Teaching Clinical Competence Today to Doctors of Tomorrow

Prof. Chit Soe

Road Map

- Why competency?

- Which competencies for future doctors?

- What do we need to change in learning and assessment methods?

Competency-CS

21.1.18

OBE

- The terms outcome based education and competency based education describe educational models
- which differ in detail but share the assumption
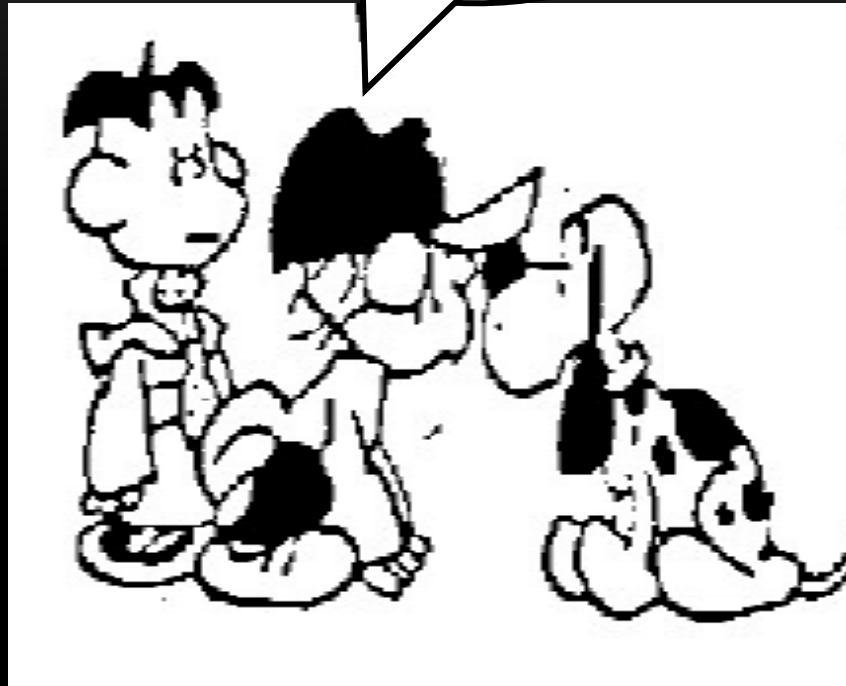- that medical education should be guided by predetermined outcomes
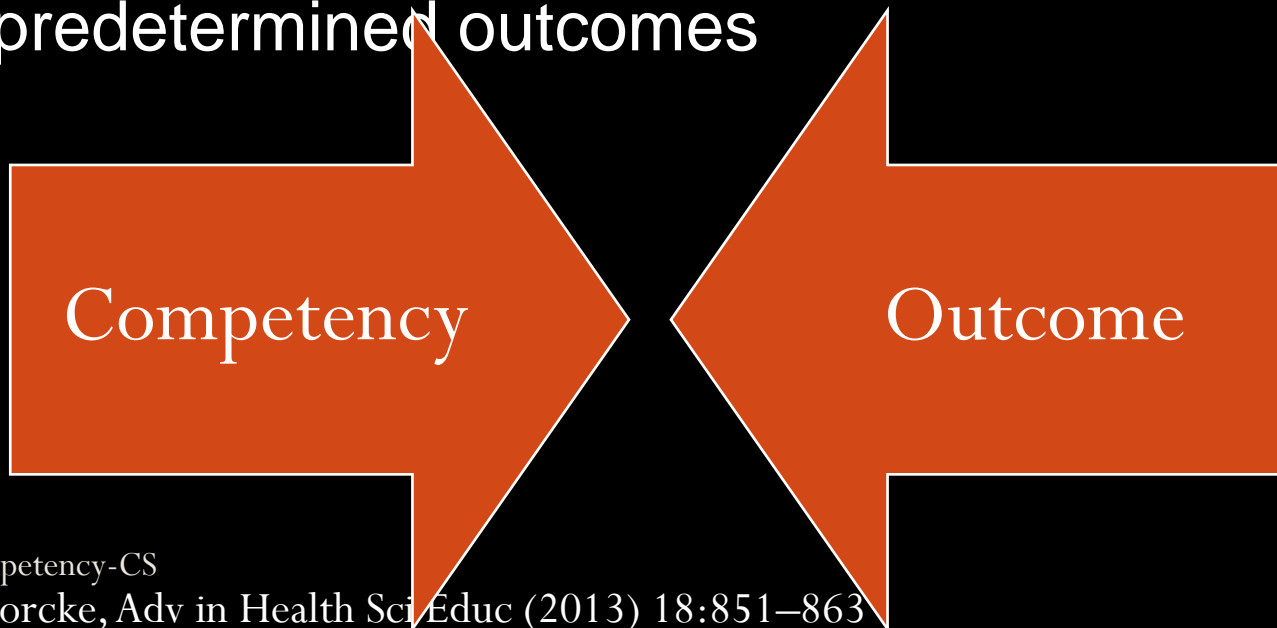
Competency → ← Outcome

21.1.18

4

(Prof. Shin, 2015)

Table 3: Comparison of Structure/Process-based vs. Competency-based Programs

Variable	Educational Program Approach	
	Structure/Process	Competency-based
Driving force for curriculum	Content-knowledge acquisition	Outcome-knowledge application
Driving force for process	Teacher	Learner
Path of learning	Hierarchical (Teacher→student)	Non-hierarchical (Teacher↔student)
Responsibility for content	Teacher	Student and Teacher
Goal of educ. encounter	Knowledge acquisition	Knowledge application
Typical assessment tool	Single subject measure	Multiple objective measures
Assessment tool	Proxy	Authentic (mimics real tasks of profession)
Setting for evaluation	Removed (gestalt)	"In the trenches" (direct observation)
Evaluation	Norm-referenced	Criterion-referenced
Timing of assessment	Emphasis on summative	Emphasis on formative
Program completion	Fixed time	Variable time

Adapted from Carraccio, 2002.

Want vs Need

- According to Albanese et al. (2008), the difference between outcomes and competencies is in the words "want" and "need"

- Outcome defines what skills and qualities we want students to have,

- Competency is a determination of what skills and qualities doctors need to have to care for patients of future civilization.

Traditional
(Teacher centered)

OBC
(Learner centered)

CBC
(Consumer centered)

Competency-CS

21.1.18

Background: Medical Errors

– NASA, Lucian Leape

– "To Err is Human": IOM and medical error

FIRST, DO NO HARM

TO ERR IS HUMAN

BUILDING A SAFER HEALTH SYSTEM

INSTITUTE OF MEDICINE
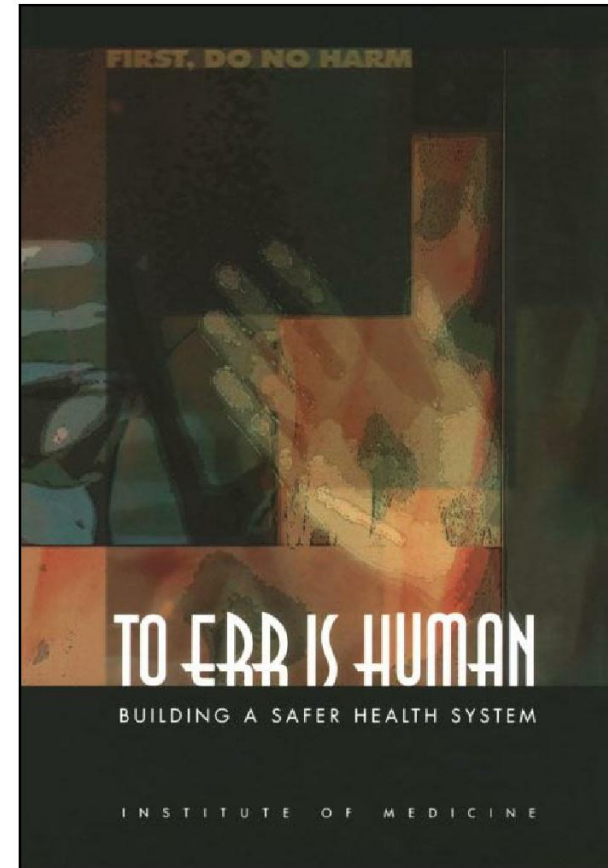
Background: Quality of Care

– TQI: Deming,

– Don Berwick

– Institute for Healthcare Improvement (IHI)

INSTITUTE OF MEDICINE

CROSSING THE QUALITY CHASM

A New Health System for the 21st Century
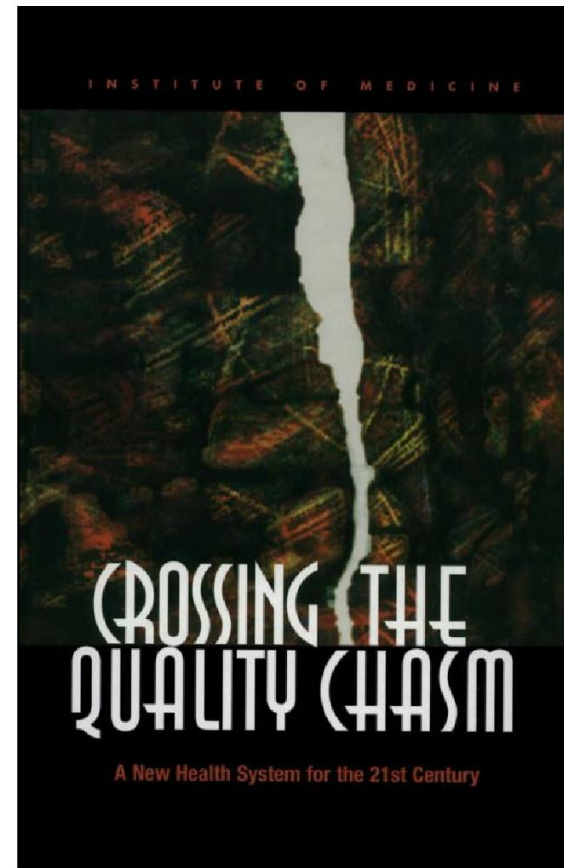
7 main models for competencies of tomorrow doctors

- Medical School Objectives Project (MSOP) of the Association of American Medical Colleges (AAMC) produced a report advocating competency based education

- Accreditation Council for Graduate Medical Education (ACGME) and the American Board of Medical Specialties jointly agreed on six competencies for certification

-

- Educating Future Physicians for Ontario Project that sparked the development of the internationally widespread CanMEDS competency framework had also been published (Neufeld et al. 1998).

Competency-CS

IOM Competency Model

Overlap of Core Competencies for Health Professionals

Work in Interdisciplinary Teams

Employ Evidence-Based Practice

Provide Patient-Centered Care

Apply Quality Improvement

Utilize Informatics

PROFESSIONAL

COMMUNICATOR

SCHOLAR

MEDICAL EXPERT

COLLABORATOR

HEALTH ADVOCATE

MANAGER
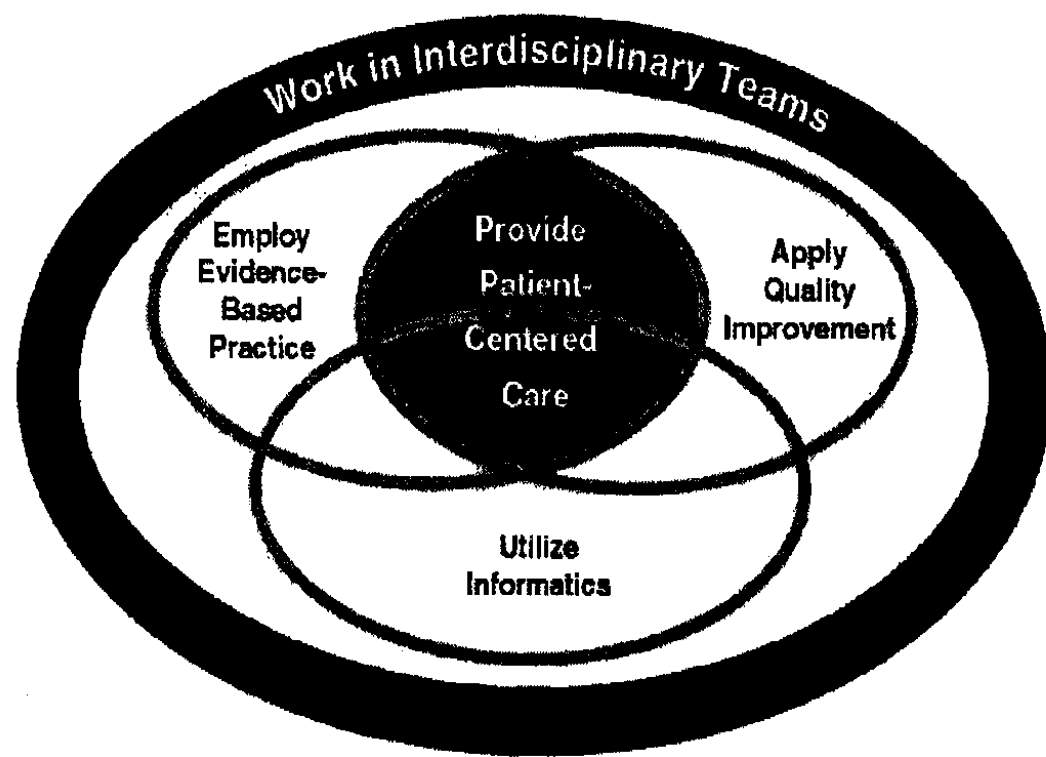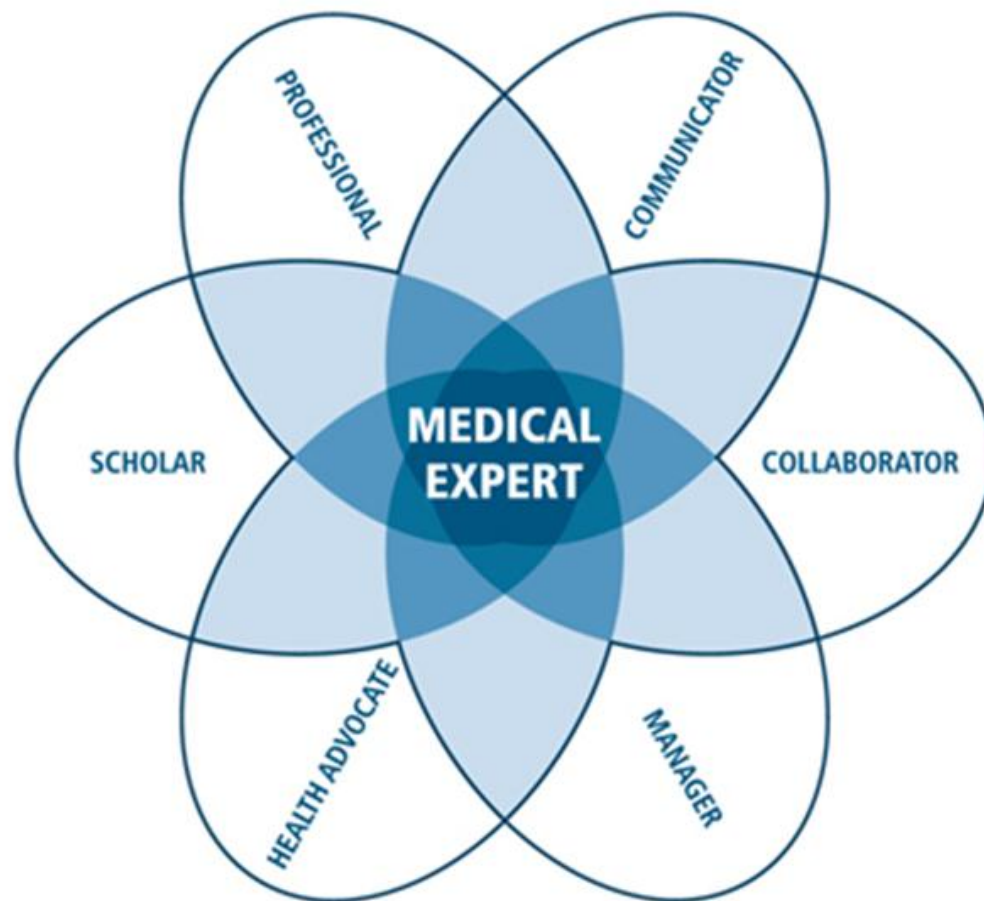
ROYAL COLLEGE
OF PHYSICIANS AND SURGEONS OF CANADA | CANMEDS

21.1.18   Competency-CS

14

- Scottish Deans' Medical Curriculum Group defined 12 key outcome domains, which were subdivided into 86 learning outcomes, leaving individual schools to break them down further according to the needs of their curricula (Simpson et al. 2002)

- Tuning Project for Medicine also developed a panEuropean learning outcomes framework (Cumming and Ross 2007)

- Reconcile of overlapping or competing outcome frameworks was published in 2007, which successfully cross-referenced The Scottish Doctor and the UK General Medical Council's framework, Tomorrow's Doctors (Ellaway et al. 2007)

Tomorrow's Doctors

Outcomes and standards for undergraduate medical education

Competenc   21.1.18

ACGME (Accreditation Council for Graduate Medical Education)

Predecessor = AMA Council on Medical Education

Member Organizations

- American Board of Medical Specialties (ABMS)
- American Hospital Association (AHA)
- American Medical Association (AMA)
- Association of American Medical Colleges (AAMC)
- Council of Medical Specialty Societies (CMSS)

David Leach, MD
Executive Director

Residency Review Committees (RRCs)

ACGME 1999

1. Patient care
2. Medical knowledge
3. Practice-based learning & improvement
4. Interpersonal & communication skills
5. Professionalism
6. System-based practice

Competency-CS

1. Patient Care

Residents must provide patient care that is compassionate, appropriate, and effective --

- Caring and respectful behaviors when interacting with patients and their families

- Interviewing **(Medical Interviewing)**

- Informed decision making **(MDM)**

- Develop and carry out patient management plans

- Counsel and educate patients and their families

- Use information technology **(Informatics)**

- Perform competently all procedures **(Procedural Skills)**

- Preventive health care services **(Prevention)**

- Work in a team

Competency-CS   21-1-18

2. Medical Knowledge

Knowledge in field, including

- Investigatory and analytic thinking **(MDM)**
- Knowledge and application of the basic and clinical sciences.

3. Practice-Based Learning and Improvement

- Analyze own practice for needed improvements (TQI, QI)

- Use evidence from scientific studies (EBM)

- Apply research and statistical methods (Statistics)

- Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness (Epidemiology, Cost Effectiveness)

- Use information technology (Informatics)

- Facilitate the learning of others (Teaching Residents to Teach)

Competency-CS

21.1.18

IOM Definition

"Good quality means providing patients with appropriate services in a technically competent manner, with good communication, shared decision making, and with cultural sensitivity."

IOM, 2001

Competency-CS

21.1.18

4. Interpersonal Skills and Communication

1. communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds, create therapeutic relationship;

2. communicate effectively with physicians, other health professionals, and health related agencies;

3. work effectively as a member or leader of a health care team or other professional group;

4. act in a consultative role to other physicians and health professionals; and,

5. maintain comprehensive, timely, and legible records.

Competency-CS

5. Professionalism

1. compassion, integrity, and respect for others;
2. responsiveness to patient needs that supersedes self interest, altruistic;
3. respect for patient privacy and autonomy, ethically sound;
4. accountability to patients, society and the profession; and,
5. sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.

Competency-CS

21.1.18

6. Systems-Based Practice

- Understand interaction of their practice with larger system

- Know about practice and delivery systems

- Practice cost-effective health care

- Advocate for patients within the health care system.

- Partner with health care managers and health care providers to assess, coordinate, and improve health care

Knowledge Acquisition vs Competency Development

DOMAIN	KNOWLEDGE	Competency
Teacher Role	*lecture*	*mentor*
Activity Center	*teacher*	*learner*
Learning Opportunity	*anytime*	*limited*
Learning Increment	*variable size*	*discrete & well defined*
Assessment & Feedback:	*anytime*	*as soon as possible*
Setting	*almost anywhere*	*clinical/simulated*
Need for repetition:	*variable*	*mandatory*

Competency-CS

Linking Miller's pyramid of competence, teaching and learning activities and assessment

Professional authenticity ↑

	Teaching and Learning	Assessment	Instruments
Does	• Experience	• Performance assessment in vivo	• Observation • video • logs • portfolio
Shows how	• Skill-based exercise ; Repetitive practice • Small group • Role playing	• Performance assessment in vitro	• OSCE • CPX • SP-based test
Knows how	• PBL, CBL • Tabletop exercises • Direct observation • Mentors	• Clinical context based tests	• Clinical context based MCQ, MEQ • Essay type • Short answer • Oral interview
Knows what	• Reading/Independent Study • Lecture • Computer-based • Colleagues/Peers	• Factual test	• MCQs • Short answer • True/False • Matching (extended)

Competency-CS

Modified form Miller GE (1990}, Harden RM (1999} & Wass V, et al. (2001)

Chart-Stimulated Recall

- Oral exam of resident using recent patient records

- Examiner probes reasoning, actions, differentials etc.

- Exam procedure and scoring rules standardized

(Well studied, psychometrics good)

Portfolios

- Collection of "products" of education
- Prepared by the resident
- May include
  - Personal and professional goals
  - Learning objectives
  - Logs of procedures, cases
  - Case summaries
  - Documented achievements
  - Etc.

(Most studies are descriptive)

ACGME Competencies: Suggested Best Methods for Evaluation

Evaluation Methods

Competency	Required Skill	Record Review	Chart Stim. Recall	Check-list	Global Rating	SP	OSCE	Simula-tions & Models	360° Global Rating	Port-folios	Exam MCQ	Exam Oral	Procedure or Case Logs	Patient Survey
Medical Knowledge	Investigatory & analytic thinking		1					2	3			1		
	Knowledge & application of basic sciences							2	3		1	1		
Practice-Based Learning & Improvement	Analyze own practice for needed improvements	2	2			2	2	3	3	1				2
	Use of evidence from scientific studies	1	1			3	2			1	1	1		
	Application of research and statistical methods		2	3	3					1	3			
	Use of information technology					2	2		1	1			2	
	Facilitate learning of others			2	3				1	3				
Interpersonal & Communication Skills	Creation of therapeutic relationship with patients			3		1	1		2					1
	Listening skills			3		1	1		2					

1 = the most desirable; 2 = the next best method; and, 3 = a potentially applicable method.

30

21.1.18

ACGME Competencies: Suggested Best Methods for Evaluation

Competency	Required Skill	Evaluation Methods												
		Record Review	Chart Stim. Recall	Check-list	Global Rating	SP	OSCE	Simula-tions & Models	360° Global Rating	Port-folios	Exam MCQ	Exam Oral	Procedure or Case Logs	Patient Survey
Professional-ism	Respectful, altruistic			3			1		2					1
	Ethically sound practice		2					2	1	3				2
	Sensitive to cultural, age, gender, disability issues		2	2			1		1	3		2		2
Systems-Based Practice	Understand interaction of their practices with the larger system						2		1	3				
	Knowledge of practice and delivery systems		2				3			2	1			
	Practice cost-effective care	3		1					2					
	Advocate for patients within the health care system			3			2		1	2				1

Competency-CS

...18

s are 1 = the most desirable; 2 = the next best method; and, 3 = a potentially applicable method.

ox of Assessment Methods© Accreditation Council for Graduate Medical Education (ACGME) and American Board of Medical Specialties (ABMS). Version 1.1.

- Assessment had to be integrated and cumulative, cover professional formation
- as well as formal knowledge and clinical performance,
- and include formative feedback, guidance, and mentoring
- as well as summative certification of competence at each level of development

Competency-CS

1. Medical knowledge
2. Patient care
3. Practice-based learning & improvement
4. Communication & Interpersonal Skill
5. Professionalism
6. System-based practice

Competency-CS

File Edit View Insert Format Tools Data Window Help Adobe PDF

A14 = International Missions

Activity Title	Program	Description	MK	PC	PBLI	CIS	Prof	SBP	For more info,
SUMC Graduate Medical Education - Program Innovations in Teaching the ACGME Core Competencies									
Advocating for Public Policy	Geriatric Psychiatry	Fellows are coached to understand how to advocate for public policy supporting rights for the elderly. Fellows are required to travel to Sacramento to lobby for public policy.						X	Jared Tinklenberg jerytink@stanford
ARTS Program	Nuclear Medicine	Trainees from various departments are given the opportunity to pursue a joint degree of their choosing in another department at Stanford.						X	Sam Gambhir, M sgambhir@stanfo
CE Didactics for Nurses	Anesthesia	Trainees give lectures to Nurses that qualify for Continuing Education			X	X			Alex Macario, MI amaca@stanford
Continuous Quality Improvement Meetings	Critical Care Medicine	Trainees are encouraged to attend CQI meetings where there suggestions are solicited to improve actual practices in the hospital. They are invited to participate in QI projects.					X	X	Norm Rizk, MD nrizk@stanford.e
Cultural Competency online course	Pediatric Pulmonary	Trainees take an online course on developing cultural competency; they also attend special lectures to learn about cultural competency.				X	X		John Mark, MD jbdm@stanford.e
Debates	Otolaryngology	A controversial topic is chosen, one trainee is assigned to defend it and one is assigned to oppose it. One faculty and one trainee act as moderators for the debate, and two other trainees act as commentators. The rest of the trainees in the audience grade the debaters on their performance; evaluations are based on the core competencies.			X	X	X	X	Anna Messner, N AMessner@ohns
Didactics on Communication Skills	Child Psychiatry	Fellows participate in special didactics to teach communication skills.				X			Shashank Joshi, svjoshi@stanford
Direct Observation Protocol	Pediatric Rheumatology	Residents are observed by a third attending who stays in the room while the resident is interacting with a patient. Residents are evaluated according to a structured checklist and feedback is provided immediately.			X	X	X		Christy Sandborg sandborg@stanfo
Ethics course	Urology	Residents are required to attend a course over lunchtime on ethics that is put on by the Stanford Center for Bioethics.					X		Harchi Gill, MD hgill@stanford.ec
Ethics module	Pediatric Urology	Department created a specific module for residents on ethics. Fellows are required to complete this module.					X		Linda Shortliffe, N Linda.Shortliffe@
Instructors Program at CAPE	Neonatology	Fellows are taught to be instructors during three day structured program; they are assigned teaching mentors and their teaching responsibilities grow gradually over time.			X				Louis Halamek, halamek@stanfo
International Missions	Pediatric Anesthesia	Trainees are given opportunities to attend overseas missions with faculty						X	Alice Edler, MD alice.edler@stan
al Club	Neuropathology	Instead of discussing 1-2 paper per session, each attendee presents a							Hannes Vogel, N

34

Program Innovations

Ready

A13 — CE Didactics for Nurses

	Activity Title	Program	Description	MK	PC	PBLI	CIS	Prof	SBP	For more info,
1	SUMC Graduate Medical Education - Program Innovations in Teaching the ACGME Core Competencies									
3	Advocating for Public Policy	Geriatric Psychiatry	Fellows are coached to understand how to advocate for public policy supporting rights for the elderly. Fellows are required to travel to Sacramento to lobby for public policy.						X	Jared Tinklenberg jerrytink@stanfor
4	ARTS Program	Nuclear Medicine	Trainees from various departments are given the opportunity to pursue a joint degree of their choosing in another department at Stanford.						X	Sam Gambhir, M sgambhir@stanf
5	Continuous Quality Improvement Meetings	Critical Care Medicine	Trainees are encouraged to attend CQI meetings where there suggestions are solicited to improve actual practices in the hospital. They are invited to participate in QI projects.					X	X	Norm Rizk, MD rizk@stanford.e
6	Debates	Otolaryngology	A controversial topic is chosen, one trainee is assigned to defend it and one is assigned to oppose it. One faculty and one trainee act as moderators for the debate, and two other trainees act as commentators. The rest of the trainees in the audience grade the debaters on their performance; evaluations are based on the core competencies.			X	X	X	X	Anna Messner, M AMessner@ohns
7	International Missions	Pediatric Anesthesia	Trainees are given opportunities to attend overseas missions with faculty						X	Alice Edler, MD alice.edler@stan
8	Lab Management	Pathology	Outside physicians come to speak to trainees about lab management.						X	Stephen Galli, M sgalli@stanford.
9	Lectures on health care system, dealing with finances	Critical Care Medicine	Trainees attend special didactics to learn about the health care system and dealing with finances in regards to patient care.					X	X	Norm Rizk, MD rizk@stanford.e
10	QI Projects in Portfolios	Otolaryngology	Each trainee identifies a QI project for the year. The project receives final approval from the Program Director. At the end of the project, the trainees' work is documented in his or her educational portfolio.			X			X	Anna Messner, M AMessner@ohns
11	Resident Retreat	Pathology	Each year all residents go on retreat together to reflect about the training program. They return with a summary of recommendations to improve the training program. A faculty subcommittee meets to review the recommendations and discuss how to implement them into the program.			X	X		X	Stephen Galli, M sgalli@stanford.
12	Residents as Teachers	Medicine	Day long course to teach teaching skills to trainees based on the Stanford Faculty Development Center curriculum.			X	X		X	Kelley Skeff, MD skeff@stanford.e
13	CE Didactics for Nurses	Anesthesia	Trainees give lectures to Nurses that qualify for Continuing Education			X	X			Alex Macario, MI amaca@stanford
	Cultural Competency online	Pediatric Pulmonary	Trainees take an online course on developing cultural competency; they also attend special lectures to learn about cultural competency.			X	X			John Mark, MD jbdm@stanford.e

35

Competency-CS

Program Innovations

Ready

Take Home

- Competency Based Curriculum with outcome based education (OBE) is the gold standard

- Main competencies had been agreed depending on needs of the society of 21st century

- Competency need different assessments, especially mentoring and continuous assessment methods combined with feedback apart from usual summative exams.

Competency-CS

Cruz, E. (2003). Bloom's revised taxonomy. In B. Hoffman (Ed.), *Encyclopedia of Educational Technology.* http://coe.sdsu.edu/eet/Articles/bloomrev/start.htm

Dalton, J. & Smith, D. (1986) *Extending children's special abilities: Strategies for primary classrooms.* http://www.teachers.ash.org.au/researchskills/dalton.htm

Tomorrow's Doctors (General Medical Council, UK, 2009)

http://www.dundee.ac.uk/medicalschool/

The Carnegie Foundation for the Advancement of Teaching (CFAT), 2010

http://www.royalcollege.ca/portal/page/portal/rc/canmeds/framework

Thank You