

David Geffen School of Medicine

Integrating Evidence-Based Integrative Medicine into Medical Education: **A Foundations of Practice Approach**

Samantha Maisel MD, Serena Wang MD, Yvonne Caro C-IAYT, Sarah Gustafson MD, Peter Quiros, MD, Rashmi Mullur MD David Geffen School of Medicine at UCLA

Background

- Complementary and Integrative Health (CIH) represents a clinical approach to care that blends conventional approaches with complementary and integrative modalities to support a patient's whole health.
- CIH is increasingly used among patients¹, but significant knowledge gaps remains for students and providers regarding these approaches².
- A needs assessment at DGSOM identified student interest in CIH and prior feedback identified barriers to CIH education.
- Core CIH concepts include acupuncture, mind-body medicine, and supplements, with core objectives focused on evidence-based uses, nutrition & lifestyle counseling, wellness, and health equity.
- These CIH concepts are woven into the HEALS curriculum integrative medicine thread guided by conceptual frameworks of Self-Determination theory, Situated Learning, Experiential learning, and Spiritual awareness.
- To provide students with clinical practice exposure to CIH and address primary barriers to CIH education, we created a Foundations of Practice course (FOP) which specifically addresses the clinical experience of caring for a patient using CIH.

Objectives

- Develop FOP Session titled, Complementary and Integrative Health in Clinical Practice to address barriers to CIH education.
- ✤ Provide didactic overview of CIH in clinical care, standardized patient case, small group discussion, and evidence-based literature evaluation and critical thinking.

Methods

- The session structure featured a didactic standardized patient interview, small group case discussions, supplement reconciliation exercises, and education on interpreting systematic reviews and metaanalyses to highlight the evidence supporting CIH (Figure 1.).
- FOP session specifically addressed previously identified barriers to CIH (Figure 2.)

Methods Cont.

Figure 1. Lesson Materials

A	
10.000	attending has asked you to see M. Ro blood pressure is high.
Please	e, do the following:
•	Review the patients home BP log
•	Discuss any interval events or chang
•	Ask the patient about their medicat
•	Counsel the patient appropriately re

Date	Time
10/30	7:32 AM
11/22	2:14 PM
11/23	11:03 AM
11/24	6:47 PM
12/10	10:12 AM

ased on clinical situation and patien

12/15	8:28 AM
	I'm taking this for my eart"
Red	Veast

5:14 PM



Fig 1: Lesson Materials. Fig. 1A illustrates an example of the presenting patient information students use for their standardized patient case. Fig 1B is an example of supplementary didactic material focusing on biotin assay interference.

Figure 2. Barriers to CIH Addressed in FOP

imited clinical exposure
_ack of evidence
Bias
Equity and access

ers to CIH Education

Fig 2: Barriers to CIH Addressed in FOP. This figure illustrates four different barriers for students' CIH education and ways in which those were addressed with the FOP session

Results

- healthcare practitioners.

M. Rowe		BIOTIN ASSAY INTERFERENCE	
ve. Patient comes in today to follow-up because es in lifestyle since the last visit on adherence and/or concerns garding blood pressure and cholesterol treatments		F: SATNATHA TAUSEL, TA H + + + + + + + + + + + + + + + + + + +	
nt values/preferences		 Biotin is critical for many metabolic processes in humans, such as gluconeogenesis and fatty acid synthesis, and is widely used by the population as a supplement to promote the growth of hair and nails. Although there is limited research to support the use of biotin in healthy individuals, its supplementation remains popular. 	
BP	Pulse	• While biotin is generally considered safe for supplementation, it can interfere with various laboratory tests, as it is	
136/82	88	key reagent in many immunoassays that utilize the biotin-streptavidin binding (Fig. IA-B). Circulating concentration of biotin in the human body from diet and metabolism alone are too low to interfere with these immuno assays, but	
138/80	88	higher dose biotin supplements (≥5 mg) can. The biotin assay interference can lead to falsely high or low levels of t	
138/88	92	lab measured based on the type of assay used. The list of affected immunoassays varies per platform, but has ofte been noted in hormonal evaluations for thyroid hormone, cortisol, vitamin D, as well as troponin, a marker of	
136/86	90	myocardial infarction. Patients on biotin therapy should abstain from biotin for a minimum of 72 hours before blood	
132/88	86	collection.	
130/84	88	In conclusion, the main safety risk for patients taking biotin, the possibility it leading to incorrect laboratory results	
136/84	78	can be avoided by talking with patients about their supplement use, documenting, and making sure they stop bioti supplementation prior to testing.	
One tablet daily. "I've been ta my dry skin and h Singer Biotin 10,000 ms The sub-		Fig. 1. Mechanism of biotin interference in (A) sandwich and (B) competitive immunoassays [2]. Reprinted from Endocrine Practice, Vol 23 Sandrasing, et al, Biotin interference in (A) sandwich and (B) competitive immunoassays [2]. Reprinted from Endocrine Practice, Vol 23 Sandrasing, et al, Biotin interference with routine clinical immunoassays: understand the causes and mitigate the risks. 989–998, ©20 with permission from the American Association of Clinical Endocrinologists.	

Adressed in FOP	
SP Case	
Evidence-based medicine with a meta-analysis on CIH approaches to hypertension	
Addressed myths and knowledge gaps and led case- based discussions	
Aligned with Structural Racism and Health Equity Theme in HEALS curriculum	

CIH module was positively received by students (Figure 3.).

Standardized patients also felt that students were more considerate as

Successfully integrated evidence-based integrative medicine into the curriculum, beginning to address concerns regarding bias against integrative medicine in medical school.

Results Cont.

Figure 3. Selected Narrative Feedback from Students

2021-2022	2022-2023	2023-2024
"Learned a lot about ways to approach Integrative medicine and the importance of honoring pts feelings and also being evidence-based based"	"Dr. Mullur's session was important but I and my classmates were distracted by the prospect of break and wish this session was more interactive somehow"	"The FOP Didactic was very clear and succinct"
"It didn't need to be 3.5 hrs long. We are wasting our time. I don't know how many 2 more times we can give this feedback. FOP is important but 1-2 hrs is more than enough."	"The lecture about integrative medicine was interesting but very very packed with information and I felt like it was hard to retain."	"I really appreciate this lecture. Dr. Mullur is so good at explaining ways to counsel patients in a way that prioritizes cultural humility. Would love more on this topic throughout the year"
	"Sometimes the EBM things seem a little too extensive and reading all the articles is honestly a lot."	

Conclusions

- There have been three CIH modules within the FOP Course (2021, 2022, aligning with core objectives in the DGSOM UCLA HEALS Integrative Medicine thread and addressing common barriers to CIH.
- This approach fosters a non-judgmental attitude towards patient care and supports the cultivation of culturally humble and socially just healthcare practices with providers who are deeply considerate.
- Continuous evaluation will inform further development and integration of CIH education in medical training.

References

- 1. Nahin RL, Rhee A, Stussman B. Use of Complementary Health Approaches Overall and for Pain 38270938; PMCID: PMC10811586.
- 2. Knowledge and Practice in Primary Care Settings: A Survey of Primary Care Providers in the Northwestern United States. Global Advances in Health and Medicine. 2021;10. doi:10.1177/21649561211023377
- Abbott RB, Hui KK, Hays RD, Mandel J, Goldstein M, Winegarden B, Glaser D, Brunton L. Medical 3. Alternat Med. 2011;2011:985243. doi: 10.1093/ecam/nep195. Epub 2011 Apr 14. PMID: 21826186; PMCID: PMC3147138.



2023) and they have introduced students to integrative health approaches,

Management by US Adults. JAMA. 2024 Feb 20;331(7):613-615. doi: 10.1001/jama.2023.26775. PMID:

Schwartz MR, Cole AM, Keppel GA, Gilles R, Holmes J, Price C. Complementary and Integrative Health

Student Attitudes toward Complementary, Alternative and Integrative Medicine. Evid Based Complement