



## 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 patients<sup>1</sup>, but significant knowledge gaps remains for students and providers regarding these approaches<sup>2</sup>.
- ❖ 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 meta-analyses 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. M. Rowe**  
Your attending has asked you to see M. Rowe. Patient comes in today to follow-up because their blood pressure is high.  
Please, do the following:

- Review the patient's home BP log
- Discuss any interval events or changes in lifestyle since the last visit
- Ask the patient about their medication adherence and/or concerns
- Counsel the patient appropriately regarding blood pressure and cholesterol treatments based on clinical situation and patient values/preferences

Blood Pressure Journal:

Date	Time	BP	Pulse
10/30	7:32 AM	136/82	88
11/22	2:14 PM	138/80	88
11/23	11:03 AM	138/88	92
11/24	6:47 PM	136/86	90
12/10	10:12 AM	132/88	86
12/12	5:14 PM	130/84	88
12/15	8:28 AM	136/84	78

One tablet daily; "I'm taking this for my heart" (Red Yeast Rice)  
One tablet daily; "I've been taking this to help my dry skin and hair." (Biotin)

**B. BIOTIN ASSAY INTERFERENCE**  
BY SAMANTHA MAISEL, MD  
Vitamin B7, also known as Biotin, is a water-soluble B vitamin found naturally in some foods like egg yolk, liver, spinach, mushrooms, oats, rice, and dairy. Biotin is often used as a supplement for hair and nail care, as well as included in many multivitamins and vitamin B complex supplements.  
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.  
While biotin is generally considered safe for supplementation, it can interfere with various laboratory tests, as it is a key reagent in many immunoassays that utilize the biotin-streptavidin binding (Fig. 1A-B). Circulating concentrations of biotin in the human body from diet and metabolism alone are too low to interfere with these immunoassays, but higher dose biotin supplements (2-10 mg) can. The biotin assay interference can lead to falsely high or low levels of lab measured based on the type of assay used. The list of affected immunoassays varies per platform, but has often been noted in hormonal evaluations for thyroid hormone, cortisol, vitamin D, as well as troponin, a marker of myocardial infarction. Patients on biotin therapy should abstain from biotin for a minimum of 72 hours before blood collection.  
In conclusion, the main safety risk for patients taking biotin, the possibility of leading to incorrect laboratory results, can be avoided by talking with patients about their supplement use, documenting, and making sure they stop biotin supplementation prior to testing.

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

Barriers to CIH Education	Addressed in FOP
Limited clinical exposure	SP Case
Lack of evidence	Evidence-based medicine with a meta-analysis on CIH approaches to hypertension
Bias	Addressed myths and knowledge gaps and led case-based discussions
Equity and access	Aligned with Structural Racism and Health Equity Theme in HEALS curriculum

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

- ❖ CIH module was positively received by students (Figure 3.).
- ❖ Standardized patients also felt that students were more considerate as healthcare practitioners.
- ❖ 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, 2023) and they have introduced students to integrative health approaches, 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:

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