

SPRING 2022 | VOLUME 09

INNOVATORS IN EDUCATION

Shaping Digital Health Professions
Education in the Pandemic



UNMC™

INTERACTIVE
E-LEARNING

A MESSAGE FROM

H. Dele Davies, MD, MS, MHCM

Senior Vice Chancellor for Academic Affairs

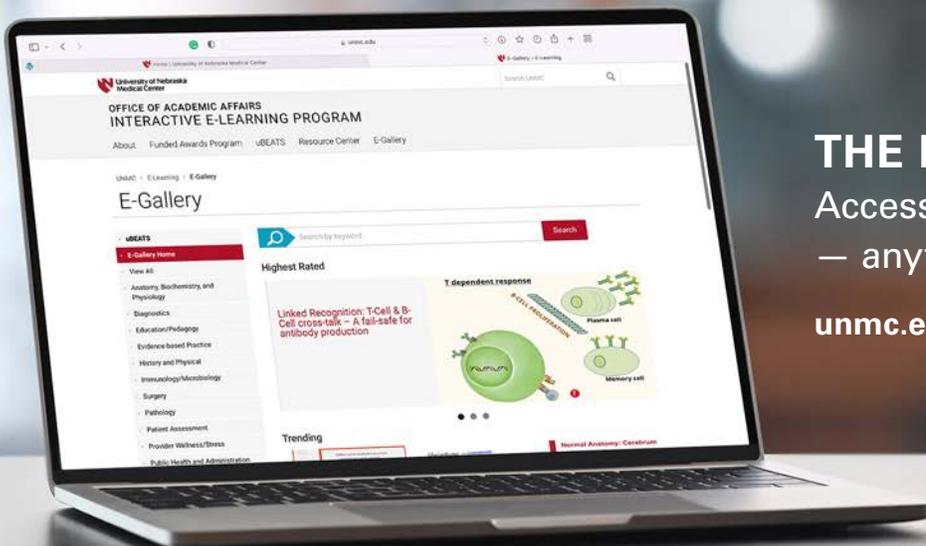
I am proud to introduce our 2021-2022 Innovators in Education. This booklet highlights our eleventh cohort in the UNMC Funded E-Learning Awards Program, which comprises 18 teams of 49 student developers and 36 faculty advisors from Omaha, Lincoln and Kearney. Three of these teams are interprofessional and multiple teams focused on topics that are applicable across all disciplines.

A major success factor in the creation of these 18 projects was the collaborative partnership between the student and faculty groups. Faculty led the projects with the commitment to incorporate the e-modules into their courses and consulted with the students to generate creative ideas. In turn, the students offered creative engagement and e-learning development skills.

As the COVID-19 pandemic continues to shift our educational delivery landscape, the modules created by these teams are more important than ever. The contributions they will bring to our curricula will prove invaluable now and in the coming years.

The e-modules from Cohort 11 will be accessible 24/7 on the E-Gallery, along with the other 260 modules created by past cohorts. Those existing modules are among our most popular resources on the site, which have garnered a total of 184,058 page views since its launch. I'm positive these new additions will be just as useful to our educators and students.

I want to express my gratitude and appreciation for all the hard work and innovation that went into the creation of these e-learning projects. I hope you enjoy viewing them as much as I do.



THE E-GALLERY:
Access all the e-learning modules
— anytime, anywhere

unmc.edu/egallery

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Adapted Healthcare Delivery for Patients with Hearing Impairments



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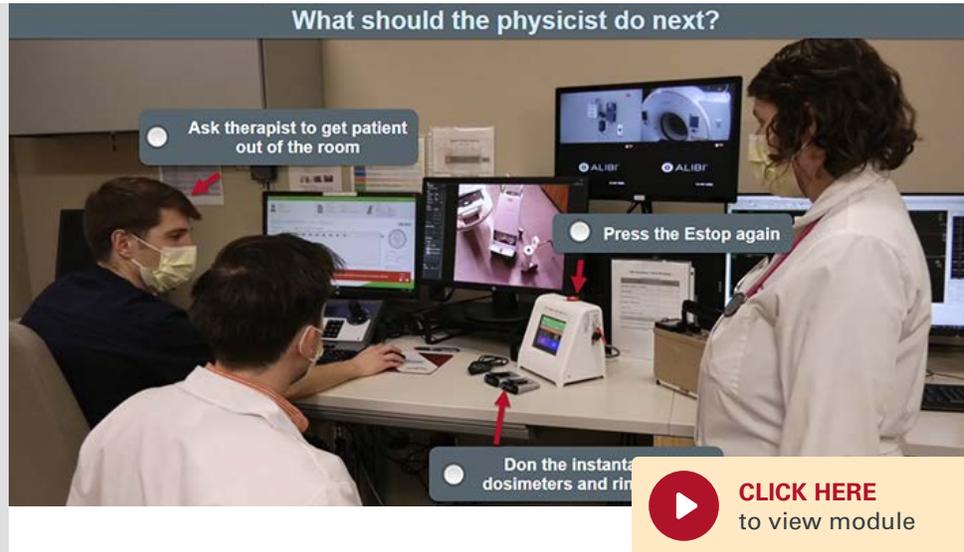
Physical therapists provide services to patients of all abilities in the way they move and interact with the environment. However, students and clinicians may not receive adequate education on the adaptation of treatment to patients with hearing impairment, specifically alternative methods of instructional delivery and patient education.

The module guides learners to review background on hearing loss and American Sign Language (ASL) and introduces the Americans with Disabilities Act (ADA), as well as common adapted delivery methods currently utilized in clinical settings.

Students learn five Universal Design Principles for Hearing at their own pace and receive recommendations on how to apply these principles to real-life practice. Throughout the e-module, pre- and postmodule case studies are employed to cultivate students' critical thinking and assess their retention and application of the course materials. Case studies are presented with animations followed by a series of integrated quiz questions to ask students to identify the most effective action they should take at different timepoints of one therapy session.

Physical therapy students have limited opportunities to practice their clinical skills interacting with deaf/hard-of-hearing patients through the curriculum. This module helps to fulfill this need and prepares students to become more accountable to deliver excellent equitable care and encourage teamwork between the patient, therapist, interpreter and others after graduation.

High-Dose Rate Brachytherapy Emergency Training



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In brachytherapy, there is a risk that the high-dose rate radioactive source can get stuck inside the patient during treatment. This is a rare occurrence, but it can be a time-sensitive and high-pressure situation when it does happen. Thus, all students and staff must be very familiar with radiation safety basics and the proper procedure for handling emergency scenarios. Currently, the training for these emergency scenarios is taught to students and residents by reading manuals and verbally walking them through the steps without a patient present. Because these types of emergencies are rare, learners do not get to practice the procedure in a realistic scenario.

This module allows learners to work through a realistic simulation of a stuck source emergency situation in a safe environment and receive real-time feedback on their decision-making process. The goal is that this more-realistic, simulated training environment helps learners gain the confidence and composure they need in the event of a high-stakes emergency in clinical practice.

This module will be incorporated into UNMC's Medical Physics Residency program and may also serve as a training tool for other students, physicians and practicing physicists in the Radiation Oncology Department.

Rancho Los Amigos Cognitive Scale

Who, when, and where?

- The RLA scale is used by the collaborative rehabilitative team in the acute and subacute settings.
- The RLA scale should only be utilized for patients with a **traumatic brain injury (TBI)**.



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to view module

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After a brain injury, an individual's alertness, ability to respond to commands, attend to tasks and interact with their environment is impaired. The Rancho Los Amigos (RLA) Cognitive Scale is a tool designed to aid clinicians in tracking recovery before and during the recovery and rehabilitation process.

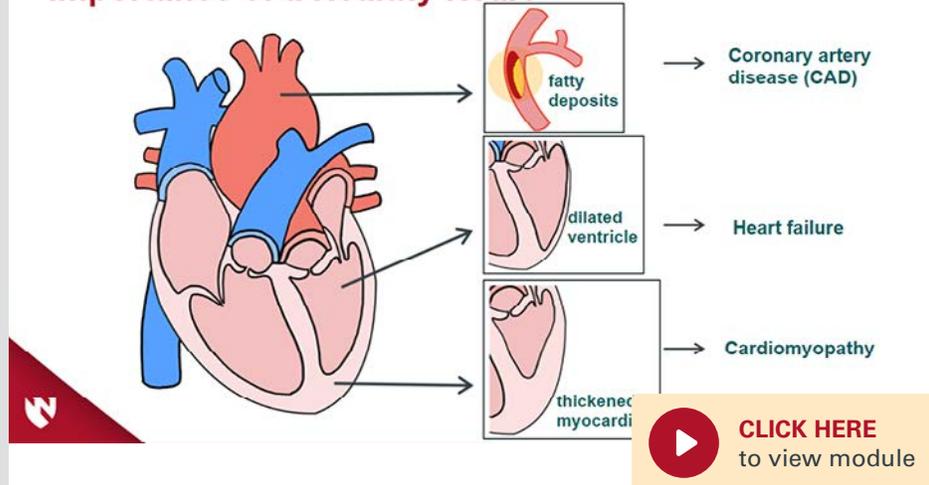
As members of an interdisciplinary team, physical therapists have a crucial role in understanding how patients are recovering from an injury to the brain. Recognizing how an individual is progressing after a brain injury helps us to shape our interactions and create meaningful, appropriate interventions.

This module helps students better understand the characteristics of each of the scale's 10 levels of recovery through interaction, followed by identifying appropriate treatment approaches that correspond to the individual's level of recovery.

Translating the descriptions of each recovery level into a meaningful intervention is often an area of difficulty for students and novel clinicians. This module aides in the student's ability to translate knowledge into practice to maximize student learning and application. Students are able to see a case vignette with adequate information to establish an RLA level, followed by recognition of appropriate intervention(s) through use of animation, video or images.

Heart Anatomy and Physiology

Importance of a Healthy Heart



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Pharmacy students take an intensive pharmacotherapy section over cardiology during their second year of school. Since anatomy and physiology are not part of the College of Pharmacy's curriculum, most pharmacy students need a short refresher on the anatomy and physiology of the heart. Providing students with the opportunity to complete this e-module before their cardiology section begins would be a great resource.

This module provides students with a strong foundation of key background knowledge necessary to understand the important concepts in the therapeutics of cardiology. It defines important concepts and provides clinical examples to help learners apply the information.

In this module, the major factors that influence blood pressure are defined, the major anatomical features of the heart and the direction of blood flow are explained, and the components of an electrocardiogram and its relationship to the heart's electrical conduction are described. Each section in the e-module provides learners with summary slides to bring key concepts together and reinforce the objectives.

This module is a key component in bringing pharmacy students up to speed in learning the vital foundational knowledge required to best understand the complex and in-depth pharmacotherapy presented in the cardiology section of the pharmacy curriculum. To aid contemporary learners to better retain the foundational knowledge of heart anatomy and physiology, this e-learning module incorporates both visual animations and written text. In addition, it includes a variety of interactive assessment questions throughout the module to test the learners' knowledge and reinforce major concepts.

Stability During Mobility: How to Select a Safe Patient Transfer

What is a Transfer?



- Movement from one surface to another, or from one position to another
- Trained individuals may perform transfers independently or with other trained individuals



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Transfers are moving a patient from one surface to another. When a patient is moving, there is an increased risk for falls and injury for both the patient and the health care provider. There are a variety of transfer techniques, and a health care professional needs to consider multiple factors when choosing the safest and most effective technique. In this module, the transfer decision process factors include the client's weight-bearing ability, stability and assistance level.

Currently, there is a disconnect between learning the various transfer techniques and critical thinking with application to clinical scenarios. Students are unsure how to organize a decision process for transfer technique selection. Presenting this information in a module helps students see how the transfers relate to one another and why a health care professional would choose one transfer over another.

The material is summarized and presented in an easy-to-follow decision flow chart with visuals. Students have multimodal learning of transfers (through video demonstration, highlighted key points and auditory methods). This module develops their professional reasoning for selecting transfers for patient scenarios. At the end of the module, students use a quiz to demonstrate understanding of selecting a safe and successful transfer.

After the module, students translate knowledge and bridge the know-do gap by applying what they learned in the module directly to hands-on practice during lab and in the clinic.

Physical Examination of the Knee



Limp



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This module was chosen to supplement the learning of physical therapy and medical students as they learn the basics of musculoskeletal exams, especially that of the knee joint. Multiple videos are included, so students can follow along and practice as they are watching. Being able to see and actively copy what is done increases their retention of the material.

The project will be used during the first year of medical training. A pre- and posttest will be conducted of students who use the e-module and will be compared to students in years prior to the implementation of the module. In addition, those students who stay at UNMC for residency will be reassessed for knowledge retention during their first year of residency. Also, students are able to easily access and refer to the information at any point in their training to review the whole knee examination or individual aspects of the exam as needed.

This module serves as a trusted point of reference for any member of the UNMC community who needs to learn or review the physical examination of the knee.

Creating a Welcoming Healthcare Environment for the Transgender and Gender Expansive Community



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Transgender and Gender Expansive (TGE) people report having negative experiences with health care providers, which includes:

- / Experiencing verbal harassment
- / Having necessary medical care refused
- / Having to educate their providers about transgender people
- / Getting asked unnecessary questions about their gender identity or transition

The aim of this module is to create empathy toward TGE individuals, examine biases, and educate students on how to create welcoming environments for their TGE patients.

This module uses videos of patient encounters and interactive questions to engage medical students in active learning. It will be used in conjunction with existing LGBTQ+ health education.

Athletic Mouth Guard: Protection from Orofacial Injury



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Sports activities cause nearly one-third of all dental injuries and approximately one in six sports-related injuries is to craniofacial areas. Unlike other injuries, a single traumatic injury to the dentition may never heal completely and it can create a lifetime of expensive, long-term problems for the affected athletes. Wearing a protective mouth guard can minimize the risk of sustaining trauma or minimize the severity to hard and soft tissues.

This e-module addresses a curriculum gap in athletic mouth guard protection in pediatric dentistry and provides content applicable to many health care professionals.

It is a highly engaging form of asynchronous learning to review and bring clarity to foundational concepts in athletic mouth guard protection for both dental professionals and other health care providers. The module is assigned as part of the students' curriculum, and they participate using the Canvas learning platform. Multiple choice questions are placed strategically in the module and a post-test helps learners with retention of content.

Athletic mouth guards are recommended for use in 30 different recreational or professional sports. This e-module is designed to enhance awareness of all health care professionals to assist in advocating their use in the protection of oral injury.

Electrical Safety in the Operating Room



CLICK HERE
to view module

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Electrical safety in the operating room is a commonly tested topic with historically difficult concepts to grasp. Our goal is to arm learners with the knowledge to improve both patient and provider safety when electrical concerns arise perioperatively.

In this module, learners discover the key elements of electrical safety in the operating room. Topics include basic electricity physics, electrical shock, grounded and isolated power systems, and devices that monitor the integrity of these power systems.

The e-module utilizes multiple interactive formats including animated videos, key point review questions and a summative assessment to help the learner solidify key points and promote life-long retention. We recognize that innumerable learning styles exist, and we have worked hard to make this an interactive and relatable module for the modern learner.

Brief Behavioral Treatment for Insomnia:

A PRIMER FOR
CURRENT & FUTURE
PRIMARY CARE
PROVIDERS



CLICK HERE
to view module

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Insomnia affects 10–25% of the general population and can be debilitating for people who suffer from it. Medications commonly used to treat insomnia carry the risks of side effects and withdrawal symptoms, as well as physiologic and psychological dependence. While the psychological treatment of Cognitive Behavioral Therapy for Insomnia (CBT-I) has been shown to be similar in effectiveness to pharmacologic treatment, its lengthy timeframe and a shortage of clinicians trained to provide it keep it from being a commonly used treatment for insomnia.

Brief Behavioral Treatment for Insomnia, or BBT-I, was developed to increase access to the behavioral treatment of insomnia for patients. It can be completed in a total of 90 minutes over four sessions, two of which can be completed over the phone, making it well suited for the primary care setting.

It is our belief that if current and future primary care providers were educated about BBT-I, they would be more likely to incorporate behavioral treatment of insomnia into their practice, rather than relying solely on medications.

This module will be used in the Neurosciences block for Phase 1 students in the College of Medicine. It provides most of its instruction through animated conversations between a provider and her patient, which keeps students engaged. The module utilizes interactive elements, such as knowledge checkpoints and a summative assessment, to improve retention and allow students to assess their own understanding of the information.

Tooth Identification

Drag the word to the correct picture!



Lower
Canine



Lower
Premolar



Upper
Incisor



Lower
Molar



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Tooth identification is a vital skill in dentistry. Teeth differ in anatomy, function and anomalies that make each tooth unique. These differences also influence the way each tooth is treated.

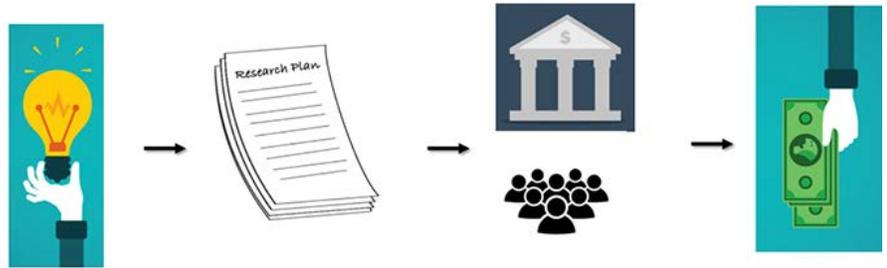
Dental Anatomy is a course taught in the first semester of dental school. This e-module will benefit both first-year students who are learning the material for the first time and upper-class students who need a refresher or are studying for boards. This module follows the curriculum presented in the dental anatomy course.

This module allows students to study in short doses at high frequency. The map of this module allows students to choose areas of focus based on their studying needs, such as tooth naming or specific areas of the adult dentition. Through quiz questions strategically placed throughout the sections and a final summative assessment, participants shift their focus to the most important tooth identifiers and reinforce their understanding of the material. The assessment tools in this module include pinning the correct tooth or tooth areas and matching images with classifying characteristics. These tools reinforce the material learned in the module and the dental anatomy course.

This resource helps other health care workers outside of dentistry learn and comprehend the basics of adult dentition and dental terminology. Dentistry is included in the interprofessional health care professions, as the oral cavity is the opening to the human body. The correlation between the oral cavity's health and the entire body's health is easily overlooked. We are striving for all members of the interprofessional health care team to feel comfortable with assisting and ensuring patients' safety and overall health.

Writing Specific Aims

What is a Research Proposal?



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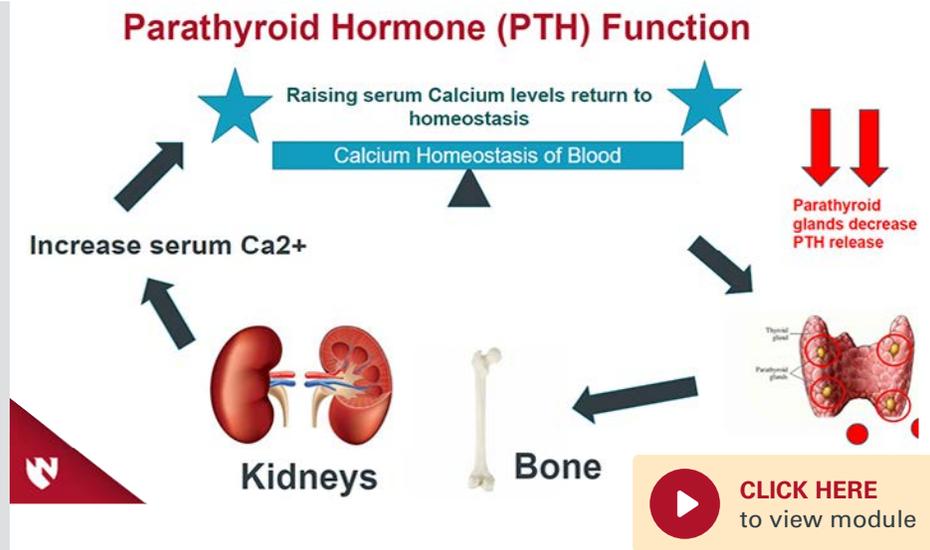
This module provides students with an introduction to research proposal writing, focusing on the Specific Aims page in the context of a whole proposal.

The Specific Aims page connects numerous proposal elements including significance, hypothesis, approaches and outcomes/impact in a convincing and abbreviated manner. This module covers the components of a Specific Aims page and their individual purposes by breaking down Pasteur's famous swan-neck flask experiment. In addition, it guides the creation of strong Specific Aims statement paragraphs, which further reiterate the purpose of the proposal and how the aims of the study will be experimentally tested. Lastly, the module facilitates analysis of effective and ineffective elements of a Specific Aims page.

By providing diverse examples, innovative formative questions in a "personality test" style, and animated annotations, this e-module introduces fundamental concepts of Specific Aims, supplements classroom discussions in this area, and identifies strengths and weaknesses in the students' current writing skills. In addition, a summative review at the end of the module introduces examples that test higher-order application questions.

Any student, postdoctoral fellow or researcher applying to a grant funding agency, either for basic science or clinical research, can benefit from the Writing Specific Aims e-module. The concepts covered within the e-module are critical for anyone working to improve and practice their grantsmanship related to the Specific Aims page and will contribute to more effective scientific communication as a researcher.

Chronic Kidney Disease & Secondary Hyperparathyroidism



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In the US, it is estimated that 1 in 9 individuals have some manifestation of chronic kidney disease (CKD) ranging from proteinuria with normal renal clearance to advanced renal failure requiring dialysis or transplantation. Cardiovascular disease is the leading cause of death in patients treated with dialysis, with mortality 10 to 30 times higher than the general population attributed mainly to calcium dysregulation.

This project assists learners better understand the normal physiology of calcium and phosphate regulation, its dysregulation in chronic kidney disease and the development of cardiovascular disease in CKD patients.

This module covers the epidemiology and significance of CKD, the normal physiology of calcium and phosphate, the dysregulation of calcium and phosphate in CKD, and the pharmacologic interventions to prevent cardiovascular disease.

The material is presented with animated slides to break down and explain complicated physiology and pathology. There are quiz questions at the end of each section and a comprehensive assessment at the end of the module to aid in self-assessment and highlight key points.

This module is intended to be used by medical students to supplement lectures given during the renal block for a more in-depth understanding and clinical application.

Pyloric Stenosis in a Vomiting Infant



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This project topic exposes students to pediatric surgical pathology and reviews the history gathering, physical exam findings, diagnostics and treatment of a vomiting infant.

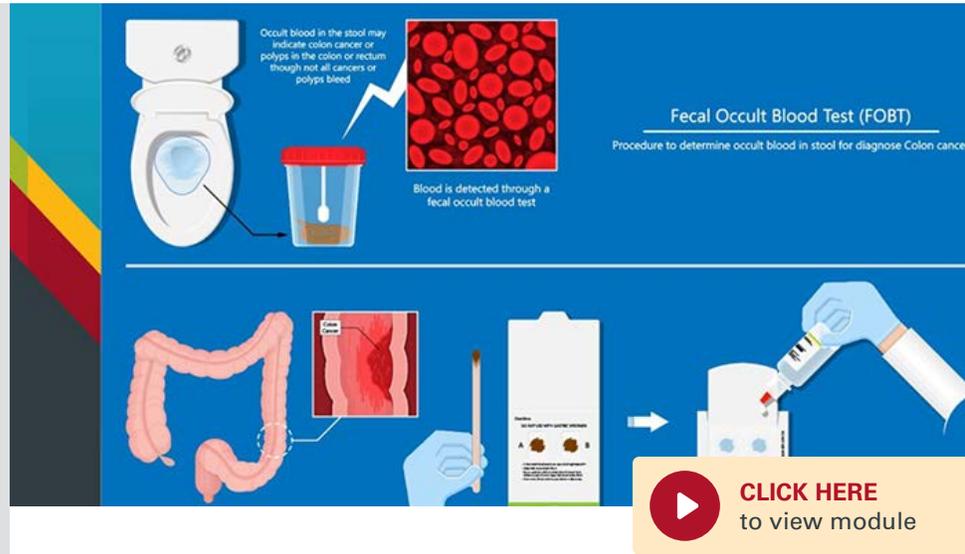
This module walks students through a case presentation and helps them better understand how to obtain a thorough medical history and physical exam. Students practice building a robust differential diagnosis for the chief complaint of “vomiting infant.” Then, they learn the importance of ordering diagnostic labs and imaging that are clinically indicated and guided by clinical guidelines.

Providing a “real-life” virtual patient case that students must diagnose and treat improves retention and application of the pathophysiology, diagnostics and treatment associated with pyloric stenosis.

This e-module will be used in Phase 1: Gastrointestinal Block to help students learn the pathophysiology and pathology of pyloric stenosis. It will accompany the Acute Care & Clinical Transitions Block to help students improve their ability to gather a history of present illness, build a differential diagnosis, order the necessary labs, and definitively treat a patient. It will be a part of Phase 2: Surgery Block and help students review the relevant diagnostic and treatment questions likely to be present on the standardized exams related to pyloric stenosis.

By viewing this module throughout various blocks, students have better retention of the material and are better prepared with the diagnostic skills necessary in future phases.

Colorectal Cancer Screening



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This module was developed as a supplemental learning activity for EPI 812: Chronic Disease Epidemiology, but can also be used as a continuing education tool for primary care providers in Nebraska, where colorectal cancer is a particular public and clinical health concern.

By combining engaging didactic and interactive teaching methods, learners gain key concepts of colorectal cancer screening methods.

As students of EPI 812 will be the primary users of this module, its underlying intent is to enable learners to grasp how the detailed features of various clinical diagnostic tools fit into the broader context of public health screening guidelines for high-occurrence chronic diseases.

The module's sleek design, clear impartation of knowledge, concise summaries and frequent interactive quiz questions ensure students understand and retain the information. Further, learners are well-equipped to comprehend the intersection of clinical diagnostics and screening guidelines for public health practitioners, are better-informed around the intricacies of colorectal cancer screening, and know how to make evidence-based decisions in preventative medicine.

Linear Accelerators: How Do They Work?



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In radiation oncology, we have many ways by which we deliver treatments to patients. One of the treatment delivery devices, the LINAC (short for linear accelerator), is the main workhorse of a radiation oncology department. The method by which the LINAC creates and delivers radiation is a complex combination of multiple components that is complicated for new learners to understand.

This module helps learners understand how the LINAC works, the various components needed to make a LINAC, and how they are all connected to deliver radiation.

Using animations and demonstrations, we engage the learner in a visually and intellectually stimulating way. Interactive assessments are incorporated along the way as we break down the main components of the LINAC and provide an inside look to teach how they work and why they are necessary. We would also like the learner to take what they learn to a “build your own LINAC” interactive section where they combine the various necessary components to virtually make a working LINAC.

This module is aimed at radiation therapy students and is intended to serve as an engaging alternative, or supplement to, a recorded lecture. This would allow for a more flipped-classroom approach where the students at the time of the lecture would have a basic understanding of the content so we could focus on more active learning strategies. Medical physics and radiation oncology residents could also use this module to refresh their understanding of the LINAC.

Approach to Inpatient Dermatology

Introduction

The skin is the primary site of presentation for many medical conditions.

- Accurately diagnosing inpatient dermatologic condition often required a multidisciplinary approach
- Dermatologic emergencies represent 8-20% of diseases seen in the emergency department



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The skin is the primary site of presentation for many medical conditions. With the establishment of the Department of Dermatology at UNMC, inpatient dermatology consultations have increased tremendously in three years, leading to improved outcomes for patients and shorter hospital stays. Accurately documenting and diagnosing inpatient dermatologic conditions often requires a multidisciplinary approach to properly treat patients.

In this e-module, students are guided through how to accurately and efficiently photograph skin conditions based on the patient's skin color, as well as learn how to recognize and differentiate common inpatient dermatologic conditions and emergencies.

With the implementation of e-consults and the value of documenting changes over time, properly photographing the skin is a critical part of developing a diagnosis. For this reason, our module implements techniques health care personnel can use to obtain clinical images, with examples and demonstrations to show learners proper techniques, tips and tricks.

Many inpatient dermatologic conditions can be complex and often deceiving. For this reason, our module employs interactive case-based learning to discuss common inpatient dermatologic conditions and emergencies. These include information related to common mimickers, work-up and treatment.

This e-module serves as a refresher to medical students as they transition to wards, as well as residents and other health care professionals who may encounter inpatient dermatologic conditions. Learners can then provide patients with the best care to improve morbidity and mortality in our patient population.

Results from the module assessments and pre- and postmodule surveys, will be analyzed to ascertain the effectiveness of the educational module.

Oral Health Literacy



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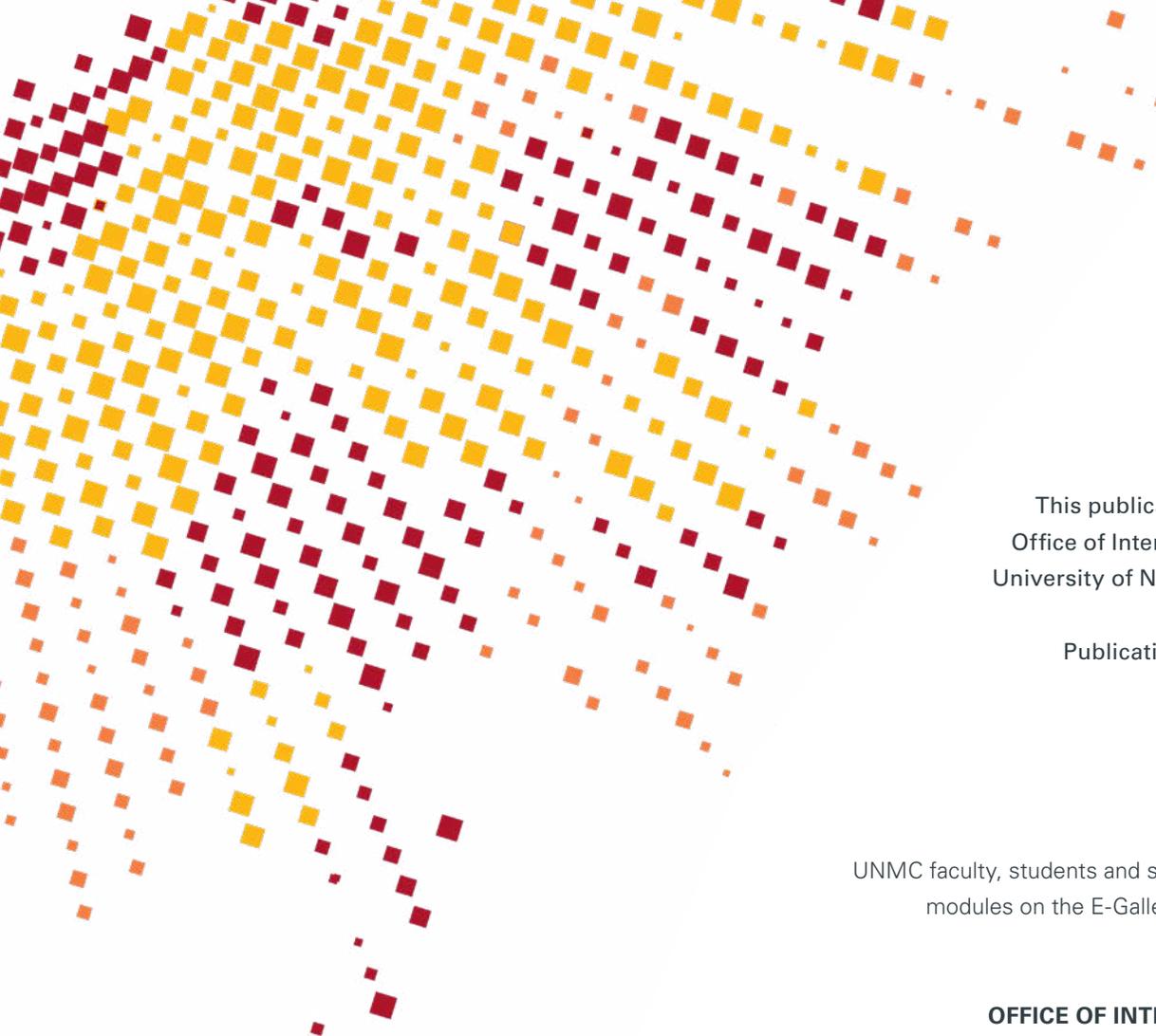
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Understanding oral health literacy is a crucial skill for any health care worker. About half the adult population struggles with limited oral health literacy, which leads to many negative outcomes. As dentists, maintaining our patients' oral health plays a large role in maintaining their overall well-being. For this reason, it is essential to recognize and effectively communicate with individuals with limited health literacy.

Currently, students' education on the topic of oral health literacy is minimal, consisting of an out-of-class reading assignment followed by a short, 20-minute lecture. While different strategies are touched on, students do not get real-life practice working through scenarios they will face when treating patients. We recognize learning is not just unidirectional. Students need to work with information, rather than absorb it.

We chose to create this module so students would get practical experience with the material. By working through scenarios rather than simply reading examples, students will have a more comprehensive understanding, higher retention and stronger interpersonal skills in the clinic setting.

The module consists of informative slides, which are then assessed with a mix of multiple-choice and true/false questions to test retention of information. In addition to these questions, there is a scenario-based, practical skills assessment to see if students fully grasp the material and can apply it to an actual situation involving a patient.



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