

# 勝任能力導向醫學教育

Competency-based Medical Education  
Milestone & EPAs

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# Outline

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1

**Competency-based Medical Education**

2

**Milestone & EPAs Project**

3

**MMH pharmacy model**

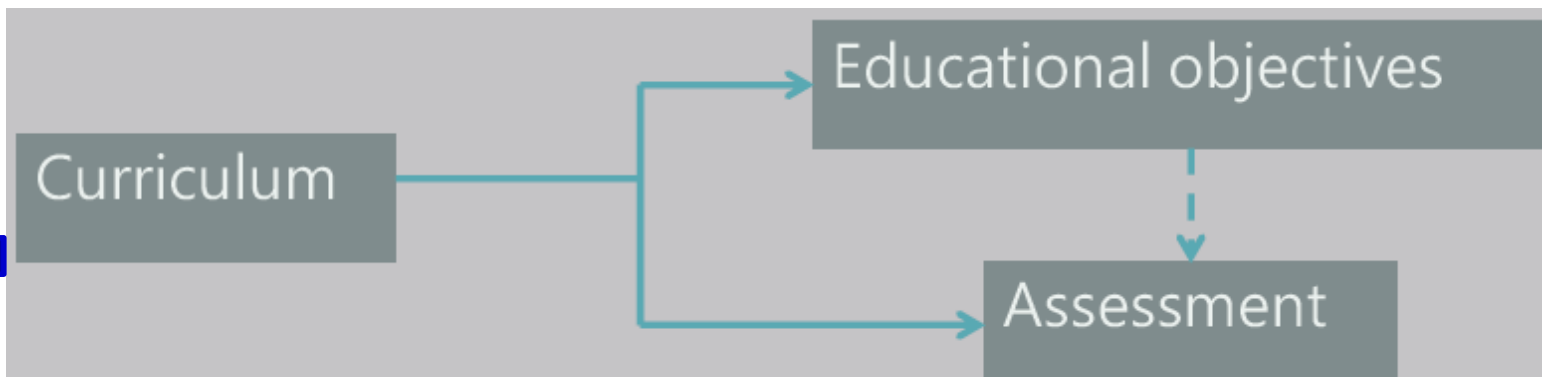
二年期藥師  
AACP ACCP GPP

住院藥師  
ASHP

專科藥師  
BPS

# Models of Education

## Traditional model (Knowledge-based)



## Competency-based medical education model (CBME)



# Competency-based Medical Education

□ First mentioned (1978, WHO)

Health professional

Practice- A defined level of proficiency

Accord with local conditions, to meet local needs

1. Patient care
2. Medical Knowledge
3. System based practice
4. Practice based learning
5. Professionalism
6. Interpersonal and communication skills

**Medical expert  
Communicator  
Collaborator**

**Manager  
Health advocate**

**Scholar  
Professional**

ACGME(1998)

CanMEDS(2005)

## 六大核心能力

病人照護  
醫學知識  
自我學習與精進  
人際溝通技巧  
專業素養  
系統下執業

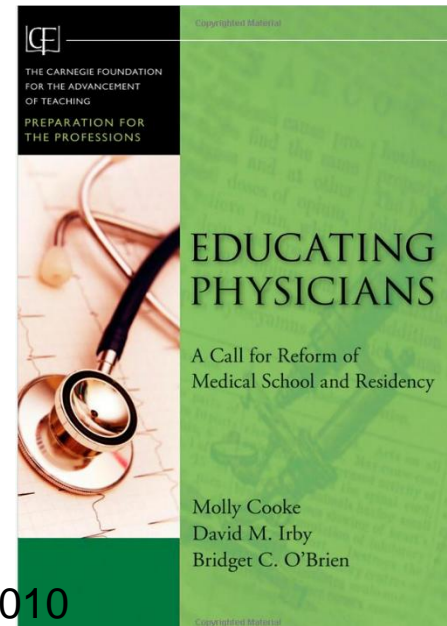
## 七個主要的專業角色

專業人員  
溝通者  
協調者  
領導者  
健康倡議  
學者  
醫學專家

# Recommendations of Carnegie Report

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- ✓ Fixed standards, flexible paths
- ✓ Integration of knowledge and clinical experience
- ✓ Professional identity formation
- ✓ Habits of inquiry and innovation



# Competency-based Medical Education

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- Organizes the educational experience **around competencies**
- Emphasizes **performance outcomes**
- De-emphasizes **time-based** training
- Promises greater **accountability** to patients and society
- Flexible and **learner-centered**

# CBME三核心面向(概念)

- ◆ **能力進展架構** An outcome-based competency framework with Progressive sequencing of competencies
- ◆ 為勝任能力量身打造的**教學與學習經驗**  
Learning experience and teaching tailored to competencies
- ◆ 計畫性、系統性的評量設計與**能力進展的評估**  
Programmatic assessment and group decision process for competencies progression

先訂出學員應具有之  
專業核心能力

設計課程

評估能力進展



# Two views

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- ✓ Doctors are **sets of competencies**. If we can identify, train, monitor all required behaviors we can *guarantee* good doctors (the analytic view)  
→ Milestone 里程碑
- ✓ Becoming a doctor is **identity formation and role internalization** over time. (the synthetic/holistic view)  
→ EPA 可信任專業活動

# Milestones for MMH pharmacy

## 六大核心能力

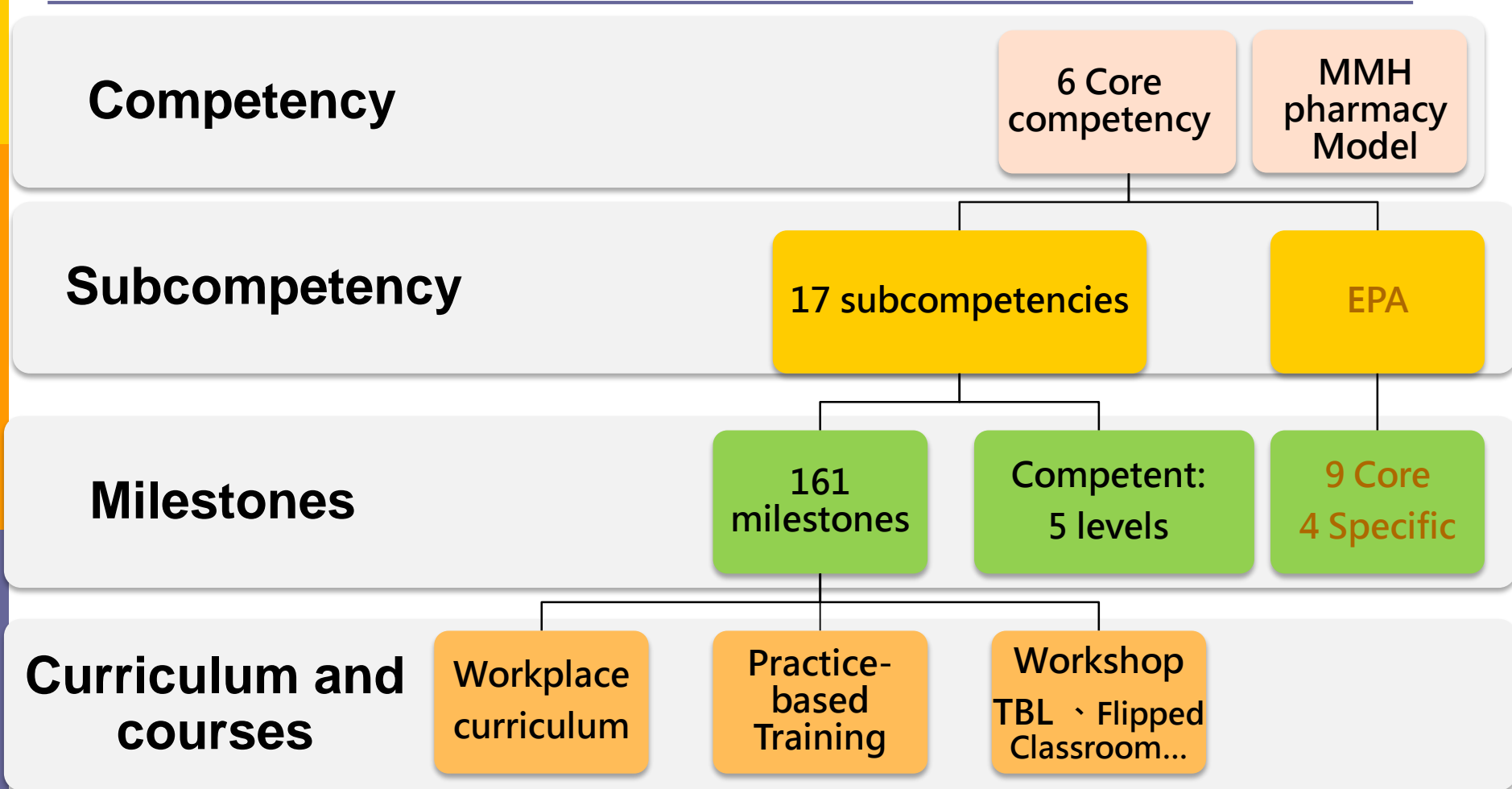
## 次能力

### ACGME 6大核心能力 (次能力)

- 1.Patient care(1-6)
- 2.Medical Knowledge(7)
- 3.System based practice(8-10)
- 4.Practice based learning(11-13)
- 5.Professionalism(14-15)
- 6.Interpersonal and communication skills(16-17)

- 1.Patient care(PC1) 適當藥品提供
- 2.Patient care(PC2) 用藥連貫性照護
- 3.Patient care(PC3) 藥品使用評估
- 4.Patient care(PC4) 提供治療建議
- 5.Patient care(PC5) 藥物治療追蹤和監測
- 6.Patient care(PC6) 提供藥品諮詢
- 7.Medical Knowledge(MK1) 展現照護病人所必需的專業知識
- 8.System based practice(SBP1)  
實際病人照護與醫療照護體系結合
- 9.System based practice(SBP2) 病人安全及照護品質提升
- 10.System based practice(SBP3) 運用科技
- 11.Practice based learning(PBLI1)  
將品管概念及病人用藥安全納入工作中
- 12.Practice based learning(PBLI2) 自主學習
- 13.Practice based learning(PBLI3) 教學、教育與知識傳播
- 14.Professionalism(PROF1) 專業價值
- 15.Professionalism(PROF2) 當責
- 16.Interpersonal and communication skills(ICS1)  
以病人為中心的溝通
- 17.Interpersonal and communication skills(ICS2)  
與醫療團隊其他成員溝通

# Framework

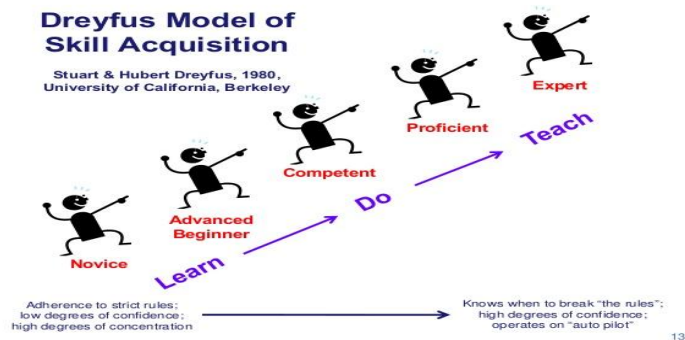


# Milestones

- “A defined observable marker of an individual’s ability along a developmental continuum.”

Englander et al, *Med Teacher* 2017

- Dreyfus model of development



<https://www.slideshare.net/KarenMartinGroup/the-improvement-professionals-evolving-role-from-practitioner-to-facilitator-oto-coac/13-Dreyfus-Model-of-Skill-Acquisition-Stuart-Hubert>

「里程碑」(milestone) 是一個對於特定能力的可觀察可測量的表現敘述

# Milestones performance- "Levels"

Milestone Description: Template				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>What are the expectations for a beginning resident?</p> <p>新進藥師程度</p>	<p>What are the milestones for a resident who has advanced over entry, but is performing at a lower level than expected at mid-residency?</p> <p>已有進步，但程度尚未達中等</p>	<p>What are the key developmental milestones mid-residency?</p> <p>What should they be able to do well in the realm of the specialty at this point?</p> <p>持續進步，已達大部份要求</p>	<p>What does a graduating resident look like?</p> <p>What additional knowledge, skills &amp; attitudes have they obtained?</p> <p>Are they ready for certification?</p> <p>已達訓練目標 已達可畢業程度</p>	<p>Stretch Goals – Exceeds expectations</p> <p>已超越訓練的要求，進入專家等級</p>
<p>勾選符合評量當時程度 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>Comments:</p>				

每一項次核心能力，分成五級的能力等級

# Example

## From Competences to Milestones

一般能力

### 1. Patient Care 1(PC1). 緊急穩定處置 (Emergency Stabilization)

次能力

急救危急病人時，按優先次序進行初步穩定措施，並且整合運用醫院之支援服務，且在執行急救後再度評估。

Has not Achieved Level 1	Level 1	Level 2	Level 3	Level 4	Level 5
	<p>辨識異常生命徵象。</p>	<p>辨識病人的狀態是不穩定、需立即處理的。</p> <p>執行危急病人的初級評估(primary assessment)。</p> <p>辨別相關數據資料以形成初步診斷(diagnostic impression)和治療計畫。</p>	<p>處理以及辨別危急病人的輕重緩急優先順序。</p> <p>急救危急病人時，優先進行關鍵的初步穩定措施。</p> <p>執行急救後，再次評估病況。</p> <p>評估 DNR 醫囑的效力。</p>	<p>即時察覺進一步的臨床處置將會是沒有效益的。</p> <p>整合運用院內相關支援服務於困難的急救情境。</p>	<p>發展危急病人處置及轉送之策略與流程。</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

里程碑

里程碑的進展

建議：

# Example

## From Competences to Milestones

次能力描述

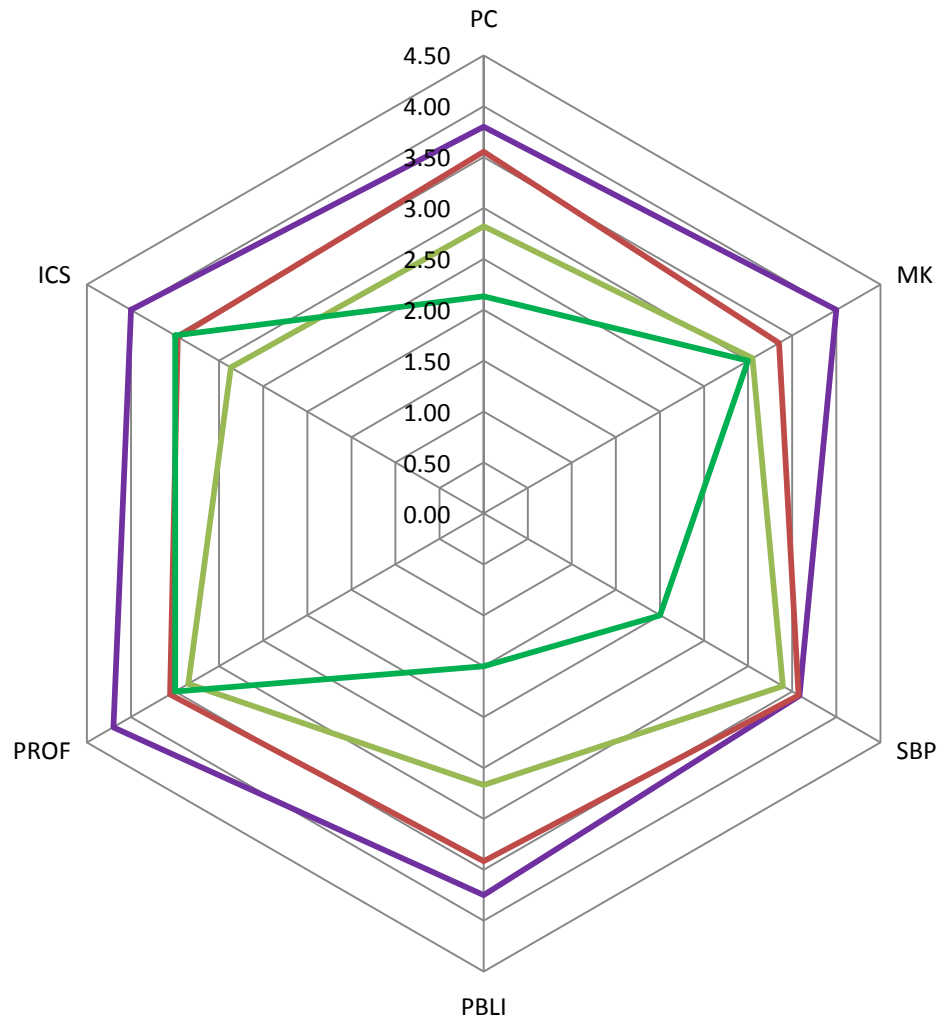
Practice-based learning & improvement 2 (PBLI 2) 主動自主學習

能運用實證醫學於臨床病人照護；能自我反思學習歷程；實踐持續自主多元學習新知。

Has not achieved level 1	Level 1	Level 2	Level 3	Level 4	Level 5
		<b>里程碑的進展</b>			
	98.能於臨床工作中積極自我學習  99.能有探索醫藥新知的動機與學習計畫  <b>里程碑</b>	<b>100.具實證醫學概念能針對臨床問題執行文獻資料蒐尋</b>  101.能針對指定學習活動(如處方案例討論、期刊報告..)執行文獻探討與資料蒐集	102.能正確評讀文獻，區分證據等級與精通資料查詢。  103.能透過多元回饋、評量表現，自我反思學習歷程，改善個人學習計畫	104.能整合實證證據於病人照護  105.能結合過往經驗、多元學習活動、精進個人學習計畫	106.能評估應用實證於病人照護成效  107.能教導初階實證醫學與技巧  108.能持續對臨床工作進行自我檢視與分析來實踐終身自主學習
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
教師回饋:					

# Milestones(里程碑)

- 學習進展軌跡  
Level 1-Level 5
- 半年-1年評估  
(Summative)
- 提供學員(自省、主動學習)與老師學習  
進展的項目和方向





# 勝任能力操作型定義化

## Milestones(ACGME)

Describe the developmental trajectory of the individual

Person with competencies

以次能力出發評估

單一能力的

能力進展概念(軌跡)

描述人的特質

(學員可自我反思)

## EPAs(Olle ten Cate)

Describe units of work

Entrustment for a task requires the synthetic application of multiple competencies at a specified level of performance(milestone)

Task to be done

以任務為出發評估

涵蓋很多次能力

可信賴程度(大量觀察/回饋)

針對任務(事)

# EPA definition

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- 可信任專業活動
- Unit of professional practice (tasks) to be entrusted to a trainee once sufficient competence has been reached.

# Entrustable Professional Activities

可信任

專業

活動

同儕/患者/社會

技術認證

臨床任務

法律規範

工作記錄

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EPAs ground competencies in daily practice

# EPAs

# EPAs 二大特色

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- 從描述特質和能力轉化為  
描述希望學員能執行什麼任務  
(所以訓練的規劃就應focus在任務去做設計)
- 拋棄了等第制→變成信賴等級  
臨床教師透過學員臨床表現評定監督等級  
反映出對學員的信賴程度

**事實上，在意的是，放不放心讓學員獨立，  
對學員信賴程度如何？**

# Supervision and permission

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1. Observe, not act
2. Direct supervision (present in the room, proactive)
  - a. Co-activity: execute together
  - b. Supervisor observes; takes over if needed
3. Indirect supervision (not present; quickly available; reactive)
  - a. **All** findings checked
  - b. **Key** findings checked
  - c. No findings checked (only on indication)
4. Unsupervised practice – only clinical oversight
5. Permission to supervise junior learners

# Elaborated EPA definition

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- part of essential professional work in a given **context**
- requires adequate **knowledge, skill and attitude**, generally acquired through training
- leads to **recognized output** of professional labor
- usually confined to **qualified** personnel
- **independently executable** within a time frame
- **observable and measurable** in process and outcome
- reflects one or **more domains of competence** to be acquired

# EPAs require multiple competencies

	EPA1	EPA2	EPA3	EPA4	EPA5
Patient care	++	++		+	++
Medical knowledge	+	+	++	+	
Interpersonal skills & communic.	++	++	++		+
Professionalism	++	+	+	++	+
Practice-based learning & improv.	+	++		++	+
System-based practice		++	+		++

Competencies inferred

Assessment based on EPAs

# 8-item format of EPA description

- |   |   |
|---|---|
| 1 | Title of the EPA  |
| 2 | Specification and limitations   |
| 3 | Potential risks in case of failure<br>任務失敗時可能造成的風險                                      |
| 4 | Most relevant domains of competence   |
| 5 | Required experience, knowledge, skills, attitude and behavior for entrustment           |
| 6 | Sources of information to assess progress and ground a summative entrustment decision   |
| 7 | Entrustment for which level of supervision is to be reached at which stage of training? |
| 8 | Expiration date   |



# 門診病人藥物諮詢

2	<p>從確認病人問題需求及諮詢要點，查詢相關資料庫及病人電子病歷/藥歷，到給予回覆與用藥指導衛教，並完成電子諮詢紀錄。</p> <p>限制:只針對下列5項諮詢項目觀察評估</p> <p>1. 一般藥教 2. 懷孕及哺乳 3. 胰島素筆型針操作 4. 吸入劑 5. warfarin</p>
3	<p>任務失敗能造成風險(對病人、對藥師、對同儕及體系的影響)</p>
4	<p>Patient care PC6 提供藥品諮詢</p> <p>Medical knowledge MK1 展現照護病人所必需的專業知識</p> <p>Practice-based learning&amp;improvement PBLI3 教學、教育與知識傳播</p> <p>Interpersonal communication skills ICS1 以病人為中心的溝通</p>
5	<p>知識:具備藥品個論專業知識及衛教內容。</p> <p>技能:溝通技巧、資料庫及病人電子病歷/藥歷、懷孕分級及哺乳婦女用藥安全系統查詢能力。</p> <p>態度:展現傾聽、同理心</p> <p>經驗:完成核心課程(溝通技巧、應對禮儀、病人訴怨處理、EBM初階)。通過筆型胰島素操作、吸入劑衛教、一般用藥衛教評核</p>
6	<p>5 SPOs (2 DOPS 3 Mini-CEX) ; 2 Ad-hoc EPA ; OSCE simulator achievement tests passed</p>
7	<p>Level 4 (unsupervised practice) in PGY training one year</p>
8	<p>One year after non-practice</p>

# Entrustment decisions

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- ❑ **Ad-hoc entrustment decisions** happen every day; situationally determined; based on *presumptive* trust and *initial* trust
- ❑ **Summative entrustment decisions** should be based on *grounded trust* (multiple sources of documented information); must serve as certification / license to act
- ❑ Many ad-hoc entrustment decisions can support a summative entrustment decision

# EPAs Achievement

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## **EPA(Ad hoc)**

- Point in time
- Single Observer
- Specific context

## **EPAs(Summative)**

- Multiple times
- Multiple observers
- Multiple contexts

# 二年期藥師EPAs

## ➤ Core EPAs(核心EPAs)-

指的是在訓練計畫中每位受訓學員都應該精熟的臨床任務

門診疑義處方處理  
 門急診藥品交付  
 門診病人藥物諮詢  
 門診異常事件處理  
 新住院病人醫療資訊蒐集及用藥評估  
 執行病人住院期間藥事照護  
 病房醫護人員電話藥物諮詢  
 住院病人用藥指導  
 藥物血中濃度的評估與建議

## ➤ Specific EPAs -

靜脈營養處方評估  
 化學治療處方審核  
 藥事資源組\_藥品資訊維護與檢核  
 藥事資源組\_民眾電話的藥物諮詢

馬偕紀念醫院藥劑部 PGY 訓練評估表單(EPA 門-4)

日期： 年 月 日 學員： 臨床教師：

1.主題：門診病人藥物諮詢 項目： <input type="checkbox"/> 一般藥教 <input type="checkbox"/> 懷孕及哺乳 <input type="checkbox"/> 胰島素筆型針操作 <input type="checkbox"/> 吸入劑 <input type="checkbox"/> warfarin <input type="checkbox"/> 其他_____					
2.任務說明： 從確認病人問題需求及諮詢要點，查詢相關資料庫及病人電子病歷/藥歷，到給予回覆與用藥指導衛教，並完成電子諮詢紀錄。					
3.期待學員展現之信賴等級(觀察學員此次表現，類推至下次遇到類似情境時，您對其信賴之程度為何?)					
	只能觀察無法實作 (Level 1)	教師在旁監督並協助操作 (Level 2)	教師在附近必要時協助 (Level 3)	可獨立執行 (Level 4)	可監督資深學員 (Level 5)
整體任務評估					
4.回饋參考內容：					
(5) 醫療面談	未達標準		符合標準		超出標準
(2) 檢閱藥歷	未達標準		符合標準		超出標準
(3) 諮詢衛教 (有效溝通、內容、工具)	未達標準		符合標準		超出標準
(4) 諮詢紀錄	未達標準		符合標準		超出標準
5.具體描述與回饋(臨床教師填寫)					

# EPAs and Assessment

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- EPAs provide a structure for teaching and assessment in the clinical workplace.
- Assessment is framed as an entrustment decision with **patient safety** implication.
- EPA assessments focus on future performance.
- The validity of an educational assessment is viewed as a property of its purpose.

# 勝任能力操作型定義化

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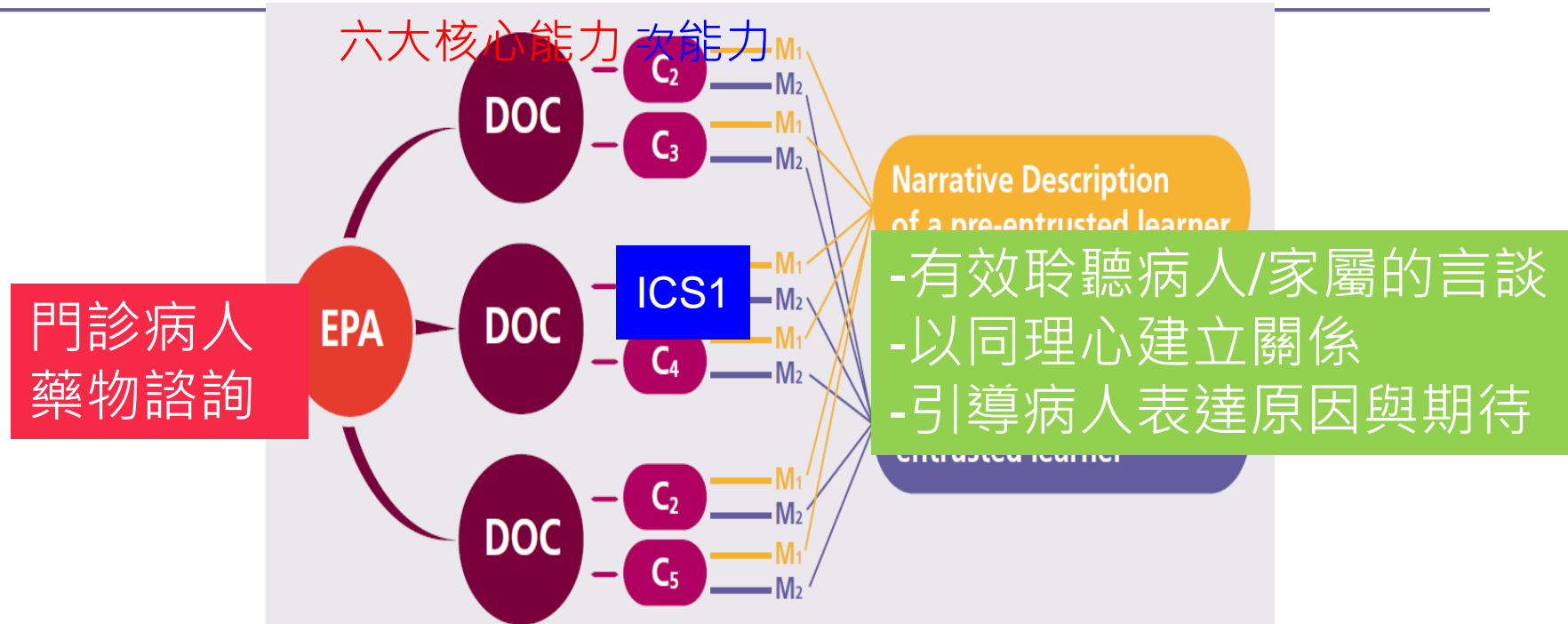
以任務為出發評估

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針對任務(事)

# EPA, Competence, and Milestone



Patient care PC6 提供藥品諮詢

Medical knowledge MK1 展現照護病人所必需的專業知識

Practice-based learning&improvement PBLI3 教學、教育與知識傳播

Interpersonal communication skills ICS1 以病人為中心的溝通

then, milestones can be devised and then synthesized into descriptive narratives of expected behaviors for learners at pre-entrustable and entrustable levels of performance.

# Milestone - EPA

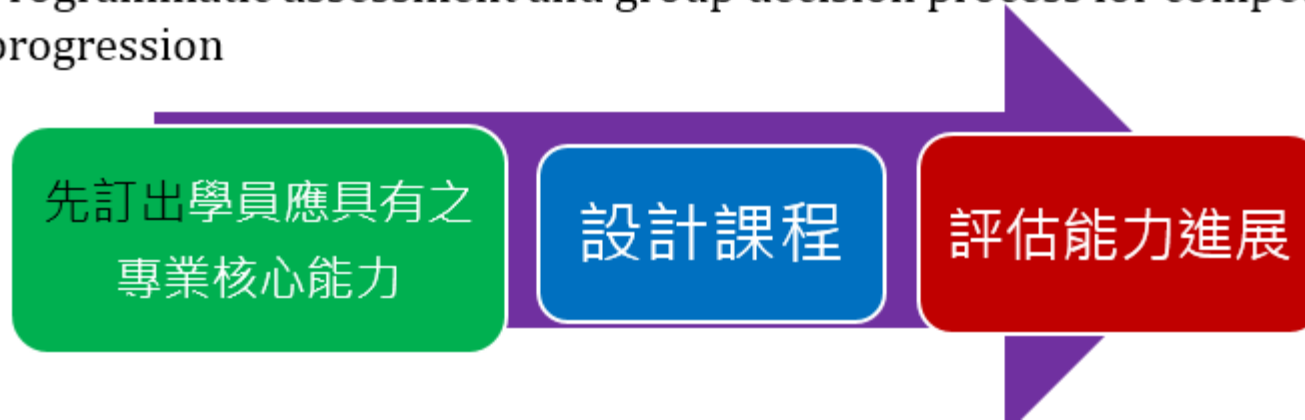
Milestones allow you as an observer to pinpoint areas that trainees need to improve, in order for them to successfully and reliably complete the EPA.





# EPA, Competence, and Milestone

- ◆ 能力進展架構 An outcome-based competency framework with Progressive sequencing of competencies
- ◆ 為勝任能力量身打造的教學與學習經驗  
Learning experience and teaching tailored to competencies
- ◆ 計畫性、系統性的評量設計與能力進展的評估  
Programmatic assessment and group decision process for competence progression



張雅惠藥師 [vannisa.c336@mmh.org.tw](mailto:vannisa.c336@mmh.org.tw)

Think big Start small Move fast 共勉之

調查網址：<https://reurl.cc/drv42z>

