uBEATS Teacher's Guide:

Careers in Public Health

(Grades 11-12)

This teacher guide is a supplementary text to support the use of the uBEATS "Careers in Public Health" module for grades 11-12.

To help students develop the knowledge necessary for an incredible future in health care, we created UNMC Building Excellence in Academics Through STEM (uBEATS), an online health science resource for Nebraska students.

UNMC uBEATS modules are short (15 minutes or less), interactive online health science modules to supplement curriculum taught in grades 6 – 12. These do not replace curriculum, but are a supplement for teachers and students incorporating evidence-based information and UNMC expert guided material. Each module is chunked into sections with formative and summative assessments with immediate feedback provided.

Tips on how to utilize uBEATS modules:

- Internet access is required to view uBEATS modules.
- For those who have access to one-to-one technology, modules can be used in or outside of the classroom as a topic introduction, extension, or review.
- For classrooms without individual student devices modules can be used in whole group instruction. Formative assessment questions can use the teacher's preferred call and response method and summative assessment questions can be displayed on the board and answered individually by students or printed and distributed to students after viewing the module.

Objectives

- Make a list of health science careers in Public Health.
- Determine courses that can prepare a person for a career in health sciences.
- Identify real-world health problems and explain how Public Health experts are involved in solving those problems.

Introduction

Public health professionals work to protect and improve the lives of individuals, families, communities, and entire populations across the globe. Some respond to health epidemics like COVID-19, AIDS, and Ebola. Other identify and assess environmental health risks, like pollution, or water and food scarcity. Still others educate people to prevent chronic illnesses such as obesity and diabetes. They mobilize when natural disasters strike and speak out for those who might not have a voice. Public health professionals play an integral role in the health and safety of the entire world.

Prior Knowledge

Before beginning this module, the student should understand the Next Generation Science Standards (NGSS) featuring Three-Dimensional Learning.

Core Idea ETS2.B Influence of Engineering, Technology, and Science on Society and the Natural World A Framework for K-12 Science Education

- ***By the end of grade 12***. Modern civilization depends on major technological systems, including those related to agriculture, health, water, energy, transportation, manufacturing, construction, and communications. Engineers continuously modify these technological systems by applying scientific knowledge and engineering design practices to increase benefits while decreasing costs and risks. Widespread adoption of technological innovations often depends on market forces or other societal demands, but it may also be subject to evaluation by scientists and engineers and to eventual government regulation. New technologies can have deep impacts on society and the environment, including some that were not anticipated or that may build up over time to a level that requires attention or mitigation. Analysis of costs, environmental impacts, and risks, as well as of expected benefits, is a critical aspect of decisions about technology use.

Science and Engineering Practices NGSS

- Asking questions and defining problems

Crosscutting Concepts NGSS

- Influence of Science, Engineering, and Technology on Society and the Natural World

Key Terms/Vocabulary

Epidemic, pandemic, COVID-19, AIDS, Ebola, biostatistics, emergency preparedness, bioterrorism, epidemiology, environmental and occupational health, toxicologist, occupational health safety officer, environmental contaminants, health promotion, health program manager, community health assessor, maternal and child health, health administration and policy, health economist, health care administrator, health policy legislative analyst.

Science Standards

Nebraska Science Standards

Engineering in Health Sciences: SC.HSP.17.1.C

- Evaluate a solution to a complex real-world human health problem based on prioritized criteria and trade-offs that account for a range of constrains, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

Extensions of the lesson

- To help students become more familiar with the Key Terms of this module, the teacher can use the vocabulary list for a classroom Word Wall, or integrate the vocabulary into classroom word games during review sessions.
- To help the students see personal relevance, suggest that they privately ponder people they know (particularly relatives, friends, neighbors) who work in any of the careers mentioned in this module.

- As student misconceptions become apparent, the teacher may need to reinforce these important concepts:
    - When the COVID-19 pandemic first broke out, very little was known about its nature, its causes, its treatment, etc. As data was collected over time, biostaticians played a critical role in analyzing the data in order to systematically build a growing understanding about the virus.
    - Public health crises can have many sources, from disease outbreaks to natural disasters. Emergency Preparedness officials work to prevent the threats, as well as to assist the public in responding to any public health crisis that occurs.
    - Epidemiology careers involve a broad range of fields dealing with disease, injury, and threats to public health.
    - Environmental and occupational health professionals create and monitor safety in the places where people live, work and play.
    - The World Health Organization (WHO) plays a critical role in monitoring localized epidemics that can have potential impacts on worldwide health.
    - If a high-school student is interested in a public health career, volunteering can provide valuable experience. Likewise, a variety of course offerings in high school can give advantages for future health career opportunities.

Enrichment

- For information about career opportunities, see UNMC's Careers in Healthcare.
- To investigate volunteer opportunities, see Volunteering in Public Health.
- The National Institutes of Health (NIH) offers a classroom lesson on the spread of disease at Against the Odds.
- To make connections in your community, contact local hospitals, healthcare clinics, nurses, doctors, state and local offices of the Department of Health and Human Services.