Co-teaching in an Undergraduate Clinical Skills Course: Physicians and Social Behavioural Scientists Use a Shared Mental Model to Highlight Complementary Aspects of Medical Interviewing and Physical Exam Skills [version 1]

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Abstract
This article was migrated. The article was marked as recommended.

Introduction: Interdisciplinary co-teaching by physicians (MD) and social behavioural scientists (SBS) has emerged as an innovative teaching practice in clinical skills courses, but little is known about how co-teachers operationalize instruction. The purpose of this study was to explore the shared mental model of co-teachers concerning medical interviewing and physical examination instruction.

Methods: Twelve individual semi-structured interviews were conducted at Brown University. Participants were asked, "What and how do MD and SBS faculty contribute to teaching medical interviewing and physical examination skills?" Transcripts were subjected to thematic analysis. Discourse analysis was also used to determine if what faculty individually described as contributing to instruction was observed by the co-teacher.

Results: Physician and SBS faculty emphasized different but complementary aspects of medical interviewing and physical examination skills. Physicians focused on content, targeting clinical reasoning, differential diagnosis, economy of movement, efficiency, synthesis, and technical skills. SBS faculty focused on process, emphasizing active listening, presence, non-verbal communication, rapport building, empathy, and patient comfort.

Open Peer Review
Migrated Content
"Migrated Content" refers to articles submitted to and published in the publication before moving to the current platform. These articles are static and cannot be updated.

Invited Reviewers
1. Felix Silwimba, University of Lusaka
2. Subha Ramani, Harvard Medical School, Brigham and Women's Hospital
3. Sharon Obadia, A.T. Still University

Any reports and responses or comments on the article can be found at the end of the article.
Discussion: Co-teachers consistently articulated their relative contributions to teaching medical interviewing and physical examinations. Their shared mental model emphasized the importance of both content and process, creating a learning environment supporting the development of both biomedical and patient-centred perspectives.

**Keywords**
co-teaching, clinical skills, shared mental models
Supplementary File 1: Example of a Doctoring checklist that integrates content and process

### Doctoring: Master History Checklist

- Use alcohol-based cleanser / wash hands (“foam in”).
- Introduce yourself to the patient.
- Determine how the patient prefers to be addressed.
- Explain your role in health care team.
- Negotiate an agenda for the encounter including the medical history and/or the physical exam.
- Ask the patient’s age.
- Determine the patient’s primary care physician, if applicable.

#### Chief Concern and History of Present Illness (HPI)

- Identify the patient’s chief concern in his or her own words.
- Allow the patient to complete the chief concern and opening statement without interruption.
- **Onset of symptom** (when did the symptom(s) begin?)
- **Provocation / aggravating factors** (what activities/actions make it worse?)
- **Palliation / alleviating factors** (what activities/actions make it better?)
- **Quality of symptom or pain** (what is it like? e.g., dry / productive cough, OR throbbing, stabbing, crushing, tightness for pain).
- **Location (region) of symptom or pain** (where does the symptom/pain occur on the body?).
- **Radiation of symptom or pain** (does the symptom move? – e.g., to the back, shoulder).
- **Severity of symptom or pain** (mild, moderate, severe; pain is measured on a scale of 0-10).
- **Associated symptoms** (other symptoms occurring with the presenting complaint).
- **Temporal profile / frequency of symptom or pain** (how often does the symptom occur?).
- **Previous similar episodes** (and how it was treated).
- Ask about patient’s concerns/fears about illness.
- Determine beliefs and/or expectations about illness and treatment.
- Allow patient to relate his/her story, interrupting when appropriate.
- Use open-to-closed ended questions to gather information/explore problems.
- Uses segment summary after HPI and gives the patient opportunity to correct or add information.

#### Past Medical History

- Transition statement.
- Active medical problems.
- Hospitalizations (including year and reason).
- Previous surgeries (including year and complications).
- Prescription medications (and doses).
- Over-the-counter medications (and doses).
- Herbal or other treatments.
- Allergies to medications.
- Description of the allergic reaction (not applicable if patient has no allergies).
Family History

- Transition statement.
- Illnesses that run in the family.
- Parents, ages, and illnesses (and/or cause of death at what age).
- Siblings, ages, and illnesses (and/or cause of death at what age).
- Children, ages, and illnesses (and/or cause of death at what age).

Social History

- Transition statement.
- Use gender-neutral inclusive language.
- Living arrangements.
- Family and relationships.
- Safety / interpersonal violence screening (if applicable)
- Sources of social support.
- Current work status and occupation, exposure to health hazards.
- Significant stressors and financial hardships that might affect health.
- Depression screening (if applicable and not done in HPI or review of systems (ROS)).
- Effect of current illness on work and family responsibilities.
- Tobacco use (how much and how long in pack-years).
- Alcohol use (quantity and frequency).
- Drug use (including type, frequency, duration and method of use).
- Cultural and religious needs related to medical care (if applicable).
- Nutrition, physical activity, sleep, or sexual history (if applicable).

Review of Systems

- Transition statement.
- **General / constitutional:** fever, chills, change in appetite, change in weight (intentional or unintentional), fatigue, night sweats
- **Head, ears, nose, throat:** head injuries, hearing loss, ringing in ears (tinnitus), use of hearing aid, nose bleeds (epistaxis), nasal discharge (rhinorrhea), loss of smell, bleeding gums, painful swallowing (odynophagia), difficulty swallowing (dysphagia), sore throat, hoarseness, sores in mouth or nose, tooth pain.
- **Eyes:** change in vision, double vision, use of glasses and/or contact lenses, blindness, ocular trauma, eye redness or discharge, eye dryness.
- **Cardiovascular:** chest pain, racing heart (palpitations), dyspnoea on exertion, waking up short of breath (nocturnal dyspnoea), # pillows for sleeping (orthopnoea), swelling in feet (oedema).
- **Pulmonary:** shortness of breath with rest/activity, cough, mucus (specify colour, +/- blood), wheezing.
- **GI:** nausea, vomiting, heartburn, abdominal pain, bloating, change in bowel habits, diarrhoea, constipation, rectal bleeding, black tarry stool (melena), yellow pigment in skin (jaundice), increase in abdominal girth.
- **GU:** urinary frequency, urgency, dysuria, haematuria, decreased libido (women: irregular menses, dysmenorrhea, dyspareunia, vaginal discharge, menopausal symptoms; men: penile discharge, erectile dysfunction, swelling or pain in the testes.)
Musculoskeletal (includes neck/back): muscle aches, joint pain, stiffness, swelling, limited movement, trauma / injury.

Integumentary (skin)/ breast: rashes, lesions, changes in moles, hair loss ; breast pain, soreness, lumps, discharge

Neurologic: headache, numbness, weakness, tingling, dizziness (vertigo vs lightheadedness), passing out / fainting or nearly fainting (syncope or near-syncope), difficulty with balance/walking, memory problems, seizures.

Psychiatric: poor concentration, depression, anxiety, insomnia, suicidal or homicidal ideation.

Endocrine: polyuria (excessive urination), polydipsia (excessive thirst), polyphagia (excessive hunger)

Hematologic/lymphatic: easy bruising, easy bleeding, recent travel, swollen glands.

Allergic/immunologic: allergies to foods, animals, insect bites, medications, environmental allergies.

General Approach/Flow of Medical Interview
- Use transition statements.
- Convey empathy using words and non-verbals that communicate care and concern.

Closure
- Summarize information gathered during the encounter.
- Ask patient about questions or concerns.
- State appreciation to patient.
- Shake hands (if appropriate).
- Use alcohol-based cleanser / wash hands (“foam out”).
Open Peer Review

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Version 1

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Sharon Obadia
A.T. Still University

This review has been migrated. The reviewer awarded 5 stars out of 5

This study clearly and skillfully demonstrates the value of varied perspectives when approaching the teaching of clinical skills to pre-clinical learners. The notion that the physician teacher can (or should) do it all is dispelled here. This article provides needed evidence of the benefit of physician and SBS faculty co-teaching that stakeholders of clinical skills courses can bring to their administrators to improve teaching methods already in place or in creating a new clinical skills program.

Competing Interests: No conflicts of interest were disclosed.

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Subha Ramani
Harvard Medical School, Brigham and Women's Hospital

This review has been migrated. The reviewer awarded 5 stars out of 5

This is an important article that separates out the content and process of patient communication skills and makes a cogent argument for the value of co-teaching by physicians and social behavioral scientists. The co-teaching curricula described are innovative, the study methodology is appropriate to answer study
questions and the results are illuminating. The article is very well written and well referenced. Even though this curriculum pertains to clinical skills teaching, the results can have an impact on co-teaching models in any field. The only comments I would add are: the first paragraph in the introduction seems unnecessary and starting with communication skills would have sufficed. In the discussion section, several models and theories are discussed. While all are relevant to the findings and messages, readers should take time to tease out what the authors are trying to say within each paragraph—sociolinguistics, various communication models, shared mental models, social construction. All educators who design communication skills curricula will find this useful. In addition, all educators considering co-teaching as a model can learn lessons from this study. I enjoyed reading this article very much and have take home points.

**Competing Interests:** No conflicts of interest were disclosed.

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**Felix Silwimba**
University of Lusaka

This review has been migrated. The reviewer awarded 5 stars out of 5

I enjoyed reading through the article. It addressed my concerns on doctoring training. I think it is worth exploring by medical educators in low-middle income countries.

**Competing Interests:** No conflicts of interest were disclosed.