

Sample essay on the different uses of calculus in medicine

[Profession](#), [Student](#)



Since its creation in the 17th century the mathematics of calculus allows different fields of study the ability for measuring change and motion connected with natural and physical science including medical research and proactive applications of medicine. With the onset of the 21st century, the advances in mathematical insights forming definitions and theorems underpin the variety of uses of calculus in medicine. Calculus provides the abstract mathematical understanding of varieties of professional fields. These include economic trends, biological probabilities with ocean currents, meteorologist calculations of upper atmosphere airflow for weather prediction, and space scientists designing remarkable aircraft for space exploration. Finally, in various medical fields of practice it contributes to measuring and calculating physical probabilities of bone, blood vessel, tumor, and other physiological growth in the human body for treatment, surgery, and therapies (Michigan State University 2013). This academic discourse provide why calculus remains an essential component of different areas of the field of medicine.

Medical Calculus

Taken from a pragmatic perspective, calculus in the field of science, including medicine, provides design capabilities in creating ultrasound and x-ray equipment used for scanning and studying human internal organs.

Doctors, work with the technical specialists diagnosing any identified anomalies of a patient's internal organizes for size, location, and extenuating probabilities for the cause and prognosis for medical applications when determined necessary. Without this remarkable medical tool, dangerous and invasive exploratory surgery remains the only means for identifying such

medical issues.

Denoising medical imagery also uses calculus according to variations of local variance estimation using shaped windows focused on reducing any additive noise disrupting a clear view of images while preserving any imagery patterns of the focal point of the imagery. Calculus allows decomposing an image through calculus based creation of a pyramid structure-texture. In doing so, the use of this calculus of variations approach allows separating texture and noise components of the image providing overall visual improvement than without the calculus use (Kohan and Behnam 2011).

Other uses of calculus in medicine look at its application epidemiology. Composed of research methods identifying and isolating the underlying cause of injury, disease, and health improvements remains the use of medicine's epidemiology. Use of this methodology for research on health and disease population determinants and distribution, studying and monitoring disease probability changes relies on the use of calculus. In doing so, the epidemiologist focuses on analysis of calculus mathematical formulas enabling clues for both preventative and reducing the incidences of disease in both people and populations (Loma Linda University 2013).

Examples of such epidemiological studies using calculus include findings calculating smoking tobacco causes lung cancer and other diseases of the body. Other calculus application to epidemiological research determined specific dietary practices of humans foster protection from cancer or promote coronary heart diseases. Other findings using calculus include how specific lifestyles also promote spreading the AIDS virus. Other epidemiologist research using calculus evaluates varieties of treatments or

medical therapies/procedures for positive and negative outcomes (Loma Linda University 2013). The most basic of the calculus applications a medical student learns aligns to statistics.

The fact remains, no matter the variety of fields of medicine a student ultimately chooses, calculus mathematics is a part of the mathematical heart of different sciences including medicine-based sociology, psychology, and biology and the related areas of specialization aligned to these areas. Among the varieties calculus required for medical school are analytical methods connected with calculating prescriptive dosages. This process takes into account the patient height and particular body type and the calculated reaction to a specific dosage of medicine. In particular, patients with kidney issues have a special focus when prescriptive medicines make up the treatment. Kidneys process what humans ingest including medicines. With a kidney, issue as part of the patient diagnosis this consideration is part of the use of calculus in determining amounts of medicines.

Treating cancer requires doctor's administering radiation therapy to the patient. In this process, the doctor uses calculus formulas for amounts of drugs that respond to the radiation therapy. Since radiation beams cross each other at angles focused on killing the cancer cells while not harming healthy one, the doctor must formulate the angles of the beams with calculus (Johnston 2013).

Conclusion

As stated in the thesis of the intention of academic discourse the reasons why calculus remains an essential component of different areas of the field

of medicine relates to the pragmatic applications. This means in research, diagnosing, treating, and determining prognostic outcomes requires the use of calculus mathematical formulas. Without this important tool, medicine goes back to a less efficient state with the outcomes the loss of life.

Works Cited

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