– Innovative Medical Curriculum –
Training the Global Physician of the 21st Century
by including Global Health in all Medical School Curricula

Pedagogical Paradigms in Global Health: An overview of Theory, Tools and Innovations
CUGH Conference, Washington DC, June 2017
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Associate Dean Global Health
California University of Science and Medicine (CalMed) School of Medicine.
Objectives:

1. Discuss historical evolution of medical curricula
2. Introduce the innovative CalMed-SOM Global Active Learning Curriculum
3. Explain horizontal, vertical and spiral Integration of basic and clinical sciences.
4. Discuss the All Active Adult Learning Pedagogies
5. Discuss how global health is integrated into the CalMed curriculum for all medical students
6. Discuss Modes of Assessment
7. Discuss method of selecting global health competencies in existing curricula
A Factory Approach with a Standard Curriculum

Modified from Harden RM and Laidlaw JM, 2012.
The Lancet Global Commission Report, on Education of Health Professionals for the 21st Century (Frenk J et al) states that today’s curricula are … “fragmented, outdated, pedagogically static and not drawing on current global educational and curricular resources to correct the rapidly changing local conditions” The Lancet Report Frenk J et.al. The Lancet, 2010:376:1923-1958

One Definition of Global Health

“...an area for study, research, and practice that places a priority on improving health and achieving equity in health for all people worldwide” (Koplan et al, Lancet 2009)
### Curricular Models Currently Being Used World-wide

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Apprenticeship-Based (1765 –)</th>
<th>Discipline-Based (1871 –)</th>
<th>System-Based (1951 –)</th>
<th>Problem-Based (1971 –)</th>
<th>Clinical Presentation-Based (1991 –)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name of CalMed’s Curriculum:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>the Global Active-Learning Curriculum</strong></td>
</tr>
<tr>
<td><strong>Organization of Course content related to:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Clinical Presentation-driven, System- and competency-based, Person-centered, Clinical Approach</strong></td>
</tr>
<tr>
<td><strong>Person-Centered Clinical Approach Learning Method</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>PC-CalMed</strong></td>
</tr>
<tr>
<td>Structural Organization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Single Dept. of Medical Education</td>
</tr>
</tbody>
</table>

*Papa FR and Harasym PH. Acad. Med. 1999;74:154-164*
1) The competency-based CALMED-SOM’s curriculum incorporates different approaches and methodologies to learning and, draws upon and incorporates global medical knowledge. . . . . realizing that the practice of today’s medicine has no geographical (ethnic, racial, cultural) boundaries

2) All of the learning methodologies used in the curriculum are guided by adult learning strategies.
Increasing independence and responsibility

(A. Tenore, modified from Harden et al. 1997).
California University of Science and Medicine (CALMED-SOM) - CURRICULUM

System-based

Active Learning mode of delivery

Fully integrated
Horizontal Vertical Spiral

Clinical Presentation
<table>
<thead>
<tr>
<th>Session Learning Objectives/Outcomes (SLOs):</th>
<th>CLO #</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Association between structure and function: identify the anatomic structure(s) involved in the clinical</td>
<td>K 2,3,4,5,6,7,10,11,12</td>
</tr>
<tr>
<td>presentation and interpret how it(they) can respond and produce the symptoms indicated</td>
<td>S 1-4</td>
</tr>
<tr>
<td></td>
<td>A 3,4</td>
</tr>
<tr>
<td>2. Abductive (also inductive) reasoning: (i.e., forming hypotheses to be tested): Describe how the basic</td>
<td>K 2,3,4,5,6,7,10,11,12</td>
</tr>
<tr>
<td>sciences are related to the presenting clinical problem and identify and explain how the key points in</td>
<td>S 1-4</td>
</tr>
<tr>
<td>the medical history and/or physical examination help determine which structure(s) and condition(s) are</td>
<td>A 3,4</td>
</tr>
<tr>
<td>most likely involved in the differential diagnosis</td>
<td></td>
</tr>
<tr>
<td>3. Critical reasoning: Formulate a differential diagnosis giving a rationale for the order of priority</td>
<td>K 2,3,4,5,6,7,10,11,12</td>
</tr>
<tr>
<td>chosen and rank and discuss the importance and relevance of the diagnoses proposed</td>
<td>S 1-4</td>
</tr>
<tr>
<td></td>
<td>A 3,4</td>
</tr>
<tr>
<td>4. Deductive reasoning: Propose diagnostic tests (laboratory/imaging etc.) which could help distinguish</td>
<td>K 2,3,4,5,6,7,10,11,12</td>
</tr>
<tr>
<td>the true etiology of the symptom(s), and prioritize their selection based on considerations involving</td>
<td>S 1-4</td>
</tr>
<tr>
<td>efficacy, cost and turn-around time to receive results</td>
<td>A 3,4</td>
</tr>
<tr>
<td>5. Cultural competency: Analyze how age, sex, gender, race, culture, ethnicity, religious beliefs,</td>
<td>K 2,3,4,5,6,7,10,11,12</td>
</tr>
<tr>
<td>socioeconomic status, and/or access to healthcare may have influenced the:</td>
<td>S 1-4</td>
</tr>
<tr>
<td>a) timing and severity of the presentation of the clinical problem,</td>
<td>A 3,4</td>
</tr>
<tr>
<td>b) possible therapies being considered, (as well as the prioritization in their use based on</td>
<td></td>
</tr>
<tr>
<td>considerations of efficacy and cost)</td>
<td></td>
</tr>
<tr>
<td>c) patient compliance in relation to decision making, treatment/management, and follow-up care</td>
<td></td>
</tr>
</tbody>
</table>
At the heart of the course are Ethical & Moral Values, Global Health, One Health, Planetary Health which truly distinguishes and brings respect to the medical profession.
College Colloquium (first 2 weeks) alternating every third week with

Journal Club (3rd week)

Student conducted Activity (per College Team)
Clinical Case

Last slide of “Presentation” ends with a clinical case containing 2-3 questions for student to answer.

CC: Jane T. is a 21 y/o female who has been complaining of extreme tiredness that has been getting worse over the last 5 months, coinciding with the beginning of her last year in nursing school. Seen by a physician 2 months ago, who attributed the tiredness to her increased emotional and physical activity in trying to keep up with her studies and her social life, while maintaining a job as a waitress during the evening hours.

PMH: no major medical problems, no surgeries. No medications, no allergies

SH: engaged to be married, using fertility protection, no alcohol, no tobacco, no recreational drugs

FH: Positive only for a mother with hypothyroidism on therapy with L-thyroxine, and a grandfather with heart disease

ROS: positive only for tiredness, not sleeping well—which is a new problem; slight increase in appetite with a weight gain of almost 2 kg in last 2 months; increased frequency of bowel movements. Menstruations regular but light.

PE: BP=135/75 mmHg, HR=88/min, RR=14/min, Temp=38.6°C

HEENT: (student should describe what could be the expected eye and neck exam findings)

Lungs/Heart: wnl except for a HR above normal at rest

Abd: normal liver and spleen; increased bowel sounds

Neuro: (student should describe what could be the expected findings)

Ext: mild tremors of the extended upper extremities

Plan: (student should describe what needs to be done to confirm the diagnosis)

Labs: (student should describe what could be the results of the studies requested)
DIPLOPIA

NO (Binocular)

Sudden (vascular/isch)

Pain/discomf

YES (Inflammatory)

Vascular

Basilar a. thromb
Aneurysm
Isch. neuropathy
Infections
Basilar meningo-
encephalitis
Cavernous s. vasc
Orbital abscess
Neoplasia
Brain-stem tumor

NO (Non-inflamm)

Vascular
Impending Basilar a. thrombosis
Brainstem lacune

Diplopia*

YES (Monocular)

Pin hole test

Not Resolved

Retinal abnormality
Cortical abnormality

Resolved

Cataract
Corneal irregular
Dryness of eye
Lens dislocation
(Marfan Synd; Homocystinuria)
Refractive error

*Consider psychosomatic etiology if above organic causes are excluded

1) Handout (and reading) of 2 clinical cases/team (students will elaborate during week and report on Friday)

2) Clinical instructor presents algorithm and reasoning guide of the “clinical presentation” of the week
1) Handout (and reading) of 1/2 clinical cases/team (students will elaborate during week and report on Friday)

2) Clinical instructor presents algorithm and reasoning guide of the “clinical presentation” of the week

### ALOPECIA

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM</td>
<td></td>
</tr>
<tr>
<td>9:00 AM</td>
<td></td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Small Group - Session 1</td>
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<tr>
<td></td>
<td>(CBL - Preparation Session)</td>
</tr>
<tr>
<td></td>
<td>a) Handout: 2 CC (CBL)</td>
</tr>
<tr>
<td></td>
<td>b) CP &amp; CA: “1” &amp; Clinical Reas. Guide</td>
</tr>
<tr>
<td></td>
<td>c) CA: “2” &amp; Clinical Reas. Guide</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>LUNCH</td>
</tr>
<tr>
<td>12 Noon</td>
<td></td>
</tr>
<tr>
<td>1:00 PM</td>
<td></td>
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<tr>
<td>2:00 PM</td>
<td></td>
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<tr>
<td>3:00 PM</td>
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<tr>
<td>4:00 PM</td>
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<tr>
<td>5:00 PM</td>
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</tr>
</tbody>
</table>
1. Global Burden of Disease
2. Health Implications of travel, migration and displacement
4. Globalization of Health and Healthcare
5. Health in Low Resource Settings
6. Human Rights in Global Health

**Standard 1: Mission, Planning, Organization and Integrity : Social Accountability Vision** - Frame the Mission and Organization of the Medical School

“...the medical school is committed to address the priority health concerns of the populations for which it has responsibility to serve” (CACMS Standard 1.1.1)

**Standard 2: Leadership and Administration** Critical to the Vision:
- Dean and President should be supportive.
- Prominence/visibility of global health in the school and community it serves

**Previous Standard 10 – Curricular Content include:**
- Global health
- Community health
- Population-based medicine
- Epidemiology
- Nutrition
- Health care systems
- Prevention
- Health maintenance
- Medical socioeconomics
- Occupational medicine
- Health disparities
- Cultural competency
- Ethics and medical humanities.
Opportunities within the curriculum to integrate Global Health

**Standard 6: Competencies and Curricular Objectives and Curricular Designs.**

6.1: Service Learning (Structured & GLOCAL)

**Standard 7: Curricular Content:** “... ensure that the medical curriculum provides sufficient breadth and depth to prepare medical students (for the 21st Century) for entry into any residency program and for the subsequent contemporary practice of medicine” (globally and locally)

7.1: Biomedical, Behavioral, Social Sciences: Knowledge/concepts-

- Health of individuals and populations (wellness, determinants of health, socio-economic determinants of health, health promotion, disease prevention)+acute, chronic, rehabilitative-care, end-of-life care and primary care).

7.3: Research opportunities.

7.5: Societal problems (e.g. global tobacco/ STDS/ etc.)

7.6: Cultural competence (Culturally competent health care/health disparities)/underserved populations/altruism and accountability)

(multidimensional diverse society)

7.7: Ethics (GLOCAL)

7.8: Communication skills and 7.9: interprofessional collaborative skills

**Previous Standard 10 — Curricular Content include:**

- Global health
- Community health
- Population-based medicine
- Epidemiology
- Nutrition
- Health care systems
- Prevention
- Health maintenance
- Medical socioeconomics
- Occupational medicine
- Health disparities
- Cultural competency
- Ethics and medical humanities.
Examples of Topics Covered:

- Patient Physician Relationship - Communication across the Cultural Racial, Ethnic and Gender Divide
- Global burden of disease and its measurement
- Preventive and Promotive Health through all stages of Life
- Human Rights Applications in Accessing Healthcare
- One Health: Animal and Environmental Health
- Access to Essential Medicines and Vaccines
- Cultural Competency: Caring Across the Cultural, Linguistic and Literacy Divide
- Planetary Health and Human Health: Population, Resources and Environment
- Global Burden of Disease/Quality and Patient Safety: Hypertension & Evidence Based Guidelines
- Global Burden of Disease/Quality and Patient Safety: Hospital-Acquired, Ventilator-Associated and Healthcare associated Pneumonia Evidence Based Guidelines
Examples of Topics Covered:

• Defining Death (Death with Dignity)
• Ethics of Health Care Disparities: Barrier to effective communication: Physician and patient/family belief dissonance
• Applied Medical Ethics: Physician’s Obligation in Preventing, Identifying and Treating Violence and Abuse
• Relationship between diabetes and social determinants of health
• Legal and ethical aspects of abortion
• Ethics of stem cell research and cloning
• Ethical issues in Carrier Screening of Genetic Disorders
• Ethical and Legal issues surrounding artificial Insemination by known donor, unknown donor, and surrogacy.
• Persons with disabilities as an unrecognized population- health disparity
# Content of: Clinical Presentations. Skills, and College Colloquium

## Table 3: Course components

<table>
<thead>
<tr>
<th>Week</th>
<th>Mondays*</th>
<th>Tuesdays*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Clinical Presentations</td>
<td>Skills** (2 hr sessions)</td>
</tr>
<tr>
<td>1</td>
<td>“Always Tired” (anemia)</td>
<td>Station 1: History &amp; Physical Examination with emphasis on anemia, Review Physical Examination of abdomen with emphasis on the Spleen, Liver and Kidney</td>
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<tr>
<td></td>
<td></td>
<td>Station 2: Role playing: cases of “tiredness”</td>
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<tr>
<td>2</td>
<td>Recurrent infections* (abnormal WBCs)</td>
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<tr>
<td>3</td>
<td>Swollen glands (Lymphadenopathy and splenomegaly)</td>
<td>Station 1: General Physical examination with emphasis on lymph nodes (head &amp; neck, axillary, epitrochlear, inguinal, popliteal)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Station 2: Role playing: “swollen glands” and “recurrent infections”</td>
</tr>
<tr>
<td>4</td>
<td>Easy bruising (bleeding diathesis) / Polycythemia and hypercoagulable states</td>
<td>Station 1: Venipuncture (phlebotomy); arterial puncture (blood gas analysis)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Station 2: Role playing: “easy bruising”</td>
</tr>
</tbody>
</table>

* “Clinical Presentations” are typically held on Mondays except when there is a holiday in the week in which case it will be shifted to Tuesday and the regularly scheduled Tuesday activity will be canceled

**Sessions may make use of standardized patients
<table>
<thead>
<tr>
<th>Date</th>
<th>Session Title</th>
<th>Overview</th>
<th>SLOs</th>
<th>CAL technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 28, 2018</td>
<td>Patient Physician Relationship (2) - Communication across the Cultural, Racial, Ethnic, and Gender divide</td>
<td>Successful physicians have tremendous relationships with their patients, their significant others and their families. They have a very low rate of malpractice</td>
<td>- Discuss ways of building rapport with a patient and his or her family or significant others  &lt;br&gt; - Identify how this relationship differs in other cultural settings. (Cultural Competency)  &lt;br&gt; - Discuss truth telling, withholding information</td>
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<td><em>(Week 5)</em></td>
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## Mapping: Session Plan Template Using MEDTRICS

**California University of Science & Medicine-School of Medicine (CalMed-SOM)**  
"Session Plan Template" (CP-PBL Small Group Session Version)

<table>
<thead>
<tr>
<th>Course Title</th>
<th>The Formed Elements of Life</th>
<th>Course Code</th>
<th>CM-105 Course Credit</th>
<th>4</th>
<th>Course Duration (Wks.)</th>
<th>4</th>
</tr>
</thead>
</table>
| **Week-Clinical Presentation**  |                             | WK 2 - Recurrent Infections (Abnormal WBCs) | Case Studies/ Clinical Vignettes | - Abnormal WBCs: IMN – Mono  
- Abnormal WBC: Sepsis  
- Lymphoma: Hodgkins  
- Abnormal WBC: CLL |  |  |
| **Students (MS1-MS4)**           | MS1                         | Learning Location (Site/Venue/Setting) | - Learning Studio  
- College Rooms |  |  |
| **Session Title**                | Small Group Session-CP: Recurrent Infections (Abnormal WBCs) |  |  |  |  |
| **Length of Session**            | 4 (2+2) Hours               |  |  |  |  |
| **Instructor (s)**               | Anvar Veji                  |  |  |  |  |
| **Keywords/Granules**            | Evidence based medicine; global health issues; health care financing; medication management/compliance; medical sociology; nutrition; pain management; palliative care; patient safety; population based medicine; preventive care; acute care; chronic care; continuity of care; primary care; end of life care; determinants of health; health promotion and wellness; adolescent medicine; pediatrics; cultural competency; health disparities; demographic influences on health care; need of underserved populations; infectious mononucleosis; IMN; sepsis; blood infections; Hodgkin lymphoma; non Hodgkin lymphoma; chronic lymphocytic leukemia/lymphoma; RS cells; Reed Sternberg cells |  |  |
| **Instructional Method*/Mode of Delivery** | Concept Mapping: Discussion, Small Group: Independent Learning, Patient Presentation – Learner, Peer Teaching; Problem-Based Learning (PBL); Self-Directed Learning; Team-Based Learning (TBL) | Resource Type* | Clinical Case; Key Feature |  |  |
| **Active Learning Experience**   | Small group sessions (Short Case Version of PBL) and Associated Weekly Flipped Classroom |  |  |  |  |
| **Formative Assessment*/In Class Assessment(s)** | Exam - Institutionally Developed, Clinical Performance; Oral Patient Presentation; Narrative Assessment; Participation; Peer Assessment; Self-Assessment |  |  |  |  |
| **Summative Assessment**         | Exam - Institutionally Developed, Clinical Performance; Peer Assessment |  |  |  |  |
### Overview of Assessment

#### Assessment in Year 1 & 2 Courses

**Table 3: SYSTEM-BASED COURSES IN YEARS 1 & 2**

<table>
<thead>
<tr>
<th><strong>Formative Assessment</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Knowledge Assessment Modality:</strong></td>
<td>Readiness Assurance Tests, CBSE (NBME)</td>
</tr>
<tr>
<td><strong>Skills Assessment Tools/Modalities:</strong></td>
<td>[Clinical Case Presentation rubric (Critical Thinking), Teamwork rubric] = first 2/3 of course</td>
</tr>
<tr>
<td><strong>Attitudes Assessment Tools:</strong></td>
<td>Professionalism rubric, Self-Assessment</td>
</tr>
<tr>
<td><strong>Clinical Skills sessions in each course</strong></td>
<td>Rubrics = Oral presentation, Role play, Observed performance</td>
</tr>
<tr>
<td><strong>College Colloq. sessions in each course</strong></td>
<td>Rubrics = Teamwork, Oral presentation, Debate, Role play</td>
</tr>
<tr>
<td><strong>Journal Club sessions in each course</strong></td>
<td>Rubrics = Journal club</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Summative Assessment</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Knowledge Assessment Modality:</strong></td>
<td>65% End-of-course MCQ examination</td>
</tr>
<tr>
<td><strong>Skills Assessment Tools/Modalities:</strong></td>
<td>15% Objective Structured Practical Examination OSPE.</td>
</tr>
<tr>
<td></td>
<td>10% [Clinical Presentation rubrics = Teamwork, Oral presentation, Clinical Case Presentation] = last 1/3 of course.</td>
</tr>
<tr>
<td><strong>Clinical Skills sessions in each course</strong></td>
<td>10% Mini Clinical Skills Examination (mini-CSE).</td>
</tr>
<tr>
<td><strong>College Colloq. sessions in each course</strong></td>
<td>Multiple choice questions included in end-of-course MCQ examination.</td>
</tr>
<tr>
<td><strong>Journal Club sessions in each course</strong></td>
<td>Multiple choice questions included in end-of-course MCQ examination.</td>
</tr>
</tbody>
</table>

**Professionalism:**
A copy of the Self-Assessment rubric must be co-signed at the end of each course.
A copy of the Institutional/Program (self-assessment) Competencies rubric must be submitted at the end of each semester.
Professional conduct will be assessed in all sessions and in every course of the 4-year curriculum. A report will be filed when negative manifestations related to ethical or professional conduct are displayed by a student. The College Colloquium sessions must produce a filled-out rubric at the end of each system-based course. Should unethical or unprofessional conduct of any student be noted in any other course session, the faculty of that session will send a report to the student’s College mentor, who will act accordingly and decide whether the report will influence the overall evaluation of the student’s professional behavior and affect promotion.
Office of Assessment has central coordinating role for supporting faculty in all assessments and evaluations in Years 1-4.
1. Select LCME/CACMAS Accreditation standards as a framework to map the global health competencies previously identified by Association of Medical Faculty of Canada and Global Health Education Consortium.

2. Integrate desired global health program outcomes—knowledge, skills, ethics, social accountability and professionalism; identify outcomes at Institutional (ILO), Program (PLO), Course (CLO), and Session Level (SLO).

3. Identify curricular materials and cross-competencies that already exist and are required for graduation in medicine, public health, population health, ethics, cultural competency, behavioral health and global health.

4. Specify mode of delivery of the curriculum e.g., active learning-flipped class room, voice over PPT.

5. Specify modes of formative and summative assessment, using tools such as Individual Readiness Assessment Test (i-RAT) and Team-based Readiness Assessment Test (t-RAT), MCQs, Rubrics and Progress Tests.

6. Adapt and utilize learning and teaching tools e.g., Objective Structured Clinical Examination, Simulations, and Virtual Reality.
• Dr. Robert Suskind, Dean of CalMed
• Dr. Alfred Tenore, Senior Associate Dean of Medical Education, CalMed
• Dr. Ghaith Al-Eyd, Associate Dean Curriculum (Year 1&2) and Director of Mapping, CalMed

References:


3. Framework for Identification of Global Health Competencies: developing an integrated basic science and clinical science medical curriculum Facilitator: Anvar Velji, California Northstate University College of Medicine (AAMC Meeting Nov 8, 2014.)