無效醫療 與 葉克膜

台大醫院 外科加護病房
柯文哲 醫師
葉克膜之緣起

• Virus pneumonia with ARDS in a girl  
  ➔ an unresolved problem but not forgotten.
• A new book in library
  – 駐足暫讀 ➔ 借回去讀 ➔ 整本copy
• A letter from Taiwan
  – 放在倉庫等我
• A CPR case in the OR

• The chance favors the prepared mind.
1994 Aug 11 PM 5:00

83-8-11 5:00

ECMO inserted via R Femoral A & V.
During CPR
Pupil dilated Bil
Poor flow (++)

(Handwritten notes)

R5 仍無反應
R5 未動
R2 仍無
抑制

[Signature]
ECMO patient number in Taiwan

H1N1

Mass media

NHI reimbursement

case No.


1500

1000

500

0

NTUH number
Taiwan total number
Table. The Comparisons of Survival Rates of Using ECMO

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感謝媒體的正面報導！
但是，太多不切實際的期望………………
## Asia Pacific ECMO use

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**台灣奇蹟**
## ECMO in Taiwan (2011-07-01)

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第三波健保改革
從三個經典案例談醫療資源分配正義研討會

歡迎

全民健康保險實施十五年以來，不僅國人滿意度極高，更享譽國際。然而，在成就的背後，健保永續經營的挑戰越來越大，尤其是醫療資源分配錯置現象不斷惡化。因此，我們特別在100年4月十六日，舉辦「第三波健保改革研討會」，全面檢討臺灣醫療資源分配正義的問題。獲得兩大社會的正面迴響。

現在，我們將進一步舉辦「從三個經典案例談醫療資源分配正義」研討會，針對洗腎、呼吸醫治療及葉克膜等重要醫療科技，深入分析健保給付大幅增加的成因與現象。問題具挑戰，並且面對在關懷生命品質、尊重醫療專業及健保永續經營三大原則下，大家能集思廣益，達成若干共識，以具體落實醫療資源的分配正義。

我們非常歡迎您參加本研討會。

黃煌雄       江東亮

財團法人臺灣研究基金會創辦人       國立臺灣大學公共衛生學院教授
三個世界第一

• 洗腎 300億
• 呼吸器 (植物人) 260億
• ECMO 10億

• What happened?
ECMO
(葉醫師傳奇)
邵曉玲事件（2006-11-18）
罹患急性心肌炎 星星王子命危 病情不樂觀 院方動用葉克膜

2009花旗聯合勵活動

財經速報：財務部長黃秀麗利應率超過70% 明年預期獲利2位數成長

姻緣北極星★
牵引你与他的来电情缘!
同盤鑑定你倆情測蜜意指數

三多旅遊~華航航空假期
換個場所來趟不一樣的輕旅之遊吧! 人間風景
專業安排您遊假期 打球同時享受

電影

合盤鑑定你倆情測蜜意指數

發現新台幣

推薦 列印 轉寄 貼壁 轉寄
星星王子
全球首例 台灣奇蹟 男無心臟障活16天
台大團隊以葉克膜苦撐 終獲換心

資料來源：台大學心臟外科主任王永康
16 DAYS without a heart

Two machines keep Taiwanese man alive till transplant

By ONG HWEE HWEE
Taiwan Correspondent
IN TaPHE

A TAIWANESE man lived without a heart for 16 days, kept alive by two artificial heart-lung machines as he waited for a transplant. Mr Chen Chi-chung, 60, thus became the world's first "heartless" survivor, according to the National Taiwan University Hospital (NTUH) where his heart transplant was done.

It all began in January when the retired electrician, who had no record of major illnesses, suffered from severe coughing and displayed flu-like symptoms. He was hospitalised on Feb 12 at Chi Mei Medical Centre in southern Taiwan city.

There he was diagnosed with infective endocarditis—a bacterial infection that can seriously damage the lining of the heart's chambers and valves. A day later, his heart failed and doctors performed emergency surgery. They found the damage so extensive that they had no choice but to remove his entire heart.

"It was a very difficult decision to make. Such a move could have legal implications. And we were concerned about setting a bad precedent," said Chi Mei's Dr Cheng Iec-chih, who operated on Mr Chen.

The surgeon of 23 years told The Straits Times that it would have been difficult to reconstruct the man's heart. "Even if we had done so, from my experience, it would have been unlikely that the patient would have lived more than a year. He likely would have suffered from repeated congestive heart failures and intra-cardiac infection."

The fact that the patient's son Chen Shih-chung is a doctor who understood the risks also played a part in the decision. "His condition was more serious than thought," said Dr Chen, 32, who also works at Chi Mei. "I trusted my colleagues' judgment."

After 29 minutes of discussion among the patient's family, they agreed to proceed with the heart removal. It took nine hours.

The patient was then connected to an ECMO or extra-corporeal membrane oxygenation machine. The artificial heart-lung machine is usually used to temporarily support— not replace—a patient's damaged or infected heart or lungs until a donor is found.

A day after the operation, Mr Chen was transferred back to his hometown and still hooked to the machine. The journey—from one end of the island to the other—took five hours. "The chance of getting a transplant is higher in Taiwan because the more conservative residents in Taiwan are less receptive to the idea of organ donation," said the patient's son.

At NTUH, doctors connected a second ECMO machine to Mr Chen.

Artificial arteries transferred blood from the bypassing hole in his chest to an external blood pump and artificial lung. The blood was warmed and filtered before being returned to his body. "We believe it is the first case in the world that a patient has survived without a heart, relying only on artificial machines," said NTUH's Professor Wang Shou-han, who performed the heart transplant.

"We have checked with some foreign medical experts and looked up medical records. We have not found any other such cases," he said. "We had a patient who was connected to the ECMO for a month. But his heart was intact."

A doctor from Harvard Medical School, who declined to be named, also said that he had not heard of similar cases. "Doctors had considered the option of an artificial heart transplant but were concerned about the risk of infection given his condition. Relying on the artificial heart-lung machines to sustain the patient's life is also not without risk. Mr Chen suffered blood infections twice while waiting for a donor replacement."

The long and agonising wait for a donor ended on Feb 29.

On Tuesday, Mr Chen was discharged and is now recovering at home. A major portion of his hospitalisation bill was taken care of by the government-run health insurance programme. The family shelled out about NT$350,000 (S$22,000).

But some doctors expressed reservations about the implications of removing the entire heart. "If the patient died before the transplant, how do we decide on the time of death?" asked Dr Ke Wei-che of NTUH's intensive care unit. "When we remove his heart, where do we draw the line between life and death?"

Others were concerned that the case could give the families of heart patients unrealistic expectations. Some surgeons at The Straits Times spoke to said that they would not attempt such a procedure because it is very risky. A spokesman for Singapore's National Heart Centre also said: "We have not done such a case here and would definitely remove a patient's heart while waiting for a donor."

hwhee@sph.com.sg
飾演葉克膜的阿文在喝醉酒後，路經中壢麥當勞時不慎著車，經地區醫院搶救一週後，仍不見起色，向台大醫院求助，台大創傷醫學部醫師王植賢與技術員前往支援，為阿文接上葉克膜後，送回台大創傷加護病房搶救。

阿文昏迷約一週後，才逐漸恢復意識，當時他全身上下都插滿管子，看到家人在病床邊哭泣，他還以為自己已死了。吸入肺部的大量髒水，使他併發嚴重感染，醫師用了最強效的抗生素「老虎黴素」，才將他從死亡邊緣救回。

台大醫院創傷團隊與葉克膜小組醫生何文哲（左）、李元麒（左二）、王植賢（右二）、韓昭宜（右）等人，昨天為溺水導致呼吸衰竭，以葉克膜（ECMO）支持一百一十七天的病患阿文（中）摘下呼吸器並祝其重生。（記者陳宜銘攝）
登上國際醫學期刊《刺胳針》 用葉克膜救命 台大占全球一半病例

時報資訊 更新日期: 2008/07/17 09:10 【中國時報 張翠芬台北報導】

台灣葉克膜技術做全球，卅分鐘不再是急救的時間界限！台大醫院十六日發表研究成果，台大院內急救使用葉克膜總人數占全球一半，與傳統心肺復甦術CPR相較，葉克膜可提高患者存活率達一倍以上。這項獨步全球的成果將刊登在下周出刊的國際知名醫學期刊《刺胳針》(The Lancet) 上。

近三年，全球登錄使用葉克膜急救病例共二六九例，台大醫院病例卻達一三二例，占全球半數；且台大團隊可在十五分鐘內裝置完成，救活更多病人，獲全球醫界重視。

台大醫院心臟外科醫師陳益祥表示，以傳統CPR施救超過十分鐘，病人存活機會即大大下降，一般來說，十五分鐘內，病人存活率約十五％，
The scene behind the Hill
上帝啊！
原諒這些罪人，
他們不知道自己在做什麼。
ECMO 事實之真相

- 2 ~ 2.5 L/min oxygenated blood flow
- Heart/lung support
- Indication:
  - if additional 2L/min blood flow, survival is possible
- Contraindication:
  - If additional 2L/min blood flow, survival is still impossible.
- That’s all.
Effect vs Benefit

• Effect:
  – limited to some parts of body
  – (anatomy, physiology, chemistry)

• Benefit: improve the person as a whole

• Goal of treatment: patient’s comfort, well-being, general state of health, not BP, HR, GOT, …..
ECMO 共犯結構

‧家屬：表達孝心
‧醫師：表達盡力，也有不錯的收入。
‧醫院：軍備競賽，廣告 → 營利單位
‧廠商：多多益善
‧健保局：總額。隨便你們怎麼玩！

‧必須處理了。
Futile treatment

• Quantity: probability of success
  – Likelihood that it will benefit a patient
  – In the last 100 cases
    • 100 (-) → 3/100, 95% CI
    • 200 (-) → 1.5/100, 95% CI
    • 1000 (-) → 0.3/100, 95% CI

• Quality: utility of outcome.
  – quality of benefit associated with a treatment
  – permanent unconsciousness
  – total dependence on ICU care
Critique - 1

• Repeated futility $\rightarrow$ progress is made

Ans:

    careful analysis $\rightarrow$ well designed study $\rightarrow$
    advance knowledge

    not repeat the previous failed experience

Medical futility: response to critiques.
Ann intern Med 1996;125:669-674
Critique - 2

- Increase the power of physician over the patients
- Repeal patient autonomy

Ans:
- Communicate!
- 不裝會死，裝了可能會活。
- 但是也有可能裝了，死得更慘！
- 醫師都未告知：如果失敗會如何？
Critique -3

• No consensus on definition of futility among doctors

Ans:

• consensus: a gradual and evolving process
• Awareness $\rightarrow$ understanding $\rightarrow$ resolution on cognitive, emotional, and moral levels
• Professional standard: accepted or rejected through legislation, licensing, court decision, ……
• Guideline & standard $>$ individual physician decision
• To minimize possible abuse to withdraw and withhold treatments

• 面對它、處理它、放下它
Critique -4

• Futility is value-laden determination

Ans:

• effect vs benefit
• Part can never be well unless the whole is well.
Critique -5

- A single patient vs population
- Treatment data cannot be applied with certainty to any given patient.

Ans:
- Futility vs death sentence
- Based on reliable evidence
- Yes, we need more studies.
- $R^2 = 0.3$
Critique - 6

- Science vs religion

- Ans:
  - Miracle is a miracle, because it is a miracle.
  - Medicine should be science, not religion.
Critique -7

• Rationing and resource allocation will determine.

• Ans:
• Rationing: allocation of beneficial treatments among patients.
• Futility: refer to whether a treatment will benefit an individual patient?
• 不贊成用市場機制來處理「無效醫療」
• 醫療應有「人性」
• 裝上去以後，才知道不會活。但是、、、
• Who? When? How? to stop ECMO

• 生命議題！
Q: 死亡是什麼?
A: 怎樣才算是活著？
不會死，也不會活

你願不願意替他關機讓他走？
In conclusion

• Physicians:
• Not obligated to offer a futile treatment
• Obligated to resist demands for futile treatments
• Judgment based on:
  – personal experience
  – experience shared with colleagues
  – published empirical data
• Value decision by health care professionals that are endorsed by society

• Importance of negative result: know what not to do.
• 面對問題是解決問題的第一步。

• 無效醫療是一個真實存在的大問題
• 安寧療護、生命末期、植物人、醫療資源分配、

• 面對它、處理它、放下它
ECMO使用適應症 (台灣健保局之規範)

2002年12月1日開始給付
2008年再修正

一、心因性休克：
1. 心臟手術重建後，暫時性心臟功能障礙 (Stunned heart)
2. Bridge：為準備心臟手術或心室輔助器或心臟移植，而暫時取代心臟功能
3. 可回復性的心肌病變：如心肌炎 (Myocarditis)、冠狀動脈暫時性痙攣
4. 肺栓塞 (Pulmonary embolism)
5. 急性心肌梗塞併心因性休克
6. 其他心因性休克

二、呼吸衰竭：
1. FiO₂：1.0, PaO₂＜60 mmHg，已排除可逆轉之原因
2. CO₂ retention，造成血行動力學不穩，已排除可逆轉之原因
3. 過渡至肺臟移植

三、小兒及新生兒
1. 吸人性腸便肺炎症候群 (MAS：Meconium aspiration syndrome)
2. 呼吸窘迫症候群 (Hyaline membrane disease)
3. 先天性橫膈膜疝氣 (CDH：Congenital diaphragm hernia)
4. 新生兒顱固性肺高壓 (PPHN：Persistent pulmonary hypertension of neonate)
台灣健保局之規範

禁忌症：2012-5-1 公告

・絕對禁忌症（健保不給付）
  - 不可逆之腦病變
  - 惡性腫瘤末期
  - 不可逆之心、肺疾患且不適合做臓器移植者
  - 不可逆之多重器官衰竭

・相對禁忌症（需逐案審查之個案）
  - 持續進展之退化性全身性疾病
  - 不可控制之感染
  - 不可控制之出血
  - 重度免疫不全之患者