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Vaccinations: Combating Disease, Death, Disability, and Child Mortality Worldwide

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According to the World Health Organization (WHO), immunizations are one of the public health's most cost-effective inventions. The United Nations (UN) created several sustainable development goals to ensure a sustainable future for all. One of these goals focuses on good health and well-being at all ages. Vaccinations play a vital role in achieving this goal. In 1803, Edward Jenner coined the term vaccination, from the Latin word "Vacca" which means cow. **Vaccines** are substances that consist of weakened, dead, or incomplete portions of pathogens or antigens. Vaccines help prevent diseases and are one of the most important achievements of mankind. Research shows that vaccines help prevent a million deaths per year worldwide, increase average life span, and help eradicate infectious diseases such as smallpox. The current unit, targeted to high school students, dives into the history of infectious diseases and vaccinations, different types of immunity and how they are acquired, a brief overview of how vaccinations help produce antibodies that combat disease-causing agents and briefly discuss the vaccination delivery systems that are currently used worldwide. This unit could be taught over a period of 3-4 weeks, the unit introduces the Design Thinking Process where students embrace empathy, work collaboratively, create "human-centric" solutions to problems.

Keywords: Vaccinations, Immunity, Design Thinking Process

(Developed for Biology and Human Physiology, grades 9-12; recommended for Biology, grades 9-10; Human Physiology, grades 11-12; and Public Health, Research, and Health, grades 9-12)

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