



8th International Meeting of the



**ASSOCIATION OF
BIOCHEMISTRY
EDUCATORS**

APRIL 30-MAY 4, 2023

KIAWAH ISLAND RESORT - KIAWAH ISLAND, SC

ABE OFFICERS & COUNCIL

**PRESIDENT**

David Franklin, PhD
Tulane University
franklin@tulane.edu

**PRESIDENT ELECT**

Kimberly Dahlman, PhD
Vanderbilt University SOM
Kim.Dahlman@vumc.edu

**SECRETARY**

Lourdes Estrada, PhD
Vanderbilt University
Lourdes.Estrada@vanderbilt.edu

**TREASURER**

Amina Sadik, PhD
Touro University Nevada COM
asadik@touro.edu

**PAST PRESIDENT**

Jana Simmons, PhD
Michigan State University
simmjana@msu.edu

**COUNCIL MEMBER**

Edgar Diaz-Cruz, PhD
Belmont University
Edgar.diaz-cruz@belmont.edu

**COUNCIL MEMBER**

Kathryn Eisenmann, PhD
University of Toledo COM
Kathryn.eisenmann@utoledo.edu

**COUNCIL MEMBER**

Sheri Fong, PhD
John A. Burns SOM / Univ. of Hawaii
sheriff@hawaii.edu

**COUNCIL MEMBER**

Pasquale Manzerra, PhD
Sanford SOM, University of
South Dakota
Pat.manzerra@usd.edu

**COUNCIL MEMBER**

Chante Richardson, PhD
Alabama College of
Osteopathic Medicine
crichardson@acom.edu

**COUNCIL MEMBER**

Doug Spicer, PhD
University of New England
dspicer@une.edu

**EXECUTIVE MANAGER**

Karen Gottlieb, CMP
TLC Events Group
karen@abiochemed.org

SPECIAL THANKS TO OUR SPONSORS



PRESIDENT'S WELCOME

Dear Colleagues and Friends,

Welcome to the 8th International Meeting of the Association of Biochemistry Educators!

We are so glad you could all be here with us at Kiawah Island Resort in Kiawah Island, South Carolina. This is our first in person meeting since 2019, and we are thrilled to be back and looking forward to reconnecting with everyone again. We hope that the return of networking at the annual meeting will energize ABE members and guests for future collaborations among clinicians, scientists, and educators.

In addition to our exciting scientific program, there are plenty of recreational activities here at the resort. We encourage you to find a colleague or two and make some fun memories together in your free time.

We hope if you are not a member that you will take this opportunity to officially join our ABE family, and we are delighted to have everyone here with us this week. Welcome to Kiawah Island!

David Franklin, PhD

President, ABE

CONFERENCE AGENDA

SUNDAY, APRIL 30 **Note: All ABE sessions take place in the West Beach Conference Center*

All Day

Main Arrivals / Explore Kiawah Island Resort

on your own

8:00 am – 12:00 pm

ABE Board Meeting I

Oleander

3:00 pm – 6:00 pm

Registration Desk open

West Beach Lobby

6:00 pm – 8:00 pm

WELCOME RECEPTION

West Beach Pool

8:00 pm – 9:00 pm


Opening Remarks

Carolina 1/2






CONFERENCE AGENDA

MONDAY, MAY 1

7:00 am – 8:00 am	COFFEE & Poster Viewing / “Meet the Educators” roundtables	Carolina 6
7:00 am – 8:00 am	ABE Business Meeting	Carolina 1/2
8:00 am – 10:30 am	JUSTICE, EQUITY, DIVERSITY & INCLUSION (JEDI) SESSION	Carolina 1/2
 8:00	Introducing a Catalyst for Transformation, Yielding New Futures: The JEDI Mandate for STEM Educators David Robinson-Morris <i>Founder & Chief Reimaginelutionary</i> <i>The REImaginelution, LLC</i>	
9:00	Plenary Workshop with David Robinson-Morris The JEDI Mandate for STEM Educators: Synthesizing our Understanding and Exploring the “How”	
10:30 am – 10:45 am	COFFEE BREAK	WBCC Lobby
10:45 am – 11:45 am	JEDI EDGr SESSION Advancing Diversity, Equity, Inclusion and Justice in Biochemistry Education Chante Richardson, Edgar Diaz-Cruz, Jaya Yodh, Tracy Fulton	
11:45 am – 1:00 pm	LUNCH (included for all attendees)	Carolina 6
1:00 pm – 2:30 pm	BREAKOUT WORKSHOPS	
1:00	Collaborative Teaching Session Linking Clinical Presentations to their Underlying Biochemistry: A Novel ABE Clinical-Biochemistry Curricular Thread Mapping Educational Tool <i>Jaya Yodh, Emine Abali, James Baleja, Gergana Deevska, Zeynep Gromley, Mariluz Henshaw, Vivek Joshi, Aditi Kesari, Sireesha Mamillapalli, Mark Metzstein, Lawrence Myers, Raquel Ritchie, Doug Spicer, Asma Zaidi.</i>	Carolina 1
1:00	JEDI Breakout Session Integrating Antiracism, Equity, Diversity and Inclusion (AEDI) Across Health Science <i>Lourdes Estrada, Kim Dahlman, Neil Osheroff</i>	Carolina 2
2:30 pm – 3:30 pm	EDUCATIONAL SCHOLARSHIP BREAKOUTS	
2:30	Who Are We? Professional Identity Formation of Basic Science Educators <i>Kim Dahlman, Tracy Fulton, Katherine Hyland, Bonny Dickinson, Neil Osheroff, Aviad Haramati, Kelly Quesnelle</i>	Carolina 1
2:30	Activate Students’ Learning Outcomes <i>Bei Zhang</i>	Carolina 2
3:30 pm – 4:00 pm	COFFEE BREAK & Group Photo	WBCC Lawn
4:00 pm – 5:30 pm	CONTENT DEVELOPMENT WORKSHOP Game-Based Learning to Enhance Cognitive Integration and Value-Based Ordering of Lab Tests: “Metabolic Mayhem!” <i>Tina Cowan, Janet Lindsley, Mark Metzstein</i>	Carolina 1/2

CONFERENCE AGENDA

TUESDAY, MAY 2

7:00 am – 8:00 am	COFFEE & Poster Viewing / “Meet the Educators” roundtables	Carolina 6
8:00 am – 8:30 am	AMGDB President Talk Carolina 1/2 <i>Penelope Duerksen-Hughes, Loma Linda University</i>	
8:30 am – 10:30 am	COLLABORATIVE TEACHING SESSION Carolina 1/2 Teaching: It Takes a Village Mark Korson, MD <i>Director of Physician Support Service and Director of Education VMP Genetics</i>	
 8:30	9:30 Plenary Workshop with Mark Korson Brainstorming: Ideas for Understanding Biochemistry	
10:30 am – 10:45 am	COFFEE BREAK	WBCC Lobby
10:45 am – 11:45 am	COLLABORATIVE LEARNING EDGr SESSION Carolina 1/2 Self-Directed Learning to Accomplish Self-Directed Learning: The Challenge of Meeting LCME Accreditation Standard 6 Element 6.3 <i>Susan Cline, Bonny Dickinson, James Knapp</i>	
11:45 am – 1:00 pm	LUNCH (included for all attendees)	Carolina 6
1:00 pm – 2:30 pm	CONTENT DEVELOPMENT WORKSHOP Carolina 1 Escape! From Biochemistry – Designing Escape Rooms for Active and Engaging Review Sessions <i>Kathryn Eisenmann</i>	
2:30 pm – 3:30 pm	ABE Committee Meetings (as needed)	Carolina 1/2
3:30 pm – 8:00 pm	FREE TIME / Dinner on your own	
8:00 pm – 10:00 pm	POSTER SESSION	Carolina 6
8:00 pm – 8:30 pm	 Presentation	Carolina 1/2
8:30 pm – 9:00 pm	 Presentation	Carolina 1/2




Share your photos with us!

Scan to view & upload to the ABE 2023 Meeting album

CONFERENCE AGENDA

WEDNESDAY, MAY 3

7:00 am – 8:00 am	COFFEE & Poster Viewing / “Meet the Educators” roundtables	Carolina 6
8:00 am – 10:30 am	WELL-BEING AND RESILIENCE PLENARY SESSION	Carolina 1/2
 8:00	Fostering Well-Being in the Learning Environment: The Imperative for Medical Educators Aviad Haramati, PhD Georgetown University	
9:00	Plenary Workshop with Aviad Haramati An Experiential Introduction to Mind-Body Medicine: Tools to Reduce Stress and Boost Resilience	
10:30 am – 10:45 am	COFFEE BREAK	WBCC Lobby
10:45 am – 11:45 am	EDUCATIONAL SCHOLARSHIP BREAKOUT SESSIONS	
10:45	Nutrition Integration in Medical Curricula: More than One Way to Bake a Cake Jana Simmons, Jesse Bakke, Tameka Clemons, David Franklin, Charles Scott	Carolina 1
10:45	USMLE Step 1 and COMLEX-USA Level 1 Have Changed to Pass/Fail – How Are We Adapting? Sheri Fong, Gergana Deevska	Carolina 2
11:45 am – 1:00 pm	LUNCH (included for all attendees)	Carolina 6
1:00 pm – 2:30 pm	BREAKOUT WORKSHOP SESSIONS	
1:00	JEDI: Bringing Gender and Sex Equity and Inclusivity Into Your Classroom: A Framework for Medical Educators Tracy Fulton, Katherine Hyland, Allison Gomez, Matthew Ryan	Carolina 1
1:00	Educational Scholarship: From Feedback to Feedback(+): How to Make Giving Feedback Easier and More Effective Sheri Fong, Tameka Clemons	Carolina 2
2:30 pm – 2:45 pm	COFFEE BREAK	WBCC Lobby
2:45 pm – 4:15 pm	COLLABORATIVE TEACHING WORKSHOP Getting to Clerkship and Beyond: Crafting Biochemistry Learning Objectives that Connect and Integrate Basic Science Concepts with Clinical Application Doug Spicer, Emine Abali, James Baleja, Judith Binstock, Martha Faner, Sheri Fong, Tracy Fulton, Zeynep Gromley, Vivek Joshi, Aditi Kesari, Renee LeClair, Pasquale Manzerra, Mariluz Henshaw, Lawrence Myers, Raquel Ritchie, Jaya Yodh, Bei Zhang.	Carolina 1/2

CONFERENCE AGENDA

WEDNESDAY, MAY 3

4:15 pm – 5:15 pm	POSTER SHORT TALKS P15 – Faculty as Dungeon Masters: Their Role in the Biochemistry Classroom - <i>David Pearson</i> P16 – Usage of a Highly Interactive Metabolic Map for Learning Medical Biochemistry - <i>Jessica Kroner</i> P18 – Longitudinal Integration of Medical Biochemistry in a Spiral Phase-1 medical Curriculum Can Lead to Significant Improvement in Student Interest in the Subject - <i>Anamika Sengupta</i> P19 – Study Skills Training and Success of Dental Students in First-Year Basic Science Courses – <i>Kate Carnevale</i>	Carolina 1/2
4:15 – 5:15	ABE Board Meeting II (old & new members)	Oleander

6:00 pm – 7:00 pm	Joint Cocktail Reception with APHMG	West Beach Pool
7:00 pm – 8:00 pm	ABE Group Dinner (ABE only) <i>Kiawah shuttles will be available for transfer to Mingo Point.</i> <i>*Outdoor location – you may want to bring a light jacket</i>	Mingo Point*

THURSDAY, MAY 4

7:00 am – 8:00 am	COFFEE & Poster Viewing / “Meet the Educators” roundtables	Carolina 6
8:00 am – 9:30 am	POSTER SHORT TALKS P13 – Making the Electron Transport Chain and Oxidative Phosphorylation Cool Again: Case Simulation in a First-Year Medical School Biochemistry Course – <i>Renee Chosed</i> P14 – Simulation in Education Using a Virtual World (Metaverse): Supplemental Educational Platform Students Using Gather® - <i>Marsha Cole</i> P17 – Ethics Assignments in Biochemistry – <i>Nina Ronkainen</i> P20 – ChatGPT: Your Biochemistry Teaching Assistant and More? – <i>Aditi Kesari</i> P21 – UX Design Approach for Leveraging Digital Course Materials – <i>Kendra Oliver</i> P22 – Creating an Inclusive Biochemistry Learning Environment – <i>Edgar Diaz-Cruz</i>	Carolina 1/2
9:30 am – 11:00 am	CONTENT DEVELOPMENT WORKSHOP SESSION Another Brick in the Wall: A New ABE Initiative to Build Curricular Resources Using the ScholarRx Bricks Web Interface <i>Doug Spicer, James Baleja, Peter Huwe, David Pearson, Raquel Ritchie, Stephen Sharkady, Vanessa De La Rosa, Jaya Yodh.</i>	Carolina 1/2
11:00 am – 11:15 am	Announcement of 2025 Conference & Adjourn	Carolina ½

Safe travels home!

ABSTRACTS

P1 Incorporating 3D-Printer Models in TBL Applications to Enhance Learning

Edward Merino, PhD; Hany Ibrahim, MD; Tan Dexter
California Health Science University, Clovis, CA

Introduction: Academic fields of study that engage with artifacts, cellular and anatomical structures can benefit from 3D printing technologies. 3D models offer innovative ways to engage with content to foster retention and learners' engagement.

Methods: We provide an example of an application exercise custom designed for a system-based first year course. This application exercise is based on Team Based Learning (TBL), the approach currently used in our Institution. We provide an example of the following TBL components: Learning objective, selected pre-work material, and a cell-biology focused application exercise demonstrating the use of a 3D model to give students new learning perspectives.

Results: TBL application exercises provide a unique opportunity to incorporate 3D-printed models using real-life scenarios to create engaging hands-on learning experiences.

Discussion: Integrating 3D-printed models in application exercises provides a unique opportunity for hands-on learning experiences that enhances the critical-thinking skills of students and foster their understanding of the cell structure and composition of its proteins. Additionally, it provides an opportunity to visualize the components of the cell which fosters students' retention

P2 Student Perceptions of Food Access Project in Elective Nutrition Course

Jana M Simmons, PhD
Michigan State University College of Human Medicine, Grand Rapids, MI

Purpose: Nutrition is a contributor to health including prevention and treatment of disease. Since 1985, Nutrition has been a recommended part of medical education and recently, the need for improvements has been recognized at a national level. Food access is an important component of public health and reducing health disparities, yet, its inclusion as a topic in medical nutrition education is rare and is almost completely absent from medical education literature. Here, I report on a food access project in an elective nutrition course for pre-clerkship medical students at MSU CHM.

Methods: This assignment is part of a medical nutrition elective course offered annually since 2017. Student groups are assigned a food source and tasked with meal planning and conducting a shopping trip for a hypothetical family of four. They must construct a written report and present it to their peers consisting of their proposed shopping list based on their meal plan, food available at their assigned source, nutritional analysis based on choosemyplate.gov, and a cost analysis including transportation.

Results: A total of 226 students have participated in this elective over 6 years with enrollments ranging from a low of 19 students in 2020 to a high of 70 students in 2019. Over the 5 years that evaluation data was collected on this class project specifically, 61 percent of respondents rated the activity as "very effective" or "extremely effective" (4 or 5 on a Likert scale) with a 67% response rate. Expectedly, narrative feedback ranged from strongly positive to critical.

Conclusion: While topics like nutrition and food access are important in the education of future physicians and are recognized nationally as critical for the betterment of public health, they garner limited interest from students who often express a desire for content they perceive relevant for the USMLE Step 1 exam.

P3 Evaluation of Nutrition Education on Osteopathic Medical Students' Personal and Career Choices

Amanda Parker
William Carey University College of Osteopathic Medicine, Hattiesburg, MS

Purpose: Our current research project evaluates the impact of nutrition education on the medical student's personal nutrition goals and likelihood of incorporating nutrition needs in patient evaluation and treatment plans in future practice.

Background: The growing popularity of lifestyle medicine has further emphasized the importance of nutrition in the treatment of all patients, especially those suffering from chronic diseases. The paucity of formal medical nutrition education in medical school curricula leaves a significant gap in the knowledge base of physicians in practice. In an attempt to close the gap, we increased the nutrition education in first year osteopathic medical students by establishing a nutrition course emphasizing modern competencies and importance in clinical practice.

Methods: Current data collected utilized a quasi-experimental pre-test/post-test study design, student satisfaction and course surveys, and participation rates within a voluntary interest group to assess whether specific aims were met. The quasi-experimental pre-test/post-test survey were given to medical students prior to beginning the mandatory nutrition course and at completion of the course. At the implementation of the nutrition and lifestyle medicine course this year, current second year medical students that were not exposed to the nutrition course within the curriculum were exposed to the pre-test/post-test to serve as a control group. The intervention group for the first survey completion was composed of first year osteopathic medical students enrolled in the mandatory nutrition course.

Results: Data analysis revealed students exposed to the nutrition course noted that medical school positively affected personal fitness/health goals suggesting that the mandatory nutrition and lifestyle medicine course positively affected the medical student's readiness to engage in behavioral change around personal nutrition goals. In addition, students exposed to the medical nutrition course noted an increase in the level at which proper nutrition for patient care had been addressed in coursework. This suggests that medical students exposed to the medical nutrition course have been exposed to more training that is critical in proper patient care. Students also noted an increase in the belief that proper nutrition can be used to prevent disease. Lastly, a noted increase in students interested in exploring residency programs with a focus on culinary medicine.

Conclusion: Analysis of research data verified that the mandatory first year nutrition course had a positive effect on the medical student's personal nutrition and plans to incorporate nutrition into future medical practice.

ABSTRACTS

P4 Formative Assessment Technology for Healthcare Student Learning in the Didactic Years

David Harrison

Rosalind Franklin University, North Chicago, IL

Web-based quizzing software to enhance the formative assessment capabilities at Rosalind Franklin University has been built. This web-based software delivers quizzes that consist of multiple-choice questions to students who are allowed to select possible answers for each question until they arrive at the correct answer. The score they receive is proportional to the number of distractors that remain. A summary of how this technology appears to both students and faculty will be presented. This Immediate Feedback Assessment Technique (IF-AT) for quizzing has been shown to help students retain information longer than conventional quizzing techniques. Future scholarship will address if this technology can be used to enhance student learning outcomes. If there is interest, there are plans to make the web-based IF-AT quizzing technology more broadly available.

P5 Effects of Supplemental High-Yield Fact Sheets and Conceptual Question Guides on Student Performance and Satisfaction in a Preclinical Medical School Block

Daniel Webster

Texas Tech University Health Science Center, Lubbock, TX

Research Question: We wished to determine if the use of faculty-vetted fact sheets and question sets would improve student exam performance and resource satisfaction, and to what extent Myers-Briggs personality types contributed to student success.

Background: The second block of the medical school pre-clinical curriculum, General Principles (GPX), consists of three units emphasizing topics in biochemistry, cell biology, and microbiology. Historically, student exam performance in the first two units has been low. To increase performance, I designed supplemental resources consisting of High-Yield Fact Sheets (HYFS) and Conceptual Questions Guides (CQG). The Myers-Briggs Type Indicator is a dimensional personality assessment that details personal preferences in the learning process. The most important predictor for success on multiple-choice examinations is the Sensing vs Intuitive dimension. Sensing students prefer detail-oriented learning while Intuitive types prefer conceptual and relationship-based learning.

Methods: A needs analysis pre-survey was conducted, and HYFS and CQG resources were created for each unit of GPX. After every exam, an anonymous survey was conducted in which students self-reported their learning types, resource satisfaction, exam scores, and likelihood of future resource use.

Results: The needs analysis revealed that past GPX students believed HYFS and CQG resources would be helpful. Data demonstrated that the use of the HYFS and CQG resources did improve student exam performance as compared to class averages. Students also reported high degrees of resources satisfaction. Myers-Briggs personality typing played a role in exam performance as Intuitive respondents averaged higher scores than Sensing counterparts across all three GPX exams.

Conclusion: Feedback was extremely positive regarding created resources, and students expressed that similar resources should be created for future blocks. Student success is not dictated by learning type, but results suggest learning type should be considered when evaluating student study strategies and methods of exam preparation in the pre-clinical curriculum.

P6 Content that Learners Digest: Seeking Transformative Design in Medical Biochemistry Instruction

Michael B. Wells, PhD

Idaho College of Osteopathic Medicine, Meridian, ID

PURPOSE: Entering medical biochemistry education in July 2020, during the COVID-19 pandemic, impacted my transition to becoming a large class instruction facilitator. Three key issues in providing a systems-based curriculum in undergraduate medical education where most sessions are non-mandatory and delivered both in-person and online are: learners enter with different educational histories, facilitating student efforts to connect related concepts discussed months apart in class, and increasing learner content accessibility in response to "triage" ignorance of 1-2 biochemistry hours within a 60- to 80-hour course. This work aims to improve biochemistry, and overall, instruction and assessment utility to post-secondary and medical school learners, with a focus on early-career educators.

BACKGROUND: Narrative-style searching of post-secondary and medical education literature was conducted using these query terms: alignment, assessment, attendance, accountability, attention span, instructional design, content delivery, peer instruction, problem-based learning, spiral integration, and knowledge application.

METHODS: Using common themes identified from the literature, the following approaches were designed to improve lecture utility for learners upon return to the classroom: study tips guide, remedial readings and problem sets provided upon matriculation, keyword terminology lists, concepts study guide slides, "brain warm-up" review exercises, "big picture" section introduction slides, short section timing, increased focus on "clinical correlations", "muddiest point" anonymous form post-session, provision of additional practice problems, alignment guides relating concepts to session objectives and assessment items, and a pre-/post-course formative quiz scheme. A flipped classroom/jigsaw-type peer teaching, problem-based learning approach was applied to improve learner comprehension of biochemical digestion and absorption of dietary biomolecules.

RESULTS: Overall, exam item performance has remained steady or improved slightly, with better performing students seeing gains since introduction. Student evaluation performance remains similar. Underperforming students largely continue to struggle.

DISCUSSION/CONCLUSIONS: The diverse educational backgrounds and expectations of learners translated to broad acceptance of these session measures. Interestingly, struggling learners noted appreciation for the well-designed sessions, but suggested they learn best using different methods. Three areas of future focus are: (1) leveling the differences in learner exposure to different classroom session styles through instruction and individual consultation; (2) resolving conflicting information in student evaluations using educational literature related to student learning motivations; and (3) increased focus on learner accountability through additional application of jigsaw-like peer instruction techniques.

ABSTRACTS

P7 The Effect of Online Class Delivery on Academic Performance in a Pre-Clerkship Curriculum

Andreas Seyfang

University of South Florida - Morsani College of Medicine, Department of Molecular Medicine, Tampa, FL

PURPOSE: During the COVID-19 pandemic in Academic Year 2020-21, the pre-clerkship curriculum of the USF medical school curriculum switched to online class delivery via live streaming by Microsoft Teams. The purpose of this study was to investigate how this affected the academic performance in the first course of a medical school curriculum compared with previous and subsequent in-person course delivery.

METHODS: Academic performance of the 8-week Course 1 "Cancer Biology & Core Principles of Medical Sciences" in Fall 2020 as an online course was compared to face-to-face in-person class delivery in Fall 2019 and 2021 again. The material and lectures had remained identical for the online course delivery in 2020.

RESULTS: The class average for the online delivery in 2020 (mean 87.2%, SD 6.7%) remained within the same range compared to the in-person delivery in 2019 (mean 88.0%, SD 6.0%) and 2021 (mean 87.9%, SD 6.3%). However, a larger tail of lower performing students was observed for the online delivery in 2020 compared to the face-to-face course deliveries.

CONCLUSIONS: The overall academic performance was not affected by online course delivery during the COVID-19 pandemic in 2020, however less opportunities for in-person social interactions in this first course of the medical school curriculum may have affected more the lower performing students as indicated by a larger tail of lower performing students for the online course delivery.

P8 Comparative Study of Medical Student Research and Residency Match Data Between the United States Medical Schools and USC SOM Greenville

Anna V. Blenda, Renee J. Chosed

University of South Carolina School of Medicine Greenville, SC

PURPOSE With Step 1 exam scoring changing to Pass/Fail in 2022, there are growing expectations for medical students to distinguish themselves before residency match in other areas of their performance, including involvement in research activities and volunteering. The purpose of this study is to delineate the latest trends and specifics of the medical student research activities using combined data for the last three years for the United States medical schools and compare those to the USC SOM Greenville.

BACKGROUND Previous study by Eldeeb and Dogbey (Oral Presentations Abstracts, 26th Annual Meeting of the International Association of Medical Science Educators, Medical Science Educator, 2023) analyzed national data from the secondary database of the Program Director Surveys published by the National Resident Matching Program for 2018, 2019 and 2020. It reviewed the importance of student involvement in research among other factors, from residency program directors' perspectives in the selection of applicants for interview and subsequent ranking for residency match. In the last several years, The USC SOM Greenville has recently developed and implemented a highly successful program for medical student research, especially during summer after their M1 year (SOARinG). However, comprehensive analysis of the school's medical students' research outcome and its effect on the residency match has not been done.

METHODS We propose further analysis of national data from the secondary database of the Program Director Surveys published by the National Resident Matching Program to include more recent data (2020-2022). One of the goals is to analyze the emerging trends in medical student research and residency match with the change to Pass/Fail scoring of the Step 1 exam. Another objective is to compare the medical research data for USC SOM Greenville to the national data.

DISCUSSION The 2018-2020 national study found that there is a wide variation among specialties in the amount of research involvement for selecting applicant for the match. This proposal aims to analyze latest trends in those specialty-related variations in student research engagements on the national level in general and using an example of one medical school (USC SOM Greenville) in particular. The ultimate goal is to provide evidence-based career counseling to medical student researchers.

P9 A Review of Lactic Acidosis In Commonly Used Learning Resources

Peter Huwe

Mercer University, Macon, GA

Purpose: To determine the quality of lactic acidosis teaching in textbooks and other learning resources.

Background: Biochemistry teachers and textbooks often mistake the direct source of protons in lactic acidosis. A pervasive false narrative exists that anaerobic glycolysis produces lactic acid which subsequently dissociates into lactate + a proton. Biochemists and physiologists have long known, however, that this description of lactate acidosis is not wholly correct.

Methods: We performed a review of over 40 different textbooks and learning resources to assess the quality of their explanations for the source of protons in lactic acidosis.

Results: Many of learning resources did not specify the source of protons in lactic acidosis. Among those that did specify the mechanistic source of protons, the vast majority stated the process incorrectly.

Conclusions: Most medical biochemistry textbooks and learning resources could benefit by revising their descriptions of proton production in lactic acidosis.

ABSTRACTS

P10 Short-Term, Mentored Training with Basic Science Research Literature Advances Pre-Clerkship Medical Students' Skills in Master Adaptive Learning

Steve A. Maxwell^a, Robin Fuchs-Young^a, Gregg B. Wells^a, Geoffrey M. Kapler^a, Sheila Green^b, Catherine Pepper^b, Barbara Gastel^c, David P. Huston^d

^aDepartment of Cell Biology and Genetics, Texas A&M University School of Medicine; ^bMedical Sciences Library, Texas A&M University, ^cDepartment of Veterinary Integrative Biosciences and Department of Humanities in Medicine, Texas A&M University; ^dDepartment of Microbial Pathogenesis and Immunology and Clinical Science & Translational Research Institute, Texas A&M University School of Medicine

Purpose & Background. A challenge for physicians is to improve patient care by critically assessing new approaches for prevention, diagnosis, prognosis, and treatment. Unlike routine clinical cases for which a physician already has the knowledge and skills to respond rapidly, some cases require the adaptive expertise and innovative thinking of a master adaptive learner, who engages expert, self-directed, self-regulated, and lifelong workplace learning⁽¹⁻⁴⁾. Physicians can improve patient care in these exceptional cases by critically applying new or emerging approaches arising from current research for disease prevention, diagnosis, prognosis, and treatment^(5,6). Therefore, they need to find and assess basic science research articles that can shape new approaches to patient care, and be able to explain these approaches to patients, colleagues, and trainees. To prepare for these responsibilities and complement evidence-based medicine methods, we developed the Medical Student Grand Rounds Course (MSGR) to develop adaptive learning skills in first-year medical students for finding, critically assessing, synthesizing, and translating clinically relevant basic research literature⁽⁷⁾.

Methods. With mentoring and grading by research-oriented faculty members, students completed these 8 milestones within a 19.5 weeks' time frame: 1) train how to search research literature databases; 2) choose a clinical problem topic using these searching skills; 3) outline the significance and background of the clinical topic; 4) review recent mechanistic research literature and outline a presentation topic; 5) attend faculty presentations at translational research-oriented grand rounds; 6) learn to prepare and give an oral presentation; 7) write a presentation abstract; and 8) present at Grand Rounds Day, with emphasis on the primary research literature of the clinical topic.

Results. End-of-course evaluations by both basic science mentors and students, and deductive and inductive qualitative analyses of student self-reflections surveys, indicated that students became proficient in interpreting research articles, preparing and delivering presentations, understanding links among basic and translational research and clinical applications, and pursuing self-directed learning.

Student reflections indicated that they enjoyed exploring and presenting research topics and thought the milestone organization was effective. They appreciated having frequent interactions with mentors.

Discussion/Conclusions. Basic science faculty mentoring helped students develop adaptive learning skills for synthesizing ideas from basic research literature and translating them into potential clinical applications. MSGR encourages life-long learning by showing students how to access and assess topic-specific basic research literature. MSGR's successful delivery in this format to more than 1000 students across 7 years supports its generalizability to other suitably equipped environments.

P11 Association of Biochemistry Educators Professional Development Committee: Overview

Emine Ercikan Abali, Tameka Clemons, Trevor Creamer, Kim Dahlman, Gergana Deevska, Martha Faner, Sheri F.T. Fong, [Vasudeva Kamath](#), Neil Osheroff

The Professional Development Committee (PDC) of the Association of Biochemistry Educators (ABE) has been in existence since 2019. The PDC fulfills one of the missions of ABE by providing its members with opportunities to support their professional development as curricular leaders, master teachers and assessors, effective mentors, and educational scholars. The ABE PDC has developed several initiatives toward this goal:

- The Committee has launched and successfully offered a "Catalyzing Your Academic Growth" webinar series for ABE members and other academic professionals. So far, there have been nine webinars on the themes of medical education scholarship, teaching and learning, and leadership and growth. Past webinars can be viewed on the ABE website. Feedback from attendees indicates that these webinars were well received.
- The ABE Professional Mentoring Initiative (PMI) facilitates one-on-one longitudinal connections for mentors to share their expertise to help mentees achieve their goals. It also promotes networking within the medical/dental/pharmacy education community. The PDC will organize and encourage breakfast roundtable discussions to promote new mentor and mentee relationships at the 2023 conference.
- The Committee will continue to engage the ABE community in professional development by presenting multiple sessions at the biannual ABE conference 2023.
- The Committee fosters collaboration with other ABE committees, including the Education Resource Development Committee (ERDC) and the Justice Equity Diversity and Inclusion Committee (JEDI). A collaborative JEDI-PDC webinar series is planned for Fall 2023. Future webinar themes will continue to promote the ABE PDC charge and expand the webinar series as a forum for other committees.

Our initiatives aim to provide essential information, key resources, and longitudinal support for ABE members to pursue their individual career aspirations.

P12 Dirty Deeds Done Dirt Cheap: Results from the ABE Communications Development Committee Membership Survey

Charles Scott, Renee LeClair, Erika Cretton-Scott, [Adam Morrow](#) (Chair)

The ABE Communications Development Committee (ACDC) was created in 2022 to communicate ABE events, resources, opportunities, and content on the ABE website, social media platforms, and the ABE newsletter to further the ABE mission. In the fall of 2022, ACDC wrote and disseminated a fifteen-question survey to the ABE membership in order to formulate a communications strategy that is most responsive to membership needs and priorities. 79 members completed the survey, and an additional 57 members completed at least part (136 total responses). Our results indicate that 75% of ABE members are very likely to renew their membership, that 79% are very likely to attend the ABE meeting or are already registered and that a majority (73%) are receptive to learning about resources that are available through ABE. Short answer questions revealed networking and professional development as the most significant reasons why respondents joined ABE. Most respondents were likely to recommend ABE membership to colleagues. Most respondents visit the ABE website infrequently, but most would be interested in receiving ABE-related content monthly. Respondents offered a breadth of suggestions for interactive content on the website, and almost everyone expressed interest in having access to content and resources created by ABE meeting speakers and to serving as peer reviewers for teaching resources. Respondents expressed interest in a wide range of teaching resources, and offered numerous, thoughtful suggestions for how ABE could provide more value and support for our members. Based on this feedback, ACDC will continue publishing the ABE newsletter, revamp the member of the month feature on the website, and update and advertise ABE website features that the survey suggests are of interest to members but that may be unfamiliar to respondents (such as Member Publications, the Collaboration Network, the ABE Professional Mentoring Network, MCQ banks and interactive teaching resources). We will also create a Forum page linked from the ABE Committees page so that members can access the complete survey results.

ABSTRACTS

P13 Making the Electron Transport Chain and Oxidative Phosphorylation Cool Again: Case Simulation in a First-Year Medical School Biochemistry Course

Renee J. Chosed¹, Sarah Farris² and Ann Blair Kennedy¹

¹Dept. of Biomedical Sciences, University of South Carolina School of Medicine, Greenville, SC

²Dept. of Emergency Medicine, Prisma Health, Greenville, SC

Purpose: To bring case simulation into the first-year biochemistry course and assess whether student learning outcomes are enhanced by inclusion of this active learning activity.

Background: Simulation is often used in pre-clerkship medical education to teach clinical skills. Pre-clerkship students expect clinical relevance to be emphasized, which can be difficult with the delivery of basic science content. We report the inclusion of a case simulation within a session on electron transport and oxidative phosphorylation.

Methods: In 2019 and 2022, an aspirin overdose case simulation was introduced at the start of a foundational sciences session with basic science content reviewed between the case presentation and resolution. These sessions are compared to sessions in 2018 and 2021 where no simulation was included. Student performance on five selected summative quiz/exam questions covering the session-specific biochemistry content was collected from simulation (2019 and 2022) and non-simulation (2018 and 2021) years. Students completed an end-of-class evaluation survey following the sessions in 2019 and 2022. Descriptive and analytic quantitative analysis was performed using SPSS v 28; Atlas.ti was used for qualitative analysis of open-ended survey questions. Chi-square analysis was used to determine student performance on exam question differences between simulation and non-simulation years.

Results: Nearly all of the students, 100% in 2019 and 94.3% in 2022, rated the case simulation as Very Good or Excellent; and three themes emerged including clinical relevance and applicability, enhancement and evidence of learning, and positive feedback. Student performance on specific exam and quiz items yielded mixed results. The point biserial ranged from a minimum of 0.14 to a maximum of 0.9 with a mean of 0.42, sd 0.21. Two of the five questions showed a statistically significant higher proportion of students who had the simulation correctly answered the question compared to the non-simulation students. One question yielded a statistically significant higher proportion of students in the non-simulation classes correctly answered the question and two questions did not show a statistically significant difference between simulation versus no simulation years.

Conclusions: Students' opinion on the inclusion of case simulation in a foundational sciences session was overwhelmingly positive and students appreciated the clinical applicability of this active learning component. However, student performance on specific assessment items was not always linked with the years where the simulation was included. Overall, the addition of case simulation within pre-clerkship foundational science sessions provides an active learning component to enhance clinical relevance that is well-received by students.

P14 Simulation in Education Using a Virtual World (Metaverse): Supplemental Educational Platform Students Using Gather®

Marsha P. Cole, PhD^{1,2}, Breacya Washington, DMD², Cynthia Crabtree, DO¹, Katie L. Canalichio, MD¹ and Mohiuddin Hadi, MD¹

¹University of Louisville, School of Medicine, Louisville, KY

²University of Louisville, School of Dentistry, Louisville, KY

Professional students enter and begin Medical and Dental Programs with diverse educational backgrounds and learning experiences. Variations in studying and preparatory skills result in assorted methods for mastering material to achieve success with class assignments and subsequent board exams.

The objective of this study was to disseminate the outcomes and develop a virtual learning experience to augment the current first year dental student (D1) educational curricula.

A pre-implementation survey was distributed to current D1s to ascertain their learning preferences and to introduce an idea of a virtual learning space, otherwise called a supplemental educational platform (SEP). Participation was voluntary for observational purposes and results were de-identified. This virtual educational platform experience was evaluated by a post-experience-survey implementing Microsoft forms anonymously. An anonymous survey was also incorporated into the virtual space, given the technical capabilities of the platform rather than distributing it separately. D1s voluntarily utilized the SEP experience asynchronously. Educational components of the framework model were established on the platform Gather®. Participants created an avatar and had the opportunity to explore, interact with educational objects, and have full video conferencing capabilities with one another. One topic, the trigeminal nerve, was introduced on the platform with options to reiterate relevant information consisting of a large library with exhibits, quizzes and resources grouped in various aisles. Additionally, a garden space beyond which portals to walk-through line drawings of the trigeminal nerve divisions and branches were offered complete with accompanying video resources. Shared whiteboards allowed students to leave notes and interact. A secret room accessed through a trapdoor containing answers to board-level questions was created along with quizzes in the Jeopardy format. Student participation and evaluation comments indicated interest and excitement, as well as included helpful feedback on their SEP experience. The Gather platform was an effective virtual SEP tool and provided unique supplemental material to reiterate class information to make it worthwhile rather than merely a slightly different presentation of materials already available to the students. Student feedback will be used to further develop additional learning topics within the SEP for future virtual interactions.

ABSTRACTS

P15 Usage of a Highly Interactive Metabolic Map for Learning Medical Biochemistry

Jessica Kroner¹, Siam Ayon¹, Nhat Nguyen¹, Han Yu¹, Tyler Gopee¹, Vasudeva Kamath² and Judith Binstock²

¹OMSIII, ²Faculty - Touro College of Osteopathic Medicine (TouroCOM), New York, NY

Purpose: This study aims to evaluate the usage and efficacy of the Interactive Metabolic Map by TouroCOM medical students.

Background: The Metabolic Map, originally produced and published by Stanford Medicine, is a resource offered and supplied to students as part of the TouroCOM Biochemistry curriculum. The first phase of this project (abstract presented at ABE Meeting 2021) used PreziNext Software to create an interactive learning tool for Biochemistry. We have expanded upon this map by adding more information, creating a cohesive means to visualize the biochemical pathways and enzyme functions within one engaging platform. The unique design of PreziNext Software allowed us to overlay additional information (with permission from Stanford Medicine), including enzyme functions, diseases, genetics, associated treatments, and mnemonics.

Method: We surveyed master's and osteopathic medical students (OMS-I and OMS-II) at TouroCOM NY campuses to ascertain if students found the Interactive Metabolic Map valuable to their studies. An anonymous online Qualtrics survey was distributed via email to all qualifying students.

Results: There was a 33% response rate (n=222), with 39% being OMS-II, 38% OMS-I, and 22.5% master's students. Among the respondents who used the map, 83.53% believed this tool helped improve their grade in their Biochemistry course, while 84.71% stated that it helped enhance their understanding of Biochemistry. Of the topics covered on the map, including diseases, genetics, vitamins, etc., nearly 63% of respondents ranked the vitamin portion of the map to be extremely or very useful. Of all those surveyed, only 15.5% (n=33) never used the map and believed that they already had abundant resources and/or that the tool was too overwhelming.

Discussion/Conclusions: Results of this survey indicate that using the map was valuable to the majority of students in their understanding of Biochemistry. Interestingly, the vitamins were found to be the most useful and we, therefore, hope to continue improving this tool by adding more vitamin deficiencies in the future. In the next phase of this project, we also plan to add self-assessment questions to assist users in evaluating their understanding. This project encompasses the approach to medical education that is now being emphasized throughout medical schools, i.e., integration of clinical information with basic science knowledge. Lastly, we see this Interactive Metabolic Map being used in the clinical arena by all health care professionals as a quick and concise tool to review biochemistry pathways and related diseases, treatments, and associated genetics.

P16 Faculty as Dungeon Masters: Their Role In The Biochemistry Classroom

David Pearson, PhD

Ben and Maytee Fish College of Pharmacy and The School of Medicine, University of Texas at Tyler, Tyler, TX

With the popularity of role-playing games both in person and online with college age students, we have borrowed ideas and techniques from the popular role-playing game Dungeons and Dragons (D&D) and adapting it to teaching in the classroom. The intent is to enhance student engagement and learning in the classroom when teaching biochemistry which students can find to be a bit dry. The map of the biochemistry journey is the Stanford Biochemistry Map and foes to fight or obstacles to deal with are the specific disease states along the way. The initial response by pharmacy students was positive. With the start of teaching in the New Medical School this fall at the University of Texas at Tyler, it is an opportunity to take this approach in the integrated case based spiral curriculum. This educational opportunity of the new curriculum invites the use of this novel approach to teaching. The students will be surveyed before and after the course to determine the response from the students. They will then be followed longitudinally to determine pass rate from year to year compared to other courses in the curriculum. The expectation being that the medical student will find this an engaging way to learn.

P17 Ethics Assignments in Biochemistry

Nina Ronkainen

Benedictine University, Lisle, IL

Ethics is deeply integrated into the way scientists and health care professionals work, making it a vital learning outcome for undergraduate science programs. I have incorporated ethics assignments into undergraduate and graduate biochemistry coursework at Benedictine University. The assignments are based on contemporary societal issues, research findings or technological advancements that introduce a new set of ethical dilemmas.

Training a generation of critical thinkers and problem solvers has become a priority in the digital age where one is continuously bombarded by information and rarely has the time to ponder the implications, consequences, information source and validity, or deeper meaning behind actions and decisions. Also, I have observed that using context for assignments and in-class problems improves student engagement, motivation, and learning outcomes in biochemistry courses. The pedagogical objectives, structure of ethics assignments, and student feedback will be described. The ethics assignment scenarios range from COVID-19 vaccine misinformation to life extension, lead in potable water, access to health care, demographics of older anatomical collections, falsifying research data, and the opioid crisis.

Ultimately, students are prompted to explore their values, responsibilities, and human conduct as they consider how to navigate ethically through complex situations that they may later face as a healthcare professional or researcher.

ABSTRACTS

P18 Longitudinal Integration of Medical Biochemistry in a Spiral Phase -1 medical curriculum can lead to significant improvement in student interest in the subject

Anamika Sengupta Ph.D., M.Ed.

Medical Biochemistry; Dept. of Health Science Education & Pathology; University of Illinois, College of Medicine (UICOM), Peoria, IL

Background and Purpose: The importance of medical biochemistry (MB) in a 21st century medical curriculum is self-evident, as modern medicine revolves around the effects of genetic, metabolic, pathogenic, and environmental factors on cells and molecules composing the human body. Yet, medical students consider learning MB as an unnecessary burden with little relevance to their future aspirations as practicing physicians. This false stigma can be attributed to the timing of the subject delivery and the antiquated teaching methods used in the more traditional medical curriculums. Medical biochemistry is taught in early preclinical years when students' medical knowledge is very close to the baseline and thus subject delivery (in the context of clinical relevance) is not refined. This study shares how medical educators could effectively shift this stigma and promote a more positive mindset among their students, pinpointing the critical relevance of MB in 21st century medicine.

Methodology: In a startup Texas-based osteopathic medical school that aimed at integrating basic and clinical sciences in a case-based format throughout their medical curriculum, the MB concepts were a) integrated throughout phases 1 and partial 2 curriculum b) all MB sessions were co-developed and co-facilitated in a case-based manner by a biochemistry and a clinical faculty. c) MB topics introduced in earlier curricular units were reintroduced in the advanced units with emphasis on their clinical applications (spiral curriculum) and learning objectives from earlier units were revisited in the advanced units of the curriculum. e) Assessment items were created through collaborative efforts between biochemistry and clinical faculty using common vignettes.

P19 Study Skills Training and Success of Dental Students in First-Year Basic Science Courses

Kate Carnevale

Nova Southeastern University, Fort Lauderdale, FL

PURPOSE: The first year of undergraduate dental doctoral education challenges students with heavy course loads as well as complex basic science topics, such as biochemistry and microbiology. Providing students with information on best practices for effective studying should optimize their study techniques and improve their success in the courses.

METHODS: Data from four cohorts of first year dental students (Class of 2023 to 2026, N = 512) were collected during their first semester. The data analyzed were student pre-exam self-reported study strategy surveys and student exam scores (for three cohorts: C/O 23-25), pre- and post-workshop self-reported surveys (for two cohorts: C/O 25-26), and class averages for biochemistry and microbiology (for all four cohorts) to find correlations between study approaches as they evolved throughout the semester and the students' success in the courses.

RESULTS: Analysis of exam performance, course averages, and survey data across the student cohorts demonstrate a correlation between study techniques used and success on biochemistry and microbiology assessments. Student cohorts who engaged with the study training workshop reported interest in implementing new active learning techniques into their studying. The cohorts that participated in the study skills training workshop showed improved performance throughout the two courses.

CONCLUSION: A correlation between engagement in active learning study modalities and improved exam scores was observed. This finding was particularly evident for student cohorts who engaged with a 1-hour study skills training workshop.

P20 ChatGPT: Your Biochemistry Teaching Assistant and More?

Aditi Kesari

University of Tennessee Health Science Center, Memphis, TN

Purpose/Background: With the advent of multiple artificial intelligence (AI) platforms in recent times, it is imperative for medical educators to recognize the applications as well as limitations of these tools in medical education. This study focuses on investigating the applications and limitations of ChatGPT, an AI-enabled tool, in biochemistry education in the medical curriculum.

Methods: ChatGPT, the AI-enabled tool developed by Open AI, was used for this study. To find the capabilities of this platform prompts related to biochemistry education topics were created. The tasks performed by ChatGPT were then analyzed to determine the utility of ChatGPT in biochemistry education in the medical curriculum.

Results: Multiple applications of ChatGPT in biochemistry education were identified. Some of these included creating templates for biochemistry curriculum objectives and session learning objectives, building case-based scenarios, generating formative/ summative questions, designing concept maps, generating summaries of complex concepts, and creating flashcards. While ChatGPT could be a helpful tool, some inaccuracies and shortcomings did come to light while generating these resources, which highlights the importance of critically evaluating the material generated by these tools.

Conclusions: ChatGPT has the potential to be a helpful tool for both faculty and students with its various capabilities. It is, however, crucial to emphasize the importance of critical appraisal of information generated through AI-enabled tools like ChatGPT, while engaging in the responsible and transparent use of these technologies.

ABSTRACTS

P21 UX Design Approach for Leveraging Digital Course Materials

Kendra Oliver

Department of Pharmacology, Basic Sciences School of Medicine, Vanderbilt University, Nashville, TN

User experience (UX) design is an approach that centers on providing meaningful and relevant experiences to the intended audience. This is often compared with instructional design, which aims to transfer knowledge or skills to learners or students. Combining UX Design and instructional design, an emerging field of learner experience design equally weighs the experience and the learning outcomes. We re-designed a series of online drug discovery courses using all three design prioritizations. Here we present a case study that provides examples and technical considerations when applying these design processes. We also provide a framework for other educators who intend to leverage digital assets to apply these design approaches. By leveraging learning experience design, digital content is better utilized within classroom environments (ex., flipped classrooms) and potentially engaging new audiences.

P22 Creating an Inclusive Biochemistry Learning Environment

Edgar Diaz-Cruz

College of Pharmacy, Belmont University, Nashville, TN

PURPOSE: As the United States becomes increasingly diverse, so do our students' demographics and cultural experiences. A call to action for biochemistry educators to create learning environments where all students feel academically supported is imperative. The purpose of this work was to utilize an inclusive excellence framework to enhance students' learning experience in a biochemistry course.

BACKGROUND: An inclusive classroom refers to a learning environment where all students feel supported academically and have a sense of belonging irrespective of their identity, cultural background, or previous education. It is a classroom where each student's intersectionality is respected, fostered, and seen as an asset. Inclusive excellence consists of a focus on student intellectual and social development, a purposeful development and utilization of organizational resources, attention to the cultural differences of the learners, and a welcoming community that engages all its diversity.

METHODS: A literature review and targeted professional development in Diversity, Equity & Inclusion were completed to understand the challenges/opportunities of increased diversity in higher education and explore best practices to meet the needs of diverse learners. In consultation with the Offices of Academic Affairs, Student Affairs, Accessibility Services, and Curriculum Committee, several practices were adopted and implemented into a biochemistry course with first-year student pharmacists.

RESULTS: A more inclusive syllabus was developed by adding a diversity & inclusion statement, as well as a statement clarifying and promoting the use of office hours. Three course policies including the use of word-to-word glossaries, extended test times, and class recording/close caption availability were implemented. A 50-minute educational activity was developed to supplement material on the regulation of gene expression, in which epigenetic changes are driven by social determinants of health, in addition sex and gender specific health content was incorporated into course instruction. Moreover, a weekly outside of class informal support session was introduced to create a safe, supportive, and purposeful environment for students to grow both academically and socially.

DISCUSSION/CONCLUSIONS: It has been established that inclusive environments are essential to encouraging academic success for all students. Upon reflecting on these practices there is evidence that they help foster an environment of respect, thoughtfulness, and academic excellence. As demonstrated by positive course evaluations, peer evaluations, and programmatic support, there is evidence utilizing an inclusive excellence framework proved to be a viable approach for creating a supporting culture inside and outside of the classroom.

P23 A Pilot Exam 'Safety Net' Program in a Pre-Clinical 'Foundations' Course to Promote Mental Health, and Sustainable and Effective Approaches to Medical School Testing

Lawrence C. Myers, Khaqan Ahmad, Daniella Azulai, Kathrine Hartnett, Abigail W. Konopasky and Rajiv Potluri

Geisel School of Medicine at Dartmouth, Hanover, NH

PURPOSE & BACKGROUND: Balancing student mental health with assuring the necessary knowledge base for a complete physician is a central tension in medical education. Transitioning to medical school is particularly stressful and 'Foundations' courses, which often begin organ-system based pre-clinical curricula and are led by biochemists, need structures that support students. Here we describe, and evaluate the efficacy of, a pilot exam 'safety net' program applied to the summer 2022 Foundations course at Geisel. Students with a low score (<77.5%) were offered a rapid minimal-stress exercise to learn missed material with the incentive of increasing their score. The objective of the safety net was to both assist a small number (<10) of at-risk students and reduce exam anxiety for all students, encouraging a learning and growth mindset, rather than a score optimization mindset.

METHODS: Foundations had two summative 'benchmark' exams, for which the 'safety net' program was offered, and a comprehensive final. To evaluate the program, we compared class-wide aggregated non-adjusted Foundations exam data from the Classes of 2025 (no intervention) and 2026, and two subsequent courses (no intervention for either class). To determine how the safety net program impacted the student's testing experience, we collected anonymous Likert scale data, and conducted mixed-methods content analysis of narrative feedback from anonymous surveys and two focus groups.

RESULTS: Narrative data revealed a reduction in self-reported anxiety and stress before exams. This specifically manifested itself in more sleep and participation in social functions than anticipated in the days prior to exams. Students also reported the program facilitated focusing on "depth" of knowledge rather than surface learning, and that scores were viewed as opportunities to improve rather than a passing of judgement. Non-adjusted mean scores on Foundations exams with the safety net were slightly higher than the prior class (no intervention). The Foundations final exam mean score for the Class of 2026 also improved versus the previous year. Exams in subsequent courses (no intervention) revealed no performance differences between the Class of 2025 and 2026. Students with low enough scores on the benchmark exams to utilize the safety net learning exercise exhibited an increase in scores on subsequent exams greater than the class as a whole.

DISCUSSION/CONCLUSIONS: A safety net exam policy in a Foundations course can improve mental health, encourage sustainable learning practices, build trust in the faculty, and facilitate a smooth transition to medical school without compromising performance on exam-based knowledge metrics.

