



能力導向醫學教育

Competency-based Medical Education

教育長 陳祖裕

大綱

- 前言
- 基本觀念
- 課程設計
- 教師培育
- 結語

Competency vs. Competent

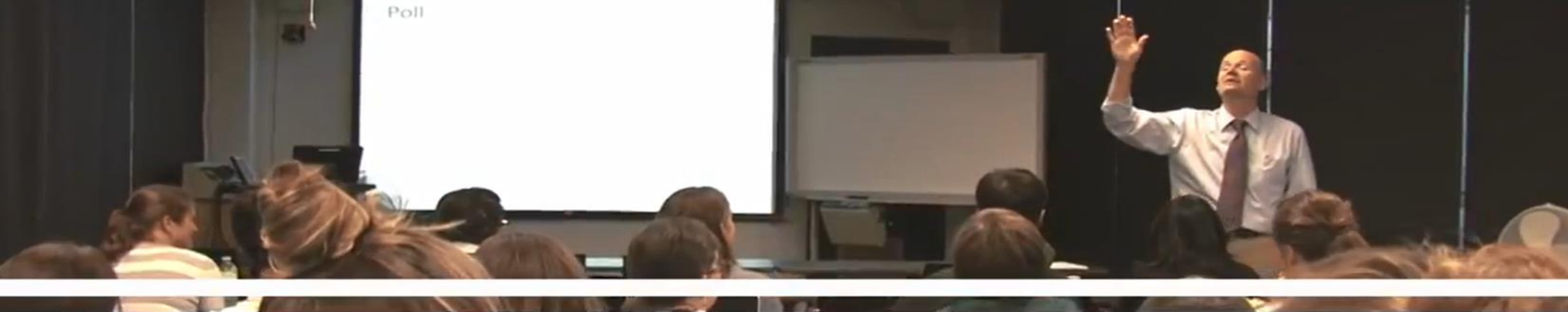
- ❑ Competency = 能力？勝任能力？
- ❑ Competent = 有能力的？勝任？有勝任能力？

能力導向醫學教育

What Is Competency-Based Medical Education?

By NEJM Knowledge+ Team





Queen's
UNIVERSITY

Competency-Based Medical Education at Queen's University

Resident = 居民、居住（留）權
Attending = 出席者、參加者





- ❑ 能力導向醫學教育（CBME）是一項教育計畫
- ❑ 明確地定義出專科醫師的能力
- ❑ 建立一個評估系統，證明他們已經具備這些能力
- ❑ 要將住院醫師訓練成「稱職的醫生」
- ❑ 我們原本就有非常好的計畫，CBME將我們期望他們能做的事情描述和定義得更好
- ❑ 我們原有很好的評估系統，CBME將評估系統更加強

- ❑ CBME使評估變得更加明確，回饋也很實在
- ❑ 一旦我們在這領域有所進步，便將能夠進入下一個階段
- ❑ CBME讓我們對自己的能力發展更能理解力
- ❑ 也確保我們的主治醫師知道我們的水平，並知道可以信任我們做什麼
- ❑ CBME也會讓住院醫師有更大的信心去嘗試



Dr. Damon Dagnone
CBME Faculty Lead, Postgraduate Medical Education



Dr. Melanie Jaeger
CBME Program Lead, Anesthesiology and Perioperative Medicine

- 我們將5年的訓練分為四個不同的階段：
 - 過渡到住院（專科）醫師訓練
 - 專科基礎
 - 專科核心
 - 過渡到臨床執業，學習如何成為一名勝任的資淺主治醫師

- CBME對住院醫師訓練更有彈性
- 讓我們對領先和落後的住院醫師有不同規劃
- 處於領先的住院醫師，一旦他們達成了所有的EPAs，就可以把時間投入他們感興趣的任何專業領域，以及獲得更多的研究或教學的機會
- 雖然CBME以能力為基礎，但它仍會有時間框架，以滿足醫療照護的需求



Dr. G. Ross Walker



Dr. Jena Hall

- 我真的認為CBME會增強已經很好的教育計畫，住院醫師成為受益者

- 這是站在加拿大醫學教育前端的絕佳機會
- 既然CBME在加拿大是必然的，能成為首批通過CBME訓練的住院醫師是幸運的
- 經歷了CBME，我知道我的水平，我知道我的能力
- 因此，我會是一個更好的醫生

名詞定義

- ❑ 能力（competency）：醫療專業人員可被觀察的能力，整合了知識、技能、價值觀和態度等多個成分
- ❑ 勝任（competent）：擁有在某特定醫學教育或執業階段具備所有領域所需的能力
- ❑ CBME：教育成效是針對完訓者能力所設計的醫學培訓方法

發展歷程

- ❑ 100多年前傳統產業界：CBT
- ❑ 20世紀60年代醫學教育界：CBME
- ❑ 20世紀末IOM：醫療人員必備的五項核心能力
- ❑ 1999年ACGME：六大核心能力
- ❑ 2005年Olle ten Cate：EPAs
- ❑ 2009年ACGME：NAS/milestones
- ❑ 2014年AAMC：Core EPAs

Question 1：為何貶加尊美？

IOM = Institute of Medicine

ACGME = Accreditation Council for Graduate Medical Education

EPAs = entrustable professional activities

NAS = next accreditation system

ACGME



- ❑ Accreditation Council for Graduate Medical Education
- ❑ 前身：AMA Council on Medical Education
- ❑ 會員機構
 - ❑ 美國醫療專科委員會
 - ❑ 美國醫院協會
 - ❑ 美國醫學會
 - ❑ 美國醫學院學會
 - ❑ 醫療專科學會理事會



美國醫療系統發生一些問題

- ❑ 政府醫療給付相關法令及程序繁雜
- ❑ HMOs 及 managed care 的動向
- ❑ 照護品質
- ❑ 住院醫師工作狀況

ACGME Competencies

Robert Wigton, MD

Associate Dean

Graduate Medical Education

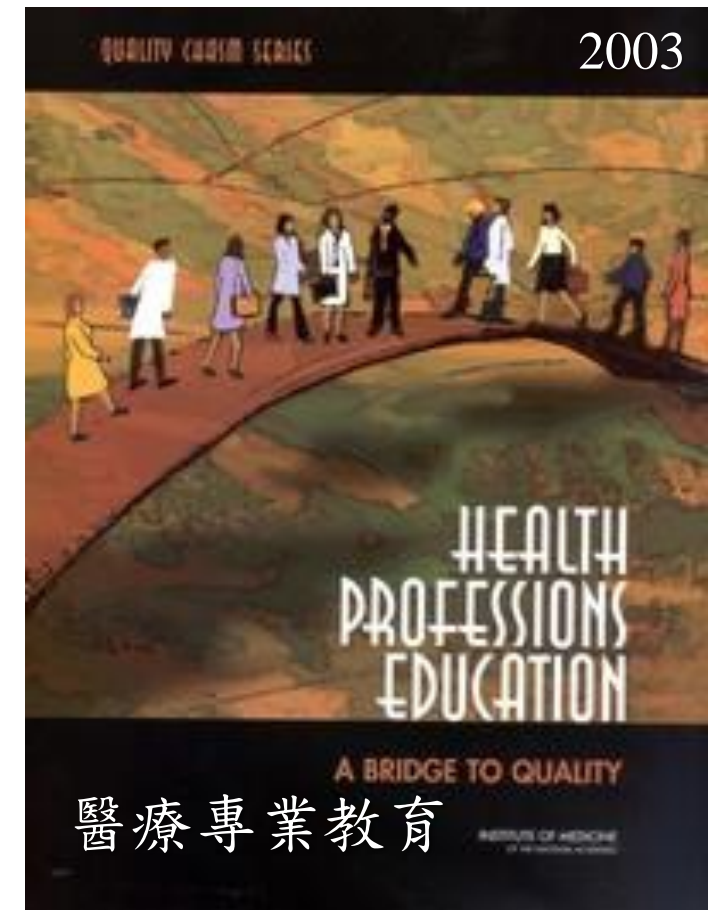
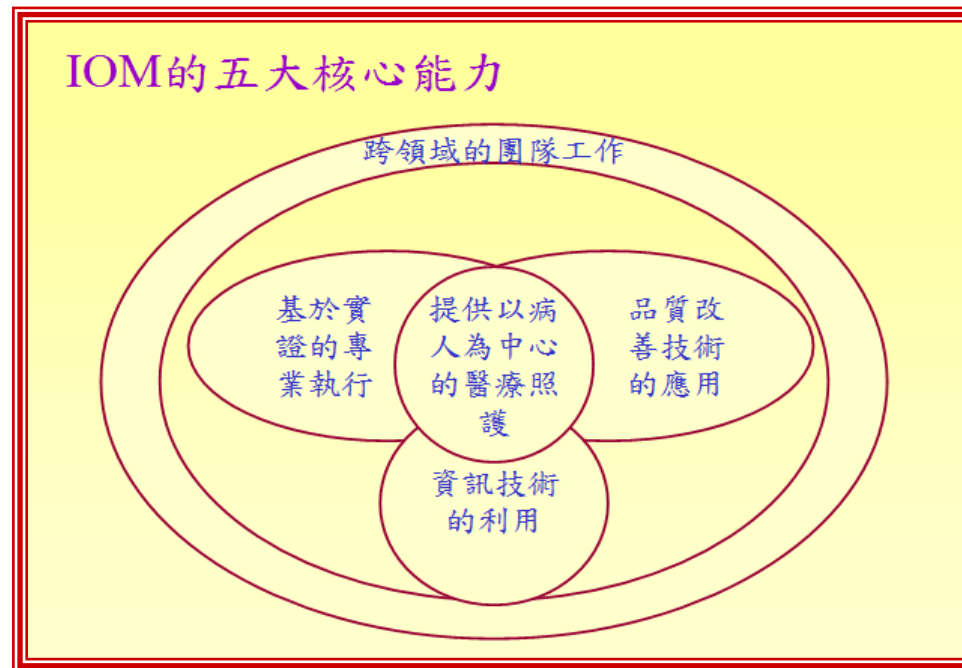
HMO = Health Maintenance Organizations :

一種管理式健康護理計劃，在預付費基礎上為自願加入的客戶提供或安排全面、協調的醫療服務。

旨在透過協調所有醫療處置並避免所有不必要或不適當的服務，提供預付費用較少的健康護理服務。

IOM : A Bridge to Quality

- ❑ 教育所有衛生專業人員成為跨領域工作團隊成員，以提供「以病人為中心的醫療照護」
- ❑ 強調：以實證執業、品質改善、資訊學



醫療作業的問題

- 住院醫師工作狀況
 - Libby Zion and the Bell Commission

Libby Zion Law (亦稱Libby Law)

一項限制住院醫師在醫院工作時數的法規

A Life-Changing Case for Doctors in Training



A DAUGHTER LOST After Libby Zion died in a hospital at age 18, her father's crusade led to changes in work hours and supervision of medical residents.

Libby Zion



- 18歲的Libby Zion 因發高燒住進紐約康乃爾醫學中心 (New York Hospital) (Mar 4, 1984)
- Depression，使用 **phenelzine**；隱瞞 **cocaine**
- Fever、shaking movements
- 住院後接受 **meperidine** ... haloperidol 注射，不久之後發生 **serotonin syndrome** 死亡
- 法院判定與住院醫師超時工作有關
- 1989：組成Bell Commission，制訂病人照護相關法規，包括：約束的使用、給藥系統及住院醫師工作時數

*Libby的父母是記者、律師

ACGME Duty Hours Standards Fact Sheet

What are the duty hours standards?

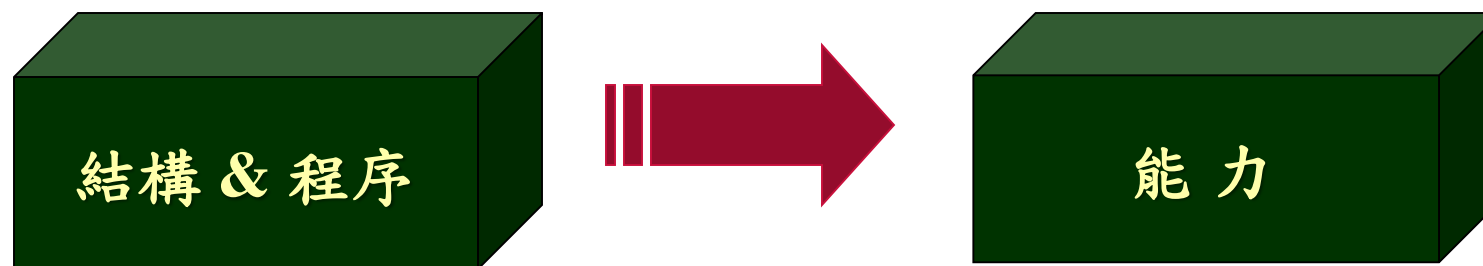
The Accreditation Council for Graduate Medical Education's common duty hour standards took effect on July 1, 2003. The common minimum standards on resident duty hours apply to ACGME-accredited residency programs in all 120 ACGME-accredited specialties and subspecialties. An ACGME working group developed the standards, which reflect its consensus on the benefit of duty hour limits for resident education and related patient care. Major provisions of the standards include:

- An 80-hour weekly limit, averaged over four weeks. Review committees for various specialties may set more restrictive standards. Moonlighting done in the sponsoring institution counts toward the weekly limit. In addition, program directors must ensure that external and internal moonlighting does not interfere with the resident's achievement of the program's educational goals and objectives.
- Adequate rest between duty periods.
- A 24-hour limit on continuous duty time, with an additional period up to six hours permitted for continuity of care and educational activities.
- One day in seven free from all patient care and educational obligations, averaged over four weeks.
- In-house call no more than once every three nights, averaged over four weeks.

A New Way of Thinking



如何改變教育和評鑑制度...



The ACGME Outcome Project

- 強調：
 - 學習：能力導向
 - 評估：住院醫師表現，改善方法學
 - 評鑑：重視「能力」及「結果」
- 促進：
 - 醫師的養成
 - 病人的照護

ACGME
Outcome project
enhancing residency education through outcomes assessment

General Competencies從何而來？

- 1998年1月至1999年2月進行「深度研議」
- 文獻蒐集、廣徵意見、反覆徵詢、多次修訂
- 廣泛的「導入」及「回饋」程序
- 意見來源：醫療專家、住院醫師、教育人員、醫師雇主、病人團體、社會團體、護理主管、醫事主管
- 諮議小組從許多項陳述整合至6項能力

Outcome Project Timeline

- **Phase 1** (2001年7月至2002年6月)
 - 蒐集資訊、開始進行
- **Phase 2** (2002年7月至2006年6月)
 - 使能力的焦點和定義更明確
 - 提供學習機會、改善評估、應用成果數據
- **Phase 3** (2006年7月至2011年6月)
 - 將能力全面地整合於學習及臨床照護
- **Phase 4** (2011年7月以後)
 - 建立卓越典範

Spread of the Competencies

- 採納相關能力的組織
 - 美國醫療專科委員會
 - 醫師繼續教育評鑑委員會
 - 醫療專科學會理事會
 - 美國骨科醫學會
 - 國家衛生保健領導中心
 - 國家醫學研究院
 - 聯合委員會
 - 台灣醫策會



Minimum Requirements

(Inserted in All Special Requirements)



- 住院醫師訓練計畫：住院醫師須獲得「一名新進執業者」在六個領域中應有的能力
- 訓練計畫應訂出所需的特殊知識、技能和態度，並提供教育訓練所需的經驗
- 住院醫師訓練計畫：
 - 有效地評估住院醫師在受訓期間的表現
 - 利用評估結果改善住院醫師的表現

Outcomes Project

- General Competencies
 - Patient Care
 - Medical Knowledge
 - Practice-based Learning and Improvement
 - Interpersonal and Communication Skills
 - Professionalism
 - Systems-based Practice
- Minimum Requirements：各專科訓練必須包含
- 除Interpersonal Skills之外，其餘均為多種臨床技能的組合

MIS-PPP
PPP-SIM

Outcome Project Timeline

- 2007：2nd Version（似乎沒有比較好）
- 2009：開始定義**Milestones**（ACGME、美國內科醫學會、次專科學會、訓練計畫主持人、住院醫師）
- 2012：alpha test sites開始在個別計畫執行**Milestones**
- 2013：**NAS**第一期計畫執行**Milestones**
- 2014：**NAS**發展至各專科；所有訓練計畫均須執行**Milestones**

NAS = Next Accreditation System 下一代評鑑系統

什麼是里程碑

- 一般定義：在特定時間內的技能和知識的培養
- 里程碑定義（ACGME和專科委員會）：住院醫師在專科訓練期間於六大核心能力領域所展示的具體行為、屬性或成效

General Competency

Subcompetency

Developmental Progression or Set of Milestones

PC1. History (Appropriate for age and impairment)

Level 1	Level 2	Level 3	Level 4	Level 5
Acquires a general medical history	Acquires a basic psychiatric history including medical, functional, and psychosocial elements	Acquires a comprehensive psychiatric history integrating medical, functional, and psychosocial elements Seeks and obtains data from secondary sources when needed	Efficiently acquires and presents a relevant history in a prioritized and hypothesis driven fashion across a wide spectrum of ages and impairments Elicits subtleties and information that may not be readily volunteered by the patient	Gathers and synthesizes information in a highly efficient manner Rapidly focuses on presenting problem, and elicits key information in a prioritized fashion Models the gathering of subtle and difficult information from the patient

Milestones

INTERNAL MEDICINE MILESTONES

ACGME Report Worksheet

11. Transitions patients effectively within and across health delivery systems. (SBP4)				
Critical Deficiencies			Ready for unsupervised practice	Aspirational
<p>Disregards need for communication at time of transition</p> <p>Does not respond to requests of caregivers in other delivery systems</p>	<p>Inconsistently utilizes available resources to coordinate and ensure safe and effective patient care within and across delivery systems</p> <p>Written and verbal care plans during times of transition are incomplete or absent</p> <p>Inefficient transitions of care lead to unnecessary expense or risk to a patient (e.g. duplication of tests readmission)</p>	<p>Recognizes the importance of communication during times of transition</p> <p>Communication with future caregivers is present but with lapses in pertinent or timely information</p>	<p>Appropriately utilizes available resources to coordinate care and ensures safe and effective patient care within and across delivery systems</p> <p>Proactively communicates with past and future care givers to ensure continuity of care</p>	<p>Coordinates care within and across health delivery systems to optimize patient safety, increase efficiency and ensure high quality patient outcomes</p> <p>Anticipates needs of patient, caregivers and future care providers and takes appropriate steps to address those needs</p> <p>Role models and teaches effective transitions of care</p>
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Comments:				

Selecting a response box in the middle of a column implies milestones in that column as well as those in previous columns have been substantially demonstrated.

Selecting a response box on the line in between columns indicates that milestones in lower levels have been substantially demonstrated as well as **some** milestones in the higher columns(s).

INTERNAL MEDICINE MILESTONES

ACGME Report Worksheet

11. Transitions patients effectively within and across health delivery systems. (SBP4)									
關鍵性不足				準備好無人監督下執行			力求精進		
<p>在轉送時忽視溝通的需求</p> <p>對派送系統照護者的請求不作回應</p>		<p>未能一致地利用現有資源來協調和確保派送系統內和派送系統之間的安全和有效的病人照護</p> <p>轉送期間缺少書面和口頭照護計畫或計畫不完整</p> <p>照護轉換效率低下，導致病人不必要的開支或風險（例如重新接受檢驗、再入院）</p>	<p>認知轉送期間溝通的重要性</p> <p>與未來照護者有進行溝通，但在相關性和及時性的信息有失誤</p>	<p>恰當地利用現有資源來協調照護，並確保派送系統內和派送系統之間的安全和有效的病人照護</p> <p>積極與過去和未來的照護人員溝通，以確保照護的連續性</p>			<p>協調醫療系統內和醫療系統之間的照護，優化病人安全、提高效率，並確保較佳的病人預後</p> <p>預測病人、照護人員和未來照護人員的需求，並採取適當的措施來滿足這些需求</p> <p>作為榜樣並教導有效的照護過渡過程</p>		
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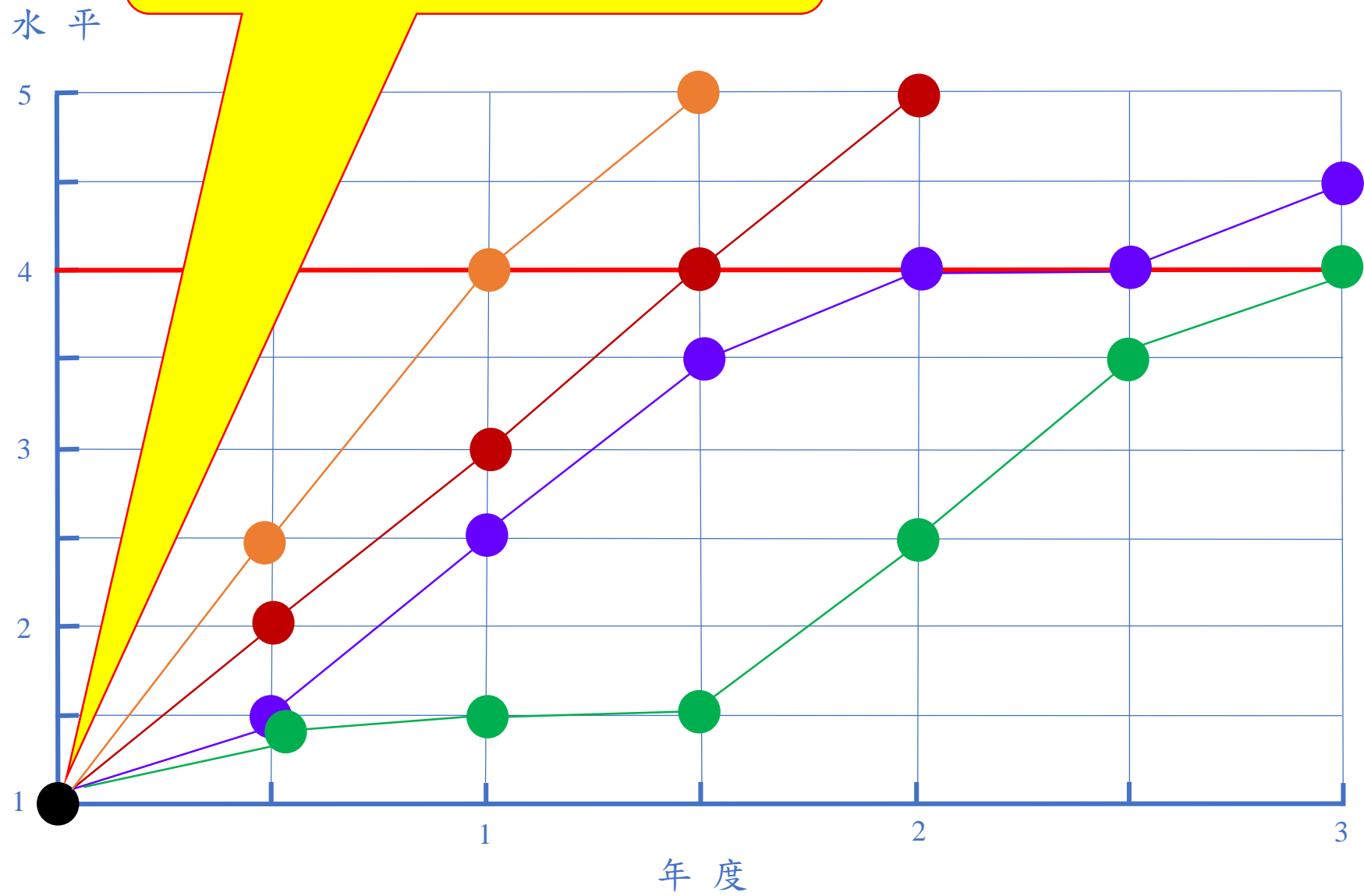
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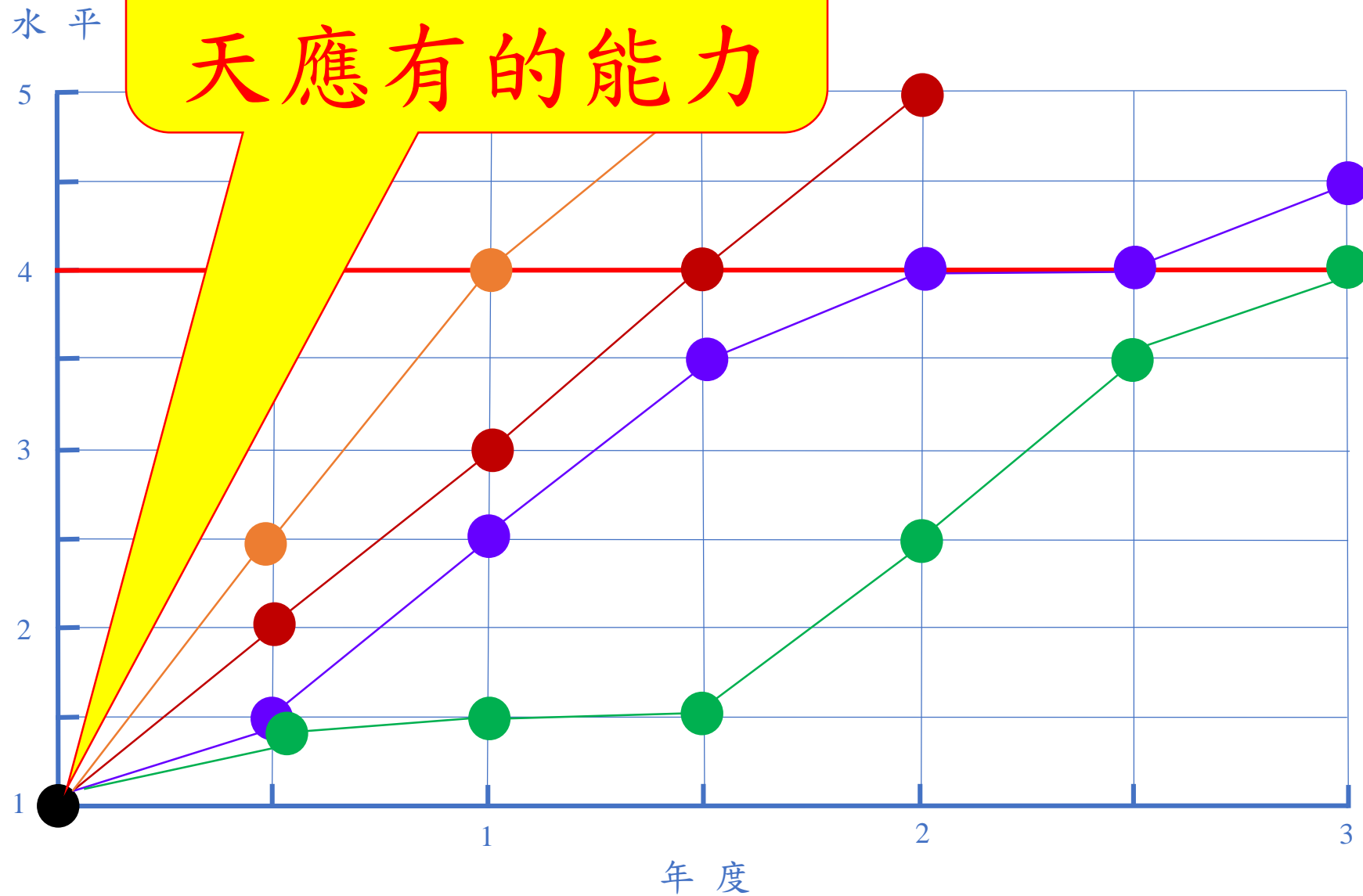
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①	②	③	④	⑤	⑥	⑦	⑧	⑨		
Comments:										

一無是處？



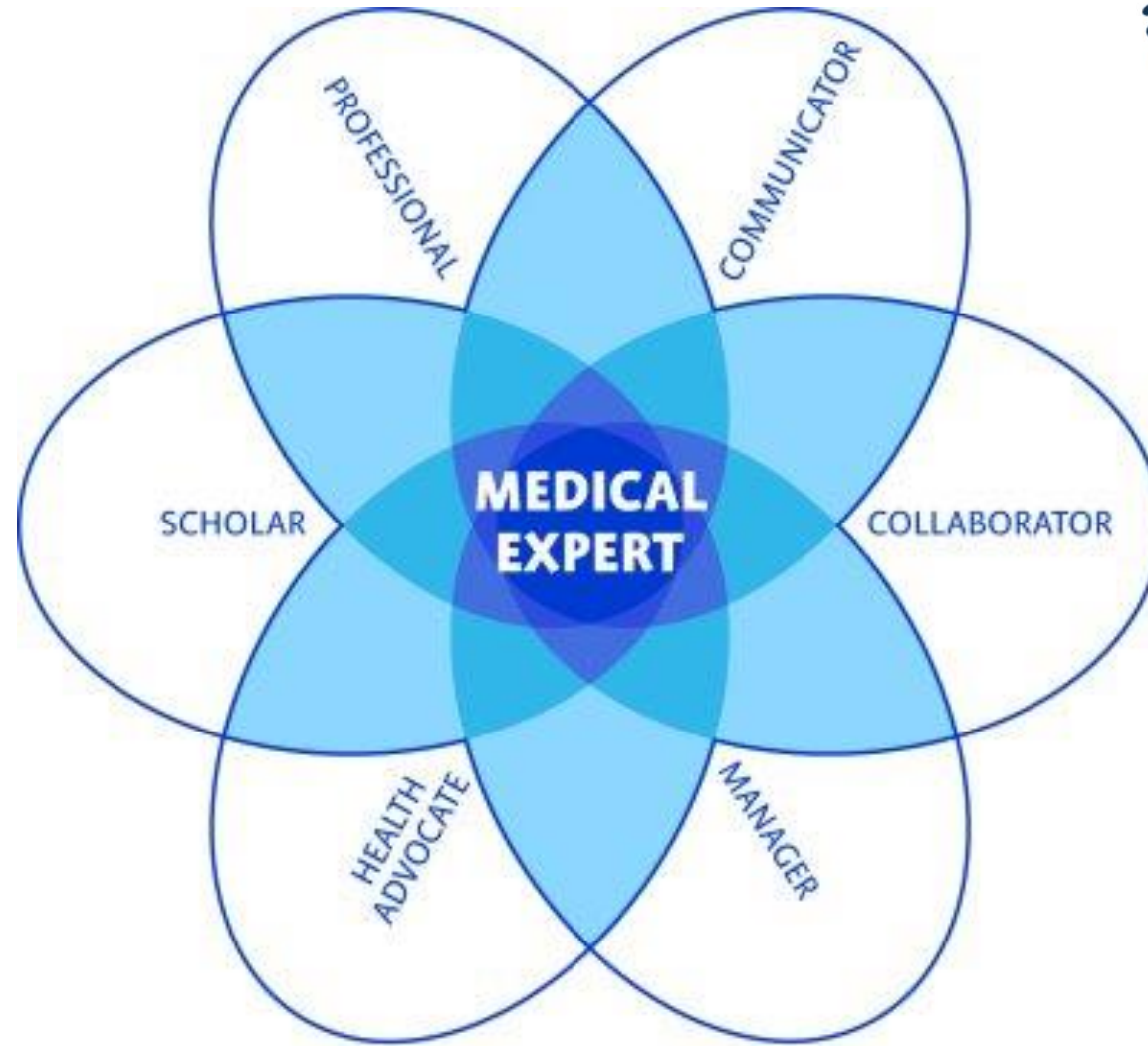
專科訓練第一天應有的能力



發展歷程

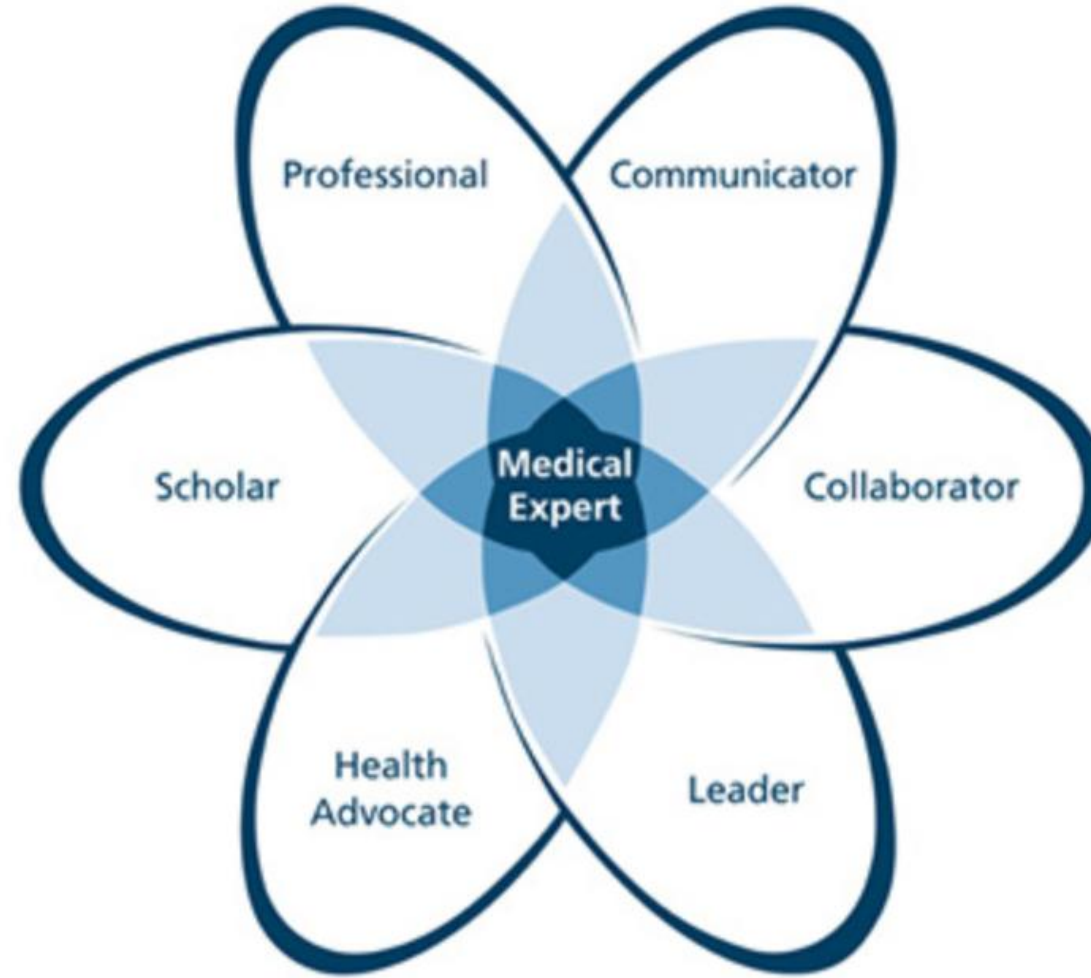
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- 20世紀末：IOM—醫療人員必備的五項核心能力
- 1996年：CanMEDS framework
- 1999年：ACGME—六大核心能力
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CBT: competency-based training; CBME: competency-based medical education; IOM: Institute of Medicine; ACGME: Accreditation Council for Graduate Medical Education; EPAs: entrustable professional activities; NAS: Next Accreditation System; AAMC: Association of American Medical College



THE
CANMEDS
ROLES FRAMEWORK

About CanMEDS



CANMEDS

CanMEDS is a **framework** for improving patient care by enhancing physician training. Developed by the Royal College in the 1990s, its main purpose is to define the necessary competencies for all areas of medical practice and provide a comprehensive foundation for medical education and practice in Canada.

Since its formal adoption by the Royal College in 1996, CanMEDS has become the most widely accepted and applied physician competency framework in the world. It reflects the work of hundreds of Royal College Fellows and volunteers and is based on empirical research, sound education principles and broad stakeholder consultation. Renewal is key to the CanMEDS Framework's ongoing success, which is why it has been updated twice since it was developed — in 2005 and again in 2015.

CanMEDS是為要加強醫師培訓來改善病人照護的框架。九十年代由皇家學院發展，其主要目的是定義所有醫療實踐領域的必要能力，為加拿大的醫學教育和醫療執業提供全面的基礎。

自1996年皇家學院正式通過以來，CanMEDS已經成為世界上被廣泛接受和應用的醫師能力框架。它反映了數百名皇家學院研究員和志願者的工作，並以實證研究，良好的教育原則和廣泛的利益相關者諮詢為基礎。「更新」是CanMEDS框架持續成功的關鍵所在，這說時為何CanMEDS分別在2005年及2015年被更新了兩次。

CANMEDS

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- 由數百名皇家學院研究員和志願者所貢獻
- 基礎：實證研究、教育原則、廣泛的利益相關者諮詢
- **更新**是CanMEDS框架持續成功的關鍵：分別在2005年及2015年被更新了兩次

CanMEDS history

In the early 1990s, Fellows of the Royal College, with support from the charitable institution Associated Medical Services, leveraged the important work of the Educating Future Physicians for Ontario project to develop a competency framework for specialist physicians. The result, the CanMEDS Framework, was formally approved by the Royal College in 1996.

CanMEDS 2005: The first update

In 2005, the Royal College updated and adopted the framework, calling it the CanMEDS 2005 Physician Competency Framework and establishing it as the basis for the Royal College's educational standards. The CanMEDS Framework is now incorporated into residency training accreditation, evaluation and examinations as well as the standards for specialty training and continuing professional development.

CanMEDS 2015: An enhanced framework

In 2012, as part of our Competence by Design program, the Royal College launched a multi-year project to update the 2005 CanMEDS Framework and the associated education and practice standards. The CanMEDS 2015 project set out to introduce new themes such as patient safety, and to align the framework with a competency-based medical education approach. The 2015 CanMEDS Framework now has a set of [competency milestones for each CanMEDS Role](#). These milestones can be applied throughout a physician's career, starting at entry to residency and continuing through retirement.

CanMEDS Consortium 2017: An unprecedented collaboration

In 2017, the [Royal College united with 12 Canadian health care organizations](#) under the new CanMEDS Consortium. Inspired by a national commitment to improve patient care, the member organizations have agreed to embed the CanMEDS Framework into their respective areas of work to train and evaluate physicians in Canada. The result will be better patient care emanating from a more consistent and coordinated approach.

Phases of CanMEDS development

Phase I (1993-1996)

Development

Identification, development and validation of the CanMEDS Roles Framework.

Phase II (1996-1997)

Experimentation and pilot

Development of practical tools and methods to facilitate both resident learning and evaluation of the CanMEDS competencies.

Phase III (1997-2002)

Implementation

Implementation into Canadian specialty postgraduate medical education, including adoption into Royal College accreditation, certification and examination standards.

Phase IV (2002-2015)

Faculty development

Systematic implementation with enhanced materials and faculty development.

Phase V (2012-2015)

Revalidation and update of CanMEDS 2005 Framework and development of competency milestones.

Phase VI (2015-present)

Systematic implementation of CanMEDS 2015 with enhanced materials and faculty development and Competence by Design.

Phase VII (2017-present)

The creation of a 13-member CanMEDS Consortium begins national and provincial integration across the continuum of medical education and practice

1996

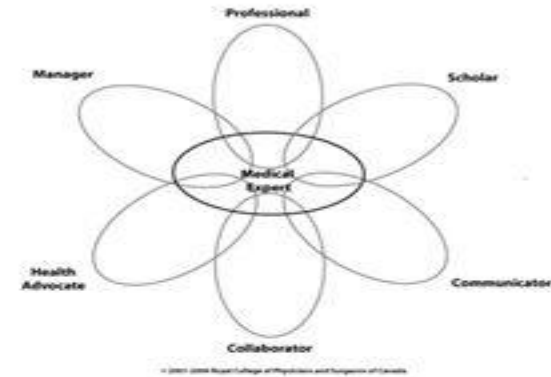
- Medical Expert
- Communicator
- Collaborator
- Manager
- Health Advocate
- Scholar
- Professional

2005



2001

The CanMEDS™ ROLES FRAMEWORK



2015



CanMEDS 2015

Physician Competency Framework



EDITORS

Jason R. Frank
Linda Snell
Jonathan Sherbino

This framework is proudly endorsed by 12 Canadian medical organizations

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Medical Expert

DEFINITION

As Medical Experts, physicians integrate all of the CanMEDS Roles, applying medical knowledge, clinical skills, and professional values in their provision of high-quality and safe patient-centred care. Medical Expert is the central physician Role in the CanMEDS Framework and defines the physician's clinical scope of practice.

DESCRIPTION

As Medical Experts who provide high-quality, safe, patient-centred care, physicians draw upon an evolving body of knowledge, their clinical skills, and their professional values. They collect and interpret information, make clinical decisions, and carry out diagnostic and therapeutic interventions. They do so within their scope of practice and with an understanding of the limits of their expertise. Their decision-making is informed by best practices and research evidence, and takes into account the patient's circumstances and preferences as well as the availability of resources. Their clinical practice is up-to-date, ethical, and resource-efficient, and is conducted in collaboration with patients and their families,* other health care professionals, and the community. The Medical Expert Role is central to the function of physicians and draws on the competencies included in the Intrinsic Roles (Communicator, Collaborator, Leader, Health Advocate, Scholar, and Professional).

KEY CONCEPTS

Agreed-upon goals of care: 2.1, 2.3, 2.4, 3.2, 4.1

Application of core clinical and biomedical sciences: 1.3

Clinical decision-making: 1.4, 1.6, 2.2

Clinical reasoning: 1.3, 1.4, 2.1, 3.1

Compassion: 1.1

Complexity, uncertainty, and ambiguity in clinical decision-making: 1.6, 2.2, 2.4, 3.2, 3.3, 3.4

Consent: 3.2

Continuity of care: 2.4, 4.1

Duty of care: 1.1, 1.5, 2.4

Integration of CanMEDS Intrinsic Roles: 1.2

Interpreting diagnostic tests: 2.2

Medical expertise: all enabling competencies

Patient-centred clinical assessment and

Key competencies	Enabling competencies
PHYSICIANS ARE ABLE TO:	
1. Practise medicine within their defined scope of practice and expertise	1.1 Demonstrate a commitment to high-quality care of their patients 1.2 Integrate the CanMEDS Intrinsic Roles into their practice of medicine 1.3 Apply knowledge of the clinical and biomedical sciences relevant to their discipline 1.4 Perform appropriately timed clinical assessments with recommendations that are presented in an organized manner 1.5 Carry out professional duties in the face of multiple, competing demands 1.6 Recognize and respond to the complexity, uncertainty, and ambiguity inherent in medical practice
2. Perform a patient-centred clinical assessment and establish a management plan	2.1 Prioritize issues to be addressed in a patient encounter 2.2 Elicit a history, perform a physical exam, select appropriate investigations, and interpret their results for the purpose of diagnosis and management, disease prevention, and health promotion 2.3 Establish goals of care in collaboration with patients and their families, which may include slowing disease progression, treating symptoms, achieving cure, improving function, and palliation 2.4 Establish a patient-centred management plan
3. Plan and perform procedures and therapies for the purpose of assessment and/or management	3.1 Determine the most appropriate procedures or therapies 3.2 Obtain and document informed consent, explaining the risks and benefits of, and the rationale for, a proposed procedure or therapy 3.3 Prioritize a procedure or therapy, taking into account clinical urgency and available resources 3.4 Perform a procedure in a skilful and safe manner, adapting to unanticipated findings or changing clinical circumstances
4. Establish plans for ongoing care and, when appropriate, timely consultation	4.1 Implement a patient-centred care plan that supports ongoing care, follow-up on investigations, response to treatment, and further consultation
5. Actively contribute, as an individual and as a member of a team providing care, to the continuous improvement of health care quality and patient safety	5.1 Recognize and respond to harm from health care delivery, including patient safety incidents 5.2 Adopt strategies that promote patient safety and address human and system factors

Communicator

COMMUNICATOR

DEFINITION

As Communicators, physicians form relationships with patients and their families* that facilitate the gathering and sharing of essential information for effective health care.†

DESCRIPTION

Physicians enable patient-centred therapeutic communication by exploring the patient's symptoms, which may be suggestive of disease, and by actively listening to the patient's experience of his or her illness. Physicians explore the patient's perspective, including his or her fears, ideas about the illness, feelings about the impact of the illness, and expectations of health care and health care professionals. The physician integrates this knowledge with an understanding of the patient's context, including socio-economic status, medical history, family history, stage of life, living situation, work or school setting, and other relevant psychological and social issues. Central to a patient-centred approach is shared decision-making: finding common ground with the patient in developing a plan to address his or her medical problems and health goals in a manner that reflects the patient's needs, values, and preferences. This plan should be informed by evidence and guidelines.

Because illness affects not only patients but also their families, physicians must be able to communicate effectively with everyone involved in the patient's care.

KEY CONCEPTS

Accuracy: 2.1, 3.1, 4.2, 5.1

Active listening: 1.1, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 4.1, 4.3

Appropriate documentation: 2.1, 5.1, 5.2, 5.3

Attention to the psychosocial aspects of illness: 1.6, 2.1, 2.2, 4.1

Breaking bad news: 1.5, 3.1

Concordance of goals and expectations: 1.6, 2.2, 3.1, 4.3

Disclosure of harmful patient safety incidents: 3.2

Effective oral and written information for patient care across different media: 5.1, 5.2, 5.3

Efficiency: 2.3, 4.2, 5.2

Eliciting and synthesizing information for patient care: 2.1, 2.2, 2.3

Empathy: 1.1, 1.2, 1.3

Ethics in the physician–patient encounter: 3.2, 5.1

Expert verbal and non-verbal communication: 1.1, 1.4

Informed consent: 2.2

Mutual understanding: 1.6, 3.1, 4.1

Patient-centred approach to communication: 1.1, 1.6, 2.1, 3.1

Privacy and confidentiality: 1.2, 5.1

Rapport: 1.4

Relational competence in interactions: 1.5

Key competencies	Enabling competencies
PHYSICIANS ARE ABLE TO:	
1. Establish professional therapeutic relationships with patients and their families	<ul style="list-style-type: none"> 1.1 Communicate using a patient-centred approach that encourages patient trust and autonomy and is characterized by empathy, respect, and compassion 1.2 Optimize the physical environment for patient comfort, dignity, privacy, engagement, and safety 1.3 Recognize when the values, biases, or perspectives of patients, physicians, or other health care professionals may have an impact on the quality of care, and modify the approach to the patient accordingly 1.4 Respond to a patient's non-verbal behaviours to enhance communication 1.5 Manage disagreements and emotionally charged conversations 1.6 Adapt to the unique needs and preferences of each patient and to his or her clinical condition and circumstances
2. Elicit and synthesize accurate and relevant information, incorporating the perspectives of patients and their families	<ul style="list-style-type: none"> 2.1 Use patient-centred interviewing skills to effectively gather relevant biomedical and psychosocial information 2.2 Provide a clear structure for and manage the flow of an entire patient encounter 2.3 Seek and synthesize relevant information from other sources, including the patient's family, with the patient's consent
3. Share health care information and plans with patients and their families	<ul style="list-style-type: none"> 3.1 Share information and explanations that are clear, accurate, and timely, while checking for patient and family understanding 3.2 Disclose harmful patient safety incidents to patients and their families accurately and appropriately
4. Engage patients and their families in developing plans that reflect the patient's health care needs and goals	<ul style="list-style-type: none"> 4.1 Facilitate discussions with patients and their families in a way that is respectful, non-judgmental, and culturally safe 4.2 Assist patients and their families to identify, access, and make use of information and communication technologies to support their care and manage their health 4.3 Use communication skills and strategies that help patients and their families make informed decisions regarding their health
5. Document and share written and electronic information about the medical encounter to optimize clinical decision-making, patient safety, confidentiality, and privacy	<ul style="list-style-type: none"> 5.1 Document clinical encounters in an accurate, complete, timely, and accessible manner, in compliance with regulatory and legal requirements 5.2 Communicate effectively using a written health record, electronic medical record, or other digital technology 5.3 Share information with patients and others in a manner that respects patient privacy and confidentiality and enhances understanding

Collaborator

COLLABORATOR

DEFINITION

As Collaborators, physicians work effectively with other health care professionals to provide safe, high-quality, patient-centred care.

DESCRIPTION

Collaboration is essential for safe, high-quality, patient-centred care, and involves patients and their families,* physicians and other colleagues in the health care professions, community partners, and health system stakeholders.

Collaboration requires relationships based in trust, respect, and shared decision-making among a variety of individuals with complementary skills in multiple settings across the continuum of care. It involves sharing knowledge, perspectives, and responsibilities, and a willingness to learn together. This requires understanding the roles of others, pursuing common goals and outcomes, and managing differences.

Collaboration skills are broadly applicable to activities beyond clinical care, such as administration, education, advocacy, and scholarship.

KEY CONCEPTS

Collaboration with community providers: 1.1, 1.2, 1.3

Communities of practice: 1.3, 3.2

Conflict resolution, management, and prevention: 2.2

Constructive negotiation: 2.2

Effective consultation and referral: 1.2, 1.3, 3.1, 3.2

Effective health care teams: all enabling competencies

Handover: 3.1, 3.2

Interprofessional (i.e. among health care professionals) health care: all enabling competencies

Intraprofessional (i.e. among physician colleagues) health care: all enabling competencies

Recognizing one's own roles and limits: 1.2, 3.1

Key competencies	Enabling competencies
PHYSICIANS ARE ABLE TO:	
1. Work effectively with physicians and other colleagues in the health care professions	1.1 Establish and maintain positive relationships with physicians and other colleagues in the health care professions to support relationship-centred collaborative care 1.2 Negotiate overlapping and shared responsibilities with physicians and other colleagues in the health care professions in episodic and ongoing care 1.3 Engage in respectful shared decision-making with physicians and other colleagues in the health care professions
2. Work with physicians and other colleagues in the health care professions to promote understanding, manage differences, and resolve conflicts	2.1 Show respect toward collaborators 2.2 Implement strategies to promote understanding, manage differences, and resolve conflicts in a manner that supports a collaborative culture
3. Hand over the care of a patient to another health care professional to facilitate continuity of safe patient care	3.1 Determine when care should be transferred to another physician or health care professional 3.2 Demonstrate safe handover of care, using both verbal and written communication, during a patient transition to a different health care professional, setting, or stage of care

Leader

LEADER

DEFINITION

As Leaders, physicians engage with others to contribute to a vision of a high-quality health care system and take responsibility for the delivery of excellent patient care through their activities as clinicians, administrators, scholars, or teachers.

DESCRIPTION

The CanMEDS Leader Role describes the engagement of all physicians in shared decision-making for the operation and ongoing evolution of the health care system. As a societal expectation, physicians demonstrate collaborative leadership and management within the health care system. At a system level, physicians contribute to the development and delivery of continuously improving health care and engage with others in working toward this goal. Physicians integrate their personal lives with their clinical, administrative, scholarly, and teaching responsibilities. They function as individual care providers, as members of teams, and as participants and leaders in the health care system locally, regionally, nationally, and globally.

KEY CONCEPTS

Administration: 4.1, 4.2

Career development: 4.2

Complexity of systems: 1.1

Consideration of justice, efficiency, and effectiveness in the allocation of health care resources: 1.1, 1.2, 1.3, 1.4, 2.1, 2.2

Effective committee participation: 3.2

Health human resources: 2.1, 4.2

Information technology for health care: 1.4

Leading change: 1.1, 1.2, 1.3, 1.4, 2.2, 3.2

Management of personnel: 4.2

Negotiation: 3.1

Organizing, structuring, budgeting, and financing: 2.1, 2.2, 4.1, 4.2, 4.3

Personal leadership skills: 3.1, 4.1

Physician remuneration: 4.2

Physician roles and responsibilities in the health care system: 1.1, 1.2, 1.3, 1.4, 2.2, 3.2

Physicians as active participant-architects within the health care system: 1.1, 1.2, 1.3, 1.4, 3.2

Key competencies	Enabling competencies
PHYSICIANS ARE ABLE TO:	
1. Contribute to the improvement of health care delivery in teams, organizations, and systems	1.1 Apply the science of quality improvement to contribute to improving systems of patient care 1.2 Contribute to a culture that promotes patient safety 1.3 Analyze patient safety incidents to enhance systems of care 1.4 Use health informatics to improve the quality of patient care and optimize patient safety
2. Engage in the stewardship of health care resources	2.1 Allocate health care resources for optimal patient care 2.2 Apply evidence and management processes to achieve cost-appropriate care
3. Demonstrate leadership in professional practice	3.1 Demonstrate leadership skills to enhance health care 3.2 Facilitate change in health care to enhance services and outcomes
4. Manage career planning, finances, and health human resources in a practice	4.1 Set priorities and manage time to integrate practice and personal life 4.2 Manage a career and a practice 4.3 Implement processes to ensure personal practice improvement

Health Advocate

DEFINITION

As Health Advocates, physicians contribute their expertise and influence as they work with communities or patient populations to improve health. They work with those they serve to determine and understand needs, speak on behalf of others when required, and support the mobilization of resources to effect change.

DESCRIPTION

Physicians are accountable to society and recognize their duty to contribute to efforts to improve the health and well-being of their patients, their communities, and the broader populations they serve.* Physicians possess medical knowledge and abilities that provide unique perspectives on health. Physicians also have privileged access to patients' accounts of their experience with illness and the health care system.

Improving health is not limited to mitigating illness or trauma, but also involves disease prevention, health promotion, and health protection. Improving health also includes promoting health equity, whereby individuals and populations reach their full health potential without being disadvantaged by, for example, race, ethnicity, religion, gender, sexual orientation, age, social class, economic status, or level of education.

Physicians leverage their position to support patients in navigating the health care system and to advocate with them to access appropriate resources in a timely manner. Physicians seek to improve the quality of both their clinical practice and associated organizations by addressing the health needs of the patients, communities, or populations they serve. Physicians promote healthy communities and populations by influencing the system (or by supporting others who influence the system), both within and outside of their work environments.

Advocacy requires action. Physicians contribute their knowledge of the determinants of health to positively influence the health of the patients, communities, or populations they serve. Physicians gather information and perceptions about issues, working with patients and their families† to develop an understanding of needs and potential mechanisms to address these needs. Physicians support patients, communities, or populations to call for change, and they speak on behalf of others when needed. Physicians increase awareness about important health issues at the patient, community, or population level. They support or lead the mobilization of resources (e.g. financial, material, or human resources) on small or large scales.

Physician advocacy occurs within complex systems and thus requires the development of partnerships with patients, their families and support networks, or community agencies and organizations to influence health determinants. Advocacy often requires engaging other health care professionals, community agencies, administrators, and policy-makers.

Key competencies	Enabling competencies
PHYSICIANS ARE ABLE TO:	
1. Respond to an individual patient's health needs by advocating with the patient within and beyond the clinical environment	1.1 Work with patients to address determinants of health that affect them and their access to needed health services or resources 1.2 Work with patients and their families to increase opportunities to adopt healthy behaviours 1.3 Incorporate disease prevention, health promotion, and health surveillance into interactions with individual patients
2. Respond to the needs of the communities or populations they serve by advocating with them for system-level change in a socially accountable manner	2.1 Work with a community or population to identify the determinants of health that affect them 2.2 Improve clinical practice by applying a process of continuous quality improvement to disease prevention, health promotion, and health surveillance activities 2.3 Contribute to a process to improve health in the community or population they serve

Scholar

SCHOLAR

DEFINITION

As Scholars, physicians demonstrate a lifelong commitment to excellence in practice through continuous learning and by teaching others, evaluating evidence, and contributing to scholarship.

DESCRIPTION

Physicians acquire scholarly abilities to enhance practice and advance health care. Physicians pursue excellence by continually evaluating the processes and outcomes of their daily work, sharing and comparing their work with that of others, and actively seeking feedback in the interest of quality and patient safety. Using multiple ways of learning, they strive to meet the needs of individual patients and their families* and of the health care system.

Physicians strive to master their domains of expertise and to share their knowledge. As lifelong learners, they implement a planned approach to learning in order to improve in each CanMEDS Role. They recognize the need to continually learn and to model the practice of lifelong learning for others. As teachers they facilitate, individually and through teams, the education of students and physicians in training, colleagues, co-workers, the public, and others.

Physicians are able to identify pertinent evidence, evaluate it using specific criteria, and apply it in their practice and scholarly activities. Through their engagement in evidence-informed and shared decision-making, they recognize uncertainty in practice and formulate questions to address knowledge gaps. Using skills in navigating information resources, they identify evidence syntheses that are relevant to these questions and arrive at clinical decisions that are informed by evidence while taking patient values and preferences into account.

Finally, physicians' scholarly abilities allow them to contribute to the application, dissemination, translation, and creation of knowledge and practices applicable to health and health care.

Key competencies	Enabling competencies
PHYSICIANS ARE ABLE TO:	
1. Engage in the continuous enhancement of their professional activities through ongoing learning	1.1 Develop, implement, monitor, and revise a personal learning plan to enhance professional practice 1.2 Identify opportunities for learning and improvement by regularly reflecting on and assessing their performance using various internal and external data sources 1.3 Engage in collaborative learning to continuously improve personal practice and contribute to collective improvements in practice
2. Teach students, residents, the public, and other health care professionals	2.1 Recognize the influence of role-modelling and the impact of the formal, informal, and hidden curriculum on learners 2.2 Promote a safe learning environment 2.3 Ensure patient safety is maintained when learners are involved 2.4 Plan and deliver a learning activity 2.5 Provide feedback to enhance learning and performance 2.6 Assess and evaluate learners, teachers, and programs in an educationally appropriate manner
3. Integrate best available evidence into practice	3.1 Recognize practice uncertainty and knowledge gaps in clinical and other professional encounters and generate focused questions that address them 3.2 Identify, select, and navigate pre-appraised resources 3.3 Critically evaluate the integrity, reliability, and applicability of health-related research and literature 3.4 Integrate evidence into decision-making in their practice
4. Contribute to the creation and dissemination of knowledge and practices applicable to health	4.1 Demonstrate an understanding of the scientific principles of research and scholarly inquiry and the role of research evidence in health care 4.2 Identify ethical principles for research and incorporate them into obtaining informed consent, considering potential harms and benefits, and considering vulnerable populations 4.3 Contribute to the work of a research program 4.4 Pose questions amenable to scholarly inquiry and select appropriate methods to address them 4.5 Summarize and communicate to professional and lay audiences, including patients and their families, the findings of relevant research and scholarly inquiry

Professional

DEFINITION

As Professionals, physicians are committed to the health and well-being of individual patients and society through ethical practice, high personal standards of behaviour, accountability to the profession and society, physician-led regulation, and maintenance of personal health.

DESCRIPTION*

Physicians serve an essential societal role as professionals dedicated to the health and care of others. Their work requires mastery of the art, science, and practice of medicine. A physician's professional identity is central to this Role. The Professional Role reflects contemporary society's expectations of physicians, which include clinical competence, a commitment to ongoing professional development, promotion of the public good, adherence to ethical standards, and values such as integrity, honesty, altruism, humility, respect

for diversity, and transparency with respect to potential conflicts of interest. It is also recognized that, to provide optimal patient care, physicians must take responsibility for their own health and well-being and that of their colleagues. Professionalism is the basis of the implicit contract between society and the medical profession, granting the privilege of physician-led regulation with the understanding that physicians are accountable to those served, to society, to their profession, and to themselves.

Key competencies

Enabling competencies

PHYSICIANS ARE ABLE TO:

1. Demonstrate a commitment to patients by applying best practices and adhering to high ethical standards

- 1.1 Exhibit appropriate professional behaviours and relationships in all aspects of practice, demonstrating honesty, integrity, humility, commitment, compassion, respect, altruism, respect for diversity, and maintenance of confidentiality
- 1.2 Demonstrate a commitment to excellence in all aspects of practice
- 1.3 Recognize and respond to ethical issues encountered in practice
- 1.4 Recognize and manage conflicts of interest
- 1.5 Exhibit professional behaviours in the use of technology-enabled communication

2. Demonstrate a commitment to society by recognizing and responding to societal expectations in health care

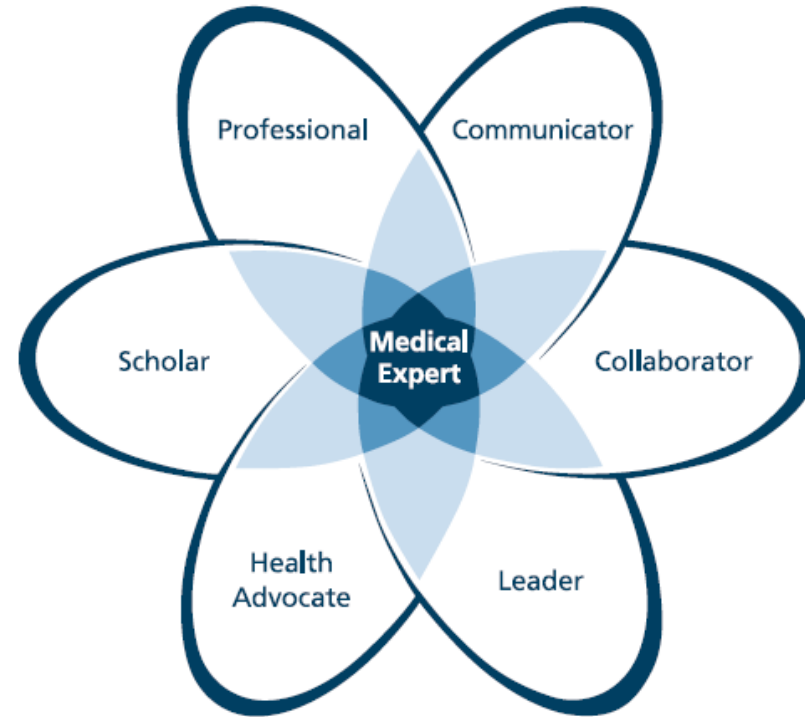
- 2.1 Demonstrate accountability to patients, society, and the profession by responding to societal expectations of physicians
- 2.2 Demonstrate a commitment to patient safety and quality improvement

3. Demonstrate a commitment to the profession by adhering to standards and participating in physician-led regulation

- 3.1 Fulfill and adhere to the professional and ethical codes, standards of practice, and laws governing practice
- 3.2 Recognize and respond to unprofessional and unethical behaviours in physicians and other colleagues in the health care professions
- 3.3 Participate in peer assessment and standard-setting

4. Demonstrate a commitment to physician health and well-being to foster optimal patient care

- 4.1 Exhibit self-awareness and manage influences on personal well-being and professional performance
- 4.2 Manage personal and professional demands for a sustainable practice throughout the physician life cycle
- 4.3 Promote a culture that recognizes, supports, and responds effectively to colleagues in need



CANMEDS

$$17+17+7+11+6+18+13 = 89$$

The following organizations have contributed to and endorse the CanMEDS 2015 Physician Competency Framework.



The CanMEDS clinician educators

- Esam Albanyan, MBBS, FAAP
- Adelle R. Atkinson, MD, FRCPC
- Farhan Bhanji, MD, MHPE, FRCPC
- Andrée Boucher, MD, FRCPC
- Rodrigo Cavalcanti, MD, MSc, FRCPC
- Warren J. Cheung, MD, MMed, FRCPC
- Lara Cooke, MD, MSc, FRCPC
- Tim Dalseg, MD, FRCPC
- Sue Dojeiji, MD, MEd, FRCPC
- Nancy Dudek, MD MEd FRCPC
- Leslie Flynn, MMus, MD, CCFP, FRCPC
- Jason R. Frank, MD, MA (Ed.) FRCPC
- Wade Gofton MD, MEd, FRCSC
- Jolanta Karpinski, MD, FRCPC
- Anna Oswald, MD, MMed, FRCPC
- Saleem Razack, MD, FRCPC
- Denyse Richardson, MD, MEd, FRCPC
- Linda Snell, MD, MHPE, FRCPC, FACP
- Brian Man-Fai Wong, MD, FRCPC

Education Scientist

- Elaine Van Melle, PhD

The Competence Continuum

Traditional stages

Proposed CBD stages

Medical education phases



Key and enabling competencies	Requirements for residency	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice	Advanced expertise
MEDICAL EXPERT MILESTONES						
1 Practise medicine within their defined scope of practice and expertise						
1.1 Demonstrate a commitment to high-quality care of their patients	While engaging as a learner in the clinical environment, demonstrate a duty of care toward patients		Demonstrate compassion for patients	Under supervision, demonstrate commitment and accountability for patients in their care	Demonstrate a commitment to high-quality care of their patients	Role-model a commitment to high-quality patient care
1.2 Integrate the CanMEDS Intrinsic Roles into their practice of medicine	Describe the CanMEDS Roles and explain how they relate to the practice of medicine	Explain how the Intrinsic Roles need to be integrated in practice of their discipline to deliver optimal patient care			Integrate the CanMEDS Intrinsic Roles into their practice of medicine	Teach and assess the application of the CanMEDS Competency Framework to medical practice
1.3 Apply knowledge of the clinical and biomedical sciences relevant to their discipline	Apply knowledge of biomedical sciences and clinically relevant skills to identify, diagnose, and address common clinical problems		Apply clinical and biomedical sciences to manage core patient presentations in their discipline		Apply a broad base and depth of knowledge in clinical and biomedical sciences to manage the breadth of patient presentations in their discipline	Teach aspects of their discipline to other clinicians Provide expert opinion to advise government or other organizations or to provide expert legal testimony
1.4 Perform appropriately timed clinical assessments with recommendations that are well organized and properly documented in written and/or oral form	Perform an assessment of a patient and provide an interpretation of the clinical situation to the supervising physician Document recommendations from the treating team accurately in the consultation record		Perform focused clinical assessments with recommendations that are well-documented Recognize urgent problems that may need the involvement of more senior colleagues and engage them immediately	Perform clinical assessments that address the breadth of issues in each case	Perform appropriately timed clinical assessments addressing the breadth of the discipline with recommendations that are well organized and properly documented in written and/or oral form	Develop system-level processes to facilitate appropriately timed clinical assessments with recommendations Teach colleagues how to perform, document, and communicate consultations Use technology to facilitate consultation for patients who may have limited or delayed access to specialist care

Key and enabling competencies	Requirements for residency	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice	Advanced expertise	MEDICAL EXPERT MILESTONES
1.5 Carry out professional duties in the face of multiple, competing demands	Recognize competing demands in professional duties and seek assistance in determining priorities		On the basis of patient-centred priorities, seek assistance to prioritize multiple competing tasks that need to be addressed	Maintain a duty of care and patient safety while balancing multiple responsibilities Prioritize patients on the basis of clinical presentations	Carry out professional duties in the face of multiple, competing demands	Teach and role-model how to prioritize professional duties	
1.6 Recognize and respond to the complexity, uncertainty, and ambiguity inherent in medical practice	Recognize that there is a degree of uncertainty in all clinical decision-making		Identify clinical situations in which complexity, uncertainty, and ambiguity may play a role in decision-making	Develop a plan that considers the current complexity, uncertainty, and ambiguity in a clinical situation Adapt care as the complexity, uncertainty, and ambiguity of the patient's clinical situation evolves	Recognize and respond to the complexity, uncertainty, and ambiguity inherent in medical practice	Teach about complexity and clinical decision-making	
2 Perform a patient-centred clinical assessment and establish management plans appropriate for their specialty							
2.1 Identify and prioritize issues to be addressed in a patient encounter	Identify the concerns and goals of patients and their families* for the encounter		Reach agreement with patients and their families on priorities for each encounter at the outset	Consider clinical urgency, feasibility, availability of resources, and comorbidities in determining priorities for the patient encounter Identify and prioritize which issues need to be addressed during future visits or with other health care practitioners Iteratively establish priorities, considering the perspective of the patient and his or her family (including values and preferences) as the patient's situation evolves	Identify and prioritize which issues need to be addressed during future visits or with other health care practitioners Iteratively establish priorities, considering the patient's and /or caregiver's perspective (including values and preferences) as the patient's situation evolves		

Key and enabling competencies	Requirements for residency	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice	Advanced expertise	MEDICAL EXPERT MILESTONES
2.2 Elicit a history, perform a physical exam, select appropriate investigations, and interpret their results for the purpose of diagnosis and management, disease prevention, and health promotion	<p>Elicit a history and perform a physical exam that informs the diagnosis</p> <p>Develop a general differential diagnosis relevant to the patient's presentation</p>			<p>Develop a specific differential diagnosis relevant to the patient's presentation</p> <p>Select and interpret appropriate investigations based on a differential diagnosis</p> <p>Synthesize patient information to determine a diagnosis</p> <p>Focus the clinical encounter, performing it in a time-effective manner, without excluding key elements</p>	Elicit a history, perform a physical exam, select appropriate investigations, and interpret their results for the purpose of diagnosis and management, disease prevention, and health promotion	<p>Conduct a clinical assessment in challenging or unusual situations</p> <p>Conduct a clinical assessment when a second opinion is requested or when a high degree of diagnostic uncertainty has already been established</p>	
2.3 Establish goals of care in collaboration with patients and their families,* which may include slowing disease progression, achieving cure, improving function, treating symptoms, and palliation	Initiate discussions with patients and their families, under supervision, about goals of care		Work with patients and their families to understand relevant options for care	<p>Address the patient's and his or her family's ideas about the nature and cause of the health problem, their fears and concerns, and their expectations of health care professionals</p> <p>Address the impact of the medical condition on the patient's ability to pursue life goals and purposes</p> <p>Share concerns, in a constructive and respectful manner, with patients and their families about their goals of care when they are not felt to be achievable</p>	Establish goals of care in collaboration with patients and their families, which may include slowing disease progression, achieving cure, improving function, treating symptoms, and palliation		

Key and enabling competencies	Requirements for residency	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice	Advanced expertise	MEDICAL EXPERT MILESTONES	
2.4 Establish a patient-centred management plan	Develop an initial management plan for common patient presentations		<p>Develop and implement initial management plans for common problems in their discipline</p> <p>Ensure that patients and their families are informed about the risks and benefits of each treatment option in the context of best evidence and guidelines</p> <p>Discuss with patients and their families the degree of uncertainty inherent in all clinical situations</p>	<p>Develop and implement management plans that consider all of the patient's health problems and context in collaboration with patients and their families and, when appropriate, the interdisciplinary team</p> <p>Develop, in collaboration with the patient and his or her family, a plan to deal with clinical uncertainty</p>	Establish patient-centred management plans for all patients in a practice	Establish management plans in patient encounters when there are significant disagreements about what is achievable		
3 Plan and perform procedures and interventions for the purpose of assessment and/or management								
3.1 Determine the most appropriate procedure(s) for the purpose of assessment and/or management			<p>Describe to patients common procedures in the discipline for the purpose of assessment and/or management of a given problem</p> <p>Describe the indications, contraindications, risks, and alternatives for a given procedure</p>	<p>Integrate all sources of information to develop a procedural plan that is safe, patient-centred, and considers the risks and benefits of all approaches</p> <p>Integrate planned procedures into global assessment and management plans</p>	Determine the most appropriate procedure(s) for the purpose of assessment and/or management	Develop novel procedures while respecting ethical standards for experimentation		
3.2 Obtain and document informed consent, explaining the risks and benefits of, and the rationale for, the proposed options	Describe the ethical principles and legal process of obtaining and documenting informed consent		<p>Obtain informed consent for commonly performed procedures and therapies, under supervision, explaining the indications, risks, benefits, and alternatives</p> <p>Document procedures accurately</p>	Use shared decision-making in the consent process, taking risk and uncertainty into consideration	Obtain and document informed consent, explaining the risks and benefits of, and the rationale for, the proposed options			

Key and enabling competencies	Requirements for residency	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice	Advanced expertise	MEDICAL EXPERT MILESTONES
3.3 Prioritize procedures, taking into account clinical urgency, potential for deterioration, and available resources		Recognize and discuss the importance of the triaging and timing of clinical procedures	Consider urgency, and potential for deterioration, in advocating for the timely execution of procedures for their patients	<p>Triage procedures, taking into account clinical urgency, potential for deterioration, and available resources</p> <p>Advocate for patients' procedures on the basis of urgency and available resources</p>	Prioritize procedures, taking into account clinical urgency, potential for deterioration, and available resources	Triage and schedule procedures in complex situations, demonstrating a collaborative approach when competing for limited resources	
3.4 Perform procedures in a skilful and safe manner, adapting to unanticipated findings or changing clinical circumstances	Perform simple procedures under direct supervision	<p>Demonstrate effective procedure preparation, including the use of a pre-procedure time-out or safety checklist as appropriate</p> <p>Appropriately set up and position patients for procedures</p>	<p>Perform common procedures in a skilful, fluid, and safe manner with minimal assistance</p> <p>Seek more supervision as needed when unanticipated findings or changing clinical circumstances are encountered</p>	<p>Competently and efficiently execute discipline-specific procedures</p> <p>Establish and implement a plan for post-procedure care</p> <p>Recognize uncertainty and the need for assistance in situations that are complex or new to the physician</p>	Independently perform procedures in a skilful and safe manner, adapting to unanticipated findings or changing clinical circumstances	<p>Perform specialized procedures that extend beyond routine practice in the discipline, in a manner that peers identify as highly skilled</p> <p>Perform simple and complex procedures with great efficiency</p> <p>Teach the procedures of the discipline to others</p>	
4 Establish plans for ongoing care and, when appropriate, timely consultation							
4.1 Establish the roles of physicians, other health care professionals, and the patient in the provision of a patient-centred care plan that supports ongoing care, including follow-up on investigations, response to treatment, and further consultation	Describe the importance of consultation and follow-up in patient care		<p>Coordinate investigation, treatment, and follow-up plans when multiple physicians and health care professionals are involved</p> <p>Ensure follow-up on results of investigation and response to treatment</p>	<p>Establish plans for ongoing care for the patient, taking into consideration his or her clinical state, circumstances, preferences, and actions, as well as available resources, best practices, and research evidence</p> <p>Determine the necessity and appropriate timing of consultation</p>	Establish the roles of physicians, other health care professionals and the patient in the provision of a patient-centred care plan that supports ongoing care, including follow-up on investigations, response to treatment, and further consultation	Develop a novel system of follow-up that is flexible and adaptable to the patient, families, and community resources	

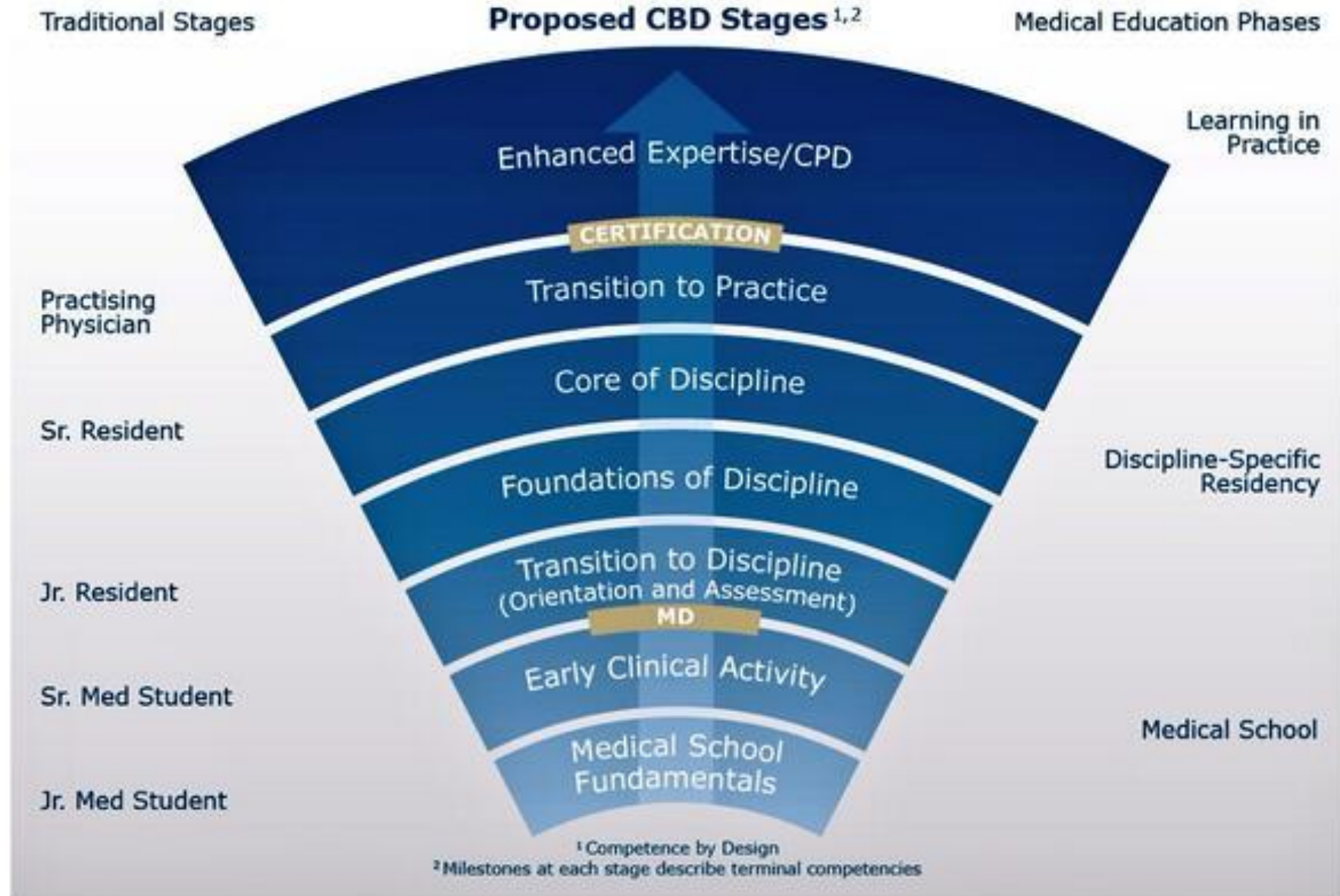
Key and enabling competencies	Requirements for residency	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice	Advanced expertise
5 Actively participate, as an individual and as a member of a team providing care, in the continuous improvement of health care quality and patient safety						
5.1 Recognize and respond to adverse events and near misses	Describe the scope and burden of health-care-related harm	Recognize the occurrence of an adverse event or near-miss	Prioritize the initial medical response to adverse events to mitigate further injury Include adverse events in differential diagnoses, as appropriate	Disclose adverse events or near-misses to patients and families and to appropriate institutional representatives	Recognize near-misses in real time and respond to correct them, preventing them from reaching the patient Identify potential improvement opportunities arising from adverse events and near-misses	Teach about the impact of adverse events and near-misses and how to improve patient care
5.2 Contribute to a culture that promotes patient safety	Describe the features of a fair and non-punitive approach to patient safety			Respond to feedback on their own practice and patient outcomes Actively encourage all involved in health care, regardless of their role, to report and respond to unsafe situations	Contribute to a culture that promotes patient safety	Teach others about promoting a health care culture that enhances safety and quality Evaluate the culture of a given institution or group with respect to health care safety and quality
5.3 Adopt strategies that promote patient safety and mitigate negative human and system factors	Describe the individual factors that can affect human performance, including sleep deprivation and stress Describe system factors that can affect patient safety, including resource availability and physical and environmental factors	Describe common types of cognitive bias Describe the principles of situational awareness and their implications for medical practice	Use cognitive aids such as procedural checklists, structured communication tools, or care paths, to enhance patient safety Describe strategies to mitigate the negative effects of human and system factors on clinical practice	Apply the principles of situational awareness to clinical practice Engage patients and their families in the continuous improvement of patient safety	Adopt strategies that promote patient safety and mitigate negative human and system factors	Evaluate the impact of system changes on the provision of patient care Design safety initiatives that incorporate needs and metrics identified by patients and their families

Key and enabling competencies	Requirements for residency	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice	Advanced expertise
COMMUNICATOR MILESTONES						
1 Establish professional therapeutic relationships with patients and their families*						
1.1 Communicate using a patient-centred approach that encourages patient trust and autonomy and is characterized by empathy, respect, and compassion	Describe the key components of a patient-centred approach to medical care Outline the evidence that effective physician–patient communication enhances patient and physician outcomes		Demonstrate the key components of a patient-centred approach in complex clinical encounters	Assess a patient's health literacy Demonstrate flexibility in applying a patient-centred approach in the breadth of clinical encounters in practice	Communicate using a patient-centred approach that facilitates patient trust and autonomy and is characterized by empathy, respect, and compassion	Teach and assess the patient-centred approach to communication
1.2 Optimize the physical environment for patient comfort, dignity, privacy, engagement, and safety	Describe elements of the physical environment that affect patient comfort, privacy, engagement, and safety (e.g., curtains, background noise, time standing or sitting, lighting, heating)	Mitigate physical barriers to communication to optimize patient comfort, privacy, engagement, and safety	Optimize the physical environment for patient comfort, privacy, engagement, and safety			Participate in institutional/system initiatives to improve the physical environment for patients
1.3 Recognize when the values, biases, or perspectives of patients, physicians, or other health care professionals may have an impact on the quality of care, and modify the approach to the patient accordingly	Describe how patient and physician values, biases, and perspectives affect clinical encounters			Recognize when patient and physician values, biases, or perspectives threaten the quality of care, and modify the approach to patient care according to the context of the discipline		Teach learners to recognize situations in which patient and physician values, biases, or preferences may threaten the quality of care, and how to modify the approach to patient care

Key and enabling competencies	Requirements for residency	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice	Advanced expertise
1.4 Respond to patients' non-verbal communication and use appropriate non-verbal behaviours to enhance communication with patients	<p>Identify non-verbal communication on the part of patients and their families and its impact on physician–patient communication</p> <p>Describe how to utilize nonverbal communication to build rapport</p>	<p>Identify, verify, and validate non-verbal cues on the part of patients and their families</p> <p>Use appropriate non-verbal communication to demonstrate attentiveness, interest, and responsiveness to patients and their families</p>		<p>Respond to patients' non-verbal communication and use appropriate non-verbal behaviours to enhance communication with patients</p>		<p>Demonstrate advanced non-verbal communication skills in difficult situations</p> <p>Teach others how to use non-verbal communication to enhance physician–patient rapport</p>
1.5 Manage disagreements and emotionally charged conversations	<p>Describe physician, patient, and contextual factors that lead to strong emotions</p> <p>Describe how strong emotions may affect the patient–physician interaction</p> <p>Critically reflect upon emotional encounters and identify how different approaches may have affected the interaction</p>		<p>Recognize when personal feelings in an encounter are valuable clues to the patient's emotional state</p>	<p>Recognize when strong emotions (such as, anger, fear, anxiety, or sadness) are affecting an interaction and respond appropriately</p> <p>Establish boundaries as needed in emotional situations</p>	<p>Manage disagreements and emotionally charged conversations</p>	<p>Teach others to anticipate, recognize, and manage emotions in routine clinical encounters</p>
1.6 Adapt to the unique needs and preferences of each patient and to his or her clinical condition and circumstances	<p>Describe models of decision-making along the spectrum from "paternalistic" to "shared" to "autonomous"</p> <p>Discuss the advantages and risks of actively involving patients in decisions about their care</p> <p>Discuss the importance of capacity assessment</p> <p>Assess patients' preferred involvement in decisions about their care</p>		<p>Assess patients' decision-making capacity</p>		<p>Tailor approaches to decision-making to patient capacity, values, and preferences</p>	<p>Teach others to tailor approaches to decision-making to patient capacity, values, and preferences</p> <p>Teach others how to assess patients' decision-making preferences</p>

CanMEDS 2015

Milestone Stages and Progression of Competence





The CanMEDS Teaching and Assessment Tools Guide

A standalone, practical resource to support program directors as they implement CanMEDS 2015.

Fellows and Resident Affiliates: \$18

Guest: \$36

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CanMEDS Summary Cards

A companion to the CanMEDS Teaching and Assessment Tools Guide, the CanMEDS Summary Cards include an overview of the key content associated with each CanMEDS Role. This information is found in a small, coil-bound set of cards designed to be used at-a-glance. Available in English only at this time.

Fellows and Resident Affiliates: \$4.80

Guest: \$6.00

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Teaching Quality Improvement in Residency Education

Written by Roger Wong, MD, FRCPC, this electronic publication outlines a curriculum to teach quality improvement to residents.

It covers topics such as setting learning objectives, assessing competencies, and curriculum evaluation from fundamentals to advanced quality improvement.

Fellows, Resident Affiliates and guests: Free

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The Time Management Guide

Are you always late for meetings? Is your medical work never-ending? Do you have trouble "getting it all done"?

If you answered yes to any of these questions, The Time Management Guide is for you. This practical resource for enhancing physician capabilities helps busy physicians manage their time more efficiently and effectively.

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Collaborator Toolkit

Are you looking for great resources, ideas, templates in one easy to access resource? The Collaborator Toolkit is the first of a planned series produced by the Royal College. For busy, committed educators who need a practical resource to identify teaching and learning tools relevant to their needs. Full of ready-to-use and modifiable learning, teaching and assessment tools that simplify the integration of the Collaborator competencies into medical education. The toolkit is a book with electronic versions of modifiable learning, teaching and assessment tools also available.

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Fellows and Resident Affiliates: \$16
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Situational Awareness and Patient Safety: A learning package

An important addition to any patient safety curriculum. For physicians and physicians-in-training, this resource enhances the provision of safe and quality care in dynamic settings. Instructors and learners are provided with practical tools and approaches for training in situational awareness, enhancing patient safety and reducing risk in medical practice.

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CanMEDS Physician Health Guide

An introduction to the broad scope of issues that make up physician health, this is an easy-to-access resource for all physicians to pursue better physician health. With real-world situations and scenarios, this guide provides practical strategies for introducing, promoting and teaching physical, emotional and spiritual well-being.

Fellows and Resident Affiliates: \$16

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CanMEDS Assessment Tools Handbook

Are you a program director, rotation coordinator or front-line educator responsible for your assessment program? This searchable, practical reference provides quick, evidence-based options for assessing all of the CanMEDS Roles.

Fellows and Resident Affiliates: \$12

Guest: \$24

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CanMEDS Teaching Springboards: Emergency Medicine

A collection of teaching moments for the CanMEDS Roles, including trigger words, specifically designed for Emergency Medicine.

Fellows and Resident Affiliates: \$6

Guest: \$12

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哪個較簡單？

大綱

- 前言
- 基本觀念
- 課程設計
- 教師培育
- 結語

The Competency-Based Approach to Training

Rick Sullivan*, Noel McIntosh*

In a traditional educational system, the unit of progression is *time* and it is *teacher-centered*. In a CBET system, the unit of progression is *mastery of specific knowledge and skills* and is *learner-centered*.

教育制度	進展的單位	以___為中心
傳統	時間	教師
CBET*	特定知識和技能的掌握	學習者

*CBET = competency-based education and training

Med Teach. 2010;32(8):638-45. doi: 10.3109/0142159X.2010.501190.

Competency-based medical education: theory to practice.

Frank JR¹, Snell LS, Cate OT, Holmboe ES, Carraccio C, Swing SR, Harris P, Glasgow NJ, Campbell C, Dath D, Harden RM, Iobst W, Long DM, Mungroo R, Richardson DL, Sherbino J, Silver I, Taber S, Talbot M, Harris KA.

An outcomes-based approach to the design, implementation, assess and evaluation of a medical education program using an organizing framework of competencies

在有組織性的「能力框架」之下，以成效導向為方針來設計、執行、評估和評量醫學教育計畫。



In addition, Elaine van Melle and colleagues outline five core components for CBME they are using as part of an institution-wide implementation of CBME at Queens University in Kingston, Ontario (van Melle, personal communication):

1. Competencies required for practice are clearly articulated.
2. Competencies are arranged progressively.
3. Learning experiences facilitate the progressive development of competencies.
4. Teaching practices promote the progressive development of competencies.
5. Assessment practices support and document the progressive development of competencies.

CBME的五個核心元素 (Queens University)

- 執業所需的能力作明確闡述
- 能力的培養是循序漸進
- 能力的逐步發展有賴：
 - 學習經驗
 - 教導實作
 - 評估臨床執業

CBME的五個核心元素 (Chan's modification)

- ❑ 標的能力：要說清楚
- ❑ 循序漸進：合理的學習順序
- ❑ 體驗學習：What? How much?
- ❑ 教導實作：採用哪些教學方法
- ❑ 評估實作：採用哪些評估方式

CBME的三個核心元素 (Chan's modification)

- 說清楚需要什麼能力
- 以實作經驗逐步發展
- 持續進行評估和回饋

知道milestones不是什麼，也是重要的....

It is also important to recognize what the Milestones are not. First and foremost, they do not describe or represent the totality or a complete description of a clinical discipline. They represent the important *core* of a discipline, but programs will need to use good judgment to fill in the gaps in curriculum and assessment. It is essential that the Milestones are not thought of as curricula in and of themselves, but rather that they should guide a thoughtful analysis of curriculum to identify strengths and gaps. Even for those specialties that developed more general subcompetencies, there was an understanding that the Milestones would not cover all areas essential to the unsupervised practice of medicine. Second, they are not tools designed to negatively affect program accreditation. The Milestones are intended for formative purposes to help learners, programs, and the Review Committees improve educational, assessment, and accreditation processes.

Milestones不是什麼.....

- 並非專科訓練的全部內容
- 並非負面批判的評鑑工具

The *entire* Milestones document (set) used for NAS reporting was also never intended to serve as a regular assessment tool, especially for short rotations (e.g., 2-8 weeks). The Milestones, and even the more specific subcompetencies, do not contain enough detail or levels of performance on a developmental trajectory to facilitate an accurate determination of the knowledge, skills, or abilities of an individual learner over a short period of time. In addition, the Milestones must not be used as the only set of assessment tools. Instead, the Milestones should inform the use and development of assessment tools aligned with the curricular goals and tasks. As stated previously, the Milestones are not inclusive of all areas of competency, and to limit the assessments to the Milestones would indicate that regular assessment is not occurring in the many other areas of learning.

不要想將milestones作為一個定期的評估工具，特別是對於短期輪換訓練！

里程碑不能用作唯一的評估工具集。

里程碑並非包括所有能力領域。

The Milestones Guidebook

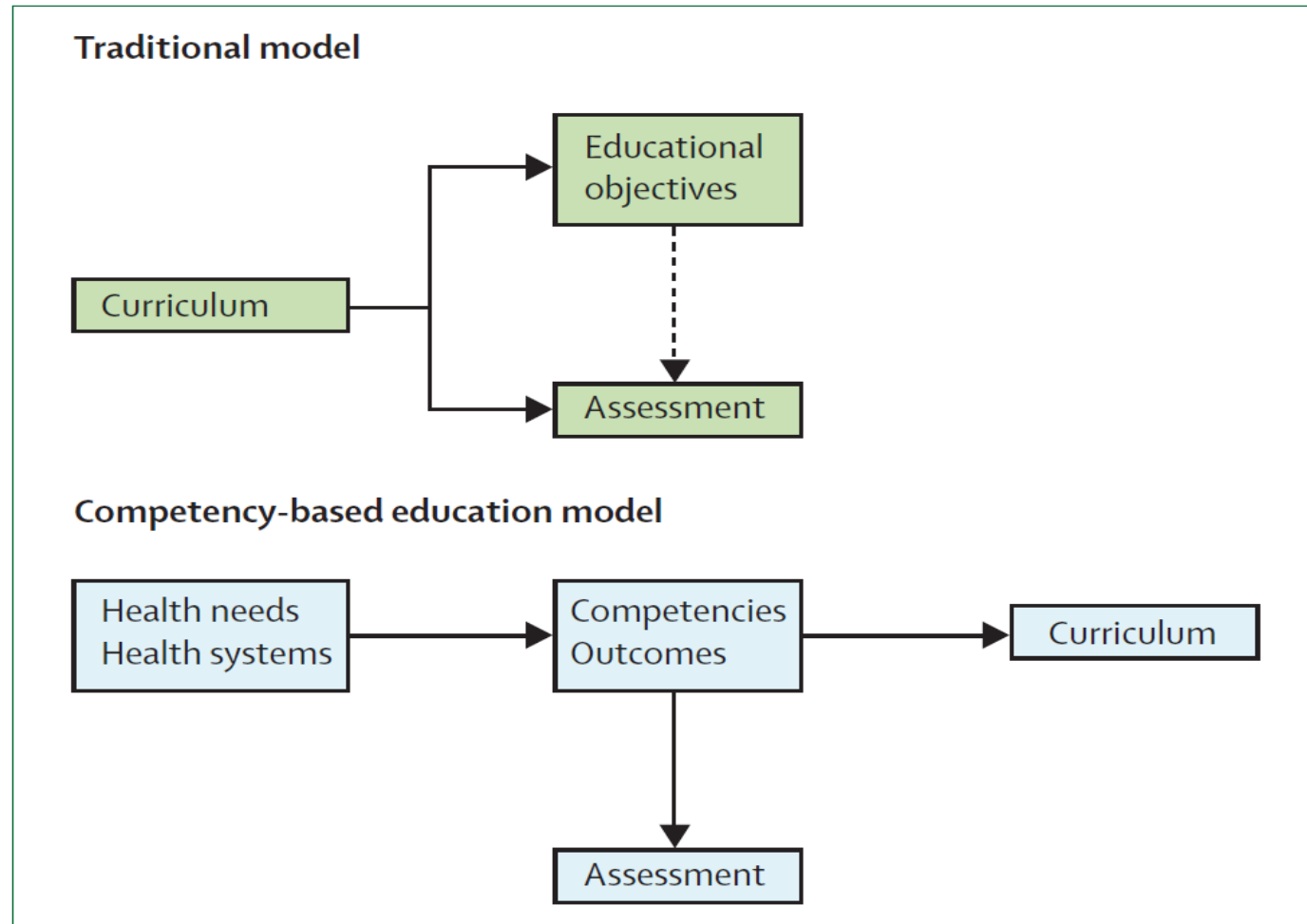
Laura Edgar, EdD, CAE
Sydney McLean, MHA
Sean O. Hogan, PhD
Stan Hamstra, PhD
Eric S. Holmboe, MD

Version 2020

大綱

- 前言
- 基本觀念
- 課程設計
- 教師培育
- 結語

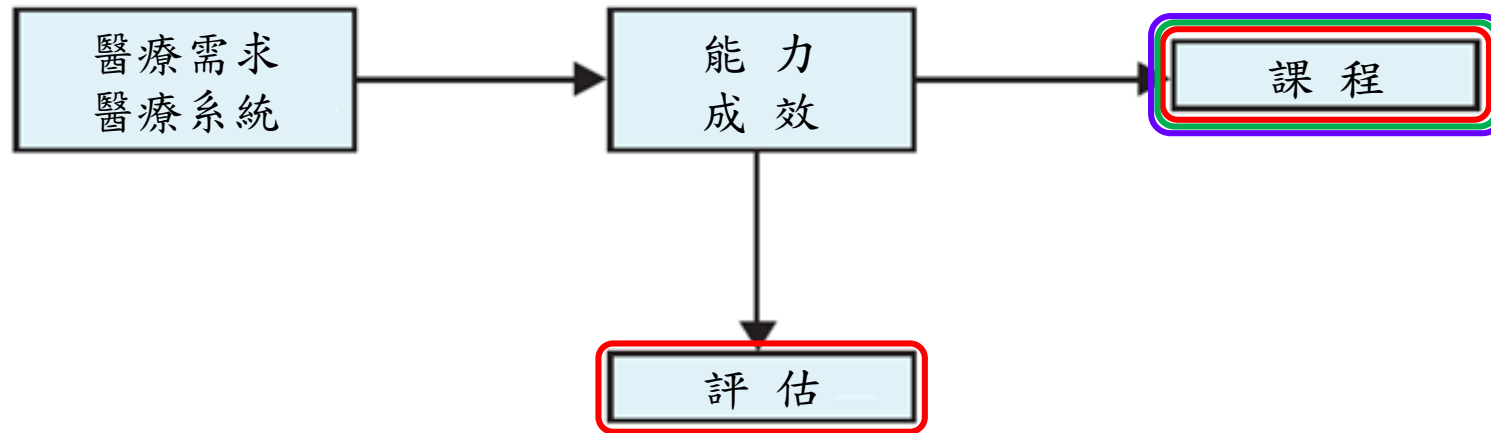
昨是今非？



Frenk J, et al. health professional for a new century: transforming education to strengthen health systems in an interdependent world. Lancet, 2010.

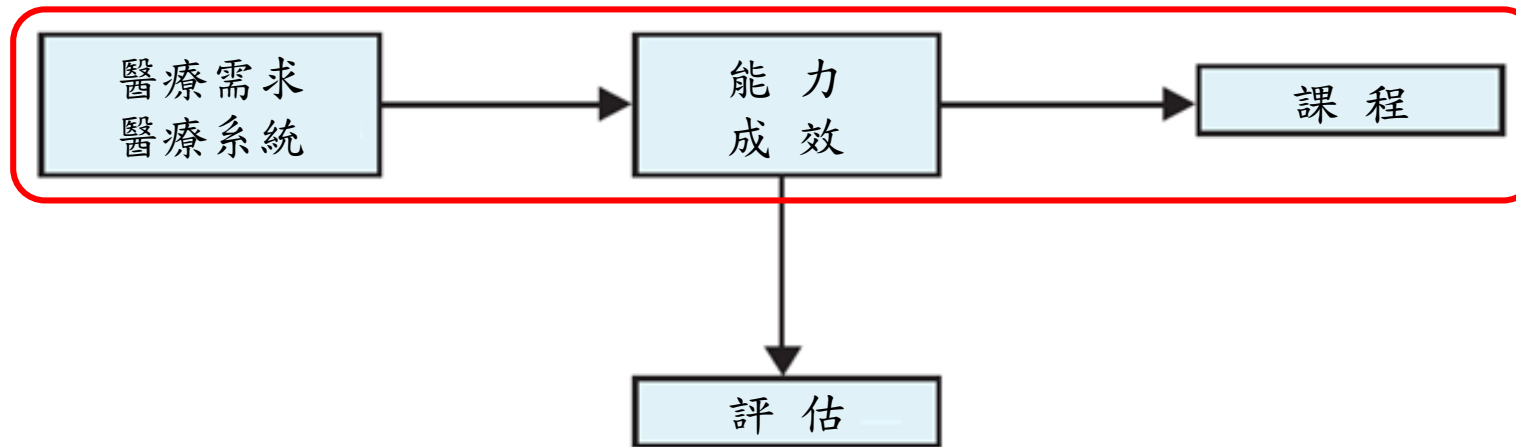
課程設計

Competency-based education model



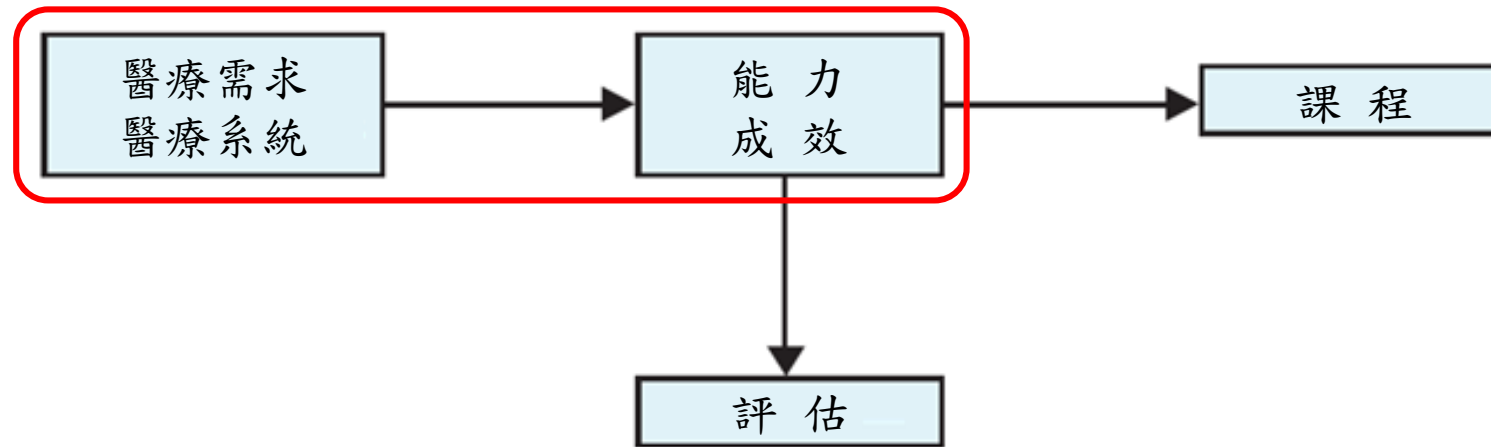
課程設計

Competency-based education model



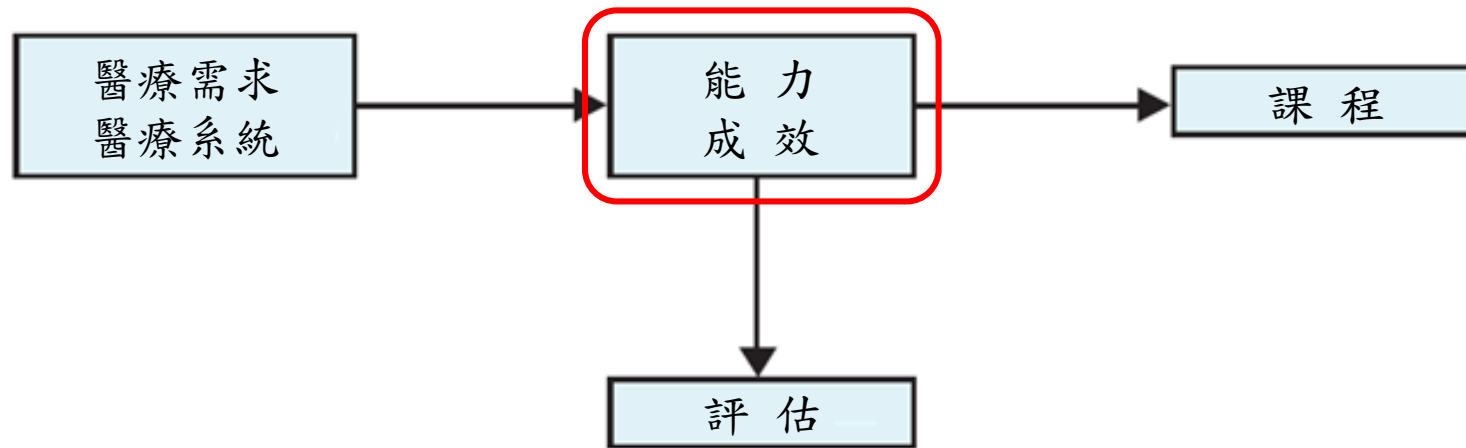
課程設計

Competency-based education model



課程設計

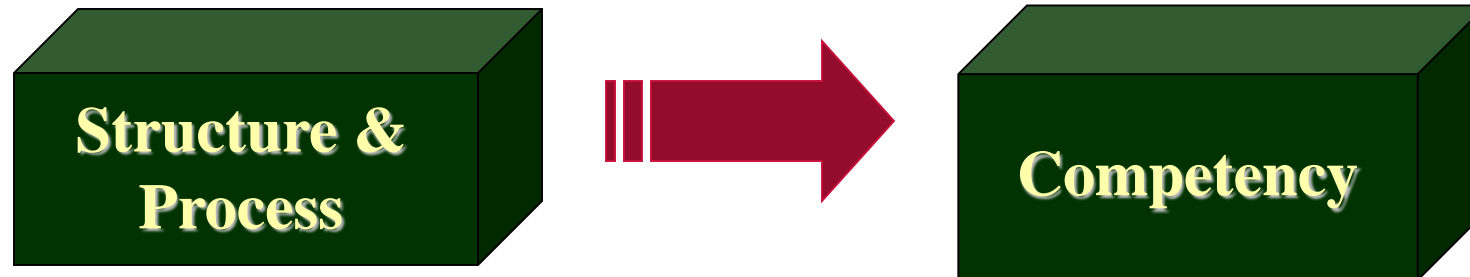
Competency-based education model



A New Way of Thinking



How to change the educational and accreditation system from...



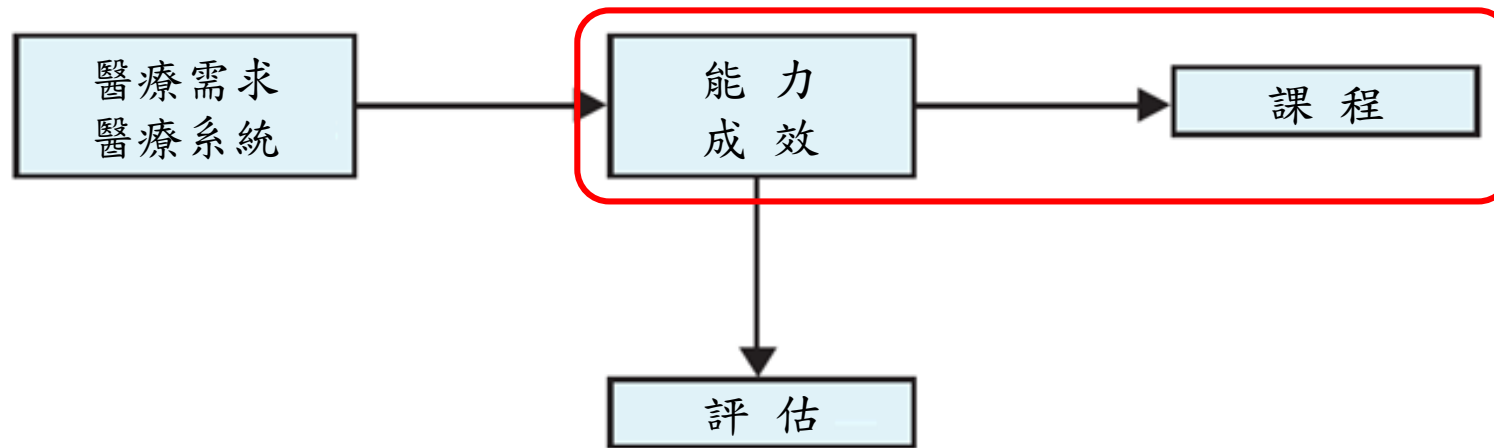
General Competencies

- ❑ General Competencies
 - ❑ Patient Care
 - ❑ Medical Knowledge
 - ❑ Practice-based Learning and Improvement
 - ❑ Interpersonal and Communication Skills
 - ❑ Professionalism
 - ❑ Systems-based Practice

MIS-PPP

課程設計

Competency-based education model



有問題！

能力的問題

- ❑ 錯綜複雜相互重疊
- ❑ 若隱若現難成課題
- ❑ 難以進行獨立評估
- ❑ 專科之間落差甚大

Entrustable **P**rofessional **A**ctivities



The 2015 ACGME Annual Educational Conference,
Saturday February 28 – SES094 1:45-3:15 pm

Entrustable Professional Activities as a Framework for the Assessment of Residents



Olle ten Cate, PhD

Center for Research and Development of Education
University Medical Center Utrecht, the Netherlands

Entrustable professional activity

- Executable within a time frame
- Observable and measurable
- Suitable for entrustment decision
- Assessment result framed as permission with designated level of supervision
- Allocated to individuals

五個條件，符合才是EPAs

Entrustable professional activity

- 可在一段時間框架內便能執行
- 可觀察和可測量
- 適合信賴決定（entrustment decision）
- 評估結果用以指定監督的級別
- 配置予個別學員

五個條件，符合才是EPAs

Entrustable professional activity

- 課程中可測量的重要學習項目：
 - 可在特定時間框架內學成
 - 適用於「信賴」決定（監督的級別）

7-item format of EPA description

1	Title of the EPA
2	Specification and limitations
3	Most relevant domains of competence
4	Required experience, knowledge, skills, attitude and behavior for entrustment
5	Assessment information sources to assess progress and ground a summative entrustment decision
6	Entrustment for which level of supervision is to be reached at which stage of training?
7	Expiration date

7-item format of EPA description

1	EPA名稱
2	規範與限制
3	最相關的能力領域
4	信賴所需的經驗、知識、技能、態度與行為
5	評估進展和據以作成總結性信賴決定的評估訊息來源
6	在訓練每一階段須達到哪個級別的監督？
7	效期

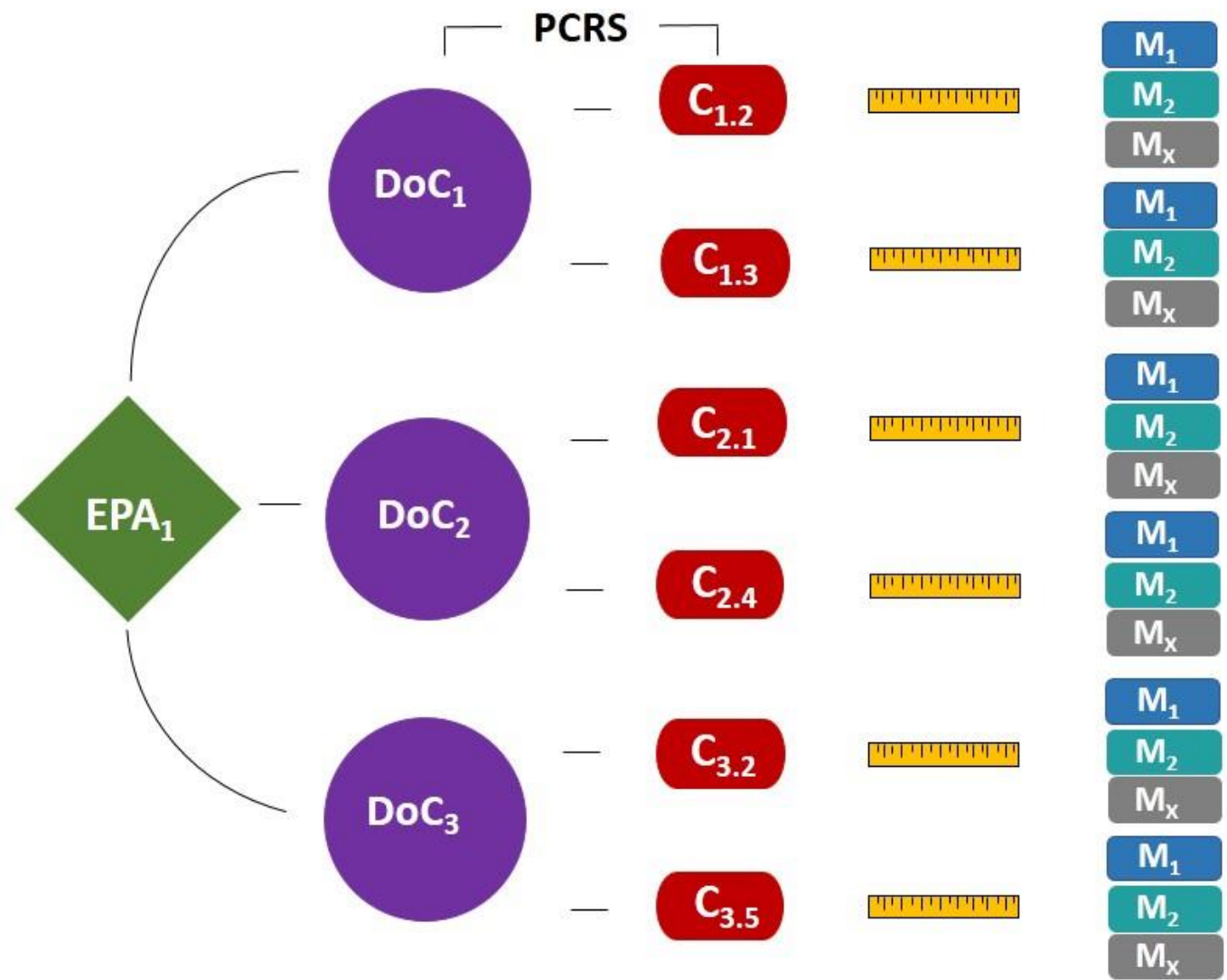
Example EPA description

1	Routine check-up of the stable adult patient [early EPA for medical students]
2	<p>Includes: no more and no less than</p> <ol style="list-style-type: none"> 1. Measuring vital parameters: heart rate, respiratory rate, temperature, blood pressure, O₂ saturation 2. Explaining all actions to the patient 3. Reporting results to the health care team including interpretation, orally and/or written <p>Context: ambulatory and inpatient setting</p> <p>Targeted transition point: first fulltime clinical clerkship to next clerkship</p> <p>Limitations: only with hemodynamically stable patients 18 years and older</p>
3	X Medical Expert X Communicator X Collaborator
4	<p>Knowledge: basic knowledge of anatomy including relevant arteries; normal values of vital parameters</p> <p>Skill: skill in using necessary devices to measure vital parameters; recognition of stable and unstable patients</p> <p>Attitude and behavior: professional communication with the patient; proactive alertness in case of adverse events; willingness to ask for help if needed</p> <p>Experience : all measurements done at least 5 times</p>
5	<p>Short practice observations: satisfactory observation of all measurements at least twice by experienced health care professionals (nurse, physician or other)</p> <p>Case-based discussions: one CBD with a qualified health care professional</p>
6	Supervision Level: Indirect supervision (level 3) ultimately before the transition to the second fulltime clinical clerkship
7	Expiration: after one year without practice following summative entrustment decision

Five levels of supervision, reflecting increasing trust in trainee autonomy

“Entrusted”/“Entrustment”

1. presence but no permission to enact EPA
2. practice EPA with direct (pro-active) supervision
3. practice EPA with indirect (re-active) supervision
- [threshold]-----
4. unsupervised practice allowed (distant oversight)
5. EPA may be supervised for junior learners



EPA = entrustable professional activities
 DoC = domain of competency
 PCRS = physician competency reference set
 C = competency
 M = milestone



Core Entrustable Professional Activities for Entering Residency

Curriculum Developers' Guide

Learn
Serve
Lead



Core Entrustable Professional Activities for Entering Residency

Faculty and Learners' Guide

Learn
Serve
Lead

- EPA 1: Gather a history and perform a physical examination
- EPA 2: Prioritize a differential diagnosis following a clinical encounter
- EPA 3: Recommend and interpret common diagnostic and screening tests
- EPA 4: Enter and discuss orders and prescriptions
- EPA 5: Document a clinical encounter in the patient record
- EPA 6: Provide an oral presentation of a clinical encounter
- EPA 7: Form clinical questions and retrieve evidence to advance patient care
- EPA 8: Give or receive a patient handover to transition care responsibility
- EPA 9: Collaborate as a member of an interprofessional team
- EPA 10: Recognize a patient requiring urgent or emergent care and initiate evaluation and management
- EPA 11: Obtain informed consent for tests and/or procedures
- EPA 12: Perform general procedures of a physician
- EPA 13: Identify system failures and contribute to a culture of safety and improvement

EPA 1: Gather a history and perform a physical examination

1. Description of the activity	<p>Day 1 residents should be able to perform an accurate complete or focused history and physical exam in a prioritized, organized manner without supervision and with respect for the patient. The history and physical examination should be tailored to the clinical situation and specific patient encounter. This data gathering and patient interaction activity serves as the basis for clinical work and as the building block for patient evaluation and management. Learners need to integrate the scientific foundations of medicine with clinical reasoning skills to guide their information gathering.</p> <p>Functions</p> <p>History</p> <ul style="list-style-type: none"> Obtain a complete and accurate history in an organized fashion. Demonstrate patient-centered interview skills (attentive to patient verbal and nonverbal cues, patient/family culture, social determinants of health, need for interpretive or adaptive services; seeks conceptual context of illness; approaches the patient holistically and demonstrates active listening skills). Identify pertinent history elements in common presenting situations, symptoms, complaints, and disease states (acute and chronic). Obtain focused, pertinent histories in urgent, emergent, and consultative settings. Consider cultural and other factors that may influence the patient's description of symptoms. Identify and use alternate sources of information to obtain history when needed, including but not limited to family members, primary care physicians, living facility, and pharmacy staff. Demonstrate clinical reasoning in gathering focused information relevant to a patient's care. Demonstrate cultural awareness and humility (for example, by recognizing that one's own cultural models may be different from others) and awareness of potential for bias (conscious and unconscious) in interactions with patients. <p>Physical Exam</p> <ul style="list-style-type: none"> Perform a complete and accurate physical exam in logical and fluid sequence. Perform a clinically relevant, focused physical exam pertinent to the setting and purpose of the patient visit. Identify, describe, and document abnormal physical exam findings. Demonstrate patient-centered examination techniques that reflect respect for patient privacy, comfort, and safety (e.g., explaining physical exam maneuvers, telling the patient what one is doing at each step, keeping patients covered during the examination).
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2. Most relevant domains of competence	<input checked="" type="checkbox"/> Patient Care <input checked="" type="checkbox"/> Knowledge for Practice <input type="checkbox"/> Practice-Based Learning and Improvement <input checked="" type="checkbox"/> Interpersonal and Communication Skills	<input checked="" type="checkbox"/> Professionalism <input type="checkbox"/> Systems-Based Practice <input type="checkbox"/> Interprofessional Collaboration <input type="checkbox"/> Personal and Professional Development
3. Competencies within each domain critical to entrustment decisions <small>(See Appendix C)</small>	PC 2 P 1 KP 1 P 3 ICS 1 P 5 ICS 7	

Critical Competency	Pre-Entrustable Behaviors	Entrustable Behaviors
PC 2: Gather essential and accurate information about patients and their conditions through history-taking, physical examination, and the use of laboratory data, imaging, and other tests	Either gathers too little information or exhaustively gathers information following a template, regardless of the patient's chief complaint, with each piece of information gathered seeming as important as the next. Recalls clinical information in the order elicited. Limited ability to gather, filter, prioritize, and connect pieces of information. Uses analytic reasoning from basic pathophysiology knowledge without ability to link findings to prior clinical encounters. Incorrectly performs and elicits most physical examination maneuvers. May miss key physical exam findings. Does not alter the head-to-toe approach to the physical examination to meet the developmental level or behavioral needs of the patient. Does not seek or is overly reliant on secondary data. (PEDS, IM, PSYCH)	Clinical experience allows linkage of signs and symptoms of a current patient to those encountered in previous patients. Still relies primarily on analytic reasoning of basic pathophysiology to gather information, but the ability to link current findings to prior clinical encounters allows information to be filtered, prioritized, and synthesized into pertinent positives and negatives as well as broad diagnostic categories. Performs basic physical examination maneuvers correctly and recognizes and correctly interprets abnormal findings. Consistently and successfully uses a developmentally appropriate approach to the physical examination. Seeks and obtains data from secondary sources when needed. (PEDS, IM, PSYCH)

Critical Competency	Pre-Entrustable Behaviors	Entrustable Behaviors
KP 1: Demonstrate an investigatory and analytic approach to clinical situations	Recalls only discrete, isolated bits of information. Tends toward “intuitive leaps” to conclusions, often unsupported by the data gathered or the evidence, before fully understanding the learning task or the types of information needed; does not follow a systematic procedure for synthesis, comparison, and evaluation of information, which may result in reasoning that is slow and linear; may have stored knowledge of procedures, rules, and formulas, but, due to a lack of integrated mental models of health and disease, fails to recognize what conditions warrant the application of this knowledge or why it is relevant. Has difficulty recognizing recurring patterns of information. (This is a new milestone created for this document)	Is developing an implicit knowledge base that allows more rapid connections, pattern recognition, and clinical reasoning. Can focus cognitive processes to discern relevant information, identify the unknowns, and make connections to solve problems or answer clinical questions via just-in-time-learning. Brings together multiple representations of the problem by comparing, synthesizing, and evaluating. (This is a new milestone created for this document)
ICS 1: Communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds	Communication with patients and families generally unidirectional and based on a template, without the ability to vary the approach based on a patient's unique demographic, cognitive, physical, cultural, socioeconomic, or situational needs. Frequently uses medical jargon. Does not engage patients and families in discussions of care plans (i.e., does not engage in shared decision making). Respects patient preferences when offered by the patient, but does not actively solicit preferences. Defers or avoids difficult or ambiguous conversations. (SURG, IM, PEDS, PSYCH)	Communication with patients and families generally bidirectional. When based on a template, can adapt to the patient's unique demographic, cognitive, physical, cultural, socioeconomic, or situational needs. Avoids medical jargon. Uses a variety of techniques, including nontechnical language, teach back, appropriate pacing, and small pieces of information to ensure that communication with patients and their families is bidirectional and results in shared decision making. Develops scripts to approach most difficult communication scenarios. (SURG, IM, PEDS, PSYCH)

Critical Competency	Pre-Entrustable Behaviors	Entrustable Behaviors
ICS 7: Demonstrate insight and understanding about emotions and human responses to emotions that allow one to develop and manage interpersonal interactions	Does not accurately anticipate or read others' emotions in verbal and nonverbal communication. Is unaware of one's own emotional and behavioral cues and may transmit emotions in communication (e.g., anxiety, exuberance, anger) that can precipitate unintended emotional responses in others. Does not effectively manage strong emotions in self or others. (PEDS)	Anticipates, reads, and reacts to emotions in real time with appropriate and professional behavior in typical medical communication scenarios, including those evoking very strong emotions. Uses these abilities to gain and maintain therapeutic alliances with others. Atypical or unanticipated situations may still evoke strong emotions in the learner, resulting in an inability to moderate one's behavior and manage the emotions. (PEDS)
P 1: Demonstrate compassion, integrity, and respect for others	Demonstrates lapses in professional conduct, such as through disrespectful interactions or lack of truth-telling, especially under conditions of stress or fatigue or in complicated or uncommon situations. This puts others in the position to remind, enforce, and resolve conflicts. There may be some insight into behavior, but there is an inability to modify behavior when in stressful situations. (PEDS, EM, PSYCH)	In nearly all circumstances, demonstrates professional conduct, such as through respectful interactions and truth-telling. Has insight into his/her own behavior as well as likely triggers for professionalism lapses and is able to use this information to remain professional. (PEDS, EM, PSYCH)
P 3: Demonstrate respect for patient privacy and autonomy	Inconsistently considers patient privacy and confidentiality (e.g., may discuss patient information in a public area such as an elevator). Unable to articulate the key components of HIPAA. Does not engage patients and families in discussions of care plans (i.e., shared decision making). Respects patient preferences when offered by the patient but does not actively solicit preferences. (PEDS, IM, PSYCH)	Consistently considers patient privacy and confidentiality with rare lapses. Able to articulate the key components of HIPAA. Engages patients and families in discussions of care plans (i.e., shared decision making). Solicits and respects patient preferences. (PEDS, IM, PSYCH)
P 5: Demonstrate sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation	Sees the world through the eyes of his own background, is ethnocentric, has trouble understanding and accepting the cultures of others. May generalize based on the patients' gender, age, culture, race, religion, disabilities, and sexual orientation. (PEDS, PSYCH, IM)	Elicits and seeks to fully understand each patient's unique characteristics and needs based on gender, age, culture, race, religion, disabilities, and sexual orientation. Includes these concepts in care plans for patients and families. Families recognize this sensitivity. Demonstrates cultural humility. (PEDS, PSYCH, IM)

Pre-Entrustable Learners

Expected behaviors for a pre-entrustable learner

The learner at this level demonstrates underdeveloped skill in history gathering, manifested as errors of omission or commission in gathering information. This learner may also incorrectly perform physical exam maneuvers and may miss key physical exam findings. These gaps in demonstrated skill may be due to a limited ability to filter, prioritize, and connect pieces of information to each other; to prior clinical encounters; or to existing factual knowledge. The pre-entrustable learner may make decisions based on intuition or a limited ability to develop relevant mental models rather than on appropriate information. The learner inconsistently demonstrates use of patient-centered information gathering and physical exam skills and may either generalize based on a patient's background or pay inadequate attention to the patient's individual background.

Vignette for a pre-entrustable learner

Zhongsu is seeing patients in the free clinic as part of a primary care team. Her first patient of the day is Mr. Rodriguez, for whom the nursing triage sheet documents a chief complaint of cough. Mr. Rodriguez is new to the clinic. He is fully clothed and sitting on the examination table when Zhongsu walks into the room. Zhongsu closes the door and stands, leaning against the wall, with a tablet in hand to take notes and document in the chart. Zhongsu starts her history-taking by saying, "The nurses said you have a cough. How long has it been going on?" She follows this with a series of questions regarding the description and progression of the cough. She finds that the patient has a chronic cough that seems to have gotten acutely worse. She asks about associated symptoms and itching or relieving factors. She asks pertinent questions about history such as smoking, exposure to sick contacts, and known lung disease. She takes a full medical history, including medications, and details a family tree in the chart. Social history points include marital status, current living situation, and substance use history. She does not include occupational or travel history. She does not demonstrate curiosity about Mr. Rodriguez' cultural context or elicit his health beliefs.

After she is done taking the history, Zhongsu says, "OK, Mr. Rodriguez, I am going to take a look at you." She starts by auscultating the lungs in six areas, first

under the shirt then moving to over the shirt for the upper lung zones. During the lung exams, she asks the patient to "take some deep breaths." She then listens to the heart in four areas. Next, she grabs the otoscope on the wall and uses it to check pupillary reaction to light and eye movements (asking the patient to look up, to the side, and down), looks inside the oropharynx, and then grabs the ear piece to look at the ear. She does a brief but appropriate examination of the abdomen and checks the skin for rashes and feet for pulses. She does not note the temporal muscle wasting or the bilateral cervical adenopathy that is present.

After the examination, Zhongsu tells the patient that she will be discussing him with the primary care team and will return. As she is leaving the room, Mr. Rodriguez asks timidly, "What do you think is causing my cough?" Zhongsu turns and answers, "I am sure that it is nothing serious, probably an upper respiratory infection or bronchitis. There are some medications that cause coughs, but you are not on them. We will probably get a chest X-ray." She then walks out of the room.

Entrustable Learners

Expected behaviors for an entrustable learner

The learner at this level is routinely able to gather an accurate complete history and can also gather a focused history in an urgent, emergent, or consultation setting. When necessary, the learner identifies and uses alternative sources of information beyond the patients themselves and ensures appropriate communication by using interpreter services when necessary. The entrustable learner can perform an accurate complete physical exam or a focused physical exam pertinent to the patient visit, identify and document abnormal findings, and describe such findings to team members. For the entrustable learner, analytic reasoning and the abilities to activate prior foundational knowledge and prior clinical experience underlie the choice of either a complete or a focused history and physical exam and guide the gathering of information relevant to the patient's care. The learner at this level consistently uses patient-centered interview skills and physical exam techniques that, even under conditions of stress or fatigue, demonstrate respect for patients, insight about patients' emotional responses, sensitivity toward each patient's unique background and needs, and the ability to communicate bidirectionally.

Vignette for an entrustable learner

Zhongsu is seeing patients in the free clinic as part of a primary care team. Her first patient of the day is Mr. Rodriguez, for whom the nursing triage sheet documents a chief complaint of cough. Mr. Rodriguez is new to the clinic. Before entering the room, Zhongsu asks the nurse if an interpreter is needed; she clarifies that the patient's first language is Spanish but that he has full ability to communicate in English. Mr. Rodriguez is fully clothed and sitting on the examination table when Zhongsu walks into the room. Zhongsu closes the door and invites the patient to sit in the chair while they review his history. Zhongsu grabs the stool and wheels it over so that she can sit facing the patient. She asks Mr. Rodriguez if he minds if she jots down a few notes while they are talking. Zhongsu starts her history-taking with: "Mr. Rodriguez, it is great to meet you. My name is Zhongsu Tang. You can call me Dr. Tang. I am working with the primary care team today. What brings you to the clinic today?" Upon eliciting the complaint of a cough, she says, "Tell me a bit more about the cough," and uses several techniques such as repeating back what she has heard, providing summary statements, and asking follow-up questions to elicit the pertinent details of the history. She finds that the patient has a chronic cough that seems to have gotten acutely worse. She asks about associated symptoms and symptoms related to potential diagnoses such as gastroesophageal reflux disease, allergic rhinitis, asthma and malignancy. She also identifies important risk factors for different diagnoses such as occupational history, travel history, and alcohol use. She takes detailed medical history, including the use of prescription, over-the-counter, and other medications and drugs; pertinent family history; social history; and information about allergies (including reactions). She specifically asks Mr. Rodriguez what he believes is causing the cough and if he has seen any healers or other providers. She identifies that he has seen a lay healer and tried some folk remedies including ajo (garlic) and gordolobo (mullein) tea. She concludes by asking, "Mr. Rodriguez, do you think that I have missed anything important in your medical history or about your cough?"

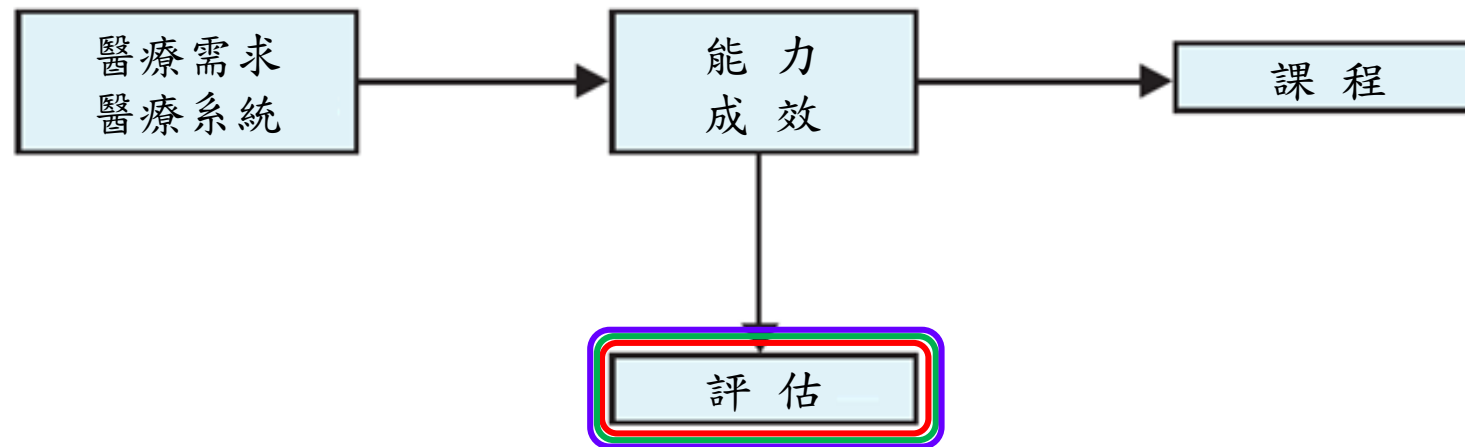
After she is done taking the history, Zhongsu says, "OK, Mr. Rodriguez, I would like to do a full examination at this point. I will step out and let you change into a gown, which is located in this drawer. I will be back in a minute. Is there anything else that you

need right now?" Zhongsu steps into the hall briefly, closing the door behind her. She returns to the room and states, "Mr. Rodriguez, I would like to do a full examination from head to toe. I am going to explain to you what I am doing at each point, but please let me know if you have questions." She starts by examining the head, eyes, ears, nose, and throat, telling the patient what she is doing before she touches the patient at each step. She notes that there is temporal wasting and inquires about recent weight loss and a bit about diet. She also notes cervical adenopathy and asks the patient about tenderness and duration. She does a thorough lung examination, removing or moving the gown so that she can auscultate directly at each point. She auscultates, then performs more detailed maneuvers such as listening for egophony and percussion. She moves through the rest of the exam, performing each part thoroughly and continuing to tell the patient what she is doing. Throughout the exam, she pays careful attention to draping and patient modesty and comfort.

After the examination, Zhongsu tells the patient that she will be discussing him with the primary care team and will return. She asks if there is anything else that Mr. Rodriguez has thought of during the exam and if Mr. Rodriguez has any further questions. As she is leaving the room, Mr. Rodriguez asks timidly, "What do you think is causing my cough?" Zhongsu turns, closes the door again, and sits down on the stool to answer the question. She first asks, "Is there something that you are worried about?" Mr. Rodriguez admits that he is worried about cancer. Zhongsu reviews that there are several causes of chronic cough, including upper airway cough syndrome, gastroesophageal reflux disease, asthma, allergies, chronic bronchitis, primary pulmonary diseases, and chronic infections. She explains that that is why she was asking so many questions, looking for clues to the underlying cause. She states that lung cancer can present as a chronic cough. She reassures the patient that she will discuss the symptoms and physical examination with the team and that they will pursue a work-up to find the cause. She asks again if the patient has any further questions and explains that she will be right back. She then walks out of the room.

課程設計

Competency-based education model



Invited Reviews

The Assessment of Clinical Skills/Competence/Performance

GEORGE E. MILLER, M.D.

It was just 20 year ago, at the 8th annual RIME conference, that I last delivered an invited lecture, offering what was then labeled "A Perspective on Research in Medical Education". Now, after more than a decade of absence from the front lines of that craft, the invitation to make this presentation was a high compliment but one that generated no small measure of uneasiness, for there seem to be so many others better qualified through personal experience to offer the scholarly review that you have come to hear: David Swanson, or Geoff Norman, or Paula Stillman, or Howard Barrows, for example. However, the organizers have made their choice, for reasons that may be obscure but probably relate to the fact that one who has finally achieved the biblical span of years can once more offer a perspective. At least that is what I will attempt to do.

Although it was suggested that the presentation focus upon standardized patients, it seems important to start with the forthright acknowledgment that no single assessment method can provide all the data required for judgment of anything so complex as the delivery of professional services by a successful physician. And so let me begin by suggesting a framework within which that assessment might occur.

At the base of the pyramid I will use for illustrative purposes (Figure 1) is some assurance that a student, a resident, a physician *knows* what is required in order to carry out those professional functions effectively. There are many who appear to believe that this *knowledge* base is all that needs to be measured. And it is unquestionably measurement of knowledge, largely

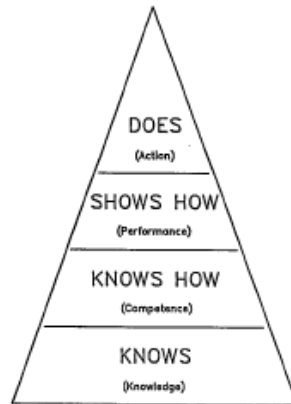


Figure 1. Framework for clinical assessment.

through objective test methods, that dominates current institutional and specialty Board examination systems. But as Alfred North Whitehead pointed out many years ago, there is nothing more useless than a merely well informed man. Tests of knowledge are surely important, but they are also incomplete tools in this appraisal if we really believe there is more to the practice of medicine than knowing.

To fulfill that broader objective, graduates must also *know how* to use the knowledge they have accumulated, for otherwise they may be little more than "idiot savants." They must develop, among other things, the skill of acquiring information from a variety of human and laboratory sources, to analyze and interpret these data, and finally to translate such findings into a rational diagnostic or management plan. It is this quality of being functionally adequate, or of having sufficient knowledge, judgment, skill, or strength for a particular duty that Webster defines as *competence*.

Despite the significant advances in testing procedures that probe these qualities, skeptics continue to point out that such academic examinations fail to document what students will do when faced with a patient, i.e., to demonstrate not only that they *know* and *know how* but can also *show how* they do it. The evaluation of this *performance* objective represents a challenge now being addressed most aggressively, even though many clinical teachers still claim that they make just such judgments about student performance through encounters on the wards or in ambulatory settings. Such a claim regrettably ignores a growing body of evidence suggesting that these judgments are generally based upon limited direct observation and equally limited sampling of clinical problems (which means an inadequate database); they seem more often related to the product of student interaction with patients, that is, to the accuracy of diagnosis and the nature of management, than to the process through which these conclusions were reached.

Finally, however, the question remains whether what is done in the artificial examination setting ordinarily used to assess any of these elements can accurately predict what a graduate does when functioning independently in a clinical practice. This *action* component of professional behavior is clearly the most difficult to measure accurately and reliably. While the diligent efforts of recent years to perfect this final stage of the assessment system have produced mixed results, they must continue with unabated vigor.

In the meantime, while it may be reasonable to assume that either action or performance implies achievement of the more basic elements of the triangle, measurement of the infrastructure (i.e., knowledge and competence) cannot be assumed to predict fully and with confidence the achievement of the more complex goals. When this fact is coupled with the inescapable truth that examinations drive the educational system, because they convey in the most clear and realistic terms what students must learn or do in order to succeed, then it follows that faculties should seek both instructional methods and evaluation procedures that fall in the upper reaches of this triangle.

With this multidimensional complex in mind, let us turn to what we know about the individual assessment techniques em-

ployed in documenting professional behavior, whether it be of student, resident, or practitioner. First, the evaluation of knowledge, particularly by objective test methods, has been so thoroughly studied and the findings so widely disseminated that no more than a summary statement is required here. Suffice it to say that these procedures, skillfully employed, have such a high level of reliability and sampling validity that virtually universal adoption attests to their usefulness, limited in scope though they may be.

It is at the next level, that of assessing the intellectual skill with which knowledge is applied, or the technical skill with which diagnostic and therapeutic procedures are carried out, that some measure of uncertainty begins to intrude. Adoption of the Bloom Taxonomy of Educational Objectives as a guide to the preparation of multiple-choice test questions has surely facilitated the refinement of techniques to probe something more than the recall of informational fragments. However, there remains some disagreement about whether an item that purports to assess analysis, interpretation, or synthesis, for example, can be used confidently to document achievement of such objectives without some knowledge of whether an examinee has previously experienced a comparable challenge, for if such exposure has occurred then what might for the novice require some higher level process may demand no more than simple recall for one well informed or experienced.

To combat this kind of objection, the sequential format illustrated by modified essay questions (MEQ) or patient management problems (PMP) has often been employed. Each of these is introduced by a clinical vignette to set the stage for subsequent actions. In the former those actions are either affirmed, or a revised database provided, before the next step in solving the problem is taken. In the latter no such feedback is provided and subsequent steps depend upon the effect of initial interventions. Scoring of the relatively standardized MEQ has generally shown a reasonably high level of reliability, while that of the PMP has been fraught with problems. Among these are the difficulty of gaining consensus among independent judges on the positive or negative weights to be assigned each possible intervention and even to the optimal path that should be followed. When well prepared, with clear and unambiguous scoring keys and well trained scorers, comparable numbers of MEQs and PMPs in an examination should be about equally reliable. However, with the PMP there is the further confounding element of cueing that is virtually unavoidable in the printed form.

There have been notable efforts to resolve some of the logistical and psychometric problems of these techniques, and to extend their range of usefulness, through the application of more advanced technology. Most prominent among these developments has been the computer-based testing program of the National Board of Medical Examiners, which incorporates both clinical simulations and multiple-choice questions. One new dimension that the computerized simulations may offer is an opportunity to introduce the dynamic element of time in examinee analysis and management of clinical problems. The library of these test materials is steadily expanding, and the procedure is currently under critical scrutiny in more than 70 medical schools.

Despite lingering psychometric questions, to the extent that these procedures have a higher face validity, that is, more closely resemble real performance and action requirements than the simpler techniques, a limited sacrifice of reliability may in some instances be acceptable. What those instances are, however, will remain a matter of intense debate while efforts to achieve higher levels of reliability for these efficient, machine scorable test formats continue.

Less debatable may be the role that models can play in the appraisal of technical competence to carry out specific procedures. Although these devices have been used more often for instruction than for evaluation, as assessment tools they have the advantage of stability and consistency in the challenge with which students are faced. The common ones include such devices as Resuscit-Anni, genital and rectal and breast models, others that allow examination of eye grounds or ear drums, simple heart sound simulators, or the more complex cardiovascular system simulator called Harvey. Whatever shortcomings these tools may have lie not so much in the accuracy of what they are designed to represent as in the reliability of the checklists and rating scales required for scoring and of the raters who use them. Such impediments can be significantly reduced, although not entirely overcome, by careful design of the scoring instruments and training those who will use them.

Yet each of these methods is at least one step removed from an encounter with a human subject. It is for this reason above all others that many faculty members cling to the evaluation they feel comfortable making in the course of working with students or residents in the wards, clinics, and private pavilions where so much clinical teaching occurs. And there is undeniable appeal to the argument that this is closer to the reality of independent practice than any of the devices that probe components of that performance in artificial and isolated settings. What is not so generally acknowledged by proponents of this evaluation procedure is the lack of standardization, the limitation of sampling, and the infrequency with which observation of performance itself (rather than discussion of outcome) provides the basic data upon which judgments are made. It is essentially a method that depends on clinical impressions rather than systematic accumulation of reliable information. Direct observation of a candidate performing a history and physical examination, by a trained rater, using a standardized checklist or rating scale, does address the reliability issue but it does not deal with the sampling question, which is critical if generalized conclusions about performance are to be reached. Applied occasionally it may have great usefulness in formative evaluation, but it has distinct limitations for summative assessment.

This brings us to the next step up the pyramidal structure, the use of patient substitutes that allow some of the perplexing psychometric questions associated with real clinical encounters to be answered. Among the first efforts to move in this direction was the introduction of role playing by the American Board of Orthopedic Surgery, later by the Royal Canadian College of General Practitioners, and more recently by the American Board of Emergency Medicine. Here physician-examiners are programmed to portray the historical features of specific patient problems and to convey, upon request, precise information about physical and laboratory findings. Coming out of role, they may then conduct further oral examination of candidates and subsequently make judgments about overall performance using predetermined and standardized criteria. While the evidence is persuasive that these techniques provide insights that cannot be obtained through more conventional methods, it is also clear that large-scale examinations of this kind are costly both in money and manpower.

For specific technical procedures, an alternative approach has been the employment of non-physician gynecologic and urologic teaching associates upon whom genital and rectal examinations may be performed and who can offer immediate feedback on the accuracy of those manipulative techniques as well as an examinee's sensitivity to patient comfort and understanding. While employed most frequently for instructional purposes, these individuals have also been successfully trained to use checklists or

rating scales in judging and recording the quality of candidate performance.

But the most effective substitute for reality is probably the simulated clinical encounter using standardized patients (SP). When Howard Barrows introduced such normal, trained simulators more than two decades ago, there was widespread skepticism about their ability to portray abnormal clinical states accurately and convincingly. I was among the skeptics, but it took no more than a few minutes in my first such encounter to erase any doubts about the reality of the portrayal. By now most of you have probably had a similar experience, and with similar reactions. It has certainly been affirmed by large numbers of students, residents, and practitioners who, in retrospect, have usually been unable to distinguish the real from the simulated patients they met during a series of encounters in an examination setting, a clinic, or a private office.

It is now clear that there are few limits to who can be trained as patient simulators, at least for the portion of a simulation that deals with communication of medical-history facts, emotional states, ethnic and cultural differences, or patient types. The simulation can occur in direct confrontation, in exchanges by telephone, or through third persons who might be required when dealing with infants and children, unresponsive patients, or families.

Even an astonishing array of physical abnormalities can be successfully simulated by the most gifted standardized patients: altered reflexes, ties, abnormal gait, hot and painful joints, and limited thoracic expansion, for example. But for those things that cannot be simulated, many investigators have employed real patients with stable physical abnormalities, trained to deliver a standardized history consistent with those findings.

But just as the encounter with a single patient cannot be used to draw generalized conclusions about overall clinical performance, neither can a single encounter with a standardized patient serve this purpose. The issue of appropriate sampling must still be dealt with. Some ten years ago, Ronald Harden at the University of Dundee, Scotland, introduced the Objective Structured Clinical Examination (OSCE) as a means of increasing the sample of clinical behaviors that might be evaluated in a reasonable period of time, using facilities and resources generally available in most medical schools.

Harden used as a model the familiar multi-station laboratory examinations so long employed by anatomists and pathologists. In this clinical version the stations might, for example, include patients on whom a focused history or physical examination would be performed (with judgments made by one or more observers); x-rays or microscopic slides or electrocardiograms to be interpreted (and reported in some written document); clinical data analyzed, and diagnostic or management conclusions drawn (and evaluated through responses to written questions). As that multi-station format has been further exploited by many other groups, real patients have often been replaced by standardized patients to assure consistency of challenge to examinees. All of which means that the OSCE is not an examination technique per se but represents a format within which a variety of techniques (from multiple-choice questions to simulations) can be employed.

The growing pressure for medical educators to be as concerned about the documentation of clinical performance as traditionally they have been about the acquisition of knowledge has led an ever-increasing number of medical schools to adopt standardized patients or patient substitute methods in their instructional programs. The 1988 LCME questionnaire revealed that 97 U.S. schools now use gynecologic or urologic teaching associates, and 61 use standardized patients for other clinical skill instruction.

Although not documented in that survey, it seems reasonable to infer from other sources that a majority of such use is in the Introduction to Clinical Medicine course. But 41 schools also employ such methods for the evaluation of clinical skills, and more than half of that group use them in making decisions about promotion or graduation. In all categories increasing use is projected for the coming year.

While psychometric issues may be a minor concern when these procedures are used for instruction, and create only limited uneasiness when they are employed in formative assessment, they are of major importance when standardized patients are introduced as summative assessment tools. Such questions will further intensify as these simulations are employed in high-stake examinations where certification or licensure are at risk. What, then, can be said about these issues at this relatively early stage of development? Here I will depend largely upon the superb critical review, now in press, by Karl van der Vleuten and David Swanson.

When any evaluation technique is introduced, one of the first questions asked is about the reliability of measurement. In this multi-station format it is apparent that the reproducibility of scores derived from standardized patients may be affected by lack of inter-rater agreement, inconsistency of standardized patient performance, or variation of examinee performance across stations. Each of these variables has to greater or lesser degree been investigated but the conclusions that have been reached must still be regarded as tentative pending further confirmation.

Initially there was a general feeling that the observers who would make judgments about the quality of examinee performance must be physicians, and in order to assure fairness as well as consistency two observers were commonly employed. This manpower-intensive approach raised serious questions about feasibility if the method were to be widely used. It now seems clear that interrater agreement, when raters have been trained in the use of standardized checklists or rating scales, is in the 0.5 to 0.9 range, generally falling between 0.75 and 0.85. Under these circumstances one rater is as good as two, given the usual length of such an examination. Any second rater is probably more widely employed to increase the number of encounters.

Further it has been found that standardized patients themselves, or other non-physician personnel, when properly trained in the use of well designed checklists or rating scales, can describe examinee performance as accurately as physicians do. Whether medical faculty members at large will accept and act upon this finding remains to be seen.

There is now growing evidence that reproducible performance of the same role can be achieved by several standardized patients trained at a single site. Initial evidence suggests that such consistency can also be accomplished when training occurs at several sites or by different trainers. While this may be of little concern for individual institutions, it assumes great significance when cooperative, multi-institutional testing is contemplated, a development that will be of critical importance if economies of scale are to be realized.

On one matter there need be no further debate: examinee performance on a single case is a poor predictor of performance on others. The issue of content specificity looms as large here as it does in other examination methods. It now appears that to obtain acceptably reproducible scores a minimum of three to four hours of testing time will be required. Where SP-based stations are either associated with or followed by questions involving data interpretation, differential diagnosis, or lab skills, for example, an even longer total test will be needed. This suggests that SP testing might best be used for the documentation of direct patient interaction behavior, while other aspects of

clinical performance are assessed with more economical testing methods. Whether this compartmentalization of performance components distorts the overall assessment of professional behavior will require further investigation.

There has been considerable discussion about optimal station format and length. It seems reasonable to conclude from the evidence now available that these matters should be determined by what is to be measured rather than by any arbitrary decision in advance. The longer station may give more information, but shorter stations will provide wider sampling of patient problems in the same time period.

Finally, it should be noted that most reliability studies have focused upon the reproducibility of scores rather than of decisions. There has not yet been any significant amount of work on setting absolute standards for SP-based tests, yet a strong argument could be mounted that ranking examinees is not the goal of clinical performance assessment. The real objective is to determine whether a defined level of mastery has been achieved. Were such a pass-fail point to be the focus of reliability studies, one might predict that less testing time would be required to reach supportable generalized conclusions. Such a shift in focus might also offer the opportunity to explore the usefulness of sequential testing, for when most examinees perform well (as they could be expected to do in this situation) then short screening tests might reliably certify the majority and detailed attention could then be reserved for those whose performance is of questionable quality.

Equally important are questions of validity. Here it may be possible to speak with confidence on the subjective assessment of this quality, but with less confidence on its empirical determination. Certainly standardized patients must have a high level of face validity (which Geoff Norman refers to as "faith validity") when residents and practitioners who meet them in the course of a series of clinical encounters are unable to detect which subjects are real and which represent simulations. And they also appear to have content validity, since the examinee performance being probed is that required in the practice of medicine. Whether the sampling of those behaviors is sufficiently large or diverse depends upon the care with which a blueprint has been devised and the extent to which the test matches that blueprint. But that is true of any test.

Empirical validation studies have thus far been relatively rare. Those which have been carried out appear to confirm that individuals with more advanced training perform better than beginners, and one might conclude that such findings confirm construct validity. Similarly with efforts to document concurrent validity: low correlations with more conventional tests are often offered as evidence that different qualities are being measured and higher correlations with faculty ratings of clinical performance as evidence that both are measuring the same critical quality. But in each instance two other issues intrude. First is the now generally accepted fact that performance is embedded in knowledge that can be expected to increase and thus influence performance as the stage of education advances. Second, correlation studies are usually derived from the scores or rankings of norm-referenced tests rather than the specific behavioral achievements of mastery-referenced appraisals.

When some of those mastery elements are specifically addressed, then the special contribution of standardized patients to the testing armamentarium becomes more apparent. For example, false positive findings on physical examination (such as heart murmur, papilledema, or joint effusion), or reporting findings when the appropriate examination has not been performed, may be infrequent numerically but represent significant deviations from acceptable standards, deviations that would other-

wise go undetected. It is just such deficiencies that have too often been uncovered by these techniques, in students already judged qualified by faculty tutors at the end of clinical rotations.

A persistent question about SP-based tests is one of feasibility. It is an issue that cannot be evaded, but one for which only preliminary conclusions can be drawn since no common method for documenting costs has yet been agreed upon. The variables include training and utilization costs for whatever number of SPs are required to provide the necessary sampling of performance, the time and dollar cost of developing cases and scripts and checklists and rating scales, the cost of materials and supplies needed for the test, the cost of consolidating scores and reporting the results, and whether physicians or non-physicians (i.e., standardized patients themselves or others) are used in judging performance. Omitting developmental costs, current estimates for implementing a full-scale certifying examination range between \$100 and \$200 per student.

Such estimates, however, do not include the potential economies of scale that might be realized through cooperative test development by several schools or testing organizations. Efforts of this kind have been initiated at both Southern Illinois University and the University of Massachusetts and will be further examined in collaborative studies being encouraged and supported by the National Board of Medical Examiners. These undertakings are probably justified economically only when the objective is to create a summative examination of clinical performance, although creation of a pool of qualified SPs with accompanying scripts and checklists or rating scales might ultimately prove to be a welcome resource for instruction and formative assessment as well.

As promising and appealing as the SP examination method may be, any confident universal application of the technique to high-risk promotion and certifying procedures must probably await further research on some of the key questions that remain to be answered. Since that is the kind of work that so many in this audience might undertake, let me list some of the investigations that seem especially needed.

Among the most difficult problems is that of reaching agreement on what components of professional behavior should be addressed by an SP-based examination. From the variety of test formats now in use, it seems clear that different groups have different things in mind, and those differences may have significant influence on the time required to gather sufficient data for generalized conclusions to be drawn. In the light of cost-benefit concerns, should the SP component of a qualifying clinical examination be limited to assessing information gathering and communication skills (as several prominent investigators have suggested), or is some significant element lost by assigning the documentation of other aspects of professional behavior to more traditional testing methods?

Equally perplexing is the question of optimal methods for scoring an encounter with standardized patients. It is not simply a matter of checklists or rating scales, scoring by physicians or trained non-physicians, but rather of reaching agreement on what aspects of the encounter to observe and how to combine and weight these observations to yield scores that reflect, in a meaningful manner, the adequacy of observed performance. After reviewing many of the scoring forms currently in use, van der Vleuten and Swanson were moved to comment that "the potential for omitting important items and including unimportant ones is great. The former penalizes examinees who take indicated actions that are not listed; the latter rewards examinees who are unjustifiably thorough."

Whatever the behavioral dimensions of the test, or of the

scoring procedure employed, a still unresolved question concerns the most effective methods for developing performance standards. This issue has been successfully bypassed in the past through the practice of norm-referenced testing; but in judging clinical performance it seems imperative to adopt a criterion-referenced method. It has been difficult in other examinations to gain agreement on criteria, and there is no reason to suppose it will be any less so with SP-based procedures. Nonetheless, if we are to be faithful to the charge placed upon us by society to certify adequacy of clinical performance, not merely the rank among performers, then we can no longer evade the responsibility for finding a method that will allow us to do so.

If cooperative inter-institutional efforts are to be mounted successfully, there remains at least one additional issue to be addressed: the techniques and logistics for creating a shared pool of standardized patients. Some initial work on these questions has been carried out at both the University of Massachusetts and Southern Illinois University working with other regional institutions. The former developed a cadre of standardized patients that were transported to the other sites for testing sessions; the latter developed a set of cases and standard training procedure for simulators that were shared with another medical school so that they could give a common examination. Each of these procedures appeared to work well for the limited objective of the experiment. But if there is to be broader sharing, it is essential to find convincing answers to several questions that remain.

For example, there must be more persuasive evidence than now exists that the portrayal of a given case by several standardized patients trained by different trainers, either at the same site or at different sites, results in comparable SP performance. Further, if a single SP is to be used repeatedly for a single case, is that individual's performance stable over time? Without documentation of comparability and stability, the reliability of this testing procedure will be subject to serious question. An encouraging recent development is Robyn Tamblin's work, which not only suggests that this goal can be achieved but also offers leads to methods that might further improve comparability.

While perhaps not as pressing as these concerns, yet still important, is that of practice effect. With most other testing methods, examinees who have had the benefit of prior experience are generally able to perform better. It seems reasonable to suppose that the same thing might be true with standardized patients, despite the fact that they are simply intended to be an accurate representation of the reality that students encounter regularly in both hospital and ambulatory settings.

Of particular concern to the National Board of Medical Examiners and the Educational Commission for Foreign Medical Graduates, who are committed to the implementation of SP-based certifying examinations, as well as to other certifying bodies that may embark upon such efforts, is the issue of costs and logistics. It is not clear whether present cost estimates, derived from the always expensive developmental phase of any program, can be used as reasonably accurate projections of what might be required to mount large-scale operations for a national or international constituency. And even if they are, is a cost in

that order of magnitude a justifiable expense for certifying or licensing examinations? If there is a way to reduce that expense, whatever it may be, it is worth exploring. The most promising possibility at this point appears to be the sequential examination strategy, using a coarse screen to identify all who are clearly acceptable and reserving the fine screen for those who fall in the gray zone of doubt. Research on this technique is badly needed, for it has major implications in the ultimate implementation of new strategies for testing.

Up to this point I have attempted to be dispassionate, setting forth what appears to be a reasonable representation of our state of knowledge about the assessment of clinical skills/competence/performance. But let me close with a set of personal views, which some might regard as no more than biases.

First is the sense of urgency I feel about getting on with the task. We have for too long been willing to base our judgments about readiness to engage in professional practice by determining whether individuals could demonstrate that they had acquired a body of knowledge that reference groups (most commonly academicians) believed essential for that function. It would be pointless to question the importance of knowledge, despite its transitory character. More important is that we demonstrate decisively through our testing procedures that knowledge alone will not be enough to succeed either in passing the examinations or in performing as a physician. Each contemporary refinement in competence testing has been aimed at drawing closer to that goal, but not until the more recent studies of SP-based examinations have we had something that approached the reality of encounters with patients and their families, in all the ambiguity that reality entails.

Given the experiential and psychometric data now available, it seems not merely desirable but essential to widen the adoption of such methods and to incorporate them, as quickly as answers to remaining problems can be found, in the high-risk examinations that qualify candidates for independent general or special practice.

Lastly, in these assessments it is time to abandon the comfortable camouflage of normative procedures and adopt criterion-referenced testing. Ranking candidates, with arbitrary cut-off points that reflect distinctions far more than differences, is neither good education nor good medicine.

It will not be easy to convince conservative medical faculties, reasonably comfortable with the current conventions that allow clinical impressions to substitute for systematic accumulation of behavioral evidence, that change is in order. Neither will it be possible to convince them with data alone. But without data, passionate arguments are bound to falter for, as one keen observer pointed out many years ago, where data are sparse opinions are plentiful. And that would seem to describe the status of clinical skills/competence/performance assessment in many parts of the globe. I can only hope that the research in medical education community, the change agents who are here today, will in this matter ultimately deserve the words with which Adlai Stevenson described Eleanor Roosevelt: "She would rather light a candle than curse the darkness, and her glow has warned the world." I wish you well in this worthy enterprise.

**George E. Miller, MD
1918–1998**

For me, the news of George Miller's death brought more than the usual shock one receives on hearing of such a sad event. My friend (indeed, George's friend) Ed Rosinski said it best: "There are some people you think will never die—George is one of them." And in a sense, of course, the statement remains true in the case of George Miller. His career of research and development in medical education lives on and will continue to do so for many more years.

In 1954, at what was then the University of Buffalo, George Miller obtained a grant from the Commonwealth Fund in support of the "Project in Medical Education," a remarkable effort featuring the first collaboration of medical faculty and educationists. He moved from Buffalo in 1959 to establish the first office of research in medical education at the University of Illinois College of Medicine, an office which became the world-renowned Center for Educational Development (CED). While there, George Miller and the World Health Organization (WHO) fashioned a global network of WHO Regional Centers in 1970. Frankly, one can find so many significant contributions to the improvement of medical education, both American and foreign, it is not possible to mention them all.

George Miller's vision and courage can be found at the origins of so much that is good in medical education today. In 1962, the original RIME Conference of the AAMC was developed and promoted by George Miller with the collaboration of Edwin Rosinski and T. Hale Ham. In 1965 George Miller convened the first eight directors of research in medical education. The offices grew in number; the directors called themselves the "Non-Group," and they met annually to share progress with one another. It was action taken at the 1971 annual meeting of that Non-Group that led to the establishment of the AAMC's Group on Educational Affairs in 1971.

Any number of innovations in medical education can be traced to those who worked with George Miller

at CED. Many others can be identified as coming from those whose activities in medical education would not have occurred had it not been for George Miller. Edwin Rosinski, Hilliard Jason, and I—who worked with George from the very beginning—have always been acutely aware that our careers would be significantly different had not George Miller come into our lives.

Although we can look back with nostalgia at what George Miller was able to accomplish, we must not gloss over the fact that his work was not always smooth sailing: there were many medical school faculty who responded to George Miller's challenge to engage in serious study of medical education with hostile resistance. George's response was gentle, dispassionate, and firm: Let's see what the evidence shows; let's study the situation carefully; let's try to apply the same scientific objectivity to medical education that we use in our careers as physicians and basic scientists.

George Miller was a gentleman and a gentle man; he was a "gentleman and a scholar" in the finest sense of that expression. His presence will be missed; his influence remains; his legacy will be with us for years to come.

From those of us still working to achieve the goals treasured by you: Thank you, George, for leading the way. From those of us who had the privilege of working closely with you: Thank you, George, for your warm friendship over the years. And for the thousands of medical students whose medical education was, and is, so much the better for your pioneering efforts: Thank you, George Miller.

Stephen Abrahamson, PhD, ScD
*Professor Emeritus of Medical Education
University of Southern California
School of Medicine*

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UIC
College of Medicine

DME
Department of Medical Education

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Remembering George Miller

George E. Miller, MD, founder of the Department of Medical Education at the University of Illinois at Chicago College of Medicine, passed away November 7, 1998 at the age of 79. He was a seminal influence in the field of medical education.

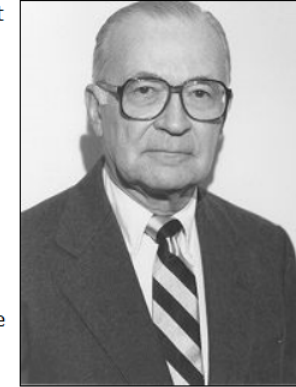
Dr. Miller earned his MD from the University of Pennsylvania in 1943. Following an internship and residency in Medicine at Buffalo General Hospital, he became Director of House Staff Education at that institution. In 1954, he established the Project in Medical Education at Buffalo, which brought together for the first time medical faculty and educationists in a collaborative enterprise.

In 1959, Dr. Miller established the Office of Research in Medical Education (ORME) at UIC. At the time of ORME's founding, it was one of the first university units dedicated to the study and improvement of medical education. This office later became the internationally respected Center for Educational Development (CED), which eventually became the Department of Medical Education (DME).

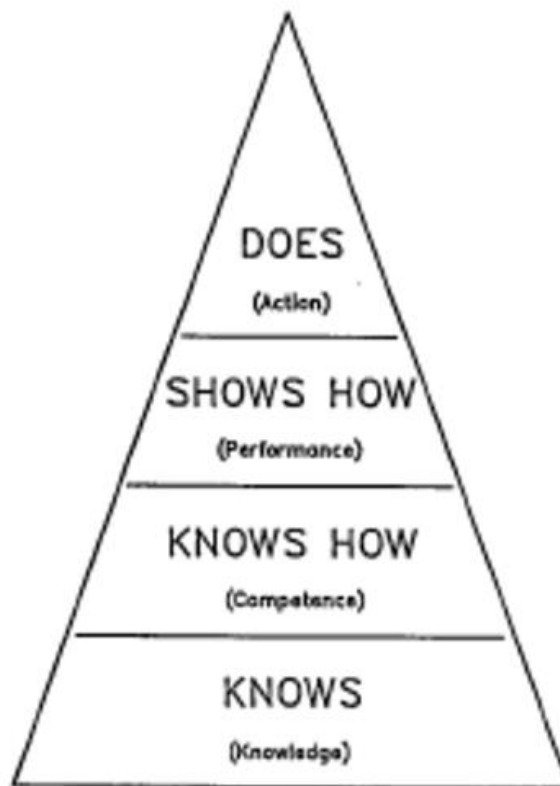
Under George Miller's direction, CED established new standards for curricula, faculty development, and assessment tools for the field of medical education. His vision of medical education as a continuum from student through practitioner led to work on the impact of continuing medical education on infection control in the 1960s. In the 1970s he saw the potential for computers and established demonstration centers to show how computer-based testing and simulations could be used for practitioner self-assessment.

Dr. Miller was an important force nationally throughout his career. His commitment to research led to the development of the AAMC RIME Conference in 1962 and the AAMC Group on Educational Affairs in 1971. He continued his involvement with the National Board of Medical Examiners during his "retirement," chairing the Clinical Skills Steering Committee until 1996.

Throughout his career, Dr. Miller challenged accepted practices to develop visionary programs and research. His work continues to engage and inspire health professions educators world-wide.



Question 3：為何下圖被尊稱金字塔？



是誰叫它金字塔？

At the base of the pyramid I will use for illustrative purposes (Figure 1) is some assurance that a student, a resident, a physician *knows* what is required in order to carry out those professional functions effectively. There are many who appear to believe that this *knowledge* base is all that needs to be measured. And it is unquestionably measurement of knowledge, largely

原來是George Miller
自己封的名號

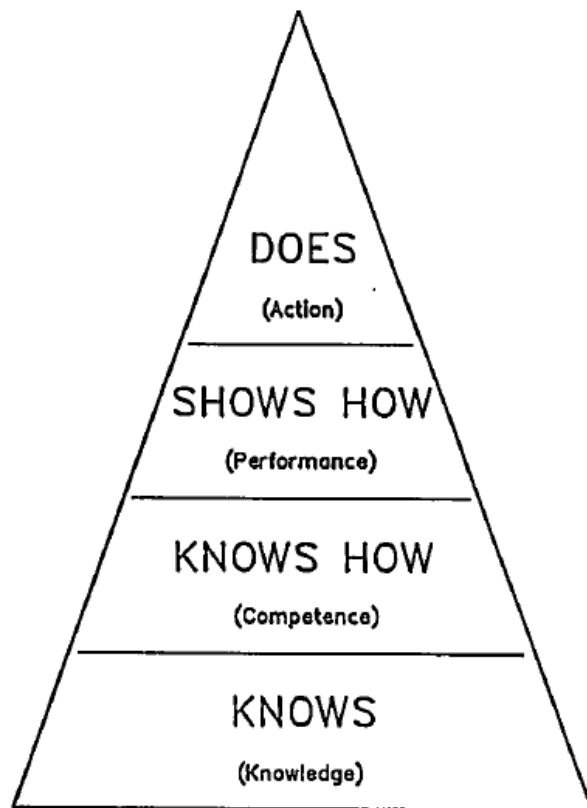
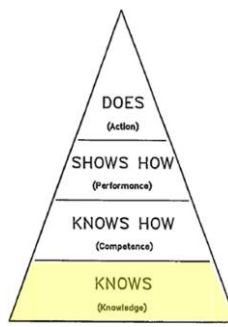


Figure 1. Framework for clinical assessment.

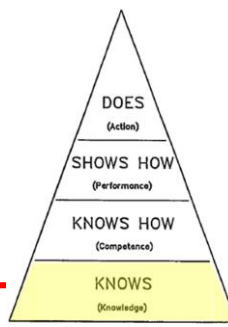
Question 4：四個層級的評估如何解讀？

Knows



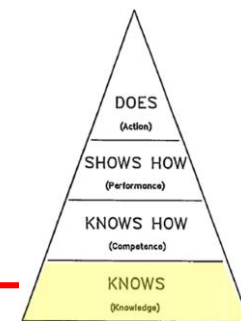
At the base of the pyramid I will use for illustrative purposes (Figure 1) is some assurance that a student, a resident, a physician *knows* what is required in order to carry out those professional functions effectively. There are many who appear to believe that this *knowledge* base is all that needs to be measured. And it is unquestionably measurement of knowledge, largely through objective test methods, that dominates current institutional and specialty Board examination systems. But as Alfred North Whitehead pointed out many years ago, there is nothing more useless than a merely well informed man. Tests of knowledge are surely important, but they are also incomplete tools in this appraisal if we really believe there is more to the practice of medicine than knowing.

Knows



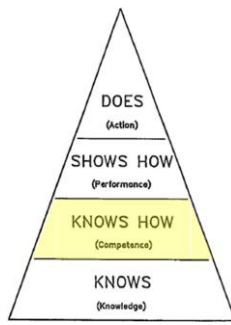
- ❑ Knows what is required in order to carry out those professional functions effectively
- ❑ This knowledge base is all that needs to be measured
- ❑ Measurement of knowledge: largely through objective test methods

Knows



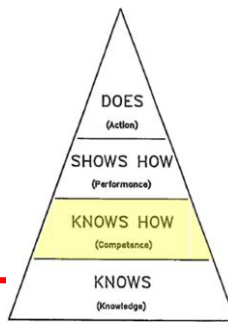
- 為有效地執行專業工作所需要的知識
- 所有這些知識是需要評量的
- 知識的測量：主要經由客觀的測驗方法

Knows How



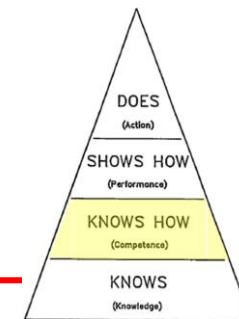
To fulfill that broader objective, graduates must also know how to use the knowledge they have accumulated, for otherwise they may be little more than “idiot savants.” They must develop, among other things, the skill of acquiring information from a variety of human and laboratory sources, to analyze and interpret these data, and finally to translate such findings into a rational diagnostic or management plan. It is this quality of being functionally adequate, or of having sufficient knowledge, judgment, skill, or strength for a particular duty that Webster defines as competence.

Knows How

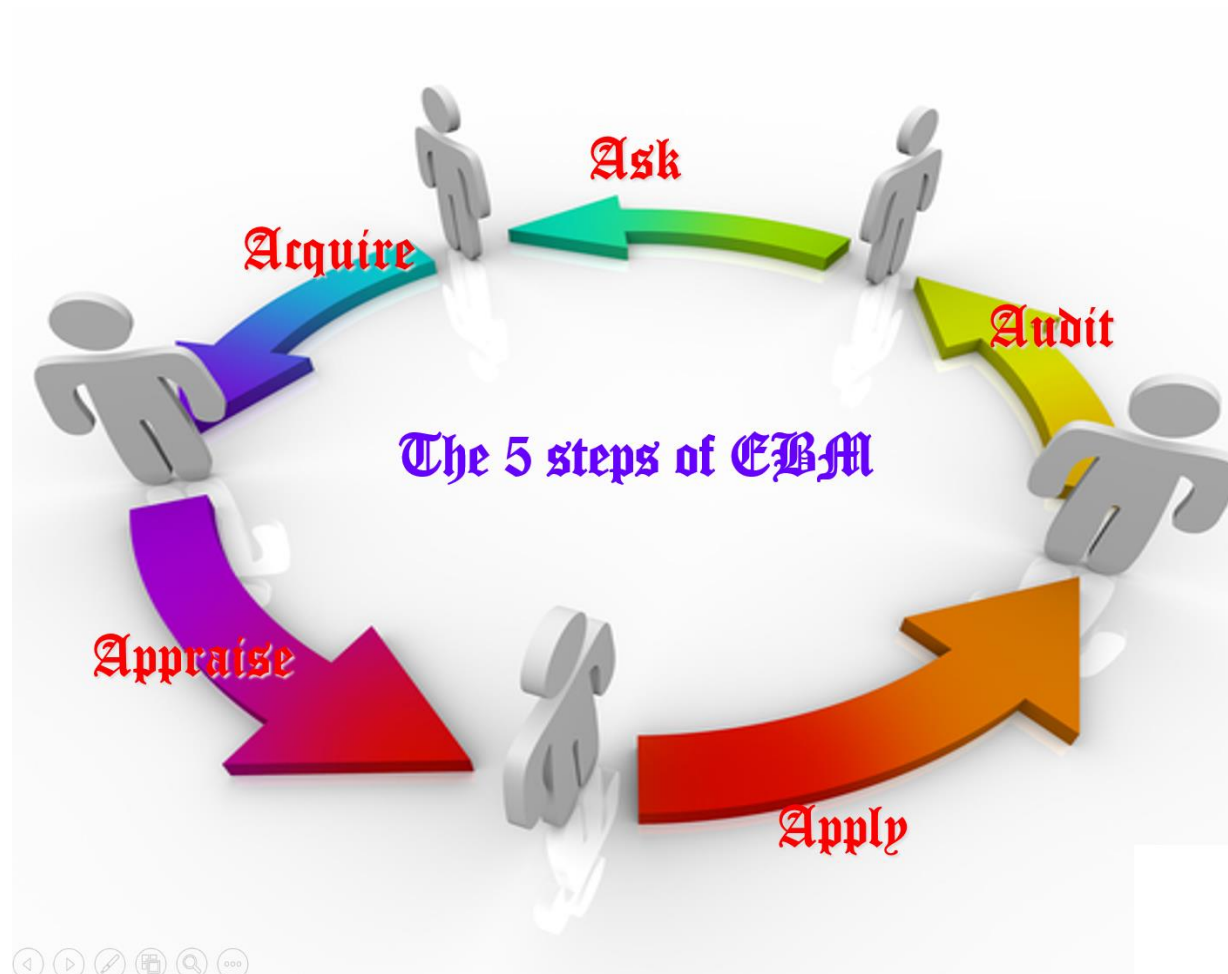


- ❑ Know how to use the knowledge
- ❑ Must develop:
 - ❑ skill of acquiring information
 - ❑ to analyze and interpret
 - ❑ to translate into a rational diagnostic or management plan

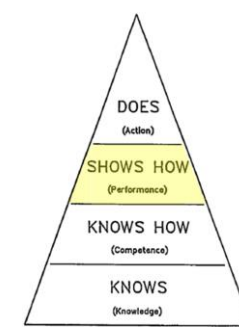
Knows How



- 知道如何使用知識
- 須養成下列能力：
 - 獲取資訊
 - 分析和解讀資訊
 - 轉化為合理的診療計畫

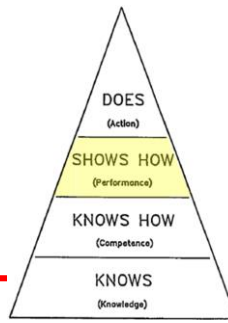


Shows How



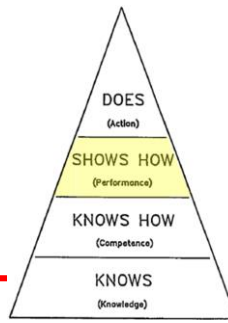
Despite the significant advances in testing procedures that probe these qualities, skeptics continue to point out that such academic examinations fail to document what students will do when faced with a patient, i.e., to demonstrate not only that they *know* and *know how* but can also *show how* they do it. The evaluation of this *performance* objective represents a challenge now being addressed most aggressively, even though many clinical teachers still claim that they make just such judgments about student performance through encounters on the wards or in ambulatory settings. Such a claim regrettably ignores a growing body of evidence suggesting that these judgments are generally based upon limited direct observation and equally limited sampling of clinical problems (which means an inadequate database); they seem more often related to the product of student interaction with patients, that is, to the accuracy of diagnosis and the nature of management, than to the process through which these conclusions were reached.

Shows How



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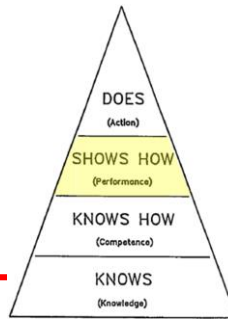
Shows How



儘管對*knows*和*knows how*的測驗程序有顯著進步，但仍有人存疑這類學術性考試不能記錄學生在面對病人時會做什麼，我們不僅要證明他們*knows*和*knows how*，而且還須*shows how*。對*shows how*的評估正是目前的挑戰而大家多積極而為，儘管許多臨床教師仍然聲稱他們經由在病房或門診的看診過程中可判斷出學生的表現，令人遺憾的是這種說法忽略了愈來愈多的證據顯示這些判斷通常是基於有限的直接觀察和不足的臨床問題抽樣；他們通常較著重於學生與病人互動的產物，即診斷的準確性和處置的性質，而不是達成結論相關的過程。

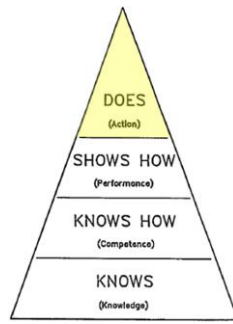
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CEX/mini-CEX DOPS



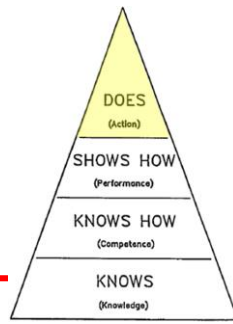
儘管對*knows*和*knows how*的測驗程序有顯著進步，但仍有人存疑這類學術性考試不能記錄學生在面對病人時會做什麼，我們不僅要證明他們*knows*和*knows how*，而且還須*shows how*。對*shows how*的評估正是目前的挑戰而大家多積極而為，儘管許多臨床教師仍然聲稱他們經由在病房或門診的看診過程中可判斷出學生的表現，令人遺憾的是這種說法忽略了愈來愈多的證據顯示這些判斷通常是基於有限的直接觀察和不足的臨床問題抽樣；他們通常較著重於學生與病人互動的產物，即診斷的準確性和處置的性質，而不是達成結論相關的過程。

Does



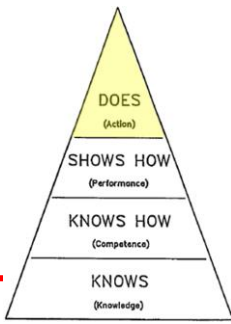
Finally, however, the question remains whether what is done in the artificial examination setting ordinarily used to assess any of these elements can accurately predict what a graduate *does* when functioning independently in a clinical practice. This *action component of professional behavior* is clearly the most difficult to measure accurately and reliably. While the diligent efforts of recent years to perfect this final stage of the assessment system have produced mixed results, they must continue with unabated vigor.

Does



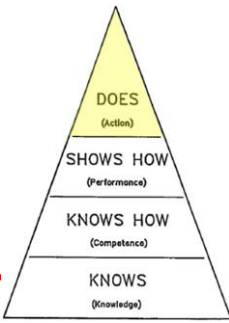
Finally, however, the question remains whether what is done in the artificial examination setting ordinarily used to assess any of these elements can accurately predict what a graduate *does* when functional independently in a clinical practice. This *action* component of professional behavior is clearly the most difficult to measure accurately and reliably. While the diligent efforts of recent years to perfect this final stage of the assessment system have produced mixed results, they must continue with unabated vigor.

Does

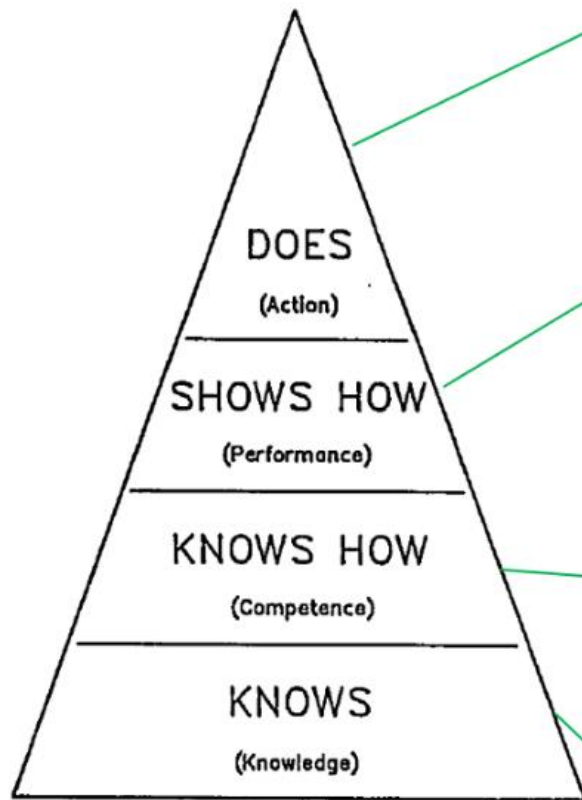


然而，仍然有最後一個問題：藉由常用的人工考試場景是否能評估醫學畢業生在獨立執行醫療業務時能實踐（*does*）各項受評項目。專業行為的「行動」部分顯然是最難準確及可靠地測量。近年來為要對此評估系統最後階段所付出的努力已產生了不同的結果，仍必須繼續努力。

Does



- ❑ 最後一個問題：OSCE無法評估*does*
- ❑ 準確及可靠地測量專業行為的*action*：最難
- ❑ 近年的努力已產生不同的結果，但仍必須繼續努力



Framework for clinical assessment.

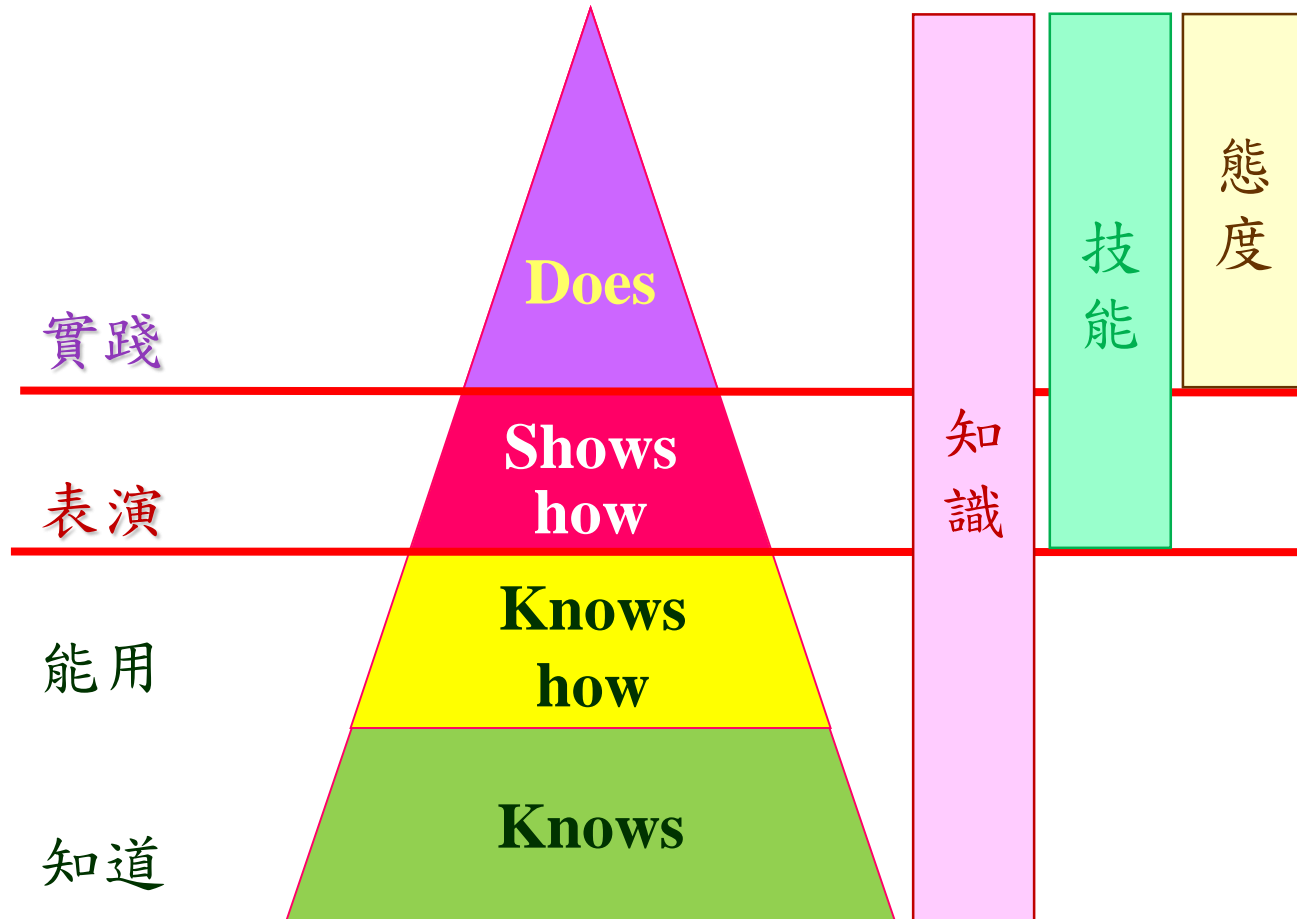
仍然令人存疑的是在一般人為的考試設置所做的評估，是否能夠準確地預測出畢業生在未來獨立執業時的**作為 (does)**。這種專業行為的**行動 (action)**顯然是最難準確可靠地衡量的。

還要他們能**展示如何 (shows how)**做。儘管評估學生表現目前仍是大家最積極面對的挑戰，但許多臨床教師依然聲稱他們藉由在病房或門診的醫病互動來判斷學生的**表現 (performance)**。這種說法遺憾地忽略了愈來愈多的證據顯示這些判斷一般基於有限的直接觀察和同樣有限的臨床問題取樣（這意味著數據不足）。他們似乎較專注於學生與患者互動的產物，即診斷的準確性和處置的性質，而不是達成這些結論的過程。

畢業生還必須**知道如何 (knows how)**利用他們所積累的知識，否則他們只是「聰明笨伯」。在知識之外，他們必須養成從人員和實驗室資源獲取信息、分析和解釋這些數據，以及最後將這些發現轉化為合理的診斷或處置計畫的技巧。具備功能充足的品質，或是對特定工作有足夠的知識、判斷技巧或力量，就是韋氏字典所定義的**能力 (competence)**。

金字塔基底是要確認學生、住院醫師、執業醫師**知道 (know)**要有效地執行專業功能所需要的是什麼。許多人似乎相信這個**知識 (knowledge)**基礎就是需要衡量的全部。

對學生的評估



Miller GE, *Acad Med* 1990.

(米勒金字塔)

對學生的評估



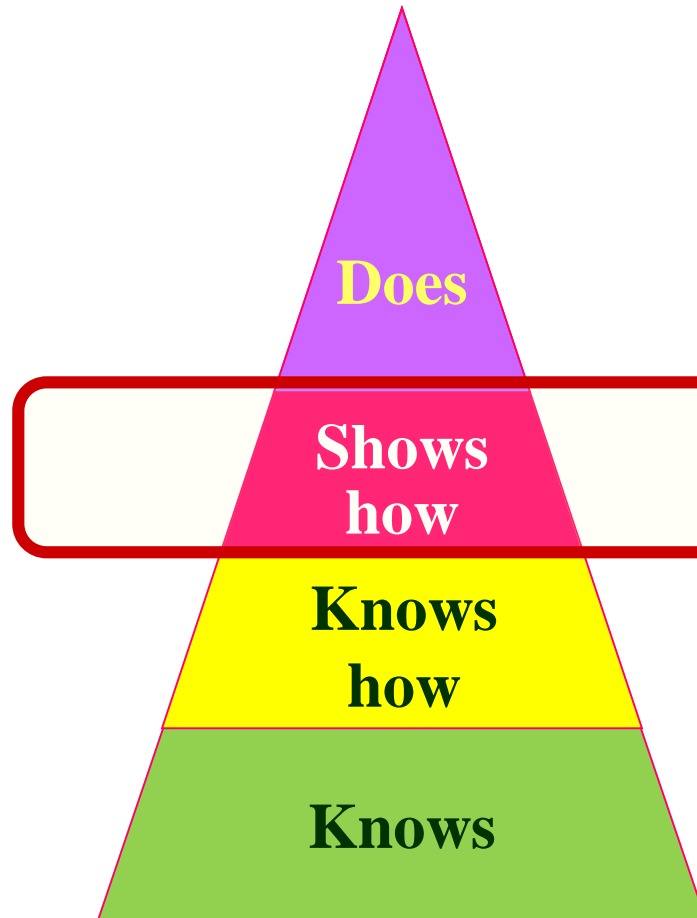
只考知與不知 推測能與不能

- 學生檔案
- 病歷紀錄
- 學習護照
- 多源回饋
- Mini-CEX, DOPS
- OSCE
- 病例報告、申論題
- 口試、Case-based discussion
- 簡答題、填充題
- 選擇題、是非題

Miller GE, *Acad Med* 1990.

(米勒金字塔)

對學生的評估



Miller GE, *Acad Med* 1990.

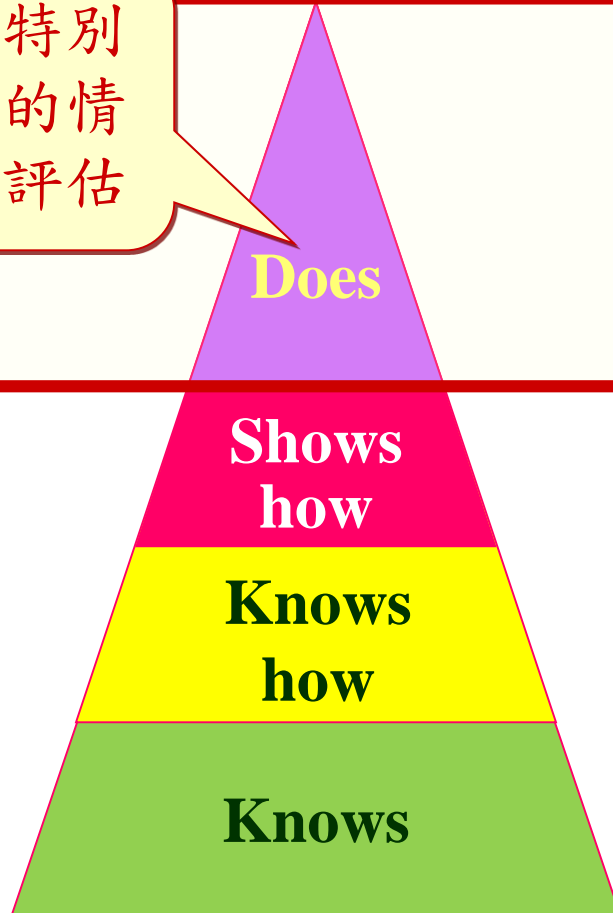
(米勒金字塔)

只考能與不能 不知為與不為

- 學生檔案
- 病歷紀錄
- 學習護照
- 多源回饋
- Mini-CEX, DOPS
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- 簡答題、填充題
- 選擇題、是非題

對學生的評估

不在特別
安排的情
況下評估



Miller GE, *Acad Med* 1990.
(米勒金字塔)

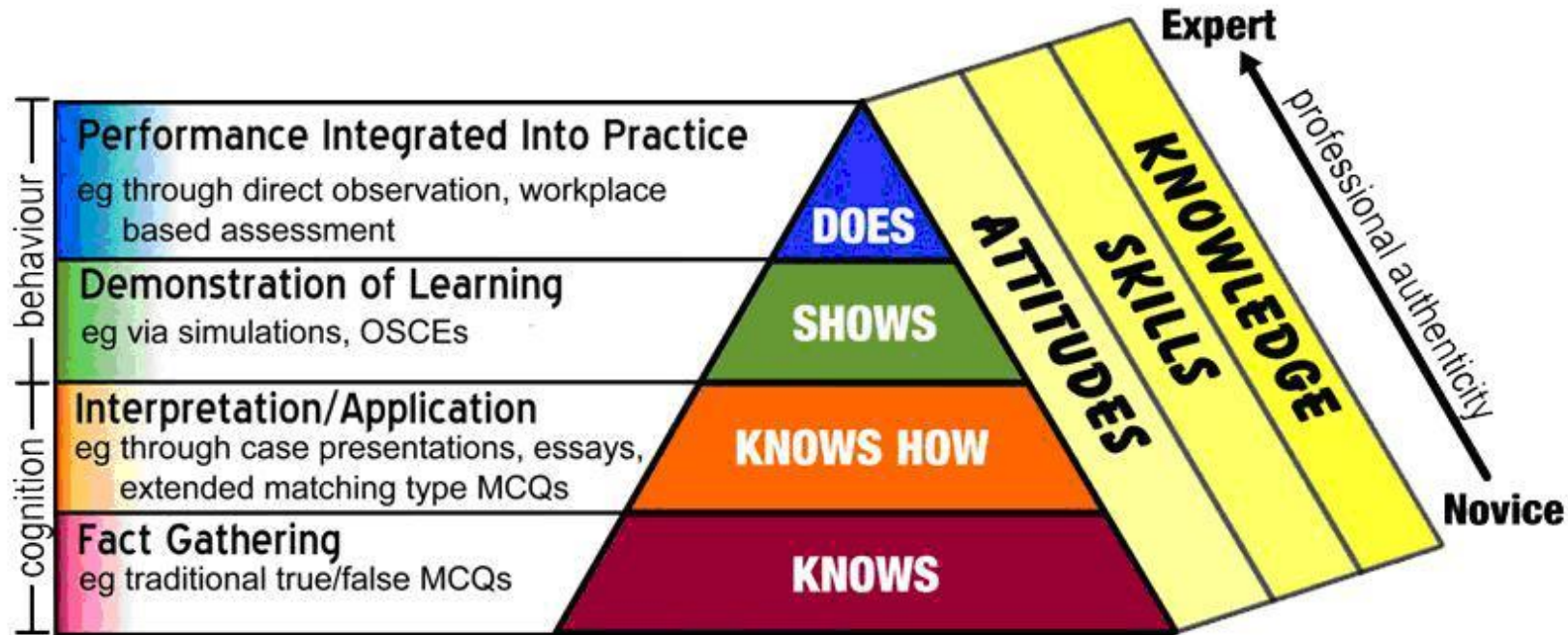
既考能與不能 也知為與不為

- 學生檔案
- 病歷紀錄
- 學習護照
- 多源回饋
- Mini-CEX, DOPS
- OSCE
- 病例報告、申論題
- 口試、Case-based discussion
- 簡答題、填充題
- 選擇題、是非題

Question 5 : 這個圖有比較高明嗎？

MILLER'S PRISM OF CLINICAL COMPETENCE (aka Miller's Pyramid)

it is only in the "does" triangle that the doctor truly performs



Based on work by Miller GE, *The Assessment of Clinical Skills/Competence/Performance*; Acad. Med. 1990; 65(9): 63-67
Adapted by Drs. R. Mehay & R. Burns, UK (Jan 2009)

clinical competence

clinical assessment

triangle

millers

prism

millers pyramid

competency

framework

osce

educational theories

medical education

assessing

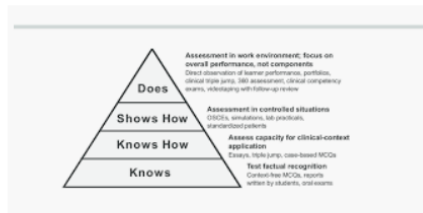
skills



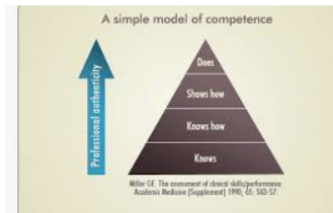
The Miller pyramid and prism gp-training.net



The Miller pyramid and prism gp-training.net



Miller's Pyramid of Professional Competence with exampl... researchgate.net



What is workplace-based assessment? — E-Le... faculty.londondeanery.ac.uk

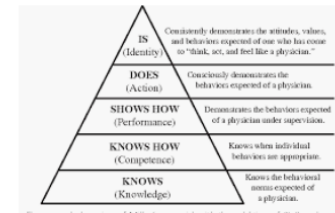
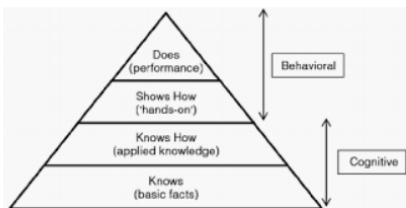
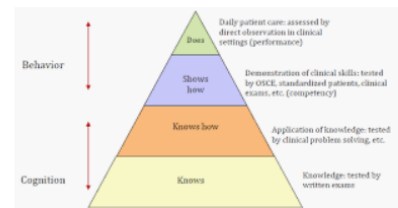


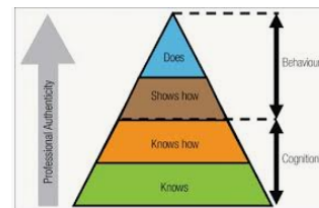
Figure 2 from Amending Miller's Pyramid to I... semanticscholar.org



Miller's pyramid of clinical competence. Source: Adapt... researchgate.net



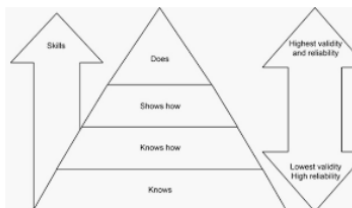
Miller's Pyramid of Assessment Miller's Pyramid of ... ben.edu



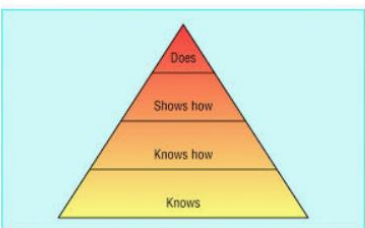
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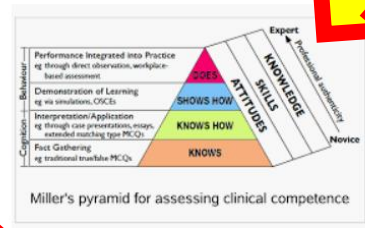
Figure 1 Miller's original pyramid. Reprinted PDF Amending Miller's Pyramid to In... semanticscholar.org



The Miller Pyramid for assessing knowledge and... researchgate.net



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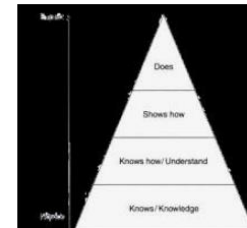
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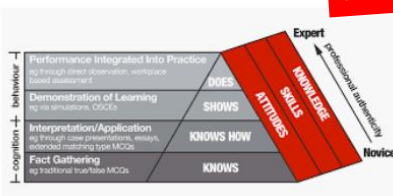
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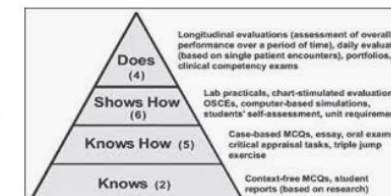
Miller's Pyramid of Competence - in relat... pinterest.com



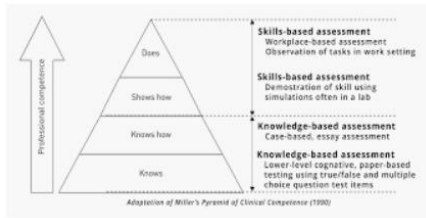
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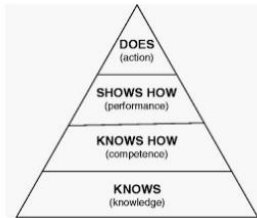
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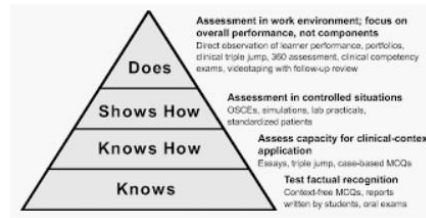
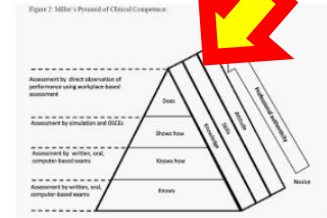


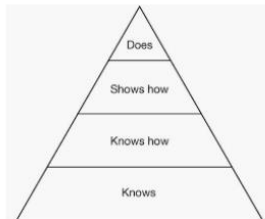
Figure 4. | Journal of Dental Education jdentaled.org



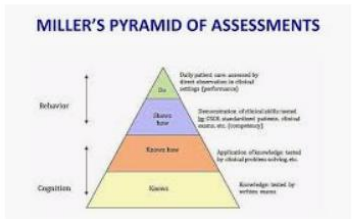
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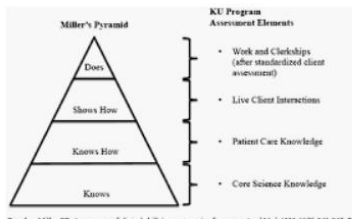
Page 4: Levels of clinical competence criugiaminimenter



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Miller's prism of clinical competence (aka Miller's pyr | Open-open.nlm.nih.gov



Miller's Pyramid applied to the Kansas School o... researchgate.net



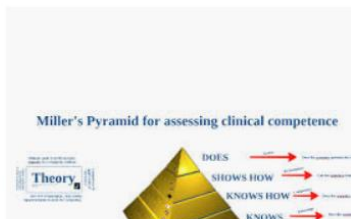
Curriculum Development aofoundation.org



Miller's Pyramid of Cli... studylib.net



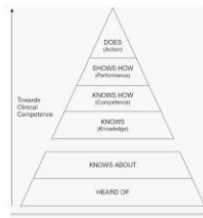
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Miller's Pyramid: assessing clinical competence... prezi.com



JMIR - Web-Based Immersive Virtua... jmir.org



SAGE Books - A Model ... sk.sagepub.com

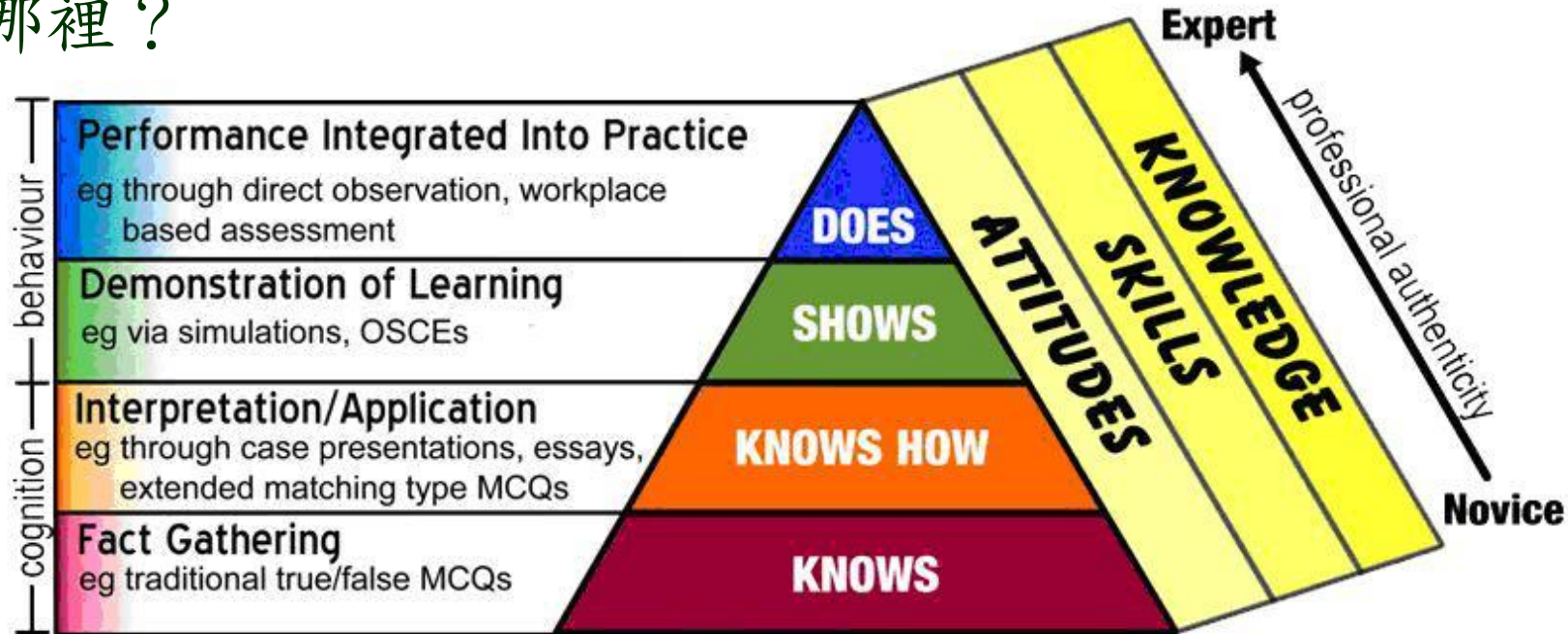


Novice medico to graduate doctor climbing ... slideshare.net



思考：廣被引用的圖會錯嗎？

❑ 錯在哪裡？

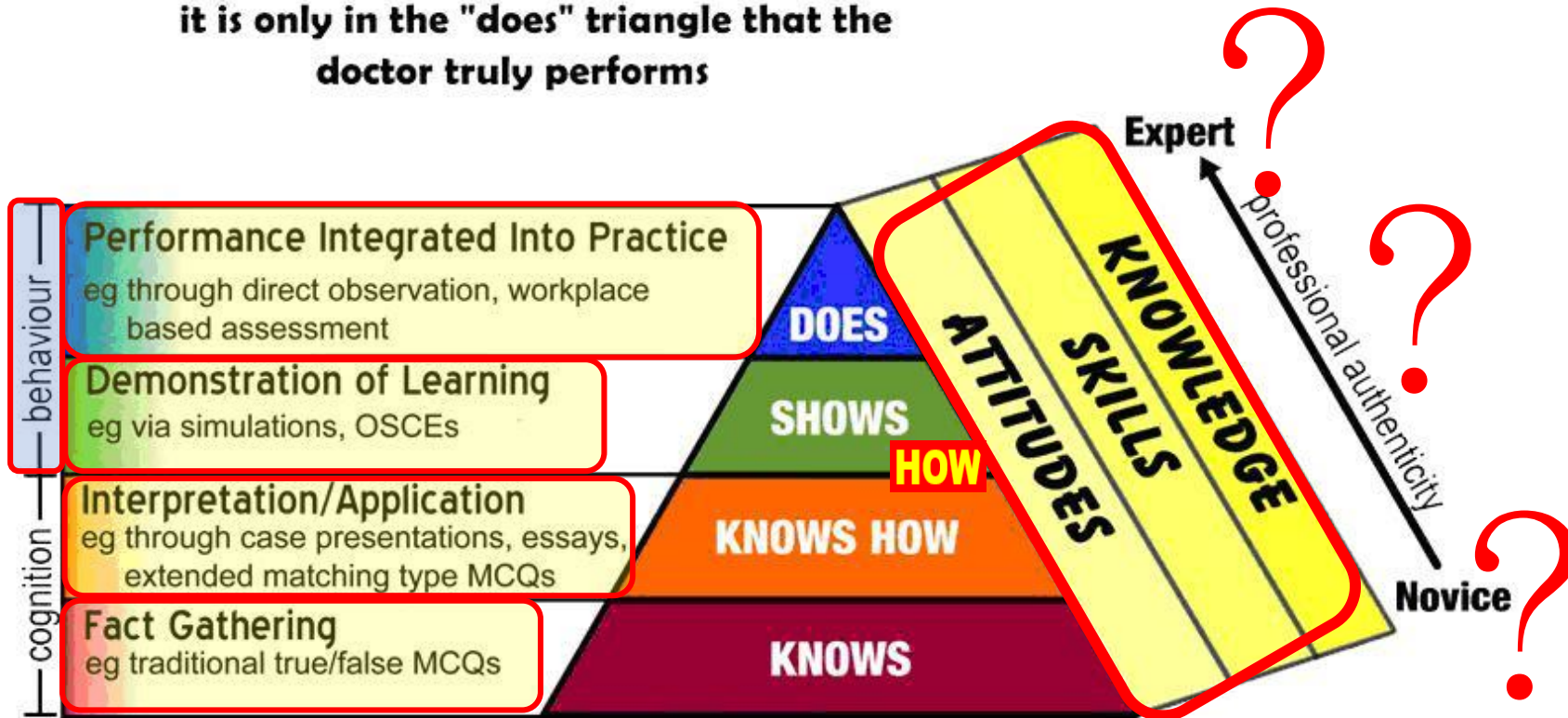


Based on work by Miller GE, *The Assessment of Clinical Skills/Competence/Performance*; Acad. Med. 1990; 65(9): 63-67
Adapted by Drs. R. Mehay & R. Burns, UK (Jan 2009)

超級經典.....

MILLER'S PRISM OF CLINICAL COMPETENCE (aka Miller's Pyramid)

it is only in the "does" triangle that the doctor truly performs



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畫蛇添多足
蛇足全都錯

ACGME Competencies: Suggested Best Methods for Evaluation

		1	2	3	4	5	6	7	8	9	10	11	12	13
Competency	Required Skill	Record Review	Chart Stim. Recall	Check-list	Global Rating	SP	OSCE	Simulations & Models	360° Global Rating	Portfolios	Exam MCQ	Exam Oral	Procedure or Case Logs	Patient Survey
Patient Care	Caring and respectful behaviors			3		1			2					1
	Interviewing			1		2	1		3					
	Informed decision-making		1	2			2					2		
	Develop & carry out pt. Management plans	2	1	2	3			2	3					
	Counsel & educate pt's. & families			3		1	1		2					1
	Performance of procedures a) Routine physical exam			2		1	1							
	b) Medical procedures			1	3			1	2				3	
	Preventive health services	1				2	1			3			2	
	Work within a team			3	3				1					

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

Toolbox of Assessment Methods[®] Accreditation Council for Graduate Medical Education (ACGME) and American Board of Medical Specialties (ABMS). Version 1.1.

ACGME Competencies: Suggested Best Methods for Evaluation

		Evaluation Methods												
Competency	Required Skill	Record Review	Chart Stim. Recall	Check-list	Global Rating	SP	OSCE	Simulations & Models	360° Global Rating	Portfolios	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

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

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ACGME Competency Supported Best Methods for Evaluation

Competency	Respectful, Altruistic	Records Review	Checklist	Global Rating	OSCE	Portfolios	MCQ	Exam Oral	Procedure or Case Logs	Patient Survey
Professionalism	Respectful, altruistic		3		1					1
	Employ sound practice									2
	Sensitive to cultural, gender, disability issues									2
Systems-Based Practice	Understand interaction of their practices with the large system					1				
	Knowledge of practice and delivery systems		2		3					

Toolbox of Assessment Methods

各種評估方法有其自身特色
有如工具箱中的不同工具

使用者得依需求選用不同的評估工具

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

- 前言
- 基本觀念
- 課程設計
- 教師培育
- 結語

CBME的教師培育

- 了解CBME
- 六大核心能力/EPAs的教學
- 六大核心能力/EPAs的評估

CBME的教師培育

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- 六大核心能力/EPAs的評估

OK!

OK?

大綱

- 前言
- 基本觀念
- 課程設計
- 教師培育
- 結語

結語 (1)

- ❑ 醫學教育常仿效傳統產業界
- ❑ CBME仿效CBT
- ❑ 能力導向教育幾乎可以涵蓋傳統產業的全部
- ❑ CBME卻非醫學教育的最終願景，而僅是基本要求

結語 (2)

- ❑ Milestones/EPAs是手段，不是目的
- ❑ 推動CBME的目的：
 - ❑ 使課程設計更具架構
 - ❑ 使教學規劃更有方向
 - ❑ 使學習成效更為具體