

實證醫學月會 復健科

R1 陳靜亭

2013/3/18

Clinical Scenario

- A 54 year-old male
 - Chronic right shoulder pain for 3 years
 - Pain character: dullness, lateral shoulder area
 - Occupation: High school teacher
 - Casual activity: tennis
 - Trauma history: denied
- Physical examination
 - Pain in overhead activities & shoulder abd.
 - Active painful arc(+): abd > 90 degree
 - Empty can test(+)

Clinical Scenario

- Msk Sonography
 - Supraspinatus tendinopathy with calcification (2x2.5 cm)
- Previous treatment (+)
 - Medication: NSAIDs
 - Modality: Heat + IFC
 - Therapeutic exercises
 - Improved for 3 months treatment → recurrence
- Asking for shock wave therapy

EBM五大步驟-1

- Asking (提出臨床問題)
 - Background questions
 - Foreground questions
- Acquire
- Appraisal
- Apply
- Audit

Background questions

- Q1: What is the clinical manifestation of rotator cuff injury?
- Q2: How to treat rotator cuff injury?

Q1: What is clinical manifestation of rotator cuff injury ?

- Shoulder pain: a common complaint
 - Prevalence: 7~30%
 - Most common cause: rotator cuff disease
- Pathophysiology
 - Extrinsic mechanism:
 - Compressive forces by surrounding structures
 - Acromion, coracoacromial lig, coracoid process
 - Intrinsic mechanism
 - Tendon overload, degeneration, other insults
 - Microvascular compromise
 - microtears, calcification, and fibrovascular proliferation

Q1: What is clinical manifestation of rotator cuff injury ?

- Presentations
 - Shoulder pain with overhead activity
 - Localize the pain to the lateral deltoid
 - Pain at night
- Positive findings of examinations
 - Painful ROM > 90 degrees of abduction
 - Pain with internal rotation
 - Special tests
 - Neer & Hawkins-Kennedy tests
 - Empty can test

Q2: How to treat rotator cuff injury?

- Nonoperative management
 - Medication
 - Oral: NSAIDs, acetaminophen
 - Subacromial glucocorticoid injection
 - Topical nitrate therapy
 - Therapeutic exercises
 - Range of motion exercises
 - Passive, active-assisted, active
 - Strengthening
 - Concentric & Eccentric exercise
 - Stretching
 - Manual therapy

Q2: How to treat rotator cuff injury?

- Nonoperative management
 - Modalities
 - Heat / Cryotherapy
 - Therapeutic ultrasound
 - Transcutaneous electrical nerve stimulation (TENS)
 - Interferential current (IFC)
 - Laser
 - Phonophoresis (US)
 - Iontophoresis (ES)

Foreground questions

- Clarifying the problem using PICO model

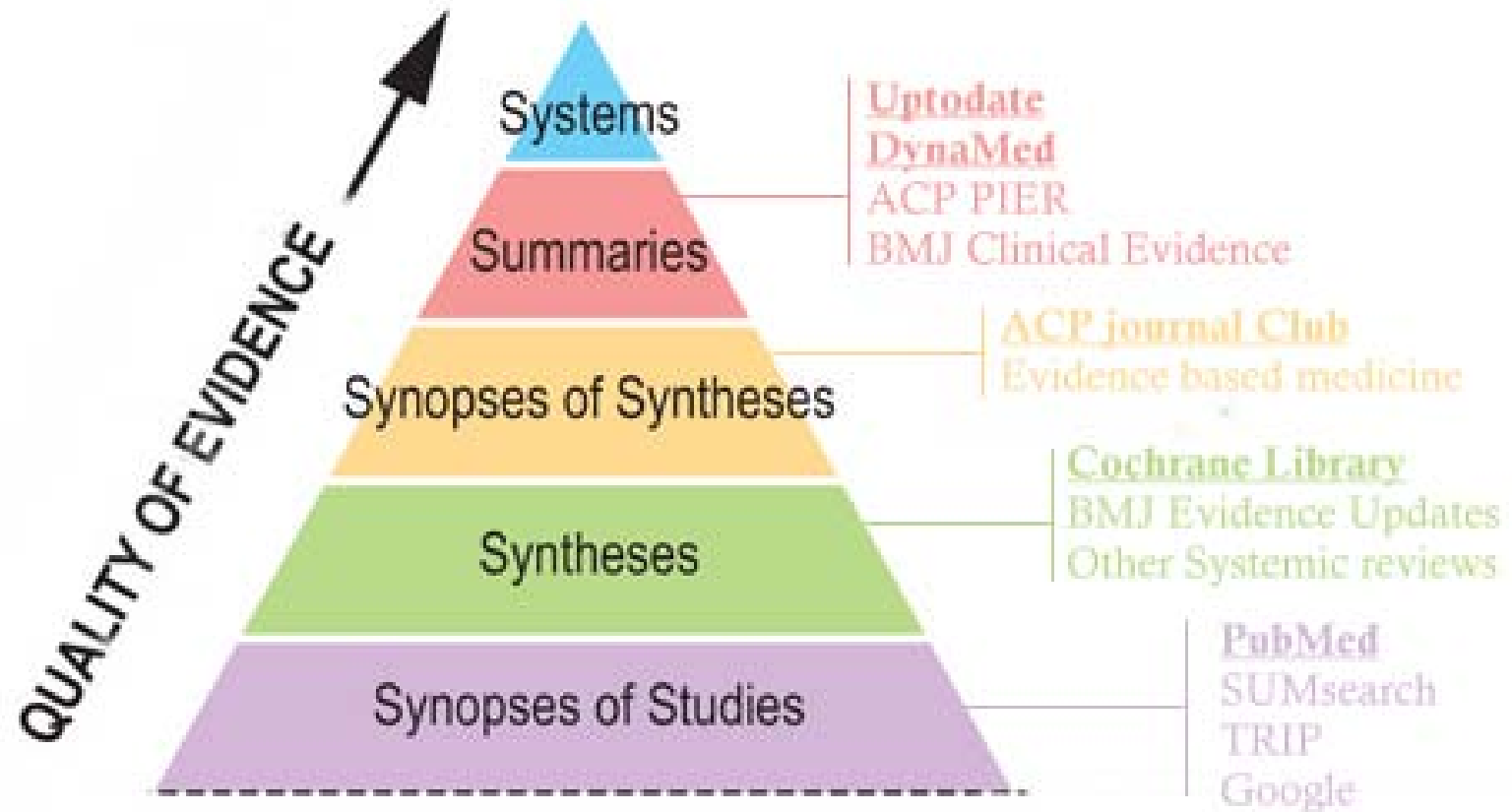
震波治療能否有效改善鈣化性旋轉肌病變引起之肩痛？

<u>P</u>atient	Rotator cuff injury with calcification
<u>I</u>ntervention	Extracorporeal shock wave therapy (ESWT)
<u>C</u>omparison	Placebo, other treatments
<u>O</u>utcome	Pain relief, function improvement

EBM五大步驟

- Asking
- Acquire (搜尋最有用的資料)
 - Search strategy: 5S model
- Appraisal
- Apply
- Audit

The "5S" levels of organization of evidence



Search strategy

- Finding out the correct keywords
 - Use MeSH to help identify terms
 - Rotator cuff
 - calcinosis
 - High energy shock wave

Summaries



- Key words: rotator cuff, calcification, shock wave

Rotator cuff, calcification, shock wave



rotator cuff, calcification, shock wave

All Topics ▾

Search

New Search

Patient Info

What's New

Calculators

Search Results for "rotator cuff, calcification, shock wave"

☒ All Topics

☐ Adult

☐ Pediatric

☐ Patient

☐ Graphics

- Rotator cuff tendinopathy
- Management of rotator cuff tears
- Overview of the management of overuse (chronic) tendinopathy
- Evaluation of the patient with neck pain and cervical spine disorders
- Chronic complications of spinal cord injury
- Postmastectomy pain syndrome: Clinical manifestations and diagnosis
- Moxifloxacin (systemic): Drug information
- Ciprofloxacin (systemic): Drug information
- Presentation and diagnosis of rotator cuff tears
- Extracorporeal shock wave lithotripsy for pancreatic stones
- Septic shock: Ongoing management after resuscitation in children
- Septic shock: Rapid recognition and initial resuscitation in children

Experimental treatments

- Topical NSAIDs
 - Symptomatic relief in tendinopathy and osteoarthritis
 - Limit systemic side effects
- Hyperthermia
 - Microwave power generator(434 MHz)
 - Deep-heating of muscles
- Platelet rich plasma (PRP)
 - Chronic, refractory, tendinopathy
 - Rotator cuff tendinopathy ?
- Extracorporeal shock wave therapy (ESWT)
 - Benefit when treating calcific tendinopathies, including the rotator cuff

Summaries



- Key words: Rotator cuff, calcinosis, shock wave

Rotator cuff,
calcinosis,
shock wave

Search ?

Browse: [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#) [Browse Categories](#)

1-2 of 2 Page: 1

Impingement syndrome of rotator cuff

Lateral epicondylitis

Impingement syndrome of rotator cuff

- + Related Summaries
- + General Information
- + Causes and Risk Factors
- + Complications and Associated Conditions
- + History and Physical
- + Diagnosis
- + **Treatment**
- + Prognosis
- + Prevention and Screening
- + Guidelines and Resources
- + Patient Information
- + ICD-9/ICD-10 Codes

Treatment overview

- some treatments may have efficacy in patients with calcific tendonitis
 - **ultrasound therapy** may reduce pain and improve function in patients with calcific tendonitis (**level 2 [mid-level] evidence**) but may be ineffective in other patients with shoulder pain (**level 2 [mid-level] evidence**)
 - **disodium EDTA via subcutaneous injections (mesotherapy) plus topically with ultrasound** may reduce pain from calcific tendonitis (**level 2 [mid-level] evidence**)
 - **extracorporeal shock wave therapy** may improve pain and function in chronic calcific tendonitis (**level 2 [mid-level] evidence**)

Treatment overview

- Some treatments may have efficacy in patients with calcific tendonitis (*Level II evidence*)
 - Ultrasound therapy
 - reduce pain and improve function
 - Disodium EDTA (SC injection+ phonophoresis)
 - reduce pain
 - ESWT
 - improve pain and function in chronic calcific tendonitis

Synopses



- Key words: Rotator cuff, calcification, shock wave

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Search ACP Journal Club

Rotator cuff, calcinosis, shock wave

Your search - **shock wave, rotator cuff** - **did not match any documents.**

Suggestions:

- Make sure all words are spelled correctly.
- Try different keywords.
- Try more general keywords.

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The information contained herein should never be used as a substitute for good clinical judgment.

Syntheses



The Cochrane Library

Evidence for healthcare decision-making

- Key words:
 - MeSH search
 - Rotator cuff
 - calcinosis
 - shock wave



THE COCHRANE LIBRARY

Independent high-quality evidence for health care decision making

from [The Cochrane Collaboration](#)

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NOT REGISTERED?
FORGOTTEN PASSWORD?
INSTITUTIONAL LOGIN?

[Search](#)[Search Manager](#)[Medical Terms \(MeSH\)](#)[Browse](#)

To search an exact word(s) use quotation marks, e.g. "hospital" finds hospital; hospital (no quotation marks) finds hospital and hospitals; pay finds paid, pays, paying, payed)

[Add to top](#)

#1

MeSH descriptor: [Rotator Cuff] explode all trees



199



#2

MeSH descriptor: [Calcinosis] explode all trees



237



#3

MeSH descriptor: [High-Energy Shock Waves] explode all trees



94



Edit



#4

#1 and #2 and #3



7

All Results (7)

☐ Cochrane Reviews (0)

☒ All

☐ Review

☐ Protocol

☒ Other Reviews (2)

☐ Trials (4)

☐ Methods Studies (0)

☐ Technology Assessments (1)

☐ Economic Evaluations (0)

☐ Cochrane Groups (0)

Database of Abstracts of Reviews of Effect : Issue 1 of 4, January 2013

There are 2 results from 19708 records for your search on #4 - #1 and #2 and #3 in Other Reviews in the strategy currently being edited

Sort by Relevance 

[Select all](#) | [Export all](#) | [Export selected](#)

- ☐ Evidence for effectiveness of extracorporeal shock-wave therapy (ESWT) to treat calcific and non-calcific rotator cuff tendinosis: a systematic review (Provisional abstract)
Centre for Reviews and Dissemination
Original Author(s): Huisstede BM , Gebremariam L , van derSande R , Hay EM and Koes BW
Manual Therapy, 2011, 16(5), 419-433
- ☐ Extracorporeal shock wave therapy for calcific and noncalcific tendonitis of the rotator cuff: a systematic review (Structured abstract)
Centre for Reviews and Dissemination
Original Author(s): Harniman E , Carette S , Kennedy C and Beaton D
Journal of Hand Therapy, 2004, 17(2), 132-151

Me Methodology

Dg Diagnostic

Evidence for effectiveness of Extracorporeal Shock-Wave Therapy (ESWT) to treat calcific and non-calcific rotator cuff tendinosis – A systematic review

Bionka M.A. Huisstede^{a,b,*}, Lukas Gebremariam^a, Renske van der Sande^a, Elaine M. Hay^c, Bart W. Koes^a

A B S T R A C T

Extracorporeal shock-wave therapy (ESWT) is suggested as a treatment alternative for calcific and non-calcific rotator cuff tendinosis (RC-tendinosis), which may decrease the need for surgery. In this study we assessed the evidence for effectiveness of ESWT for these disorders. The Cochrane Library, PubMed, Embase, Pedro, and Cinahl were searched for relevant systematic reviews and RCTs. Two reviewers independently extracted data and assessed the methodological quality.

Seventeen RCTs (11 calcific, 6 non-calcific) were included. For calcific RC-tendinosis, strong evidence was found for effectiveness in favour of high-ESWT versus low-ESWT in short-term. Moderate evidence was found in favour of high-ESWT versus placebo in short-, mid- and long-term and versus low-ESWT in mid- and long-term. Moreover, high-ESWT was more effective (moderate evidence) with focus on calcific deposit versus focus on tuberculum major in short- and long-term. RSWT was more effective (moderate evidence) than placebo in mid-term.

For non-calcific RC-tendinosis, no strong or moderate evidence was found in favour of low-, mid- or high-ESWT versus placebo, each other, or other treatments.

This review shows that only high-ESWT is effective for treating calcific RC-tendinosis. No evidence was found for the effectiveness of ESWT to treat non-calcific RC-tendinosis.

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Method

- 17 RCTs (11 calcific & 6 non-calcific)
 - ESWT vs. placebo/control/other treatments



- Outcome

- Effectiveness evaluation
 - Pain: VAS score
 - Function: Constant-Murley Shoulder Outcome Score (100)
 - Recovery: calcium deposit size



Result

- Calcific RC-tendinosis
 - ESWT vs. no treatment
 - Short-term: constant score ↑ (*limited evidence*)
 - ESWT vs. Placebo
 - Short-/mid-/long- term: effectiveness (*moderate evidence*)
 - Pain ↓, constant score ↑, calcium deposit size ↓
 - High ESWT vs. Low ESWT
 - Short-term: effectiveness (*strong evidence*)
 - Pain ↓, constant score ↑
 - Mid-/long- term: effectiveness (*moderate evidence*)
 - Pain ↓, constant score ↑, calcium deposit size ↓

Conclusion

- For calcific rotator cuff tendinosis
 - Pain relief + function improvement + recovery
 - ESWT > non-ESWT
 - High ESWT > Low ESWT
- Mechanism (unknown)
 - Reactive hypervascularization → healing process
 - Calcification resorption
 - Analgesic effect
 - Substance P + PGE2 ↑
 - Selective loss of unmyelinated nerve fiber

Studies



- Key words: MeSH term search

PubMed search builder

```
(( "Rotator Cuff"[Mesh] ) AND  
"Calcinosis"[Mesh] ) AND "High-  
Energy Shock Waves"[Mesh]
```

Add to search builder

AND ▼

Search PubMed

Display Settings: ☒ Summary, 20 per page, Sorted by Recently AddedSend to: ☒

Results: 13

- ☐ [Extracorporeal shock-wave therapy for supraspinatus calcifying tendinitis: a randomized clinical trial comparing two different energy levels.](#)
- 1.

Ioppolo F, Tattoli M, Di Sante L, Attanasi C, Venditto T, Servidio M, Cacchio A, Santilli V.
Phys Ther. 2012 Nov;92(11):1376-85. doi: 10.2522/ptj.20110252. Epub 2012 Jun 28.

PMID: 22745199 [PubMed - indexed for MEDLINE]

[Related citations](#)

- ☐ [Evidence for effectiveness of Extracorporeal Shock-Wave Therapy \(ESWT\) to treat calcific and non-calcific **rotator cuff** tendinosis--a systematic review.](#)
- 2.

Huisstede BM, Gebremariam L, van der Sande R, Hay EM, Koes BW.

Man Ther. 2011 Oct;16(5):419-33. doi: 10.1016/j.math.2011.02.005. Epub 2011 Mar 10. Review.

PMID: 21396877 [PubMed - indexed for MEDLINE]

[Related citations](#)

- ☐ [Extracorporeal shock wave treatment for shoulder calcific tendonitis: a systematic review.](#)
- 3.

Mouzopoulos G, Stamatakis M, Mouzopoulos D, Tzurbakis M.

Skeletal Radiol. 2007 Sep;36(9):803-11. Epub 2007 Apr 6. Review.

PMID: 17415561 [PubMed - indexed for MEDLINE]

[Related citations](#)

- ☐ [High-energy extracorporeal shock-wave therapy for calcifying tendinitis of the **rotator cuff**: a randomised trial.](#)
- 4.

Albert JD, Meadeb J, Guggenbuhl P, Marin F, Benkalfate T, Thomazeau H, Chalès G.

J Bone Joint Surg Br. 2007 Mar;89(3):335-41.

PMID: 17356145 [PubMed - indexed for MEDLINE] [Free Article](#)

[Related citations](#)

- ☐ [Extracorporeal shock wave treatment for chronic **rotator cuff** tendonitis \(shoulder pain\).](#)
- 5.

Ho C.

Issues Emerg Health Technol. 2007 Jan;(96 (part 3)):1-4.

PMID: 17302022 [PubMed - indexed for MEDLINE]

[Related citations](#)

- ☐ [Effectiveness of radial shock-wave therapy for calcific tendinitis of the shoulder: single-blind, randomized clinical study.](#)
- 6.

Cacchio A, Paoloni M, Barile A, Don R, de Paulis F, Calvisi V, Ranavolo A, Frascarelli M, Santilli V, Spacca G.

Phys Ther. 2006 May;86(5):672-82.

PMID: 16649891 [PubMed - indexed for MEDLINE] [Free Article](#)

[Related citations](#)

EBM五大步驟

- Asking
- Acquire
- Appraisal (嚴格評讀文獻)
 - 對找到的文章進行critical appraisal
- Apply
- Audit

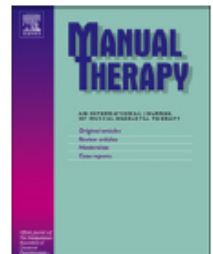
Appraisal



Contents lists available at ScienceDirect

Manual Therapy

journal homepage: www.elsevier.com/math



Systematic Review

Evidence for effectiveness of Extracorporeal Shock-Wave Therapy (ESWT) to treat calcific and non-calcific rotator cuff tendinosis – A systematic review

Bionka M.A. Huisstede^{a,b,*}, Lukas Gebremariam^a, Renske van der Sande^a, Elaine M. Hay^c, Bart W. Koes^a

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^bErasmus MC, Department of Rehabilitation Medicine, Rotterdam, The Netherlands

^cKeele University, Arthritis Research Centre National primary Care Centre, Keele, United Kingdom

Level of evidence

Level	Therapy/Prevention, Aetiology/Harm
1a	Systematic review (with homogeneity) of RCTs
1b	Individual RCT (with narrow Confidence Interval)
1c	All or none (ie all patients died before the Rx became available, but some now survive on it; or when some patients died before the Rx became available, but none now die on it)
2a	Systematic review (with homogeneity) of cohort studies
2b	Individual cohort study (including low quality RCT; e.g., <80% follow-up)
2c	"Outcomes" Research or ecologic studies (studies of group ch ^{ics})
3a	Systematic review (with homogeneity) of case-control studies
3b	Individual Case-Control Study
4	Case-series (and poor quality cohort and case-control studies)
5	Expert opinion or based on physiology, bench research or "first principles"

Item	<u>AAMPICOT</u> for therapy- Criteria	Comments
Answer	此文獻有沒有回答我的問題	有
Authors	作者群是這領域的專家嗎？	是
	有沒有利益衝突？	應該沒有 (無相關廠商支持記錄)
Method	本文獻研究設計是屬於以下那一類SR, RCT, Cohort, Case-control, Case series or report, Expert opinion	Systemic review
Population	取樣是否為隨機取樣？	是， 所選入之文獻全部皆為隨機取樣
	取的樣本是否具代表性？其特性是否接近我的病人	是，10篇文獻中之受試者與此病人的條件相似
	分組是否是隨機分組？	是，所收入的17篇文獻皆有對於受試者進行隨機分組
	分組是否採用盲法？	部分，17篇文獻中有7篇為double blind，4篇為single blind

Comparison	AAMPICOT for therapy- Criteria	Comments
Intervention	給予實驗組的處置是否描述清楚， 並且是臨床可行的？	有描述清楚(dosage, application site), 而且是临床上可行的治療方式
Comparison	給予對照組的處置是否描述清楚，並且是臨床 可行的？各種可能比較皆有了？	• 大部分的文獻都有描述清楚， 並且也是临床上可進行的治療方式 • 比較ESWT vs. placebo, no treatment Short-/Mid-/Long term effect
Outcome	測量了那些結果？是否用客觀的方式測量？	• Pain relief (VAS score), Function improvement (constant score) Recovery (calcium deposit size)
	這些結果是否有統計學上的重要性？	是
	這些結果是否有臨床上的重要性？	是
	是否呈現結果的「數值」，「p值」，「信賴區 間」，「檢力」？	是
Time	測量結果的時間點是否合宜？	是，short/mid/long term都有考慮進去
	追蹤時間是否夠長？	Long term追蹤時間至少有6個月，最長 的則有追蹤至12個月
	文獻發表時間？	2011

EBM五大步驟

- Asking
- Acquire
- Appraisal
- Apply (臨床應用)
 - 結合醫學倫理方法將文獻結果應用在病人身上
- Audit

Will the results help me in caring for my patients ?

- Is my patient so different to those in the study that the results cannot apply?
 - No
- Is the treatment feasible in my setting?
 - Yes
- Will the potential benefits of treatment outweigh the potential harms of treatment for my patient?
 - Need more data

醫療現況

- 54歲男性長期右肩慢性疼痛
- 超音波檢查:鈣化脊上肌肌腱炎
- 曾接受過電熱療及運動治療而症狀曾有改善，但沒有持續治療因此又復發

病人意願

- 經過上述文獻結果的解釋，病人有意願接受震波治療，期待可以有效減緩肩部疼痛

生活品質

- 因病人表示反復嚴重之肩痛已明顯影響其日常生活
- 平日工作及休閒活動(網球)需長時間使用右手執行動作
- 工作繁忙無法長時間持續復健

社會脈絡

- 震波治療尚未納入健保給付之治療項目，所以目前需自費治療

EBM五大步驟

- Asking
- Acquire
- Appraisal
- Apply
- Audit (自我評估)

在「提出臨床問題」方面的自我評估

- 我提出的問題是否具有臨床重要性？ 是
- 我是否明確的陳述了我的問題？
 - 我的foreground question 是否可以清楚的寫成PICO？ 是
 - 我的background question是否包括what, when, how, who等字根？ 是
- 我是否清楚的知道自己問題的定位？（亦即可以定位自己的問題是屬於診斷上的、治療上的、預後上的或流行病學上的），並據以提出問題？ 是，屬於治療範疇
- 對於無法立刻回答的問題，我是否有任何方式將問題紀錄起來以備將來有空時再找答案？ 是

在「搜尋最佳證據」方面的自我評估

- 我是否已盡全力搜尋？是
- 我是否知道我的問題的最佳證據來源？是
- 我是否從大量的資料庫來搜尋答案？是
- 我工作環境的軟硬體設備是否能支援我在遇到問題時進行立即的搜尋？是
- 我是否在搜尋上愈來愈熟練了？是
- 我會使用「斷字」、布林邏輯、同義詞、MeSH term，限制（limiters）等方法來搜尋？是
- 我的搜尋比起圖書館人員或其他對於提供病人最新最好醫療有熱情的同事如何？有進步空間

關於「嚴格評讀文獻」方面的自我評估

- 我是否盡全力做評讀了？是
- 我是否了解Number need to treat 的意義？大致了解
- 我是否了解Likelihood Ratios的意義？大致了解
- 我是否了解worksheet每一項的意義？大致了解
- 評讀後，我是否做出了結論？是

關於「應用到病人身上」的自我評估

- 我是否將搜尋到的最佳證據應用到我的臨床工作中？是
- 我是否能將搜尋到的結論如NNT,LR用病人聽得懂的方式解釋給病人聽？應該可以
- 當搜尋到的最佳證據與實際臨床作為不同時，我如何解釋？目前所搜尋到的文獻之結論為統計分析過後的結果，研究對象條件與病人未必相符，治療上可做為參考但實際面仍須以病人目前的臨床狀況為主

Thank You!

