810 DQ 7-1

[Author Name(s), First M. Last, Omit Titles and Degrees]

[Institutional Affiliation(s)]

Author Note

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# Topic 7 DQ 1

## Discuss how genetic and genomics can play a role in the demand for new health services and how they may impact health care expenditures in the chronic disease population. Give one example.

It was only a couple decade ago when the human genome sequence was just being carried out. The project came to a successful end in 2003 (Freimer & Sabatti, 2003), yet it will be a while before our knowledge of the human genome is completed. Despite it all, current studies show that genome sequencing has had the greatest impact on healthcare studies (Wagle et al., 2012). Thus, exploration of the human genome sequence and genomics have the potential to look into molecular pathways that cause diseases propagation. Additionally, it can also target drug use and give economic efficiency to the existing healthcare system by forgoing risky and wasteful therapeutic treatments (Harper & Topol, 2012).

Some of the most common chronic diseases like cancer, diabetes, cardiovascular diseases, and mental disorders have been in the focus of public health programs for years. The integration of genome-wide association in these studies have revealed the most susceptible variations of the disease in populations and has the potential to analyze and study the cause of such diseases in vivid detail. Such a study has a better potential for producing viable results and offers healthcare professionals. For instance, categorization of breast cancer using genomics and associated study can possibly allow mammography to take place sooner than is they normally are. This greatly reduces the risk associated with the procedure, while offering a more intensive primary or secondary preventive measures. This also provides those individuals at greater genomic risk to seek maximum benefit from the program in place, while keeping inconvenience and harm associated with it to bare minimum and provide incredibly cost-effective services (Burton et al., 2013).

In conclusion, exploration and enhancement of genomic knowledge and associated technologies have opened up exciting opportunities that allow effective disease prevention, protection against diseases as well as efficient diagnosis of diseases. Earlier, this knowledge was primarily confined to research, but now this practice is expanding to the practical application of genomic exploration.

# Topic 7 DQ 2

## Describe one method that includes using evidence-based data to support a new or innovative way to care for those with the chronic disease now or in the future. How will it impact care and what are the anticipated outcomes?

At present, there are a number of new and inventive means of preventing chronic diseases that are already in place. For instance, Johnson et al. (2005), used family histories rather successfully as a simple genomic tool. This allowed them to modify their long-term lifestyle behavior and enables them to keep a number of chronic diseases at bay. Furthermore, Annis, Caulder, Cook, & Duquette (2005) explored populations and proved that it contained valuable genomic information that serves as a reliable source of detection, prevention, and assessment of chronic diseases. Furthermore, according to Irwin, Zuiker, Rakhra-Burris, & Millikan (2005), states have genomic components for Comprehensive Cancer Control programs as a part of their health plans. This shows the precedence given to family history and genomic exploration, given that 67% of the disease control programs include family histories in the programs in an effort to understand just how the system works. This also includes launching a public education program that can help with this effort (Carmona & Wattendorf, 2005). Using family history maybe an orthodox approach to dealing with diseases and their prevention. However, they can be incredibly helpful in the following ways;

* Family histories provide details of chronic diseases that are prevalent in a population through accurate and detailed reporting of disease.
* Family histories present a detailed look at the consistent risk factors associated with human diseases (Yoon, Scheuner, & Khoury, 2003). A look at the family histories of first-degree is more helpful in this case.
* The complex association of shared genes with different behaviors, environments, and cultures is within families are easily identified using family histories. This enables them to not only study the progress of a disease but also help in applying viable preventive measures.
* Family history cannot be changed, but it does help in targeting diseases prevention and improves health and prevalence of the disease in society (Khoury, 2003).

Today, family history is the best genomic tool available and compared with other genetic tests, it can be relatively inexpensively collected. However, the future application of genomics for the purpose of healthcare shows a whole lot of better perspectives than those being used at present. One of those measures hails from a field called “Precision medicine” (Williamson, 2018). It enables healthcare professionals to customize medical treatments that cater to a patient’s genetic composition. Launched in the US as a part of the National Institutes of Health's “All of Us” research program, under the title “US Precision Medicine Initiative” (Sankar & Parker, 2017), it aims to sequence the genome of 1 million American and analyze their health data to gather environmental and biological information in order to facilitate research and serve as a means to enhance the present healthcare technologies, work on better policies and provide individualized healthcare (Dyer, 2018).

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