



流金頌 賽馬會長者計劃新里程
A Jockey Club Initiative for Seniors

Press Conference on Research Findings
jointly organised by
the Faculty of Social Sciences of HKU and CADENZA

香港大學社會科學學院及「流金頌」聯合舉辦
研究結果記者招待會

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The University of Hong Kong



Does Very Hot Weather Warning Reduce Mortality among Elderly People in Hong Kong?

酷熱天氣警告有否減低香港長者的死亡率?



A Hotter World 全球暖化

- Growing concern over global warming
 愈來愈多人關注全球暖化
- Mean annual global surface temperature is predicted to rise by 1.4°C to 5.8°C in the next century
 預料下世紀的全球地面年均溫度會上升1.4°C至5.8°C
 (Cubasch *et al.*, 2001)




Physiological Effect of Heat Stress 身體對酷熱的反應

- Excessive heat causes loss of salt & water in sweat, causing haemoconcentration, which in turn causes increase in coronary & cerebral thrombosis
 酷熱天氣使身體中的鹽份及水份從汗水中流失，令血液變得濃稠，從而提升了心臟及腦部血管堵塞的機會
 (Keatinge *et al.*, 1996)
- Overload of already failing hearts, unable to meet the need for increased cutaneous blood flow in the heat
 酷熱天氣促進了皮下血管的血流量，增加了心臟病患者的負荷
 (Keatinge, 2003)



Hot Weather & Mortality 熱天氣與死亡

- Relationship between extreme hot temperature & mortality had been demonstrated in different places around the world
 世界各地的研究指出死亡率與酷熱天氣息息相關
- e.g. Netherlands, Taiwan, Spain & Canada
 如荷蘭、台灣、西班牙及加拿大
 (Kunst *et al.*, 1993; Pan *et al.*, 1995; Ballester *et al.*, 1997; Smoyer *et al.*, 2000)



The More Vulnerable 較受影響的一群

- Elderly are more vulnerable because of
 長者較容易受影響是因為：
 - Diminished capacity to detect outside temperature & deteriorated ability to regulate body temperature
 他們感應氣溫及調節體溫的能力較低
 - Limited adaptive ability may also be affected by pre-existing diseases and/or the use of medications
 患病及/或服藥也可能進一步削弱他們抵禦高溫的能力

(Jones *et al.*, 1982; Guest *et al.*, 1999; Yan, 2000; The World Health Organization Regional Office for Europe, 2003; Vandentorren *et al.*, 2006)



An Example from France 法國的例子

- ✦ In France, the 2003 heat wave (7 days with $>40^{\circ}\text{C}$) killed 14,802 people, who were mainly elderly
在2003年，法國的熱浪(7天溫度高於攝氏40度)奪去了14,802人的性命，而大部份為長者
(New Scientist article: www.newscientist.com/article.ns?id=dn4259)

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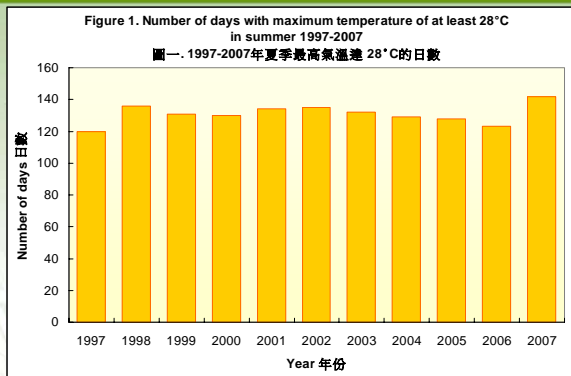
A Hotter Hong Kong 香港在暖化

- ✦ By the end of this century, there will be a temperature increase of 3.0°C to 6.8°C
預料香港本世紀末的氣溫會上升 3.0°C 至 6.8°C
- ✦ Long summer, no winter
長夏無冬

(Hong Kong Observatory, 2008)

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Situation in the Past Decade 過往十年的情況



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Hot Weather & Mortality 熱天氣與死亡

- ✦ While the summer in Hong Kong is not fatally stressful, elderly mortality has been shown to be associated with weather stress in summer
雖然香港的夏天不致帶來極大的致命危機，但數據顯示酷熱天氣與長者的死亡率有一定的關係
(Li & Chan, 2000; Yip *et al.*, 2007)

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Very Hot Weather Warning 酷熱天氣警告

- ✦ Hong Kong Observatory introduced the Very Hot Weather Warning in 2000
香港天文台自2000年設立酷熱天氣警告
- ✦ When the weather stress index exceeds a threshold, the Warning will be issued & relevant Government departments & the general public take various preventive measures
當人類天氣舒適度指數超過特定水平，香港天文台便會發出警告，而相關政府部門及大眾會相應作出預防措施

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When the Warning is Issued 當警告發出時

- ✦ General public take proper preventive measures as advocated by the Hong Kong Observatory and Department of Health
市民根據天文台及衛生署的建議，採取適當措施
- ✦ Home Affairs Department opens temporary night heat shelters for people to stay overnight
民政事務總署會開放夜間臨時避暑中心，讓有需要的市民入住
- ✦ General public, especially the elderly, increase alertness to health conditions
大眾尤其是長者，更留意自己的身體狀況

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Warning Systems Elsewhere 其他地方的警告系統

- Literature showed that the heat watch/warning systems elsewhere might help to reduce heat-related mortality

文獻顯示其他地方的警告系統可能有效減低與酷熱天氣相關的死亡率

(Ebi *et al.*, 2004; Tan *et al.*, 2007; Fouillet *et al.*, 2008)

Does Very Hot Weather Warning, accompanied by various preventive measures reduce mortality among elderly people in Hong Kong?

結合各種預防措施之下的酷熱天氣警告有否減低香港長者的死亡率?

CaeNza 香港中文大學社會科學院 The Hong Kong Jockey Club Charities Trust Faculty of Social Sciences The University of Hong Kong 14

Objective 研究目的

- To examine the relationship between issue of Very Hot Weather Warning (the Warning) & the mortality among elderly people in HK

研究酷熱天氣警告(以下簡稱警告)與長者死亡率的關係

Study Design 研究設計

- Observational study

觀察性研究

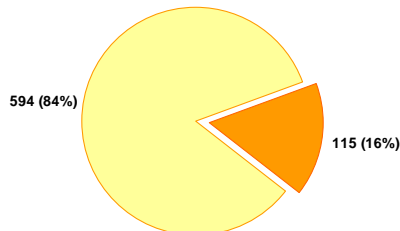
- Data

採用數據

- Daily numbers of death from Ischaemic Heart Disease (IHD) & stroke among the HK elderly population (aged ≥ 65)
每天因缺血性心臟病及中風而死亡的65歲或以上人口
- Days with maximum temperature of at least 30.4°C during summer (May to September) in 1997 to 2005
1997年至2005年夏季，最高氣溫達 30.4°C 的日子

Data 數據

Figure 2. Number of days with maximum temperature of at least 30.4°C in summer 1997-2005
圖二. 1997至2005年夏季最高氣溫達 30.4°C 的日數

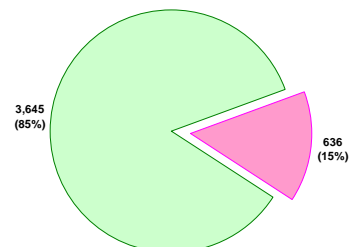


Total number of days = 709
總日數 = 709

Days with the Warning 警告生效的日子
Days without the Warning 沒有警告的日子

Data (Con't) 數據(續)

Figure 3. Number of death from ischaemic heart disease among the elderly occurred on days with maximum temperature of at least 30.4°C in summer 1997-2005
圖三. 1997至2005年夏季最高氣溫達 30.4°C 下因缺血性心臟病而死亡的長者人數

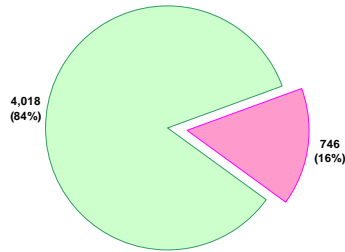


Total number of death from ischaemic heart disease = 4,281
因缺血性心臟病而死亡的總人數 = 4,281

Days with the Warning 警告生效的日子
Days without the Warning 沒有警告的日子

Data (Con't) 數據 (續)

Figure 4. Number of death from stroke among the elderly occurred on days with maximum temperature of at least 30.4°C in summer 1997-2005
圖四. 1997至2005年夏季最高氣溫達 30.4°C下因中風而死亡的長者人數



Total number of death from stroke = 4,764
因中風而死亡的總人數 = 4,764

Days with the Warning 警告生效的日子
Days without the Warning 沒有警告的日子

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Methodology 研究方法

Multiple regression models, controlling for age and sex, were used to study the association between the Warning and mortality rate from the two causes among the elderly

計算在警告生效及沒有警告的日子之中，平均每日因缺血性心臟病或中風而死亡的長者人數

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Methodology (Con't) 研究方法 (續)

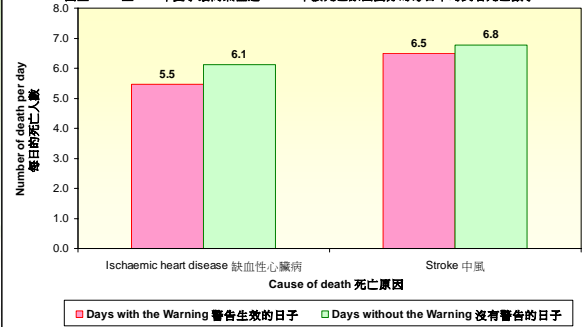
Multiple regression models, controlling for age and sex, were used to study the association between the Warning and mortality rate from the two causes among the elderly

調整年齡及性別後，有關警告與兩類長者死亡率的關係會以多元回歸分析

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Results 研究結果

Figure 5. Average daily number of death among the elderly, by cause of death, occurred on days with maximum temperature of at least 30.4°C in summer 1997-2005
圖五. 1997至2005年夏季最高氣溫達 30.4°C下按死亡原因劃分的每日平均長者死亡數字



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Results (Con't) 研究結果 (續)

Based on multiple regression models, controlling for age and sex, the Warning was significantly associated with lower daily mortality rate from the two causes among the elderly†

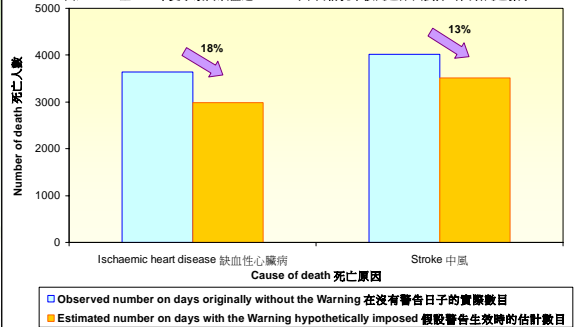
調整年齡及性別的統計分析顯示，在有警告的日子，每日長者的缺血性心臟病及中風死亡率均顯著較低†

†Two outliers from the stroke series were excluded
此分析不包括兩項有關中風死亡的異常數據

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Results (Con't) 研究結果 (續)

Figure 6. Number of death among the elderly, by cause of death, occurred on days with maximum temperature of at least 30.4°C under different scenarios in summer 1997-2005
圖六. 1997至2005年夏季最高氣溫達 30.4°C的不同情況下按死亡原因劃分的長者死亡數字



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Limitations 研究局限

- ❖ Owing to the observational nature of this study, we cannot prove the causation effect of the Warning
由於這只是一個觀測性的研究，因此無法證實酷熱天氣警告與長者死亡率的因果關係
- ❖ Nevertheless, the findings & theoretical backup are consistent, which support the possible protective effect of the Warning
然而，調查結果與有關警告效用的理據相符

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Recommendations 建議

- ❖ We cannot prevent disaster, but we can help to minimize its impact by better preparation
我們不能制止災難的來臨，但我們能做好準備去減低災難的影響
- ❖ Public education, targeted at the elderly & their caregivers, is needed to inform them on how to take appropriate measures during the days with heat stress
應針對長者及護老者提供指引，教育他們採取適當措施對抗炎熱天氣

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Recommendations (Con't) 建議 (續)

- ❖ As elderly are more vulnerable to heat stress than the general population, the Government can consider warning system tailored for the elderly
由於長者對抗炎熱天氣的能力較一般市民低，政府可考慮設立專為長者而設的警告
- ❖ It is important to reduce the occurrence & severity of hot weather conditions by reducing heat-island effect and fighting against global warming
透過減低熱島效應及對抗全球暖化以減低炎熱天氣出現的頻率和嚴重程度，也同樣重要

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Practical Tips – Individuals 個人小貼士

- ❖ On hot days, individuals, especially the elderly and those with cardiac and respiratory conditions, should
市民尤其是長者及患有心臟病或呼吸系統疾病的人士應該在炎熱的日子：
 - ❖ Drink more than 8 cups of water or fluid
喝多於8杯水或飲料
 - ❖ Seek well-ventilated or air-conditioned shelter
留在通風或冷氣開放的地方
 - ❖ Limit exposure to high heat in the afternoon
避免在午間曝曬

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Practical Tips – Individuals 個人小貼士

- ❖ On hot days, individuals, especially the elderly and those with cardiac and respiratory conditions, should
市民尤其是長者及患有心臟病或呼吸系統疾病的人士應該在炎熱的日子：
 - ❖ Reduce vigorous physical exercises, particularly when outdoor
減少劇烈運動，尤其戶外活動
 - ❖ Wear light colored & thin clothing
穿上淺色及輕薄衣服
 - ❖ Be more alert to health conditions & seek help when symptoms emerge
應留意身體狀況，並在不適時求助

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Practical Tips – Caregivers 護老者小貼士

- ❖ Pay extra attention to the elderly even when the heat is not considered stressful to the general population
即使在天氣對一般大眾並未構成重大影響的情況下，也應加倍關注長者

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Role of CADENZA 「流金頌」的角色

✦ This is one of the public awareness programs based on research findings of the project entitled **“CADENZA: A Jockey Club Initiative for Seniors”**, which directs towards health maintenance and improvement of health environment

這是「流金頌：賽馬會長者計劃新里程」其中一項以研究為基礎的計劃，用以提高公眾對維護及改善健康生活的關注

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Further information on CADENZA can be obtained via:
有關「流金頌」的詳細資料可經下列途徑索取：

- ✦ Website 網址: <http://www.cadenza.hk/>
- ✦ Email 電郵: info@cadenza.hk
- ✦ Telephone 電話: 2219-4271

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Q & A 歡迎提問

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