

- A. 網路新聞「某研究顯示每日睡眠不足者容易罹患糖尿病」。如果你要探討這個問題，要設計什麼樣的研究？請寫出研究假說、研究設計、研究對象、變項定義（自變項、依變項、干擾變項）、測量方法、統計方法。（15%）
- B. 醫院感染控制感染率的分母近年來由「人數」改為「人日數」，這在流行病學上有何意義？（10%）
- C. 請先閱讀下列期刊論文摘要及圖表後，再作答第 1-5 題：
Berry JD, Dyer A, Cai X, et al. Lifetime Risks of Cardiovascular Disease. *N Engl J Med* 2012; 366: 321-9.

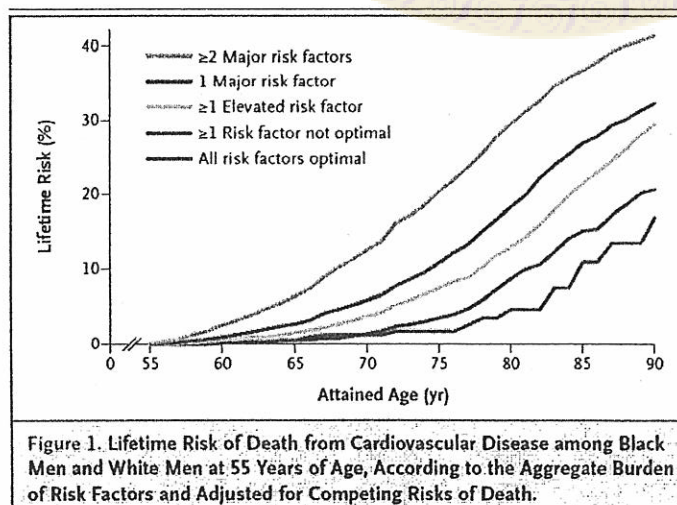
Abstract

Background: The lifetime risks of cardiovascular disease have not been reported across the age spectrum in black adults and white adults.

Methods: We conducted a meta-analysis at the individual level using data from 18 cohort studies involving a total of 257,384 black men and women and white men and women whose risk factors for cardiovascular disease were measured at the ages of 45, 55, 65, and 75 years. Blood pressure, cholesterol level, smoking status, and diabetes status were used to stratify participants according to risk factors into five mutually exclusive categories. The remaining lifetime risks of cardiovascular events were estimated for participants in each category at each age, with death free of cardiovascular disease treated as a competing event.

Results: We observed marked differences in the lifetime risks of cardiovascular disease across risk-factor strata. Among participants who were 55 years of age, those with an optimal risk-factor profile (total cholesterol level, <180 mg per deciliter [4.7 mmol per liter]; blood pressure, <120 mm Hg systolic and 80 mm Hg diastolic; nonsmoking status; and nondiabetic status) had substantially lower risks of death from cardiovascular disease through the age of 80 years than participants with two or more major risk factors (4.7% vs. 29.6% among men, 6.4% vs. 20.5% among women). Those with an optimal risk-factor profile also had lower lifetime risks of fatal coronary heart disease or nonfatal myocardial infarction (3.6% vs. 37.5% among men, <1% vs. 18.3% among women) and fatal or nonfatal stroke (2.3% vs. 8.3% among men, 5.3% vs. 10.7% among women). Similar trends within risk-factor strata were observed among blacks and whites and across diverse birth cohorts.

Conclusions: Differences in risk-factor burden translate into marked differences in the lifetime risk of cardiovascular disease, and these differences are consistent across race and birth cohorts. (Funded by the National Heart, Lung, and Blood Institute.)



(資料來源：N Engl J Med 2012; 366: 321-9.)

1. 請簡要說明在流行病學上，何謂 cohort study？ (5%)
 2. 請簡要說明在流行病學上，何謂 risk？請問參加本研究的 257,384 名美國民眾每一位接受追蹤的時間都不相等，作者如何計算 Figure 1 中的 lifetime risk？ (6%)
 3. 請簡要說明在流行病學上，何謂 risk factors？本研究探討了哪 4 項 risk factors？ (4%)
 4. 請簡要說明何謂 meta-analysis？ (4%)
 5. 本研究特別探討在 55 歲時「無危險因子組」(those with an optimal risk-factor profile) 與「有兩個或更多危險因子組」(with two or more major risk factors) 到 80 歲的心血管疾病死亡率。假設「有兩個或更多危險因子組」這一組民眾能夠經由預防醫學介入而在 55 歲時完全消除本研究所探討的 4 項危險因子，則他們到 80 歲時預期因心血管疾病而死亡的人數可望減少多少百分比？(請將男女生分開計) (6%)
- D. In epidemiologic study, what is the main purpose of stratification (4%)? After stratification, if stratum-specific estimates differ significantly, should you use pooling or standardization to get a combined estimate (2%)? Why? (3%) What are the differences between pooling and standardization (4%)?
- E. What is population attributable risk (PAR) (4%)? What is the importance and application of PAR in epidemiology (4%)? Use the example in A 「某研究顯示每日睡眠不足者容易罹患糖尿病」 and explain what PAR indicates in this study (4%).

F. 簡答題(每題三分)

某國小的三年忠班一共有 20 位小朋友在學，在一個星期日的白天，一位小朋友(個案一)發生流感的症狀，隔天仍然繼續上學，班導師擔心班上可能會發生流感爆發，因此從星期一開始監控全班的流感症狀並通知家長多加留意，結果發現：星期一晚上有一位小朋友出現症狀，星期二晚上又多兩位，星期三晚上又多一位。假設所有出現症狀的小朋友都是流感患者，並假設感染之後病情會持續一周且所有的小朋友都仍然繼續上學

1. 在星期一的白天，該班的流感盛行率(prevalence)為何？
2. 從星期一到星期四，該班的流感累積發生率(risk, or cumulative incidence)為何？
3. 從星期一到星期四，該班的流感發生的勝算(odds)為何？
4. 從星期一到星期四，該班的流感發生率(incidence rate)為何？
5. 假設所有其他得流感的小朋友都是被個案一所傳染，請定義並計算基礎再生數(basic reproductive number).

G. 單選題(每題兩分)

1. If the risk ratio (cumulative incidence ratio) from a cohort study is 1.0, the risk difference would be:
(A) greater than 1.0
(B) equal to 1.0
(C) smaller than 1.0
(D) can be any number

2. In the beginning of a prospective cohort study, the eligible study population would always have to be:

- (A) free of exposure
- (B) free of outcome
- (C) free of confounder
- (D) all of the above

3. In a double-blinded randomized controlled trial:

- (A) both the patient and the doctor will be blinded to the study aim and hypothesis
- (B) both the patient and the doctor will be blinded to the treatment assignment
- (C) only the patient is blinded to treatment assignment
- (D) only the patient is blinded to study aim and hypothesis

4. What can be done to address the bias from confounding?

- (A) Random assignment of exposure
- (B) Standardization
- (C) Stratified analysis
- (D) All of the above

5. Professor X wants to study whether smoking increases the risk of heart disease using a case-control study. He includes all patients with incident heart disease admitted to Hospital A in the year 2011, and decides to select controls from the same hospital. How should he select controls to obtain valid results?

- (A) Patients admitted to the hospital because of lung diseases
- (B) Patients admitted to the hospital because of car accident
- (C) Patients admitted to the hospital because of car accident, excluding those with lung diseases
- (D) All of the above

試題隨卷繳回