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# Medical Interventions Course Overview

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## **UNIT ONE:**

Students are introduced to Jane Smith, the eighteen-year-old daughter of Mr. and Mrs. Smith. Jane is a college freshman who is presenting symptoms of an unknown infectious disease which students eventually identify as bacterial meningitis. Jane survives the infection but is left with hearing impairment. Through this case, students will explore the diagnostic process used to identify an unknown infection, the use of antibiotics as a treatment, how bacteria develop antibiotic resistance, how hearing impairment is assessed and treated, and how vaccinations are developed and used to prevent infection.

## **UNIT TWO:**

Students are introduced to Mr. and Mrs. Smith, the head of the Smith family. Mr. and Mrs. Smith are very excited because they just found out they are expecting a new baby. Because the couple is in their early 40s, the doctor has suggested genetic screening and testing. Through this case, students will explore how to screen and evaluate the code in our DNA, the value of good prenatal care, and the future of genetic technology.

## **UNIT THREE:**

Students are introduced to Mike Smith, the sixteen-year-old son of Mr. and Mrs. Smith. Mike is diagnosed with osteosarcoma, a type of bone cancer that often affects teenagers. Mike's treatments put him into remission; in order to remove all of the cancerous tissue, he had to have most of his arm amputated and he needs a prosthesis. Through this case, students will explore the diagnostic process used to determine the presence of cancerous cells, the risk factors and prevention of cancer, rehabilitation after disease or injury, and the design process for new medications, prosthetics, and nanotechnology.

## **UNIT FOUR:**

Students are introduced to Mrs. Jones, the forty-three-year-old sister of Mr. Smith. Mrs. Jones has been struggling with Type 1 Diabetes Mellitus for twenty years. Over the years, Mrs. Jones did not take good care of herself or properly control her diabetes. She eventually began using an insulin pump and changed her lifestyle to regulate her blood sugar levels, but the damage had already been done. Mrs. Jones is now dealing with end stage renal failure and needs a kidney transplant. Through this case, students will explore protein production, blood sugar regulation, dialysis, organ donation and transplantation, non-invasive surgery techniques, as well as creation of a bionic human.