INNOVATORS in EDUCATION

Transforming Curricula for the Next Generation of Learners

University of Nebraska Omaha | Medical Center

Spring 2020 | Volume 07

A MESSAGE FROM
H. DELE DAVIES, MD, MS, MHCM

Senior Vice Chancellor for Academic Affairs

I am proud to introduce our 2019-2020 Innovators in Education. This booklet highlights our two most recent cohorts who are transforming curricula: Cohort 9 from the UNMC Funded Awards Program and Cohort 5 from the uBEATS Development Program.

UNMC Cohort 9 comprises seven teams of 23 student developers and 12 faculty advisors from Omaha, Lincoln, and Kearney. One of the key factors of their success was the collaborative partnership between the two groups. Faculty led the projects with the commitment to incorporate the e-modules into their courses and consulted with students to generate creative ideas. In turn, students offered creative engagement and e-learning development skills.

uBEATS Cohort 5 comprises 11 teams of 25 developers from the University of Nebraska Omaha, some of whom are repeat participants or graduates of the UNMC High School Alliance. uBEATS developers come from varying collegiate backgrounds to create engaging e-modules for students in grades 6 - 12. Their projects will be included in the 65+ e-modules that have the potential to impact up to 90,000 Nebraska students.

I want to express my gratitude and appreciation for all the hard work that went into the creation of these e-learning projects. These contributions by our faculty, students, and UNO collaborators are more important than ever in light of all the changes to the educational landscape due to the COVID-19 pandemic.

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TABLE OF Contents

03

E-LEARNING LEADERSHIP

Local and national experts drive the future of UNMC E-Learning.

07

FUNDED AWARDS PROGRAM

Cohort 9 comprises 36 faculty and student participants from Omaha, Lincoln, and Kearney.

17

uBEATS

UNO & UNMC Building Excellence in Academics Through STEM concludes its fifth and final cohort.

03

UNMC E-LEARNING

LEADERSHIP

To ensure our dedication to training faculty and students in all aspects of e-learning, we've gathered a team of representatives from all areas of campus, including faculty, staff, and students, as well as nationally renowned experts in the area of e-learning.

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FUNDED AWARDS PROGRAM

The Funded Awards Program is a collaborative partnership between faculty and students. Faculty lead the projects with the commitment to incorporate the e-modules into their courses and consult with students to generate creative ideas; in turn, students offer engagement options and content development skills.

Click the titles to jump to that abstract

PROJECT ABSTRACTS

09 | New Outcome Measure in Post-Acute Care: Out with FIM – In with Section GG
Dr. Stacie Christensen, Holly Bower, Lacey Johnson, Allison Mason
College of Allied Health Professions

10 | Progressive Musculoskeletal Case for Clinical Reasoning Development
Dr. Megan Frazee, Amanda Beisner, Tanner Dewey, Nick Schmit
College of Allied Health Professions

11 | Fundamentals of Nutrition
Dr. Birgit Khandalavala, Dr. Susan Evans, Dr. Justin Mott, Collin Gilmore, Mckenzie Rowe
College of Medicine
Kellie Ecklund, College of Nursing
Sarah Liewing, College of Public Health

12 | Green Sheet
Jon Kilstrom, Lorna Hummel, Haelee Kowalski, Darren Stoub
College of Allied Health Professions

13 | Guess My Age from Dental Radiographs
Dr. Sung Kim, Bo Chao, Safia Rauf
College of Dentistry

14 | Intraosseous Line Placement
Dr. Nicholas W. Markin, Dr. Bobby Muelleman, Dr. John Riley, Dr. John Radio, Meg Thacker, Dr. Alicia Schiller, Dr. Amy Cutright
College of Medicine

15 | Cultural Awareness
Dr. Yun Saksena, Jordan Brozek, Maddison McConnaughhay, Christine Scanlan, Olivia Straka, Dr. Luana Oliveira-Haas
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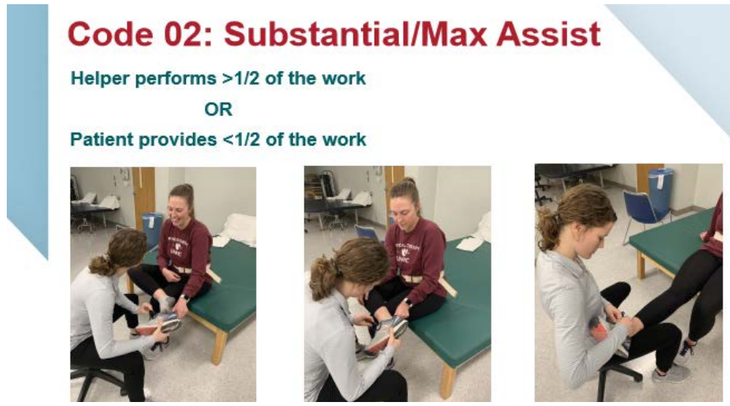

New Outcome Measure in Post-Acute Care: Out with FIM – In with Section GG

Tracking a patient's function is an important part of a physical therapy plan of care. Recently, the Center for Medicare & Medicaid Services mandated a new outcome measure, Section GG, to track patient progress in multiple settings following acute care.

Due to its novelty, Section GG is relatively new to all clinicians (including students) yet is integral in reimbursement within multiple practice settings. Facilitating understanding and adequate implementation of this measure is the primary goal of this content.

> Learning about standardized outcome measures, by nature, lacks excitement. Our interactive module serves to introduce this content in a manner that leads to early understanding and application of the information through videos, patient scenarios, and quizzes in a flipped classroom.

> This formative feedback should improve student performance in the use of the Section GG tool during real patient care in a clinical setting.

While this module is intended to be utilized prior to formal class discussion, it will be easily available to students in preparation for exams and future clinical experiences.

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Progressive Musculoskeletal Case for Clinical Reasoning Development

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Clinical reasoning is one of the most challenging skills for healthcare profession students to master. The ability to synthesize and integrate patient information to establish an appropriate differential diagnosis is essential in providing great patient-centered care.

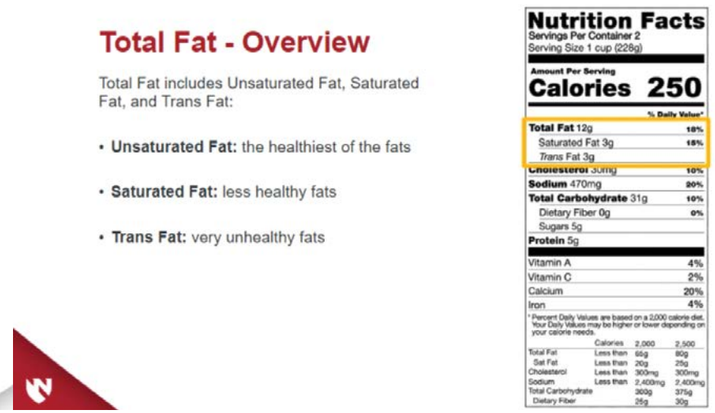
> This module imitates the flow of an actual physical therapy examination and diagnosis, so learners can easily apply and transfer their skills to in-person patient care.

The module allows learners to collect information by reviewing patient intake paperwork, viewing videos, and clicking through various objective findings. As the learner gathers more information, they must use clinical reasoning skills to establish a hypothesis list of possible diagnoses and then eventually narrow this list down to a primary diagnosis. This enables learners to practice the clinical reasoning process at their own pace while moving through an examination that imitates the steps and processes carried out in an actual physical therapy examination.

Learners may use this module as a stand-alone learning activity or as an opportunity to practice the clinical reasoning and differential diagnosis process prior to an in-class discussion. They will be randomized to receive feedback at each step in the process, or delayed feedback at the end of the module. Outcomes will be assessed through a statistical comparison of the learner's primary diagnosis to an expert's primary diagnosis. In addition, learners will fill out a survey indicating how useful they found the module.

Fundamentals of Nutrition

Interprofessional Team and Topic



The lack of healthcare education regarding nutrition is one of many barriers that exist in the provider-patient relationship; moreover, many healthcare providers have expressed a lack in basic nutritional education. This perpetuates myths and misinformation that ultimately decreases the quality of care. In short, many students who become providers feel inadequately prepared to discuss nutrition with patients, and consequently, outcomes decrease.

> This e-module would begin to decrease the gap that exists in provider knowledge by establishing a foundation for nutritional education and literacy for students training to become healthcare professionals.

The e-module utilizes the Nutrition Facts label standardized by the Food and Drug Administration to identify and explain macronutrients. Additional topics include energy and serving sizes. Since the e-module has many interactive components, this will aid in application and understanding. Some interactions include matching questions, entering in values relation to the Nutrition Facts label, and calculating energy requirements.

While the gap in knowledge that exists for many healthcare providers will not be completely filled by this e-module, it is a great place to start. Additionally, by teaching using the Nutrition Facts label standardized by the Food and Drug Administration, we present material in a way that can be easily relayed to patients given the ubiquitous nature of the label. Finally, we have many options and ideas for how to utilize or implement this e-module, including in medical education or residency programs.

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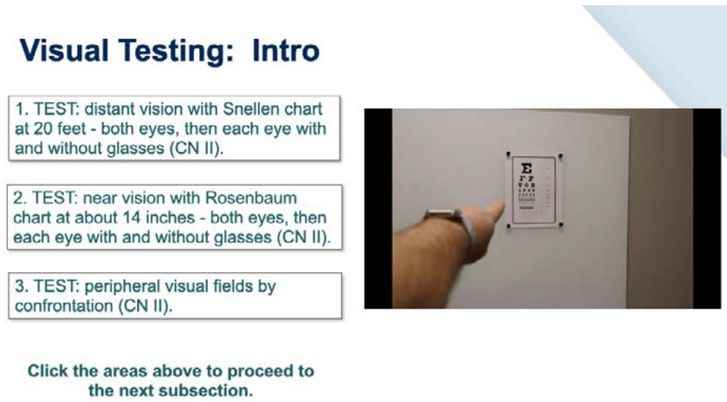
Green Sheet



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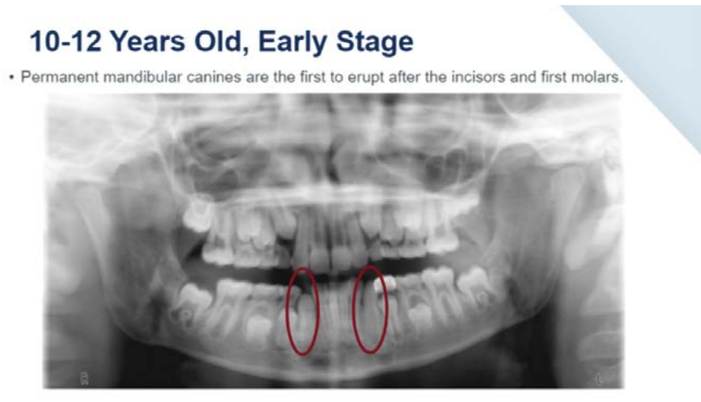
Green Sheet is a full head-to-toe physical exam that is learned and performed during the first year of PA school; these clinical skills are mastered prior to going out on clinical rotations.

> This e-module is a visual and auditory guide to aid students in their learning of the Green Sheet. It provides an interactive way to learn each component of the physical exam that includes how to do it correctly and why it is done in such a way.

By using an interactive e-module to teach students about the different components of the Green Sheet physical exam, it creates an opportunity for hands-on learning that will promote retention of the skills. Using several types of assessments throughout the e-module also facilitates retention and keeps the student on pace to learn the objectives.

The module is intended to be used week to week to learn the skills prior to practicing them in the Clinical Skills Lab. This way, students will learn how to do the skills correctly and the reason for doing each component of the physical exam.

Guess My Age from Dental Radiographs



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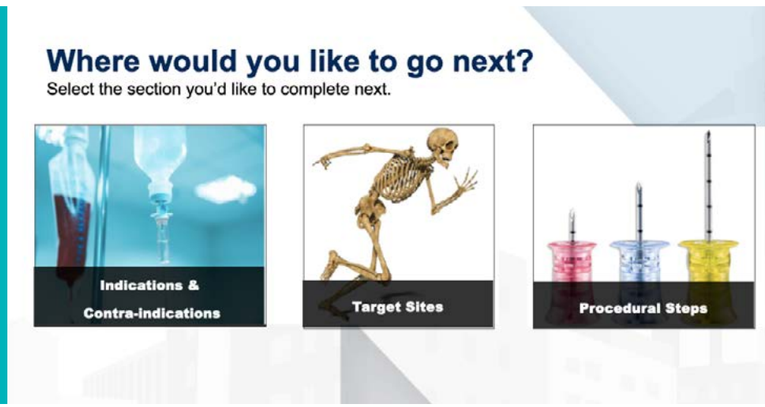
Knowledge of primary and permanent tooth eruption is important to inform the patient of the normal eruption timeline and identify dental anomalies sooner. This topic is typically presented with a timetable flooded with eruption dates for students to memorize. Students may find it overwhelming and hard to retain the information.

> This module will walk the learner through the primary and permanent tooth eruption timeline by utilizing animation, panoramic radiographs, interactive quizzes, and vocal recordings to help with information retention in a time-efficient manner.

In the e-module, students navigate through the panoramic radiographs and eruption charts accompanied by captions and vocal recordings explaining the material. The e-module is divided into primary and permanent dentition groups and utilizes various methods, such as animation, to make it enjoyable for students to remember and enhance engagement. Each section will have a short quiz to ensure the students retain key points. There is also a summative assessment at the end to help the students test their retention. The menu on the left allows students to review whichever part they want to review conveniently.

This e-module will not only increase students' ability to identify tooth number on panoramic radiographs but also master primary and permanent tooth eruption sequence in a time-efficient manner. Students will feel more confident when seeing patients, especially children with primary and mixed dentition with regards to interpreting panoramic radiographs and recognizing any anomalies after going through this module.

Intraosseous Line Placement



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Intraosseous (IO) line placement is an important, rarely used, emergency vascular access procedure. In situations without IV access, or adequate IV access, an IO line can provide the required vascular access for administration of critical medications and fluids.

> This e-module reviews the indications, contraindications, site selection, landmarks and other key components for intraosseous line placement.

It promotes retention of the material through image-based landmark identification and interactive learning components focusing on the four key locations for adult IO line placement used in medical care. Interactive components allow the viewer to see key aspects of the placement and understand how intraosseous line administered medications and fluids return to the systemic venous circulation.

A series of questions at the end of the module will confirm the learners' understanding of the material presented. As well, the format will allow learners to review this material on a mobile device and could be used as a training refresher prior to performing a critical, rarely used procedure.

This module was created with the intention of use for medical student training and has been used in the March 2020 medical student course for IO line training.

Cultural Awareness

Interprofessional Topic

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It is imperative that future healthcare providers are aware of cultural differences, and treat patients the way their patients want to be treated in order to optimize patient/person-centered care. This awareness is also important for interactions with staff, families and friends of relatives, and other colleagues and members of the healthcare team.

> This interactive module will include commonly faced scenarios in the healthcare setting where the importance of cultural awareness will be highlighted (dental examples are used but they would be generalizable to other health professions).

To promote better retention and application of course material, the module is divided into short sections with animations of real-life health care scenarios, and some important definitions and principles for patient communication and management. Interactive components are embedded throughout the module, and knowledge and key concepts will be assessed intermittently for reinforcement and at the end.

The sections will cover concepts of cultural difference, implicit association/bias, assessing situations objectively, using communication skills effectively, decision making to take culturally aware and appropriate actions with practice navigating scenarios.

The project can be used for pre-work for flipped learning or for blended learning. It could also be used for staff and faculty training. Learners will need to assess situations, reflect on their own inclinations and reactions, and think about best practices for patient care.

uBEATS

UNO & UNMC Building Excellence in Academics Through STEM (uBEATS) is series of health science e-modules designed for grades 6 – 12 to enhance existing curriculum and provide advanced information on top of what students learn in the classroom.

uBEATS was made possible by the generous support of the Chancellor's Math & Science Program Fund, the Claire M. Hubbard Foundation, The Elenore Gakemeier Swarts eLearning Fund, and The Sherwood Foundation.

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uBEATS Cohort 5

GRADES 6 – 8: PATHOLOGY & MICROBIOLOGY

Specialized Cells: Sensory Pathways

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PROJECT SUMMARY

What would cause you to lose your sense of smell or sight? This module describes the sensory pathway and how problems along the pathway can cause loss of a particular sense. Users also learn treatment options for various types of blindness.

GRADES 11 – 12: PHARMACOLOGY

Introduction to FDA Approval

PROJECT DEVELOPERS

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PROJECT SUMMARY

You hear a lot about FDA approval, but what does it really mean? This module describes the role of the FDA in the drug approval process, how the agency regulates various types of drugs, and the difference between brand-name and generic drugs.

GRADES 11 – 12: PHARMACOLOGY

Pharmacognosy

PROJECT DEVELOPERS

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2-Time Participant

PROJECT SUMMARY

Natural remedies have become incredibly popular lately, but there are still a lot of questions surrounding them. This module helps the learner recognize that pharmacologic and toxicologic chemicals can be found in nature. It also illustrates that herbals can interact in the body the same way as compounds developed by chemists.

GRADES 11 – 12: PHARMACOLOGY

Individualized Drug Therapy

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PROJECT SUMMARY

Getting the dosage right can be a matter of life and death. This module focuses on factors that influence drug concentrations and types of drug interactions and incompatibilities. It also describes different applications of pharmacogenomics and explains the basis of therapeutic drug monitoring.

GRADES 11 – 12: PHARMACOLOGY

Drug Discovery

PROJECT DEVELOPERS

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PROJECT SUMMARY

Compounds found in nature are at the heart of drug development, and the road to implementation can be long. This module identifies steps of the drug discovery process and the financial costs associated with it.

GRADES 6 – 8: PHARMACOLOGY

Structure & Properties of Matter

PROJECT DEVELOPERS

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PROJECT SUMMARY

How do you distinguish between the physical and chemical properties of pure substances? The module describes the relative positions of particles within solids, liquids, and gases. It also explains how variations in temperature or pressure can cause states of matter to change.

GRADES 11 – 12: PATHOLOGY & MICROBIOLOGY

Mycology

PROJECT DEVELOPERS

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PROJECT SUMMARY

Mushrooms, molds, and yeasts have a much bigger role in the world than you think. This module defines mycology and describe the role of fungi in decomposition. It also lists human diseases caused by fungi.

GRADES 6 – 8: PHARMACOLOGY

Chemical Reactions

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PROJECT SUMMARY

Chemical reactions are how new forms of matter are made. This module highlights the anatomy of a reaction and how energy changes through the course of a reaction.

GRADES 11 – 12: PATHOLOGY & MICROBIOLOGY

History of Medicine/Pathology

PROJECT DEVELOPERS

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UNO Student

PROJECT SUMMARY

How does Ancient Egyptian medicine play a role in the documentation of diseases? This module takes the learner through a journey of discovery that details specific tools that have contributed to the advancements of medical practices through the centuries.

GRADES 11 – 12: PATHOLOGY & MICROBIOLOGY

Bacterial Culture

PROJECT DEVELOPERS

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PROJECT SUMMARY

There are various ways to cultivate bacteria in a laboratory. This module explains the wide-ranging methods, identifies techniques for maintaining a pure culture, and outlines safety concerns regarding the culturing of bacteria.

GRADES 11 – 12: PHARMACOLOGY

Pharmaceutical Compounding

PROJECT DEVELOPERS

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PROJECT SUMMARY

This module discusses what pharmaceutical compounding is and how it compares to drug manufacturing. It also identifies the different dosing forms and the key factors that influence the administration of them.

This publication is produced by Interactive E-Learning at the University of Nebraska Medical Center.

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