行政院所屬各機關因公出國人員出國報告書

(出國類別：考察)

加拿大健康資訊管理及醫療資訊系統發展現況考察報告

暨

美國演講簡報資料

行政院研考會／省（市）研考會編號欄

服務機關：中央健康保險局

出國人　職　稱：總經理

姓　名：張　鴻　仁　等　二　人

出國地點：加拿大，美國

出國期間：93 年 1 月 31 日至 93 年 2 月 13 日

報告日期：93 年 3 月

系統識別號:C09301245

公 務 出 國 報 告 提 要

頁數: 35　含附件: 否

報告名稱:

考察醫療資訊管理系統

主辦機關:

行政院衛生署中央健康保險局

聯絡人／電話:

高以琳／27028920

出國人員:

張鴻仁　行政院衛生署中央健康保險局　　總經理
吳淑慧　行政院衛生署中央健康保險局　資訊處　專門委員

出國類別: 考察

出國地區: 加拿大

出國期間: 民國 93 年 01 月 31 日 -民國 93 年 02 月 13 日

報告日期: 民國 93 年 03 月 25 日

分類號/目: J0／綜合（醫藥類）　J0／綜合（醫藥類）

關鍵詞:　資訊管理,電子健康記錄

內容摘要: 本次考察目的在於瞭解加拿大卑斯省及聯邦政府相關單位健康資訊管理，醫療資訊系統發展現況及其相關設計機制，以提供我國未來建設健康資訊基礎架構之規劃參考。考察心得如下： 1.重視資料標準的訂定、品質的提升及資料定義的一致性，成立非政府組織(CIHI)來專責定義全國醫療資訊的各項標準。 2.聯邦及省各層級的單位均設有資訊管理(Information Management)相關部門，資訊管理人員必須對於各項業務有所瞭解，長期培養並累積分析經驗。 3.各種資訊以 Web based 方式呈現，提供各界查詢是發展趨勢 4.個人的(Individual level)資料呈現，事先訂有相對應的資料保護原則與法規規範。 5.將不同來源的資料予以串檔整合，分析運用，提供更完整的健康資訊。 6.電子健康記錄(Electronic Health Record)及遠距醫療(Telehealth)是近期加拿大發展的重點計劃之一，並於 2000 年成立一個專責執行的非營利公司組織 Canada Health Infoway 來做藍圖規劃與細項工作展開。 7.Canadian Council on Health Services Accreditation（CCHSA）醫院評鑑工作由同儕執行，醫院將評鑑視爲是一種學習的過程。

本文電子檔已上傳至出國報告資訊網

摘　要

一、考察目的:

瞭解加拿大卑斯省及聯邦政府相關單位健康資訊管理，醫療資訊系統發展現況及其相關設計機制，以提供我國未來建設健康資訊基礎架構之規劃參考。

二月九日至二月十三日張總經理另赴美國哈佛大學及普林斯頓大學演講。

二、考察機構：

加拿大卑斯省衛生署，聯邦政府衛生部相關單位

三、考察心得：

1. 重視資料標準的訂定、品質的提升及資料定義的一致性，成立非政府組織(CIHI)來專責定義全國醫療資訊的各項標準。

2. 聯邦及省各層級的單位均設有資訊管理(Information Management)相關部門，資訊管理人員必須對於各項業務有所瞭解，長期培養並累積分析經驗。

3. 各種資訊以 Web based 方式呈現，提供各界查詢是發展趨勢

4. 個人的(Individual level)資料呈現，事先訂有相對應的資料保護原則與法規規範。

5. 將不同來源的資料予以串檔整合，分析運用，提供更完整的健康資訊。

6. 電子健康記錄(Electronic Health Record)及遠距醫療(Telehealth)是近期加拿大發展的重點計劃之一，並於2000年成立一個專責執行的非營利公司組織Canada Health Infoway來做藍圖規劃與細項工作展開。

7. Canadian Council on Health Services Accreditation（CCHSA）醫院評鑑工作由同儕執行，醫院將評鑑視為是一種學習的過程。

建議：

1. Statistics Canada是獨立的中央機構，長久以來即負責加拿大人口健康資料（population health data）及社區民眾健康調查資料的收集工作，一年預算約3000萬加幣，在他的web主機上提供有13萬筆人口健康調查研究的記錄，可提供研究者來下載資料，進一步分析使用。加拿大政府有鑑於健康資料更詳細的分析需要，將原Statistics Canada部分人員與CIHI前身二組人員在1994年合併，正式成立CIHI的非營利機構，由加拿大的衛生部及各省的衛生署所共同成立，以發展加拿大全國的健康資料收集、處理及資訊分享的共通標準。CIHI的2/3資金由聯邦政府支應，另1/3由各省政府支應（一年預算約5000萬加幣），由其提供資訊來協助加拿大健康政策之制定，並與Statistics Canada共同發展全國的健康指標（national health indicators)。建議衛生署可考慮投資或設立類似CIHI之機構，以提供強而有力之衛生政策決策支援系統功能。

2. 加拿大為發展電子健康記錄(Electronic Health Record)及遠距醫療(Telehealth)，於2000年成立一個專責執行的非營利公司組織Canada Health Infoway來做整體藍圖規劃與細項工作展開；Infoway董事會的委員包括各省的衛生署副署長，來共同審核其所提之業務計畫，聯邦政府提供11億元加幣來執行各項基礎架構建設與六大策略性投資計畫，預定自今年起六年內完成各項重要的電子化健康紀錄互通機制之建置工作。

3. 目前我國在研擬中的建設「國家健康資訊基礎架構」專案，

建議比照加拿大聯邦政府推動電子健康紀錄(Electronic Health Record)的作業模式，於籌畫初期即邀請各相關團體參與規劃討論，蒐集各方意見，凝聚共識，訂定共同的願景，定義專案範圍與目標，發展策略，成立全國性的最高指導委員會監督專案之運作方向，與成立專責規劃的獨立執行單位。

4. 檢視及確認健保局全局資訊管理(Information Management)之策略。未來可朝全局資訊管理(Information Management)中高階主管及分析人員的培訓，提高所收集進來資料之正確性，提升分析資料品質，進一步將所獲得的資料有系統的整理成各部門管理資訊的方向發展。

5. 訂定健保局資訊安全的政策與指導原則。建議本局可另派員深入瞭解加拿大政府整體資料安全的政策，配套措施等設計機制，BC 省衛生署與 UBC 間所訂之各項資料提供作業準則，資料存取之原則與所提供資料欄位等相關作業細節，做為本局資通安全政策與標準流程訂定之規劃參考。

6. 積極參與國際醫療健康組織活動，我國可考慮參加 Canadian Society for International Health (CSIH) 非政府的國際醫療組織所舉辦之活動，擴大參與面。

考察人員：

總經理　　張鴻仁

總局資訊處　　專門委員　吳淑慧

出國期間：

中華民國九十三年一月三十一日至同年二月十三日

考察行程列表如后：

加拿大參訪行程

Monday February 2	Tuesday February 3	Wednesday February 4	Thursday February 5	Friday February 6
Location: Ministry of Health 維多利亞市 ***9:30 am*** ***Health Information Management Structure*** Mr. John Cheung Manager Health Information Systems ***10:30 am*** ***Health Information Systems Structure*** Mr. Stuart Frampton Manager Health Systems	Location: Ministry of Health 維多利亞市 ***9:30 am*** ***Welcoming Comments*** Mr. Ron Danderfer ADM ***10:00 am*** ***Demonstration of Data Warehouse Web Access Tools*** Mr. Terry Tuk ***11:00 am*** ***Surgical Waitlists*** Mr. Bill Moncur ***11:30*** ***Discussion***	*行程* 溫哥華 to 渥太華 ***Depart Victoria at 07:35 am***	Location: Health Canada 渥太華 ***9:30 am*** ***Health Canada*** Ms.Louise Crepault Program Advisor Location: Canada Health Infoway 2255 Fox Cres. Ottawa, Ontario ***11:30 am*** ***Canada Health Infoway*** Mr. Paul Hession Engagement Group Executive	Location: CCOHTA 600-865 Carling Ave 渥太華 ***9:30 am*** ***Canadian Coordinating Office of Health Technology Assessment*** Dr. Jill Sanders President
12:00 noon Lunch	**12:00 noon Lunch**		**Lunch and Discussion**	
Location: Ministry of Health 1515 Blanshard St. Victoria, B.C. ***1:30 pm*** ***Information Management Applications*** Dr. Alan Thomson Chair CCOHTA ***3:00 pm*** ***Health Technology Assessment & Info Management*** Dr. Alan Thomson Chair CCOHTA	Location: VIHA 2101 Richmond Rd. Victoria, B.C. ***1:30 pm*** ***CIHI & Info Management in Hospitals*** Mr. Rick Roger CEO Vancouver Island Health Authority (Cancelled) ***3:00 pm*** ***General Discussion*** Steve Kenny & Michael Hsieh CAMSI	***Arrive Ottawa at 4:35 pm***	Location: CIHI 377 Dalhousie St Suite 200 Ottawa, ON ***2:30 pm*** ***Canadian Institute for Health Information*** Dr. Bruce Petrie COO, CIHI ***4:45 pm*** ***Canadian Society for International Health (CSIH)*** Ms. Laurie Jones, Director of Special Projects	Location CCHSA ***12:00 pm*** ***Canadian Council on Health Services Accreditation*** Mr. Gilles Lanteigne & Mr. Martin Beaumont

張總經理美國演講行程

Sunday February 8	Monday February 9	Tuesday February 10	Wednesday February 11	Thursday February 13
Free time on Sunday Afternoon ***Meet with students who are studying medicine and public health at Harvard***	***Present a seminar*** "How Taiwan's National Health Insurance provides universal coverage while contain health cost inflation" ***Discuss with Winnie on the idea of DM payment design.***	***Travel and Visits*** Boston to Princeton ***Depart Boston (CO 9-VQMNXD) at 8:30 am*** ***Arrive Newark at 9:46am*** ***4:15 pm***. Give a speech "How Taiwan's National Health Insurance provides universal coverage with affordable costs" ***Follow by a dinner with a select group of graduate students and special guests from the Robert Wood Johnson Foundation.***	***Travel Day*** Princeton to Taipei ***Depart Newarkat***	***Arrive Taipei Feb 13***

目　　錄

附件目次

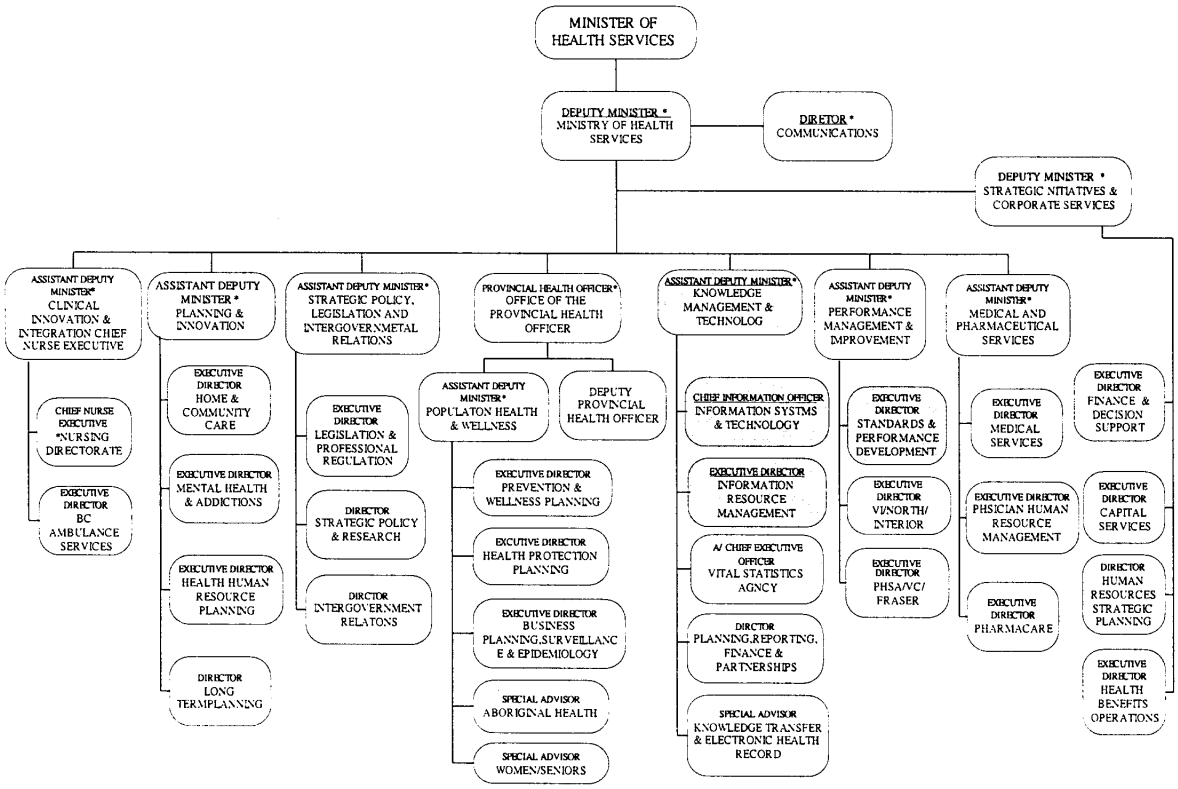
壹、 卑斯省衛生署參訪機構介紹內容摘要說明

一、 二月二日－加拿大卑斯省的衛生署

Session 1 － Health Information Management Structure

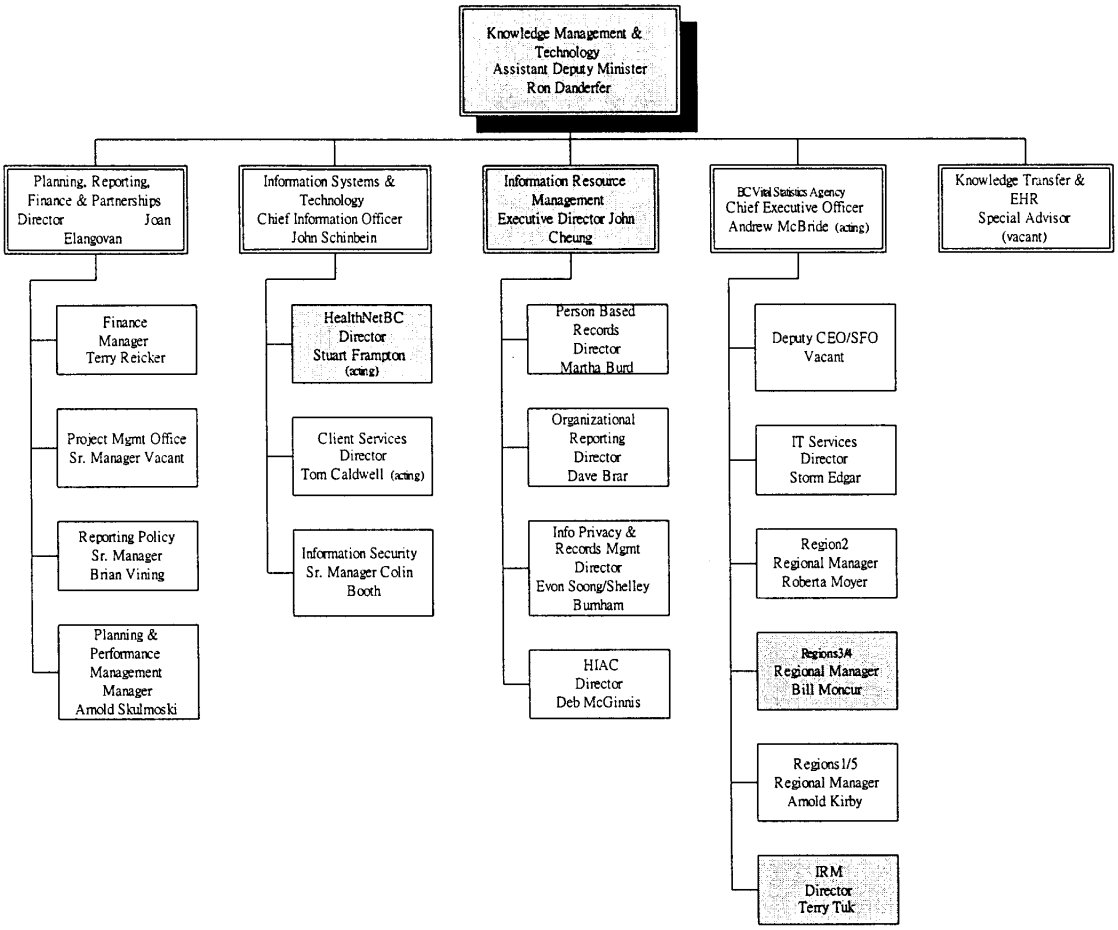
主講者：Mr. John Cheung, Executive Director of Information Resource Management

BC 省衛生署組織架構於今 2004 年 1 月重組，詳附圖一。



（附圖一）

知識管理與科技部門(knowledge Management & Technology)其下有 4 個工作團隊（詳附圖二），其中 Information Resource Management 設有 55 個人員編組。



（附圖二）

主要職掌：

- 提供全國及 BC 省的健康資訊
- 發展申報需求（reporting requirement）、資料品質（data quality）、及資料的管理（record management）
- 各種醫療資料的收集、驗證、及資料品質的管理
- 審視、驗證及負責內外部資料的公布
- 管理各種健康資料及資訊的擷取，訂定資料擷取的政策與標準
- 提供各種軟體工具供使用者查詢使用
- 提供資料收集及分析的標準方法與技術
- 建立以人口為基礎的 Funding Model 及相關分析
- 訂定績效指標（performance measures）

- 產製各項指標值及全國指標值
- 提供各種制式的及客製化的分析、報表
  其中 standard report 佔了 80% 的分析需求，而 customized 分析只佔 20%
- 提升資料品質為其工作重點
- 負責資訊的收集及對外發佈的統一窗口

心得與感想：

1. BC 省衛生署設立專責單位及人員集中處理及提供資訊。Information Management 人員必須對於業務有所瞭解，而非僅是產製數字，該部門主管 John Cheung 即同時俱有財務（Finance）、統計分析及 Hospital provider side 實務之管理經驗，因此對於數據之變化及判讀均能正確靈敏的提出分析與解釋。
2. 本局目前 IU 及各處均能產製各項分析數據，係分散式處理架構，對於資料之解讀則限制在各自的權責範圍與領域。未來建議逐年培訓中高階主管及分析人員，逐步轉移作業型態架構。

建議：

BC 省衛生署訂有資料提供的 Guideline，及資料 Access 存取權限的 policy。針對學術團體資料提供需求委託給 University of British Columbia(UBC)，由衛生署提供加密後但串檔完的原始 raw data file 給 UBC。學術單位之資料提供需求由 UBC 處理，除審查分析需求外，並負責資料之適當教導使用與事後銷毀等工作。

建議本局可另派員來深入瞭解 BC 省衛生署與 UBC 間所訂之各項資料提供作業準則，資料存取之原則與所提供資料欄位等相關作業細節。

二、 2 月 2 日

Session 2 — Health Information Systems Structure

主講者：Mr. Stuart Frampton, Manger of Information Systems &Technology

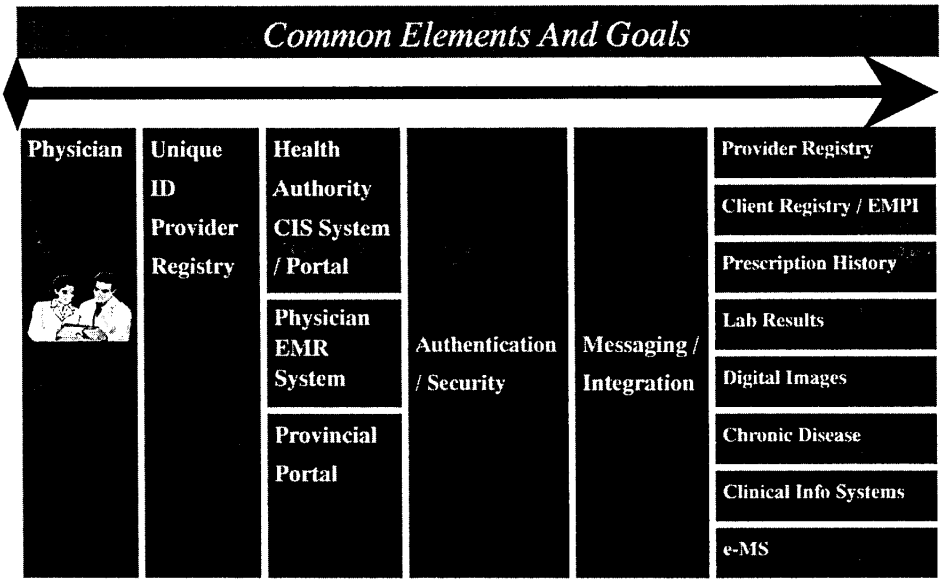
主要介紹重點：

BC 省健康資訊管理及電子健康紀錄 EHR（Electronic Health Record）的發展策略 power point 檔案內容（詳附件一）。

- Stuart 所屬部門是資訊管理(Information Management)在 IT 技術面之支援單位
- BC 省五大 Health Authorities 的 CIO(Chief Information Officer)組成 CIO Council 每個月召開會議討論資訊基礎架構及建立以病人為中心的 EHR（Electronic Health Record）系統
- Focus 在 BC 省電子健康紀錄 EHR 之實施策略及 IM／IT 合作之需求與時機
- 建立 HUB 來做為不同的區域醫療群(Health Authorities)之間的介接平台
- 因為 PHN（Patient Health Number）並未 100% 使用，因此需再利用 EMPI 的功能來檢查重覆的 Client Registry Data(Client Registry Data 除了 PHN 之外，另含姓名、性別、地址等資料欄位）
- 針對 Health Authority 內的 physician 召開 Work shop，宣導及收集 physicians 對電子健康紀錄之用途與期望，多數 physician 期望電子病歷能提供醫療的歷史資料(medical history)，尤其是 lab 及 prescription 的部份

心得與感想：

1. BC 省所規劃的電子健康紀錄系統，目前 Client Registry 尚有 3% 的重覆建檔資料，需要利用工具來清理與整合；而本局在經歷二代承保改採集中式資料庫架構，已進行重覆建檔資料之清檔工作。健保 IC 卡之實施，更進一步將第一線資料建檔可能發生之錯誤予以排除。因此，在這一點上本局之發展速度已超越 BC 省目前 PHN 尚未在所有醫療體系內全面實施之情形。
2. BC 省規劃未來透過一個共通的入口網站，整合成共通的 physician Authentication 設計機制，依其所進入之系統設定不同之 EHR 資料內容存取權限，此一設計構想應可作為我國設計全國醫療資訊共通平台之參考，詳如下圖



三、 2月2日

Session 3 — Health Technology Assessment and Information Management Application

主講者：Dr. Alan Thomson , Executive Director of standards & Performance Development Performance Management and Improvement Division

主要職掌：

- 與各Health Authority訂定Performance Agreement及績效衡量指標來提升醫療服務品質。
- 每年依據Performance Agreement所訂的績效衡量指標來產製相關年度報表
- 提供Health Authority各項及時的資料來規劃、管理及提供服務
- 2004全年Ministry of Health Service 預算約10 Billion， Performance Management & improvement部門約有 6.5 Billion預算分配給5個 Health

Authorities 提供居民所有的健康照護服務

- 目前有些試辦的 Chronic Disease Management Service，如：糖尿病病人之照護，每位病人一年支付加幣 75 元來給醫師輸入相關病人照護的表格資料
- 癌症病人則已經建立了二、三十年 evidence based data 在集中式資料庫內，衛生署除了收集資料外，並分析回饋給醫師。建立了 clinical feedback loop ，並提供醫師可以存取 clinical guideline 等相關資訊，藉此機制來改變醫師的行為及提供持續的品質提升(Continuous Quality improvement)

心得與感想：

1. Performance Management & Improvement 部門每年與各 Health Authority 訂定 Agreement 取得互相對於醫療服務發展方向、績效衡量指標的共識，類似我國目前總額協商與訂定品質指標之機制。
2. BC 省依人口及地理分布畫分成 5 大 Health Authority，加一個特區方式來切分總額，與未來我國分成六大區域(分局)朝以人口為基礎的總額計算方式，發展方向雷同。
3. 關於 Health Technology Assessment & Information Management 目前著重在新的藥品及器材的評估與效益分析工作上。
4. Alan 介紹中提及〝read code〞的 Tool 可以協助醫師輸入診斷文字說明，工具可以自動轉換成 ICD-9-CM code 或 ICD-10 CODE，減輕第一線醫師工作人員之負擔。未來如果 Ministry of Health Services 改變 coding system 的版本，只需要工具軟體 upgrade 新版，醫師診間系統不需配合做大幅度的程式修改，這亦應是我國未來資訊平台設計應考慮的發展方向。

四、 2 月 3 日

Session 1 － Information Management Resource Plan

主講者：Mr. Ron Danderfer , Assistant Deputy Minister of knowledge Management & Technology Division

主要職掌:(BC 省衛生署整體資訊來源管理 power point 檔詳附件二)

- 訂定 BC 省衛生署整體資訊來源管理的策略發展、建置與評估
- 將所有衛生署的data整合成可以支援每天運作的資訊
- 引導及確保 Information Management IM／IT 的策略（strategy)、原則（policy)、標準（standard)、技術（Technology）可以支援及整合成有效率的健康資訊管理系統

2004 年的優先議題：

- 改進及強化管理資訊系統以支援健康系統的改造、業務規劃及決策支援
- 建立安全的電子化健康資訊共享的能力（Capacity）
- 與其他相關團體及夥伴建立合作關係（Collaboration）並提供主動的諮詢、規劃及解決方案
- 促進社會大眾可以利用電子化的方式存取健康資訊及服務

2004 年主要的 projects：

- 發展 BC 省的 Lab 系統
- 電子健康紀錄（Electronic Health Record）system
- 生命統計資料倉儲系統（VISTA Data Warehouse）
- 健康狀況記錄（Health status Registry）
- 定義 Sub-Acute 醫院照護
- 將出院病歷摘要資料與管理資訊系統資料做更好的串檔整合

（目前仍有小於 5% 的資料無法串接）

心得與感想：

1. 加拿大 BC 省因為早期各個系統各自上線，而 PHN 並不是在所有資訊系統內均有資料欄位，因此衛生署在做資料整合上面必須以 PHN 來串接或增加在原始資料之後，以便做後續各種管理及資訊的分析工作。
2. 我國推行健保制度時，即以身分證 ID 為 Key，因此這方面串檔所需之資料已非常完整。
3. 加拿大非常重視資料的品質及定義一致性的問題，以

便各省之間可以做比較，因此 Information management 的分析人員做很多資料清理與驗證的工作。

五、 2月3日

Session 2 — Demonstration of Data Warehouse Web access tools
主講者：Mr. Terry Tuk, Director of Information Resource Management BC Vital Statistics Agency

主要介紹內容：

- 簡介目前 in-house 所開發的 Web System "VISTA"（Vital Information STAtistics）生命統計查詢系統
- 該系統後端使用 ORACLE 資料庫，前端用 Oracle Express multi dimentional cube 開發 user 查詢介面
- 系統開發時有資訊人員及統計分析人員先深入瞭解及學習 Oracle 開發工具，而當開發完成後針對 End user 僅需半天的教育訓練，而針對資深的經理人員需二天的教育訓練即會操作查詢介面
- 目前該系統已經有 45 個 users，另有外部 user（如：CDC、大學及其他省的衛生署）均可來查詢資訊
- 該系統已設計針對死亡原因做各種維度的分析（如：死亡原因各年齡層各地區的分析，實際死亡率對預估死亡率之分析…等）
- 每個查詢畫面註明資料最近被更新的日期
- 每個報表欄位，double click 會顯示那個欄位的說明及公式定義等訊息
- 可以做 drill down 及多維度 drag & drop 動態分析
- 系統上線前有 Test Group（如：長期合作的 UBC），邀請有經驗使用生命統計資料的人來協助驗證系統的正確性及所開發之功能是否符合使用者需要。
- 開放使用者申請權限時，必須簽定保密協定（Aggrement），未來將設計依不同 user 設定不同權限來查詢不同的資料（尤其是個人的資料）
- 該系統規劃目標是希望能滿足大部分 Researcher 及資料需求者的資料查詢需求。

— 統計分析人員利用此項查詢的工具所呈現的數據亦可提醒其他衛生部門的相關機構（如：CDC）須做某項衛生政策的調整，或某個地區要加強的防疫措拖等。

六、 2月3日

Session 3 — Surgical Waitlists Tracking System

主講者：Bill Moncur , regional Manager BC vital statistics Agency

主要介紹內容：

— 利用 Web 有效率的資訊呈現，來管理手術的 Waiting Times。
— BC 省衛生署自 1998 年即設立一個 Web site 提供社會大眾及醫師來查詢 19 項 Surgical areas 的 Wait times 訊息
— 網站提供了醫師門診及醫院層級的相關訊息
— 提供醫師及民眾 local 醫院及周圍其他地區（surrounding areas）的 Waiting times 訊息
— 訊息提供係由 46 個主要的 Surgical centers（一年做 1000 以上的手術），資訊內容包括：病人登記的手術 ICD-9-CM 代碼，專科醫師轉來醫院 Waiting list 的日期，病人接受手術的日期，疾病的緊急程度等。
— 醫院將上述資料送到衛生署，經過編輯整理後，即將結果上網公布。
— 網頁上可以查詢到某位醫師 Wait list 上的病人數，及協助病人找尋其他的替代醫師的參考訊息。
— 本系統未來將新增地理分布的相關訊息，及提供 intranet site 供醫師及衛生署內部人員查詢趨勢發展及其可能的原因。

心得與感想：

1. 加拿大 BC 省將資料的整理、串檔與定義等工作認為是 Information Management 非常基礎的工作，且設有一組人長期做資料彙總與分析等工作。
2. 統計分析人員熟悉分析工具之後，自行開發設計符合

所有資訊需求人員或單位的 Aggregation data sets，以便 Web based 查詢介面能提供各種動態多維度的線上分析功能。

3. 各種彙總性的資訊朝以 Web base 方式呈現，供民眾查詢，但是 individual level 的資料呈現則有相對應的法規規範及資訊安全規定。

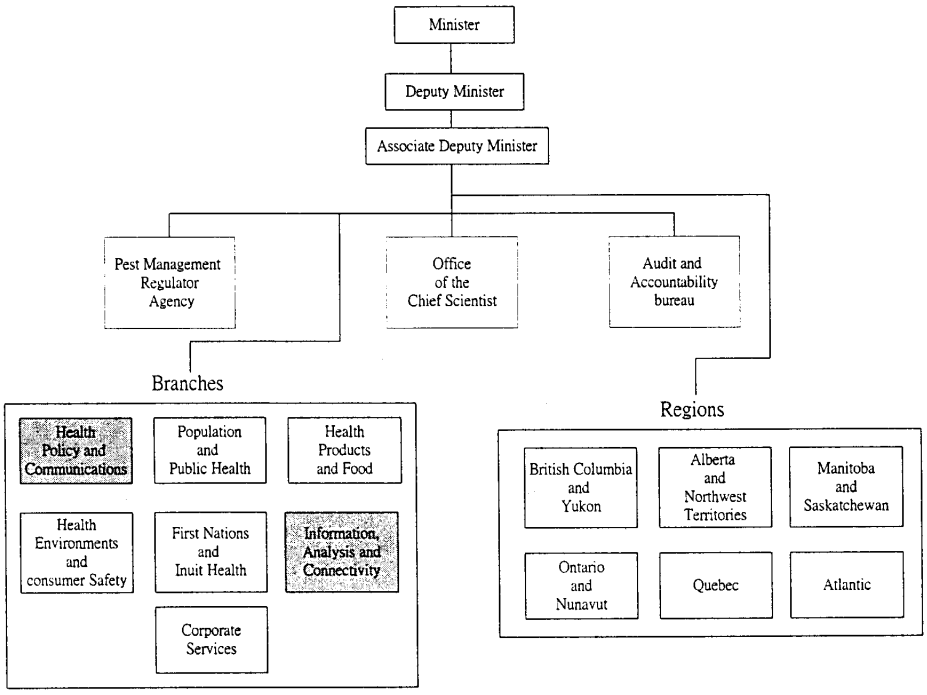
貳、 渥太華省參訪機構介紹內容摘要說明

七、 2月5日

Session 1 — Overview of the Canadian Health Care System
Federal-Provincial-Territorial Responsibilities

主講者：Mr. Serge Lafond, Senior Policy Advisor, Health Policy and Communications Branch Canada Health Act Division

加拿大聯邦的衛生政策是分散式的架構，Health Canada 組織架構圖如附圖三



（附圖三）

主要說明內容：

- 健康醫療照護主要是各省的責任
- 2002 年的健康費用支出（health expenditures）
  - 加幣 113.4 billion
  - 加幣 3616 per capita
  - 佔 GDP 的 9.8%
- Health expenditures 政府／民間比率是：70／30
- 聯邦政府、省政府及各地區 Health Authorities 的功能與責任分工詳附圖四。基本上聯邦政府做的是 high level 法規的訂定，藥品核准及藥價的訂定等工作。而預算實際分配到各 Health Authorities 行政管理、醫療費用支付、醫事人員的發證及人力資源的配置與教育訓練等，則是省衛生署的責任。而 Health Authority 則是在所分配的預算下，照顧該地區內民眾的健康、照護需求，包括：Acute care hospitals、long-term care、clinics、community-based 等各項健康醫療服務。
- 聯邦政府直接提供 Health service 給某些特定的族群（如：退伍軍人、住在保留地的原住民、軍人及聯邦監獄的囚犯等）

聯邦政府與省政府責任分工彙整表

Federal Government		
Budgeting/Financing – Conditional and unconditional transfers to provinces and territories (Canada Health Transfer, Equalization, dedicate funds, etc.) – Funding of federal health programs (First Nations, DND, RCMP, CIHR, etc.)	Regulation – Setting of national standards (Canada Health Act) – Drug approval (i.e., Food and Drug Act) – Drug Prices (i.e., Patent Act) – Others (i.e., Tobacco Control Act, etc)	Planning – F/P/T process (e.g. ,Conference of Health Ministers, Conference of Deputy Ministers of Health, etc.)
Provincial（10）and Territorial（3）Governments		
Budgeting/Financing – Sectorial allocation of resources – Funding of regional health authorities and provincial health programs	Regulation – Licensing of providers (e.g. physicians , nurses ,etc.) – Accreditation of facilities (e.g. ,hospitals, clinics, labs, long term care facilities, etc.) – Payment of providers(e.g. fee-for-services, capitation, etc.)	Planning – Infrastructure(e.g., number of beds, MRIs, etc.) – Health human resources(e.g., number of physicians, nurses, etc.)
Regional Health Authorities（97）		
Budgeting/Financing – Micro level allocation of resources – Funding of providers (e.g. , hospitals community health centers , home care agencies, etc.)	Regulation – Integration of programs (e.g. ,health and social services) – Coordination of delivery (acute care hospitals , long term care clinics, , community-based services)	Planning – Identification of regional needs and priorities

八、 2月5日

Session 2 — Overview of the Information System population Health Initiatives

主講者：Ms. Jeannine Bustros, Director, Data Development and Dissemination Division
Mr. Bill Bradley, Director, Data System and Standards Division

主要介紹內容：

- Statistics Canada 是獨立的中央機構，長久以來即負責人口健康資料（population health data）及社區民眾健康調查資料的收集工作，每年預算約 3000 萬加幣。
- CIHI 則負責健康照護(health care system)相關醫療資料的收集工作
- Statistics Canada 及 CIHI working groups 之上有一個 Health Canada Information Committee 每個月開會來決定所需收集的資料內容及優先次序
- 提供全國醫療費用支出相關訊息，並確保所提供資料的品質(Quality)及即時性(timely valid data)與有效性。
- 他們利用 web 平台提供一套 dais nesstar 系統(Data and Information Sharing System)
- 沿襲舊有 Data Documentation Initiative（DDI）end-user 資料文件的標準，並擴及新的 ISO/IEC11179 及 Corporate Metadata Repository（CMR）統計分析，建立 meta data 的標準
- 橫向整合不同單位，不同轄區及不同統計分析產製者的資料來源
- 提供群體比較的變數、測量指標與概念
- 產製時間序列（time series）指標值及分析比較
- 縱向資料的垂直整合，提供 Drill-up 到某個分析者的報告及其所使用的 table 資訊；
  Drill-down 可以從研究者的報告，table 向下鑽到底層的變項等細項資料
- eBusiness an Metadata Technology

Standardization 國際會議將在 2004 年 5 月 17-19 日在中國大陸西安舉行。

- meta data 標準在 microdata level 採用 ISO11179 標準，而 Aggregate and time-series data 採 SDMX 標準。

九、 2月5日

Session 3 — Canadian Health Infoway

主講者：Paul Hession，Engagement Group Executive

主要職掌：加速推動加拿大的電子化健康紀錄（Electronic Health Record）採用共通的標準及通訊介面，以改進產能，提供病人更好的就醫可近性及獲得更佳 outcome

主要說明內容：

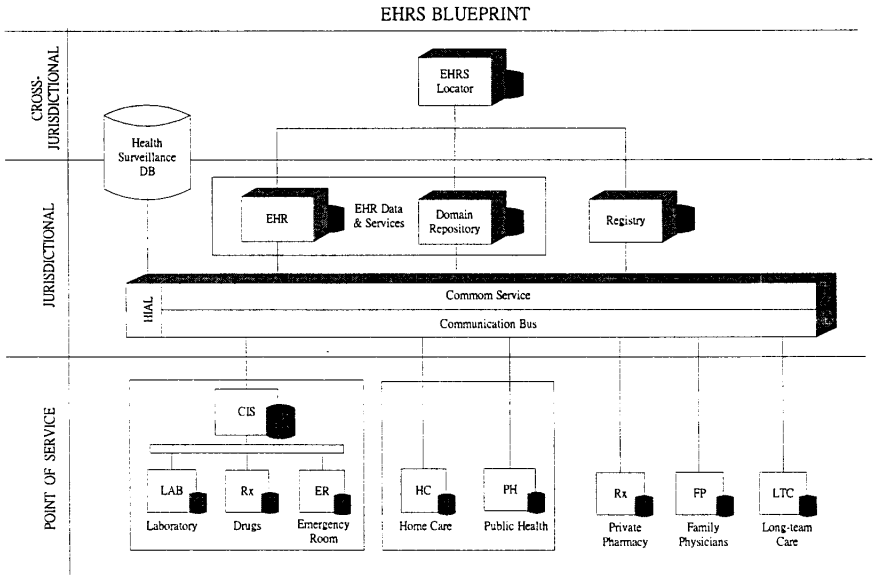
- Infoway 董事會的委員包括各省的衛生署副署長，來共同審核其所提之業務計畫。
- 聯邦政府提供 11 億元（加幣）來執行各項工作
- 該公司自 2000 年成立，歷經三年時間已擬定六個投資策略（investment strategy），預定自今年起六年內完成各項重要的電子化健康紀錄互通機制之建置工作。
- Infoway 的電子建康記錄 EHR 主要在收集調劑、醫療影像及檢驗結果的資料
- 因為各省本身的優先順序不同，及新的 IT 不斷出現，因此 Infoway 從自己直接做計畫（project）改變成專案的投資（program investment），導引投資的政策、制定投資公式並與各省共同規劃。
- 目前更把遠距醫療(Telehealth) 策略及行動計畫的訂定列為工作項目之一
- Infoway 扮演策略的投資者（strategic investor），並積極主動的監督所投資計畫的執行進度
- 設立產品的標準及需求，並指揮電子健康紀錄策略發展及研究方向。
- 訂定計畫成功的指標
- 依據產出成品的品質來決定是否繼續予以補助
- 每個省依據自己的 Readiness 程度及是否能提供相

符合的投資計劃來申請 Infoway 的補助

- 臨床的應用系統如何與電子健康紀錄系統做介面或整合亦包括在投資項目內
- Infoway 六個策略性的投資計劃包括：

1. Infostructure ($190-260M)
2. Client & Provider Registries ($80-110M)
3. Drug Information System ($185-240M)
4. Diagnostic Imaging System (DIS/PACS，$220-280M)
5. Laboratory Information Systems (LIS，$150-200M)
6. Telehealth ($100-150M)

- Infoway 2003 年公佈的電子健康紀錄規劃藍圖如下



（附圖四）

十、 2月5日

Session 4 — Canadian Institute for Health Information (CIHI)

主講者：Bruce Petrie, Vice President and Chief Operating Officer

組織職掌：CIHI 是成立於 1994 年的非營利機構，由加拿大的衛生部及各省的衛生署所共同成立，用來發展加拿大全國的健康資訊共通 的標準

- 提供資訊來協助加拿大健康政策之制定
- 2/3 資金由聯邦政府支應，另 1/3 由各省政府支應(一年預算約 5000 萬加幣)
- 與各級政府、各區域醫療群 (regional health authorities)、醫院管理者、研究單位、醫療照護提供者及一般民眾一起合作來訂定健康資訊的需求，優先順序及開發的計畫
- 支援 Statistics Canada 發展全國的健康指標 (national health indicators)
- 協調及發展全國的資料收集、處理，健康資訊分享的各種標準
- 分析資料，支援或參與健康照護系統的研究工作 (research)
- 出版健康及健康照護之年度報表 (" Health care in Canada")，並分享其主要的發現給加拿大人民。
- 提供全國健康資訊、財務、統計及臨床資料的各項標準 (包含 ICD-10-CA 分類標準的訂定)
- CIHI 可以提供各省跨地區的相互比較，找出 best practice 或某項健康服務及手術 (health services & procedures) 全國的跨區比較分析
- CIHI 管理三大類的健康資訊資料庫：1. 健康服務 (health services)，2. 健康人力資源(health human resources)，3. 健康照護費用支出 (health care expenditures)
- CIHI 持續的檢視所收集到的資料，找出長期趨勢並做預測
- CIHI 也積極參與 Infoway 電子化健康紀錄的工作，確保資料的可串接整合 (linkable)、可近性與可用性 (accessable , available)
- 1999 年 CIHI 和 Statistics Canada 正式與各省政府單位 (governments)、各區域醫療群 (regional health authorities)、醫療服務者 (caregivers)、管理者及其他人員 (managers and others) 共同合

作來串接及整合各單位及地區的健康資訊系統（filling the gaps in health information）因此CIHI和Statistics Canada合作共同收集全國63個地區的資料。

- 最近加拿大將成立一個〝National Health Council〞組織，來定義national health strategy，CIHI仍會參與這個委員會的工作
- 提供Information Portal的web-based系統來提供資訊服務

十一、2月5日

Session 5 — Canadian Society for International Health (CSIH)

主講者：Lori Jones, Director of special projects and programs
Eva Slawecki, Project Manger

主要職掌：CSIH是一個全國自願性的組織（national voluntary organization），運用加拿大相關的資源舉辦各項活動及計畫來促進並支援世界各國健康的發展

- CSIH透過傘狀的組織架構(umbrella organization)約有800個加拿大的專家來執行國際的健康與促進發展之相關計畫
- 在過去5年來CSIH已經成功的完成的12個促進國際健康發展計畫，地點遍及拉丁美洲、中歐及東歐等地區（如：烏克蘭、高加索、玻利維亞、克羅埃西亞…等）
- CSIH成立於1977年，由一群tropical medicine specialists所創立，當時主要是照顧加拿大人到熱帶地區旅遊或工作的需求，當時該組織還屬於加拿大公共衛生協會（Canadian Public Health Association）的一部分，後來獨立出來，staff人數從1991年的3人，增加到1999年的17人，每年的預算約360萬加幣，會員人數已超過600人。
- 在1991年CSIH變成是Pan American Health Organization（PAHO）的技術代表（Technical representative），更提高了加拿大健康照護系統各類專家的參與度。
- 從1997年開始，CSIH已經透過〝International Health Youth Internships Program〞送了超過200位加拿大的實習醫師到世界各地的健康照護機構

（host organization）去實習 6~9 個月。

十二、 2 月 6 日

Session 1 — Canadian Coordinating Office of Health Technology Assessment（CCOHTA）

主講者：Peter Chinneck, Communications Director
Don Husereau, Research Officer, Pharmaceutical Assessment
Bruce Brady, Health economist

主要職掌：

- 提供健康科技（health technology）的臨床效益與經濟的成本效益分析
- CCOHTA 有 64 名員工，一年約有 920 萬加幣之預算
- 自 2002 年 9 月起 CCOHTA 增加了新藥是否納入聯邦及各省的藥品給付項目內之審核工作
- 一般藥品審核流程 Common Drug Review（CDR），簡介資料詳附件三
- 外部的同儕審核流程（peer review process），簡介資料詳附件四
- 主要的經濟效益評估（economic evaluation）係由 CCOHTA 內部自行開發，簡介資料詳附件五
- CCOHTA Economic Guidelines 2003 年更新版將於今年（2004）春天出版
- CCOHTA 與一家網路公司合作，設立 HTAi（international HTA institution）來處理各省 HTA offices 資訊交換的事宜。

心得與感想：

1. 本局賴前總經理美淑，曾率十人的研究團隊至 CCOHTA 來做 5 天較深入的學習與參訪。
2. 加拿大 CCOHTA 在藥品這方面的評估分析已進行多年，且有非常好的分析報告，我國可以密切注意其發展現況與結果，適度引用參採。並發展出國內類似的服務。

十三、 2月6日

Session 2 — Canadian Council on Health Services Accreditation (CCHSA)

主講者：Gills Lanteigne, Associate Executive Director
Martin Beaumont, Manager International Projects

主要職掌：

- 依據國家的標準與促進知識的交流為基礎，提供醫院評鑑的 program，目的在提升健康照護機構的服務品質與促進醫療資源有效的運用
- CCHSA 成立於 1958 年是 national , non-profit, independent organization，主要在協助他的客戶檢視及改進醫院的醫療服務與照護的品質；在整個評鑑的過程中，去發現自己的優點與待改進的缺點。
- 評鑑的方式採同儕審查（peer review）及自我評鑑（self-assessment）的流程
- CCHSA 提供的外部同儕審查（external peer review）的評鑑標準
  - 由同儕發展出全國的評鑑標準（national peer-generated standards）
  - 在評鑑的過程中檢視醫院與這些標準的符合程度（assessing compliance with these standards through accreditation reviews）
  - 分享評鑑檢視過程的相關資訊
- CCHSA 提供健康服務機構（health services organizations）自願的參與評鑑其他醫療服務機構的機會，可以瞭解評鑑標準的訂定，也是一種經驗交流與知識分享的過程。目前已有上千家健康服務機構自願參加評鑑 programs，另有 350 位 health professionals 自願替 CCHSA 做調查員（surveyors）去健康服務機構實地檢視他們的醫療服務流程與品質，並提供指導。
- 被評鑑的醫院經過這個評鑑的學習流程，他們自己可以依據評鑑的標準來做自我的評鑑，除了獲得同儕專家的寶貴建議外，亦可獲得一般民眾的認同與肯定

— CCHSA 把評鑑視為是一個三年為一週期的學習循環，從機構決定參與評鑑就開始 step-by-step 學習之旅

- Getting the facts and getting ready
- Do the self-assessment
- Plan and have the survey
- Use the report
- Make ongoing improvements

參、 心得與建議

1. 重視資料標準的訂定、品質的提升及資料定義的一致性，成立獨立的非營利組織(CIHI)來專責定義全國醫療資訊的各項標準。

加拿大各級政府單位非常重視資料標準的訂定、品質的提升及資料定義一致性的議題，以便各省之間可以有一致性的基礎來比較，因此成立了 Canadian Institute for Health Information (CIHI) 的非營利組織來專責定義全國醫療資訊的各項標準，為了提升資料品質，亦設計有 Audit 的機制，派人直接到醫院去調查所申報之 ICD-9-CM CODE 是否符合 "Golden Rule"，以提升資料之正確性；並定期出版全國的分析報告。

各級政府單位將資料的整理、定義與串檔整合等工作認為是 Information Management 非常基礎的工作，且各級政府均設有一組專人長期做資料彙總與各項時序性分析並累積成組織的知識。

當有一個新且重要的全國性議題或主張(initiatives)被提出來時，加拿大政府會成立一個新的委員會（如：新近成立的 National Health Council）來執行聯邦與各地政府的全國性策略規劃與討論工作，制定 National Health Strategy 與取得相關單位的共識。

2. 資訊管理(Information Management)人員必須對於各項業務有所瞭解，並長期累積分析經驗

各單位負責資訊管理(Information Management)人員必須對於各項業務有所瞭解，而非僅是產製數字，如 BC 省衛生署 Information Resource Management 主管 John Cheung 即同時具有財務（Finance）、統計分析及醫院實務之管理經驗，因此對於數據之變化及判讀均能正確靈敏的提出分析與解釋，以協助醫療政策之推行。

3. 各種資訊以 Web based 方式呈現，提供各界查詢是發展趨勢

資訊分析人員熟悉分析工具之後，自行開發設計符合所有資訊需求人員或單位的 Aggregation data sets，以便所開發的 Web based 查詢介面能提供各種動態多維度的線上分析功能。

4. 個人的(Individual level)資料呈現，訂有相對應的資料保護原則與法規規範

衛生署將各種彙總性的資訊以 Web based 方式呈現，供民眾查詢，但是個人 individual level 的資料呈現則有相對應的資料保護法規規範及資訊安全規定。

5. 將不同來源的資料予以串檔整合，分析運用，提供更完整的健康資訊。

加拿大 BC 省因為早期各個系統各自上線，而 PHN(Patient Health Number）並不是在所有資訊系統內均有收載，因此衛生署在做資訊整合上面必須以 PHN 來串接或附加在原始資料之後，以便做後續各種資訊管理及分析的工作。

我國推行健保制度時，各種申報資料即以身分證 ID 為 Key，因此本局所蒐集之資料已具有串檔所需之 key 值，不同資料之串檔工作相對容易許多。

6. 電子健康記錄(Electronic Health Record)及遠距醫療(Telehealth)是近期加拿大發展的重點計劃之一

加拿大聯邦政府與省政府衛生署共同出資籌組 Canada Health Infoway（非營利的公司組織），嘗試建立一條 information highway，由其邀請各方代表（醫界、政府部門及民間企業等）共同討論，訂定整體資訊投資策略及作業藍圖，定義何謂電子健康記錄(EHR)，各方獲致共識後，才真正啟動各項子計劃的細部規劃與投資建置工作。

7. Canadian Council on Health Services Accreditation（CCHSA）醫院評鑑工作由同儕執行，互相學習。

CCHSA 是醫療服務評鑑的非政府單位，他們採用同儕醫院院長的自願參與評鑑其他醫院的工作方式，互相學習；評鑑的方式強調是整體醫院的流程檢視（Organizational Process Review)，醫院將此評鑑視為是一種學習的過程，從中學習如何去衡量他們自己的醫療服務品質；而病人的安全（patient safety）亦是現在醫院評鑑的重點。

建議：

1. Statistics Canada 是獨立的中央機構，長久以來即負責加拿大人口健康資料（population health data）及社區民眾健康調查資料的收集工作，一年預算約 3000 萬加幣，在他的 web 主機上提供有 13 萬筆人口健康調查研究的記錄，可提供研究者來下載資料，進一步分析使用。加拿大政府有鑑於健康資料更詳細的分析需要，將原 Statistics Canada 部分人員與 CIHI 前身二組人員在 1994 年合併，正式成立 CIHI 的非營利機構，由加拿大的衛生部及各省的衛生署所共同成立，以發展加拿大全國的健康資料收集、處理及資訊分享的共通標準。CIHI 的 2/3 資金由聯邦政府支應，另 1/3 由各省政府支應（一年預算約 5000 萬加幣），由其提供資訊來協助加拿大健康政策之制定，並與 Statistics Canada 共同發展全國的健康指標（national health indicators）。建議衛生署可考慮投資或設立類似 CIHI 之機構，以提供強而有力之衛生政策決策支援系統功能。

2. 加拿大為發展電子健康記錄(Electronic Health Record)及遠距醫療(Telehealth)，於 2000 年成立一個專責執行的非營利公司組織 Canada Health Infoway 來做整體藍圖規劃與細項工作展開；Infoway 董事會的委員包括各省的衛生署副署長，來共同審核其所提之業務計畫，聯邦政府提供 11 億元加幣來執行各項基礎架構建設與六大策略性投資計畫，預定自今年起六年內完成各項重要的電子化健康紀錄互通機制之建置工作。

3. 目前我國在研擬中的建設「國家健康資訊基礎架構」專案，建議比照加拿大聯邦政府的作業模式，於籌畫初期即邀請各相關團體參與規劃討論，蒐集各方意見，凝聚共識，訂定共同的願景，定義專案範圍與目標，發展策略，成立全國性的最高指導委員會。

   建設「國家健康資訊基礎架構」為全國性的大型專案，建議應成立衛生體系之最高指導委員會，定義專案範圍與願景，於其下成立專責工作小組做細部的規劃，可考慮徵求國內外有醫療衛生實際整合經驗之顧問來協助提供專案管理與諮詢服務，共同擬訂整合的策略(Strategy)草案，再廣邀各界代表（衛生署，健保局，醫師及醫院公協會，學界，醫療資訊及產業界

等）充分溝通與討論，確認整體建設藍圖，並檢視現有既存及開發中之相關系統如何串接整合後，再啟動各個基礎建設相關資訊系統的實際開發工作。

4. 檢視及確認健保局全局資訊管理(Information Management) 之策略

目前本局數據處理中心(IU)及各處室均能產製各項分析數據，係採分散式處理架構，對於資料之分析判讀則大多侷限在各自的權責範圍與領域，各處室資料之定義是否一致，資料品質之驗證與提升，目前尚未有專責單位來統籌管理。建議未來可朝全局資訊管理(Information Management)中高階主管及分析人員的培訓，提高所收集進來資料之正確性，提升分析資料品質，進一步將所獲得的資料有系統的整理成各部門管理資訊的方向發展，並逐步調整作業型態架構，明確定義總分局資訊管理的權責與分工。

5. 訂定健保局資訊安全的政策與作業原則

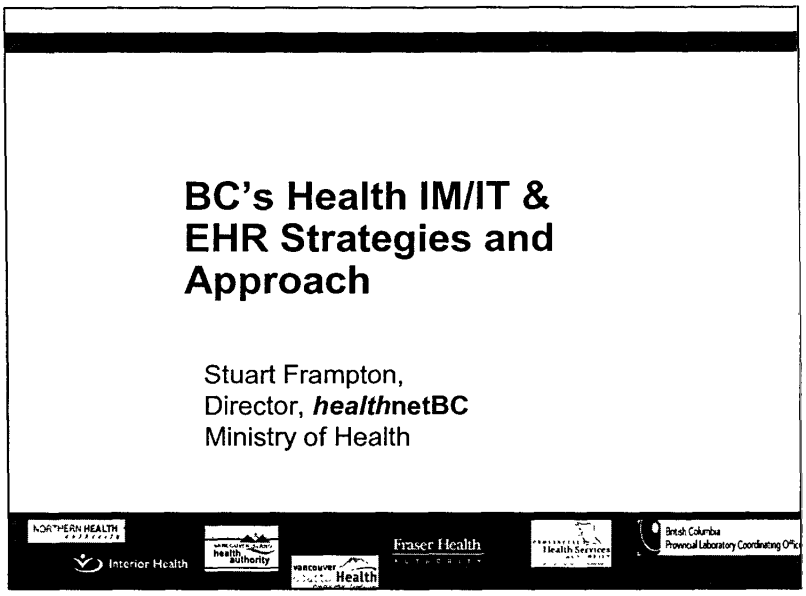
加拿大政府訂有全國整體資訊安全的政策與指導原則，供各級政府部門遵循，BC 省衛生署在大原則之下訂定資料提供的 Guideline，及資料存取權限 Access 的 policy。針對學術團體資料提供需求則委託給 University of British Columbia (UBC)，由衛生署提供加密後但串檔完的原始 raw data file 給 UBC。學術單位之資料提供需求由 UBC 處理，除審查資料需求單位之分析需要外，並負責資料之教導使用與事後資料銷毀等工作。

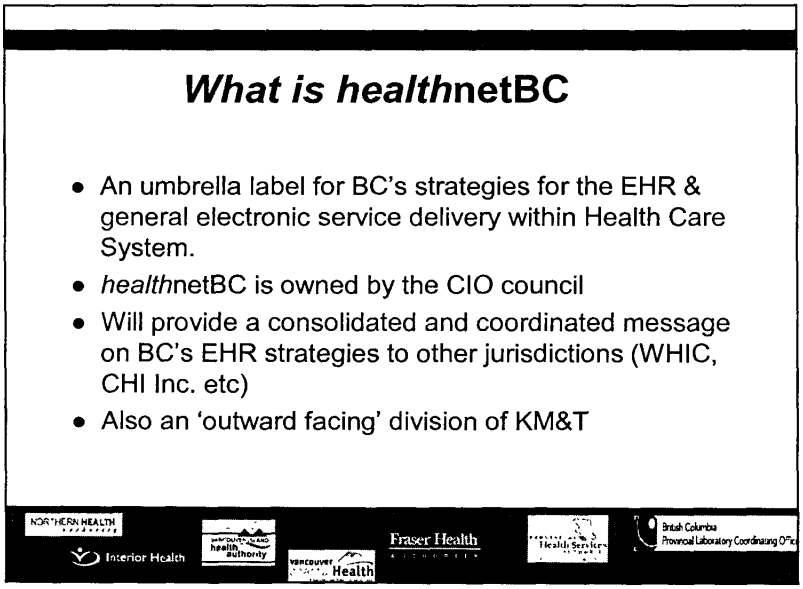
建議本局可另派員來深入瞭解加拿大政府整體資料安全的政策，配套措施等設計機制，BC 省衛生署與 UBC 間所訂之各項資料提供作業準則，資料存取之原則與所提供資料欄位等相關作業細節，做為本局資通安全政策與標準流程訂定之規劃參考。

6. 積極參與國際醫療健康組織活動，我國可考慮參加 Canadian Society for International Health (CSIH) 非政府的國際醫療組織所舉辦之活動，擴大參與面。

CSIH 是非政府的國際健康組織，每年在加拿大會舉辦

International health conference，約有 400 多人參加會議，本局可考慮透過此種方式參與及瞭解各國健康政策走向與發展趨勢。


BC's Health IM/IT &
EHR Strategies and
Approach
Stuart Frampton,
Director, healthnetBC
Ministry of Health
NORTHERN HEALTH
Interior Health
Fraser Health
Health Services
British Columbia
Provincial Laboratory Coordinating Office


What is healthnetBC
An umbrella label for BC's strategies for the EHR & general electronic service delivery within Health Care System.
healthnetBC is owned by the CIO council
Will provide a consolidated and coordinated message on BC's EHR strategies to other jurisdictions (WHIC, CHI Inc. etc)
Also an 'outward facing' division of KM&T
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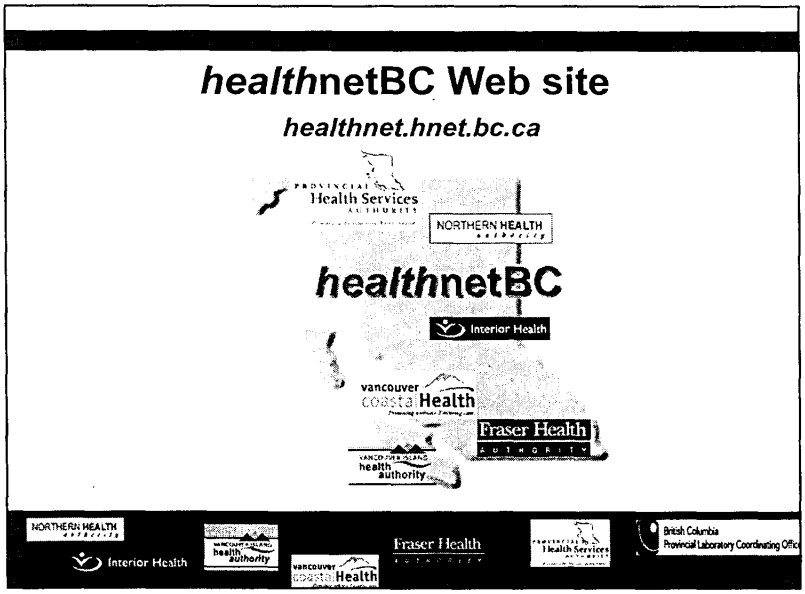
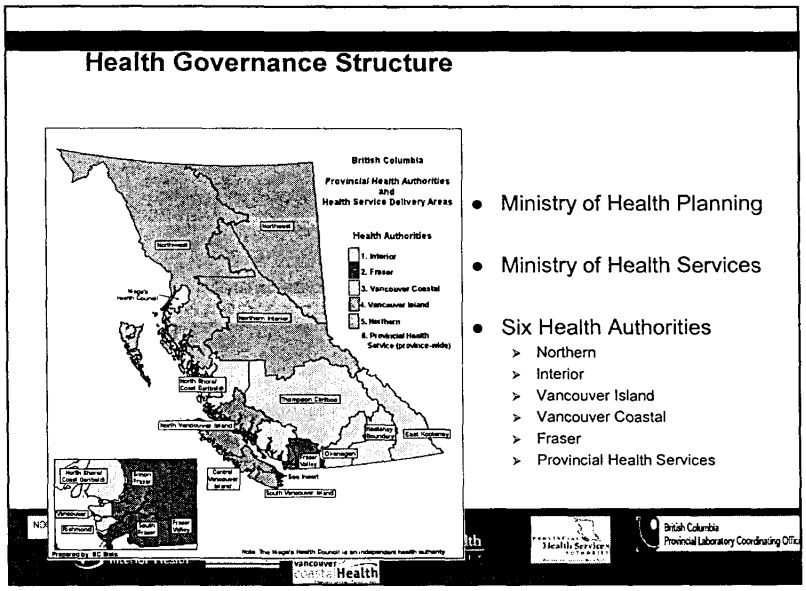
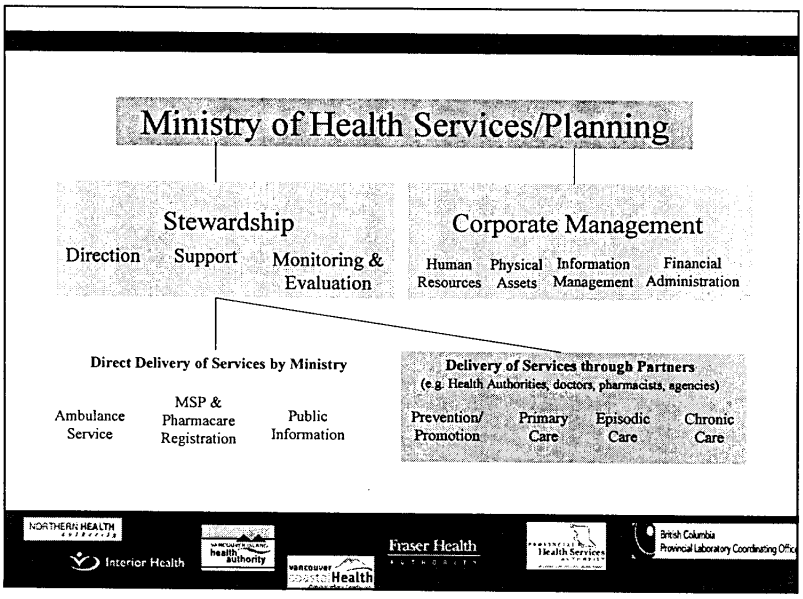
Fraser Health
Health Services
British Columbia
Provincial Laboratory Coordinating Office


healthnetBC Web site
healthnet.hnet.bc.ca
Provincial Health Services Authority
NORTHERN HEALTH
healthnetBC
Interior Health
vancouver coastal Health
Fraser Health
AUTHORITY
vancouver island health authority
NORTHERN HEALTH
Interior Health
Fraser Health
vancouver coastal Health
British Columbia Provincial Laboratory Coordinating Office


Health Governance Structure
British Columbia
Provincial Health Authorities and Health Service Delivery Areas
Health Authorities
1. Interior
2. Fraser
3. Vancouver Coastal
4. Vancouver Island
5. Northern
6. Provincial Health Service (province-wide)
Ministry of Health Planning
Ministry of Health Services
Six Health Authorities
Northern
Interior
Vancouver Island
Vancouver Coastal
Fraser
Provincial Health Services
British Columbia Provincial Laboratory Coordinating Office


Ministry of Health Services/Planning
Stewardship
Direction
Support
Monitoring & Evaluation
Corporate Management
Human Resources
Physical Assets
Information Management
Financial Administration
Direct Delivery of Services by Ministry
Ambulance Service
MSP & Pharmacare Registration
Public Information
Delivery of Services through Partners
(e.g. Health Authorities, doctors, pharmacists, agencies)
Prevention/ Promotion
Primary Care
Episodic Care
Chronic Care
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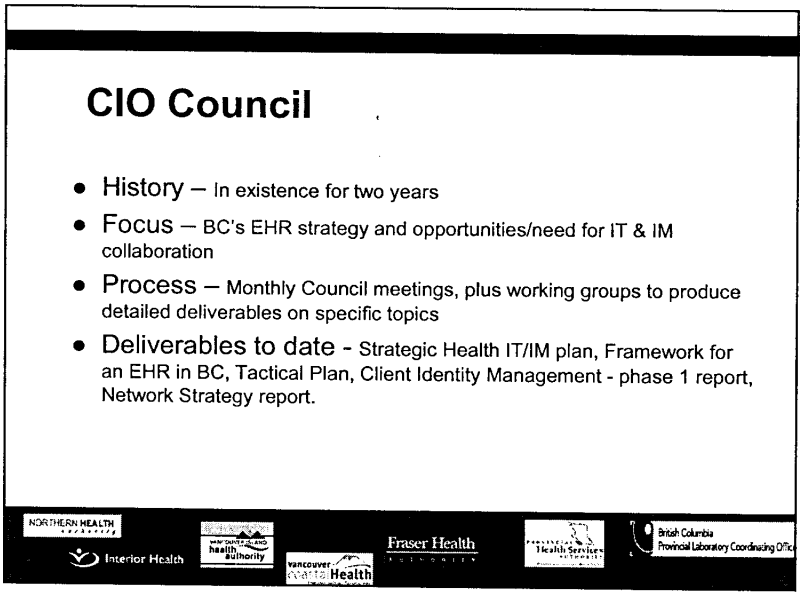
CIO Council
History – In existence for two years
Focus – BC's EHR strategy and opportunities/need for IT & IM collaboration
Process – Monthly Council meetings, plus working groups to produce detailed deliverables on specific topics
Deliverables to date - Strategic Health IT/IM plan, Framework for an EHR in BC, Tactical Plan, Client Identity Management - phase 1 report, Network Strategy report.
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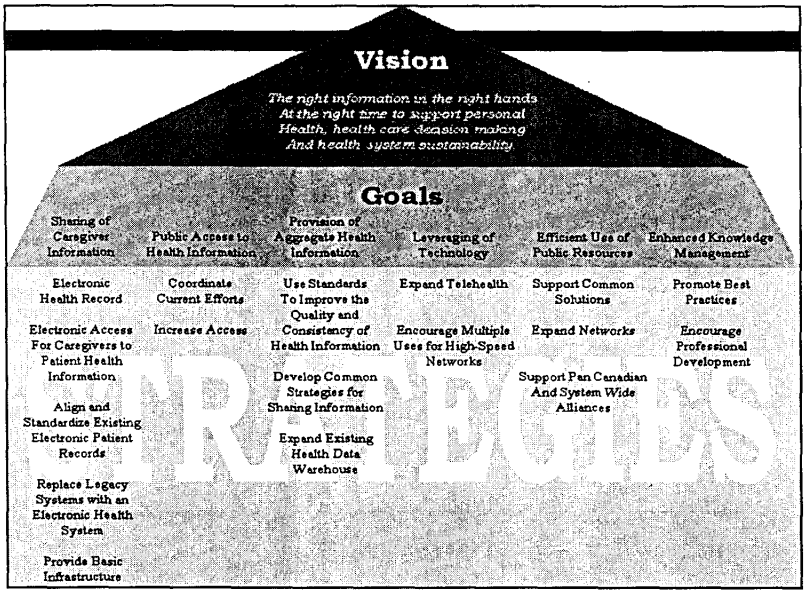
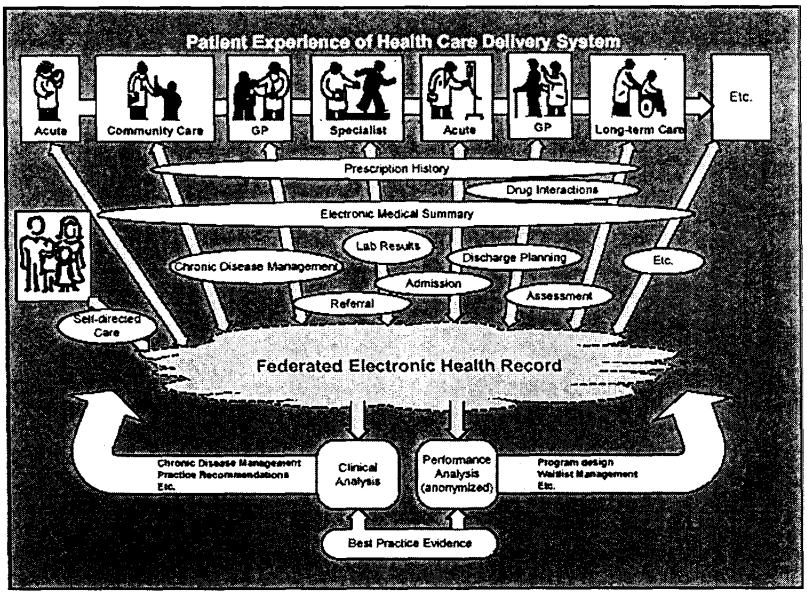


What is the EHR in BC ?

- It is not a single software application
- It is not a single centralized repository of clinical data
- EHR is a **capability** not a thing
- EHR capability will be measured by the type and scope of information it provides at specific location in relation to a health providers needs for delivering patient care.



BC's EHR strategy

- Evolution Versus Revolution
- Significant EHR capability will be delivered at the regional level.
- Key Provincial EHR capability, infrastructure and standards will be established where beneficial.
  - E.g. PharmaNet, Provider Registry, Client Registry/EMPI
- Leverage existing and new IT/IM investments

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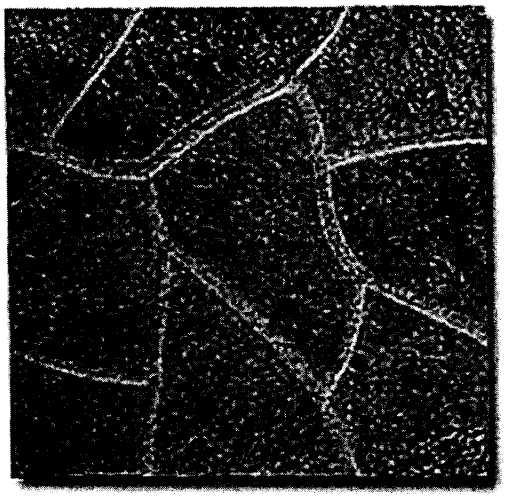
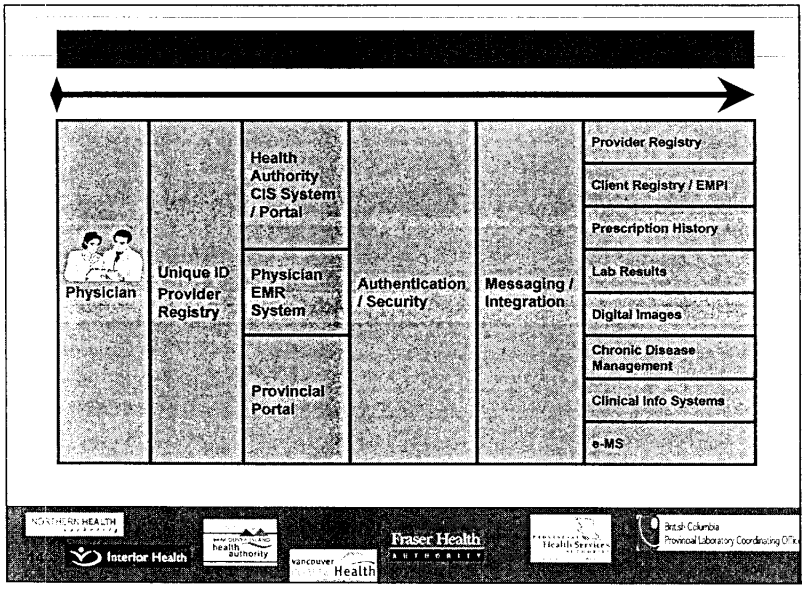
The EHR Landscape



EHR Information Domains

EHR Infrastructure - '*Filling in the Gaps*'



Using business initiatives to deliver common, reusable infrastructure

Example: One of Lab Reforms deliverables is to 'ensure the development of a comprehensive information system, including a practitioner decision support component to optimize quality care'

This cannot be done without addressing

- Client identity management
- Provider Authentication
- Messaging transport/translation
- Provider information delivery e.g Portal

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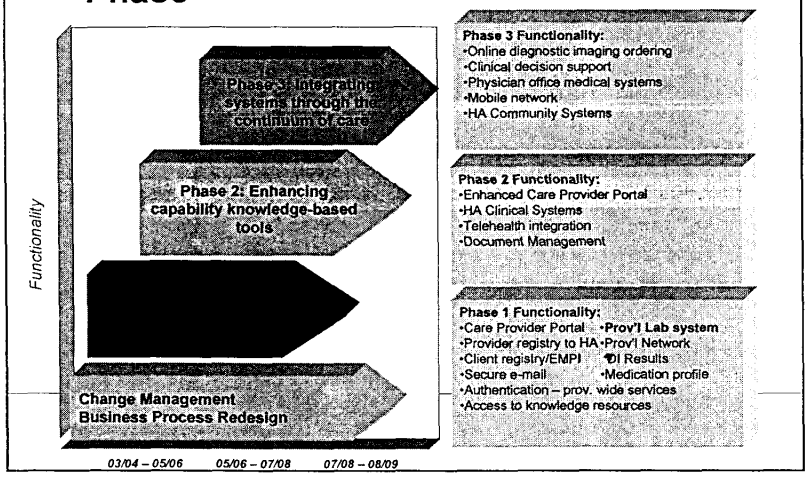
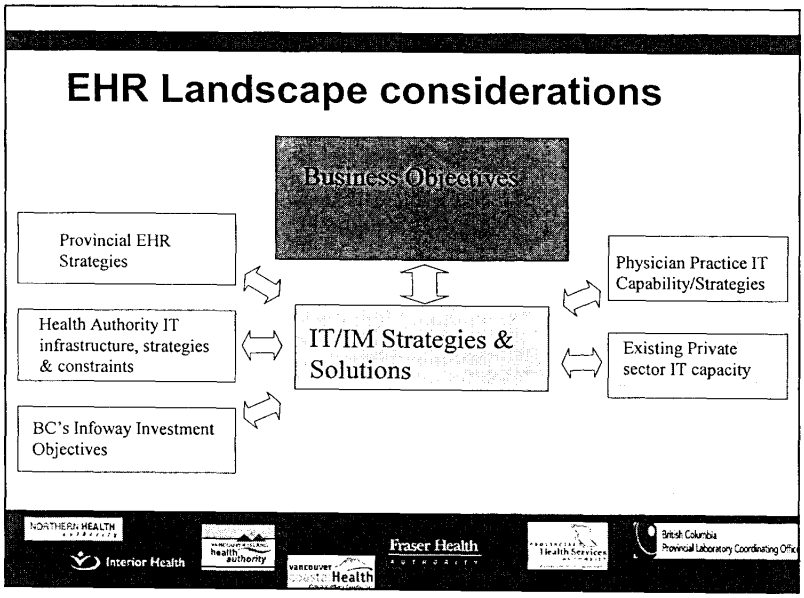
Proposed Phasing and Functionality by Phase




EHR Landscape considerations
Business Objectives
Provincial EHR Strategies
Health Authority IT infrastructure, strategies & constraints
BC's Infoway Investment Objectives
IT/IM Strategies & Solutions
Physician Practice IT Capability/Strategies
Existing Private sector IT capacity
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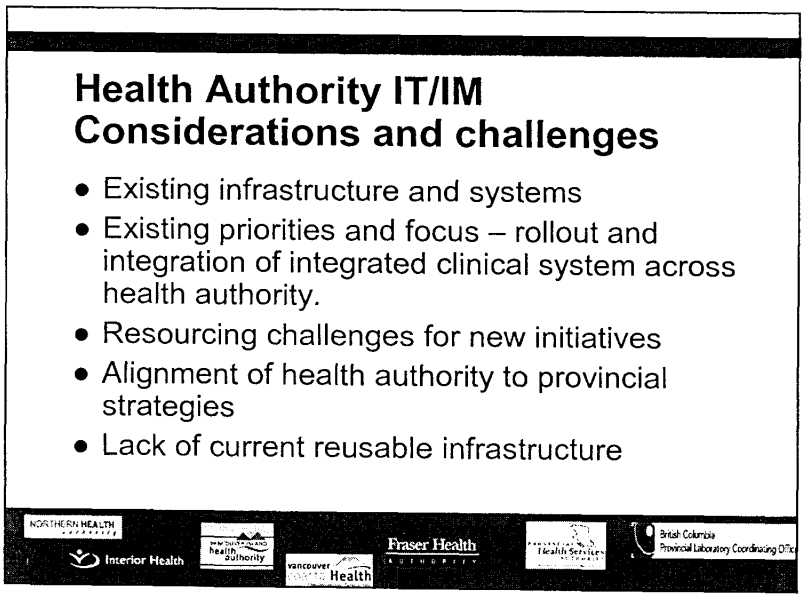
Fraser Health
Health Services
British Columbia Provincial Laboratory Coordinating Office


Health Authority IT/IM Considerations and challenges
• Existing infrastructure and systems
• Existing priorities and focus – rollout and integration of integrated clinical system across health authority.
• Resourcing challenges for new initiatives
• Alignment of health authority to provincial strategies
• Lack of current reusable infrastructure
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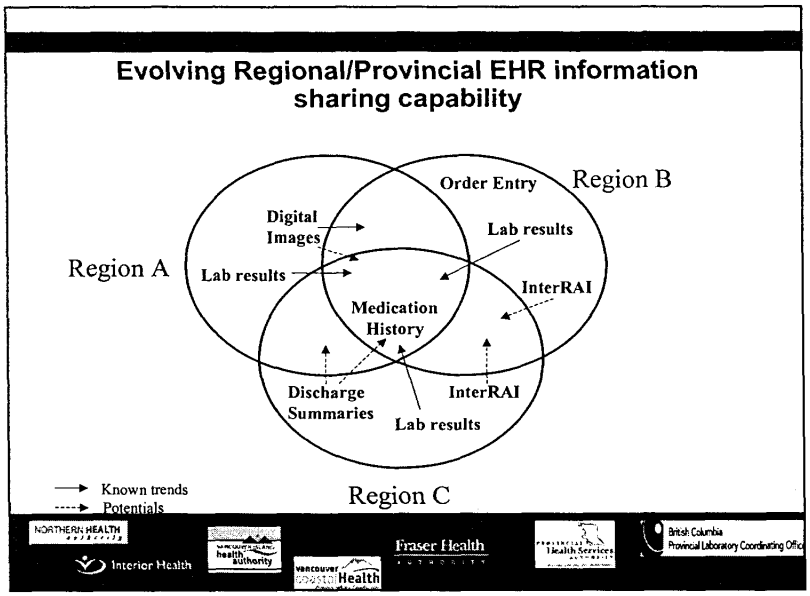


Infoway

- Federally funded agency with $1.1billion to invest on advancing the EHR within provinces
- Have 5 investment programs
- Up to 80% funding
- Strong emphasis on replication/reusability
- Timeline for identification of investment opportunity will be a challenge

Physician Practice IT

- Physician Practices are in the early stages of adoption of IT for clinical purposes
- Broad spectrum of interest, understanding and adoption of IT
- Currently no broad physician practice IT strategy within the Province.
- Physicians do not want new stovepipe IT solutions

（附件二）

Knowledge Management and Technology

Ministry of Health Planning
Ministry of Health Services

Information Management Resource Plan
2004/05

Presentation to the Executive Committee Jan.2004

Knowledge Management and Technology

Ministry of Health Planning
Ministry of Health Services

Agenda

- KMT Division Mandate
- KMT Priorities and Linkages to Ministries' Goals
- Business Model
- KMT Environment
- Organization Chart and Budget
- Stakeholders/Partners
- Major Projects
- Information Clearing House

Mandate

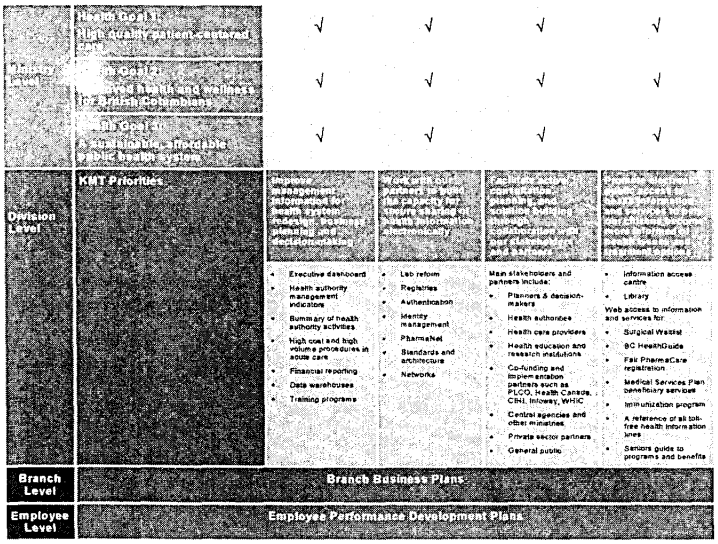
- Build capacity for the integration of data into daily operations and policy to support our stewardship role
- Provide leadership and ensure that the IM/IT strategies, policies, standards and technology initiatives support the integrated delivery of **system-wide** health information management
- Responsible for the overall strategic development, implementation and evaluation of the Ministry of Health Services and Ministry of Health Planning's information resource management plans

Knowledge Management and Technology
Ministry of Health Planning
Ministry of Health Services

KMT Priorities

- Improve management information for health system redesign, business planning and decision-making
- Work with our partners to build the capacity for secure sharing of health information electronically
- Facilitate active consultation, planning, and solution building through collaboration with our stakeholders and partners
- Promote electronic public access to health information and services to help our citizens become more informed of health issues and treatment options

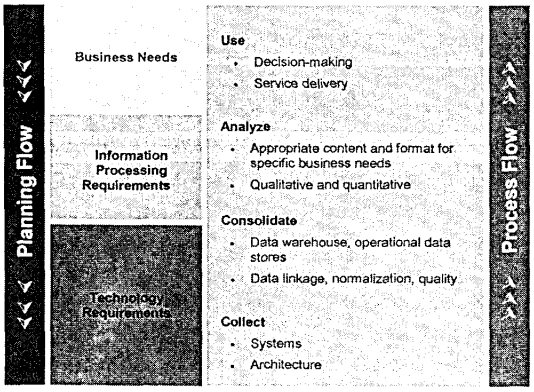
Planning Hierarchy and Linkages to Ministries' Goals

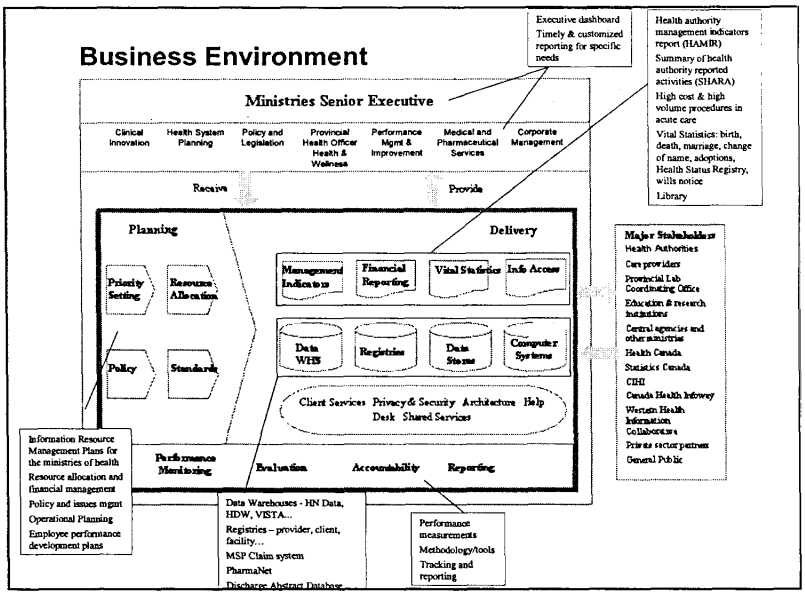


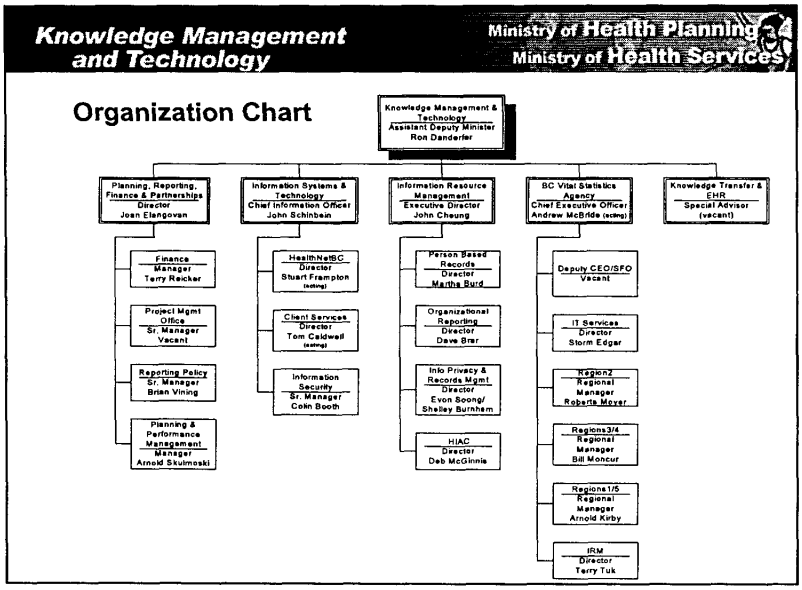
Knowledge Management and Technology

Ministry of Health Planning
Ministry of Health Services

Business Model




Business Environment
Executive dashboard
Timely & customized reporting for specific needs
Health authority management indicators report (HAMIR)
Summary of health authority reported activities (SHARA)
High cost & high volume procedures in acute care
Vital Statistics: birth, death, marriage, change of name, adoptions, Health Status Registry, wills notice
Library
Ministries Senior Executive
Clinical Innovation
Health System Planning
Policy and Legislation
Provincial Health Officer Health & Wellness
Performance Mgmt & Improvement
Medical and Pharmaceutical Services
Corporate Management
Receive
Provide
Planning
Delivery
Priority Setting
Resource Allocation
Policy
Standards
Management Indicators
Financial Reporting
Vital Statistics
Info Access
Data WHS
Registries
Data Stores
Computer Systems
Client Services Privacy & Security Architecture Help Desk Shared Services
Performance Monitoring
Evaluation
Accountability
Reporting
Major Stakeholders
Health Authorities
Care providers
Provincial Lab Coordinating Office
Education & research institutions
Central agencies and other ministries
Health Canada
Statistics Canada
CIHI
Canada Health Infoway
Western Health Information Collaborative
Private sector partners
General Public
Information Resource Management Plans for the ministries of health
Resource allocation and financial management
Policy and issues mgmt
Operational Planning
Employee performance development plans
Data Warehouses - HN Data, HDW, VISTA...
Registries – provider, client, facility...
MSP Claim system
PharmaNet
Discharge Abstract Database
Performance measurements
Methodology/tools
Tracking and reporting


Knowledge Management and Technology
Ministry of Health Planning
Ministry of Health Services
Organization Chart
Knowledge Management & Technology
Assistant Deputy Minister
Ron Danderfer
Planning, Reporting, Finance & Partnerships
Director
Joan Elangovan
Finance
Manager
Terry Reicker
Project Mgmt Office
Sr. Manager
Vacant
Reporting Policy
Sr. Manager
Brian Vining
Planning & Performance Management
Manager
Arnold Skulmoski
Information Systems & Technology
Chief Information Officer
John Schinbein
HealthNetBC
Director
Stuart Frampton
Client Services
Director
Tom Caldwell
Information Security
Sr. Manager
Colin Booth
Information Resource Management
Executive Director
John Cheung
Person Based Records
Director
Martha Burd
Organizational Reporting
Director
Dave Brer
Info Privacy & Records Mgmt
Director
Evon Soong/ Shelley Burnham
HIAC
Director
Deb McGinnis
BC Vital Statistics Agency
Chief Executive Officer
Andrew McBride
Deputy CEO/SFO
Vacant
IT Services
Director
Storm Edgar
Region2
Regional Manager
Roberta Meyer
Regions3/4
Regional Manager
Bill Moncur
Regions1/5
Regional Manager
Arnold Kirby
IRM
Director
Terry Tuk
Knowledge Transfer & EHR
Special Advisor
(vacant)

Budget

OPERATING BUDGET, FTES, CAPITAL BUDGET, AND OTHER
Knowledge Management and Technology Division

	KMT Division (excluding Vital Statistics)	Vital Statistics Agency	TOTAL
OPERATING BUDGET			
FY 2003/04	$54,947,000	$6,975,000	$61,922,000
FY 2004/05	$46,051,000	$6,935,000	$52,986,000
FTES			
FY 2003/04 (actual)	160	90	250
Included	132	81	213
Excluded	28	9	37
FY 2004/05 (projected)	145	89	234
Included	121	80	201
Excluded	24	9	33
CAPITAL BUDGET			
FY 2003/04	$7,788,000	$600,000	$8,388,000
FY 2004/05	$7,700,000	$550,000	$8,250,000
OTHER			
FY 2003/04			
Revenue (Estimated)		$9,060,000	$9,060,000
Western Health Information Collaborative	$294,694		$294,694
Canada Health Infoway	$1,482,626		$1,482,626
Expenditures			
Canadian Institute for Health Information	$1,404,000		$1,404,000
Western Health Information Collaborative	$125,000		$125,000
FY 2004/05			
Revenue (Estimated)		$9,024,000	$9,024,000
Western Health Information Collaborative	$722,583		$722,583
Canada Health Infoway	$6,879,000		$6,879,000
Expenditures			
Canadian Institute for Health Information	$1,650,000		$1,650,000
Western Health Information Collaborative	$125,000		$125,000

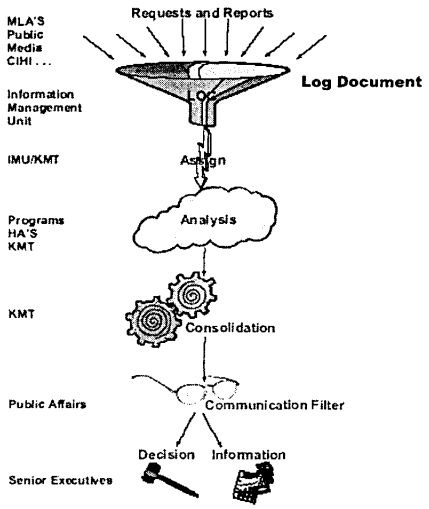
Major Stakeholders

- BC Health Information Standards Council
- British Columbia Medical Association
- Canada Health Infoway
- Canadian Institute for Health Information
- Chief Information Office of BC
- Common Information Technology Services
- College of Physicians and Surgeons
- College of Pharmacists
- Coroner's Office
- General Public
- Health Authorities
- Health CIO Council
- Health Canada
- Identification and Beneficiary Programs
- Law Enforcement
- Provincial Lab Coordinating Office
- Provincial Health Officer
- Statistics Canada
- Universities
- Western Health Information Collaborative

Major Projects

- Provincial Lab System
- Electronic Health Record System (EHR-S)
- VISTA Data Warehouse
- Health Status Registry
- Defining Sub-Acute Hospital Care
- Reconciling Discharge Abstract Database and Management Information System Data

Information Clearing House



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CANADIAN COORDINATING OFFICE FOR HEALTH TECHNOLOGY ASSESSMENT

OFFICE CANADIEN DE COORDINATION DE L'EVALUATION DES TECHNOLOGIES DE LA SANTÉ

An Introduction to CCOHTA and HTA in Canada

Peter Chinneck
Communications Director

Health Care and Technology

- Technology is an essential component of modern health care
- Technology can improve health outcomes
- The use of inappropriate technologies can erode the quality of care and threaten sustainability

The Challenge of Managing Health Technology

- Technology is a major driver of health costs
- Pace of innovation accelerating
- Technologies are increasingly complex
- Push from Canadians for access to new technologies
- Finite budget vs. infinite number of technology choices
- Expectation that scarce health resources will be used wisely

Toward Informed Decisions

- To rank the quality and value of one technology against others, decision makers need:
  - **Reliable information about the clinical and cost effectiveness of a technology**
  - **The ability to interpret this information and use it within appropriate context**
- This is complicated by:
  - **Information overload**
  - **Complex and contradictory evidence**
  - **Concerns about bias and quality of information**

Increased complexity because of delegated decision model

- Canada's publicly funded system employs a delegated decision model:
  - **Federal government sets policy and regulates drugs, medical devices and equipment**
  - **10 provinces and 3 territories responsible for delivering health care services**
- In effect, 13 different systems with different priorities, patient groups and programs

HTA: A Tool for Decision Makers

- A bridge between science and policy
- A multi-disciplinary field of policy analysis that systematically evaluates existing evidence of effectiveness, cost-effectiveness and impact of medical technology and its use
- Typically compares a technology with the "gold standard"
- Is impartial and comprehensive

The Role of HTA

- To provide a basis for informed decisions about the purchase and use of health technology by:
  - **Providing unbiased reliable information that compares technology options**
  - **Evaluating clincial and cost effectiveness**
  - **Making complex research accessible**
  - **Cutting through information overload by synthesizing relevant literature**
  - **Identifying data deficiencies**
- To encourage the appropriate use of health technology
- To facilitate planning for the introduction and diffusion of new technologies

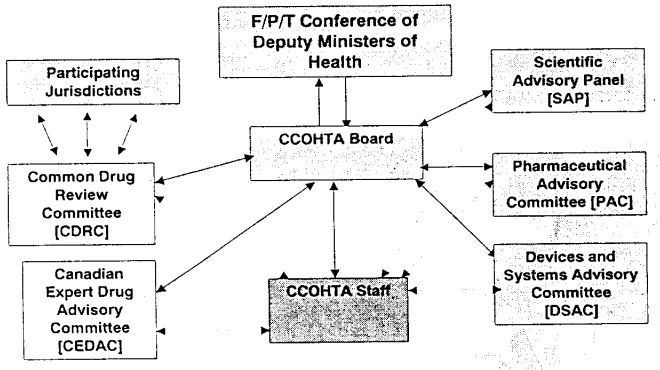
Policy not Regulation

- Regulation of health technology is the legal process that controls the availability of a health technology
- Regulation of pharmaceutical and devices is the responsibility of Health Canada
- Once licensed, a health technology may be advertised and sold
- HTA is not part of the regulatory process; HTA supports policy development

CCOHTA: A National Resource

- In 1989, Canada's F/P/T Health Ministers established CCOHTA:
  - **Only HTA organization in Canada jointly funded by federal, provincial and territorial governments**
  - **Reports to the Conference of DMs of Health**
  - **Responsive to the priorities of the DMs through F/P/T representatives on Board and advisory committees**

Reporting and Governance



What we do

- Provide health care decision makers with unbiased, reliable information about health technologies:
  - Clinical effectiveness
  - Cost effectiveness
- Two programs:
  - HTA, which assesses medical devices, health systems and pharmaceuticals
  - CDR, which provides:
    - A systematic review of the best available clinical evidence
    - A critique of manufacturer-submitted pharmacoeconomic studies
    - An evidence-based listing recommendation for new drugs

CCOHTA's HTA Program

- Core functions:
  - **Horizon scanning**
  - **Assessments**
  - **HTA methodology**
  - **Knowledge Transfer**
  - **Coordination and collaboration**

Horizon Scanning

- Early identification of upcoming health technologies likely to have a significant impact on the delivery of health care
- CCOHTA's *Canadian Emerging Technologies Assessment Program* is the only horizon scanning program in Canada
- Piloted in 1997 and is now a permanent part of CCOHTA's HTA program

Assessments

- Focus is on health technology issues of national concern related to medical devices, pharmaceuticals and health systems
- Topics are screened, selected and prioritised by F/P/T advisory committees (one for drugs,one for devices and systems); additional input provided by members of a non-jurisdictional Scientific Advisory Panel
- Approved by CCOHTA's Board of Directors

Knowledge Transfer

- Easy access to HTA reports
  - **www.ccohta.ca**
  - **Email notification system**
  - **International databases**
- Outreach
- Presentations
- Ongoing liaison with users

Coordination and Collaboration

- CCOHTA also works collaboratively with other HTA agencies to minimize duplication and provide decision-makers with access to assessments produced by other agencies:
  - **Canadian Health Evaluation Forum (CHEF)**
  - **Canadian Coordinating Committee for Health Services Research (CCHSR)**
  - **HTAi**
  - **INAHTA**
  - **EuroScan**

Provincial HTA organizations

- Network of provincial HTA organization
  - Alberta: AHFMR HTA Unit
  - Ontario: ICES and Medical Advisory Secretariat, Ontario Ministry of Health
  - Quebec: AETMIS
  - Saskatchewan: Health Quality Council
- Provincially funded; response to provincial priorities

Developments in 2003

- National Strategy:

  "... a comprehensive strategy which assesses the impact of new technology and provides advice on how to maximize its effective utilization in the future."

  -- Excerpt from 2003 First Ministers' Accord on Health Care Renewal

- New Federal Funding:

  "... there is increasing need for reliable, evidence-based information to ensure that technologies are used in clinically beneficial, cost-effective ways."

  – Excerpt from Federal Budget 2003

Budget for CCOHTA

	HTA Program	Common Drug Review	Total
2002 – 2003	$4.2 million	$2 million	$6.2 million
2003 - 2004	$9.2 million	$2 million	$11.2 million
2004 – 2005	$14.2 million	$2 million	$16.2 million
2005 - 2006	$14.2 million	$2 million	$16.2 million

CANADIAN COORDINATING OFFICE FOR HEALTH TECHNOLOGY ASSESSMENT

OFFICE CANADIEN DE COORDINATION DE L'ÉVALUATION DES TECHNOLOGIES DE LA SANTÉ

HTA at CCOHTA

Don Husereau, BScPharm M.Sc.
Research Officer, Pharmaceuticals

Stages of the assessment process

- Topic selection
- Project feasibility
- Formation of a project team
- Literature search and retrieval
- Synthesis and interpretation
- Expert reviews
- Knowledge Transfer

Topic selection -- overview

- Topics accepted from all sources
  - CCOHTA's web site
- Topics are screened, selected and prioritised by F/P/T advisory committees (one for drugs,one for devices and systems); additional input provided by members of a non-jurisdictional Scientific Advisory Panel
- Approved by CCOHTA's board of directors

Topic selection – prioritization

- Enough information available?
- Potential significant impact on quality of patient care or health care system?
- Potential impact on health care decision-making (both clinical and health policy decisions)?
- Controversial technology?
  - Does it call into question the current "gold standard'?
  - Question of over- or under-utilization?
  - Variation in practice patterns?
- Recent assessment(s) done by others?

Project feasibility

- Purpose: to assess project feasibility
- Process:
  - Define research question(s)
  - Specify report components (e.g. clinical/economic aspects)
  - Conduct preliminary literature search
  - Outline proposed search protocol, methodology and resource needs

Project team

- Most projects are performed "in-house" (lead researcher is from CCOHTA)
- Every project team includes a CCOHTA information specialist
- External clinical experts added
- Some projects involve national or international collaborations

Literature search

- Systematic and exhaustive search for relevant documents
  - No language restrictions
  - Comprehensive sweep of many electronic databases
  - "Grey literature", including information from abstracts and other HTA agencies
  - Information from industry
  - Alerts to notify information specialist of new literature after original search

Synthesis and interpretation

- Systematic review
  - transparent, reproducible methods to identify, assemble and synthesize the literature
- Meta-analysis
  - use of statistical methods to combine the findings of multiple research studies to gain a larger "n"
- Economic analysis
  - Systematic review of economic evidence
  - Budget impact analysis
  - Full economic evaluation

Review cycles

- Both internal and external review cycles
- Guidelines supplied for reviewers
- Reviewer panel includes
  - Clinical experts
  - Statisticians/methodologists
  - Scientific advisory panel advisors
  - +/- Health economists
  - +/- Industry representatives

Knowledge Transfer

- Published report provides a synthesis of relevant literature that tells you:
  - about the technology/its clinical use
  - whether it is efficacious/effective ... and for whom
  - how it compares with other treatments
  - information deficiencies
  - +/- economic aspects of the technology
  - +/- social, ethic, legal issues

CANADIAN COORDINATING OFFICE FOR HEALTH TECHNOLOGY ASSESSMENT

OFFICE CANADIEN DE COORDINATION DE L'EVALUATION DES TECHNOLOGIES DE LA SANTÉ

Case Study: Glitazones

Overview

- More than 1M Canadians adults have diabetes mellitus; of these 90% have type 2 diabetes.
- Rosiglitazone and pioglitazone are members of the newest class of oral anti-diabetic drugs called thiazolidinediones (aka glitazones)
- Glitazones decrease blood glucose levels and appear to address insulin resistance, a key problem in type 2 diabetes
- Rosiglitazone and pioglitazone received Health Canada approval in 2000.

Glitazones: Topic selection

- Proposed for assessment because of:
  - Potential clinical advantage
    - Appear to address insulin resistance
  - Potential safety issues
    - Concerns with liver toxicity and cardiac problems
  - Potential budget impact
    - Significantly more costly than other drugs for diabetes
- Screened and prioritized by CCOHTA's Pharmaceutical Advisory Committee and approved for assessment by CCOHTA's Board of Directors

Glitazones: Project feasibility

- Purpose:
  - To perform a systematic review of the clinical trials that compare rosiglitazone or pioglitazone (as monotherapy or add-on therapy) with other oral anti-diabetic agents for the treatments of type 2 diabetes
  - To perform a budget impact analysis projecting costs associated with the introduction of glitazones in Canada to 2004
- Preliminary literature search identified sufficient information to support an assessment (Review was conducted in 2001-02)

Glitazones: Project team

- Lead author (CCOHTA pharmacist)
- Second author (CCOHTA epidemiologist)
- Health economist (CCOHTA)
- Clinical expert (external endocrinologist)
- Information specialist (CCOHTA)

Glitazones: Literature search

- Electronic literature search identified 405 citations; industry submitted 114 references, 179 electronic alerts after original search
- 2 reviewers independently reviewed citations and discarded irrelevant ones, based on title and abstract, leaving 124 potentially relevant references to be retrieved in full for more detailed evaluation
- Of these, 86 did not meet selection criteria, leaving 38 relevant references describing the results of 19 clinical trials

Glitazones: Synthesis/interpretation

- Clinical Efficacy Review
  - Statistical pooling of data using Reference Manager 4.1
  - Primary outcome: blood sugar levels.
  - Secondary outcomes: serum lipids, liver enzymes, etc.
- Budget Impact Analysis
  - Primary focus was impact on drug expenditures of oral anti-diabetic agents using perspective of provincial drug plans

Glitazones: Expert reviews

- Three external reviewers:
  - Marshall Dahl, BSc, MD, PhD FRCPC, University of British Columbia, Canada
  - Jeffrey Johnson, BSP, MSc, PhD, University of Alberta, Canada *(for BIA only)*
  - Ron Sigal, MD, MPH, FRCPC, University of Ottawa, Canada
- Two reviewers from CCOHTA's Scientific Advisory Panel
- Internal review by Director of HTA Research and Director of Knowledge Transfer

Glitazones: Publication

- Conclusion
  - When used as monotherapy, effect on blood sugar similar to non-glitazones
  - Greater effect on blood sugar when used in combination with non-glitazone drug, but this is also true when two non-glitazones are used in combination
  - Minimum budget impact for publicly funded drug programs: $11.8M; maximum $88.5M (depending on utilization)
- 1000 copies mailed in October 2002; 514 copies downloaded from CCOHTA website

CANADIAN COORDINATING OFFICE FOR HEALTH TECHNOLOGY ASSESSMENT

OFFICE CANADIEN DE COORDINATION DE L'ÉVALUATION DES TECHNOLOGIES DE LA SANTÉ

Economic Analysis at CCOHTA

Bruce Brady, MA
Health Economist

Economic Analysis at CCOHTA

- HTA reports can assess clinical and/or economic aspects of a technology
- Economic analysis can include:
  - Reviews of published economic studies
  - Primary economic evaluations
  - Budget impact analysis

Review of Published Economic Studies

- Methods
  - Systematic literature search & review
  - Study selection criteria & data extraction
- Analysis – usually qualitative
  - Study characteristics & quality
  - Direction & magnitude of results
- Discussion – limitations, generalizability
- Example: services for stroke rehabilitation

Primary Economic Evaluations

- Addresses the issue of 'value for money'
- Methods:
  - Use of economic models
  - Use CCOHTA's economic guidelines
  - Industry information sought
- Analysis:
  - Sensitivity & sub-group analysis
- Discussion - key drivers, limitations
- Example: NIs for treatment of influenza

Budget Impact Analysis

- Addresses the issue of affordability
- Two steps:
  1. Population impact – number of individuals (or claims)
  2. Budget impact – annual incremental expenditure
- Clarify perspective, use scenarios, consider factors that differ by jurisdiction
- Example: Glitazones for type 2 diabetes

BIA vs. Economic Evaluation

	Budget Impact Analysis	Economic Evaluations
Question	Is it affordable?	Is it good value for money?
Goal	Cost containment	Efficiency of alternatives
Measure	Total expenditure (P x V)	Incremental cost per unit of benefit
Time Horizon	Usually short (1 to 3 years)	Usually longer term (may be lifetime)

Economic Analysis at CCOHTA

- Which type of economic analysis?
  - Policy question & needs of target audience
  - Gaps in existing research
  - Type of project
  - Practical – timing, workload, resources
- Guidance / resource documents:
  - CCOHTA's Guidelines for Authors
  - CCOHTA's Economic Guidelines
  - National Cost List

CCOHTA Economic Guidelines

- To help 'doers' produce standardized, reliable economic information to meet needs of 'users'
- Reduce bias...but will not eliminate
- Focus on drugs; apply to other technologies
- Used by manufacturer for submissions to public drug plans & by CCOHTA for in-house evaluations
- CCOHTA Guidelines a leader (1994 & 1997 editions)

Contents of Guidelines

- Identify preferred methods
- Guideline statements (25) covering:
  - study design (analytical techniques, perspective, comparators, time horizon)
  - outcomes & costs
  - handling uncertainty
  - discounting
  - generalizing results
- Quality assurance tips

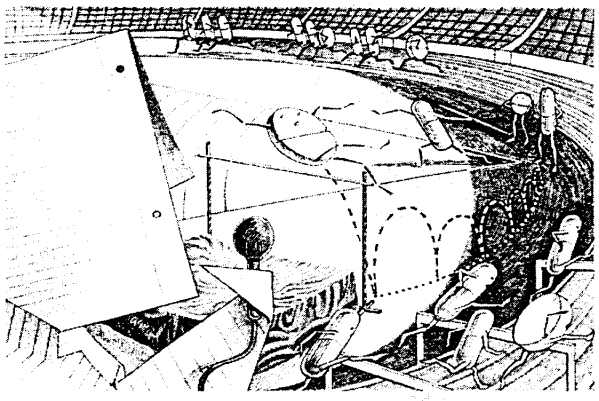
Revision of Guidelines

- 2003 revised edition to reflect:
  - experience with use
  - methodological developments since 1997
- Consultations (drug plan reps, govt users, economists, method experts, industry)
- New areas of content:
  - handling uncertainty
  - budget impact analysis
  - systematic review of published economic evaluations
  - medical devices & procedures
  - modeling

To Sum Up

- Types of economic analysis:
  1. Reviews of published economic studies
  2. Primary economic evaluations
  3. Budget impact analysis
- Important to determine what type of economic analysis is appropriate
- CCOHTA's Economic Guidelines are an internationally recognized standard and an valuable resource

Questions?



What is the problem?

- Silo budgeting, lack of economic expertise
- Report lacks timeliness or is weakly disseminated
- Deficiencies in conduct & reporting evaluations:
  - Reliability – inappropriate use of clinical data (extrapolation), assumptions, transparency
  - Relevance - comparator, sub-group analysis, transferability of results, timing

Use of Economic Evaluations Varies by Drug & Place

- More likely to be used if drug has:
  - high budget impact
  - marginal benefit but at high cost
  - innovative
- Less likely to be used if drug has:
  - weak clinical evidence
  - already penetrated market
  - or where other decision criteria are key (ethics, politics)

When to Conduct an Economic Evaluation (EE)

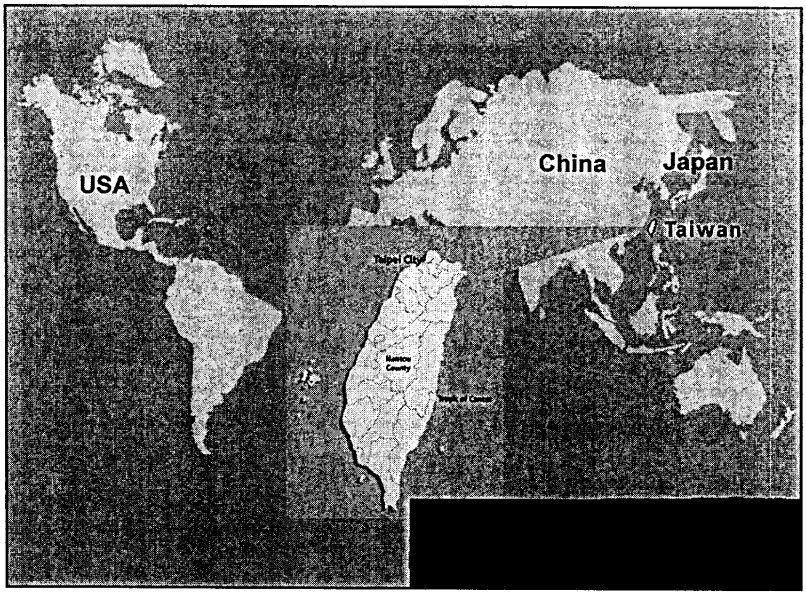
1. The amount of resources at stake justify the EE
2. The are clear alternative uses for the resources to be evaluated
3. The technology underlying each alternative is reasonably well understood
4. A reasonable length of time is available to conduct the EE
5. Decision-makers are receptive to the EE results & have not already made up their minds

How Taiwan's National Health Insurance provides universal coverage while contain health cost inflation

Hong-jen Chang, MD, MPH, MS
CEO and President
Bureau of National Health Insurance
Taiwan, Feb. 9, 2004

Contents

- A brief introduction to Taiwan's National Health Insurance
- Performance of Taiwan's NHI
- International Comparison
- Conclusion & Major Lessons



Profile of Taiwan (2002)

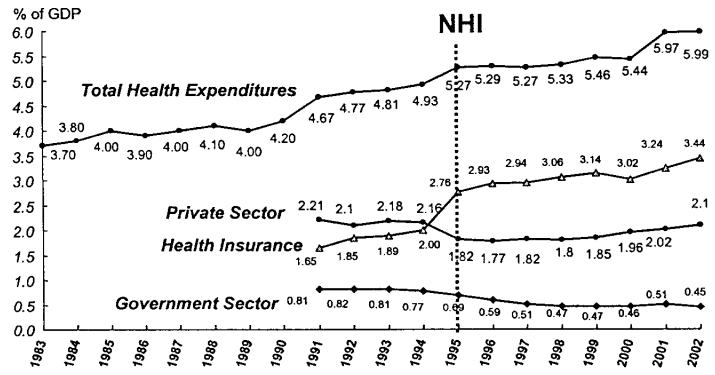
- Population: 22.52 million
- Land area: 36,188 km^2 (14,000 mile^2)
- Population density: 622 per km^2
- Population aged over 65 : 9.02%
- GNP per capita : US $12,900
- NHE as % of GDP: 5.99%

Bureau of National Health Insurance www.nhi.gov.tw 4

Health Indices
(2002)

- Crude Birth Rate: 11.02 ‰
- Crude Death Rate: 5.73 ‰
- Natural Increase Rate: 5.29 ‰
- Infant Mortality Rate: 5.35 ‰
- Maternal Mortality Rate: 7.68 0/0000
- Life Expectancy: 73.03 Male
  78.82 Female

National Health Expenditures as % in GDP
1983-2002



Characteristics of the Healthcare System

- Dominated by the private sector
- Closed-staff system for hospitals
- Patients are able to choose care providers freely
- No gate-keeper system
- Hospitals accredited by DOH every 3 years
- High service volumes in outpatient department in most hospitals

Public/Private Mix of Providers (2002)

	Public	Private	Total
Hospitals	93 (15.2%)	517 (84.8%)	610 (100%)
Clinics	477 (2.7%)	17,141 (97.3%)	17,618 (100%)
Beds	42,860 (32.1%)	90,538 (67.9%)	133,398 (100%)

Milestones in Social Insurance

1950 Labor Insurance (40.12%)

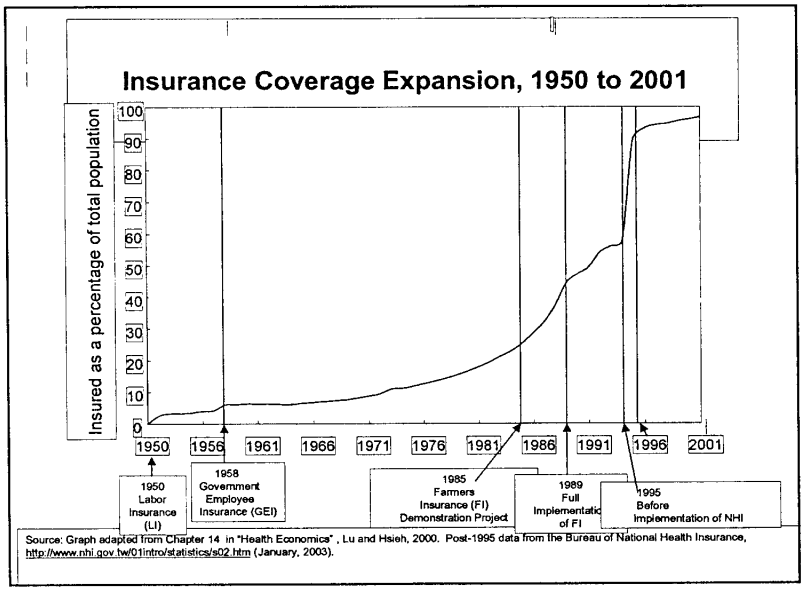
1958 Government Employee Insurance (8.06%)

1985 Farmer Insurance (8.21%)

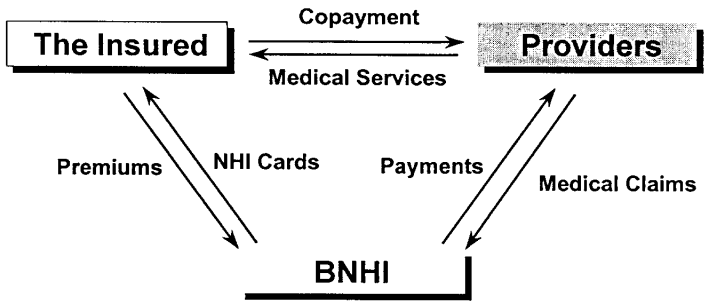
1990 Low-income Household Insurance (0.55%)

1995 National Health Insurance (99%)

*( ) indicates % of covered population



Flow of Healthcare System under the NHI



Characteristics of NHI (1)

- Mandatory enrollment
- Single-payer system
- Public Administraton
- Payroll-related premium rate
- Contribution shared by the employer, the employee and the government

Characteristics of NHI (2)

- Comprehensive benefit package
- Cost sharing for ambulatory care, inpatient care, and drugs
- Fee-for-services under the Global budget

Benefit Coverage

- Inpatient care
- Ambulatory care
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How much should a wage-earner pay for NHI premium?

Mr. Chang is a wage-earner with a monthly income of NT$28,800(USD 800)

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- Self employed pays NT$520(15USD) per month
- Farmers/Fiserman Pays NT$260(8USD) per month
- Community rate: NT$604 (17USD) per month

(1 USD = 35 NTD)

"The average citizen pays 20 U.S. dollars per person, per month."

"They can go to any doctor, any hospital they want. They pay, on the average, two U.S. dollars and a maximum of about 10 U.S. dollars each visit. And we don't have a waiting list."

Hong-jen Chang, ABC News October 25, 2003

Copayment for Ambulatory Care

Unit: US Dollar

	Outpatient Care	Emergency Care	Dental Care & Chinese Med.	Drug (20%)
Academic Medical Centers	6	12	1. 5	0~6
Regional Hospitals	4	6	1. 5	0~6
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Copayment exemption: catastrophic diseases, child delivery, preventive health services, medical services offered at mountain areas or offshore islands, low-income households, veterans, children under the age of 3

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Coinsurance for Inpatient Care (Acute Care)

Length of Stay	Coinsurance Rate
within 30 days	10%
31 to 60 days	20%
Above 61 days	30%

Coinsurance ceiling: US$686 per stay and US$1,143 cumulative for the entire calendar year.

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Exemptions of Cost Sharing

- Catastrophic diseases
- Child delivery
- Preventive health services
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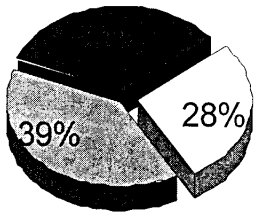
- Low-income households
- Veterans
- Children under the age of 3

Premium Revenues

Total revenues in 2002: NT$302.5 billion (US$8.6 billion)

Employer
NT$101.2billion

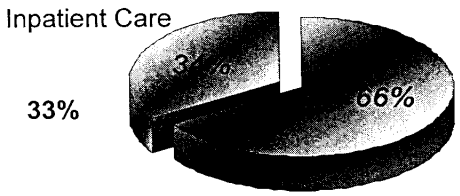
Insured
NT$118.3 billion



Government
NT$83 billion

Medical Expenditures

Total Spending in 2002: NT$ 339.9 billion (US$9.7 billion)



Fairness of financing contribution to health systems in selected countries, WHO index, 1997

Rank	country	index
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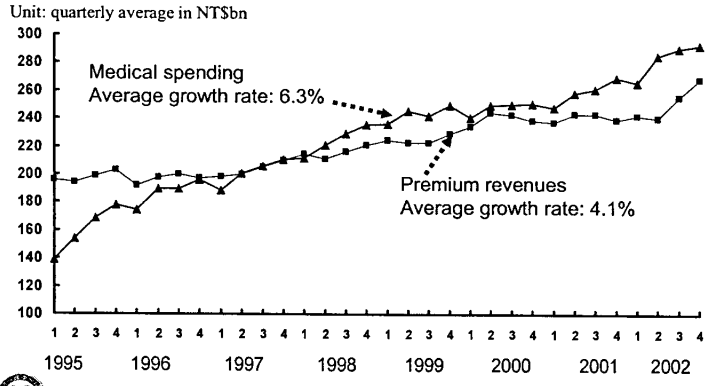
3-5	Denmark	0.979
6-7	Germany	0.978
8-11	Japan	0.977
8-11	United Kingdom	0.977
12-15	Sweden	0.976
17-19	Canada	0.974
20-22	Netherlands	0.973
38-40	Switzerland	0.964
53	South Korea	0.955
54-55	US	0.954
101-102	Singapore	0.929
188	China	0.638

* :Taiwan index for 1998

Trend of NHI Financial Status



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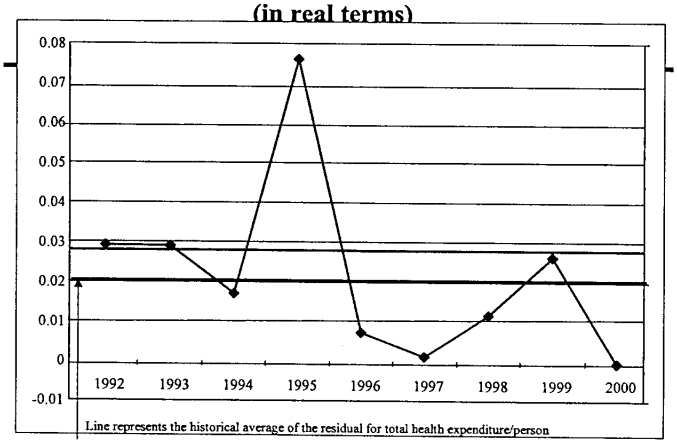
Residuals for Taiwan's Total Health Expenditure/Person (in real terms)



Source: The residual was computed based on Taiwan's national health expenditures estimated by Lu & Hsiao

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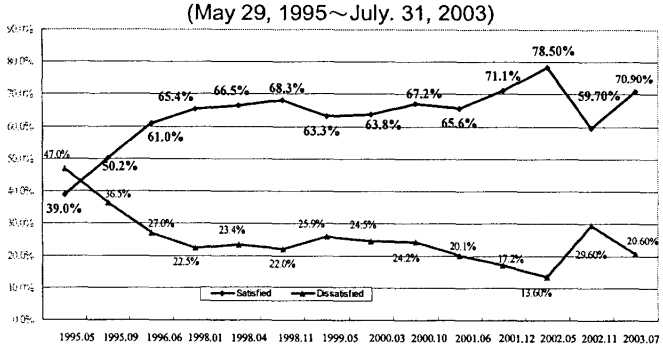
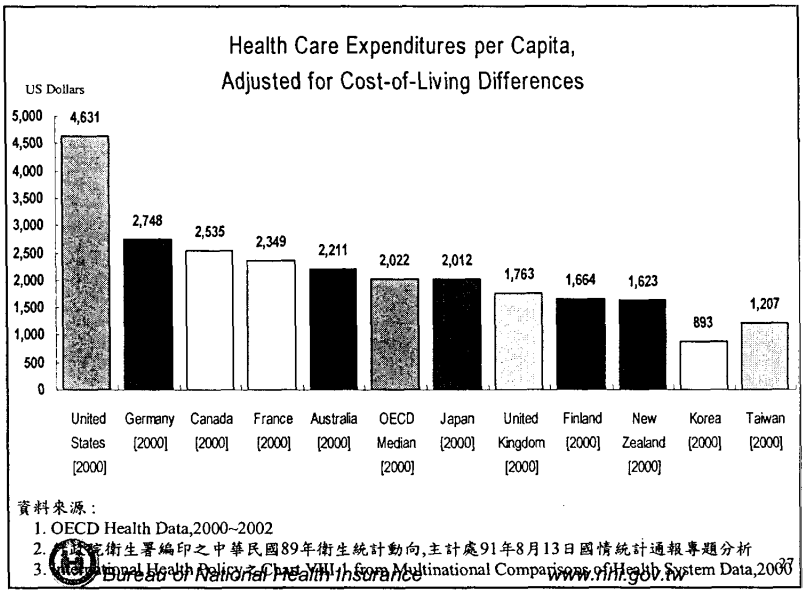
High Public Satisfaction

(May 29, 1995～July. 31, 2003)



* The numbers following the decimal points indicate months of the year, e.g. 1995.05 refers to May of 1995

International Comparison



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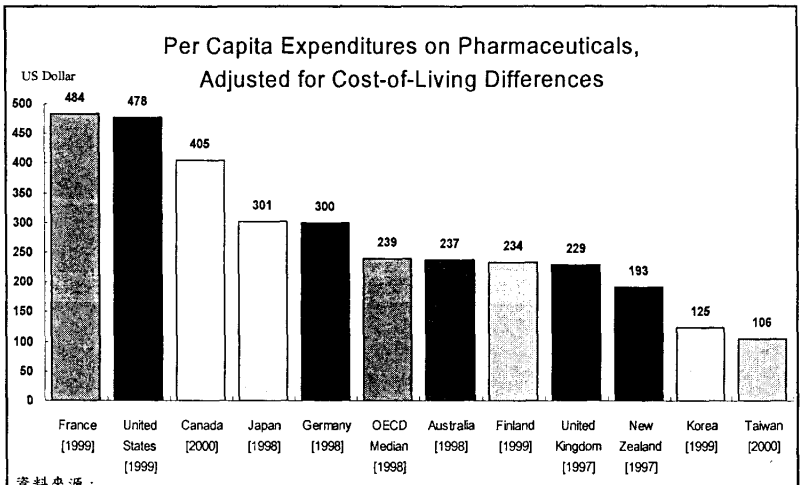

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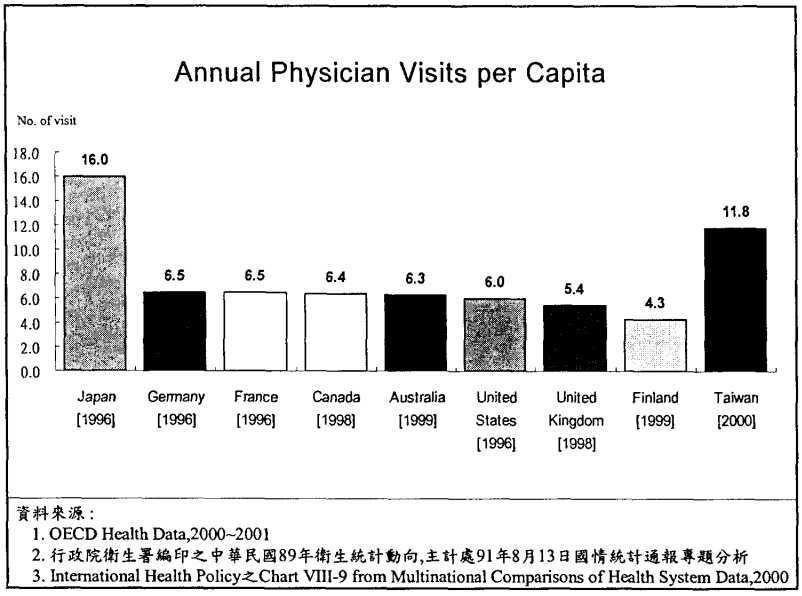

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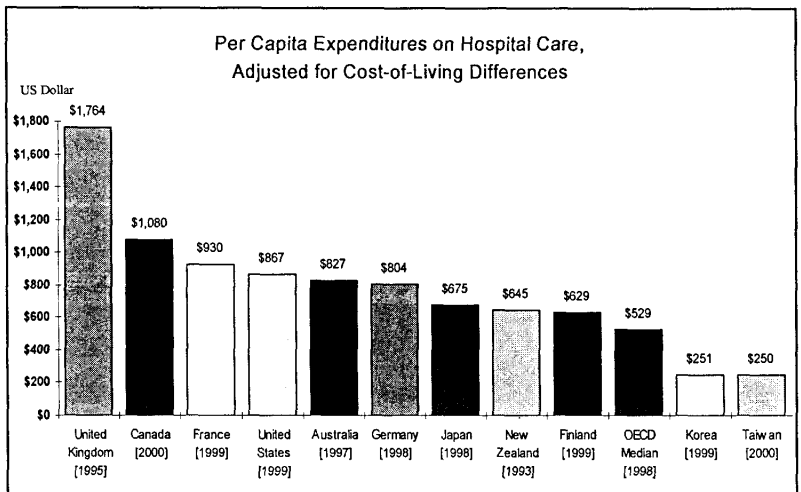

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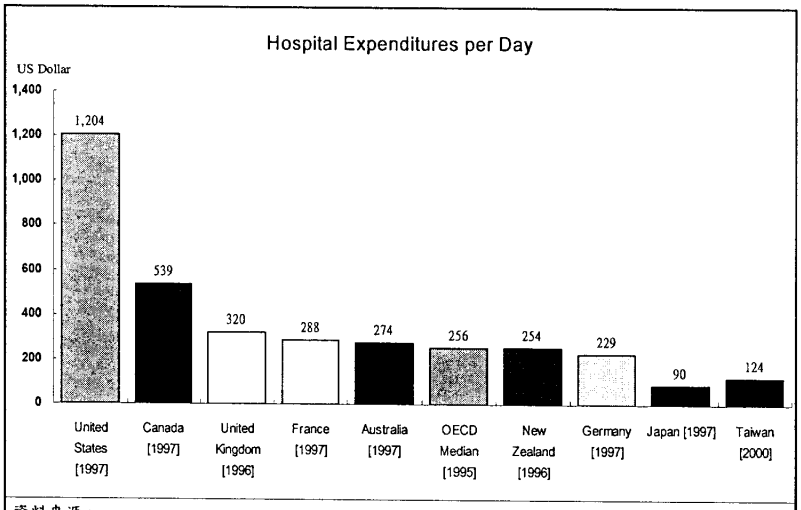

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International Comparison of Treatment for Hip Fracture

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Male					
Internal fixation(ICD-9 79.3)	51%	10%	30%	48%	48%
Any hip replace(ICD-9 81.5X)	38%	13%	20%	31%	36%
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No procedure	9%	66%	50%	21%	16%

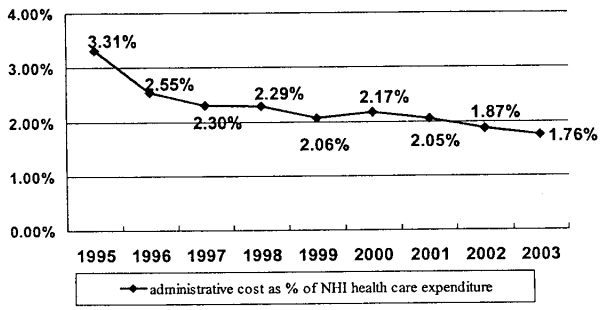
Source: Kessler et al. (2002)

International Comparison of One-year Mortality Rate for Hip Fracture

	Australia	Canada	Taiwan	U.S.
Male	37%	33%	22%	39%
Female	22%	18%	17%	25%

Source: Kessler et al. (2002)

Administrative Cost in Taiwan



Conclusion

Taiwan's healthcare systems:

- Inexpensive and affordable
- Accessible to all
- High public satisfaction
- Quality Acceptable

Possible factors contributing to the success of Taiwan's NHI

- Single-payer system
- Free market on delivery side
- IT intensive:
  - 100% electronic claim processing
  - smart card
- Strong generic pharmaceutical industry
- Physicians willing to work very hard at relatively low physician fee
- Tradition of family support

Problems ahead

- Long-term financial sustainability
  - New Technology
  - Aging
- Society's willingness to pay
- Monopoly:
  Rigidity vs. Efficiency
- Quality

Major Lessons

Major Lessons

- *Taiwan offers an opportunity to study how an advanced economy can structure its health care system to advance societal goals in universal coverage and financial risk protection.*
  - Free market may not be a good choice, if equitable access to care and efficient risk pooling are top concerns.

Major Lessons

- *Single-payer system greatly reduced transaction costs and also offered information and tools to manage health care costs.*
  - The total increase in health spending between 1995 and 2000 was not more than the amount that Taiwan would have spent.

Major Lessons

Lessons for US?

Major Lessons

Taiwan developed its NHI program using the most current experiences from countries around the world.

- Perhaps US can do the same.
  - Lu & Hsiao, Health Affairs 2003

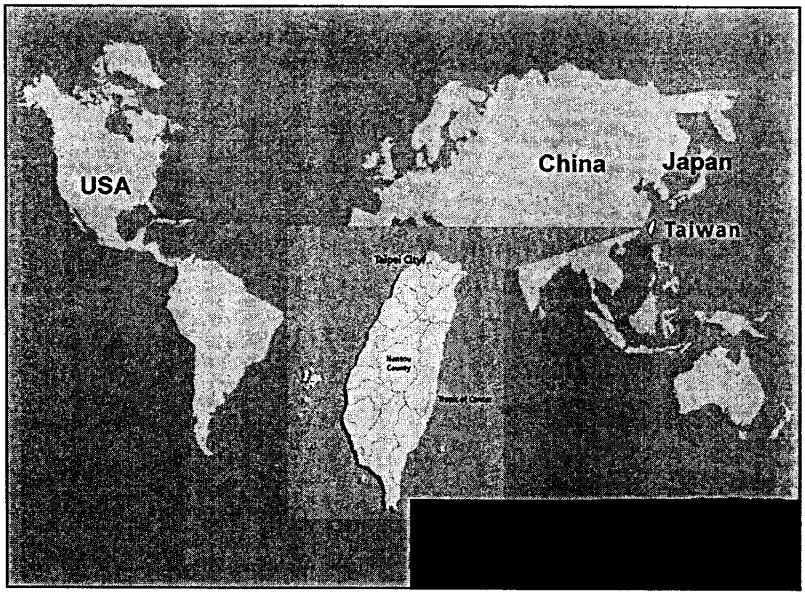
Thank you!

How Taiwan's National Health Insurance provides universal coverage with affordable costs

Hong-jen Chang, MD, MPH, MS
CEO and President
Bureau of National Health Insurance
Taiwan, Feb. 10, 2004

Contents

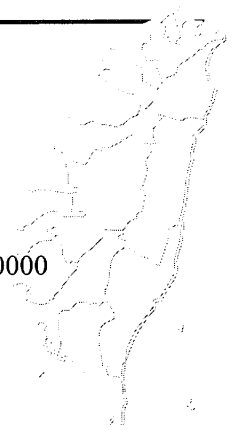
- A brief introduction to Taiwan's National Health Insurance
- Performance of Taiwan's NHI
- International Comparison
- Conclusion & Major Lessons



Profile of Taiwan (2002)

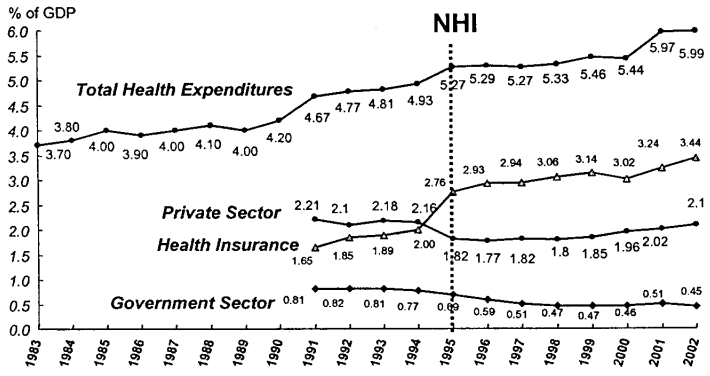
- Population: 22.52 million
- Land area: 36,188 km^2 (14,000 mile^2)
- Population density: 622 per km^2
- Population aged over 65 : 9.02%
- GNP per capita : US $12,900
- NHE as % of GDP: 5.99%

Health Indices
(2002)



- Crude Birth Rate: 11.02 ‰
- Crude Death Rate: 5.73 ‰
- Natural Increase Rate: 5.29 ‰
- Infant Mortality Rate: 5.35 ‰
- Maternal Mortality Rate: 7.68 0/0000
- Life Expectancy: 73.03 Male
  78.82 Female

National Health Expenditures as % in GDP
1983-2002



Characteristics of the Healthcare System

- Dominated by the private sector
- Closed-staff system for hospitals
- Patients are able to choose care providers freely
- No gate-keeper system
- Hospitals accredited by DOH every 3 years
- High service volumes in outpatient department in most hospitals

Public/Private Mix of Providers (2002)

	Public	Private	Total
Hospitals	93 (15.2%)	517 (84.8%)	610 (100%)
Clinics	477 (2.7%)	17,141 (97.3%)	17,618 (100%)
Beds	42,860 (32.1%)	90,538 (67.9%)	133,398 (100%)

Milestones in Social Insurance

1950 Labor Insurance (40.12%)

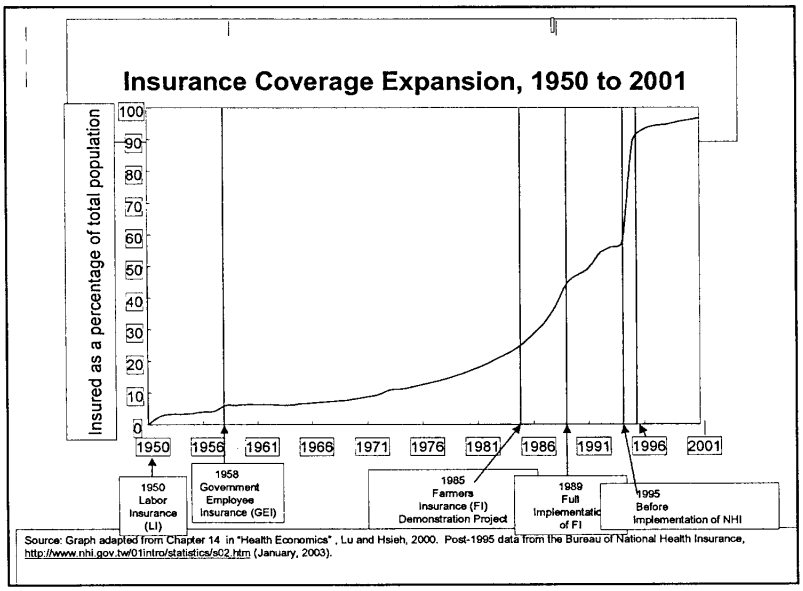
1958 Government Employee Insurance (8.06%)

1985 Farmer Insurance (8.21%)

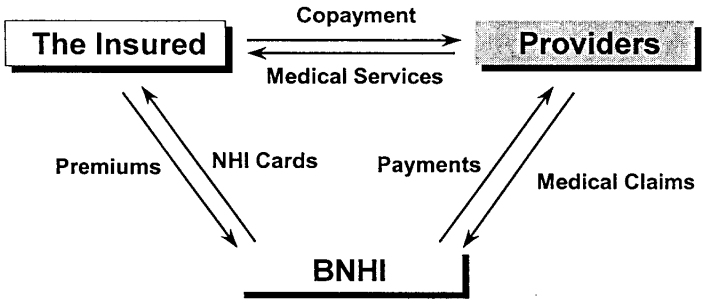
1990 Low-income Household Insurance (0.55%)

1995 National Health Insurance (99%)

*( ) indicates % of covered population



Flow of Healthcare System under the NHI



Characteristics of NHI (1)

- Mandatory enrollment
- Single-payer system
- Public Administration
- Payroll-related premium rate
- Contribution shared by the employer, the employee and the government

Characteristics of NHI (2)

- Cost sharing for ambulatory care, inpatient care, and drugs
- Comprehensive benefit package
- Fee-for-services under the Global budget

Benefit Coverage

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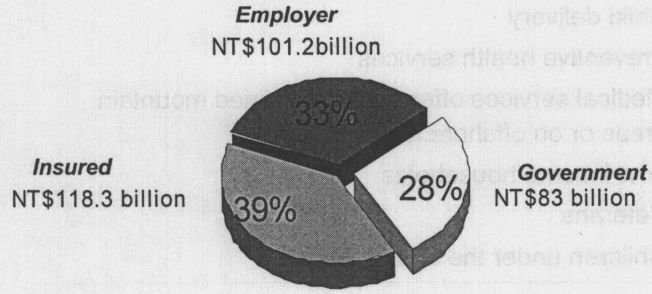

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Medical Expenditures

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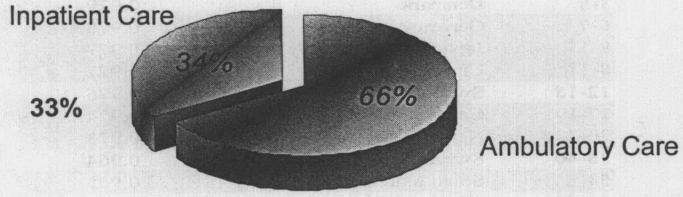

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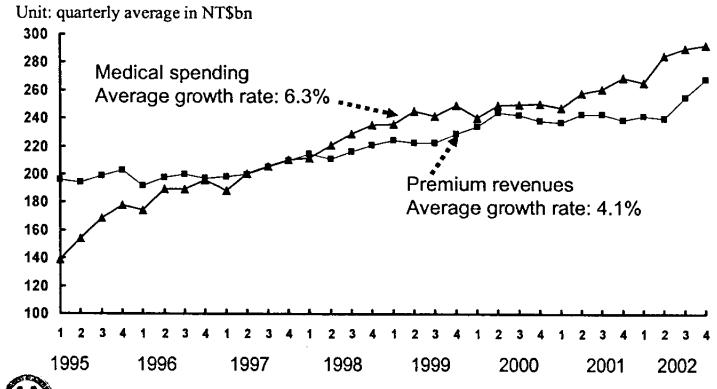
Trend of NHI Financial Status



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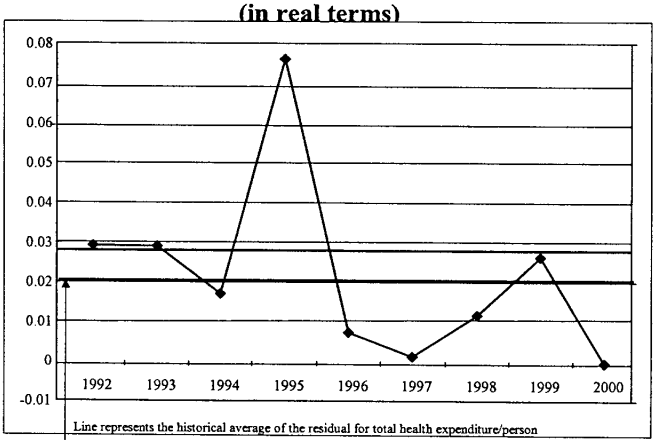
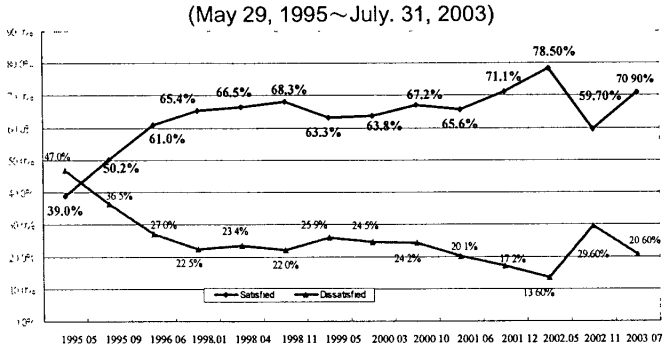
Residuals for Taiwan's Total Health Expenditure/Person (in real terms)



Source: The residual was computed based on Taiwan's national health expenditures estimated by Lu & Hsiao

High Public Satisfaction

(May 29, 1995～July. 31, 2003)



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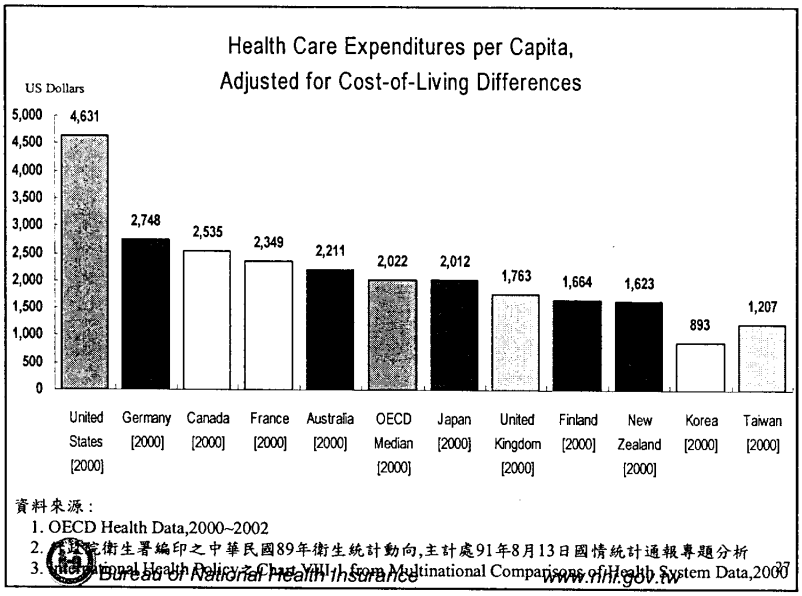
International Comparison



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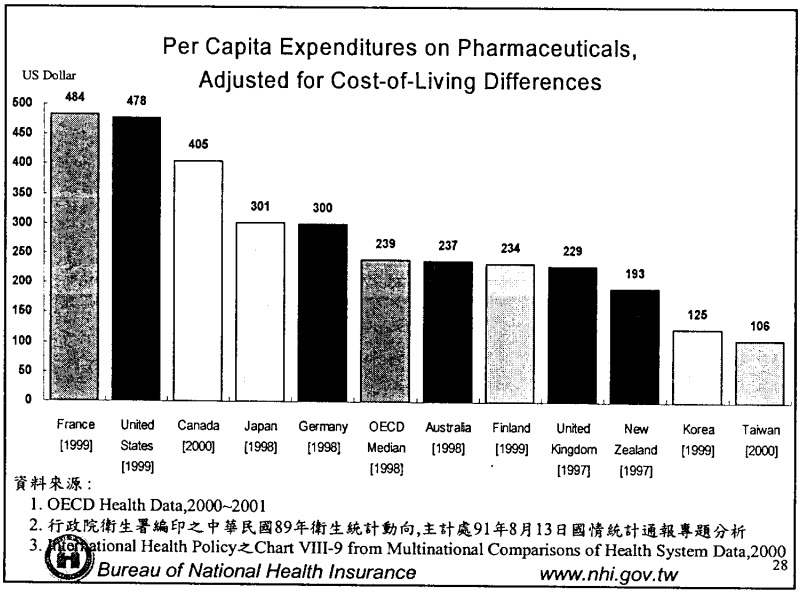

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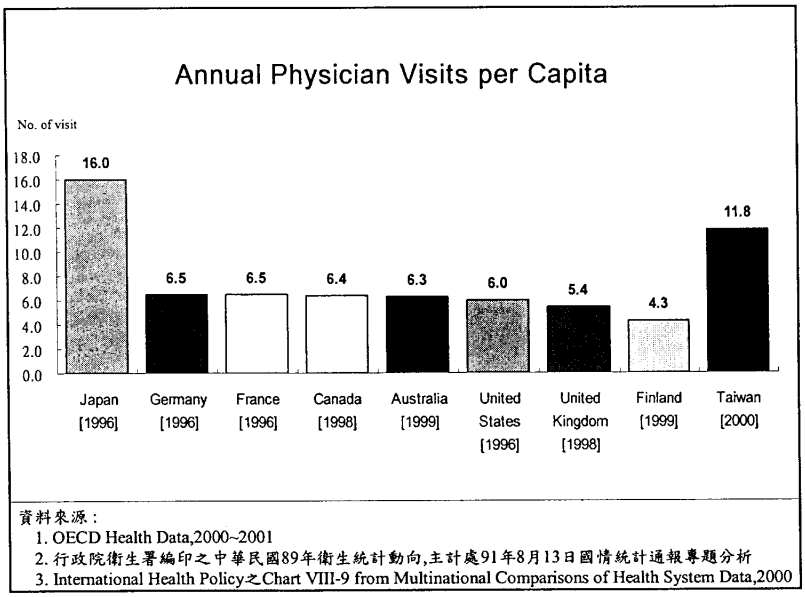

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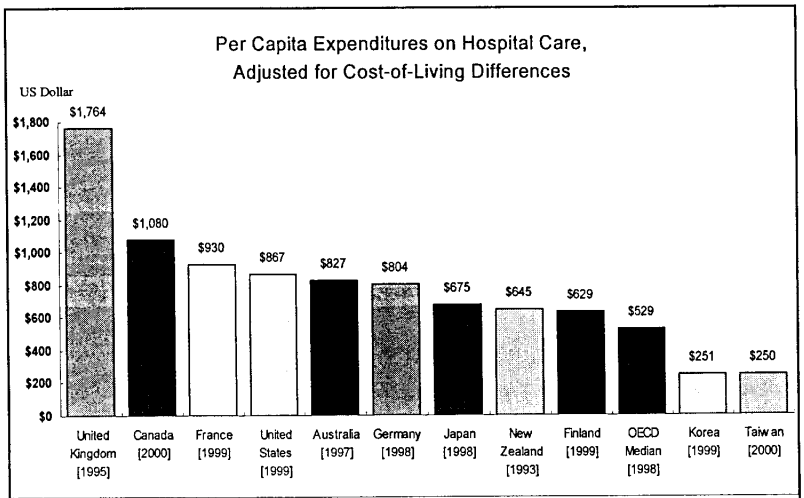

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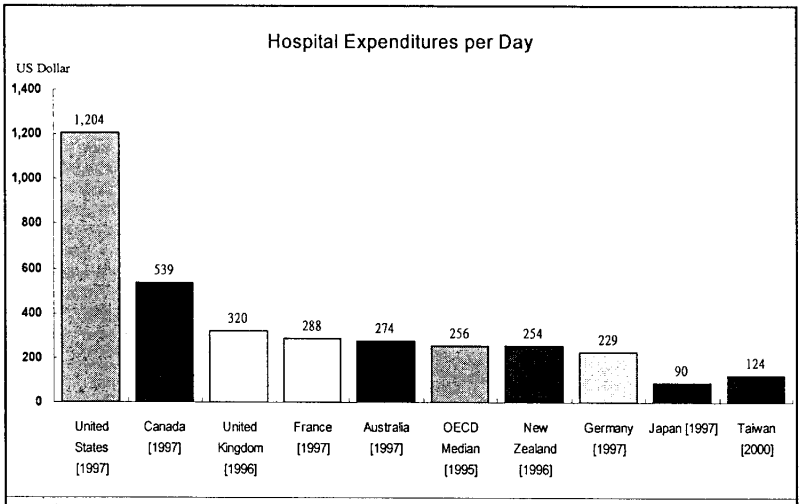

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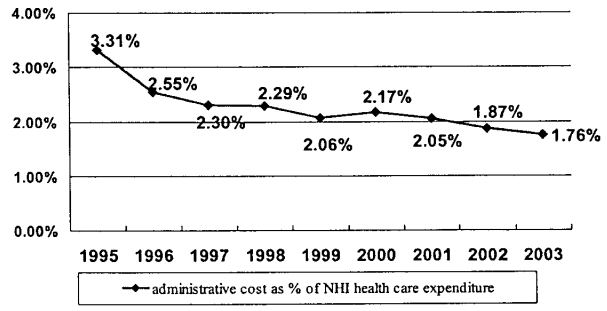
Source: Kessler et al. (2002)

International Comparison of One-year Mortality Rate for Hip Fracture

	Australia	Canada	Taiwan	U.S.
Male	37%	33%	22%	39%
Female	22%	18%	17%	25%

Source: Kessler et al. (2002)

Administrative Cost in Taiwan



Conclusion

Taiwan's healthcare system:

- Affordable
- Accessible to all
- High public satisfaction
- Quality of care Acceptable

Possible factors contributing to the success of Taiwan's NHI

- Single-payer system
- Free market on delivery side
- IT intensive:
  - 100% electronic claim processing
  - smart card
- Strong generic pharmaceutical industry
- Physicians willing to work very hard at relatively low physician fee
- Tradition of family support

Problems ahead

- Long-term financial sustainability
  - New Technology
  - Aging
- Society's willingness to pay
- Monopoly:
  Rigidity vs. Efficiency
- Quality

Major Lessons

Major Lessons

- *Taiwan offers an opportunity to study how an advanced economy can structure its health care system to advance societal goals in universal coverage and financial risk protection.*
  - Free market may not be a good choice, if equitable access to care and efficient risk pooling are top concerns.

Major Lessons

- *Single-payer system greatly reduced transaction costs and also offered information and tools to manage health care costs.*
  - The total increase in health spending between 1995 and 2000 was not more than the amount that Taiwan would have spent.

Major Lessons

Lessons for US?

Major Lessons

- Americans, whose public health policy has been hostage to political gridlock for more than two decades, should be impressed with Taiwan's bold embrace and implementation of universal health insurance.

Cheng Tsung May, Health Affairs, 2003

Major Lessons

Taiwan developed its NHI program using the most current experiences from countries around the world.

- Perhaps US can do the same.

Health Affairs 2003

Thank you!