graph of the equation modeling the disease. A prediction of how the disease model would change with, or without, intervention (some models may reflect global health interventions which have already occurred, others might reflect diseases that are, thus far, unchecked-- you should discuss the likely outcome in whichever instance is not reflected in your data.)In-text and formal APA style citations for any historical or factual data related to your disease choice that would not represent common knowledge. This report will be done in APA format and prepared as if you were the person on the scene of the outbreak and trying to project different outcomes based on different agency responses.