WARNING:
SIGNS!

Drug allergy
Side effects
Drug interaction

病歷記錄 III.

寫錯,聽錯,做錯
不該錯
弄錯病人

醫療警訊與快速反應團隊

RAPID
RESPONSE TEAM

CHENG-YI WANG
2024.04.19

醫院不定期潛伏著醫療危機 要怎麼辦怎麼辦(對策)

- 醫療上出現**重大的問題**,必需**盡速解決。**
- **否則會危及生命.**
- 1.有些問題是由於***醫療錯誤(medical error)***引起,
- 更容易引爆醫療糾紛.
- 2. 有些問題是由於發生了**未預期的問題,**病家難以接
- 受如(procedure related complications)。及藥物之副作
- 用,過敏及交替反應.則要**考驗醫護團隊的智慧及應變**
- **措施是否得宜.**
- **3. 疾病惡化藥石罔效,病家失望**、也容易導致不滿、引爆
- 糾紛。
- 4. 有一些是**潛在的危險因素**引起.潛在是因未及早發現之
- 狀況

醫院評鑑的目的，不是競選醫學中心

1978-2015都有參與

臺灣醫療品質的確保始於1978年，由教育部和衛生福利部（時稱行政院衛生署）共同主辦教學醫院評鑑，目的為提升醫療服務品質，奠定分級醫療之基礎並提供醫學院校學生及住院醫師良好之臨床訓練場所，依據「醫療法」之規定，於1988年度首度辦理臺灣地區醫院評鑑，
自1999年正式將醫院評鑑工作委由財團法人醫院評鑑暨醫療品質策進會（以下簡稱醫策會）執行與策劃

- 醫院評鑑的主要目的-
- 維持高品質之醫療,維護病人之安全
- 關鍵在: 有無潛伏的危機要仔細詢問.
- Occult risk factors並做好危機處理

形形色色的危機相當複雜有時要求助他人,
每一個危機之處理方式以及結果都應該形成教學檔案

1978-2014參與醫院評鑑

- 從1978年教育部跟衛生署聯合舉辦的教學醫院評鑑開始.
- 1988衛生署主辦的醫院評鑑,亦即以後交給醫策會辦理的醫院評鑑(1999)
- 我都有參與,直到10年前才正式從醫院評鑑委員退休.---
- 我不關心評鑑條文,文字怎麼寫
- 關心的是評鑑的精神.如何去實踐. 如何保持. 最重要的是病歷有沒有好好寫,那是醫療實踐的永恆紀錄.醫療人員是不是負責的重要憑據

病歷記錄重點

- **團隊合作(MDT),**減少醫療錯誤—最重要的原則
- Physicians—正確的決策以及醫囑orders
- Nurses—正確執行醫師的囑咐.
- Patients-聽從醫師的指示,照樣作
- 改變不良習性—飲食與運動,
- 服藥的正確性—擔負重要的職責
- 充分溝通清楚說明**臨床藥師**—醫病之間最需要的互動.
- 最常見的醫療危機:**預先訂定SOP**
- CPR team and RRT 可以減少死亡/合併症
- **值班與交班**: 口述並做清楚之紀錄(並重)

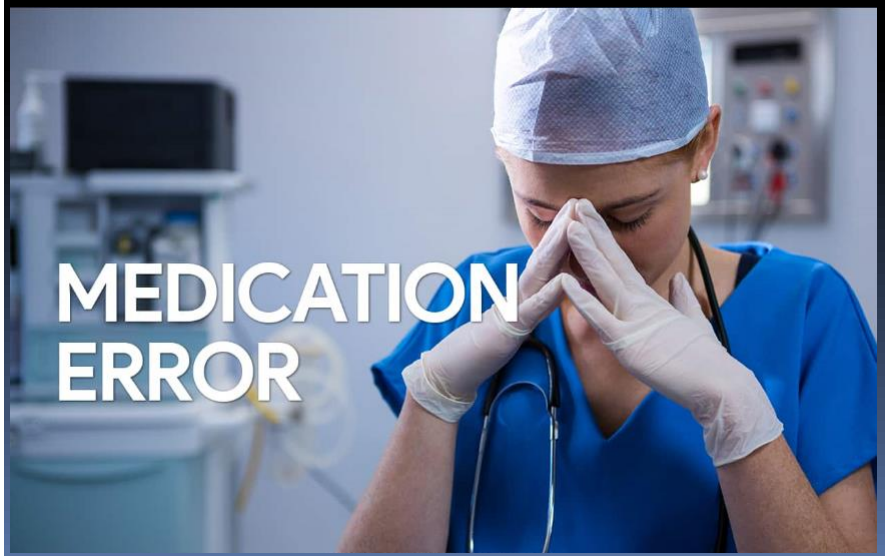
人力
教育訓練
經驗與技術
相關規範
團隊合作

醫療錯誤
(medical error)

- 未正確的執行原定的醫療計劃之行為（即『執行的錯誤』）。 執行面
- 採取不正確的醫療計劃去照護病人（即『計劃的錯誤』）。 Therapeutic plan

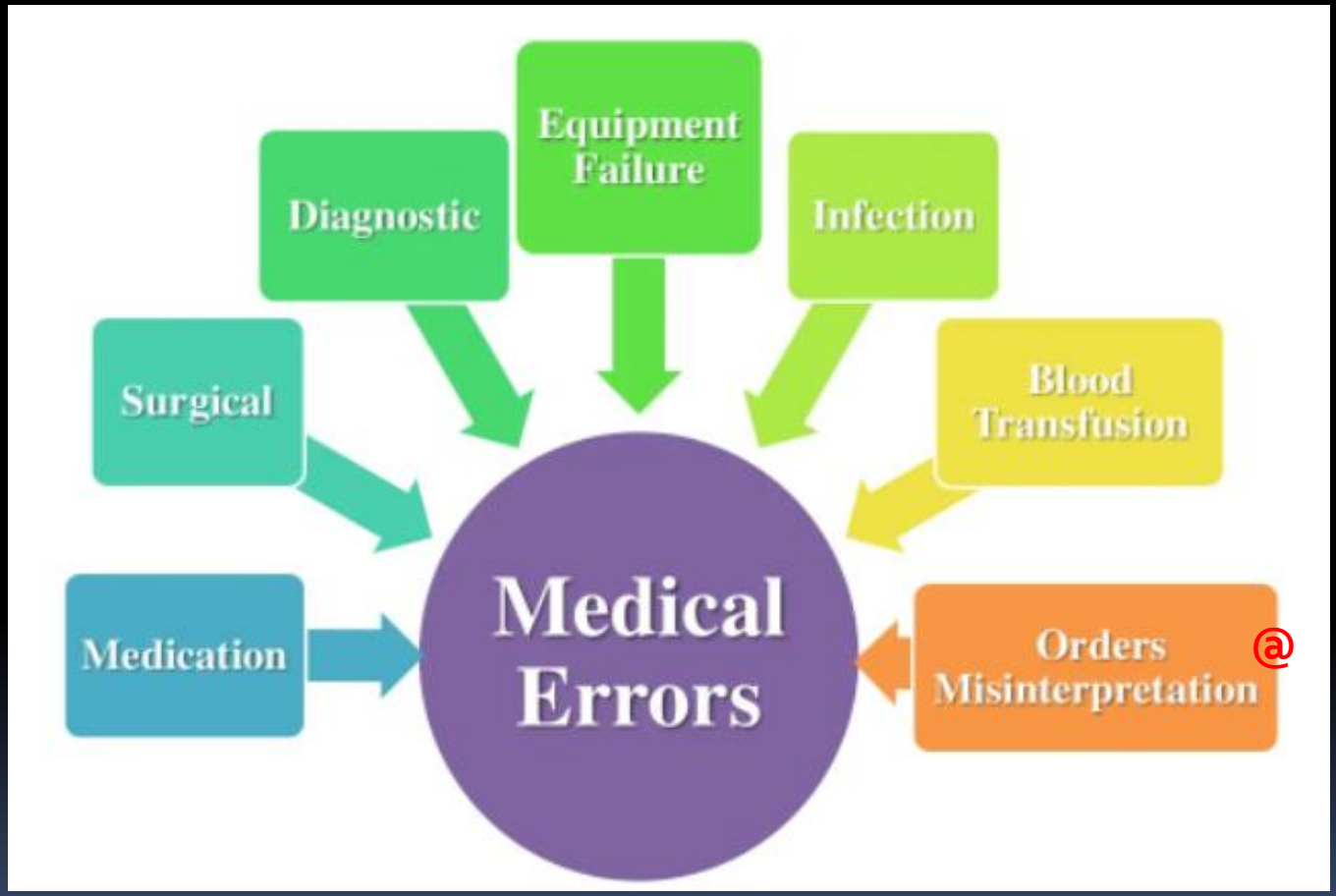
減少醫療的錯誤是最低的要求

- What Are the **Types** of Medical Errors ….. How Can we **Classify** Medical Errors. ..?



T

Medical errors類別



Medical errors →Health grades 評鑑

Burden of the Medical Errors

- (2004) HealthGrades report stated that annual deaths attributable to medical errors may be as high as 195,000 deaths.
- This number compared to other causes of death is exceeded only by heart disease (700,142) and cancer (553,768).

錯誤會造成很多死亡.
2004: HealthGrades report : 195,000/year
百萬美國人受傷120,000人死亡(L.Leape,)


HEALTHGRADES
GUIDING AMERICA TO BETTER HEALTHCARE

HealthGrades Patient Safety in American Hospitals Study

March 2011

Author: Kristin Reed, M.P.H.; Co-author: Rick May, M.D.
Major Contributors: Carol Nicholas, M.S.T.C., editor
Harold Taylor, Ph.D. and Alex Brown, statistical analysis

Health Grades, Inc.
999 18th Street, Suite 600
Denver, Colorado 80202

Healthgrades Operating Company Inc.，簡稱**Healthgrades**，是一家美國公司，提供有關醫生、醫院和醫療保健提供者的信息。 Healthgrades 已經收集了超過 300 萬美國醫療保健提供者的信息。[6] 公司由 Kerry Hicks、David Hicks、Peter Fatinow、John Neal 和 Sarah Lochran 1998 創立，總部位於科羅拉多州丹佛

從錯誤中學習，制定策略防止再發 (L1500, 1502)

- 在複雜而多變的醫療環境中，醫療錯誤雖然令人遺憾，但卻是學習過程中不可避免的一部分。
- 多學科醫療團隊之間的有效溝通和協作至關重要。強調團隊合作和溝通的教育項目有助於防止參與患者護理的醫護人員之間因溝通中斷而導致的錯誤.
- 從任何程序錯誤中吸取教訓，瞭解其根本原因，並制定策略以防止其在未來再次發生。
- 從錯誤中學習並改進他們的技術，而不會對真實患者構成任何風險
- 錯誤可能具有多方面的原因。報告及討論使醫療團隊能夠更深入地研究錯誤背後的原因，制定有針對性的解決方案
- 建設性的反饋有助於醫療保健專業人員識別錯誤並掌握自己的行動。它創造了一個環境，讓專業人士可以**承認錯誤而不必擔心懲罰措施，促進了透明**和問責的文化
- 報告及討論是寶貴的學習機會。團隊成員可以反思他們的表現，分享見解，並共同提高他們的技能、知識和行為。這種持續的學習過程有助於減少錯誤的可能性並提高患者安全性。

減少醫療錯誤 解決方法

- 1.醫院評鑑- stars (US) ,醫學中心、區域醫院
- 及地區醫院(Taiwan)
- 2.醫院品管要求檢討及改進
- 3.個別領域。學會Guidelines , Consensus
- meeting
- 個別項目:SOP.
- 4. **Medical educations**.
- 5, Case conferences—clinical instructions.
- **VS Round**: 學會確定病人之問題及解決問題
- 6. Special task forces—CPR team, RRT—
- 7. 建立**教學檔案**隨時可以參閱

醫院分級 星級(US):

- Healthgrades: Which states have the safest hospitals? Janice Lloyd, USA TODAY (2012.10.23)
- 1. Arizona, California, Illinois and Ohio scored the best marks for
- hospital care in a new report that says quality varies "significantly" from
- state to state in key health areas linked to mortality rates.
- 2. During 2005-2011, hospitals in those states outperformed others when treating
- patients for **four key conditions or procedures** studied: coronary artery bypass
- graft, heart attack, pneumonia and sepsis, according to the report to be released
- today by Healthgrades, a for-profit provider of information about physicians and
- hospitals. Those four areas combined to make up 54% of all hospital-related deaths in the
- USA.

- Patients have a 55% lower risk of dying when treated in the best hospitals and 42% lower risk of
- experiencing a complication, the report says.

Introduction

2020 has been a year unlike any other, especially for hospitals and healthcare systems. As the impending pandemic began to take hold across the country, health leaders grappled with escalating unknowns.

Some hospitals were immediately overwhelmed with patients affected by the coronavirus, while others scrambled to find critical personal protective equipment (PPE), ventilators, and additional ICU capacity to deal with the crisis.

Throughout the spring and into the early summer, patients became increasingly anxious and wary of seeking care, postponing their medical treatments either by choice or due to shelter-in-place orders and other restrictions. The impact on hospitals was clear, as admissions dramatically declined. Some hospitals operated at **less than 50%** capacity and also saw a decline in acute illness admissions.[1]

The Difference Between a 1-Star and a 5-Star Hospital

Central to IIealthgrades' mission is providing patients and hospitals with trusted, actionable information about the care delivered at our nation's hospitals. The 2021 analysis shows that clinical outcomes continue to differ dramatically between hospitals in the top and bottom of Healthgrades' hospital performance categories. Patients treated at a hospital receiving a 5-star rating have, on average, a lower risk of a complication or mortality than if treated at a hospital receiving a 1-star rating in that procedure or condition.

Healthgrades' recent assessment of 32 of the most common procedures and conditions in the country show that if all hospitals, as a group, performed similarly to 5-star rated hospitals, on average: **218,785** lives could potentially have been saved and complications in **148,681** patients could potentially have been avoided from 2017-2019*. Looking specifically at key hospital services like coronary bypass surgery, stroke care, and treatment of heart attack, the results

From 2017 through 2019*

If all hospitals, as a group, performed similarly to 5-star rated hospitals

218,785 LIVES
potentially could have been saved

148,681 PATIENTS
potentially could have avoided complications

* Statistics are based on Healthgrades analysis of MedPAR data for years 2017-2019 and represent three-year estimates for Medicare patients only

Top hospitals for speciality care,
為民眾尋求專業醫療提供參考

尋找頂級醫院接近你的

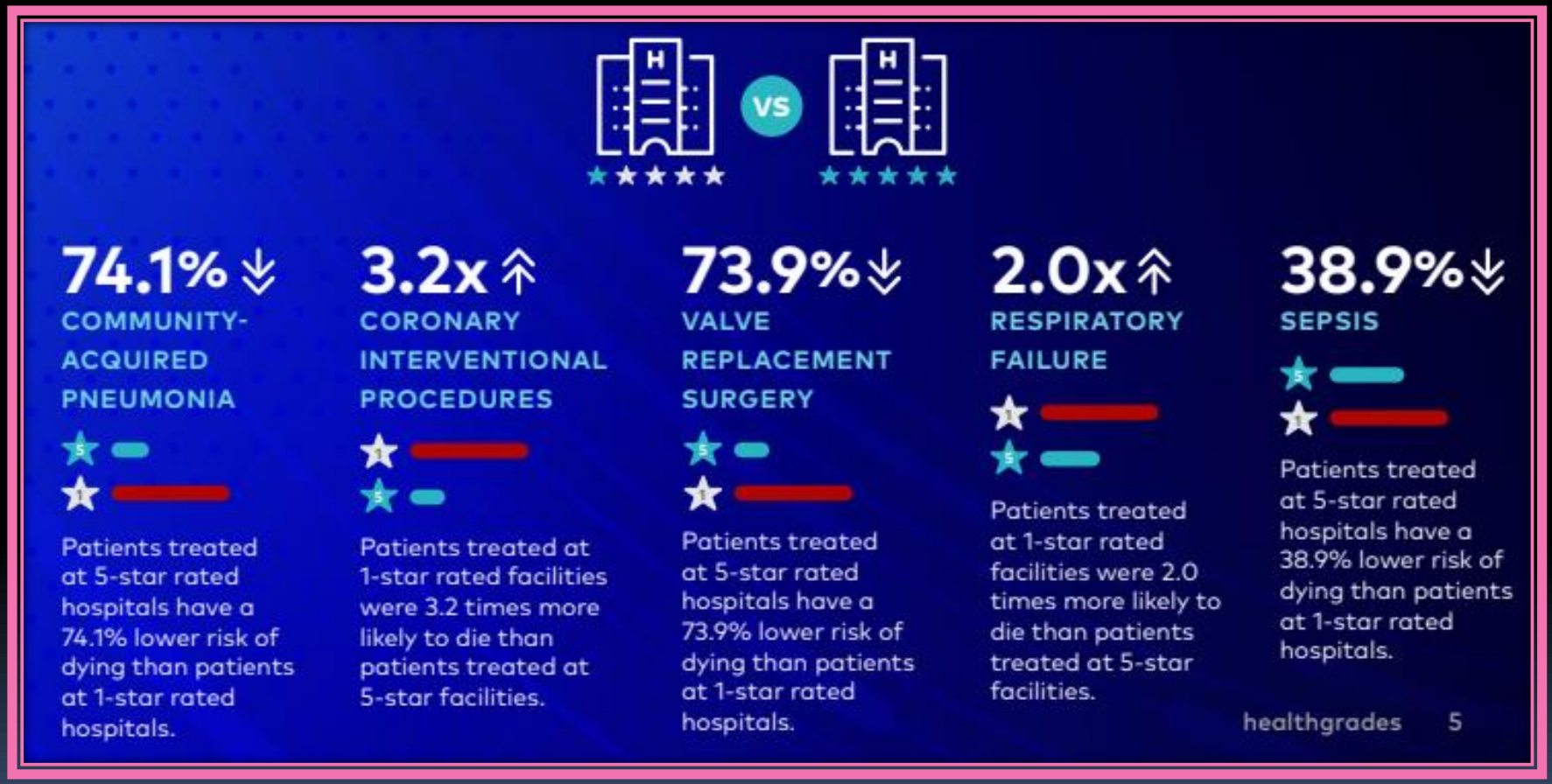
我們僅根據績效和臨床結果評估醫院質量

專業卓越獎

查看在專科護理方面取得臨床卓越成就的全國醫院名單

Healthgrades 專業卓越獎旨在表彰在全國關鍵專業提供卓越患者結果的醫院。

理由：增加成功率，减少合併症，减少死亡



The frequency and nature of medical error in primary care: understanding the diversity across studies

John Sandars ✉, Aneez Esmail

Family Practice, Volume 20, Issue 3, 1 June 2003, Pages 231–236, https://doi.org/10.1093/fampra/cmg301

Medical error

5-80/100,000

診療次數

開業診所(primary care)也會犯錯

Literature searches of English language studies identified in the National Patient Safety Foundation bibliography database, in Medline and in Embase were carried out. Studies identified that medical error occurs between **five and 80 times per 100 000** consultations, mainly related to the processes involved in diagnosis and treatment.

Prescribing and prescription errors have been identified to occur in up to **11%** of all prescriptions, mainly related to errors in dose.

Conclusion. An understanding of the true frequency and nature of medical error is complicated by the **different definitions** and methods used in the studies.

醫師診療數 50 x 3 x50=7500人次-/year -→ 7500x40=300,000,

一生行醫40年大約15-240次,平均 一年6次

Medical mistake:造成美國人18萬人死亡/年

- Then in 2010, the Office of Inspector General for Health and Human Services released its own **study**, indicating that just among Medicare patients, medical mistakes and poor care contributed **to 180,000 deaths each year**. Researchers selected a nationally representative random sample of 780 Medicare patients discharged during October 2008. A group of physician researchers analyzed:
- Whether an adverse event occurred;
- Whether the adverse event was on the list of Serious Reportable Events or recognized hospital-acquired conditions;
- The level of harm to patient;
- Whether event was preventable.
- What they discovered was an estimated **13.5 percent of hospitalized Medicare beneficiaries experienced at least one adverse event during hospital stays. That's about 1 in 7.**
- **住院病人每7個就有一次不良事件(ADR)**

原可避免的死亡多達每年44萬人(2013)

- A **survey** conducted in 2012 by Wolters Klewer Health Quarterly indicated one-third of respondents reported they or a family member or friend had experienced some type of medical error in their lives.
- Further, the poll indicated 1 in 5 respondents were misdiagnosed by a health care provider. A total of 73 percent indicated they were concerned about medical errors.
- In 2013, the *Journal of Patient Safety* released its **study** revealing an estimated **440,000 people die every year as a result of preventable medical errors.**

Medical Device-Related Pressure Injuries

- L537, Preventive medical errors by devices.
- Crit Care Nurs Clin North Am . 2020 Dec;32(4):533-542.
- **Medical Device-Related Pressure Injuries**
- Joyce Pittman [1], Carroll Gillespie [2]
- [1]College of Nursing, University of South Alabama
- _____

- 可能導致壓力性損傷的常見醫療器械類型包括呼吸裝置、管子/引流管和壓縮包/夾板/支架。...
- 壓力性損傷預防策略包括：正確選擇正確的設備、安裝和固定設備;壓力再分配;和預防捆綁策略。...
- MDRPI 預防包的關鍵組成部分包括：在醫學上盡可能快地移除設備，在設備和皮膚之間應用預防性敷料，重新置放...

- 醫療器械相關的壓力性損傷是由於使用與**皮膚直接接觸的醫療器械、設備、家具和日常物品以及由於增加的外部機械負荷導致軟**組織損傷而造成的。由此產生的壓力損傷通常反映了設備的模式或形狀。
- 護士和臨床醫生必須高度警惕使用這些設備會增加壓力性損傷的風險。本文提供了有關導致成人壓力性損傷的最常見設備的循證信息，並描述了當前最佳的循證預防策略。循證預防策略是減少設備可能造成的傷害的關鍵。

Common Preventable Medical Errors—US news (2015)

- 1. **Medication Errors**
- Wrong drug, wrong dose, bad combination, bad reaction
- 2. **Too Many Blood Transfusions**
- Red blood cell transfusions are one of the most common procedure in U.S. hospitals, but nearly 60 percent globally were deemed "inappropriate" procedures by a 2011 study.
- 3. **Too Much Oxygen for Premature Babies.**
- **4. Health Care-Associated Infections.**
- **5. Infections From Central Lines**

One type of health care-associated infection is caused by tubes of medicine or fluids usually inserted into large veins, which create "a highway for bacteria to get into the blood or into the bladder," says Dr. Arjun Srinivasan, associate director for Healthcare Associated Infection Prevention Programs at the CDC

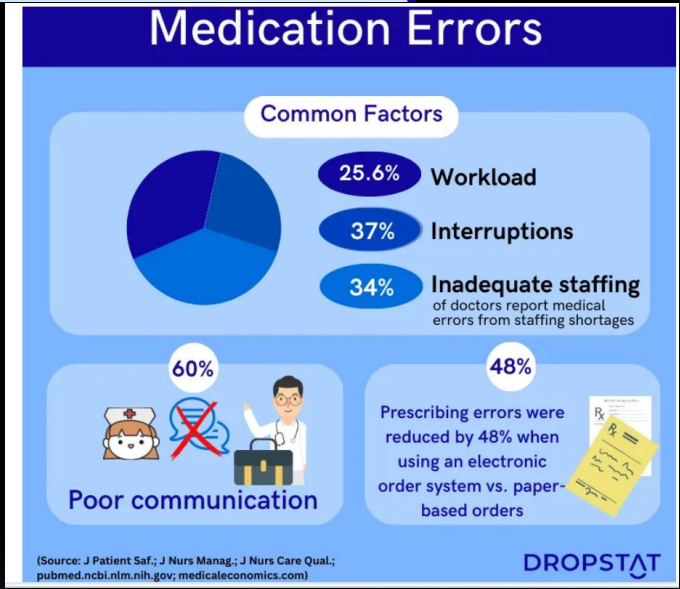
如何避免? Preventing Medical Errors

- 1. handoff **miscommunications**
- 2. **Standardizing the process**
- 3. Health care system to avoid medical errors
- **by double check and triple check**.,
- 4. **The special team works** to manage all
- medical errors.
- **Rapid response team.**
- **Suicidality management**
- **Resilience effort**☹身心復原
- **ADR review.**

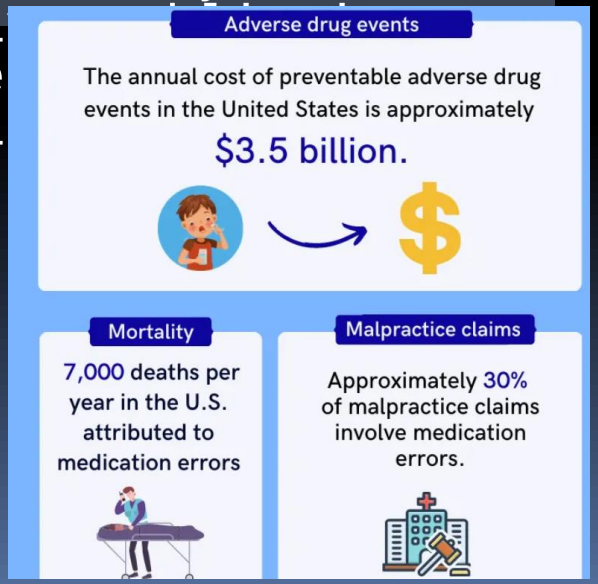
Nurses were responsible for the interception of

87%

of all medication errors made by physicians, pharmacists and others before the error reached the patient.



- The FDA receives over 100,000 complaints in connection with medication errors annually. That means there are 8,333 medication errors per month; nearly 300 medication errors every day. These errors result in increased mortality rates, prolonged hospital stays, and a negati
of the
facili



Reduce Medication Errors in Nursing Through Focused Awareness.

Top Tips to Prevent Medication Errors in Nursing – Dropstat.

https://dropstat.com/blog/healthcare-management/reduce-medication-errors-in-nursing/

Accessed on 2024.04.01.

教育以及工作制度(包括AI的運用)可以減少用藥的錯誤-臨床藥師查核有很重要的貢獻

- L529 (medication errors)(2019)(2022.11.01)

  Rev Bras Enferm. 2019 Feb;72(suppl 1):307-314. doi: 10.1590/0034-7167-2017-0658.
- Debora Bessa Mieiro [1], Érica Bueno Camargo de Oliveira [1], Renata Elizabete Pagotti da Fonseca [1], et al ; *[1]Universidade Federal de São Carlos. São Carlos, São Paulo, Brazil.*
- **Strategies to minimize medication errors in emergency units: an integrative review.**

- 1. 教育策略（開展運動、制定說明手冊、建立一個參與預防和減少藥物
- 不良事件的多學科委員會）；
- 2. 組織之工作,制度（會議、偏差積極處置、協議的創建和工作流程的變
- 化）
- 3. 新技術（通過計算機化系統實施處方、
- 在藥物管理中引入單位劑量(unit dose)
- 和條形碼）
- 可達成減少急診室用藥錯誤的目的。

溝通及說明非常重要，溝通說明的內容也必須記載在病歷上且註明時間

	2.1.2	應與病人溝通、適當說明病情、處置及治療方式，特別是實施侵入性檢查或治療時，應明訂作業規範並簽署同意書
	2.1.3	向住院病人或家屬說明住院之必要性及診療計畫，並有措施協助及鼓勵其參與醫療照護之過程及決策
	2.1.4	醫院能對病人、家屬提供有關生命末期醫療抉擇的相關資訊並予以尊重，以維護其權益

問題是簡單的說明還是清楚詳細的說明

住院及出院計畫都要有人負責說明

重	2.3.1	住院病人應由主治醫師負責照護，住院病人之照護應朝向整合醫學照護制度發展
	2.3.2	住院、急診病歷應詳實記載病況變化、治療方式及其治療依據說明等，以供事後檢討
合	2.3.3	每日應有醫師迴診，並適當回應病人病情之陳述，紀錄詳實
合	2.3.4	醫療照護團隊成員應了解病人問題，並讓接班人員知悉；如有轉出至其他單位時，應製作照護摘要或交班紀錄，以達持續性照護

	2.3.17	醫療照護團隊應依病人需求，提供適切、完整的出院照護計畫與指導，並有紀錄
	2.3.18	有適當安寧緩和醫療團隊提供安寧照護服務
	2.3.19	安寧病房應有適當之設施、設備、儀器管理機制，並確實執行保養管理
	2.3.20	適當的安寧照護服務管理、收案評估、照護品質、團隊合作與紀錄

- 評鑑條文都是原則性,重點還是再怎麼做,有人關心有人監督,而且是經常在注意

醫院裡危機四伏

- 處理好,危機解除、-→轉危為安
- 危機可能是轉機-→轉好、***雙贏***
- **沒有處理好**-→可能造成重大傷害甚至死亡並導致醫療糾紛
- **醫師**信心受到挫折
- **醫院**聲譽大受影響
- 病人死亡或受到傷害
- --→***三輸***

條	號	條文
重	1.8.1	建立醫院緊急應變管理機制，且依據危機應變需要儲備或即時取得災害所需之醫療用品、通訊器材及其他資源，並有檢討改善機制
重	1.8.2	訂定符合醫院風險/危機管理需要之緊急災害應變計畫及作業程序，並落實演練
重	1.8.3	設置大量傷患緊急應變組織與健全指揮系統
重合	1.8.4	訂定醫院與媒體溝通之規範並落實執行，以維護病人之隱私與權益

對醫療發生的緊急事故沒有提出成立response team的必要性
對生手醫師而言卻是非常重要, 特別是值班時候

條號		條文
	2.2.1	醫院應訂定及推動全院醫療品質及病人安全計畫，並定期檢討改善

危機出現機率高
成立Rapid response Team

1千床的醫院一天裡面出現的危機至少也有10件

- 十個病人,十天之中至少會出現一次
- 危機未嘗不是轉機,
- 度過險期,就是平安
- **危機時刻要鎮定,把握原則 SOP, 就可以度過**
- **醫院成立 Rapid response team 協助各級醫師作危機處理 (醫療互助)**
- **Hatler C et al : Implementing a rapid response team to decrease emergencies outside the ICU: one hospital's experience.**
- *Medsurg Nurs. 2009 Mar-Apr;18(2):84-90, 126.*

- 從病歷記錄的字裡行間,自然可以看出醫院有沒有rapid response team.
- RRT有功能．

其實醫師工作太勞累，休息不夠，
犯錯也是難以避免的．要靠團隊
中的每一個人都加以注意

醫師會犯錯，團隊合作指出錯誤

可以預防問題

Tait Shanafelt, MD, Christine A. Sinsky, MD, FACP & Stephen Swensen, MD, MMM, FACR

Mayo Clinic

American Medical Association

Preventable Deaths in American Hospitals.

NEJM January 23, 2017

- Hospital medical errors are the third leading cause of death in the United States. **That's 700 people per day,** notes Steve Swensen. "And most of those have a second victim: the nurses, doctors, social workers, managers, pharmacists involved in their care."
- In a Mayo Clinic study with the American College of Surgeons, **8.9% of participating U.S. surgeons reported the belief that they've made a major medical error** within the last 3 months — and 1.5% believe their error resulted in a patient's death, according to Tait Shanafelt.
- **1/11 surgeons/3 months major medical error.**
- **1/66 surgeons: resulted in death.**

Community-Acquired Pneumonia 是一個嚴重的問題→如何減少死亡?

- **The Burden of Community-Acquired Pneumonia Requiring Admission to ICU in the United States**
- Rodrigo Cavallazzi et al (Divisions of Pulmonary, Critical Care Medicine, and Sleep Disorders, University of Louisville, Louisville, KY.
- [2]Divisions of Infectious Diseases, University of Louisville, Louisville, KY.
- [3]Pulmonary and Critical Care Division, Northwestern University Feinberg School of Medicine, Chicago, IL.
- [4]Division of Pulmonary and Critical Care Medicine, Weill Cornell Medical College, New York, NY.)
- 2020 Sep;158(3):1008-1016Chest :

1.All nine adult hospitals in Louisville, Kentucky. The annual incidence of CAP in the ICU per 100,000 adults was calculated for the whole adult population of Louisville.
2 A total of 7,449 unique patients who were hospitalized with CAP, 1,707 patients (23%) were admitted to the ICU. The incidence of CAP in the ICU was 145 cases per 100,000 population.
3. Mortality rate of patients with CAP in ICU was 27% at 30 days and 47% at one year.
4. CAP in the ICU should be a high priority in research agenda and health policy
---- cluster in areas with higher poverty, better access to health care and vaccination programs..

醫學中心的職責是領導特定區域裡的各醫院了解問題,解決問題

- 該也是在一個特定區域學中心+區域醫院
- 合作研究了解問題解決問題

如何减少死亡

Rapid-Response Teams (L306,307,308,309)

Daryl A. Jones et al : N Engl J Med 2011; 365:139-146 (July 14

Table 1. Comparison between a Traditional Code Team and a Rapid-Response Team.*

Feature	Traditional Code Team	Rapid-Response Team
Typical criteria for calling the team	No recordable pulse, no recordable blood pressure, absence of respiratory effort, unresponsive	Low blood pressure, rapid heart rate, respiratory distress, altered consciousness
Typical conditions that the team assesses and treats	Cardiac arrest, respiratory arrest, airway obstruction	Sepsis, pulmonary edema, arrhythmias, respiratory failure
Typical team composition	Anesthesia fellow, ICU fellow, internal-medicine house staff, ICU nurse	ICU fellow, ICU nurse, respiratory therapist, internal-medicine house staff
Typical call rate (no./1000 admissions)	0.5–5	20–40
Typical in-hospital mortality (%)	70–90	

5-8倍

* ICU denotes intensive care unit.

These studies showed a reduction in the rate of cardiac arrests and a greater effect with a greater "dose" of care from the rapid-response team (i.e., a larger number of assessments per 1000 admissions).[12] However, a major multicenter, cluster-randomized, controlled trial called the Medical Early Response Intervention and Therapy (MERIT) study failed to demonstrate a benefit. (L307)

Response to Code blue→ based on the guidelines of the American Heart Association:

- **First Responder**
  - Call for help.
  - Ensure patient is flat on bed. Remove pillows and drop the head of bed.
  - Check for pulse. The best site for this is the carotid pulse.
  - Start compression. CPR-CBA
- **Second Responder**
  - Bring the e-cart and other emergency equipment on the site of code.
  - Secure the backboard under the patient.
  - Manage airway by using an ambu bag or a pocket mask with one-way valve.
  - Switch role with the first responder in giving chest compressions to the patient.
- **Third Responder**
  - Turn on the AED/defibrillator and use it for pulseless patients.
- **Fourth Responder**
  - Ensure that IV fluids and emergency medications are ready for use of the Code Team.

Fifth Responder------Security– Assists with crowd control
– In-charge with documentation.寫成記錄

- **Early intervention can improve patient outcomes.**[3] Even within a mature rapid-response system, **delayed activation of** the responding team is associated with increased mortality.

- Downey AW, Quach JL, Haase M, et al : Characteristics and outcomes of patients receiving a medical emergency team review for acute change in conscious state or arrhythmias. Crit Care Med 2008;36:477-481.
- Rivers E, Nguyen B, Havstad S, et al. Early goal-directed therapy in the treatment of severe sepsis and septic shock. N Engl J Med 2001;345:1368-1377
- Fresco C, Carinci F, Maggioni AP, et al. Very early assessment of risk for in-hospital death among 11,483 patients with acute myocardial infarction. Am Heart J 1999;138:1058-1064

Typical RRT System Calling Criteria

Any staff member may call the team if one of the following criteria is met:

- Heart rate over 140/min or less than 40/min
- Respiratory rate over 28/min or less than 8/min
- Systolic blood pressure greater than 180 mmHg or less than 90 mmHg
- Oxygen saturation less than 90% despite supplementation
- Acute change in mental status
- Urine output less than 50 cc over 4 hours
- Staff member has significant concern about the patient's condition

啓動RRT之時機

Hear rate >140/min.,<40/min.
Respiration : >28/min, <8/min.
BP< 90 mm Hg
>180 mm Hg,
Oxygen saturation <90%
Mental change
Urine amount : <50 cc./4 hour

最需要的Teams

1. Heart and lung—and shock
2. Gi problems (acute abdomen)
3. Coma team
4. Infections
5. Acute renal failure

Rapid response teams

What's the latest?

Jackson, Shirley A. DNP, RN, CCRN-K, CCNS, CHSE **Author Information**

Nursing: December 2017 - Volume 47 - Issue 12 - p 34-41
doi: 10.1097/01.NURSE.0000526885.10306.21

L530

伸出援手，動作要快

- OR NEARLY 25 YEARS, rapid response teams (RRTs) have been assessing and managing patients who experience acute clinical deterioration.[1] Nurses perform a vital role in the function of the team. This article reviews the team members, responsibilities, and common challenges of RRTs.
- *Lee A, Bishop G, Hillman KM, Daffurn K. The medical emergency team. Anaesth Intensive Care. 1995;23(2):183 – 186*

Nurses play a vital role

For almost 3 decades, multidisciplinary teams have been responding to circumstances of acute clinical deterioration to assist the nursing staff in non-ICU settings and provide improved care for these patients. Positive patient outcomes have been realized due to the efforts of the RRT.

Nurses play a vital role on this team. As rapid response systems evolve, nurses will contribute their knowledge in expanding areas such as educating staff and patients to recognize clinical deterioration and participating in proactive assessments on patients at risk for deterioration.

各種不同領域的危險狀況–針對個別的危險狀況成立相關的快速反應小組團隊

- 1. Cardio-pulmonary problems, shock,
- dyspnea, respiratory distress, heart failure
- major arrhythmia ---AMI. PCI..,.
- 2 Severe Gi bleeding and acute abdomen
- 3. Renal failure and electrolyte imbalance
- 4. Infection and sepsis
- 5. Coma evaluation.
- 6 Suicide prevention.
- 7. others

2. 目標導向之治療可降低死亡率

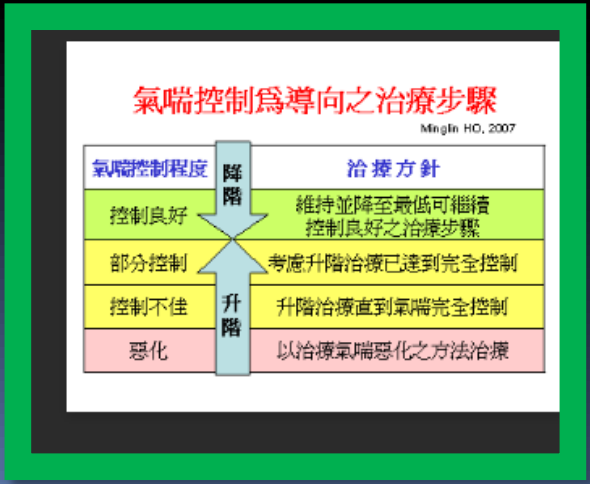
死亡率 46.5 %-→30.5 %

- **Early Goal-Directed Therapy** in the Treatment of Severe Sepsis and Septic Shock. Emanuel Rivers et al :N Engl J Med 2001; 345:1368-1377.
- Of the 263 enrolled patients, 130 were randomly assigned to early goal-directed therapy and 133 to standard therapy; there were no significant differences between the groups with respect to base-line characteristics. *In-hospital mortality was 30.5 percent in the group assigned to early goal-directed therapy*, as compared with **46.5** percent in the group assigned to standard therapy (P=0.009). During the interval from 7 to 72 hours, the patients assigned to early goal-directed therapy had a significantly higher mean (±SD) central venous oxygen saturation (70.4±10.7 percent vs. 65.3±11.4 percent), a lower lactate concentration (3.0±4.4 vs. 3.9±4.4 mmol per liter), a lower base deficit (2.0±6.6 vs. 5.1±6.7 mmol per liter), and a higher pH (7.40±0.12 vs. 7.36±0.12) than the patients assigned to standard therapy
- Early goal-directed therapy provides significant benefits with respect to outcome in patients with severe sepsis and septic shock.

目標導向之治療
Early goal-directed therapy

- 要寫在medical orders,整個team members全瞭解,有目標就知道努力的方向
- **First goal : within 72 hours(通常以恢復正常生命現象為第一目標)**
- Second goal : 可以出院之條件 (7-10 days)

控制嚴重的症狀.
脫離險境



^ Rivers, E; Nguyen, B; Havstad, S; Ressler, J; et al. (November 2001). "Early goal-directed therapy in the treatment of severe sepsis and septic shock". *The New England Journal of Medicine*. **345** (19): 1368–77. doi:10.1056/NEJMoa010307. PMID 11794169.

3.診療程序哎程序訂定SOP：常見疾病建立治療規範很重要

- The protocol was as follows. A 500-ml bolus of crystalloid was given every 30 minutes to achieve a central venous pressure of 8 to 12 mm Hg. If the mean arterial pressure was less than 65 mm Hg, vasopressors were given to maintain a mean arterial pressure of at least 65 mm Hg. If the mean arterial pressure was greater than 90 mm Hg, vasodilators were given until it was 90 mm Hg or below. If the central venous oxygen saturation was less than 70 percent, red cells were transfused to achieve a hematocrit of at least 30 percent. After the central venous pressure, mean arterial pressure, and hematocrit were thus optimized, if the central venous oxygen saturation was less than 70 percent, dobutamine administration was started at a dose of 2.5 μg per kilogram of body weight per minute, a dose that was increased by 2.5 μg per kilogram per minute every 30 minutes until the central venous oxygen saturation was 70 percent or higher or until a maximal dose of 20 μg per kilogram per minute was given. Dobutamine was decreased in dose or discontinued if the mean arterial pressure was less than 65 mm Hg or if the heart rate was above 120 beats per minute. To decrease oxygen consumption, patients in whom hemodynamic optimization could not be achieved received mechanical ventilation and sedatives.

Table 2. Reasons for Failure to Rescue.

Monitoring technology is used only in the intensive care unit or step-down units.
Hospital-ward monitoring is only intermittent (vital-sign measurements).
Intervals between measurements can easily be 8 hours or longer.
Regular visits by a hospital-ward nurse vary in frequency and duration.
Visits by a unit doctor may occur only once a day.
When vital signs are measured, they are sometimes incomplete.
When vital signs are abnormal, there may be no specific criteria for activating a higher-level intervention.
Individual judgment is applied to a crucial decision.
Individual judgment varies in accuracy according to training, experience, professional attitude, working environment, hierarchical position, and previous responses to alerts.
If an alert is issued, the activation process goes through a long chain of command (e.g., nurse to charge nurse, charge nurse to intern, intern to resident, resident to fellow, fellow to attending physician).
Each step in the chain is associated with individual judgment and delays.
In surgical wards, doctors are sometimes physically unavailable because they are performing operations.
Modern hospitals provide care for patients with complex disorders and coexisting conditions, and unexpected clinical deterioration may occur while nurses and doctors are busy with other tasks.

4. 檢討為何救援失敗？

Why, failed to rescue ???

- Only Intermittent monitoring,
- **Frequency of visiting**
- **Measurement of vital signs : incomplete**
- Judgement : individualized,
- Delays in management
- Surgeons : doing op.
- Staffs : busy

@5.好好找原因:大部分的醫療危機都很顯著,也有不明顯,(病家不知道,也被醫師忽略)、結果是醫療崩壞 medical failure→好好找原因

常見的醫療危機:

- **Bradycardia**(HR<52／min.)→Stokes-Adams attack.
- Hypokalemia (K <2.5 m Eq/l)-→respiratory arrest.
- **Relative hypoglycemia**(blood sugar 50-70)+ **HbA1c<5.5%** in diabetic patients under therapy-→true and profound **hypoglycemia**
- **CRP >20** suggests tissue necrosis or intense reaction--- **Sepsis, Bowel necrosis and perforation. Abscess,**
- **Iatrogenic diseases**

HCW should be alert to all medical warning signs.

- Alert to all medical warning.

Dreamstime. com.
Access on 2022.10.23

Hypokalemia

表三：低血鉀的治療

1. Medical emergency	Cardiac arrhythmia, respiratory insufficiency
2. Avoid risks of K^+ shift into cells	Do not give glucose, insulin and $NaHCO_3$
3. Magnitude of K^+ deficit	Large vs. small does of K^+
4. Route of K^+ administration	Central, peripheral or oral

內科學誌 2010；21：31-39

低血鉀的診斷與治療

李忠政[1] 黃文德[1] 林石化[2]

[1]國軍左營總醫院 內科部
[2]三軍總醫院 腎臟內科

低血鉀症的定義是血清 K+ 濃度低於 3.5 mmol/L。
臨床迷思 (Clinical pitfalls) 血鉀偏低並不一定代表體內 K+ 的總量減少，例如血中白血球數大於 10 萬 /μL 則有可能 造成假性低血鉀 (pseudohypokalemia)。血中 K+ 移動到細胞內亦可造成低血鉀，但體內鉀的總 量並未減少。相對而言，體內 K+ 的總量減少， 也不一定會造成低血鉀症，

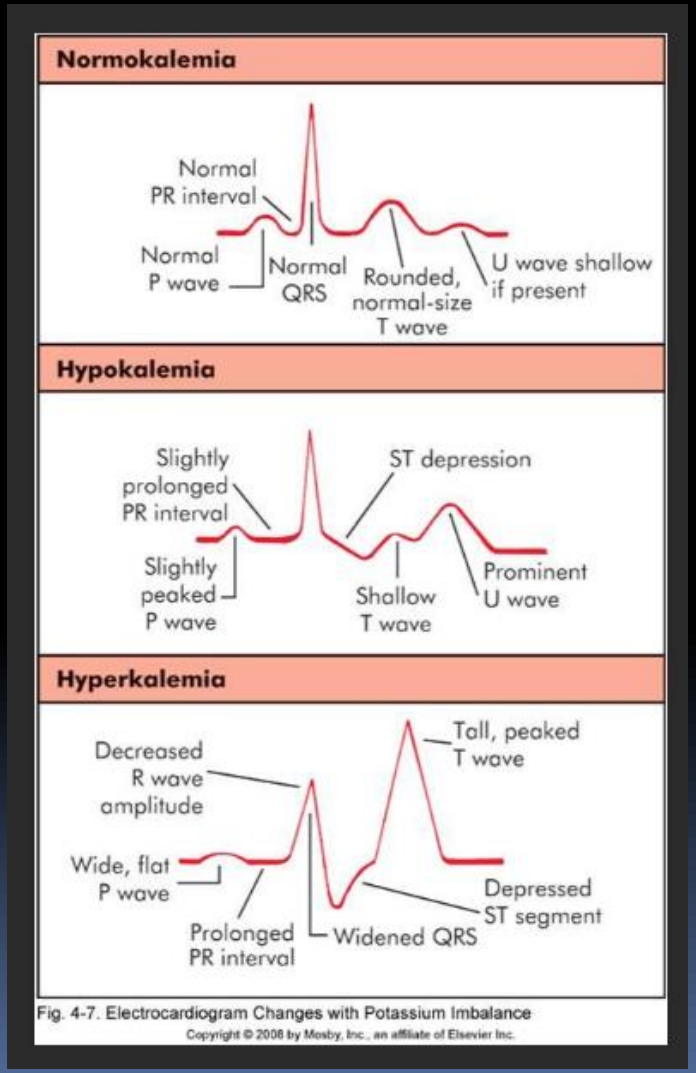
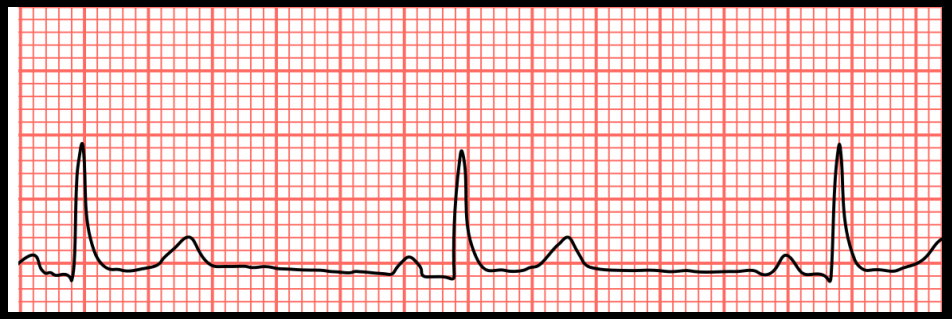


Fig. 4-7. Electrocardiogram Changes with Potassium Imbalance

HR<52／min.→Bradycardia



Sinus Bradycardia ECG

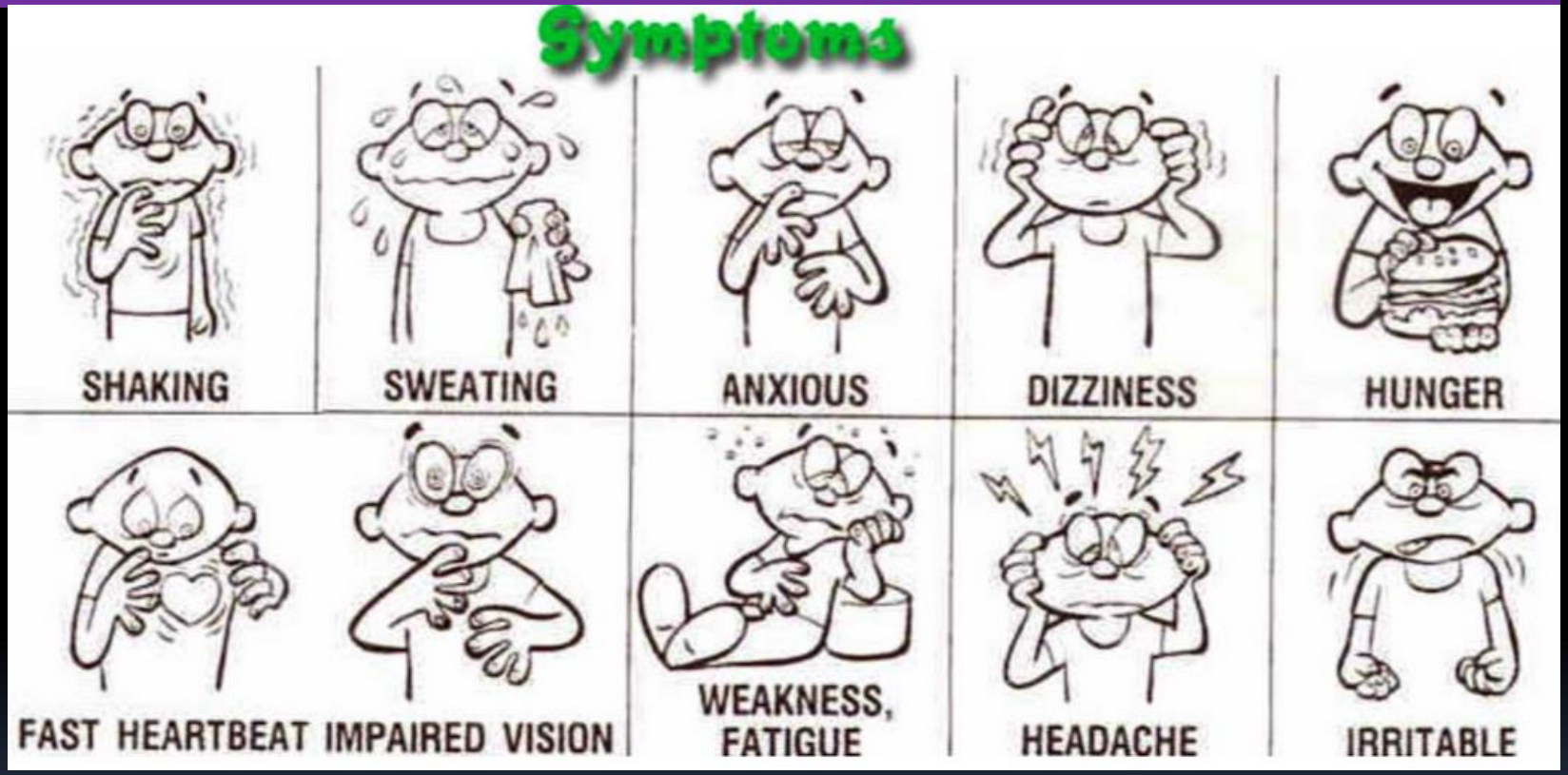
Sinus bradycardia occurs on an ECG when there is a normal upright P wave in lead II (sinus P wave) preceding every QRS complex with a ventricular rate of less than 60 beats per minute.

Causes of sinus bradycardia include:

1. AV blocking medications (beta-blockers, non-dihydropyridine calcium channel blockers, digoxin).
2. Heightened vagal tone (i.e. well trained athlete)
3. Sick sinus syndrome
4. Hypothyroidism
5. Hypothermia
6. Obstructive sleep apnea
7. Hypoglycemia

LearnTheHeart.com

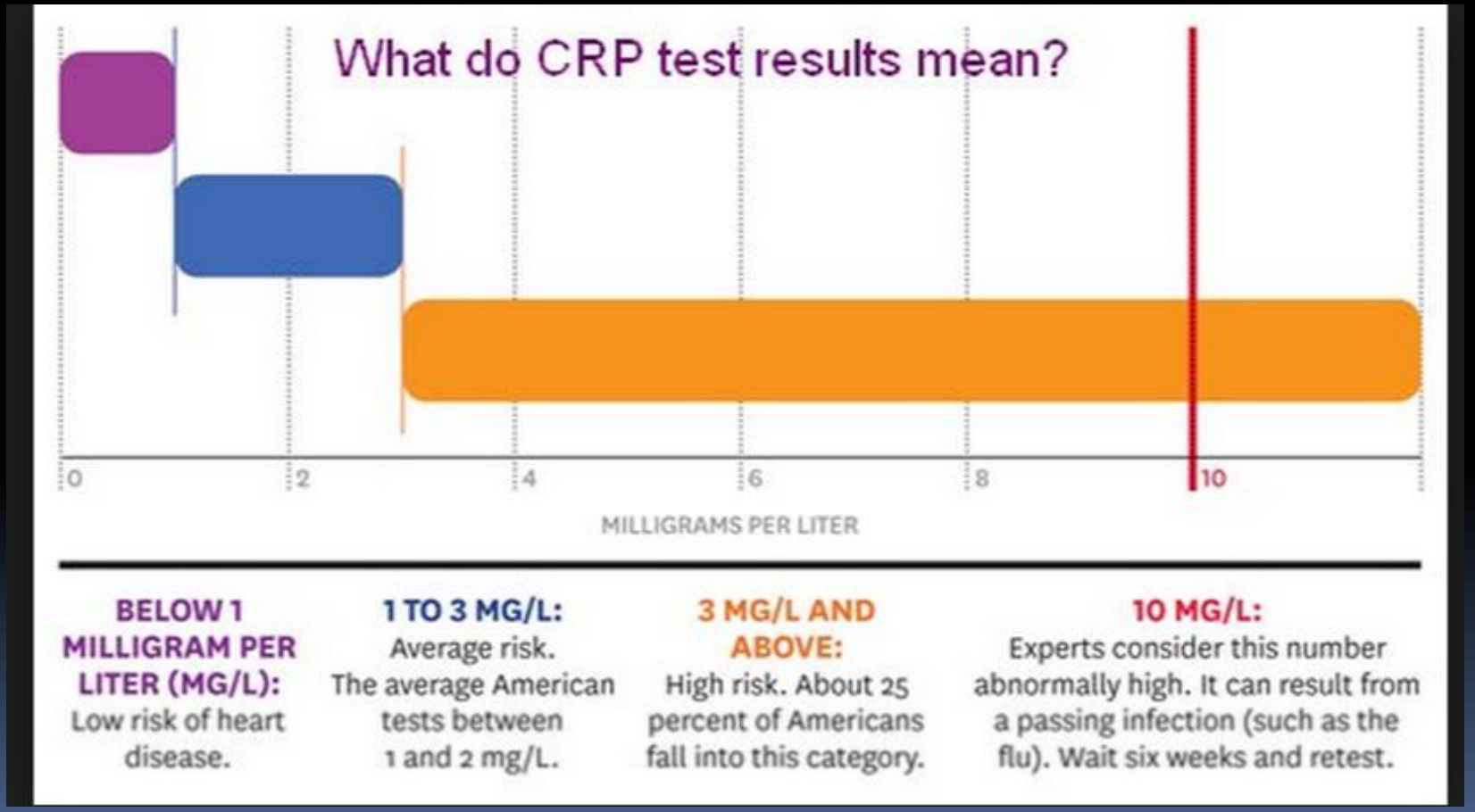
Hypoglycemia: Blood sugar < 50



要確定低血糖只有一個方法是檢查血糖而且及時治療讓症狀消失

High CRP indicated high risk

注意CRP 之單位mg/dl or mg/L.注意發病日,CRP值可以猜測發病日



Definition : Iatrogenic Disease is defined as a disease that is caused by medical treatment.

- 因醫療之目的引起之問題.
- 是負面的, 造成傷害,甚至死亡
- 住院日延長.
- 導致家屬不滿,甚至爆發醫療糾紛.
- Medical team必須小心應付,可以減少問題.

Examples

- medical error
- wrong prescription, (due to illegible handwriting)
- negligence
- faulty procedures, techniques, information, or methods
- failure in life support instruments
- prescription drug interaction
- adverse effects of prescription drugs
- over-use of drugs leading to antibiotic resistance in bacteria
- nosocomial infection (hospital-acquired infections)
- blood transfusion

Iatrogenic diseases 原因-1

- 1. 因檢查引起---colonoscopy→ perforation
- 2. 因檢查及治療引起: Post ERCP and papilltomy acute pancreatitis.
- 3. 因治療之目的引起—
  EX. 1, 用藥—allergy, side effects, drug interactions.
- Ex. 2, Radiotherapy→radiation colitis
- Ex. 3, Chemotherapy– agranulocytosis→sepsis
- avastin---intestinal perforation
- Ex. 4, Surgery – leakage from the anastomotic
- site.

Iatrogenic diseases原因-2

- 4. 因對象錯誤引起---人、及手術之目標弄錯。
- 5. 因劑量不當引起
  Heavy dose,
  Radiotherapy overdose →**death or ineffective**
- 6. .因IV routes 不當引起
  KCl : IV drip rather than IV push.
- 7. Different drugs : 用錯藥引起。
- 8. 因器材誤用引起
  麻醉機導入氮氣而非氧氣
  氧氣桶空了
- 9. Others.

Iatrogenic diseases很多

Deaths Per Year	Cause
106,000	Non-error, negative effects of drugs[2]
80,000	Infections in hospitals[10]
45,000	Other errors in hospitals[10]
12,000	Unnecessary surgery[8]
7,000	Medication errors in hospitals[9]
250,000	Total deaths per year from iatrogenic[4] causes

Starfield: JAMA

To err is human
First do no harm

The first report,
Institute of Medicine IOM-1 First Do No Harm

IOM-1 key findings

An estimated 44,000 to 98,000 people die each year in hospitals as a result of medical errors; ***medication*** errors alone account for an estimated 7,000 deaths annually. Even the lower estimate (44,000) suggests that medical errors are the eighth leading cause of death, higher than motor vehicle accidents (43,458) or breast cancer (42,297). These numbers were derived predominantly from two studies, one conducted in New York and the other in Colorado and Utah (see References: *Brennan 1991*, *Thomas 1999*). However, controversy exists as to the exact magnitude of adverse outcomes associated with medical errors. This is illustrated by two editorials that appeared in the July 5, 2000, issue of the Journal of the American Medical Association. In one, McDonald and others questioned the validity of the IOM-1 estimates and suggested that the numbers were exaggerated (see Resources: *McDonald 2000*). In the other, a recognized leader in the field indicated that the numbers may actually *underestimate* the true burden caused by medical errors (See Resources:*Leape 2000*).

In patients醫療費用大增(美國年增200億美元以上)

Total annual costs of preventable adverse events (ie, medical errors resulting in injury) are estimated to be between $17 billion and $29 billion per year. Over one-half of these expenditures are for direct health care costs, such as longer stay or treatment. The increased costs of preventable adverse drug events affecting hospitalized patients are about $2 billion per year.

門診病人

776 億美元

Another analysis concluded that between 4% and 18% of consecutive patients experience negative effects in outpatient settings, with:

- 116 million extra physician visits
- 77 million extra prescriptions
- 17 million emergency department visits
- 8 million hospitalizations
- 3 million long-term admissions
- 199,000 additional deaths
- $77 billion in extra costs

Lucian Leape, a Harvard University professor who conducted the most comprehensive study of medical errors in the United States, has estimated that one million patients nationwide are injured by errors during hospital treatment each year and that 120,000 die as a result.

-- *Harvard University*

每年,100 萬個美國人受到傷害,12萬人死亡

1991. In New York State. 1/200 病人died because of hospital errors.

In their study, Leape and his colleagues examined patient records at hospitals throughout the state of New York. Their 1991 report found that one of every 200 patients admitted to a hospital died as a result of a hospital error.

That number of deaths is the equivalent of what would occur if a jumbo jet crashed every day; it is three times the 43,000 people killed each year in U.S. automobile accidents.

"It's by far the number one problem" in health care, said Leape, an adjunct professor of health policy at the Harvard School of Public Health.

Researchers such as Leape say that not only are medical errors not reported to the public, but those reported to hospital authorities represent roughly 5 to 10 percent of the number of actual medical mistakes at a typical hospital.

Leape report in 1991 and 2009.（US 哈佛大學公共衛生學系）

- 現代對醫療傷害問題（治療並發症）的認識可以追溯到 1991 年哈佛醫學實踐研究結果的發表，但直到 2000 年醫學研究所 (IOM) 發表報告，To Err is Human 患者安全確實引起了醫學和公眾的關注。醫療傷害是一個嚴重的問題，正如多項研究表明的那樣，影響著大約 **10% 的住院患者**，每年造成數十萬可預防的死亡。組織原則是，原因不是壞人，而是壞系統。這個概念正在轉變；它取代了以前專注於個人錯誤的專注於有缺陷的系統。儘管對患者安全的主要關注點是實施安全實踐，越來越明顯的是，在我們的醫療保健組織中實現高水平的安全需要更多：已經出現了幾個流。其中之一是認識到讓患者更充分地參與他們的護理的重要性。另一個是對透明度的需求。
- 在大多數醫院當前的醫療保健組織環境中，至少需要六項重大變革才能開始安全文化之旅：
- 1. 我們需要從**將錯誤視為個別故障轉向意識到它們是由系統故障引起的；**
- **2. 我們必須從懲罰環境轉向公正文化；**
- 3. 我們從保密走向透明；
- 4. 醫療由以提供者（醫生）為中心轉變為以患者為中心；
- 5. 我們的醫療模式不再依賴獨立，個人績效卓越到相互依賴、協作、跨專業的團隊合作；
- 6. 問責制(accountability)是普遍和對等的，而不是自上而下的。
- **L515 (medical errors)(2009)(2022.10.23)** Lucian L Leape[1]. **Errors in medicine** Clin Chim Acta. 2009 Jun;404(1):2-5.Epub 2009 Mar 18.
- [1](Harvard School of Public Health, Boston, MA 02115, United States. leape@hsph.harvard.edu)

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Clin Interv Aging. 2011; 6: 77–82.
Published online 2011 Mar 21. doi: 10.2147/CIA.S10252
PMCID: PMC3066256
PMID: 21472095

Iatrogenic disease in the elderly: risk factors, consequences, and prevention

The epidemiology of iatrogenic disease in the elderly has not been extensively reported. Risk factors of iatrogenic disease in the elderly are drug-induced iatrogenic disease, multiple chronic diseases, multiple physicians, hospitalization, and medical or surgical procedures. Iatrogenic disease can have a great psychomotor impact and important social consequences. To identify patients at high risk is the first step in prevention as most of the iatrogenic diseases are preventable. Interventions that can prevent iatrogenic complications include specific interventions, the use of a geriatric interdisciplinary team, pharmacist consultation and acute care for the elderly units.

Up to 29% of these admissions were suspected to be attributable to **adverse drug effects**. Interestingly, a large difference was observed between the number of iatrogenic admissions according to the admitting physicians and the investigators (229 versus 380, respectively).

@@Aranaz-Andres et al demonstrated that patients older than 65 years of age had a **higher frequency of adverse events than those under this age** (**12.4% versus 5.4%,** $P < 0.001$, relative risk 2.5) in Spanish hospitals.(Aranaz-Andres JM, Aibar-Remon C, Vitaller-Murillo J, Ruiz-Lopez P, Limon-Ramirez R, Terol-Garcia E. Incidence of adverse events related to health care in Spain: Results of the Spanish National Study of Adverse Events. J Epidemiol Community Health. 2008;62(12):1022–1029.)

doi: 10.1007/s00464-022-09010-6. Epub 2022 Jan 19.

高齡者警覺性差，問題發現慢，死亡率增加

- L516,
- L517,

Korean J Gastroenterol. 2022 May 25;79(5):210-216. (L516)

[Factors Associated with the Clinical Outcomes of Iatrogenic Colonic Perforation (ICP)]

Hyun Jin Lee [1], Han Hee Lee [2], Dae Young Cheung [2], Jin Il Kim [2], Soo-Heon Park [2]

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1. ICP 發生在不到 0.1% 的病例中。上午期間發生的事件更有可能通過內窺鏡進行處理。
2. **年齡超過 80 歲和穿孔識別前的較長時間與死亡率相關**

臨床會有那些危機?

- 1. 病情突然惡化 shock, coma, dyspnea—
- 2,發生特別狀況 bleeding, high fever, acute
- liver failure, acute renal failure(合併症)
- 3. 藥有嚴重之副作用
- 4. Accident : suicide, fall
- 5. 醫療上之 錯誤
- 6. Complications of medical procedures.
- 7. 醫病溝通不良發生口角

1. 要注意一些變化早作處理可免惡化

MEWS: modified early warning signs
顯示在TPR Sheet 上

- **Heart rate** : < 51/min. or >100/min.
- **RR** : < 12 or > 20/min.
- **BP** :< 100 mmHg or > 180 mmH g
- **Oxygen saturation** : < 94 %
- **Respiratory support** by ventilator.
- **Consciousness** :alert
- **V**oice, **P**ain and **U**nconsciouness
- **Urine output** : **< 200/4 hours**.
- **Pain** :mild to severe.

4分以上要特別小心

→every 30 min observation

MEWS (Modified Early Warning System)

	3	2	1	0	1	2	3
Respiratory Rate per minute		Less than 8		9-14	15-20	21-29	More than 30
Heart Rate per minute		Less than 40	40-50	51-100	101-110	111-129	More than 129
Systolic Blood Pressure	Less than 70	71-80	81-100	101-199		More than 200	
Conscious level (AVPU)	**U**nresponsive	Responds to **P**ain	Responds to **V**oice	**A**lert	New agitation Confusion		
Temperature (°c)		Less than 35.0	35.1-36	36.1-38	38.1-38.5	More than 38.6	
Hourly Urine For 2 hours	Less than 10mls / hr	Less than 30mls / hr	Less than 45mls / hr				

EARLY WARNING SCORING SYSTEM FOR DETECTING ADULT PATIENTS WHO HAVE OR ARE DEVELOPING CRITICAL ILLNESS

IS THE SCORE FOR YOUR PATIENT 1-2? PERFORM 2 HOURLY OBSERVATIONS AND INFORM NURSE IN CHARGE

IS THE SCORE FOR YOUR PATIENT 3? PERFORM 1-2 HOURLY OBSERVATIONS AND INFORM NURSE IN CHARGE

*IF THE MEWS SCORE IS DETERIORATING : THE WARD S.H.O. OR DUTY DOCTOR **MUST** ATTEND*

IS THE SCORE FOR YOUR PATIENT 4 OR MORE? PERFORM OBSERVATIONS AT LEAST 1/2 HOURLY. ENSURE MEDICAL ADVICE IS SOUGHT AND CONTACT OUTREACH TEAM (see below)

#2.注意 Clinical progress:思考 sensitive parameters.

@@寫Progress note 的時候就需要特別注意:病況的改變,而且多思考為什麼會這樣

- 1.症狀惡化(家屬已知道)
- 2.發生特別狀況,如 bleeding, high fever, acute liver failure, acute renal failure(雙方皆知嚴重)
- 3.用藥有嚴重之副作用,明顯的醫療錯誤 medical errors (Medical team先知道)
- 4.Accident, suicide, fall. Complications of medical procedures.(雙方皆知嚴重)
- 5. **Lab. Tests 出現惡化之結果、(medical team預先知道)**

3.病情再發,要知道原因，盡快解決

- 要知道原因, 盡快解決
- Severe cases 居多
- 也許會 fatal, 不可以太 樂觀
- 一開始就很厲害
- Ex. UC---perforation–
- bowel massive necrosis—pan-peritonitis
- ---開始不厲害, 但Progression 很快,–
- repeated bleeding->massive bleeding—
- uncontrollable--death

4. Accident---Ex. traffic accident 重大意外事件，難以接受，

- 只有怪老天,命中註定的不幸
- 傷害很大,只要立即好好地處理,結局不好,也還不致於造成醫病糾紛.
- 持續作好處理,
- 多看1~2次(一天看4-5 次)多說明,告知狀況,告知大家(參予的專家們)都在努力。
- **關鍵點是不要出錯**~會被轉移焦點。

5.Suicide prevention,注意重度 depression及 psychic trauma

- Training ：
- 小組要快速行動
- **Medical team要 alert to suicide tendency.**
- Identification--- treatment or action.
- **Strategies in treatment of suicidal tendency: identification of common and treatment-specific interventions in empirically supported treatment manuals.** Weinberg I, et al :*J Clin Psychiatry. 2010 Jun;71(6):699-706*.

講壞消息時要小心

- Well prepared.
- Family members 預先知道
- 告訴大家提防,(不要全睡著,至少有一個人清醒。)
- 告知壞消息時至少留一點希望---絕望是很難接受的。

. Unpredictable side effects–藥品造成嚴重之副作用

- 會有怨言,但可以諒解,好好處理即可.
- 關鍵點在及早發現,早日停藥.
- Ex. Pentrexyl IV 後發生 Anaphylacxis
- ---CPR 救回來
- Ex. Avandia for DM 發生 fulminant
- hepatic failure.---早該停用的藥
- EX. Antibiotics發生
- pseudomembranous colitis

6.特別是普通藥(acetaminophen)的應用稍未注意就造成假象,造成大問題

Sepsis 病人一直使用acetaminophen, 4天以後病人出院, 連blood culture的結果都還不知道, CRP 沒有follow up-→就出院了.再過4天病人就Septic shock住到醫院.

醫師說已經4天沒發燒-所以出院查病歷 ,orders普拿疼一直在用.請臨床藥師多用點心指導.

- 重點:再hepatic failure due to
- (1) Usual dose of panadol
- (2) Severe liver failure after taking statins.
- (3) Hepatic failure after herbs.
- -------
- 沒有必要長時間使用Acetaminophen

早年,不好的NSAID造成不少腸子的潰瘍及出血
藥品的品質相當重要,有時價錢是會誤導的.

Gastroenterology Research, ISSN 1918-2805 print, 1918-2813 online, Open Access

Journal website http://www.gastrores.org

Case Report

Volume 3, Number 2, April 2010, pages 91-92

Nicorandil Induced Colonic Ulcer: A Late Complication?

Figures

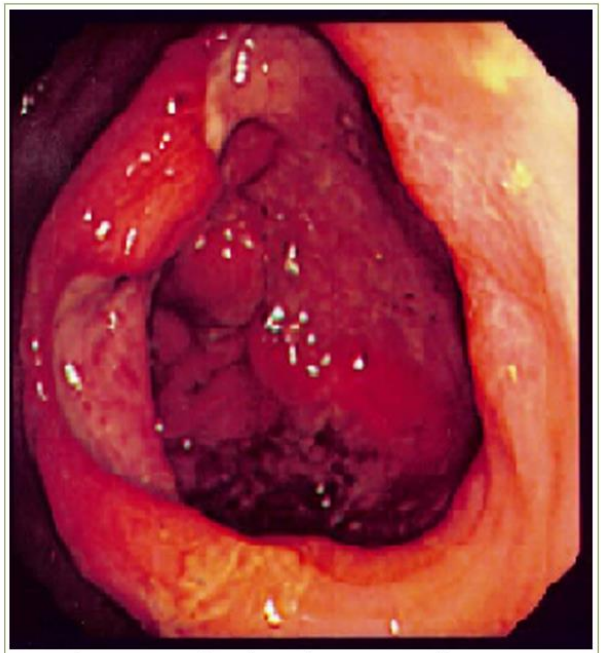


Figure 1. *Ulceration in transverse colon noted 8 years after commencing Nicorandil.*

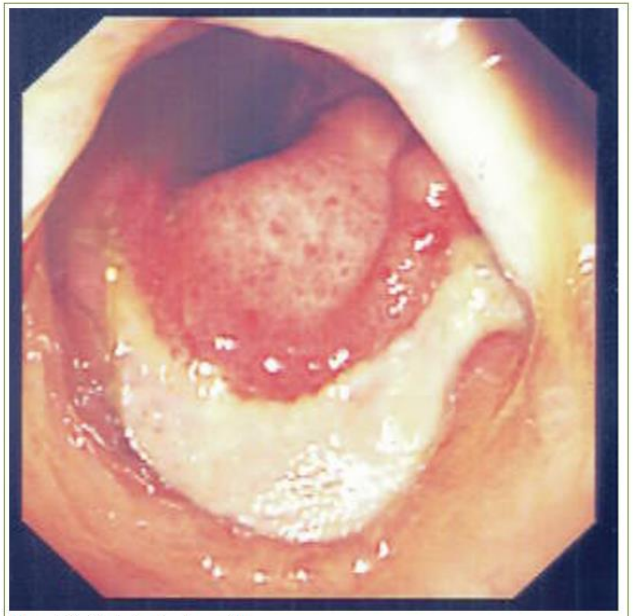


Figure 2. *Persistent ulceration 2 years later.*

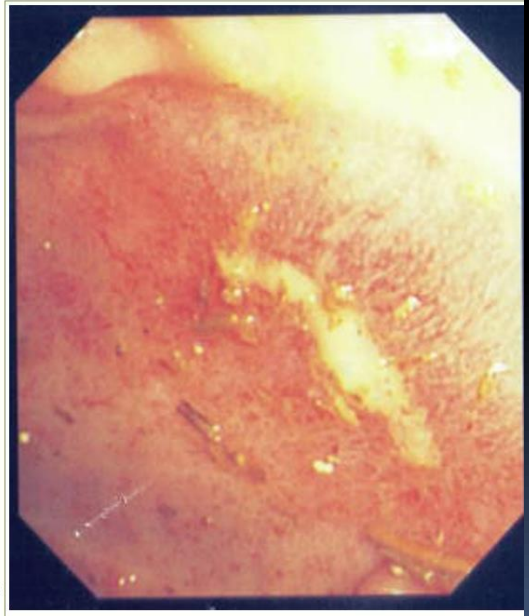


Figure 3. *Healed ulcer 6 months after stopping Nicorandil.*

NSAID induced colitis

NSAIDs-induced colitis

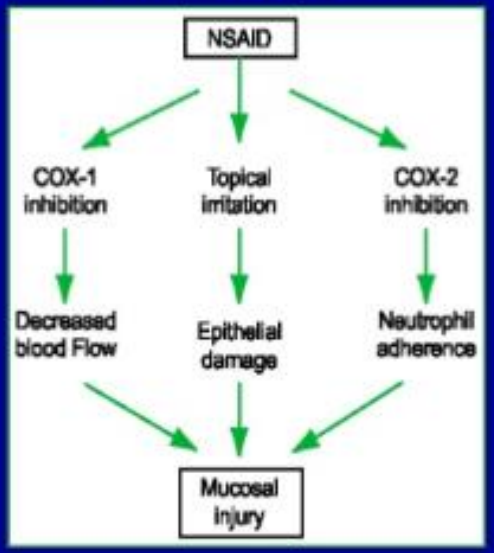
Segmental mucosal inflammation with ulceration

Histologically nonspecific

DD: infections, IBD, ischemia, vasculitis

Pathogenesis of NSAID-induced GI Injury

Three main components



Best Pract Res Clin Gastroenterol 2001 ; 15 : 691 – 703.

Case 1

The first case involves a 65 year old woman who presented with a year long history of bloody diarrhoea with intermittent nausea and vomiting and iron deficiency

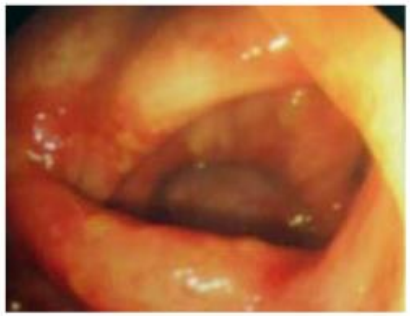


Fig 1. Finding at colonoscopy showing right sided patchy inflammation.

J Gastrointestin Liver Dis. 2010 Mar;19(1):89-91.

NSAID-induced colopathy. A case series.

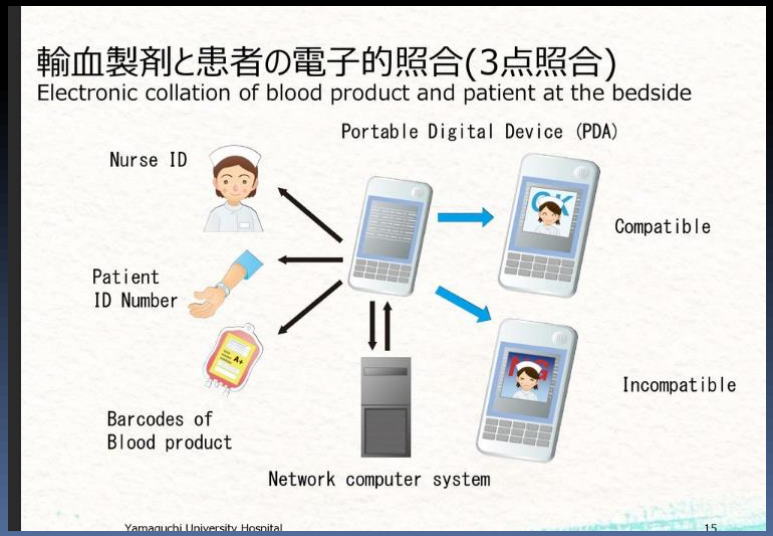
Aftab AR[1], Donnellan F, Zeb F, Kevans D, Cullen G, Courtney G.

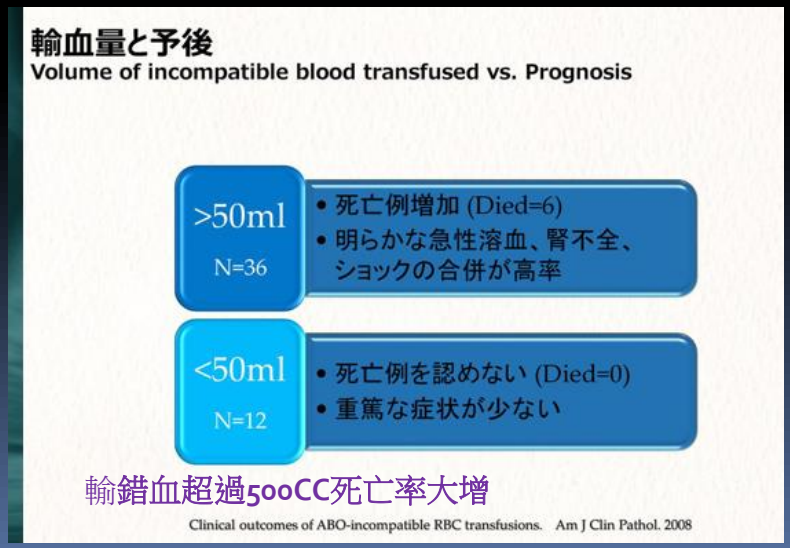
7. Complications of a procedure醫師造成,很明顯,無法擺脫責任

- Procedure related.
- Procedure 之前好好的, procedure 之後才出現的大問題, 被認定是醫師造成,很明顯,無法擺脫責任,只有好好處理。
- **全力安排後續之處理,主動參予**,不躲開
- 要很關心, 時常出現, (一天至少4次,急性期以後再減為 1-2 次,假日之早晚一定要去看.(**停止休假 ,是重點**)
- 態度上負責
- 病歷上要紀錄, 照顧之經過,及處理之方式

8. 輸血錯誤–致命的錯誤

- 從前一年總有一件,
- 標本弄錯了
- **病人的辨識(確認身份)是一個大問題。**
- Blood sample 有兩人簽名!
- **電腦檢錯功能**:要發揮---OPD寫錯偶而會發生。





輸血錯誤多嗎？ > 1/30,000
約 1/12,000

- Sazama分析1976到1985年間在美國FDA登錄，因輸血錯誤發生ABO血型不符而造成急性溶血性輸血反應致死的案例。1**其結論每800,000例輸血就有一例可能因輸血過程中之錯誤造成死亡**，。
Linden在1992年發表紐約州兩年內，向捐血中心所回報輸血錯誤案例統計分析。2
Linden與Sazama的案例收集方式不同，Sazama的統計只報告輸血錯誤造成死亡案例，Linden則是只要向捐血中心回報的案子就採入分析，不論錯誤是否造成輸血傷害。
Linden分析後發現每12000例輸血即發生一例輸血錯誤，每33000例輸血即發生一例ABO血型配對不符，每600000例輸血即有一例造成可能致死的急性溶血性輸血反應。
其比例分析結果，當中有17%為合併血庫及血庫以外作業錯誤，意味原來發生錯誤後，又因為第二次錯誤，而喪失補救的機會。
McClelland以問卷方式調查英國400個輸血機構所發生的輸血錯誤，回收245份問卷。3這些回報的機構輸血量佔整個英國每年輸血量的3/4，其中填報了111件輸血錯誤，但是多數無不良後果，發生併發症的機會是1/275000，**換算成每單位輸血發生錯誤的機率是1/29000**，死亡的機會是1/550000。
比率和前述報告統計發生率相較，可以發現大多數的輸血錯誤並未被主動報告出.

- 1.Sazama K.1990. Reports of 355 transfusion-associated deaths: 1976 through 1985. Transfusion.30:583–590.
2.Linden JV, Paul B, Dressler KP. 1992. A report of 104 transfusion errors in New York State. Transfusion. 32:601–606.
- 3.McClelland DBL, Phillips P. 1994. Errors in blood transfusion in Britain: survey of hospital haematology departments. BMJ.308:1205–1206.

How to avoid or prevent transfusion related AE (L310)

- **1). 依照輸血的規範,正規程序進行.**
- 2.) 減少輸血的次數,必要時才輸
- **3)** 輸血前評估可以識別有 TACO、TRAR 和 TAH 風險的患者，並採取避免措施。
- **4)**TACO (circulation overload) 的預防策略包括降低輸血率、一次一個單位"輸血政策和可能的利尿劑藥物。
- **5)** 有 TRAR 既往史的患者應優先給予無血漿血液成分；可以考慮在輸血前服用抗組胺藥。
- **6)** TAH 在大量輸血環境中很常見，尤其是創傷患者。對患者進行加溫是避免 TAH 的關鍵策略。
- **7)** 識別有 TRALI (lung injury)風險的患者在輸血前先控制肺部炎症的措施都可能降低 TRALI 的風險

- **How clinicians can minimize transfusion-related adverse events? (L 310)**
- C Aubron [1], P Aries [2], C Le Niger [3], R L Sparrow [4], Y Ozier [5]. **Monash university, Melbourne.**
- Transfus Clin Biol. 2018 Nov;25(4):257-261.

輸血前合照，輸血後5分內一直觀察

日本山口大學的方法

至少有5分鐘觀察輸血後有沒有反應

明日的輸血要怎麼做

Transfusion Clinique et Biologique
Volume 30, Issue 1, February 2023, Pages 31-34

Perspective de recherche

How do we forecast tomorrow's transfusion? — Next generation transfusion practices to improve recipient safety

Neil Blumberg, Joanna Mary Heal

Transfusion Medicine, Department of Pathology and Laboratory Medicine, University of Rochester Medical Center, Box 608, 601 Elmwood Avenue, Rochester, NY 14642, USA

下一代輸血,如何提高提高接受者安全性,應該是是一個重要的課題

- 這些措施包括
- （1）普遍減少白細胞以減輕院內感染、炎症和器官損傷， Universal leukoreduction
- （2）去除儲存的上清液及其伴隨的導致免疫功能失調和器官損傷的有毒內容物，
- （3）避免輸注可能導致出血、血小板難治性和炎症的 ABO 不相容抗原和抗體，
- （4）**盡量減少預防性輸血**（特別是血漿和血小板），除非已證明有益，
- （5）**避免使用生理鹽水**，生理鹽水與腎功能衰竭和可能的溶血有關。伴隨著這些安全措施的還有最重要的安全措施之一，即患者血液管理的持續增長，其好處之一是避免不必要和有害的輸血。降低輸血的毒性將增強患者血液管理所改善的臨床結果。 Substitute balanced crystalloids for normal saline as resuscitation, apheresis, washing, transfusing solutions

9. Endoscopy related complications– what are possible complications.

- 1. Perforations
- 2. Bleeding
- 3. Symptoms after endoscopy----Perforation 之先兆還是就是 perforation之症狀.

  Spleen rupture and subcapsular rupture
- 4. Transmission of Infection
- 5. Minor complications

Major Complications related to GI endoscopy

- 不多,但難以逆料
- **Incidence : 至少 1/1,000 (0.1 %)**
- 大大小小的合併「症」:**大約 1/100**
- 小心,以免發生醫療糾紛.
- **Fellows (R4-5)兩年之中會自己遇到1-2 件。**

太忙碌, 太匆忙, 醫師累是 complications的一大因素
(一個下午作5例以上)

Endoscopy related complications

- Diagnostic endoscopy– 比較少 (1/1,000)---x 1
- Diagnostic endoscopy under anesthesia—
- :4~5倍
- (Well trained endoscopists : 2-3 倍)
- Therapeutic endoscopy : 4-10倍增加
- Biopsy related ----- :至少增加3倍
- 太忙碌, 太匆忙, 醫師累是 complications的一大因素
- (一個下午作5例以上)

Factors related to complications (為何發生)

1. No evaluation before endoscopy

   Ex. Colon Perforation in SLE

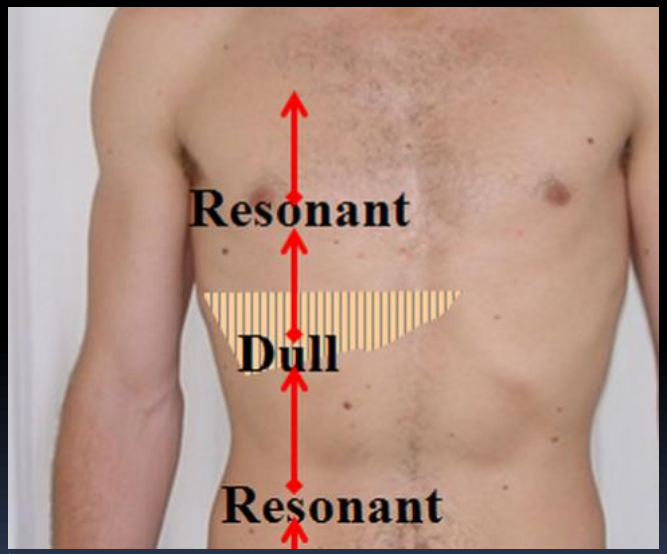
2. Too serious to do endoscopy請不要勉強
3. Multiple tight adhesions
4. Too aggressive procedures.
5. Underlying diseases and medications

   Aspirin, Plavix, Cerenin and coumarin

6. Technical failure

小心謹慎就可以避免–
緊急的案例要特別小心

- Case 4, Physical examination 避免了一次背
- 黑鍋
- Abdomen 一定要摸一下,
- Distension
- Abdominal tenderness
- Peritoneal sign
- **LLB– free air 就可以敲出來**



注意是否 contraindications

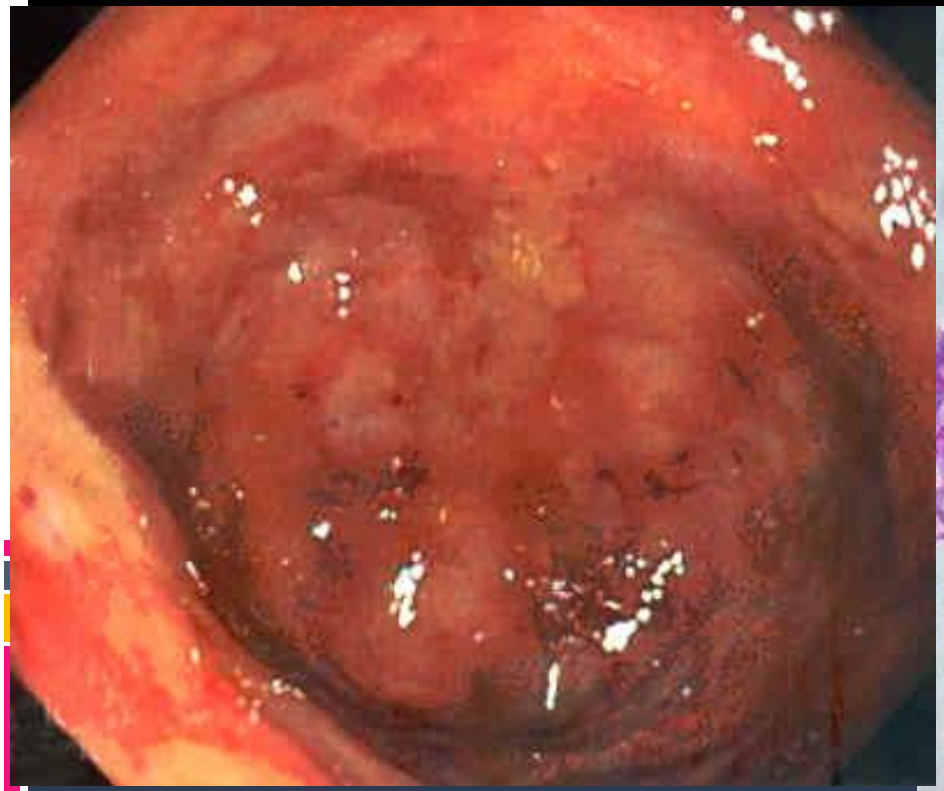
- 已經 Perforation of the hollow viscus.
- Peritonitis (+) is evident .
- Shock: not recovered.
- Coma of unknown cause.
- **No family at the bedside.**
- Severe bowel necrosis –impending rupture
- (ileus + more than 5 days.)(CRP,WBC很高)
- **Plain film of abdomen (upright) should be taken before any decision**

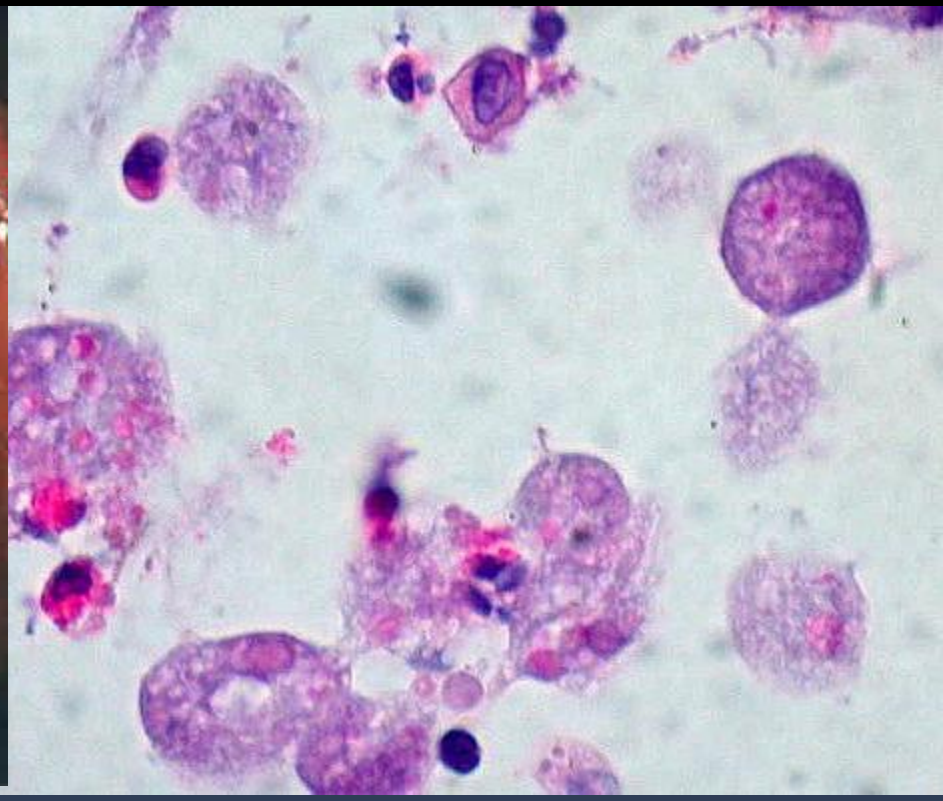
10. Pay attention to evidence of **infectious diseases**

- Amebiasis
- Intestinal TB
- C. difficile
  (Pseudomembranous colitis)

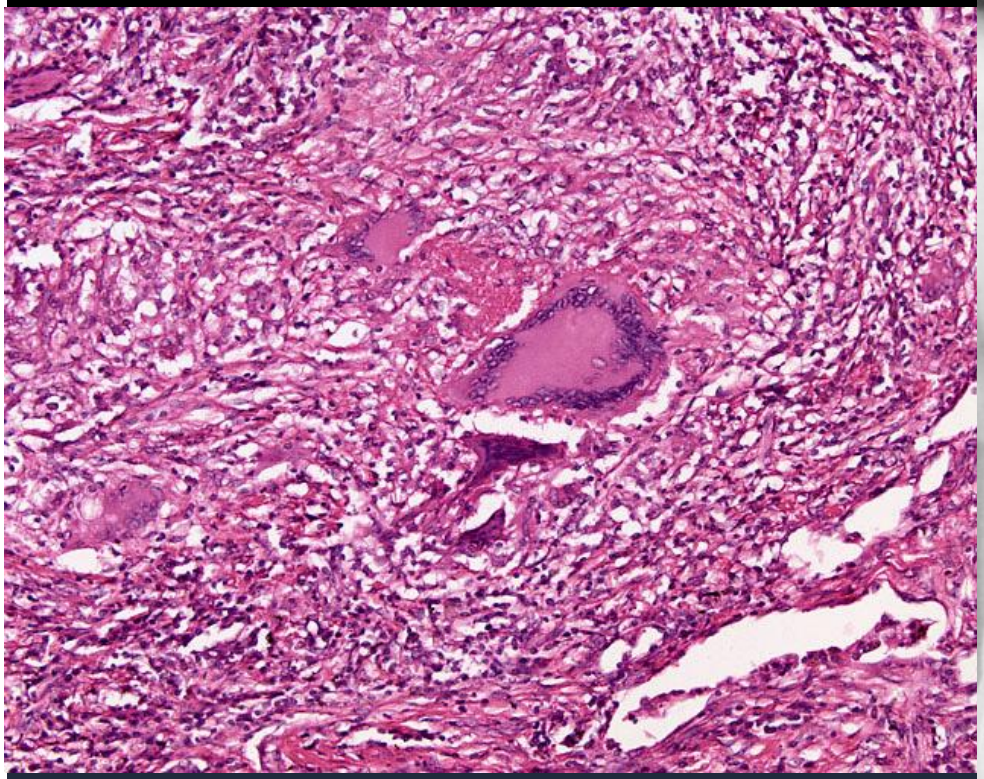
注意病人的感染狀態.
包括 B 肝, C 肝, 以及 HIV 等

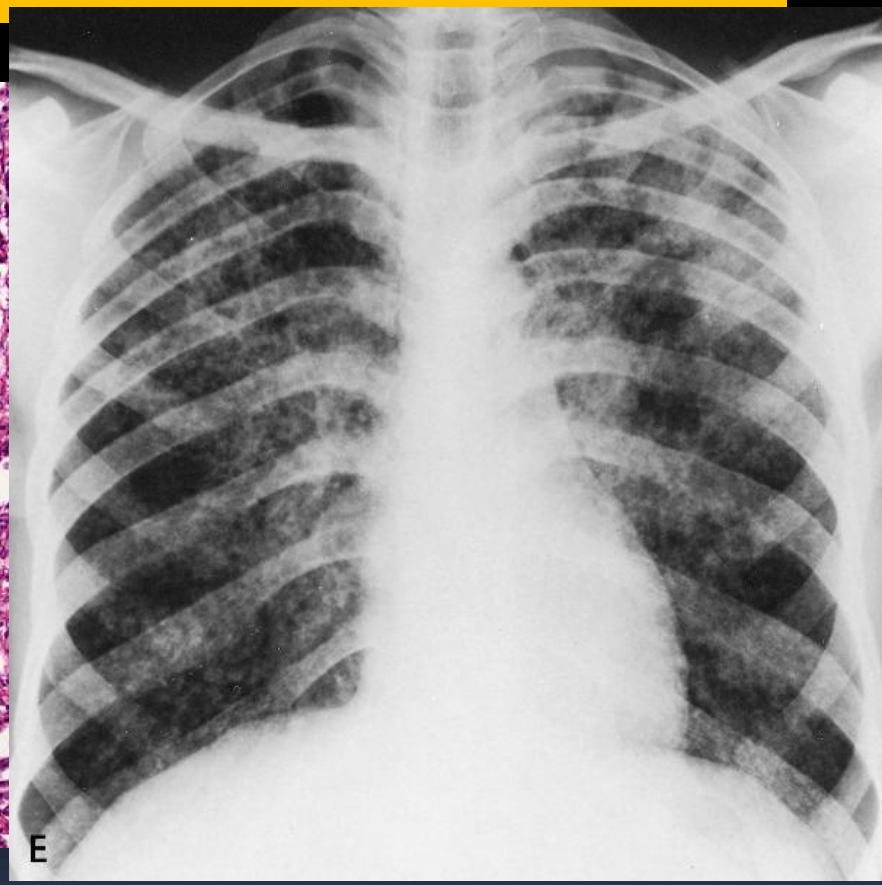
Amebic colitis要會判斷





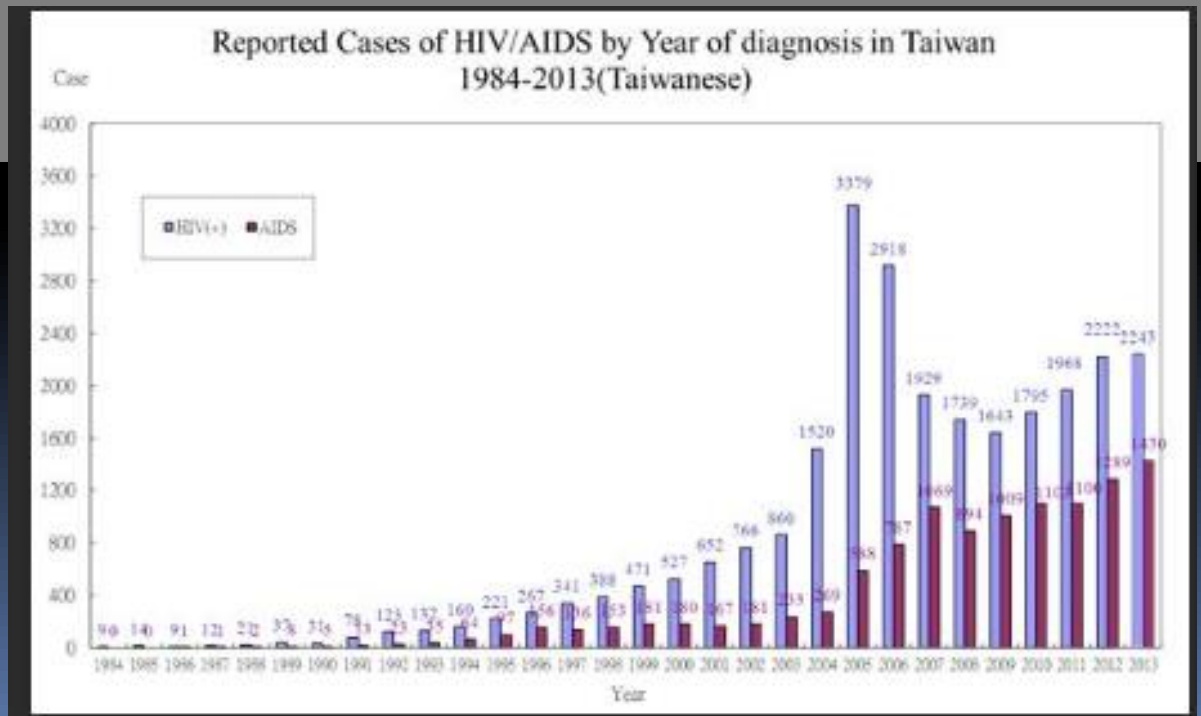
TB：一個永遠不可忽略的問題



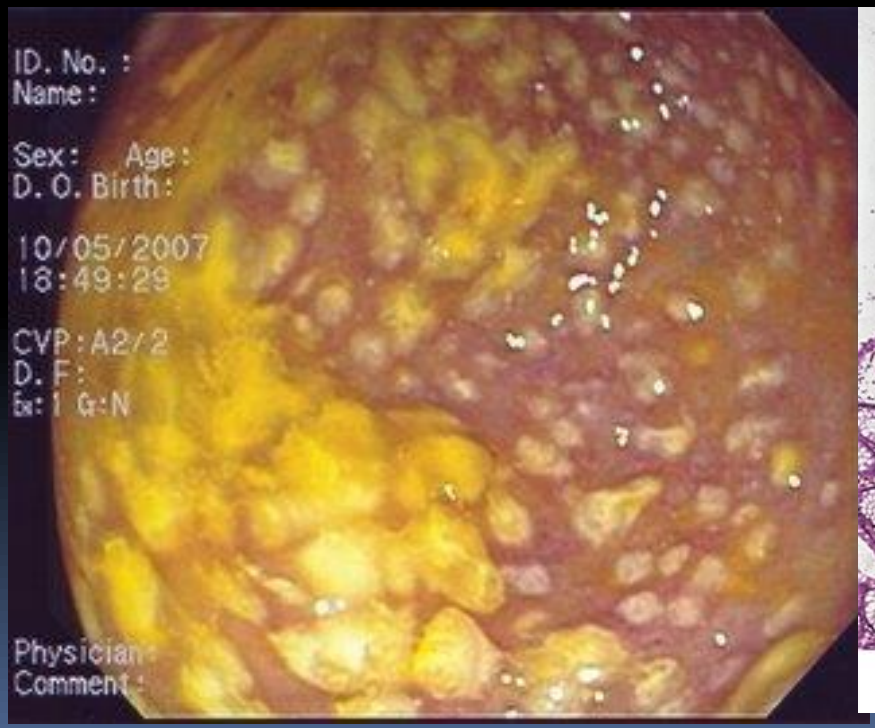


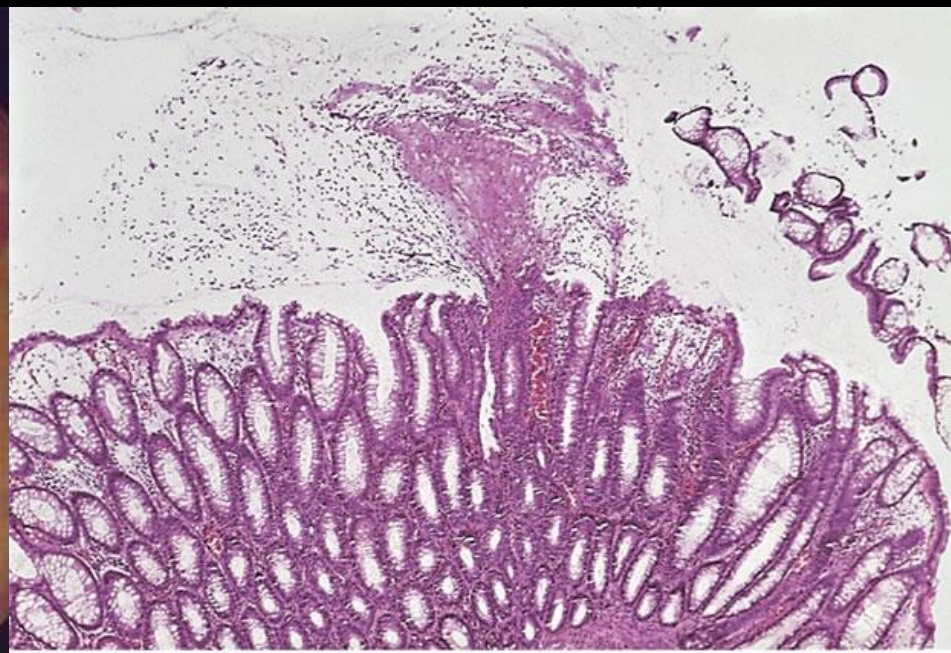
HIV infection in Taiwan

- The first reported case was reported in December 1984 on a foreign transit traveler. The first local infection was reported in February 1986.
- As of March 2016, there are 31,620 reported cases of Taiwanese testing positive, and 1,020 foreigners testing positive

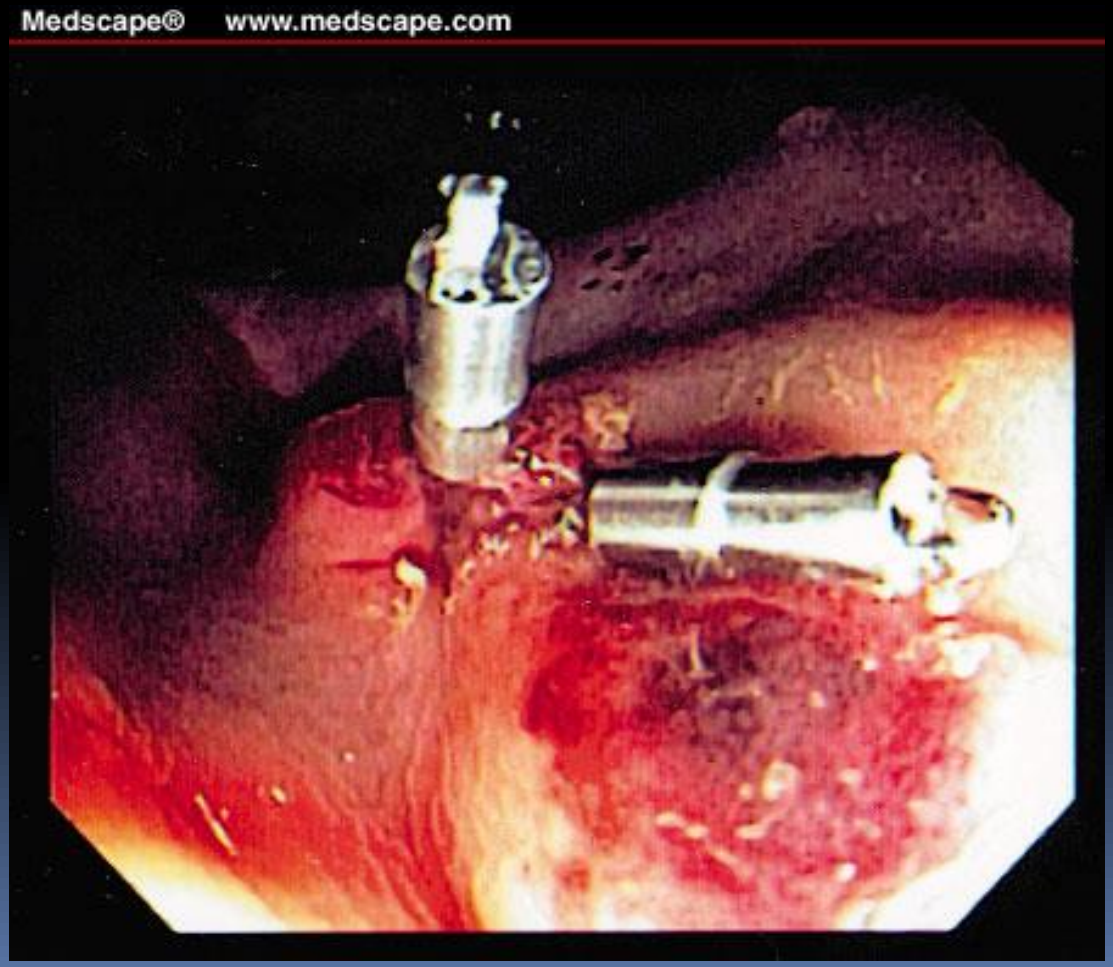


11. Pseudomembranous colitis
-使用抗生素之後





12. Endoscopy 發現爛爛的,或ulcers太大, 術中就作處理



用 Clips 夾住一支不夠,要2支以上。

#13 一旦有合併症,要面對!

- 不要躲閃,
- 勇敢站出來,面對
- 照顧清楚說明病情

不讓合併症接踵而至。

- 兩個不幸事件病人受不了
- 家屬也受不了
- 醫師也受不了

進 OR, ICU 或病房,也要緊跟去,觀察瞭解,再向病家說明

越 aggressive，合併症越多，要知道自己的能力–有所不能

- Biopsy
- Polypectomy
- SMR
- ESD (submucosal dissection)

好好作技術討論

- 太大的不切.
- 太新的技術先看不作,至少看20次,有心得之後再作
- 太嚴重的不作
- 沒把握的不作,不熟悉的不作
- 沒找到指導者前不作
- 太骯髒的,出血太多的,太爛的部位避開,
- 看不到 base 時不切,
- 老師少作的技術不作

ADR Conference ： 從痛苦(自己的,別人的)的經驗中學習。,

- 為什麼發生?
- 處理的方式
- 醫院的「制度」及「人力」需求上遇到什麼問題?
- 有無解決方法?
- 讓醫糾化為無形
- 文獻上的
- 討論會上的

新世代的醫師危急事件
New Medical Emergency

- 處理方法是人釘人技術,
- 每一案例VS 均釘著看/也要問/還要電!
- Fellow or CR 的責任是不只要自行受「訓練」還要指導他人 R. and pGY1. 維持病房的安全.
- 組成Rapid response team.

Prevention預防危機出現

- 1. 小心作好病人辨識---重要的課題
- 2. 遵照醫囑給藥, 辨別藥品之含量
- 3. 應有危機意識
- 4.具備相關智識 ADR report and Drug interaction
- 5. 技術訓練—精進
- 6. 思考減少合併症之方法
- ERCP—induced pancreatitis-→ by NSAID
- PPI for NASID related GI bleeding
- 7. Close observation after examination.
- 8. 各種臨床程序均訂定 SOP.
- 9.事先要告知風險

小心作好病人辨識

- 確實, 確定.

熟習每一個常見問題之處理方式

- 1.由主治醫師編寫之危機處理手冊-→
- 針對每種問題有標準之處理程序.
- 2.輔以課程指導
- 3.個人所獲得之臨床經撿
- 4. 參閱醫院網路
-
- 5. 研討會所學到的方法
- 6.閱讀醫學文獻
- 7.觸類旁通

Decision tool
At the EMR

設置危機處理小組,(rapid response team.)隨時支援

Rapid Response Teams

Rapid Response Teams quickly respond to failing patients in and out of the ICU before their condition worsens, helping assure optimal outcomes.

針對各科各領域常見之問題成立相關之危機處理小組.對生手醫師有 的幫忙

萬一發生不良後果，及時發現儘快處理，

- 及時發現
- 儘快處理，
- 停止檢查
- 住院

儘快完成相關之病歷紀錄絕對不可以忽略

願意檢討就會改善

- **Ward round-→老師隨機教學, 最快最直接**
- **Case conference→**發現各種問題.最有效最實際
- **History taking and PE**
- **Lab. Evaluation**
- **Image reading**
- **Treatment principle**
- **Response evaluation**
- **Discharge decision and plan**
- **Altitude and ethical view- by medical records.**
- ADR report and conference:
- Health care quality committee conference

清楚告知病人服藥之種類，用法，及目的
--→有書面資料

- Medication problems
- 1. Polypharmacy
- 2. Allergy
- 3. Side effects
- 4.drug interaction

這比較醫療複雜多了

	1.7.3	建立醫療事故預防及爭議處理機制，確保醫病間之信賴與和諧關係，且對涉及醫療爭議員工有支持及關懷措施	

醫院對同人之信賴,支持以及關懷非常重要, 有專人專職人員嗎?
要很有愛心很有耐心去瞭解.必須是具體的有用的方法

全人醫療指的就是病人的Problem list要完全敘述(Active + inactive)

9.住院病人之照護應朝向整合醫學照護制度發展。

條號		條文	
重	2.3.1	住院病人應由主治醫師負責照護，住院病人之照護應朝向整合醫學照護制度發展	
	2.3.2	住院、急診病歷應詳實記載病況變化、治療方式及其治療依據說明等，以供事後檢討	
合	2.3.3	每日應有醫師迴診，並適當回應病人病情之陳述，紀錄詳實	
合	2.3.4	醫療照護團隊成員應了解病人問題，並讓接班人員知悉；如有轉出至其他單位時，應製作照護摘要或交班紀錄，以達持續性照護	

要做到才算

從病歷上看出現嚴重問題時是如何處理就可以判斷．醫院有沒有快速反應小組(Rapid Response Team)協助年輕醫師.

RRT可以減少問題降低死亡率，維護高品質的醫療.

結論 1, (2024/04/19)

- 1.醫院裡危機四伏,時時出現警訊.應及時處理即可轉危為安.
- 2.醫療錯誤是常見的危機,
- 3.目標導向之治療可降低死亡率.
- 4.重要問題**訂定SOP**，共同遵守,可望減少錯誤
- 5.要注意一些變化,早作處理可免惡化.
- 6.設置危機處理小組,(rapid response team.)
- 隨時支援,對經驗不足者可提供支援、

結論2. (2024/04/19)

- 1. 任何醫療程序,包括檢查治療及用藥都免
- 不了合併症
- 2. 合併症 **發生後要好好檢討原因**
- **(技術粗暴?)(疏忽) (太勉強)(其他)**
- **(ADR conference)**
- 3. 合併症發生時,要面對而非逃避。好好照
- 顧病人,從合併症中恢復最為重要
- 4. 良好的醫病關係可消弭醫療糾紛.