

科技部人文社會科學研究中心  
跨領域整合型研究計畫之前置規劃案成果報告

預防醫學健康效應之經濟評估

規劃案編號： MOST 104-2420-H-002-016-MY3-PA10502

規劃案執行期間：105年7月1日至105年12月31日

執行機構及系所：成功大學醫學院公共衛生科暨研究所

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中 華 民 國 106 年 1 月 6 日

## 中文摘要

國內全民健保的財政負擔，在 2014 年起已經超過新台幣 5 千億，同時也面臨內、外、婦、兒、急診五大皆空之困境。預計未來 15 年內，台灣 65 歲以上的老人人口數將加倍；健保與長照制度，將面臨更大的財務困難與照護人力不足。宜積極導入有效的疾病預防解決此難題。

本團隊整合存活函數及生活品質函數、功能障礙比率函數及健保(或長照)給付成本函數，領先國際發展出健康計量之普遍方法。將計算出各重大傷病之性別、年齡別發生率、終身累積發生率與預期壽命(life expectancy)、預期健康餘命(quality-adjusted life expectancy, 簡寫為 QALE)、終身預期壽命損失、終身預期健康餘命損失(loss-of-QALE)、及終身健保醫療費用(lifetime costs)等；以健康人年(quality-adjusted life year, 簡寫為 QALY)作單位，計量出每賺得 1 QALY 要花多少成本(子計劃一)；以便把預防醫學與診療、復健、及另類醫學相比；促進健保與長照保險之效率、公平性及永續；亦供人壽險精算。同時用此法推算各傷病之人力資本損失(子計劃二)，及各種功能損失與長照花費(子計劃三)。整體結果應用到職業與環境因素之風險與健康衝擊評估(子計劃四)，對都市計劃可能之健康效應作分析(子計劃五)；以選擇有效之疾病預防策略與方法提升全民健康。第一、二年作男女十大癌症，第三年作心血管疾病(包含中風、急性心肌梗塞)。

## 英文摘要

While applications of epidemiologic method on health policy decisions were once popular before 19th century, such works have come across with difficulty beginning in the last half of the 20th century. Because most diseases have become chronic, the comparison of different healthcare services based on mortality rate alone is not efficient. With the progressive aging of the population and development of new technology, the sustainability of current healthcare system becomes questionable. My team have tackled the above issue by developing methods to integrate survival function with functions of quality of life/costs/disability proportions from outcome research, which result in life expectancy (LE), quality-adjusted life expectancy (QALE), expected years of life loss (EYLL), loss of QALE, lifetime healthcare cost, and lifetime durations of different disabilities and can be multiplied with the occurrence rates from epidemiologic research for evaluation and policy decision of all different healthcare services including prevention. In this project, we have build up an inter-disciplinary team and organized following 5 subprojects to further develop and apply the above methods on evaluation and promotion of preventive health policy based on principles of economic evaluation: (1) Estimation of lifetime costs reimbursed by the National Health Insurance (NHI), QALE, and loss-of-QALE for major catastrophic illnesses in Taiwan (subproject 1), beginning with top 10 cancer for males and females in the first two years and followed by exploring the lifetime health impacts of stroke and acute myocardial infarction; (2) estimation of human capital loss resulting from major catastrophic illnesses; (3) estimation of lifetime functional disability and cost-effectiveness of different types of care setting (community versus institutional) for major catastrophic illnesses; (4) impact assessment for prevention of selective occupational and environmental hazards; (5) health impact assessment for different degrees of accomplishment in urban planning. This project by itself will demonstrate a road map of abstracting health and welfare related knowledge from big data.

## 摘要關鍵詞中文

醫療科技評估、全民健保、醫療保健支出、成本效益、存活函數、預期壽命、生活品質調整後預期壽命、預期壽命損失、生活品質調整後預期壽命損失、生活品質調整人年、人力資本、長期照護、健康資訊、石棉、氯乙烯、2.5 微米以下顆粒污染、都市計劃、癌症、中風、事故傷害、重大傷病、預防醫學、經濟評估

## 摘要關鍵詞英文

health technology assessment (HTA), National Health Insurance, health care expenditure, cost-effectiveness, survival function, life expectancy, QALE (quality-adjusted life expectancy), EYLL (expected years of life loss), loss of QALE, QALY (quality-adjusted life year), human capital, long term care, health informatics, asbestos, vinyl chloride, PM2.5, urban planning, cancer, stroke, injury, catastrophic illnesses, preventive medicines, economic analysis