

臺灣感染控制的願景

- 過去、現在與未來 -

顏慕庸

臺北市立聯合醫院
國立陽明大學



我的感控防疫人生

- 1980 高醫畢業，全科實習 系統性 全人思考的醫者心



1981 裝甲兵，戰鬥人生





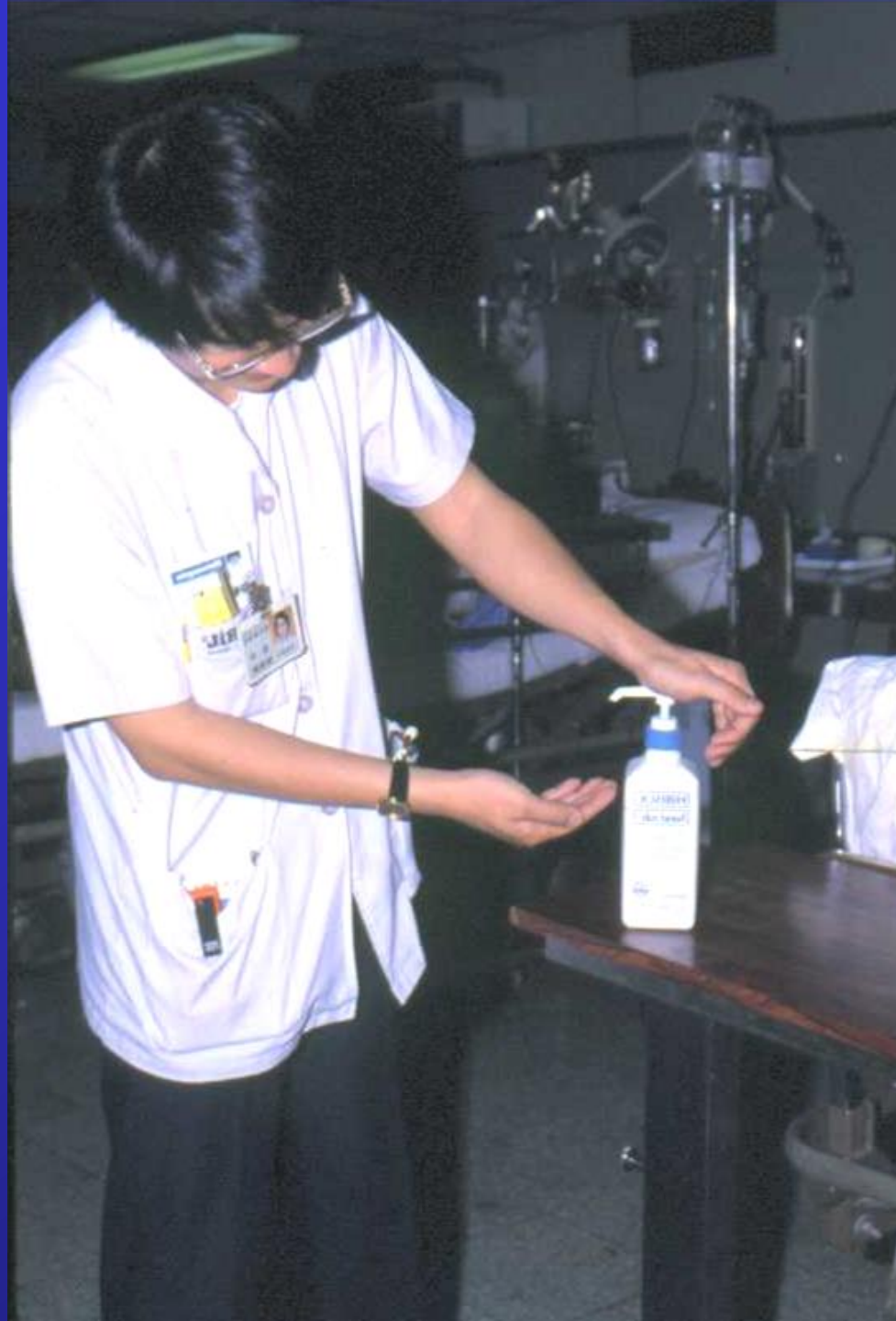
我的感控防疫人生 - I

- 1982 金門大霧， 將我帶進了榮總
- 1983 傳染病科。 只看寄生蟲？
什麼都看也都治好。
4個急性心臟肥大的水腫病人。
器官導向 VS 全人醫療
- 1984 鄭德齡拍了拍我的肩膀：
慕庸，歡迎你來走感染科。
關門弟子



我的感控防疫人生 - II

- 1984：慕庸，你去做院內感染管制。
 - 聽嘸、摸嘸又看嘸？
- 王立信醫師則赴英國發表Hibisol乾洗手劑之消毒成效，
 - 從此每位感染科醫師口袋裡總是攜帶一小瓶藍色的Hibisol乾洗手劑隨時洗手。
- 這樣一路洗手走過來的 1984-2003



聯合
11/28 婦幼醫院新生兒集體腹瀉
已持續兩三週：人數仍在增加

【台北訊】台北市立婦幼醫院新生兒室，體複舊已持續二、三週，院方雖將嬰兒隔離觀察，治療；但據了解，傳染人數仍不斷增加，該院推測傳染源因可能是一「沙門氏桿菌」引起。

婦幼醫院以前也發生過大腸桿菌感染案，導致嬰兒粒粒肚子；但人數不多，也很快即可痊癒。這次受波及的嬰兒一增再增，醫院

万也不願透露詳細數字。

羅沙醫院日前做病兒的大便培養，發現部分有「沙門氏桿菌」，醫師推測可能是家長親自哺餵新生兒時傳染給嬰兒的；但也不排除其他帶菌病患或工作人員傳染的可能。

至於糞便中未檢出「沙門氏桿菌」的嬰兒致病原因，該院醫師認為，秋冬之際，

「環狀濾過性病毒」引起的腳氣最流行，這些新生兒受此感染不無可能。

據該醫院目前採取緊急措施，除將患病的新生兒隔離觀察、治療外，並通知該院的新生兒母親病室，希望有助找出感染源。

由於外傳醫院給新生兒吃母乳、牛奶粉，才懷疑兒集體拉肚子，醫院方面則否認。

婦幼醫院新生兒腹瀉案引起關注
衛署醫政處派人調查
該院五樓公告「禁止探視」

【台是誤】台是由立陶宛醫院新生兒室體檢事件已引起各界關注，不但有政治衛生署副政處長調查者，不少家長也紛紛投書反應；甚至部分在該院出生的嬰兒，院方仍會體檢。

育光市政府衛生局長魏發賢的人指不願
醫院健康調查感幸。並加強勸導新生
兒。

婦幼醫院的未來認新生兒魏發賢率佔
百分之六左右。依該院每月平均出生數九
百六計算，感幸兒在五十年二十人之間。
婦幼醫院表示，魏發賢生兒目前仍集中

在這種新生兒病發的時，這一週內已無新
生兒病發生。由於感染源為「沙門氏桿菌」
所致，嬰兒症狀較輕微，確為腹瀉。發
熱，並未發生脫水現象。同時，已查出有
二名新生兒母親為「沙門氏桿菌」帶菌者，
但本身未有症狀。目前正進一步觀察。

據該醫院在五哩的新生兒科室，前十六日貼出「禁止探視」的公告，並稱該室在有關的護理人員的更換。

由於目前，該醫院感染率都在百分之十左右，而該室則在百分之四，為該院內發生重大感染事件之一例。

該室的主任護士大兒科醫士羅德森解釋其說，該室設備，係傳染性來的一例門氏桿菌，並非屬感染所致。

對於「五哩」兒出院後，才發生感染事件，羅德森醫士解釋，可能是感染來，而該院門氏桿菌，屬於

[illegible]

醫院感染管制在台灣之發展

- **1984年**台北市醫幼兒沙門氏菌群突發，CDC Nakashima 在台協助處理調查，環境因素導致該次疫情，即由政府開始設立相關法令，以規範醫院之感染管制事宜。
- 開啟台灣醫院推行院內感染管制之法源依據，並逐漸開始有系統地進行感染管制醫護之培訓。
- **1986年**奉派新加坡參加感控研習營
- **1987年**感染症醫學會成立。在整個感染症之專業領域中，並朝另一支感染控制的處女地開荒拓蕪。





中華民國感染症醫學會成立大會
暨第一次學術演講會會場

中華民國感染症醫學會
第一次學術演講會

時間 76年9月20日下午4-6時
地點 台大醫院第七講堂
內容

- 1. 歡迎詞
- 2. 報告書
- 3. 報告書
- 4. 報告書
- 5. 報告書
- 6. 報告書
- 7. 報告書
- 8. 報告書
- 9. 報告書
- 10. 報告書

1987年感染症醫學會成立

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中華民國醫學會暨台大醫學會第一屆學術演講會



我的感控防疫人生 - II

- 1989 五年磨劍 V3，鄭師籌建高雄榮總近尾聲，帶下高雄。經過蔣夫人的通路，兩個禮拜以後我已踏上紐約街頭。
- 1989 Columbia University, USA, in molecular biology. Zone of contamination.
- 1990 返台共同開創高雄榮總
- 1995 慕庸..現在有一個主任缺，但是這個位置不是很好做，你自己先思考看看。



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An introduction to Nosocomial Infection

- What's Old & New?

Muh-Yong Yen, Der-Ling Cheng

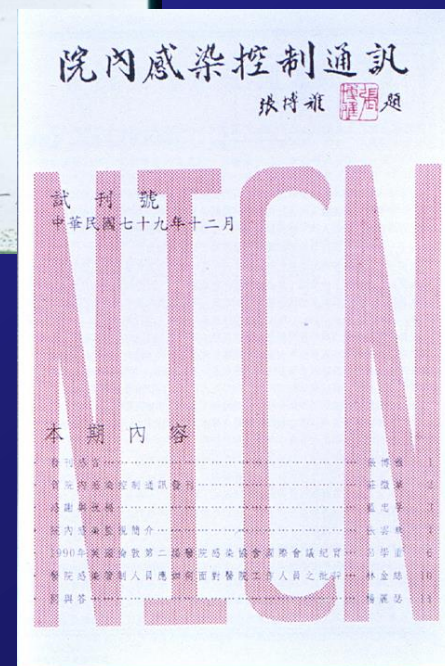
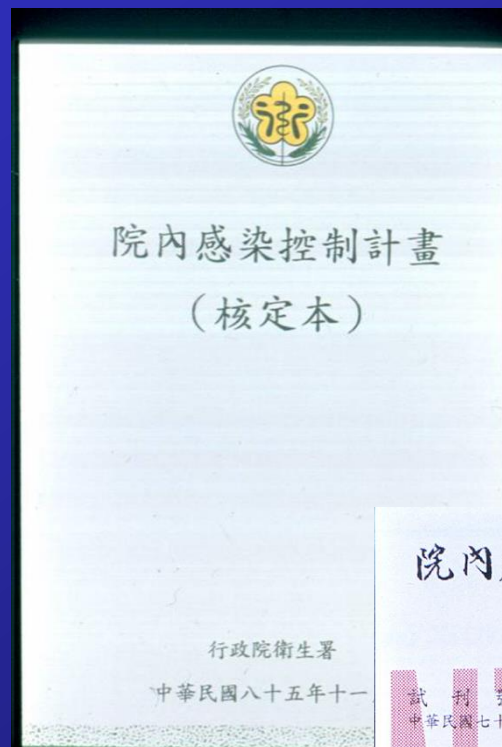
Section of Infectious Diseases

Nosocomial Infection Control Committee

Veterans General Hospital - Kaohsiung

醫院感染管制在台灣之發展

- 1990
- 衛生署防疫處張耀雄處長推動五年感染防治計畫
- 藍忠孚教授感染管制通訊
 - 院內感控雜誌 NICJ 之前身



醫院感染管制在台灣之發展

- 1993年 CDC Dr. William Jarvis 來台，對院感核心成員進行**群突發偵測**之訓練，全台灣第一代醫護檢感控種子



各區設置感染管制聯誼會，至此「台灣醫院感染管制學會」水到渠成，於1993 年正式成立。



1993

本土瘧疾 來自院內感染 全球首見

在國內絕跡30年的瘧疾 接連出現四
查竟是在台北榮總與一病例檢查時

記者 蔣桂文／報導

名本土病例 引起一陣恐慌 經調
同使用顯影劑注射而被傳染

●國內絕跡已三十年的瘧疾，最近陸續出現四名本土病例，造成防疫單位極大恐慌，擔心這種由蚊子傳染的疾病在台死灰復燃；但初步調查顯示，這些病患應非經蚊子叮咬而傳染，而是在醫院接受檢查時被感染，成為全球首見的特殊案例。

這四名病例最先被發現的是一家在新店男性，十月一日他開始發熱，曾至台北榮總、耕莘等醫

院到榮總急診，醫師懷疑為俗稱「惡性瘧」的熱帶瘧，並經證實，但患者近兩年未出國，應非自國外染病，成為多年來首名本土病例。

近一週內，榮總又接連發現三名分別住在中壢、新竹、宜蘭的男性，也都證實感染熱帶瘧。患者近兩年內也都未出國；由於患者住處和活動範圍相距甚遠，不像是同一地出現病媒蚊，造成小區域流行，衛生署為此一度擔心，是否病媒蚊已在國內遍布。

不過，據國防醫學院研究所調查，



曾台北榮總為治療中的瘧疾病人注射蚊蟲，以防瘧疾傳染其他病人。

National health insurance, Cost & Benefit

聯合報

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院內感染

將醫院評鑑獨立項目

衛署表示 新儀器須確實按操作手冊行事

【記者楊淑玲／台北報導】衛生署昨天表示，今年起將開始把院內感染列為醫院評鑑的獨立項目；而未來各醫院購買新儀器時必須確實按照操作手冊上的規定，用完即該拋棄的器材就應該拋棄；各醫院的院內感染控制手冊，也必須逐步列入各項侵入性醫療行為的標準操作步驟。

在台北榮民總醫院痼疾事件受到矚目之時，衛生署昨天舉行例行的院內感染控制諮詢小組會議，討論今年度院內感染控制的重點建議項目，台北榮總放射部主任張政彥和感染科主任劉正義也列席說明這次院內感染事件的過程，供與會人士參考。諮詢小組召集人、台大醫院內科教授謝維銓表示，這次台北榮總痼疾事件付出了很高的代價，提醒各醫院的人員不可忽視

院內感染的嚴重性。

至於未來院內感染在醫院評鑑中所占的分數，是否能達到足夠的關鍵比例，諮詢小組的決議對衛生署的整體政策將發揮很大的效力，則待衛生署進一步商討後才能決定。

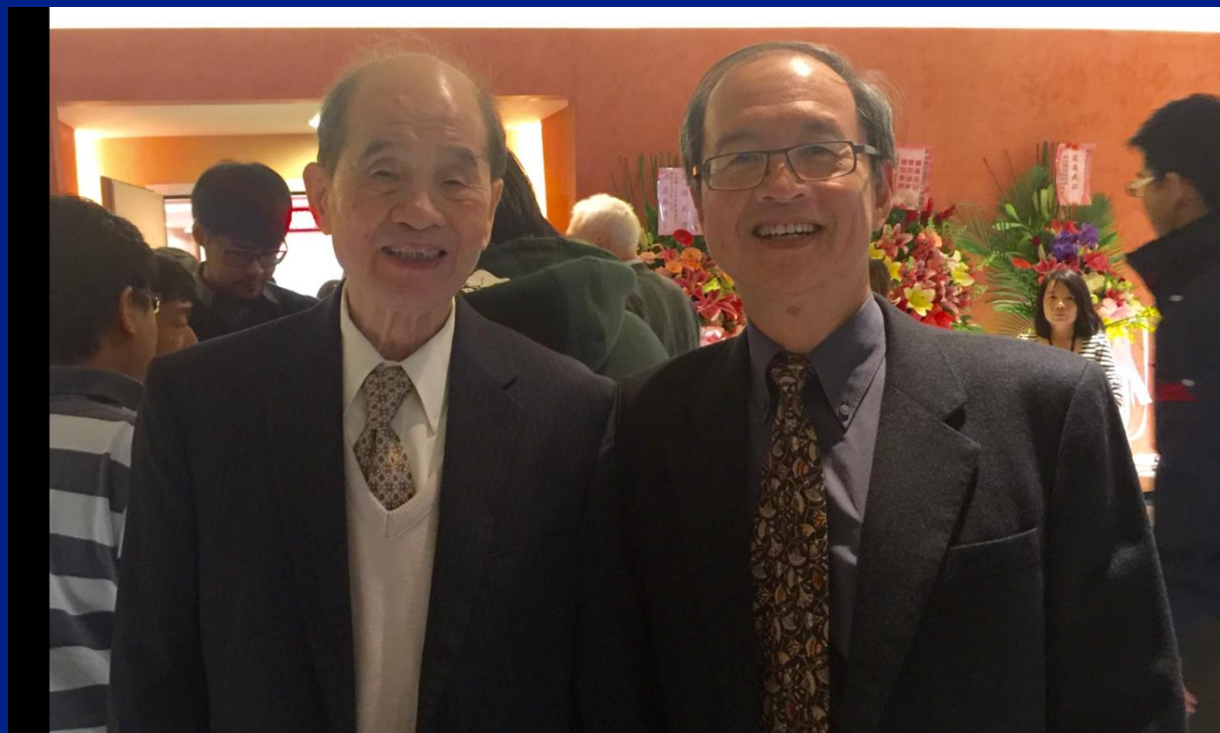
目前衛生署將今年院內感染的重點督導管理工作放在區域級以上醫院。至於地區級醫院表示目前難以輔導鼓勵為主。

【台北訊】士林地檢署檢察官侯名皇為調查榮民總醫院痼疾事件，今天上午將到榮總了解加速注射器的操作過程。檢察官侯名皇指出，若操作過程有簡化或其他的人為疏失造成痼疾感染，將追究相關人員的刑責。檢察官也在榮總提出的調查報告中，找到一些疑點，今天將逐一查證。

中華民國感染症醫學會 1987.09.20

- 謝維銓 1987
- 鄭德齡 1990
- **李慶雲 1993**
- 劉正義 1996
- 陸坤泰 1999
- 黃富源 2002
- 劉永慶 2005
- 林奏延 2008
- 張上淳 2011
- 莊銀清 2014

理事長 90 大壽 秘書長



在整個感染症之專業領域中，
感染控制的處女地開荒拓蕪。

感染症專科醫師訓練與甄試

- 成人感染科，小兒感染科，微生物學科
- 醫院感染管制
- 感染管制必修課目
 - 院內感染臨床醫療實務
 - 接受醫院流行病學實務訓練
 - 群突發調查
 - 醫院感染管制委員會
 - 感控小組之實務運作

醫院感染管制在台灣之發展

- 感染症醫學會領導策略規劃我國感控架構，
 - 並將「醫院感染控制」納為感染科之次專長專業領域。
- 台灣感染管制學會發展實際感控執行與推廣之任務。
 - 促進感染管制
 - 維持醫療品質
 - 保障病人安全
 - 有效節約成本
- 感染管制師亦經完整訓練及認證成為一專業項目。

我的感控防疫人生 - II

- 1995 慕庸.. 現在有一個主任缺，但是這個位置不是很好做，你自己先思考看看。
- 無欲則剛
- 有容乃大

我的感控防疫人生 - III

- 1995 急診醫學全新的情境，緊急、雜亂、全方位疾病的叢林煉獄。又一新興之全人醫學領域。
- 調解醫糾，促進品質，開始了行政管理的人生。
- 2002 六標準差，EMBA
- 爾後終於在2003年SARS煞疫時感控與災難醫學融合為一 發展成為防疫之危機管理。

非典型肺炎 疑變種病毒

衛生署籲國人前往越南、香港及大陸要小心 一旦出現感冒症狀應儘

【記者周富美、洪素卿／台北報導】世界衛生組織(WHO)已經對全球提出警告，一種傳染性極強的肺炎已經在越南、香港和中國大陸廣東等地蔓延，在尚未查出病因之前，衛生署呼籲國人前往越南、香港、大陸或鄰近國家等地旅遊或經商要小心，一旦出現流行性感冒的症狀要儘快就醫。

衛生署疾病管制局局長陳再智指出，根據疾管局初步了解，香港公立醫院和越南醫院的肺炎群聚事件，和之前廣東的非典型肺炎和香港的致死禽流感病例無關。

馬偕醫院小兒感染科主任邱南昌表示，從既有資料研判，雖然不能排除有致病菌但檢體未培養出的可能，但是其可能性不高。相較之下，「變種病毒」的可能性較高。

疾管局疾病監測調查組組長陳國東表示，目前香港已經篩檢出二十三位醫護人員疑似感染非典型肺炎，越南也篩檢出約二十位非典型肺炎的疑似病患，由於這些醫護人員都曾經照顧過一位非典型肺炎



行政院國軍退除役官兵輔導委員會高雄榮民總醫院便箋

各部各位同仁：
為因應目前在大陸、
東南亞、香港地區流行之
肺炎疫情，凡有發燒、
或呼吸道症狀之患者，
一定要先清楚最近兩周
之旅遊史，以求自保
及掌控疫情。

顏慕康

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指出，禽流感是經由接觸家禽所感染，民眾罹患會流感的致死率高達四十%，由於大陸廣東、香港、越南等地疑似感染非典型肺炎的患者並未大量死亡，目前尚未分離出致病菌的種類，研判應與禽流感的疫情無關。

這次的肺炎除了症狀與已知特定病原引發者不同，無法直接診斷病原外，藉由細菌、病毒培養，以及血清學檢查目前都尚未找出確定病原。

【中央社香港十三日電】近期香港爆發一場類似「非典型肺炎」恐慌，旅遊業者擔心會嚴重損害復旦節及「五一」勞動節的旅遊旺季生意。

香港入境旅行社協會估計，由於非典型肺炎的個案增加，估計每日來港的旅行團會減少一百個，經濟損失每日可能超過二千四百萬港元，希望特區政府盡快處理，避免引起公眾恐慌。

此外，旅遊發展局表示會密切注意事態發展，當局也已將有關消息通報全球海外辦事處，不過，暫時尚未收到有海外團取消來港的通知。

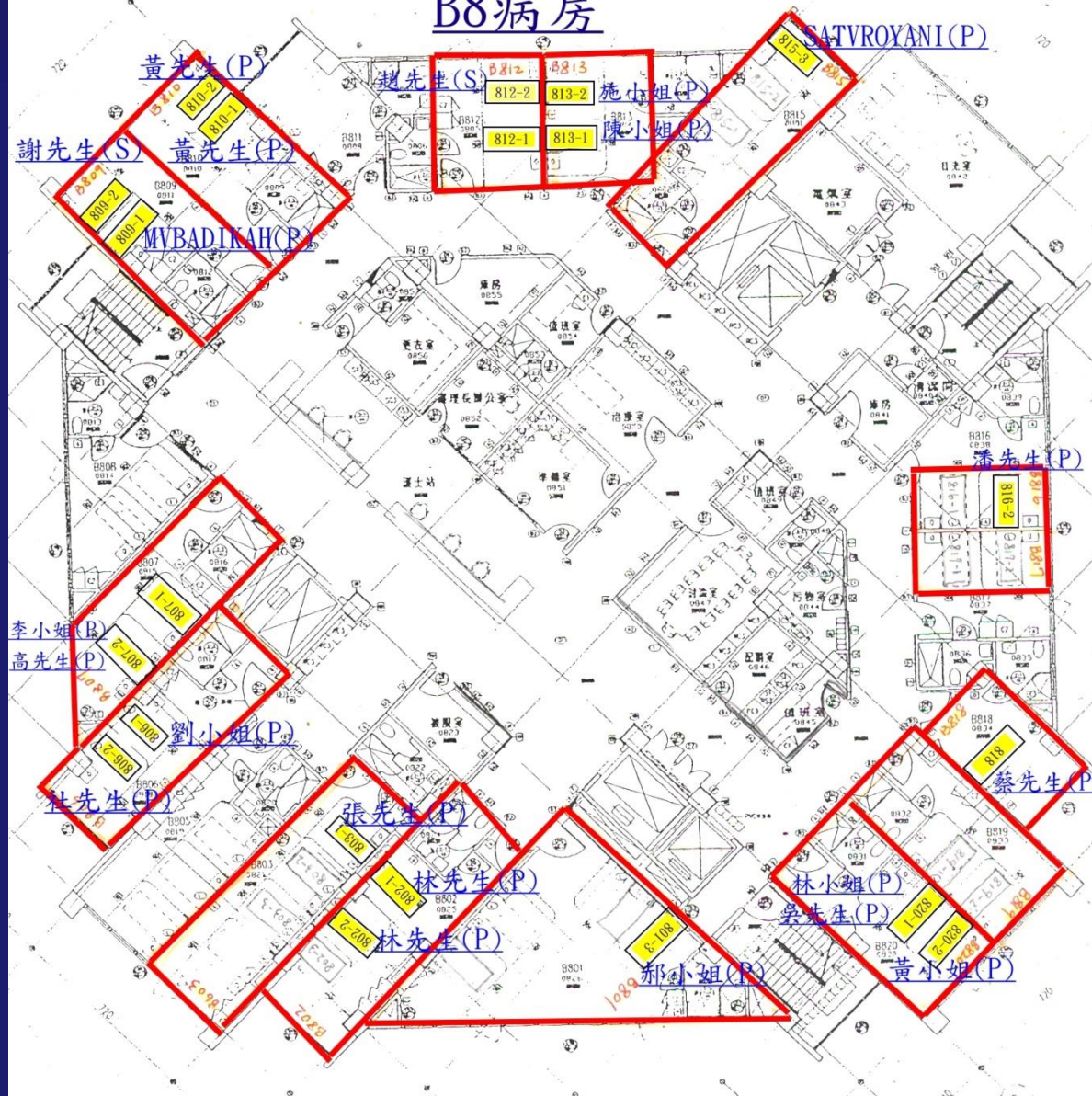
醫生的戰場就在這裡

和平醫院
松山醫院
每個前線

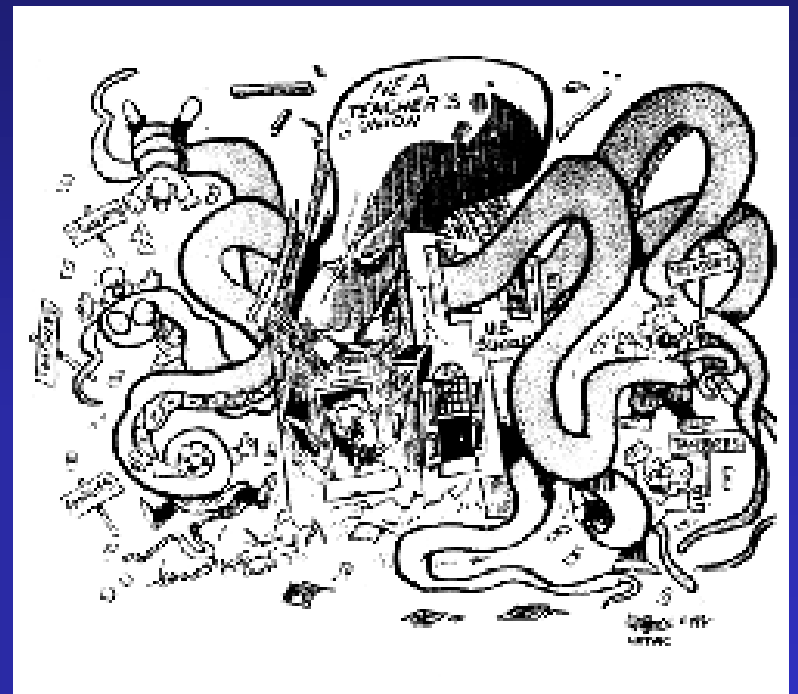
葉金川 & US CDC



B8病房



No Crossing or Overlapping of the stream



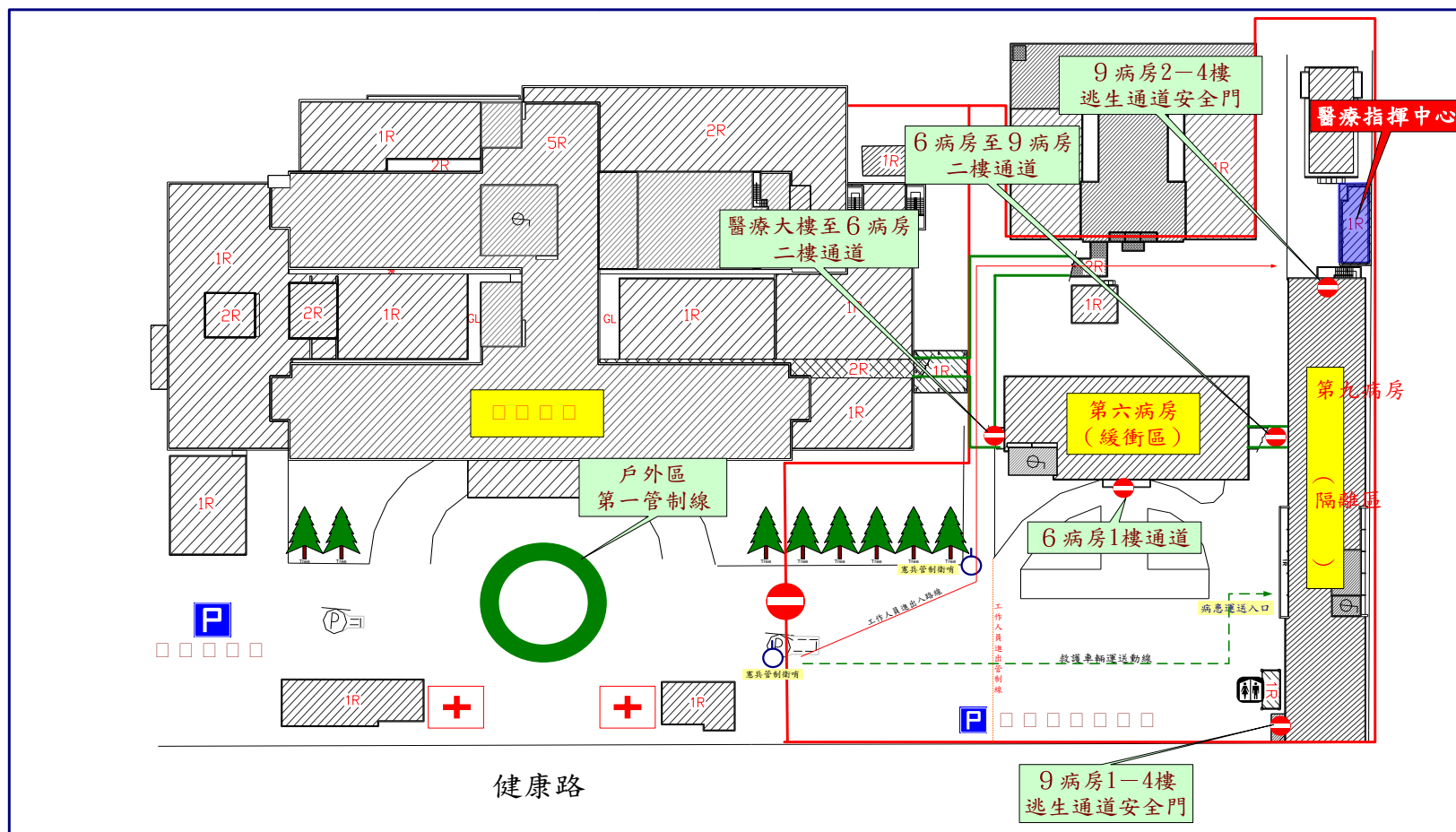
fomites

AMANO 自動化停車設備
(入口)・請減速慢行

技安股份有限公司
電話:0212298-8686



國軍松山醫院啟



國軍松山醫院成立隔離病房院區管制平面示意圖

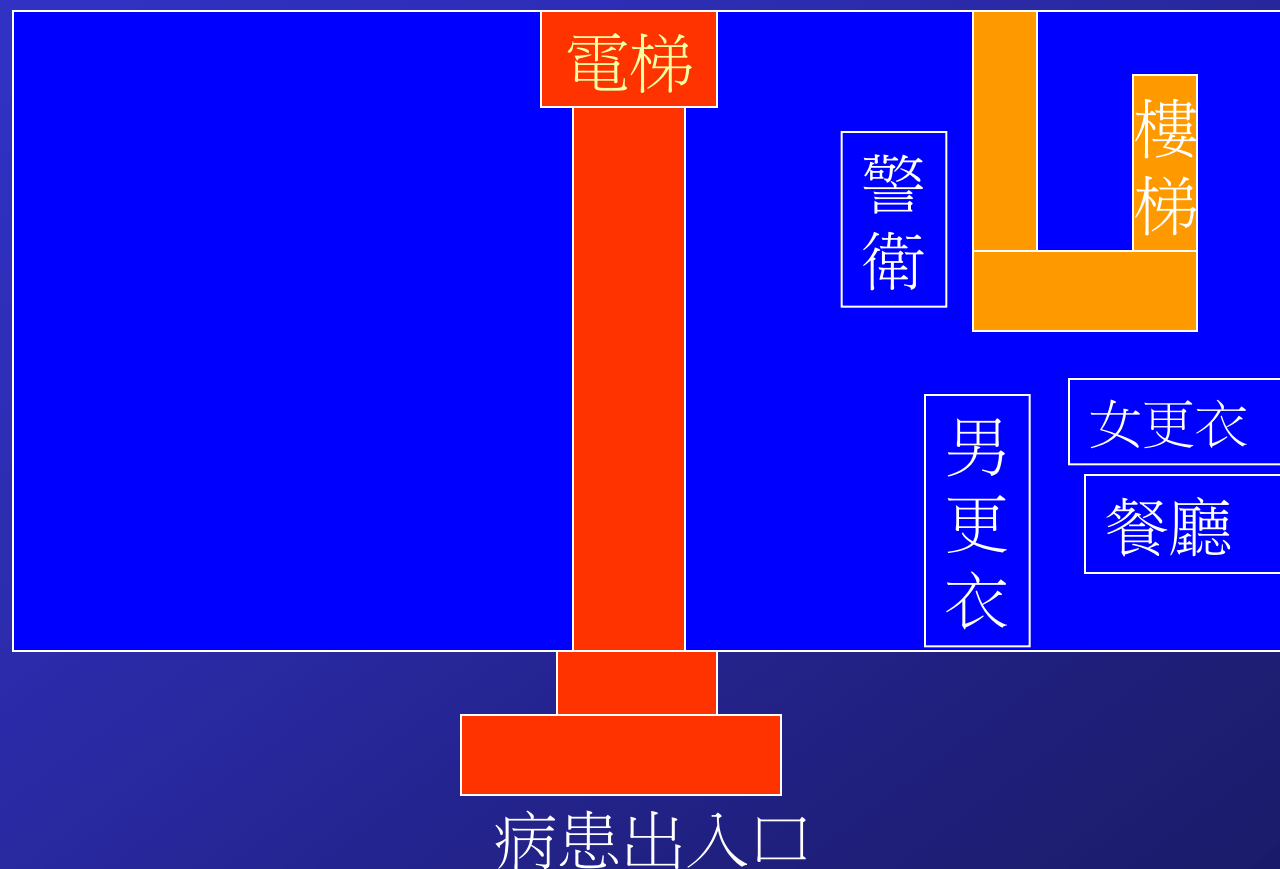
- 紅色線標示區塊為管制區
- 樓層通道管制標示
- 通道管制說明



MAY 8 2003



松德SARS病房平面圖(一樓)

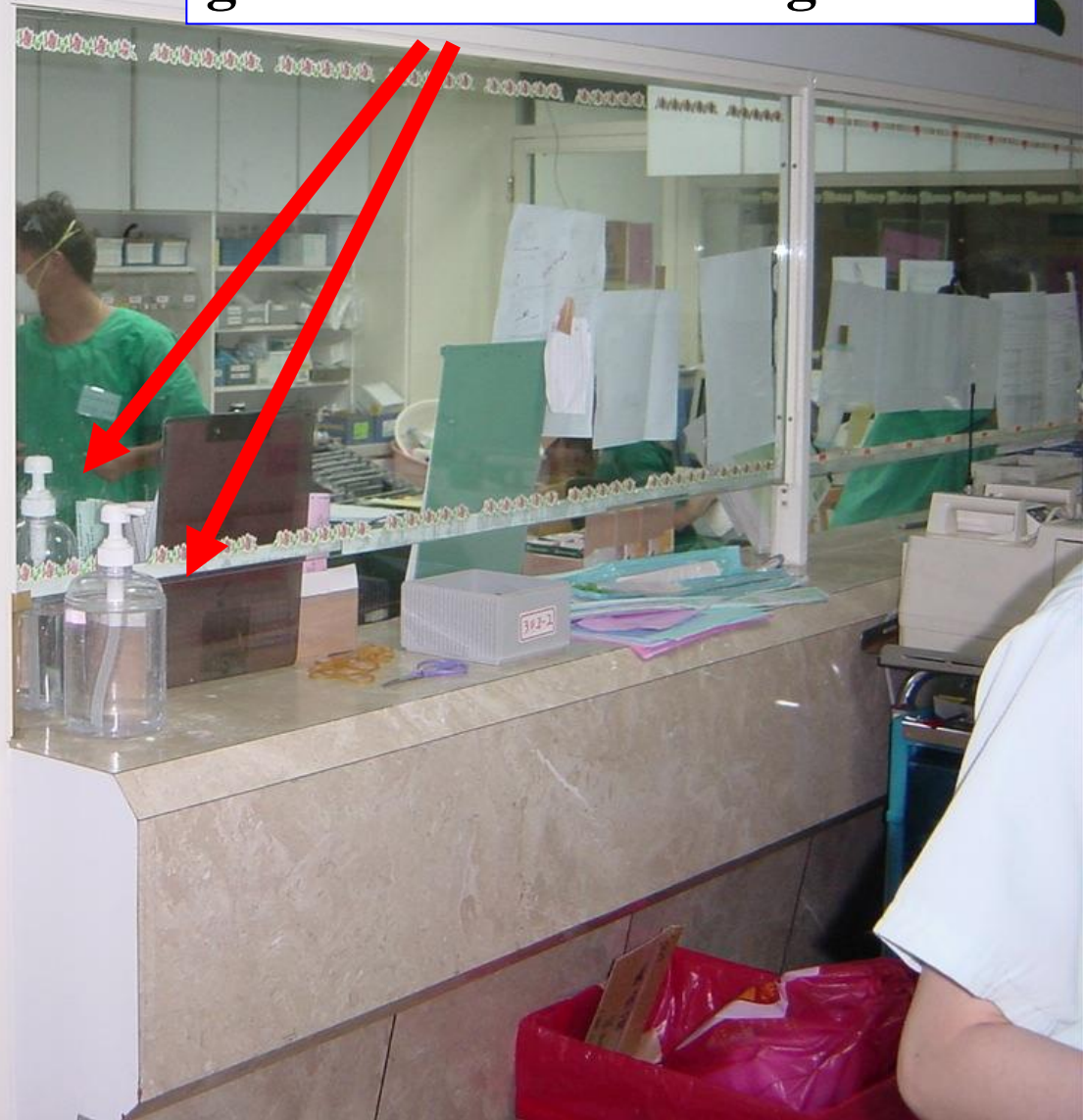




**installation of alcohol
dispensers at checkpoint for
glove-on hand rubbing**

非工作人員請勿進入

手推後請洗手





A Brand New World for SARS Infection Control

顏慕庸 李建賢

榮民總醫院

-May 03,2003-

醫護第一 病人次之

誤差導致客戶(HCW)流失 6 sigma: 以客為尊

• 6 sigma	mistake	control
• 70 – 80 %	20-30 %	natural
• 95.0-97.0 %	3-5 %	N.I.C
• 99.0-99.9 %	0.1-1.0 %	(負壓, PPE)
• 99.9997 %	0.0003 %	NEW !!
• 100 %	0 !!	?????

Using *Traffic Control* Strategy During Outbreak Control to Minimize Nosocomial Infection of SARS Among Health-Care Workers

• Hospitals	Test Hospital			Control
	A (67)	B (18)	Total (85)	(746)
• Bed				
• Suspected	0 (0 %)*	0 (0 %)	0 (0%)	43 (5.76 %)
• Probable	2 (2.98 %)	0 (0 %)	2 (2.35 %)	50 (6.70 %)
• Total**	2 (2.98 %)	0 (0 %)	2 (2.35 %)	93 (12.47 %)

- * SARS case divided by number of patient bed
- ** $p = 0.004$, Chi square, Fisher exact test

Traffic control bundle 動線管制

- An integrated infection control strategic bundle which includes
 - triage of patients into hospital 到院前分流
 - zones of risks 汙染分區
 - installation of alcohol dispensers at checkpoint for glove-on hand rubbing. 節點洗手
- Yen MY, et al. JHI ,2006.2,62:2:195 –
- Yen MY, et al. *Scand J Inf Dis*, 2010, early online 1-6 -

Using an integrated infection control strategy during outbreak control to minimize nosocomial infection of severe acute respiratory syndrome among healthcare workers

M.-Y. Yen^{a,j}, Y.E. Lin^b, I.-J. Su^c, F.-Y. Huang^d, F.-Y. Huang^e, M.-S. Ho^f, S.-C. Chang^c, K.-H. Tan^g, K.-T. Chen^c, H. Chang^e, Y.-C. Liu^a, C.-H. Loh^h, L.-S. Wangⁱ, C.-H. Lee^{j,*}

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^bGraduate Institute of Environmental Education, National Kaohsiung Normal University, Kaohsiung, Taiwan, ROC

^cCenters for Disease Control, Taipei, Taiwan, ROC

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^eDepartment of Anaesthesiology, Shin-Kong Wu Ho-Su Memorial Hospital, Taipei, Taiwan, ROC

^fInstitute of Biomedical Sciences, Academia Sinica, Taipei, Taiwan, ROC

^gDepartment of Surgery, Armed Force Sung-Shan Hospital, Taipei, Taiwan, ROC

^hDepartment of Community Health, Tri-service General Hospital, Taipei, Taiwan, ROC

ⁱDepartment of Infectious Diseases, Buddhist Tzu-Chi General Hospital, Hualien, Taiwan, ROC

^jInstitute of Emergency and Critical Care Medicine, National Yang-Ming University, Taipei, Taiwan, ROC

Received 30 July 2004; accepted 10 February 2005

Available online 8 September 2005

J Hosp Inf 2006;62,195–9

KEYWORDS

SARS; Infection control; Healthcare workers; Traffic control

Summary Healthcare workers (HCWs) are at risk of acquiring severe acute respiratory syndrome (SARS) while caring for SARS patients. Personal protective equipment and negative pressure isolation rooms (NPIRs) have not been completely successful in protecting HCWs. We introduced an innovative, integrated infection control strategy involving triaging patients

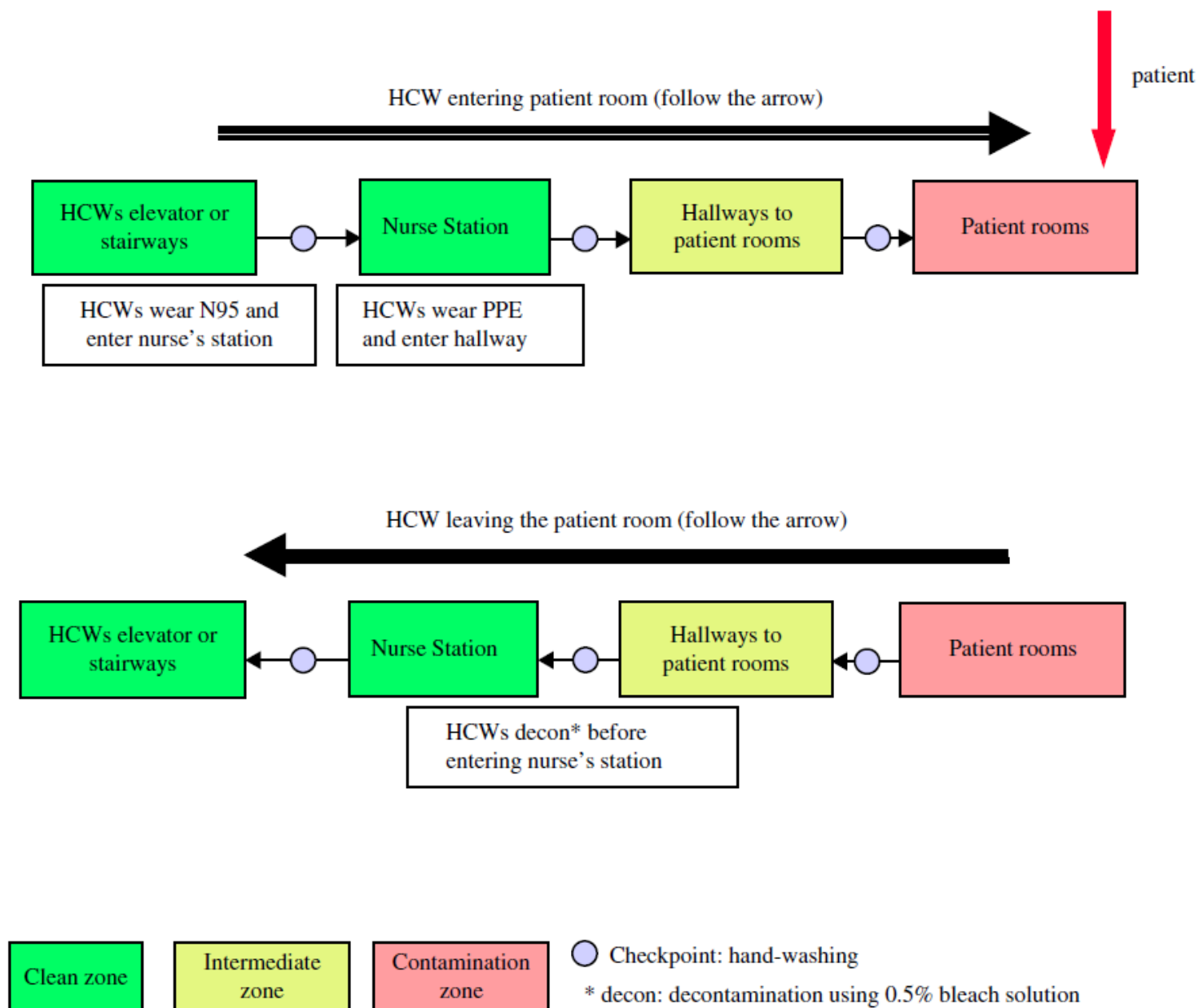


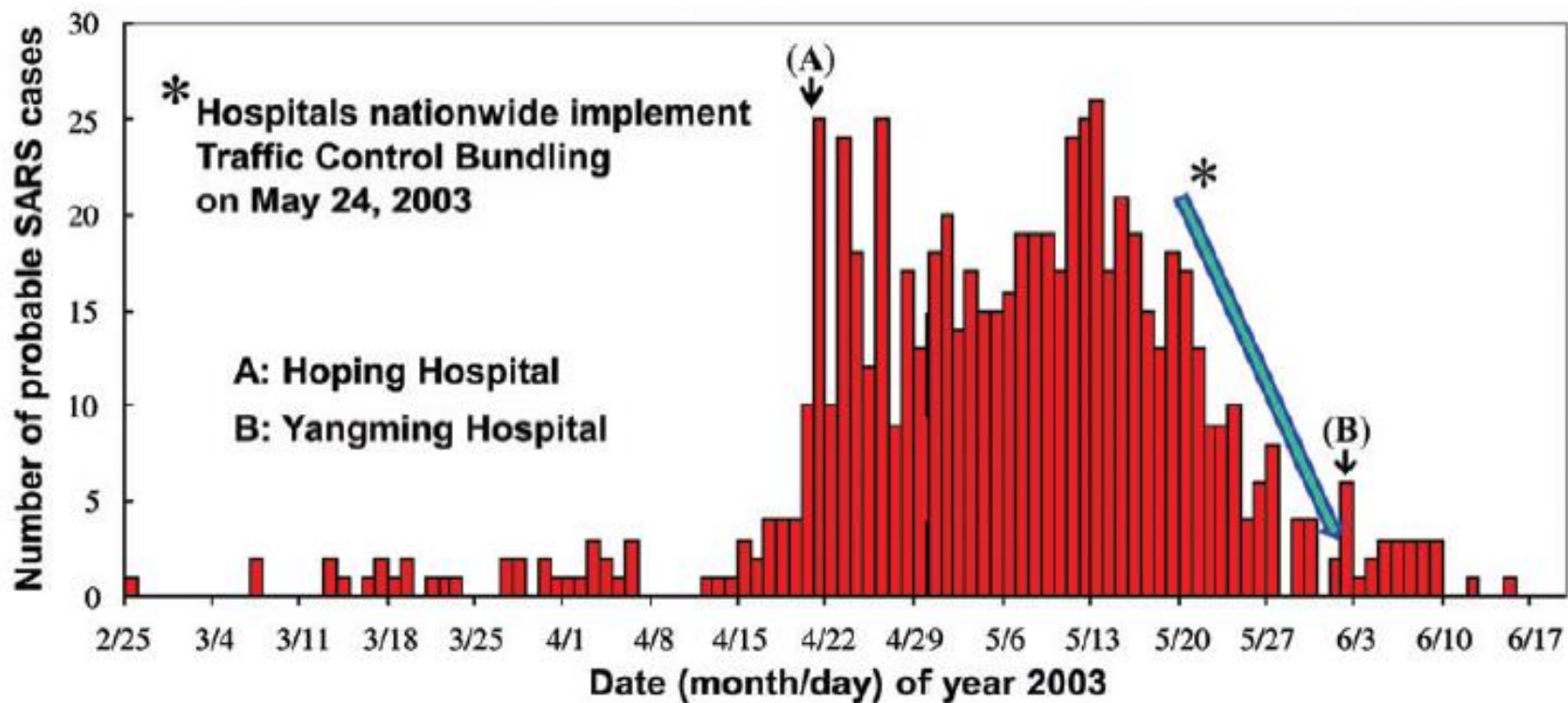
Figure 1. Traffic control bundle procedures. Following triage outside the hospital entrance, patients who are possibly infected are directed (red arrow) into the contamination zone. Healthcare workers (HCWs) and patients are separated by zones of risk with decontamination and glove-on alcohol or hand-washing, or both, between zones of risk.⁵ PPE, personal protective equipment.



creasingly possible that MEKs spread through fomites [1–3]. The 2003 severe acute respiratory syndrome (SARS) epidemic in Taiwan offers a documented example of transmission

units, in designated SARS areas, and in supposedly clean areas [5]. As SARS-CoV proved capable of surviving in the environment for 1–3 days [6], HCWs were unwittingly spreading the virus throughout the

(demarcate zones of risk between contaminated and clean zones); and “contact hand disinfection” (consistently washing hands, gloves on or not, at checkpoints between zones of risk).



Epidemiological curve of probable severe acute respiratory syndrome (SARS) cases in Taiwan in 2003. A total of 674 probable cases were reported in Taiwan between 24 February and 3 July 2003. Hoping Hospital was the first to suffer a major outbreak (A). Yangming Hospital was the last to report a major outbreak (B). In the 2 weeks following the nationwide mandate that hospitals implement TCB, Taiwan experienced a sharp decline of the epidemic curve.

Casual mistake is acceptable

- When this is all over
- And if we are still alive
- Than we can take off our mask
- And to get to know each other better

YEN, 桃榮, 仁濟

- May 1st, 2003 -



这个夏天过去了

悲壯

2003 年

松山指揮部抗煞團隊



抗戰成功十二週年感恩餐會

台灣感染管制學會 1993.12.12

- 呂學重 1993
- 黃高彬 1996
- 張上淳 1999
- 莊銀清 2002
- **顏慕庸 2005**
- 李聰明 2008
- 李聰明 2012
- 薛博仁 2015



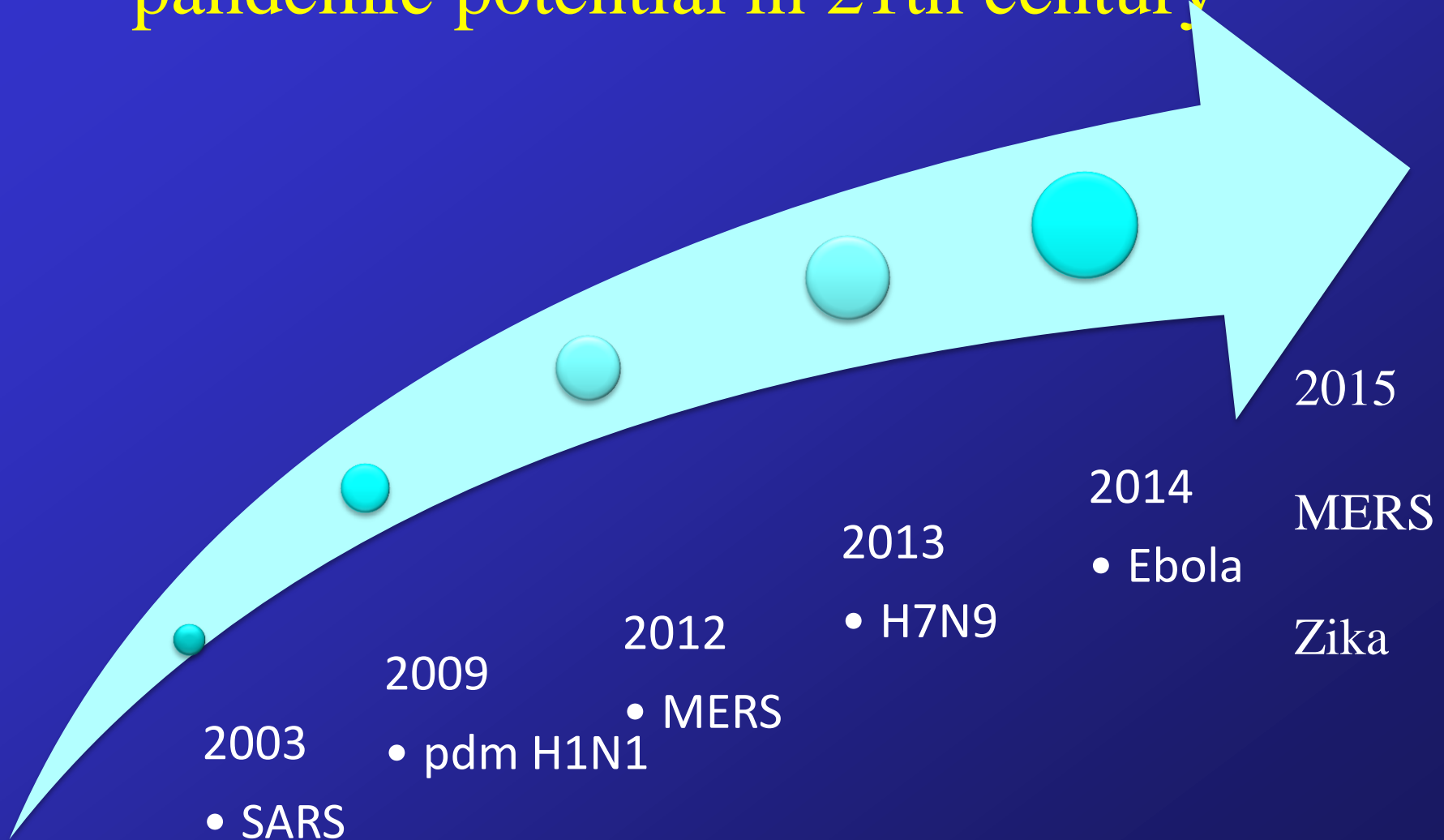
二十一世紀零容忍



後煞時期感染管制新系統

- 六標準差。
- 感控系統性改善之最新趨勢:
- WHO病人安全之主軸，
- 統合相關流程並建構感控組合式照護 bundle care
- 手部衛生
- 抗生素管理計畫等流程管理，
- 院內感染率趨零之終極目標。
- 平時感控 / 戰時防疫等常態性危機管理機制，迎接21世紀之遽變與挑戰。

Major emerging infectious diseases with pandemic potential in 21th century



Correspondence

環媒fomite傳播是Ebola的致病機制之一

Traffic Control Bundling Is Essential for Protecting Healthcare Workers and Controlling the 2014 Ebola Epidemic

TO THE EDITOR—A global health crisis, the 2014 Ebola outbreak has now struck healthcare workers (HCWs) at unprecedented levels. Whereas historically, Ebola epidemics spread via person-to-person transmission, the current outbreak in West Africa has seen unexpectedly extensive spread of nosocomial disease, despite HCWs' reliance on previously effective infection control procedures such as patient isolation, barrier nursing procedures, and required personal protective equipment (PPE) [1]. Indeed, infection struck even

sion of Ebola may best explain some of these unanticipated cases. Fomite transmission is facilitated by the practice of situating patients with acute symptoms and potentially extremely high viral loads outside isolation rooms in environments where adherence to routine disinfection practices is rare [7].

Taiwan's experience with severe acute respiratory syndrome (SARS) in 2003 is instructive. We contend that during the height of the SARS epidemic, HCWs in institutions that failed to identify designated zones of risk simply assumed they were secure from risk as long as they were not in proximity to patients with highly contagious pathogens. However, their confidence in existing barrier precautions

Realizing the threat of nosocomial infection, the Taiwan Centers for Disease Control responded by implementing traffic control bundling (TCB), which included triage and diversion of patients before they enter the hospital; creation of zones of risk between contaminated and clean zones; and hand disinfection at checkpoint transitions between zones of risk (Figure 1) [11]. This was critical ($P < .05$) for protecting HCWs [9]. Indeed, infection rates among HCWs caring for SARS patients dropped to zero following its implementation, primarily contributing to nationwide control [7].

A key aspect of successful TCB was the installation of alcohol dispensers at

zero and contributed to nationwide SARS control.

According to TCB, patients triaged outside the hospital entrance, at every step along the way until they are hospitalized in an isolation room, should remain contained inside clearly designated "zones of risk," which are distinguished from "clean zones" and "intermediate zones."

Healthcare workers in a clean zone must don their PPE before entering a zone of risk. When they leave a zone of risk, they must be decontaminated and remove their PPE in an intermediate zone before they enter a clean zone. To avoid casual contact of skin or mucosa with the virus, they must disinfect their gloved or bare hands between every single step of the decontamination process and PPE removal.

During the height of Taiwan's SARS epidemic, in institutions that failed to identify designated zones of risk, fomites positive for SARS coronavirus RNA were found far from patient rooms. Unaware of this, healthcare workers in these distant areas sometimes came into contact with fomites after removing their PPE and were contaminated.

This scenario likely explains the infection of healthcare workers with Ebola, the authors write.

"Lessons from SARS and in-vitro study of Ebola virus have clearly demonstrated the importance of fomite transmission as an ignored mechanism in emerging infectious diseases," co-author Dr. Po-Ren Hsueh of National Taiwan University College of Medicine in Taipei told Reuters Health in an email.

SOURCE: <http://bit.ly/1ybTKsk>

Clin Infect Dis 2014.

Correspondence

Controlling Middle East Respiratory Syndrome: Lessons Learned From Severe Acute Respiratory Syndrome

TO THE EDITOR—First identified in April 2012, Middle East respiratory syndrome (MERS) usually derives from individuals in close contact with camels. The infection may then spread to close contacts, including healthcare workers (HCWs) who are exposed to the patient through droplet and contact transmission. To date, no other transmission method has been definitively identified [1]. However, evidence exists that a number of those infected by South Korea's index MERS case

via fomites [4]. Shortly after the index SARS case entered Heping Hospital in Taipei, a nosocomial SARS outbreak occurred. Similar to the South Korean MERS case, in the initial phase 17 HCWs contracted SARS despite working in separate sectors of the hospital and having no direct contact with the index patient. Within 2 weeks, the hospital suffered 150 SARS cases and was sealed off. Many patients and contacts who had unknowingly contracted the disease and who had not been quarantined moved to other hospitals where nosocomial spread recurred, eventually spreading throughout Taiwan [4]. Evidence of fomite transmission derived

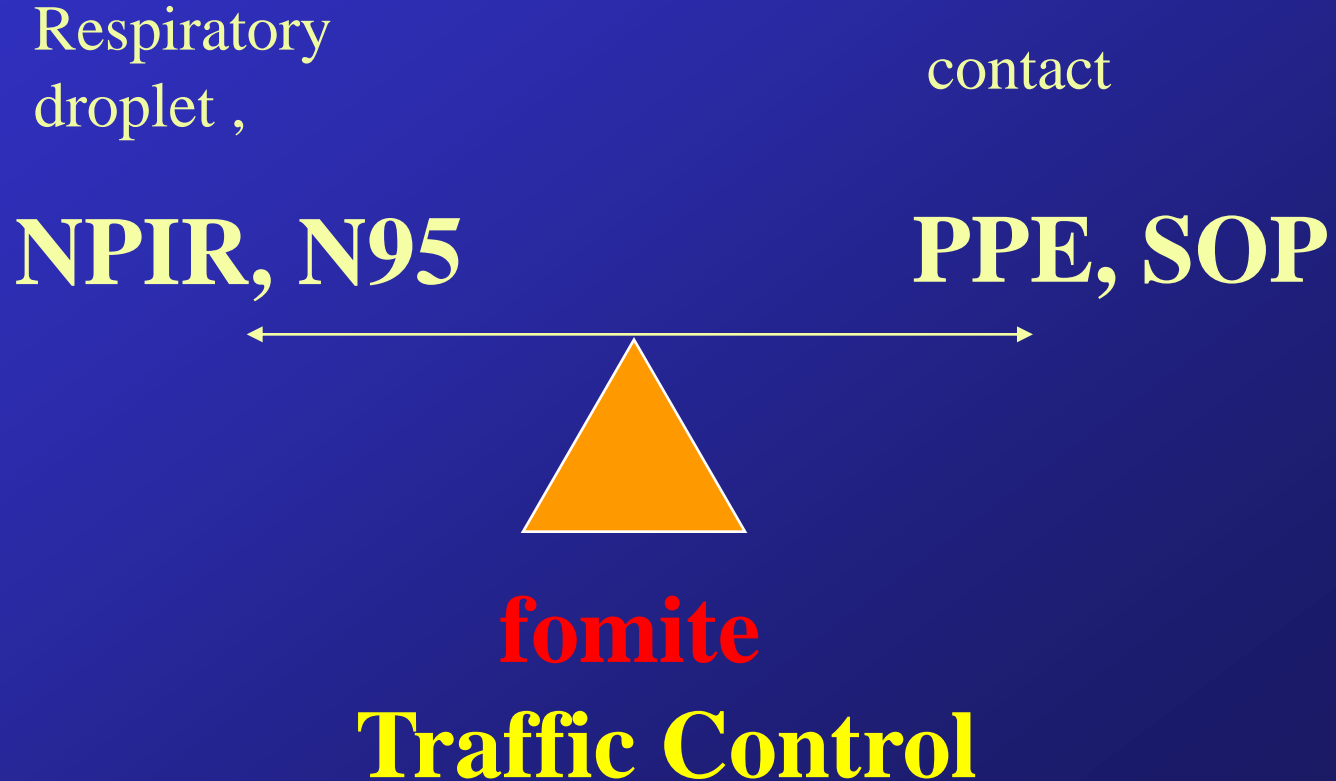
hospital v
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The Tai
(TCDC) n

in a pilot hospital, encouraging, with among HCWs significantly more in the pilot hospital than in the control hospitals ($P = .03$) [4]. It is clear, the TCDC in pilot hospitals immediately reduced the spread of infection. As a result, from the outbreak was curtailed (Table 1). A retrospective analysis showed that TCB was the only significant measure in protecting both HCWs and patients [7, 8]. As shown here, when not im-

contributors to nosocomial infection and the spread of emerging infectious diseases, such as SARS and potentially MERS. As we have illustrated, it seems that fomite transmission is a common microbiological niche adapted to human behavior [3, 9, 10]. The SARS and, potentially, MERS

環境媒介物傳播是常見的微生物繁衍機制
addressing fomite transmission spread of emerging infectious diseases. Given the evidence that TCB effectively limits fomite transmission, we strongly recommend that TCB be implemented alongside other measures meant to control

2003 SARS epidemic of Taiwan
2014 EVD episodes of USA a
2015 MERS epidemic of Korean





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Journal of Hospital Infection

journal homepage: www.elsevierhealth.com/journals/jhin

Review

From SARS in 2003 to H1N1 in 2009: lessons learned from Taiwan in preparation for the next pandemic

M.-Y. Yen^{a,*}, A.W.-H. Chiu^b, J. Schwartz^c, C.-C. King^d, Y.E. Lin^e, S.-C. Chang^f,
D. Armstrong^g, P.-R. Hsueh^{f,h,**}

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^b Department of Surgery, Taipei City Hospital, Department of Health, Taipei City Government and National Yang-Ming University School of Medicine, Taipei, Taiwan

^c Department of Political Science, State University of New York, New Paltz, NY, USA

^d Institute of Epidemiology and Preventive Medicine, College of Public Health, National Taiwan University, Taipei, Taiwan

^e Center for Environmental Laboratory Services, National Kaohsiung Normal University, Kaohsiung, Taiwan

^f Department of Internal Medicine, National Taiwan University Hospital, National Taiwan University College of Medicine, Taipei, Taiwan

^g Memorial Sloan Kettering Cancer Center, New York, NY, USA

^h Department of Laboratory Medicine, National Taiwan University Hospital, National Taiwan University College of Medicine, Taipei, Taiwan

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Severe acute respiratory
syndrome

Six Sigma

Traffic Control Bundles

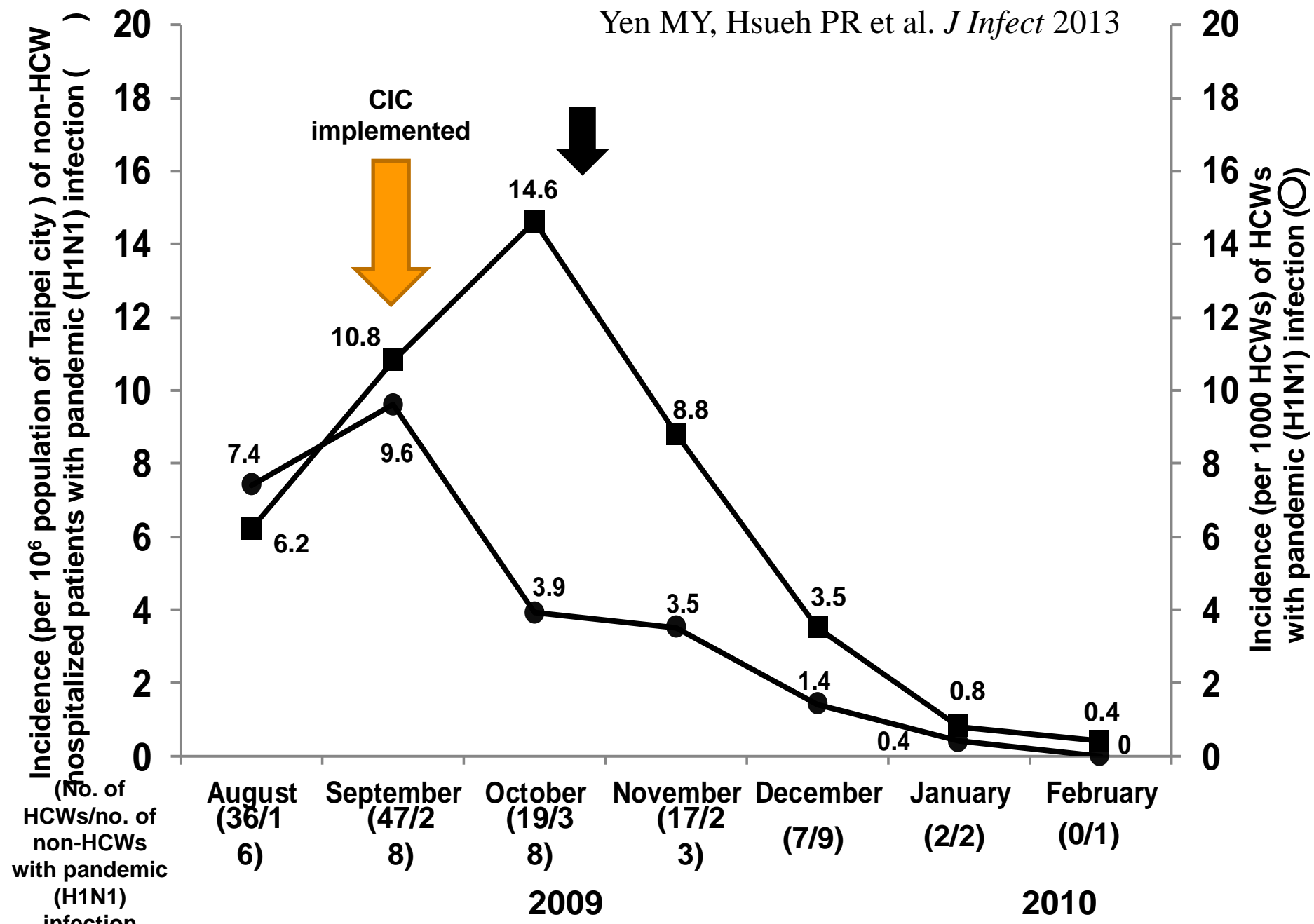
SUMMARY

In anticipation of a future pandemic potentially arising from H5N1, H7N9 avian influenza or Middle East Respiratory Syndrome, and in large part in response to severe acute respiratory syndrome (SARS) in 2003, the city of Taipei, Taiwan, has developed extensive new strategies to manage pandemics. These strategies were tested during the 2009 H1N1 outbreak. This article assesses pandemic preparedness in Taipei in the wake of recent pandemic experiences in order to draw lessons relevant to the broader international public health community. Drawing on Taiwan and Taipei Centers for Disease Control data on pandemic response and control, we evaluated the effectiveness of the changes in pandemic response policies developed by these governments over time, emphasizing hospital and medical interventions with particular attention paid to Traffic Control Bundling. SARS and H1N1 2009 catalysed the Taiwan and Taipei CDCs to continuously

flu epidemic 2016/ pandemic

- **Traffic Control Bundles, triage before hospital**
 - Activating either screening stations outside hospitals OR
 - CICs (community influenza center 社區分流).
- **Traffic Control Bundles, zones of risk**
 - hospital level (動線管制)
 - community level (專責醫院分流) / ICU 分流
- **Traffic Control Bundles, checkpoint control**
 - TCB may serve as a social distancing measure and cut off the vicious cycle of transmission
 - hospitals and the schools as checkpoint to mitigating the epidemic.

Fig. 2



flu epidemic 2016/ pandemic

- **Traffic Control Bundles**, triage before hospital
 - Activating either screening stations outside hospitals OR
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- **Traffic Control Bundles**, checkpoint control
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 - **hospitals and the schools** as checkpoint to mitigating the epidemic.
- **Traffic Control Bundles**, zones of risk
 - hospital level (動線管制)
 - **community level (專責醫院分流) / ICU 分流**

Air travel

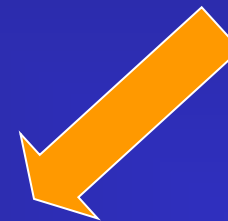


Family



Schools
70 %

checkpoint



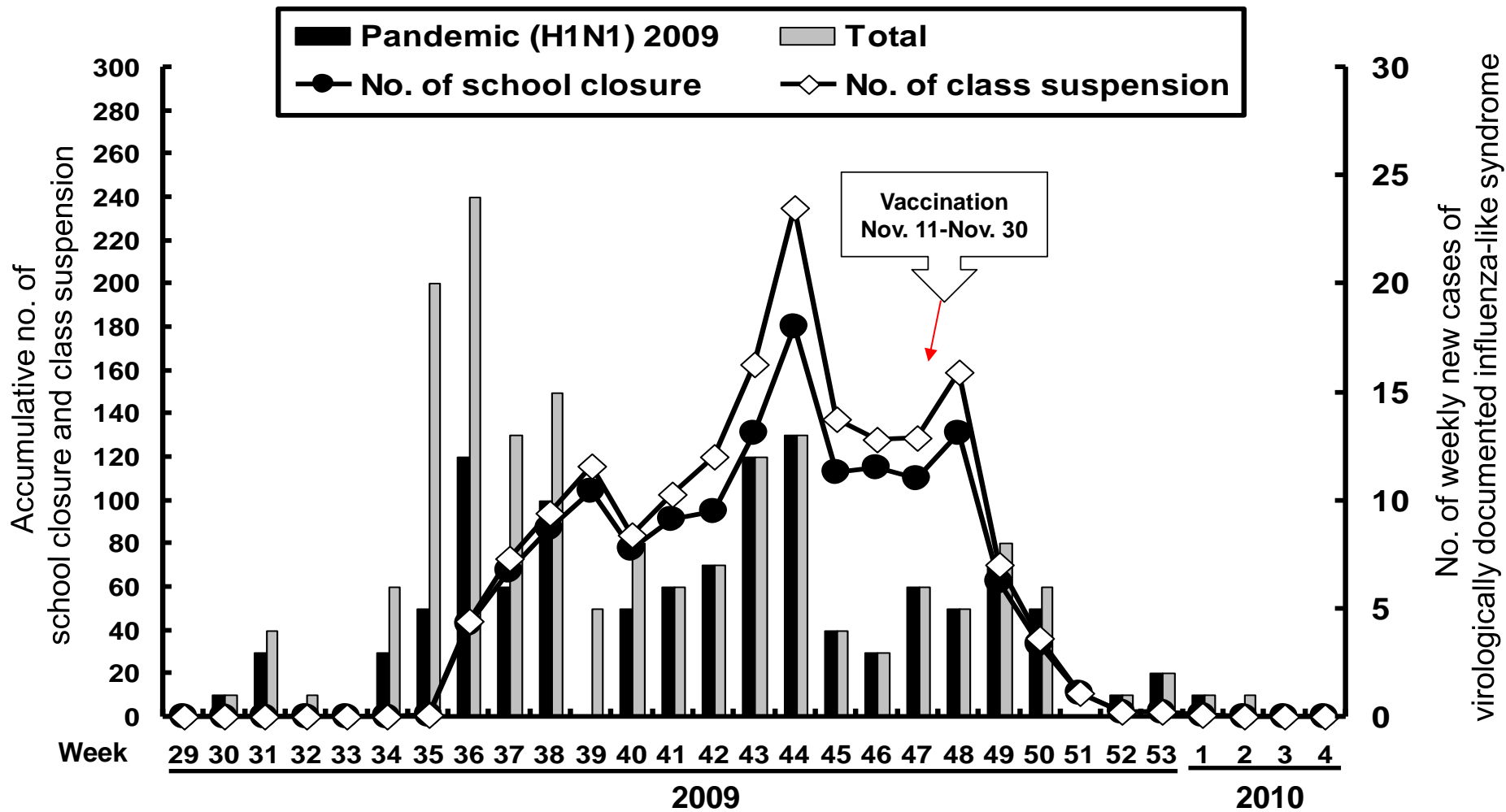
Community
21 %



Hospital
70 %

checkpoint

Herd immunity



flu epidemic 2016/ pandemic

- **Traffic Control Bundles**, triage before hospital
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 - CICs (community influenza center 社區分流).
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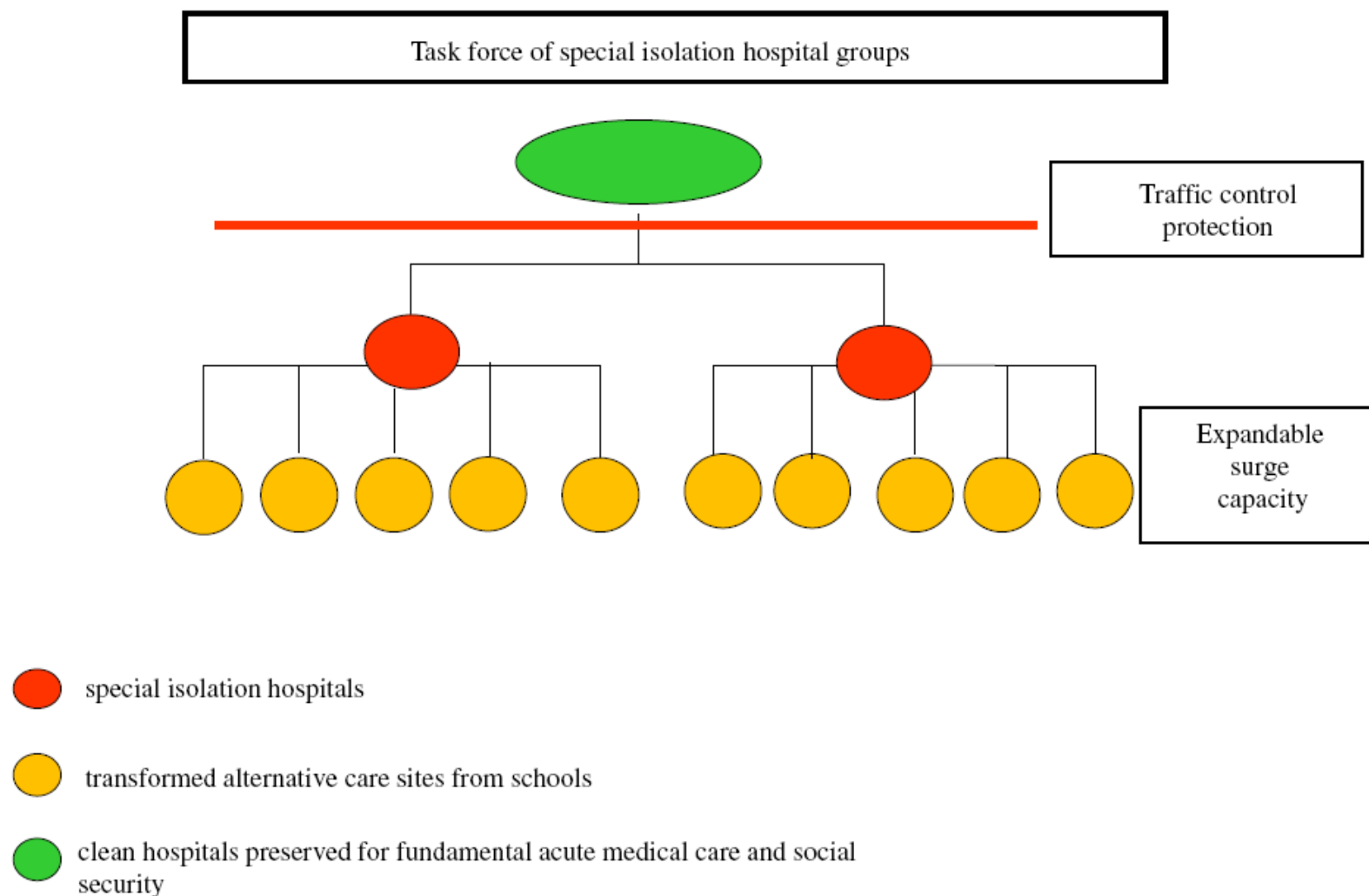
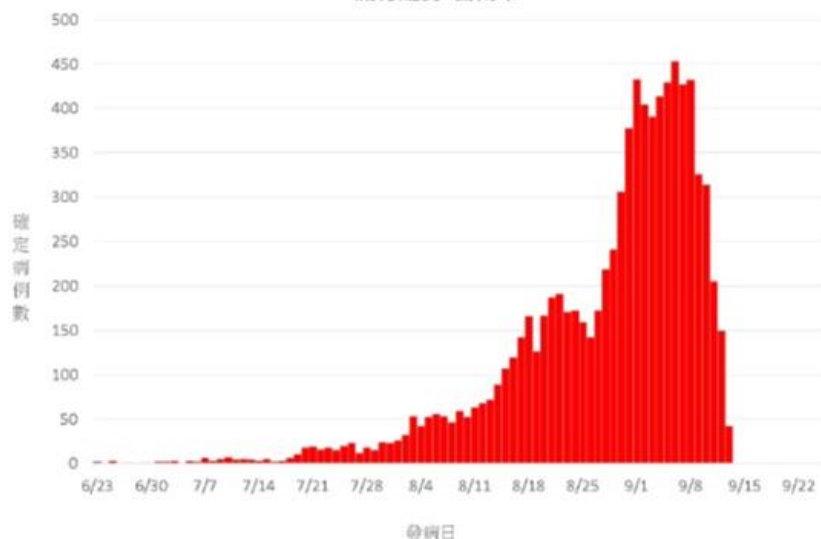


Figure 3. Conceptual scheme of expandable task forces of special isolation hospital groups for surge capacity in mitigating novel pandemics. Each working group comprised one designated communicable disease isolation hospital (red ovals) with five alternative care sites (yellow circles) transformed from recruited schools. Other general hospitals (green ovals) should prioritize strict infection control to remain free from nosocomial outbreaks of novel pandemic and maintain the integrity of the healthcare system.

台南市疫情現況

◆入夏以來累計8,666例，分布於35個行政區(佔全市95%)

流行趨勢-台南市



M.-Y. Yen et al. / Journal of Hospital Infection 87 (2014) 185–193

191

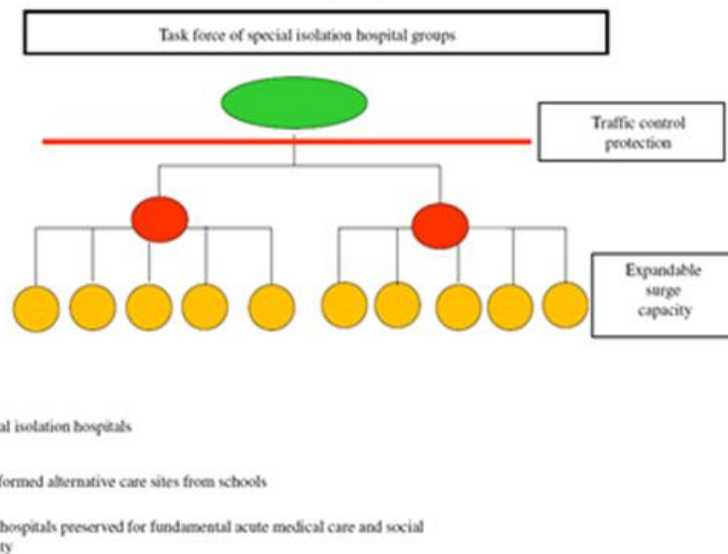


Figure 3. Conceptual scheme of expandable task forces of special isolation hospital groups for surge capacity in mitigating novel pandemics. Each working group comprised one designated communicable disease isolation hospital (red ovals) with five alternative care sites (yellow circles) transformed from recruited schools. Other general hospitals (green ovals) should prioritize strict infection control to avoid any form of nosocomial outbreaks of novel pandemic and maintain the integrity of the healthcare system.

緩解塞爆奇美、成大 今研討防治、快篩使用條件 快篩劑到貨

衛生福利部擬設登革熱應變醫院

中央流行疫情指揮中心公告

中華民國104年9月17日

1

由於目前登革熱病患眾多，為確保醫療品質並避免登革熱病患在急診候床過久，增加院內感染機率，登革熱中央流行疫情指揮中心依傳染病防治法第五十三條及第四十四條規定，建立病患分流與醫療整合系統，由醫師評估將登革熱病患分為A、B、C三級

2

若B級病患經醫師評估需要留院觀察治療者，應轉至以下四家登革熱應變醫院接受持續治療：

- ✓ 衛生福利部台南醫院
- ✓ 台南市立醫院
- ✓ 台南市立安南醫院
- ✓ 高雄榮總台南分院





謝謝今天出席的長官、主持人、演講人、專家、同好們的踴躍出席與指教！

19:45

已讀105
20:09

這就是「動線管制」到院前分流、汙染分區（感染專責醫院）之最佳體現。老莊讚！



陳彥旭

這真的是次完全不同且成功分流的經驗，台灣成功！

20:13



莊銀清

登革熱病患分流再分流
醫護人員鬆口氣

http://www.appledaily.com.tw/realtimenews/article/new/20150919/695128/?utm_source=Via&utm_medium=Android Share&utm_campaign=%E5%8D%B3%E6%99%82%E6%96%B0%E8%81%9E%2F%E6%9C%80%E6%96%B0%2F%E7%99%BB%E9%9D%A9%E7%86%B1%E7%97%85%E6%82%A3%E5%88%86%E6%85%81%E5%86%8D

[%E5%93%A1%E9%AC%86%E5%8F%A3%E6%B0%A3](#)

20:45



莊銀清

老顏：您最內行了，comment一下！

20:49

已讀17
21:35

目標 CID original article

已讀12
21:36

分流再分流再分流.....

已讀10
21:36

六標準差



已讀10
21:37

已讀8
21:37

快逃

21:38
顏慕庸邀請盧進德加入群組

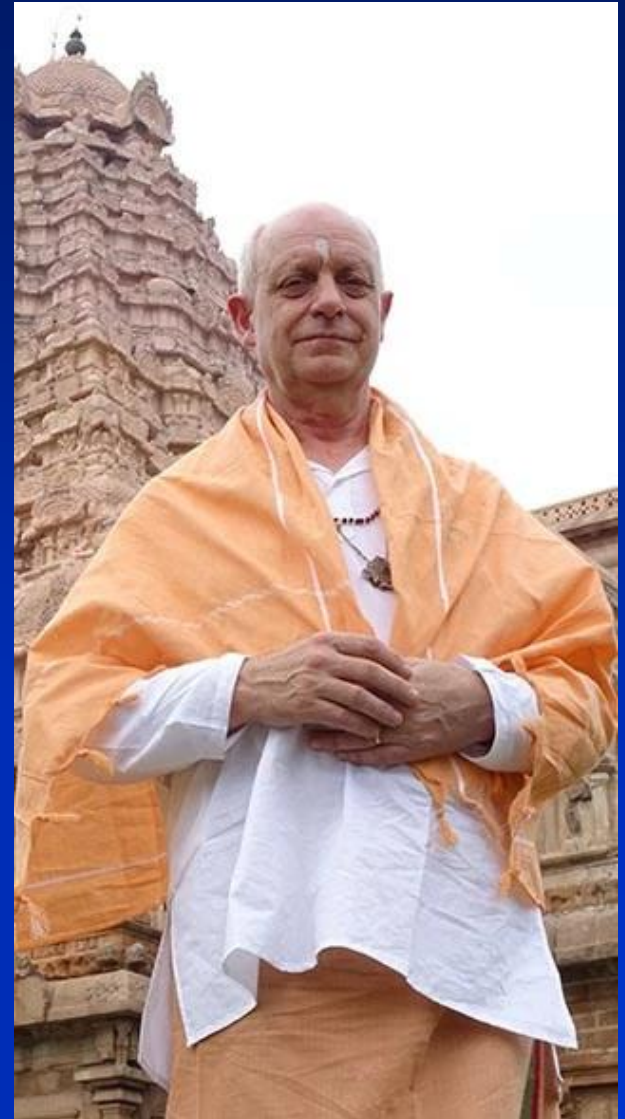
21:38

Latest World Predictions for 2017

Craig Hamilton-Parker

Donald Trump will win the US Election
(Correct 10/10 9 Nov 2016)

- Dec. 2017 – into mid 2018
- a world-wide flu like epidemic from a strange disease that attacks the immune system and will kill many in the third world.



Infection control bundle = 0

- Traffic control bundle
- Triage into hospital
 - Rapid screening of MRSA/MDR at entry
- Zones of risk
 - Environmental disinfection
 - Probiotics, PPE
- Check point handwashing
 - HH campaign
- Antibiotic stewardship

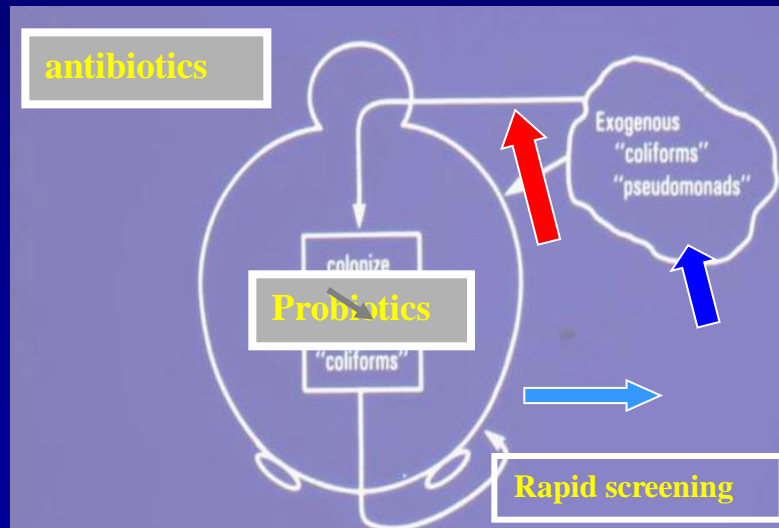


Fig. 1-1 Epidemiology of aerobic gram-negative bacilli. Endogenous organisms may invade or colonize exterior surfaces. Exogenous organisms may colonize exterior or interior surfaces and invade.



ORIGINAL ARTICLE

Bio-Kil, a nano-based disinfectant, reduces environmental bacterial burden and multidrug-resistant organisms in intensive care units

Wen-Sen Lee^a, Tai-Chin Hsieh^a, Justine C. Shiau^b,
Tsong-Yih Ou^a, Fu-Lun Chen^a, Yu-Hsin Liu^a, Muh-Yong Yen^{c,*},
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^b Department of Biology, Eberly College of Science, Pennsylvania State University, State College, PA, USA

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^d Departments of Laboratory Medicine and Internal Medicine, National Taiwan University Hospital, National Taiwan University College of Medicine, Taipei, Taiwan

Received 24 December 2015; received in revised form 14 April 2016; accepted 25 April 2016

Available online ■ ■ ■

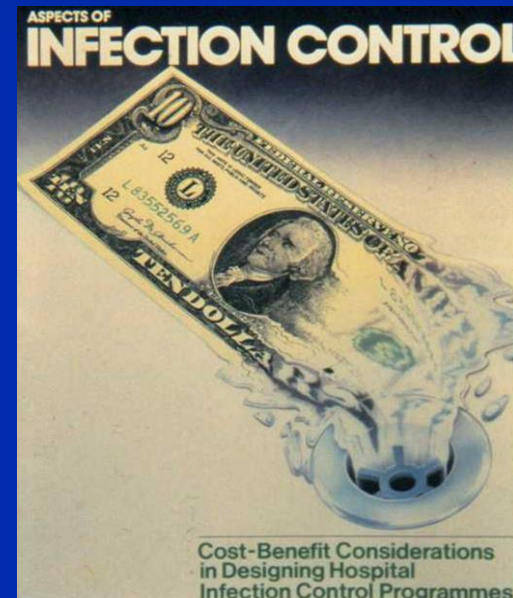
結論

- We have demonstrated the mode of HAI in ICU through “**environment-colonization-infection** 環境-移生-感染” transmission.
- **Fomites** 環境汙染源 play a major role rather than patient’s surrounding in the mode of **physician-environment-patient** 醫師-環境-病人 transmission.
- The Bio-Kil automated environmental disinfection has the beneficial outcome over MDRO colonization and reduced ICU sepsis, which **requires no behavioral modification** on the part of the staff. 自動化奈米科技可克服人類行為規範之盲點，降低移生與院內感染

藍海 Envision 願景

- 老化、長照、勞基法、一例一休加速整體變化
- 健保制度囚犯理論下的殺戮紅海—總額預算

- 論人計酬 capitation
- 分級醫療





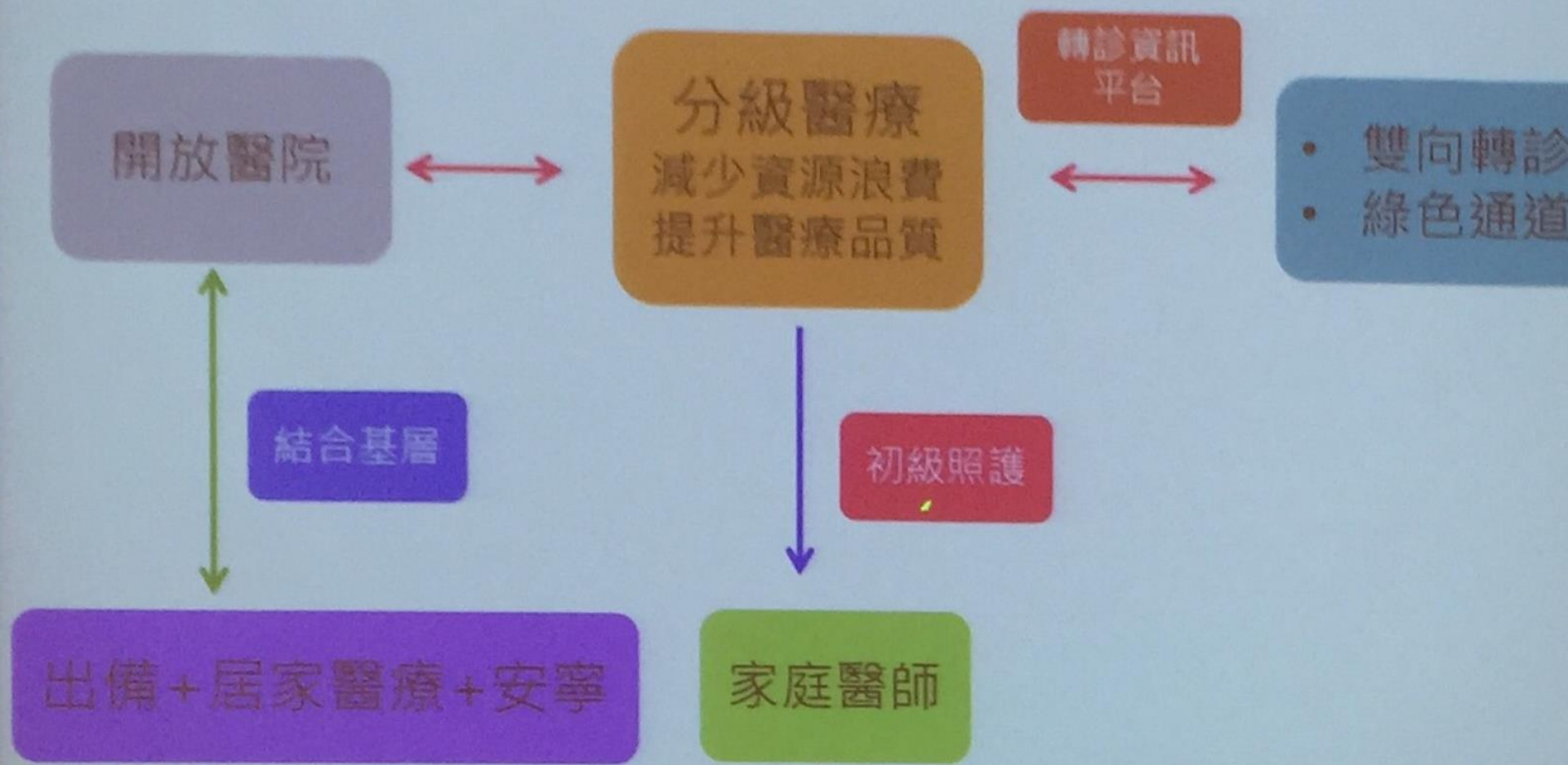
嘉義市長涂醒哲去年訪視長輩，宣導醫、藥師到宅訪視情形。（嘉義市政府提供）



Community based

- supplier centered
- patient centered
- patient-family centered
- community centered
- 水平整合、垂直整合、智慧醫療
automation、移動醫療
- 社區居家，用心創造高價值的醫療，共
創優質藍海願景！

落實分級轉診，建立社區照護模式





台北
中嘉新聞 送愛到宅行動超音波 打造居家醫療照護



台北
中嘉新聞 送愛到宅行動超音波 打造居家醫療照護



台北
中嘉新聞 李依如 台北報導 送愛到宅行動超音波 打造居家醫療照護



台北
中嘉新聞 送愛到宅行動超音波 打造居家醫療照護

國內外新知

居家環境污染與 MRSA 感染復發之相關性

過去三十年來，抗甲氧苯青黴素金黃色葡萄球菌 (methicillin-resistant *Staphylococcus aureus*, MRSA) 感染在社區機構中快速成長，多半為皮膚及軟組織感染，其中約有 5~10% 的感染可能危及生命。因為社區相關 MRSA (community associated MRSA, CA-MRSA) 感染對家庭所帶來的影響包括家庭成員 MRSA 移生比率、

6 月 30 日，共篩選出 554 位培養出 MRSA 之皮膚及軟組織感染患者。研究對象排除居住長照機構、研究前六個月內曾住院、無家可歸或生活在避難所、有慢性疾病如末期腎臟疾病、年齡小於 1 歲或家庭成員中已有參與此研究者，共有 262 位病人符合研究收案標準，最後有 83 位患者及 214 位家庭成員同意參與研究。計畫內容

筆路藍縷 以啓山林

承先啓後

雙十巨擘 懿品懿教

顏慕清 2013/0104



08.06.2009

成龍，坂本龍馬亦如是(III) close-up view

坂本龍馬

- 武士劍道
 - 手槍
 - 大砲
 - 船塹
 - 治國
 - 流星
- 少年劍士
裝甲醫官
感染學科
感染管制
防疫管理
靈修

感控防疫靈修的人生部落客

- 感控: 新鴉片戰爭



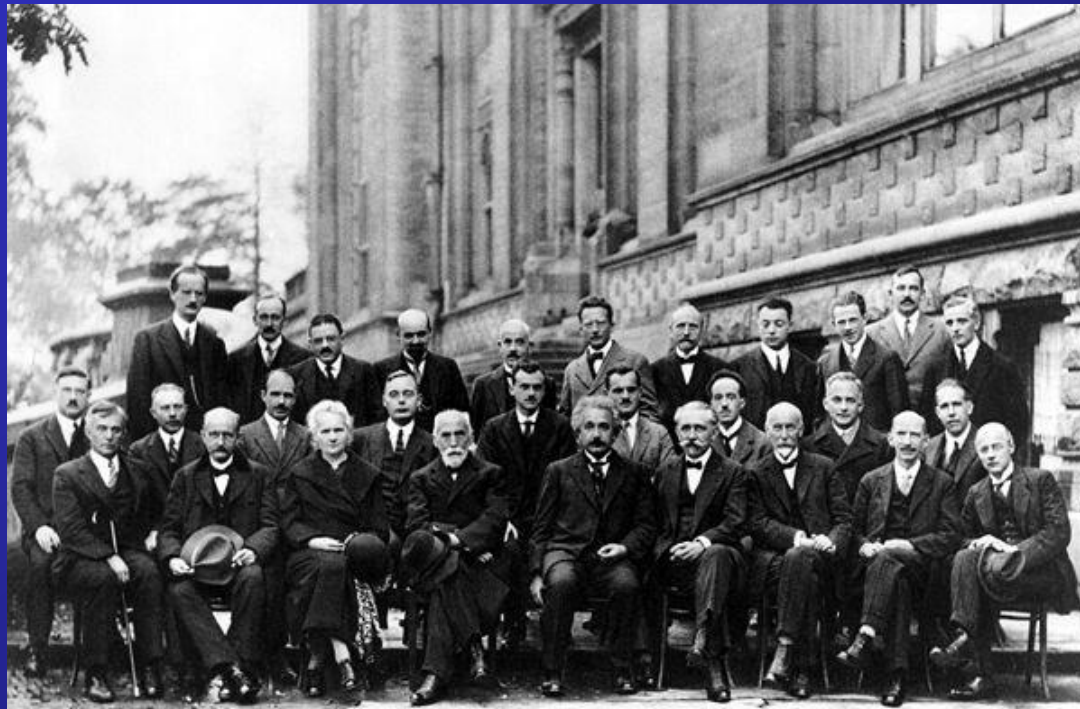
感控防疫靈修的人生部落客

- 感控: 新鴉片戰爭
- 防疫: Health Crisis Management in EID



感控防疫靈修的人生部落客

- 感控: 新鴉片戰爭
- 防疫: Health Crisis Management in EID
- 靈修: 醫學人文「身心靈實證之生死學」



Conclusion

- 惠能大師的**頓悟**，原是累世俱足
- 聰明/智慧？！還是得靠**時間歲月**累積。
- 越老越能咀嚼**身心靈**整體之美。
- 面對AI 世紀，身心靈的平衡才是**藍海**。

顧
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NOV 24 2008

The End

Thanks for your attention.