急重症病人院內轉送跨領域訓練模式-呼吸治療經驗分享

林口長庚紀念醫院 呼吸治療科
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報告大綱

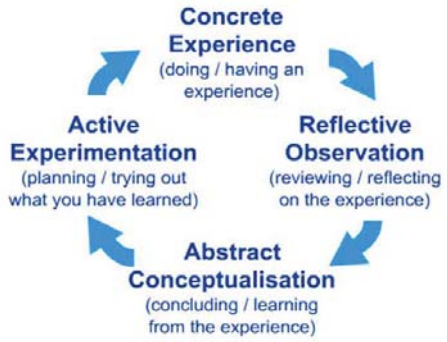
- 學習理論
- 跨領域教學的理想
- 高擬真情境模擬的應用
- 跨領域擬真教學的困境
- 建議與討論

學習理論

"Learning is the process whereby knowledge is created through the transformation of experience"

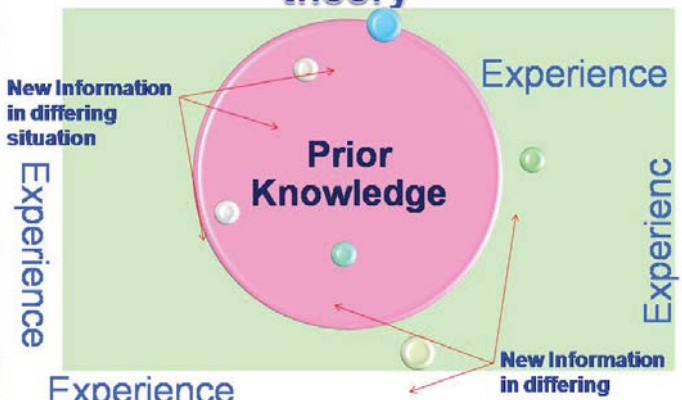
學習是透過經驗轉化創造知識的過程

Kolb Learning Cycle



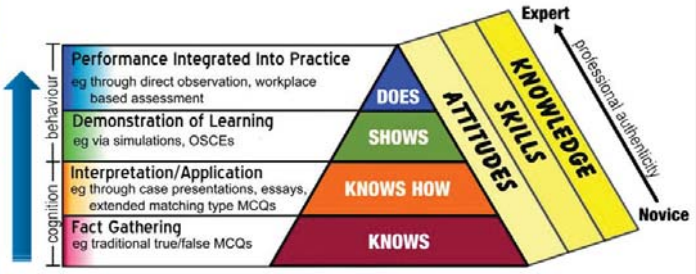
by Saul McLeod published 2010, updated 2013

Dewey's experiential learning theory



The educational process as a "continual reorganization, reconstruction and transformation of experience"

Miller's Pramid for accessing Clinical Competence



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)

跨領域教學的理想

Traditional vs CBME: Start with system needs

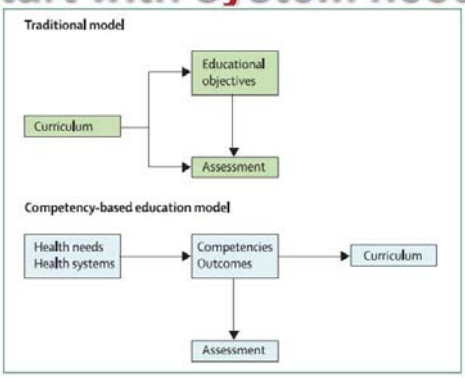


Figure 9: Competency-based education

Frenk J. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet 2010

跨領域教學與合作實踐行動框架

Health Professions Networks Nursing & Midwifery Human Resources for Health, WHO (2010)

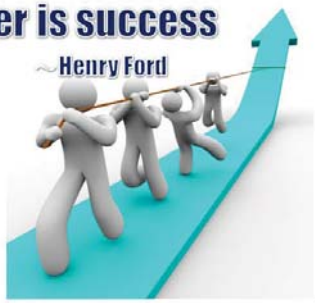
跨領域教學信念

Coming together is a beginning

Keeping together is progress

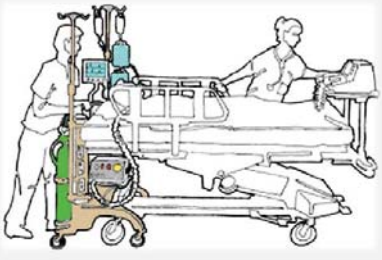
Working together is success

~Henry Ford



高擬真情境模擬的應用

-院內病人轉送-



Swoboda et al. Crit Care 1997

轉送風險～病人因素

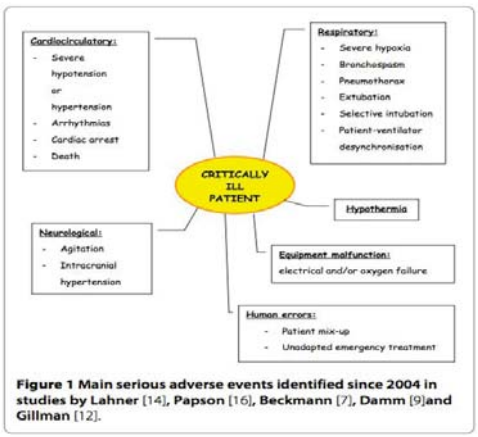


Figure 1 Main serious adverse events identified since 2004 in studies by Lahner [14], Papson [16], Beckmann [7], Damm [9]and Gillman [12].

Fanara, B, et al. 2010

轉送風險～如履薄冰

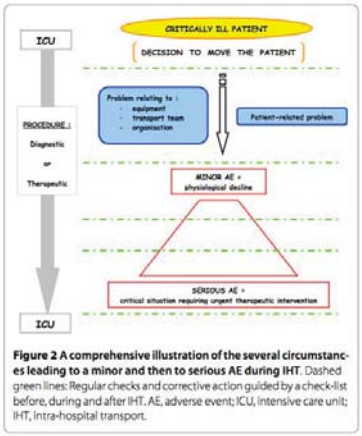


Figure 2 A comprehensive illustration of the several circumstances leading to a minor and then to serious AE during IHT. Dashed green lines: Regular checks and corrective action guided by a check-list before, during and after IHT. AE, adverse event; ICU, Intensive care unit; IHT, Intra-hospital transport.

Fanara, B, et al. 2010

常見異常事件

Table 3
Types of adverse events encountered

Adverse event	No. (%)[a]
Hypoxia >5 minutes	25 (37)
Hypotension	25 (37)
Significant electrocardiographic changes	7 (10)
Altered mental status	5 (7)
Need for restraints	3 (4)
Extubation	1 (1)
Code team activation	1 (1)
Total	67 (100)

[a]Percentages may not total 100 because of rounding.

Kue R, Brown P, Ness C, Scheulen J; 2011

常用緊急處置

Table 4
Types of interventions provided

Intervention	No. (%)[a]
Supplemental oxygen	22 (34)
Vasoactive agent	18 (28)
Medical	9 (14)
Intravenous fluid replacement	7 (11)
Sedation	4 (6)
Technical intervention	2 (3)
None	2 (3)
Intubation	1 (2)
Total	65 (100)

[a]Percentages may not total 100 because of rounding.

Kue R, Brown P, Ness C, Scheulen J; 2011

混合型擬真OSCE導入呼吸治療師新人訓練 -急重症病人院內轉送跨領域訓練模式

Using Simulation in Preparation for Pediatric OSCE Exam

PO 09-7
ID: IPSSW2016-1176

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University of Cincinnati

Abstracts

Background
Simulation-based education is a popular learning modality in the field of medical education. Although it is commonly used in pediatrics, simulation use in preparation for pediatric objective structured clinical examination "OSCE" is minimal in the research body. Membership of Royal College of Paediatrics and Child Health "MRCPCH" clinical exam is an OSCE format exam which was established in the UK and disseminated worldwide.

Aim
The purpose of this study was to evaluate the role of hybrid simulation (combined manikin and standardized patient) in the preparation of pediatric trainees for short cases OSCE examination.

Methods
Data from 28 trainees preparing for the clinical exam have been analyzed. All the trainees attended the 3 day clinical workshop for the MRCPCH exam preparation designed and conducted by the researcher. Data extracted from 3 sources: questionnaire (pre and post workshop); short interviews during the workshop; and the researcher's reflective journal. The hybrid simulation was used for short cases training during the workshop.

Results
Four major themes (and their subthemes) emerged from data analysis. These themes were: (1) Hybrid simulation is useful in short cases training, (2) Simulation is more effective compared to live patients training, (3) Hybrid simulation helps trainees pass the pediatric OSCE exam and (4) Trainees might be unaware of the effectiveness of simulation learning.

Conclusions
Hybrid simulation is an effective modality of training for short cases stations in pediatric postgraduate OSCE preparation. This study results suggest that simulation training might help MRCPCH clinical exam candidates pass their final exam. Recommendations are made regarding future researchers studying the use of different types of simulations for OSCE

Methods

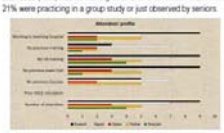
In this action research study, the researcher included 28 MRCPCH clinical exam candidates enrolled in the workshops for training before their exam (we called them in this study, "trainees" or "attendees"). The trainees are assigned from five different clinical workshops that were conducted for the last three years by the researcher. The selection criteria were based on the accurate observation of trainees during the workshop and the appropriate interviews held in the break times as well as the questionnaire responses from the trainees. Exclusion criteria included trainees who did not share their questionnaires or who were not observed accurately during the workshop for short cases training.

Study procedure and data collection
To assess the effectiveness and limitations of this hybrid simulation training, data from different sources were collected and analyzed:
1. Questionnaire: Comparing the pre and post workshop experience with simulation and the degree of learning skills in each station of OSCE was done through online questionnaires (Google form.
2. Interview: The researcher held short interviews with the attendees during the workshop days in the break times. The main goal for those interviews was to evaluate the trainee's experience and feedback on simulation-based learning. This addresses the limitation of using that simulation in the training of clinical short cases setting.
3. Field notes (Reflective Journal): In order to assess the smoothness of the shift between the manikin and standardized patient, field notes (reflective journal) were written immediately after each workshop's last day by the researcher. Those notes reflected the researcher observation on trainees performance in short cases session.

The two figures below show the Likert scale used in the survey before and after the workshop to assess the usefulness of hybrid simulation in short cases station training for MRCPCH clinical Exam

Results

None of the 28 trainees had previous simulation training for short cases OSCE exam and also all of them are not trained in the UK. The majority (89.2%) did not try the MRCPCH exam before the workshop, so they were preparing for the first exam trial. Only 18% are working in non-teaching workplaces and 32% of the attendees had a previous course or workshop while 68% of them did not attend any previous formal training. The majority of those latest attendees (79%) had no training at all after their written exam while 21% were practicing in a group study or just observed by seniors.



This figure shows an example of manual coding used to analysis the qualitative data

Development and incorporation of hybrid simulation OSCE into in-training examinations to assess multiple CanMEDS competencies in urologic trainees

Laura N. Nguyen, MD;[a] Kim Tardioli;[a] Matthew Roberts, MD, FRCSC;[a] James Watterson, MD, FRCSC[a]

[a]Department of Surgery, Division of Urology, The Ottawa Hospital, Ottawa, ON; [b]The University of Ottawa Skills and Simulation Centre, University of Ottawa, Ottawa, ON

Fig. 1. High-fidelity simulation operating room.

Fig. 2. Monitor displaying operating room, digital cystoscope image and SimMan vital signs.

Fig. 3a. Papaya simulating urethra and bladder.

Fig. 3b. Ureteral stent secured to outside with staples to prevent removal.

Fig. 3c. Papaya/stent model in a female pelvic model.

Fig. 4. Hybrid model consisting of part-task trainer and standardized patient. SimMan is covered in a corner of the operating room.

運用擬真臨床情境模擬訓練理由

- To improve patient safety
- To provide training opportunities for novices and experts
- To facilitate learning at the individual level
- To facilitate learning in teams of health professions

Østergaard D. & Dieckmann P. 2009

轉送團隊成員

- 醫師
- 護理師
- 呼吸治療師

跨領域教學團隊

新進人員跨領域病患轉送訓練

培育勝任病人轉送的跨領域團隊

TRANSPORT TEAM

Model of In-situ simulation training

擬真設備

團隊訓練

新進人員訓練成效評估

- 量性技能評估
  - 個人技能（technical skills）
  - 團隊技能 （non-technical skills）
- 滿意度調查
- 質性訪談

個人技能～沒氣了

確認呼吸道位置

RT - Checklist

RT Checklist 項目		正確執行	未執行	備註欄
RT 個人技術：轉送前後評估與處置				
1.	檢視目前呼吸器設定參數	V		檢視原呼吸器
2.	確認血氧及血行力學(BP)		V	
3.	準備轉送型呼吸器	V		1.FiO2>50%須備儲氣袋 2.PEEP>10cmH2O須備 Ambu PEEP
4.	準備 EtCO2	V		
5.	正確裝置轉送型呼吸器管路及細菌過濾器	V		管路需完整
6.	執行轉送型呼吸器使用測試		V	確認蓄電量
7.	將轉送型呼吸器接上備用電池，確保功能正常		V	
8.	設定轉送型呼吸器:參數須比照目前使用呼	V		壓力或容積與原

團隊合作～小心翼翼

團隊技能評估

任務管理
團隊合作
狀況警覺
決策

Subscores	Elements
Task management	Planning and preparing Prioritizing Providing and maintaining standards Identifying and utilizing resources
Team working	Coordinating activities with team Exchanging information Using authority and assertiveness Assessing capabilities Supporting others
Situation awareness	Gathering information Recognizing and understanding Anticipating
Decision-making	Identifying options Balancing risks and selecting options Reevaluating
Rating options	**Descriptor**
4—Good	Performance was of a consistently high standard, enhancing patient safety; it could be used as a positive example for others
3—Acceptable	Performance was of a satisfactory standard but could be improved
2—Marginal	Performance indicated cause for concern, considerable improvement is needed
1—Poor	Performance endangered or potentially endangered patient safety, serious remediation is required

Riem er al. British Journal of Anaesthesia 109 (5): 723–8 (2012)

呼吸治療師-團隊技能評估

急重症病人院內轉送跨領域團真測驗-呼吸治療師技術面評分結果

個人技術 轉送前評估與處置		正確執行人數	正確完整執行率
1.	檢視目前呼吸器設定參數	7	39%
2.	確認生命徵象及自行力學(RR)是否穩定	6	
3.	準備轉送型呼吸器	2	
4.	準備 ETCO$_2$	0	
5.	設置轉送型呼吸器管路及相關連接器	2	
6.	執行轉送型呼吸器使用測試(漏電力 OK)	1	
7.	設定轉送型呼吸器參數(依照病患使用呼吸器之設定	7	
8.	給病人使用轉送型呼吸器前評病人床上並確認無漏氣之處	2	
9.	呼吸器潤之計量氧氣鋼瓶，並給正確調整氧流量，並能監測 SpO$_2$ 是否達標	8	
團隊技術：轉送過程團隊溝通及處置能力			
1.	VAC 設置醫令給正確處置	10	30%
2.	呼吸器醫令時，給正即時病人	6	
3.	檢查氣管內管是否滑脫(dislocation)	3	
4.	檢查氣管內管阻塞(obstruction)	1	
5.	檢查病人有無發生(pneumothorax)	3	
6.	檢查呼吸器是否故障(equipment failure)	10	
7.	給病患呼吸器警報原因	3	
8.	安撫	9	
9.	將 BVM 接上氧氣	6	
10.	使用 BVM 適當 PPV	4	
個人技術：轉送後處置			
1.	給病患病人用胸部X光病人 ETT 位置	1	22%
2.	建立呼吸器之呼吸器正常運作狀況	6	
3.	給對於不需要或給於不適合轉送的予病人立即停止轉送動	3	
4.	給執行轉送型呼吸器基本檢查消毒	1	
5.	給將轉送型呼吸器歸位並完整	2	

急重症病人院內轉送跨領域團真測驗-呼吸治療師非技術面評分結果

非技術性項目	內　容	平均得分	項目平均得分
任務管理	規劃與準備	1.7	1.9
	處置優先順序	2.1	
	提供和維持標準	1.8	
	確認和使用資源	2.2	
團隊合作	團隊行動協調	2.2	2.4
	交換訊息	2.3	
	適當團隊並展現自信	2.3	
	評估與領導力	2.4	
	支持他人	2.7	
狀況警覺	獲取訊息	2.4	2.5
	辨認與理解	2.6	
	預先考慮到	2.5	
決　策	找出替代選擇	2.9	2.8
	平衡風險及選擇	2.8	
	重新評估	2.7	

評　分	說　明
4-很好	表現超過高水準，能作他人榜樣
3-可接受	已達標準，但還有改善空間
2-勉強	表現引起關注，病患照護的完整性必須改
1-不佳	表現可能危及病人的安全，需要重新教

質性訪談-反思/回饋

學員在想什麼？

1. 成功的轉送~依賴專業、信任及溝通
2. 經驗是~工作信心及專業能力的基礎
3. 學長姐出現~讓人又愛又怕
4. .....

成功的轉送依賴專業、信任及溝通

- 我們應該是擔任leader的角色，所以我覺得我應該要有比較專業的判斷，然後可以去帶領我的member去做很多事情。(13P_120)
- 出發後遇到新的狀況，大家都會負責看一下是不是自己負責的那部份的問題，就會互相告知。(22P_264)
- 就像剛剛OO說我們可以很快的達成一些協定就是因為我們都還滿彼此信任的，覺得對方的建議真的值得參考，我覺得這個在團隊上可能會更流暢。(25P_119)

經驗是工作信心及專業能力的基礎

- 我覺得是經驗，如果你在還沒獨立之前遇到，學姊都會教你，可是你如果獨立之後你遇到了，你會覺得很慌張呀。(34P_21)
- 步驟會比較清楚，才知道到底要做什麼，而且壓力比較不會那麼大，因為真的臨場來的時候 你真的會慌啊。(14N_440)
- 先做練習之後，真的來的時候，你會比較有點概念性，你才不會說到底要做什麼。(14N_442)

學長姐出現～讓人又愛又怕

- *可以幫我看有什麼遺漏，check一下，也比較安心。(13N_162)*
- *學姊進來壓力很大，等一下應該要被罵了(14N_210)*

跨領域擬真教學的困境

創新訓練的困境

又夜幕低垂了

走出臨床技能中心.....

學員的毅力~老師的動力

設備受限

- Test Lung

- Patient Simulator

人力物力

- O2

- 衝刺吧！老師們！

環境限制

- 門永遠太小
- 最佳場所～有限

建議與討論

對院內轉送不利因素

1. 轉送團隊組成鬆散，合作短暫
2. 成員缺乏信心及經驗
3. 交接訊息傳遞不易完整
4. .....

團隊功能強化了

1. 對危急情況提高警覺
2. 角色及責任認同
3. 彼此信賴及團隊的建立
4. 學習經驗開始轉化
5. ....

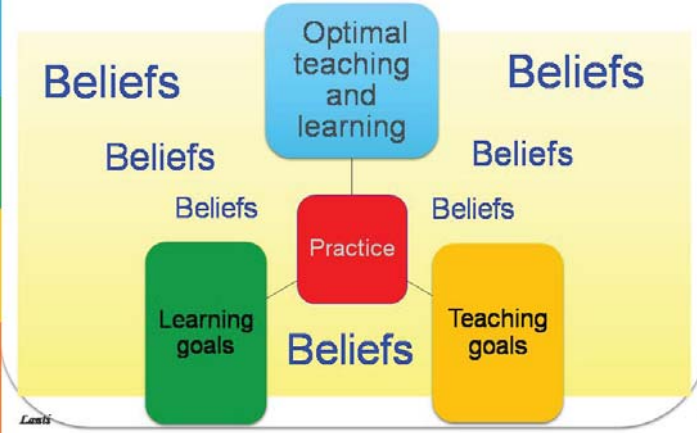
We believe

~I hear and I forget

~I see and I remember

~I do and I understand

Reflective Teaching Statement



教育的～呼吸治療

航向新藍海

- 向下扎根，從頭做起
- 心是根本，以身作則
- 從需求出發，發現更多需求
- 培養臨床教師跨領域教學能力
- 推動整合式模擬訓練，建立信任與團隊
- 強化學員專業認同，落實角色與責任
- 提升病人轉送安全

跨領域教學感想

跨領域的合作更可以彼此提攜達到事半功倍的效果，更能激勵且有動力的向前邁進

謝謝聆聽～