

# Evidence-Based Medicine Conference

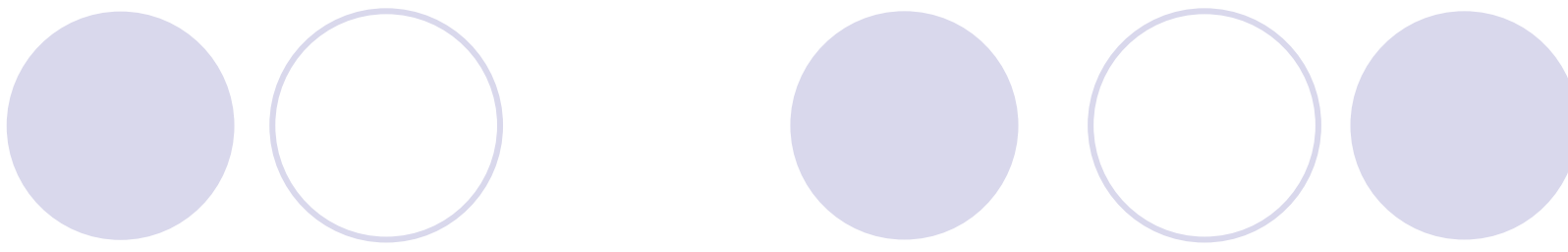
姓名：Intern 王彥淳

學號：林志隆醫師



## 臨床場景

- This 76 y/o female was well-being before.
- This time she suffered from sudden onset severe headache and vomiting. At 旗山醫院, brain CT showed SAH. At our ER brain CTA was done and revealed right IC-PC aneurysm rupture with spontaneous SAH. Due to this problem she admitted to our ward.

- 
- 由於病人是old age patient，雖然病人並沒有任何系統系疾病，但考慮到麻醉風險的問題，向病人及家屬解釋手術的風險性之後，亦告知有endovascular coiling的治療方式，並建議以endovascular coiling 進行處置。



- 對於aneurysm的病人，選擇neurosurgical clipping或是endovascular coiling，對於動脈瘤的治療效果及預後是否有差異？

The title is centered at the top of the slide, flanked by four light purple circles. The second circle from the left is a thin outline, while the others are solid. The text '將問題寫成PICO' is written in black, with 'PICO' in a larger, bold font.

# 將問題寫成PICO

<b>P</b>	Patient with aneurysm with spontaneous SAH
<b>I</b>	Endovascular coiling
<b>C</b>	Neurosurgical clipping
<b>O</b>	Outcome and complication



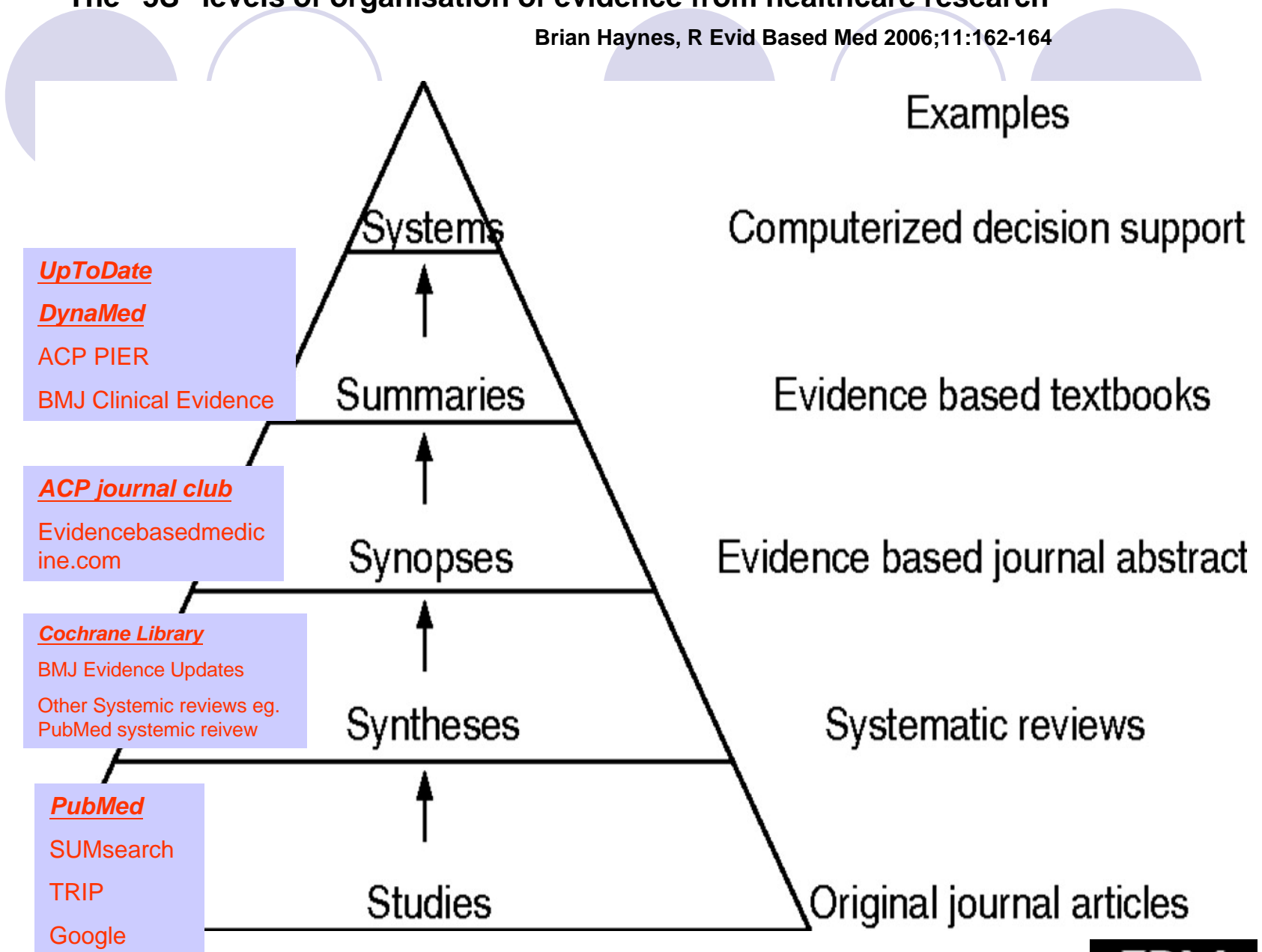
# 搜尋最有用的資料

先從已經過評讀的database開始找起  
(system, synopses, synthesis)

最後再找尚未經過嚴格評讀的study

# The "5S" levels of organisation of evidence from healthcare research

Brian Haynes, R Evid Based Med 2006;11:162-164



# 搜尋 Systems



- 出處：UpToDate
- Key word:
  - Aneurysm
  - Endovascular coiling
  - Neurosurgical clipping



# 搜尋到的文章標題

- **Title:**

- **Treatment of aneurysmal subarachnoid hemorrhage**

- **Last literature review version 17.1:** 一月 2009

- **This topic last updated:** 一月 24, 2009



## 搜尋到的文章內容

- **TREATMENT OF ANEURYSMS**

- Surgery has been the mainstay of therapy of intracranial aneurysms, although endovascular techniques are becoming more widely used. In the future, gene therapy combined with endovascular techniques may offer improved results for aneurysm treatment



- **Surgery**

- Surgical management of cerebral aneurysms is an effective and safe procedure with the evolution of microsurgical techniques in the hands of an experienced surgeon.

- **Endovascular therapy**

- Advances in biopolymers and image chain devices have allowed the intraluminal approach to cerebral aneurysms to emerge as a safe and often effective alternative to surgical clipping.
- Aneurysms with broad necks, a low neck-to-fundus ratio, distal segment lesions, and a number of giant aneurysms are not amenable to endovascular therapy

# 將system搜尋的結果應用到我的病人

- Our patient: aneurysm with SAH, old age
- 因病人的CTA顯示，病人aneurysm type並非endovascular coiling所不建議處理的a low neck-to-fundus ratio。所以endovascular coiling是可以做為治療之首選，但並未有顯著的理由顯示neurosurgical clipping的不適，若考慮到年齡所造成的麻醉風險，可先由麻醉醫師評估。

搜尋 Synopses , ACP Journal Club

- Key word:

- Aneurysm

- Treatment



## 搜尋到的文章標題

- **International subarachnoid aneurysm trial (ISAT) of neurosurgical clipping versus endovascular coiling in 2143 patients with ruptured intracranial aneurysms: a randomised comparison of effects on survival, dependency, seizures, rebleeding, subgroups, and aneurysm occlusion.**



## 搜尋到的文章內容

- **BACKGROUND:**

- Two types of treatment are being used for patients with ruptured intracranial aneurysms: endovascular detachable-coil treatment or craniotomy and clipping. We undertook a randomised, multicentre trial to compare these treatments in patients who were suitable for either treatment because the relative safety and efficacy of these approaches had not been established. Here we present clinical outcomes 1 year after treatment.



- **METHODS:**

- 2143 patients with ruptured intracranial aneurysms, who were admitted to 42 neurosurgical centres, mainly in the UK and Europe, took part in the trial. They were randomly assigned to neurosurgical clipping (n=1070) or endovascular coiling (n=1073). The primary outcome was death or dependence at 1 year (defined by a modified Rankin scale of 3-6). Secondary outcomes included rebleeding from the treated aneurysm and risk of seizures. Long-term follow up continues. Analysis was in accordance with the randomised treatment.



- **FINDINGS:**

- We report the 1-year outcomes for 1063 of 1073 patients allocated to endovascular treatment, and 1055 of 1070 patients allocated to neurosurgical treatment. 250 (23.5%) of 1063 patients allocated to endovascular treatment were dead or dependent at 1 year, compared with 326 (30.9%) of 1055 patients allocated to neurosurgery, an absolute risk reduction of 7.4% (95% CI 3.6-11.2,  $p=0.0001$ ). The early survival advantage was maintained for up to 7 years and was significant (log rank  $p=0.03$ ). The risk of epilepsy was substantially lower in patients allocated to endovascular treatment, but the risk of late rebleeding was higher.



- **INTERPRETATION:**

- In patients with ruptured intracranial aneurysms suitable for both treatments, endovascular coiling is more likely to result in independent survival at 1 year than neurosurgical clipping; the survival benefit continues for at least 7 years. The risk of late rebleeding is low, but is more common after endovascular coiling than after neurosurgical clipping.

## 將synopses搜尋的結果應用到我的病人

本文章顯示endovascular coiling有較好的independent survival在治療後的七年內，在預後上有較低的epilepsy risk，但卻有較高的rebleeding risk，對於此病人而言，選擇endovascular coiling是可行的治療方式。

# 搜尋 syntheses, Cochrane Library

- Key word:

- Aneurysm

- Surgery

- Endovascular coiling



# 搜尋到的文章標題

- Title:

- **Endovascular coiling versus neurosurgical clipping for patients with aneurysmal subarachnoid haemorrhage**

- Irene van der Schaaf<sup>2</sup>, Ale Algra<sup>3</sup>, Marieke Wermer<sup>1</sup>, Andrew Molyneux<sup>4</sup>, Mike J Clarke<sup>5</sup>, Jan van Gijn<sup>1</sup>, Gabriel JE Rinkel<sup>1</sup>
- *Cochrane Database of Systematic Reviews, Issue 2, 2009*, DOI: 10.1002/14651858.CD003085.pub2




# 搜尋到的文章內容

- **Background**

- Patients who have had an aneurysmal subarachnoid haemorrhage (SAH) are at very high risk of rebleeding if the aneurysm is not treated. The standard treatment for several decades has been surgical clipping of the neck of the aneurysm. In recent years, an alternative, the introduction of detachable coils to occlude the aneurysm, has become more common.

- **Objectives**

- To compare the effects of endovascular coiling versus neurosurgical clipping in patients with aneurysmal subarachnoid haemorrhage.



- **Search strategy**

- We searched the Cochrane Stroke Group Trials Register (last searched in February 2005). In addition we searched MEDLINE (1966 to January 2004) and EMBASE (1980 to January 2004), and contacted trialists.

- **Selection criteria**

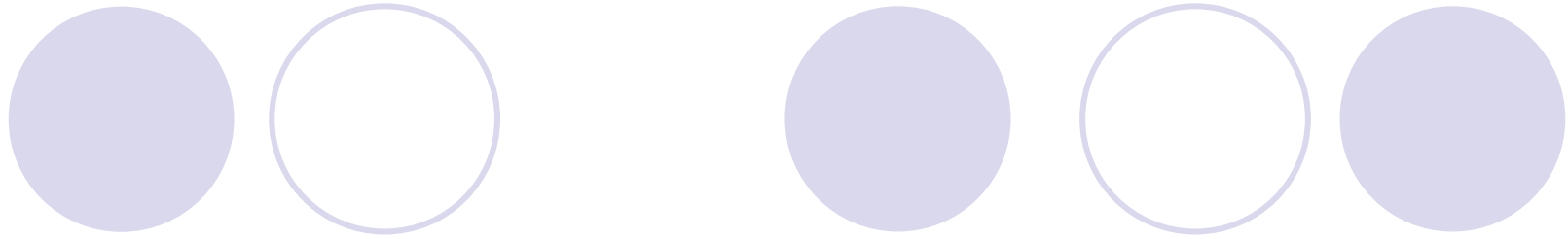
- We included randomised trials in which endovascular coiling of aneurysms was compared with neurosurgical clipping in patients with SAH who have proven aneurysm.

- **Data collection and analysis**

- Two authors independently extracted the data and assessed trial quality. Trialists were contacted to obtain missing information.

## ● **Main results**

- We identified **three randomised trials**: two published and one unpublished. The trials included a total of 2272 patients (range per trial: 20 to 2143 patients).
- Most of the patients were in good clinical condition and had an aneurysm on the anterior circulation. After one year of follow up, the relative risk (RR) of poor outcome for coiling versus clipping was 0.76 (95% confidence interval (CI) 0.67 to 0.88). The absolute risk reduction was 7% (95% CI 4% to 11%).
- In the worst-case scenario analysis for poor outcome overall, the relative risk for coiling versus clipping was 0.81 (95% CI 0.70 to 0.92) and the absolute risk reduction was 6% (95% CI 2% to 10%).
- For patients with anterior circulation aneurysm the relative risk of poor outcome was 0.78 (95% CI 0.68 to 0.90) and the absolute risk decrease was 7% (95% CI 3% to 10%).
- For those with a posterior circulation aneurysm the relative risk was 0.41 (95% CI 0.19 to 0.92) and the absolute decrease in risk 27% (95% CI 6% to 48%).

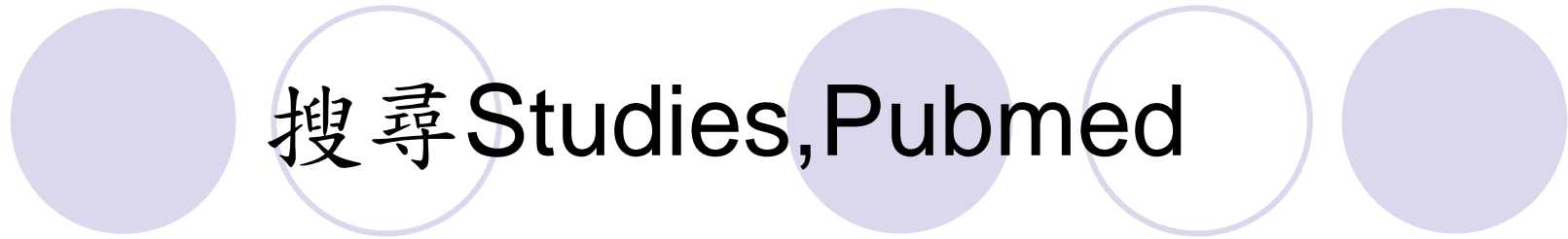


- **Conclusions**

- The evidence comes mainly from one large trial. For patients in good clinical condition with ruptured aneurysms of either the anterior or posterior circulation we have firm evidence that, if the aneurysm is considered suitable for both surgical clipping and endovascular treatment, coiling is associated with a better outcome.

## 將synthesis的搜尋結果應用到病人身上

- Endovascular coiling VS neurosurgical clipping，本篇文章亦是認為Endovascular coiling為較好的選擇，會有較好的outcome。
- 對於我們的病人，屬於posterior circulation aneurysm，Endovascular coiling 治療方式的選擇是可行的。



搜尋 Studies, Pubmed

- Key word:
  - Aneurysm
  - Surgery
  - Endovascular coiling



## 搜尋到的文章標題

- **Risk of recurrent subarachnoid haemorrhage, death, or dependence and standardised mortality ratios after clipping or coiling of an intracranial aneurysm in the International Subarachnoid Aneurysm Trial (ISAT): long-term follow-up.**
  - Lancet Neurol. 2009 May
- **Cost-effectiveness analysis of endovascular versus neurosurgical treatment for ruptured intracranial aneurysms in the United States.**
  - J Neurosurg. 2009
- **Ruptured cerebral aneurysm patients treated by clipping or coiling: comparison of long-term neuropsychological and personality outcomes.**
  - Zentralbl Neurochir. 2007
- **Impact of Ruptured Cerebral Aneurysm Coiling and Clipping on the Incidence of Cerebral Vasospasm and Clinical Outcome.**
  - J Neuroimaging. 2008



# 搜尋到的文章內容摘要

- **BACKGROUND:**

- Our aim was to assess the long-term risks of death, disability, and rebleeding in patients randomly assigned to clipping or endovascular coiling after rupture of an intracranial aneurysm in the follow-up of the International Subarachnoid Aneurysm Trial (ISAT).

- **METHODS:**

- 2143 patients with ruptured intracranial aneurysms were enrolled between 1994 and 2002 at 43 neurosurgical centres and randomly assigned to clipping or coiling. Clinical outcomes at 1 year have been previously reported. All UK and some non-UK centres continued long-term follow-up of 2004 patients enrolled in the original cohort. Annual follow-up has been done for a minimum of 6 years and a maximum of 14 years (mean follow-up 9 years). All deaths and rebleeding events were recorded. Analysis of rebleeding was by allocation and by treatment received. ISAT is registered, number ISRCTN49866681.



- **FINDINGS:**

- 24 rebleeds had occurred more than 1 year after treatment. Of these, 13 were from the treated aneurysm (ten in the coiling group and three in the clipping group; log rank  $p=0.06$  by intention-to-treat analysis). There were 8447 person-years of follow-up in the coiling group and 8177 person-years of follow-up in the clipping group. Four rebleeds occurred from a pre-existing aneurysm and six from new aneurysms. At 5 years, 11% (112 of 1046) of the patients in the endovascular group and 14% (144 of 1041) of the patients in the neurosurgical group had died (log-rank  $p=0.03$ ). The risk of death at 5 years was significantly lower in the coiling group than in the clipping group (relative risk 0.77, 95% CI 0.61-0.98;  $p=0.03$ ), but the proportion of survivors at 5 years who were independent did not differ between the two groups: endovascular 83% (626 of 755) and neurosurgical 82% (584 of 713). The standardised mortality rate, conditional on survival at 1 year, was increased for patients treated for ruptured aneurysms compared with the general population (1.57, 95% CI 1.32-1.82;  $p<0.0001$ ).



- **INTERPRETATION:**

- There was an increased risk of recurrent bleeding from a coiled aneurysm compared with a clipped aneurysm, but the risks were small. The risk of death at 5 years was significantly lower in the coiled group than it was in the clipped group. The standardised mortality rate for patients treated for ruptured aneurysms was increased compared with the general population



# Appraisal (嚴格評讀)

對Primary database找到的文章  
進行critical appraisal

# 證據等級

Level	與[治療/預防/病因/危害]有關的文獻
1a	用多篇RCT[註1]所做成的綜合性分析(SR[註2] of RCTs)
1b	單篇RCT(有較窄的信賴區間)
1c	All or none
2a	用多篇世代研究所做成的綜合性分析
2b	單篇cohort及低品質的RCT
2c	Outcome research / ecological studies
3a	SR of case-control studies
3b	Individual case-control studies
4	Case-series(poor quality :cohort / case-control studies)
5	沒有經過完整評讀醫學文獻的專家意見

# Grades of Recommendation

<b>A</b>	consistent level 1 studies
<b>B</b>	consistent level 2 or 3 studies <i>or</i> extrapolations from level 1 studies
<b>C</b>	level 4 studies <i>or</i> extrapolations from level 2 or 3 studies
<b>D</b>	level 5 evidence <i>or</i> troublingly inconsistent or inconclusive studies of any level

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使用 work sheet 嚴格評讀

**Should these valid, potentially important results of a critical appraisal about a harmful treatment change the treatment of your patient**

Can the study results be extrapolated to your patients?

Yes

What are your patient's preferences, concerns and expectations from this treatment?

病人希望治癒出院並減少併發症的發生機會

What alternative treatment are available?

Endovascular coiling



Apply

結合醫學倫理方法

將study的結果應用在病人身上



## 醫療現況

使用endovascular coiling

## 病人意願

患者願意接受治療，尋求能改善症狀

## 生活品質

治療後會有較好的生活品質

## 社會脈絡

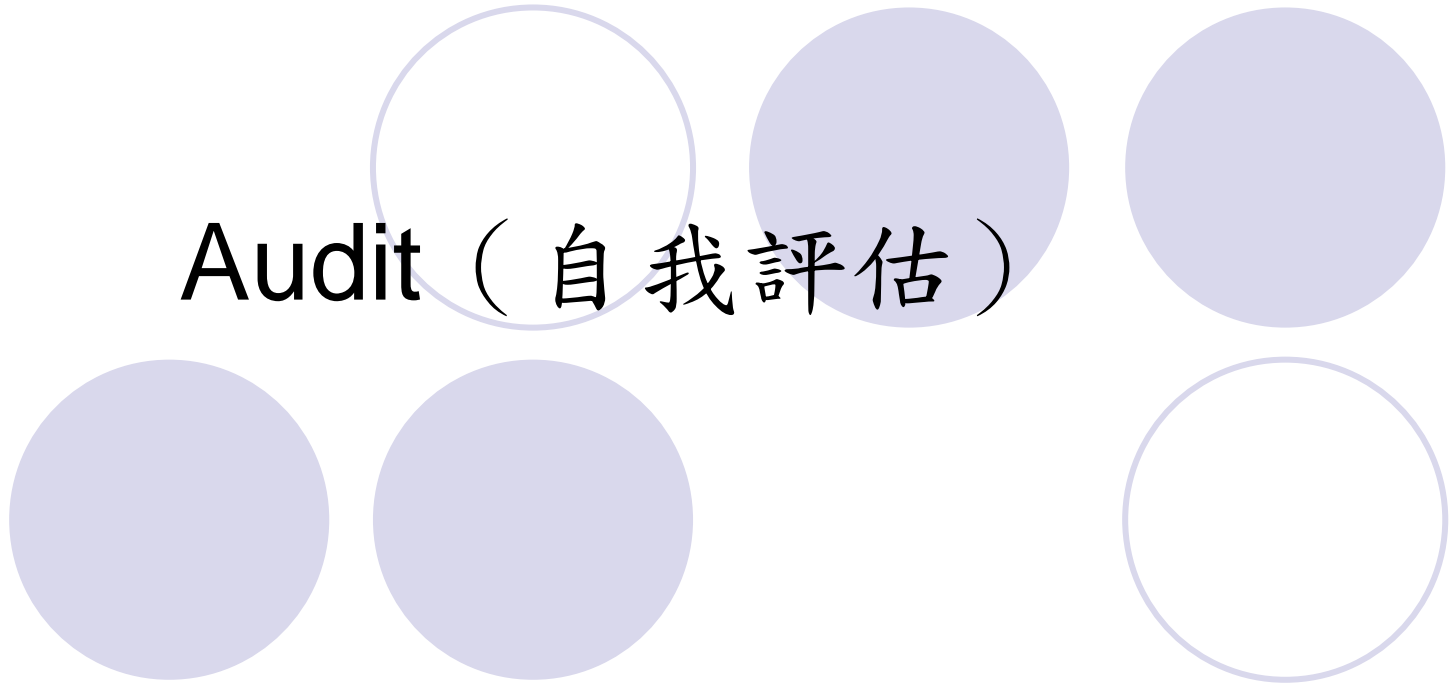
須自費負擔的治療研究顯示有較好的結果，但這結果的差異是否有足夠的理由去負擔這樣的金錢



## 總結與討論

<b>P</b>	Patient with aneurysm with spontaneous SAH
<b>I</b>	Endovascular coiling
<b>C</b>	Neurosurgical clipping
<b>O</b>	使用endovascular coiling有較好的outcome，但是有較高的rebleeding risk。

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，可以作為治療參考。
- 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？可以
  - 我的background question 是否包括what, when, how, who等字根？未能包括全部
- 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？知道，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？**部分使用**
- 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？**能需加強**

# 改變「醫療行為」的自我評估

- 當最佳證據顯示目前臨床策略需改變時，我是否遭遇任何阻止改變的阻力？**沒有，目前證據未改變臨床策略**
- 我是否因此搜尋結果而改變了原來的治療策略？做了那些改變？**沒有改變**



## 效率評估

- 這篇報告，我總共花了多少時間？約兩天
- 我是否覺得這個進行實證醫學的過程是值得的？值得
- 我還有那些問題或建議？資料的搜尋需要大量的時間，並非每一次的治療都可以有充足的時間給予EBM的證實

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**Thanks for your attention!**