

The Application of Multiplicative Intensity Models for Recurrent Hospitalization of Breast Cancer

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Background

- **Breast cancer: increase in incidence and mortality**

Incidence 1997 30.45 /10⁵

Mortality 1999 10.08/10⁵

Background

- **Diseases which needs repeated utilization of health care**

Re-hospitalizations are commonly encountered in chronic diseases when patients may experience repeated needs of inpatient care.

- **The role of clinical epidemiology**
- **The need of statistical methods beyond currently available ones**

Aims

- **To describe the phenomenon of repeated hospitalization of breast cancer**
- **To assess the effects of possible predictors of re-hospitalization for the breast cancer in any diagnoses (primary and four secondary)**

大型資料庫

- 全民健保學術研究資料庫
- 1999年國家衛生研究院開放供學術界使用。
- 2000年發行1996年和1997年正式版包含醫事機構等之基本資料檔等檔案。
- 1999年發行癌症住院醫療費用清單明細檔。
- 因全民健保涵蓋96%的民眾，是目前最能代表台灣民眾醫療保健服務使用情形的資料庫。

The Anderson-Gill multiplicative intensity model (1981)

- **the risk of a recurrent event for a patient satisfies usual proportional hazard model and the dependence among recurrent times are included explicitly in the model as covariates.**
- **further extend this method to handle recurrent events and death.**

Methods (1):

- **Data source:**
- **File names: CN_DD1996-1999** (全民健保學術研究資料庫癌症住院醫療費用清單明細檔)。
- 主診斷及次診斷中任一診斷為ICD-9CM 140-239 (含惡性、良性、與未明示腫瘤) 或以V code紀錄之V58.0 (放射線治療) V58.1 (化學治療) 者。

Methods (2):

- **Retrieving criteria:**
- **First hospitalizations**
- **primary diagnosis of female breast cancer (ICD-9CM 174) in 1997**
- **had not been hospitalized with the same reason in 1996**
- **had a surgical procedure of biopsy or mastectomy during the hospitalization.**

Methods (3):

- **Record linkage:**
- Subsequent hospitalizations with any diagnosis of female breast cancer for each patient were from the inpatient files of 1998 and 1999, linked by scrambled citizen's ID
- **Covariates:**
- age, accreditation grade of the hospital, surgical procedures, adjuvant therapy, length of stay, and medical care cost of the first hospitalization

Results:

- **Re-hospitalizations for breast cancer**
- **Effects of major predictors during the first admission:**

age by group

procedures (biopsy, conserving or radical)

length of stay, cost, adjuvant therapy: C/T, R/T
(intensity, severity)

accreditation grade of the hospital

Discussion

- **Limitation of this study**

- not allowed to link outside data sources

- no validation (vs. hospital records)

- no last endpoint (death) (vs. mortality file)

- covariates limited to available ones in NHIRD

- **Interpretation of study results**

Expectations and perspectives

- **Open data linkage**
 - national health files
 - hospital records
 - consented personal data
 - new cohort file
- **Open more data files**
 - OPD data of cancer visits