

專科護理師執行醫療業務 的病人照護品質與安全

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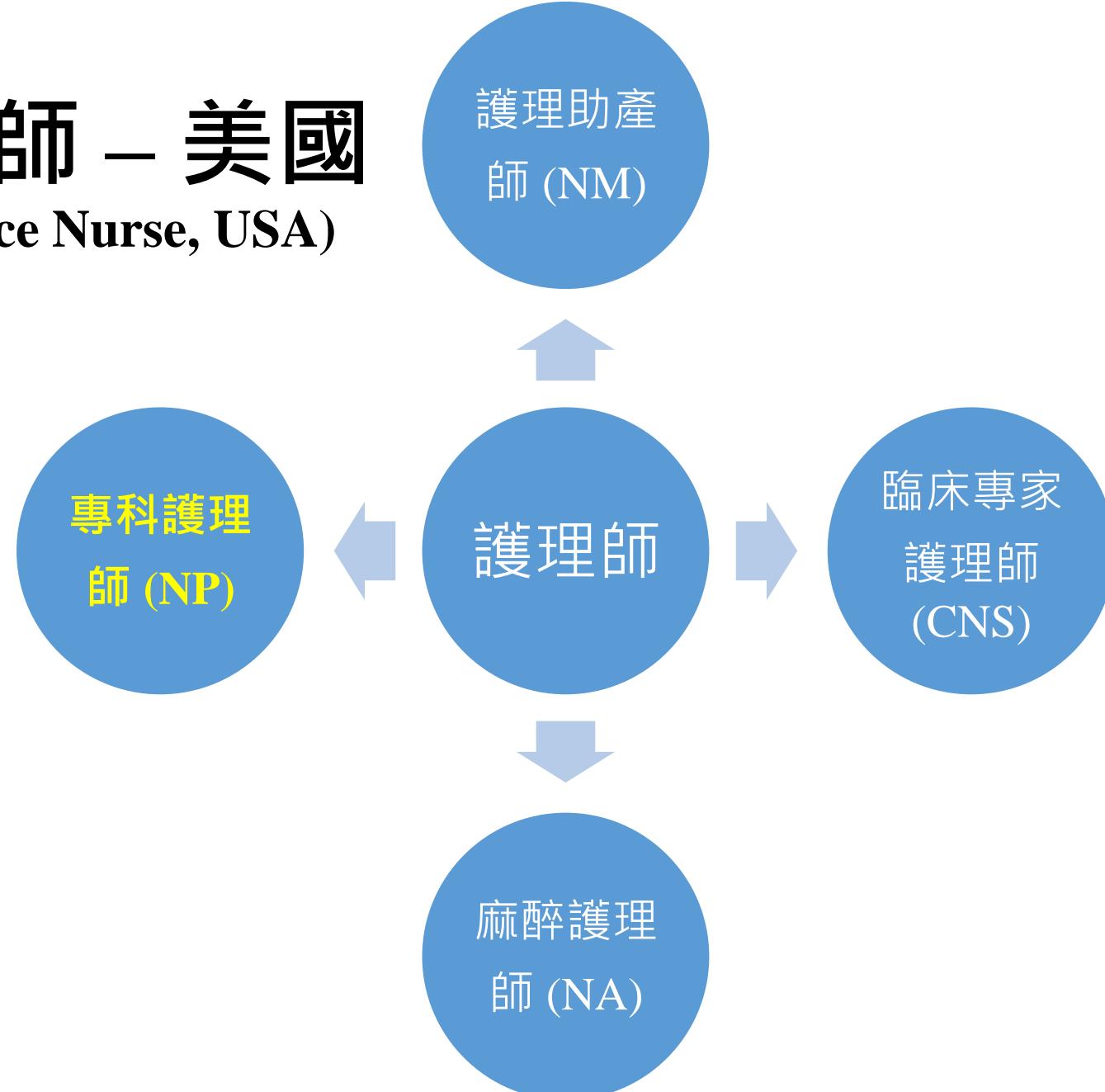
大綱

- 背景
- 品質與安全 - 單一研究
- 品質與安全 - 統合分析
- 結論

背景

進階護理師 – 美國

(Advanced Practice Nurse, USA)



醫師

親自為之

核心醫療業務

專師

醫師監督下
執行

低風險
醫療業務

護理師

醫師指示(指
導)下

醫療輔助行為

健康問題之護理評估

預防保健之護理措施

護理業務

護理指導及諮詢

醫療輔助行為

護理人員法 第二十四條 (中華民國109年1月15日)

身體評估/診察

(Physical assessment/examination)

護理身體評估
- 發現異常 -



醫師身體診察
- 診斷疾病 -



作為



診斷

處置

會診

預測

教育

臨床推理評估

學科內容知識

專科護理師的新能力與新價值 (= 預期與要求)

醫療業務執行

評估以診斷

- 資訊蒐集
- 思路邏輯
- 推理診斷

治療與處置

- 藥物治療
- 醫療處置
- 照會討論

監測與預測

- 追蹤評估
- 療效預期
- 病程預測

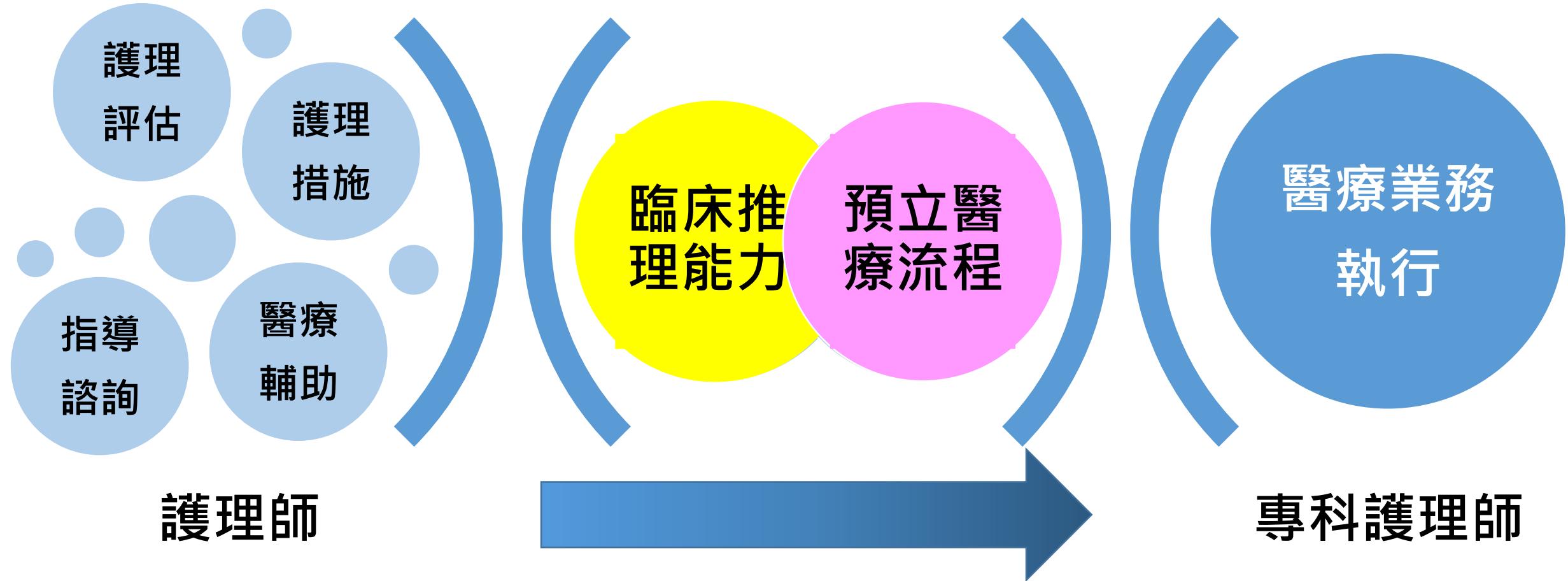
衛教與賦能

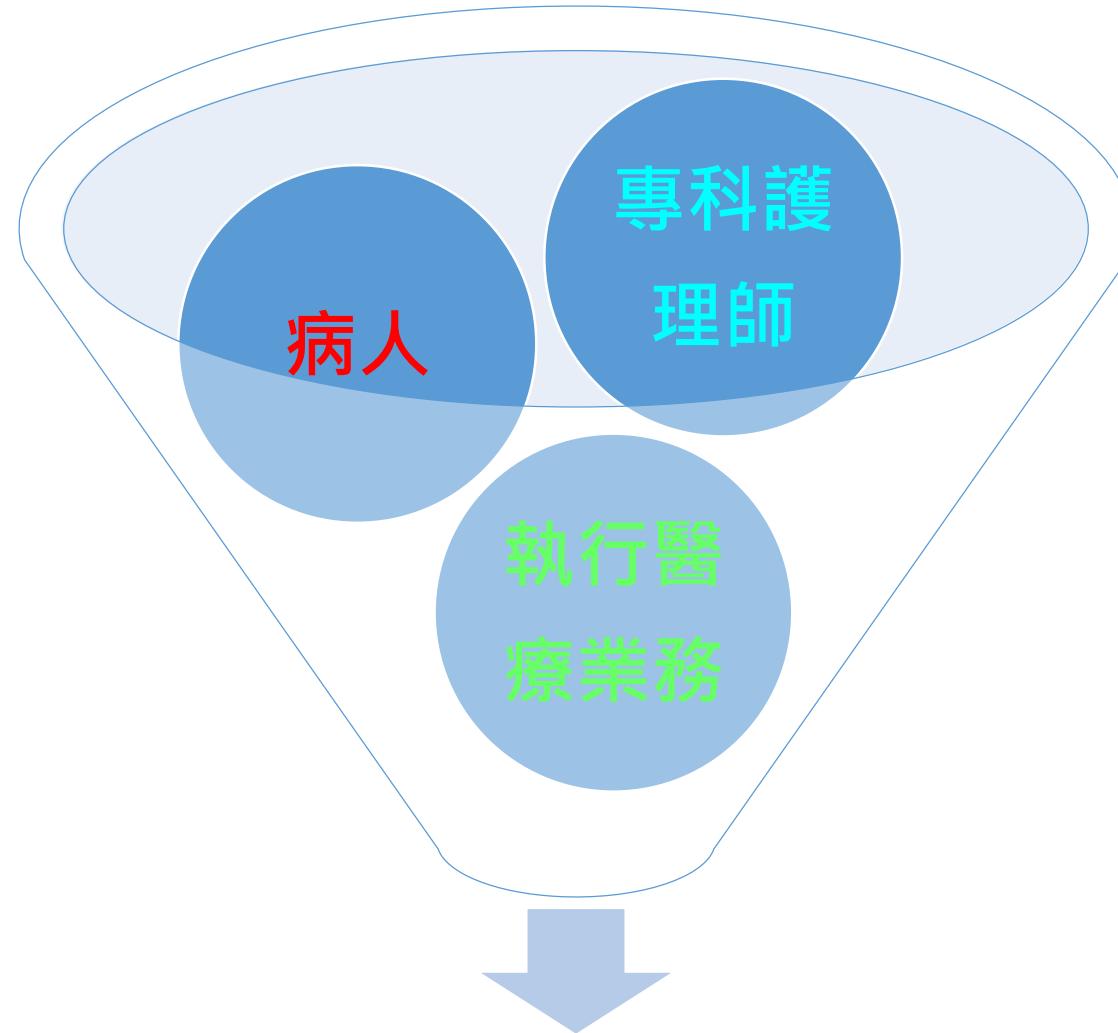
- 預防保健
- 疾病衛教
- 教育賦能

護理專業執行

專科護理師的工作場域





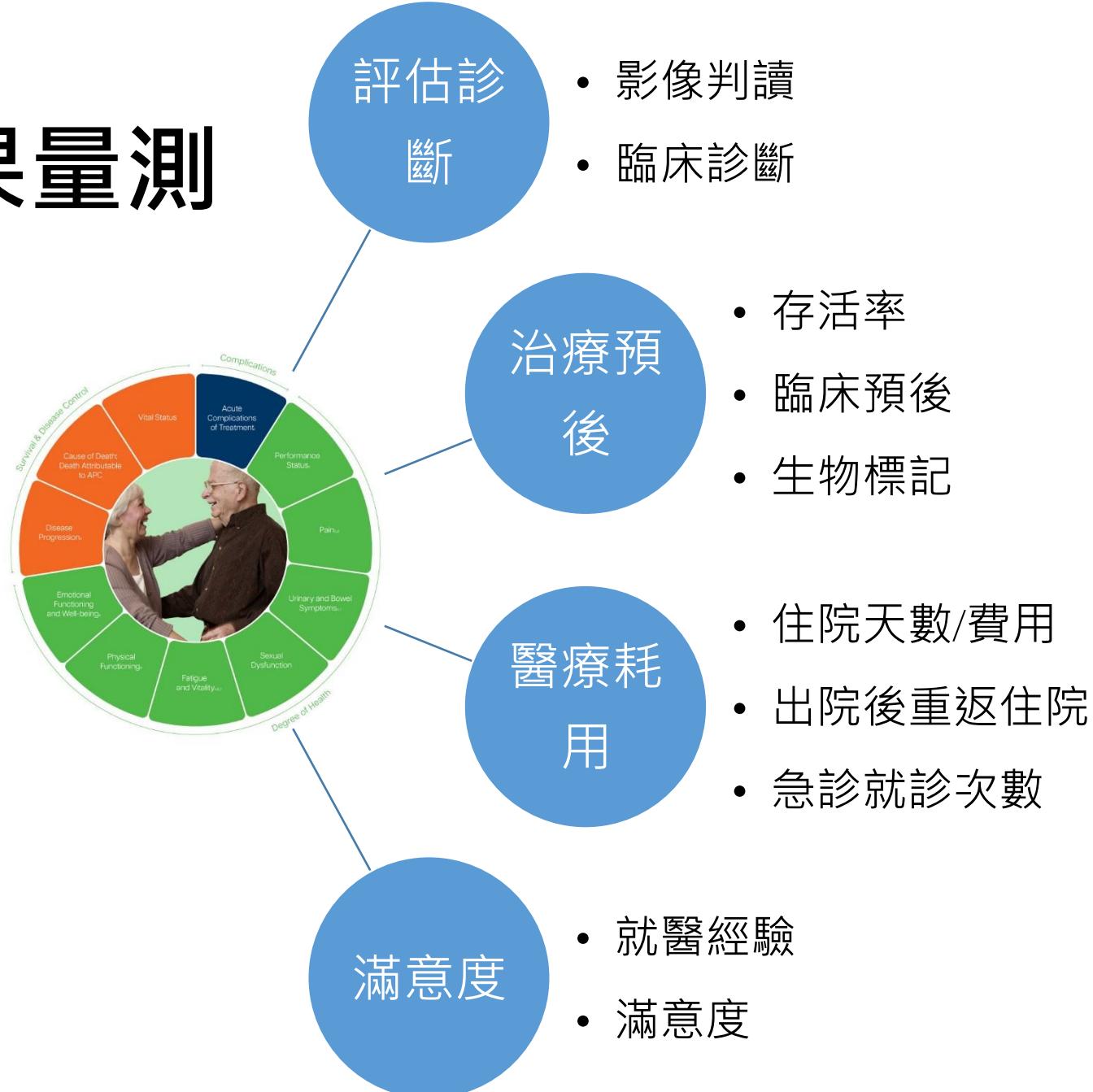


醫療品質與病人安全？



品質與安全

醫療照護成果量測



單一研究

專科護理師急診肢體骨骼影像判讀能力

- 澳洲單一醫院急診前瞻性研究，平行比較6位專科護理師 vs. 10位醫師
- 共判讀200位穩定，無合併其他部位損傷的成人傷患的肢體X光
- 以影像科醫師的判讀作為黃金標準，陽性結果 = 可能骨折+明確骨折

	敏感性	特異性	陽性預測率	陰性預測率
專科護理師	91% (87.0–95%)	85% (78.9–89.1%)	78% (72.0–83.6%)	94% (90.2–97%)
醫師	88% (83.5–92.5%)	91% (87.0–95%)	86% (81.2–90.8%)	93% (88.9–96.2%)

- 結論：專科護理師在影像的判讀上具有高正確性，並與醫師有相當高的一致性(Weighted Kappa = 0.83)

The accuracy of adult limb radiograph interpretation by emergency nurse practitioners:
A prospective comparative study. Int J Nurs Stud. 2014 Apr;51(4):549-54.

急診專科護理師對輕症傷病患的診斷處置能力

- 2008年，荷蘭、單一社區教學醫院急診，回溯性病例對照研究
- 急診專科護理師 vs. 急診總住院醫師及資淺主治醫師
 - 平均執業年數 2.1 (專師) + 7.6 (護理師) = 9.7 年
- 在輕症(低照護需求)病人 (741位 vs. 741)的診斷處置能力上沒有差異，但所需留觀時間較短

	專科護理師	醫師	P – 值
遺漏診斷或不適當處置, n (%)	20 (2.7)	9 (1.2)	N.S.
遺漏診斷	12 (1.6)	5 (0.7)	
不適當處置	8 (1.1)	4 (0.5)	
平均等候看診時間, 分鐘	19 ± 20	20 ± 21	N.S.
平均急診留觀時間, 分鐘	65 ± 42	85 ± 56	< 0.001

Diagnostic accuracy of emergency nurse practitioners versus physicians related to minor illnesses and injuries. J Emerg Nurs. 2010 Jul;36(4):311-6.

專科護理師對輕症外病人的診斷處置能力 (I)

- 1997年，英國，單一醫院急診，輕症外傷病人，隨機對照研究
- 專科護理師 (4週~3年專師年資 + >4年急診護理師年資) vs. 住院醫師
- 判斷標準：資深急診及影像科主治醫師依照研究格式對兩者的處置進行評估
- 預後比較：評估時間、醫療處置、滿意度、症狀改善及活動力恢復情形、門診追蹤安排的當性
- **結論：適當訓練且遵從醫療準則的專科護理師，可以提供輕症外傷病人與住院醫師(senior house officer)相同甚至更佳的照護**

專科護理師對輕症外病人的診斷處置能力 (II)

	專師組 (n = 704)	醫師組 (n = 749)	P 值
病人評估紀錄耗時, 平均 ± 標準差 (分)	10.89 ± 4.6	9.02 ± 4.0	0.04
就診日醫療處置, n (%)			
顯著錯誤	65 (9.2)	80 (10.7)	0.20
重大醫療病史詢問遺漏	1 (0.15)	11 (1.5)	0.01
影像安排不一致性,	119 (16.9)	134 (17.9)	0.61
影響判讀不一致性	12/431 (2.8)	16/447 (3.6)	0.50
後續問卷追蹤, n (%)			
感到不滿意	15/419 (3.6)	24/487 (4.9)	0.32
症狀無預期的改善	36/409 (8.8)	48/469 (10.2)	0.41
沒有回到過去的活動力	74/424 (17.5)	76/488 (15.6)	0.45
未安排必要的門診追蹤	37/432 (8.6)	34/488 (13.1)	0.03

Care of minor injuries by emergency nurse practitioners or junior doctors: a randomised controlled trial. Lancet. 1999;354:1321-6.

專科護理師臨床推理性研究 (I)

- 紐西蘭梅西大學，2011-2012年進行之比較性研究，
- 比較30位專科護理師 vs. 16位醫師對複雜個案情境的臨床推理性
 - 專師: 女性27位(90%)；平均執業年數 2.2 (專師) + 28.2 (護理師) = 30.4 年
 - 醫師: 女性9位(56%)；包含心臟、胸腔、急診、老年、及一般醫學專科；平均專科執業年數 2.88 (住院醫師) + 3.42 (專科醫師) = 6.3 年
- 由專家組針對診斷、問題釐清、與計畫行動進行評估
- 量化的「放聲思考程序」(think aloud protocol)

Nurse practitioners versus doctors diagnostic reasoning in a complex case presentation to an acute tertiary hospital: A comparative study. Int J Nurs Stud. 2015 Mar;52(3):716-26.

專科護理師臨床推理性研究 (II)

Box 2. Diagnoses, problems and actions the expert panel expected of doctors.

Expected diagnoses/problems	Expected action plan
? lower respiratory tract infection	Computerised tomography or with pulmonary angiogram
? pleural effusion	Sputum culture
? pulmonary embolism	Change antibiotics to include a macrolide
? lung cancer	Lung function tests – spirometry
? chronic obstructive pulmonary disease	
Gastric bleeding	Gastroscopy
? Gastric ulcer	Proton pump inhibitor Stop both aspirin Stop diclofenac Test Haemophilus-Pylori
Hypertension	Refer hospital for specialist team review/? hospital admission Recheck and monitor blood pressure and if required review antihypertensive medications
Reasonably well controlled Type II diabetes mellitus	Diabetic referral/Diabetic education
Well controlled hyperlipidaemia	
Poor adherence to medications	

Nurse practitioners versus doctors diagnostic reasoning in a complex case presentation to an acute tertiary hospital: A comparative study. Int J Nurs Stud. 2015 Mar;52(3):716-26.

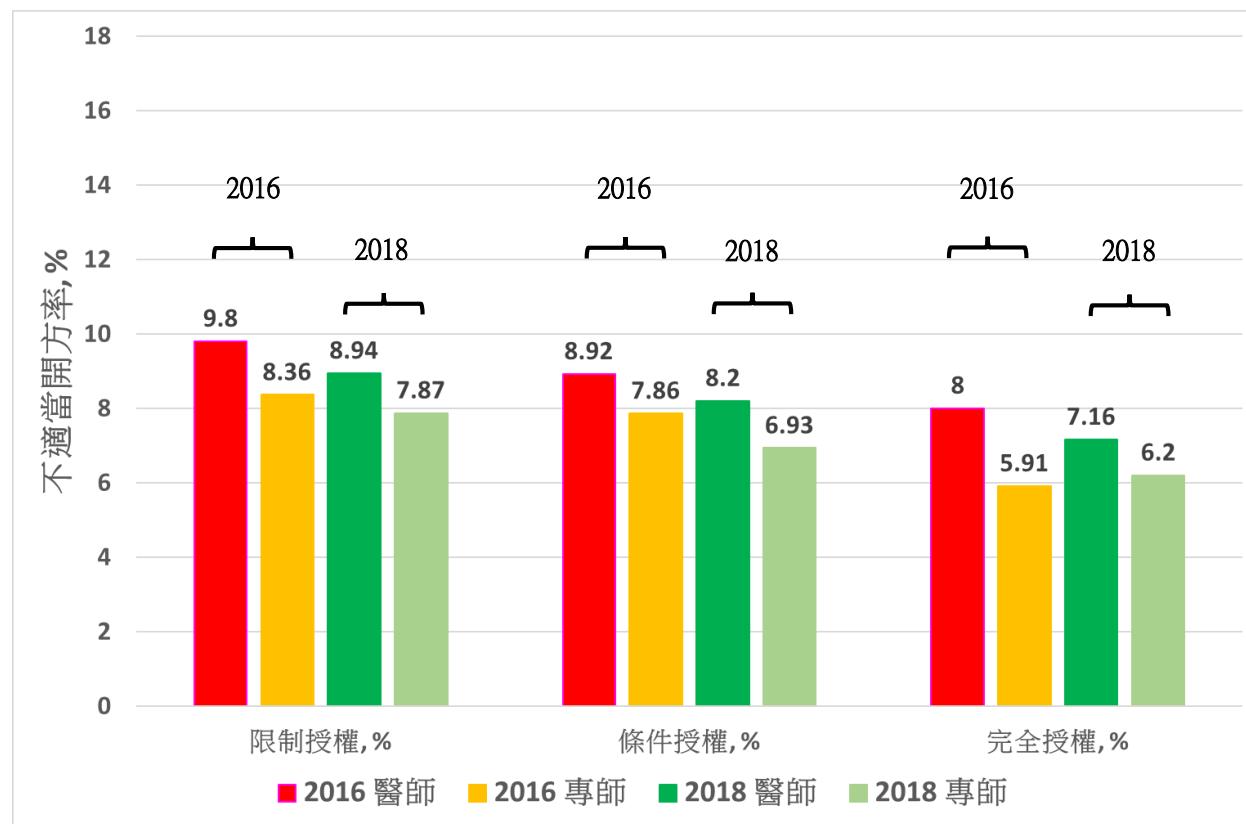
專科護理師臨床推理能力研究 (III)

- 結果與結論：
 - 對於複雜情境的個案，專科護理師在診斷、問題、行動等臨床推理能力上，有跟專科醫師相類比的能力
 - 在全球資源緊迫的地區，專科護理師可以提供進一步替代性醫療照護的協助

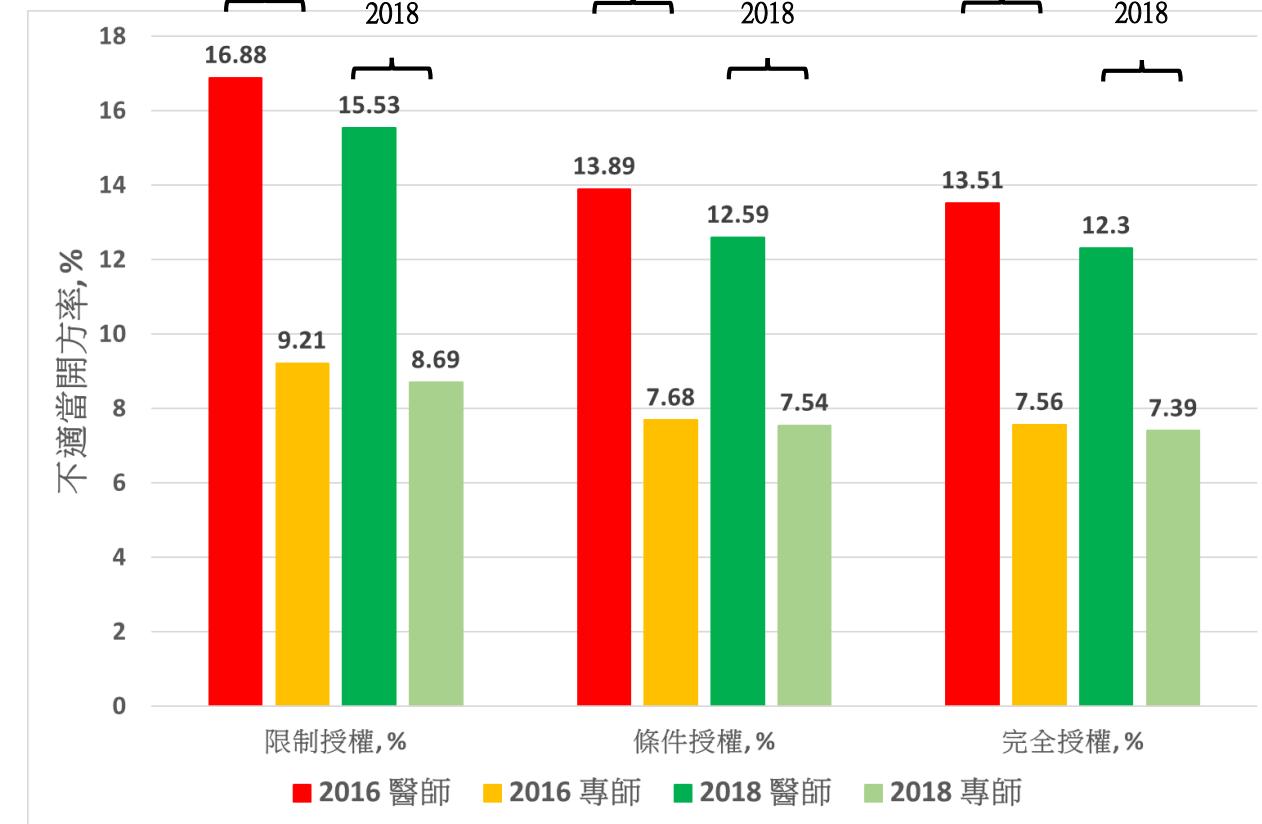
	專科護理師	專科醫師	P – 值
診斷 (diagnosis)	54.7%	61.9%	0.17
問題釐清 (identify problem)	53.3%	56.3%	1.00
計畫行動 (proposed action)	35.8%	34.4%	0.80

Nurse practitioners versus doctors diagnostic reasoning in a complex case presentation to an acute tertiary hospital: A comparative study. Int J Nurs Stud. 2015 Mar;52(3):716-26.

專科護理師藥物處方授權程度對潛在不正確藥物開方的影響 (I)



初始開方



連續開方

Impact of State Nurse Practitioner Regulations on Potentially Inappropriate Medication Prescribing Between Physicians and Nurse Practitioners: A National Study in the United States. J Nurs Care Qual. 2022;37:6-13.

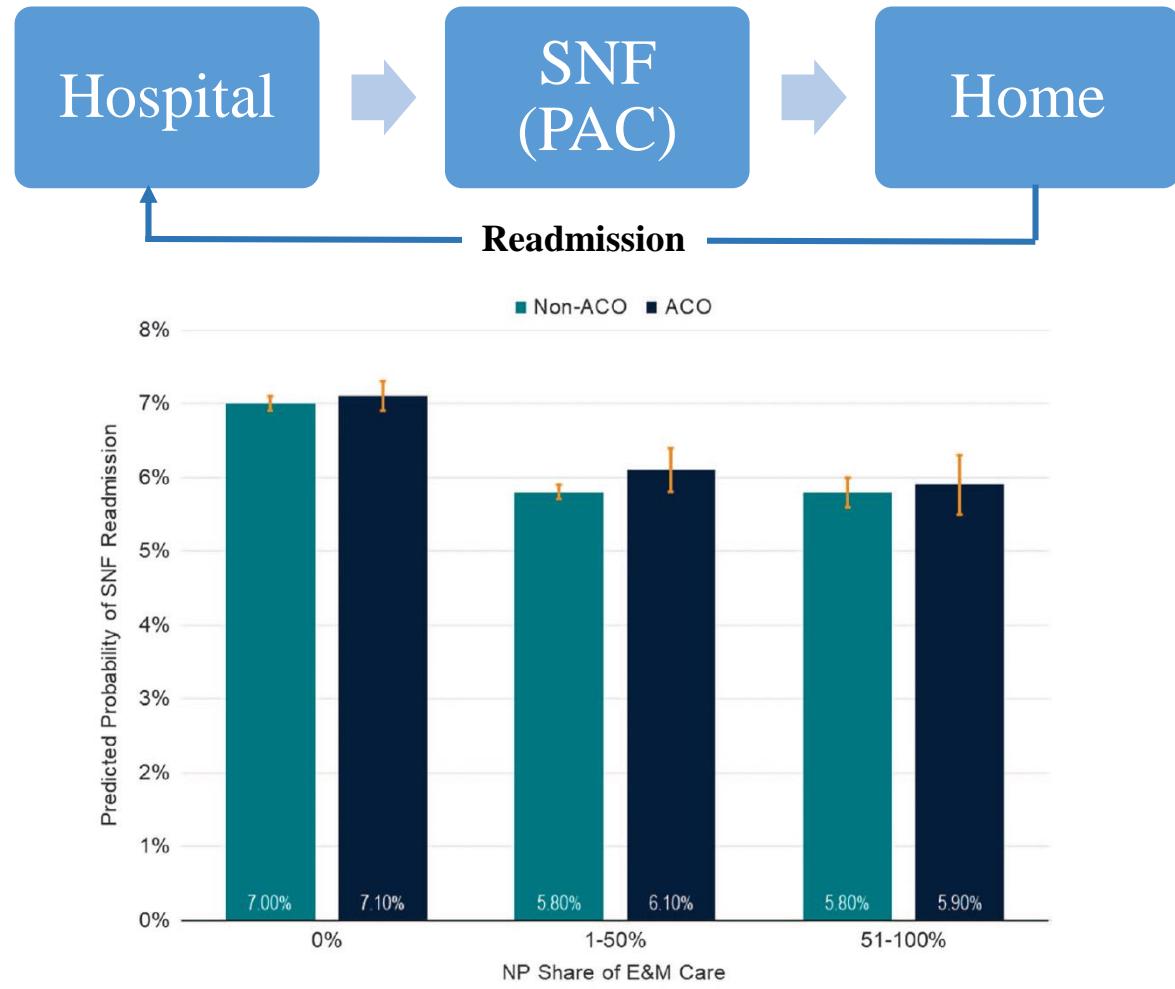
專科護理師藥物處方授權程度對潛在不正確藥物開方的影響 (II)

- 潛在不正確藥物開方率在2018年比在2016年多呈現下降的情形
- 專科護理師的潛在不正確藥物開方率在不同州均比醫師為低
- 紿予專師完全開方授權的州，比立法限制授權及條件授權的州有更低的潛在不正確藥物開方率

Impact of State Nurse Practitioner Regulations on Potentially Inappropriate Medication Prescribing Between Physicians and Nurse Practitioners: A National Study in the United States. J Nurs Care Qual. 2022;37:6-13.

專科護理師減少急性後期照護病人的再住院率

- 負責任護理組織(ACO)在急性後期照護(PAC)期間，提供較多的專科護理師評估與處置
- 有專科護理師參與病人的急性後期照護，可以減少病人的再次住院率 (5.9% vs. 7.1%; $P <0.001$)



The Impact of Nurse Practitioner Care and Accountable Care Organization Assignment on Skilled Nursing Services and Hospital Readmissions. Med Care. 2023 Mar 15. Online ahead of print.

專科護理師與醫師執行初級照護的預後比較 (I)

- 研究設計

- 1995 Aug. ~ 1997 Oct., 隨機研究 (Randomized trial)
- 1316位急診或急性照護中心就診病人
- 出院後隨機分配至專科護理師($n = 806$)或醫師($n = 510$)的門診追蹤至滿一年
- 預後比較: 滿意度(問卷)、健康狀態(SF-36)、生理功能檢測(尖峰呼氣流量、糖化血紅素、血壓)、醫療資源耗用(門診次數、急診就診次數、有無住院)

Primary care outcomes in patients treated by nurse practitioners or physicians: a randomized trial. JAMA 2000;283:59-68.

專科護理師與醫師執行初級照護的預後比較 (II)

- 研究結果: 滿意度

Table 2. Patient Satisfaction: Initial Visit and 6-Month Follow-up Interviews

	Initial Visit				6-Month Follow-up			
	Nurse Practitioner Group (n = 726)	Physician Group (n = 453)	Comparison	P Value	Nurse Practitioner Group (n = 644)	Physician Group (n = 389)	Comparison	P Value
Provider attributes mean score*	4.16	4.19	$t = 0.815$	.42	4.12	4.22	$t = 1.963$	.05
Overall satisfaction mean score*	4.59	4.60	$t = 0.144$	.89	4.45	4.46	$t = 0.161$	.87
Problems, % of patients reporting†								
0	74.4	70.2			59.1	62.7		
1	15.4	18.7			25.1	23.5		
2	6.5	7.2	$\chi^2 = 2.605$	.46	10.2	7.8	$\chi^2 = 2.146$	.54
3-5	3.7	3.9			5.6	5.9		
% of patients who would recommend clinic to others	98.7	98.2	$\chi^2 = 0.544$	.46	95.0	95.1	$\chi^2 = 0.000$	.99

*Calculated from items rated on a 5-point scale, in which 5 is the most positive response.

†Percentages may not add to 100% due to rounding.

Primary care outcomes in patients treated by nurse practitioners or physicians: a randomized trial. JAMA 2000;283:59-68.

專科護理師與醫師執行初級照護的預後比較 (III)

- 研究結果: 健康狀態

Table 3. Health Status Based on MOS SF-36 Results*

	6-Month Scores for Nurse Practitioner Group (n = 649) and Physician Group (n = 391)							
	Comparison of Baseline and 6-Month Scores for Entire Sample (n = 1040)			Unadjusted Mean Scores			Adjusted Mean Scores†	
	Baseline	6 mo	Change (Paired t tests)‡	Nurse Practitioner Group	Physician Group	Comparison	Nurse Practitioner Group	Physician Group
Physical functioning	60.30	64.26	<i>t</i> = 4.631	64.94	62.90	<i>t</i> = -1.126 <i>P</i> = .26	64.21	63.78
Role-physical	36.06	53.31	<i>t</i> = 10.519	53.74	52.62	<i>t</i> = -0.375 <i>P</i> = .71	52.92	53.38
Bodily pain	42.74	53.01	<i>t</i> = 9.133	53.66	52.07	<i>t</i> = -0.748 <i>P</i> = .45	52.91	52.73
General health	42.94	48.75	<i>t</i> = 7.662	48.79	48.67	<i>t</i> = -0.070 <i>P</i> = .95	48.42	49.04
Vitality	47.02	53.45	<i>t</i> = -7.771	53.86	52.79	<i>t</i> = -0.635 <i>P</i> = .53	53.27	53.38
Social functioning	58.51	70.47	<i>t</i> = 12.507	70.39	70.59	<i>t</i> = 0.114 <i>P</i> = .91	70.25	70.70
Role-emotional	44.70	56.26	<i>t</i> = 7.105	56.71	55.24	<i>t</i> = -0.488 <i>P</i> = .63	55.81	56.34
Mental health	53.51	60.17	<i>t</i> = 8.177	60.75	59.45	<i>t</i> = -0.742 <i>P</i> = .46	60.37	59.63
Physical component summary	37.46	40.63	<i>t</i> = 8.706	40.83	40.29	<i>t</i> = -0.728 <i>P</i> = .47	40.53	40.60
Mental component summary	40.56	44.58	<i>t</i> = 9.438	44.64	44.29	<i>t</i> = -0.398 <i>P</i> = .69	44.55	44.48

*MOS SF-36 indicates Medical Outcomes Study Short-Form 36.

†Adjusted for age, sex, baseline MOS subscale scores, and each selected chronic condition.

‡*P* values for change are all <.001.

§Adjusted *t* test is based on a regression model, with age, sex, baseline MOS subscale scores, and each condition entered as covariates.

在身體功能、活動力、
社交功能、角色狀態、
以及心智健康等方面，
在校正病人的基本健康
狀態後，兩者並無差別

Primary care outcomes in patients treated by nurse practitioners or physicians: a randomized trial. JAMA 2000;283:59-68.

專科護理師與醫師執行初級照護的預後比較 (IV)

- 研究結果: 生理功能檢測

	專科護理師組	醫師組	p 值
尖峰呼氣流量 (氣喘病人數)	297 L/min (107人)	292 L/min (64人)	0.77
醣化血紅素 (糖尿病人數)	9.5 % (58人)	9.4 % (46人)	0.82
收血壓 (高血壓病人數)	137 mmHg (211人)	139 mmHg (145人)	0.28

Primary care outcomes in patients treated by nurse practitioners or physicians: a randomized trial. JAMA 2000;283:59-68.

專科護理師與醫師執行初級照護的預後比較 (V)

- 研究結果: 醫療資源耗用

Table 4. Health Services Utilization*

	Change for Entire Sample, %			6 Months After Initial Primary Care Visit, %		1 Year After Initial Primary Care Visit, %				
	6 mo Prior (N = 1309)		6 mo After (N = 1309)	Change, z Score†	Nurse Practitioner Group (n = 800)	Physician Group (n = 509)	Comparison	Nurse Practitioner Group (n = 800)	Physician Group (n = 509)	Comparison
Primary care visits										
0	88.8	21.2			20.6	22.2		18.0	19.1	
1	5.7	22.4			22.6	22.0		18.4	16.1	
2	2.9	17.3			18.0	16.3		13.8	13.4	
3	2.6	13.8			14.5	12.8		10.3	8.8	
4	0	9.8			9.6	10.0		9.3	8.8	
5	0	6.1			5.3	7.5		7.5	6.1	
≥6	0	9.3			9.4	9.2		22.9	27.7	
Specialty visits										
0	89.1	62.3			61.8	63.1		54.5	54.8	
1	5.6	14.2			13.3	15.7		13.9	16.5	
2	2.3	9.3			10.8	7.1		8.9	6.3	
≥3	3.1	14.2			14.3	14.1		22.8	22.4	
ED and urgent care										
0	58.1	76.5			77.4	75.0		65.8	66.2	
1	16.4	16.2			15.3	17.7		20.4	17.7	
2	16.4	4.0			4.3	3.7		7.4	8.6	
≥3	9.1	3.3			3.1	3.5		6.5	7.5	
Hospitalizations										
0	94.5	95.3			95.9	94.3		91.5	90.2	
≥1	5.5	4.7			4.1	5.7		8.5	9.8	

*Percentages may not add to 100% due to rounding. ED indicates emergency department.

†Except for hospitalizations, $P < .001$ for column.

在一般門診、專科門診、急診照護、以及住院次數等醫療資源的耗用，兩者同樣也沒有差別

Primary care outcomes in patients treated by nurse practitioners or physicians: a randomized trial. JAMA 2000;283:59-68.

專科護理師與醫師執行初級照護的預後比較 (VI)

- 研究結論

- 在專科護理師在具有與醫師同樣的權威、責任、創造力、與行政要求下，兩者在病人醫療照護的預後上，有一樣的表現

Primary care outcomes in patients treated by nurse practitioners or physicians: a randomized trial. JAMA 2000;283:59-68.

統合分析

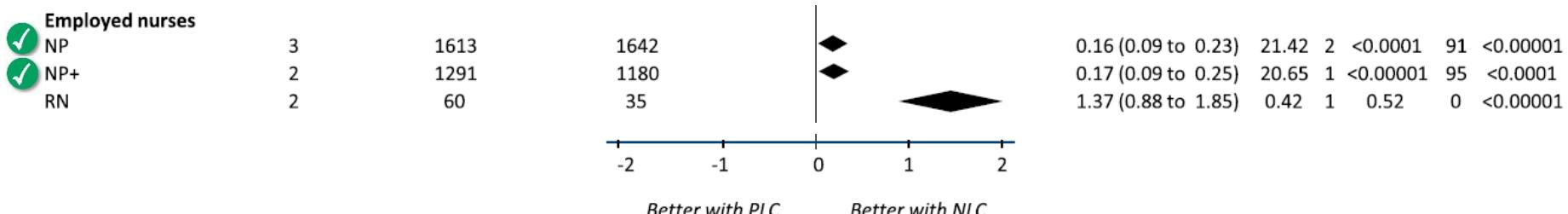
專科護理師替代醫師執行初級照護 (I)

- 研究目標 – 評估護理師取代醫師執行初級照護在病人預後、照護過程、及資源利用的影響
- 方法:
 - 2位專家分別獨立進行文獻回顧
 - 隨機對照試驗 (Randomized controlled trial)
 - 資料庫: OVID Medline, Embase, CINAHL and The Cochrane Library of Systematic Reviews (~ August 2012)
- 醫療替代範疇
 - 滿意度、住院率、死亡率、生活品質、醫療支出
- 最後採用24篇隨機對照試驗，及2篇醫療經濟學研究

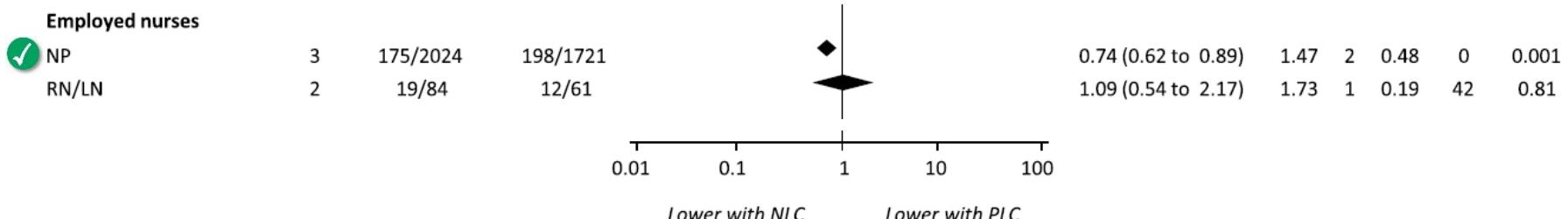
專科護理師替代醫師執行初級照護 (II)

- 將對於醫師，接受專科護理師初級照護的病人有：

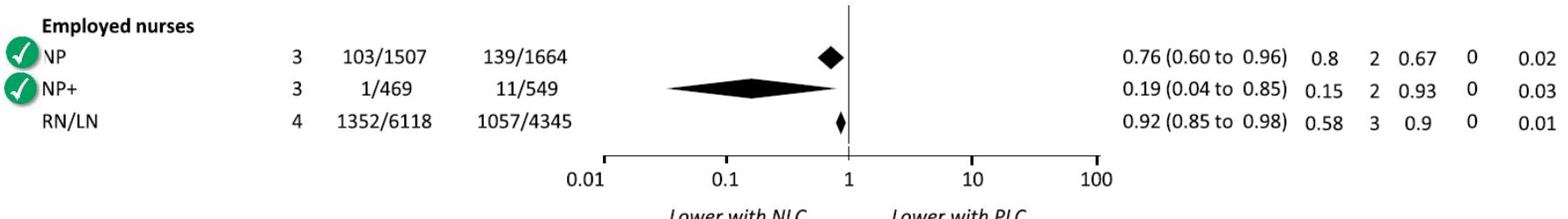
- 較高滿意度



- 較低住院率



- 較低死亡率



護理師替代醫師執行初級照護 (I)

- 研究目標 – 評估護理師取代醫師執行初級照護在病人預後、照護過程、及資源利用的影響
- 方法:
 - 2位專家分別獨立進行文獻回顧
 - 隨機對照試驗 (Randomized trial)
 - 資料庫: CENTRAL, MEDLINE, Ovid, CINAHL, EbscoHost, ICTRP, & ClinicalTrials.gov trial registries
- 醫療替代範疇
 - 第一接觸照護(包括緊急照護)、病人症狀的進一步評估、慢性疾病的持續追蹤、*疾病預防服務、醫療健康教育*
 - 多數護理師可以獲得醫師的建議或支持

Nurses as substitutes for doctors in primary care. Cochrane Database Syst Rev. 2018 Jul 16;7(7):CD001271.

護理師替代醫師執行初級照護 (II)

- 最後整合18篇隨機對照試驗
- 發現: 相對於醫師照護，護理師照護的病人在:
 - 病人預後: 較少的死亡；較好的血脂肪與血壓控制；較高的滿意度；較佳的身體功能與生活品質
 - 照護過程: 較長的照會討論時間；較不足的疼痛、血糖、與疾病活性控制
 - 資源利用: 相近但稍少的檢查安排、藥物處方、醫院轉診及緊急醫療需求；相近但稍多的後續住院；較多的約定返診(attended return visit)及依時返診(attended return visit)

Nurses as substitutes for doctors in primary care. Cochrane Database Syst Rev. 2018 Jul 16;7(7):CD001271.

護理師替代醫師執行初級照護 (III)

- 判讀
 - 整體而言，有較佳的病人預後與滿意度
 - 提供病人較長的看診諮詢時間，並有較好的醫療順從性
 - 在用藥方面，特別在糖尿病與疼痛控制的用藥較為保守
 - 耗用較少的醫療資源，但須注意後續轉診時間點的拿捏
- 結論
 - 經由訓練的護理師(如專科護理師)，對於發生中或緊急的身體症狀及慢性健康狀態的照護，可以提供與醫師相同或更佳的照護品質與結果

Nurses as substitutes for doctors in primary care. Cochrane Database Syst Rev. 2018 Jul 16;7(7):CD001271.

進階護理師對於長照照護的效果

- 研究目標 – 評估進階護理師(CNS &/or NP)對於長照老年族群的醫療照護效果
- 方法:
 - 評估接受進階護理師照護的長照中心60 歲以上長者，相對於對照組的照護效果
 - 隨機對照試驗、準隨機對照研究、前瞻性世代準實驗研究
 - 1966~2010年間，搜尋12個醫療資料庫
- 最後有4個研究符合收案排除條件
- 發現: 有進階護理師參與照護的長照中心，其住民發生憂鬱、尿失禁、壓力性損傷、需要接受約束、及出現攻擊性行為的比率均比對照組(常規照護人力)為低

A systematic review of the effectiveness of advanced practice nurses in long-term care. Donald F, et al. J Adv Nurs. 2013;69:2148-61.

結論與心得

結論

- 經由良好訓練的專科護理師，在影像判讀、鑑別診斷、處置決策、處方開立等，均有跟醫師相近甚至更好的表現
- 專科護理師的照護能力，在緊急醫療處置、急性後期照護、及社區長期照護，都有良好的表現
- 對於病人而言，無論在滿意度、醫療順從性、身體功能恢復、與整體生活品質，接受專科護理師的照護均高於接受醫師的照護

心得

- 為病人提升品質與安全，為醫院提供效率與永續，為自己建立成就與價值
- 專科護理師的貢獻，應該有適當且設計良好的回饋激勵機制
- 專科護理師的價值，建立在能力提升、制度法規、資源支持之上
 - 能力提升: 臨床推理能力、專師教育規劃
 - 制度法規: 預立醫療流程、相關法規修訂
 - 資源支持: 友善執業環境、外部評鑑認證

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交流與討論

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