

Hospital Discharge National Databases Pilot questionnaire design testing and results

Pnina Zadka,* Lois Fingerhut,** Margaret Warner** and Vita Barell***

*Central Bureau of Statistics, Jerusalem, Israel

***National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC), Hyattsville, MD

***Health Services Research Unit, Ministry of Health, Israel

Background

Estimating injury morbidity in non-fatal injuries, is essential in order to estimate the prevalence of severe injuries. Injury morbidity prevalence can be estimated through two main data sources; population-based surveys and health care agencies. The first step toward these data sources was to obtain information on injuries resulting in a hospital stay.

Hospital stay, unlike mortality, is dependent on the to local and national medical care delivery system, on health policy issues, registration issues and medical insurance coverage. Other factors that may affect hospitalization rates are tradition and attitudes of the medical professions as well as classification schemes and the population included in the hospitalization databases.

In order to evaluate the degree of comparability of the available national hospitalization databases, an adequate description of these databases is required. The description should cover all the issues that might distort comparability of national hospitalization rates and differences should be identified and explained in a standard format.

Format standardization may be accomplished by a constructing a questionnaire designed to evaluate comparability of national hospitalization databases in those countries participating in the ICE on Injury Statistics.

Questionnaire design

As current knowledge on the variability of the existing national hospitalization data systems is limited, it was decided that the pilot questionnaire would mainly an open ended, and ask for textual description on issues that might distort comparability i.e. a "short questionnaire with long answers".

The pilot questionnaire covered issues such as: admission policy, health insurance, data collection systems, population included and excluded from the database, criteria for inclusion, type of information included as well as definitions and classification systems (see questionnaire in appendix).

Main Issues Addressed in the Pilot

- (1) Availability of national hospitalization/inpatient databases (NDB)
- (2) NDB based on census or sample of hospitalizations, if based on a sample: sample type, size and design.
- (3) Data sources and collection system: how is the data obtained from hospitals, a description of the reporting system, types of hospitals and/or hospitalizations which are not reported or excluded from the NDB. How are transfers within and between hospitals counted (counted as new admission). NDB based on admission or discharges. Information obtained on each hospitalization event. Possibilities of identifying re-admission. Type of medical, demographic and social data on each entity.
- (4) Injury data description, type of data available on each injury such as injury event, type of injuries, external cause, place and activity, availability of narrative description on the event and the injury.
- (5) Classification systems used in the NDB, for: injury, circumstances, co-morbidity etc.
- (6) Number of diagnoses and procedures on each discharge included in the database.
- (7) Data on the population used for calculating rates. Inclusion and exclusion of groups such as military and non-residents.
- (8) Agency responsible for data collection and NDB maintenance.
- (9) Agency responsible for data dissemination and publication. Type of data available to other organizations. Availability of micro-data (individual) files. Requirements for obtaining unpublished data.

Main Results from Pilot Questionnaire Testing

The questionnaire was disseminated among six countries participating in the ICE on Injury Statistics. Five countries responded and completed the questionnaire, USA, Canada, Australia, Norway and Israel.

a. Data sources

Databases are based on direct abstraction from hospital patient records in all five countries. It was not clear whether these data are obtained manually or electronically (computerized). The extent to which these are based on pre-coded forms was not clear from the responses.

b. Data collection

All five countries maintain a national database (NDB). In three of the countries; (Canada, Australia and Norway) the NDB is based on a full count of hospitalizations (census). In the U.S., the NDB is based on a probability sample and in Israel it is a combination of full count of hospitals providing computerized files and probability sample hospitals providing manual records (90% and 10% of hospitals respectively). It was not clear from the responses whether transfers are counted as separate discharges. The Canadian NDB relates only to trauma cases. The Australian NDB excludes some provinces for some of the years.

c. Type of hospitals included in the NDB

NDB in all five countries include short stay, general care and children's hospitals. Long-term care is excluded from NDB in all five countries. In the U.S., hospitals with less than six beds, military hospitals and Department of Veterans hospitals are excluded from the NDB. The definition of general care and short stay may differ from one country to another, and should be clarified.

d. Information about the hospital

This information could be an integral part of the NDB or available through a separate database that could be matched to the NDB. Information such as size (number of beds), ownership, rural/urban/inner city, average length of stay etc. are relevant in order to assure that the inclusions/exclusions are comparable. If not, their effect can be estimated.

e. Patient information

In all five countries the NDB includes patient's demographics, such as age, sex, residency status and place of residence. Length of stay and date of admission are available in all five countries. It was not clear from the responses how transfers are being reported.

In three countries (U.S., Australia and Israel) status at disposition (discharge) is reported and place of disposition if discharged alive. Diagnoses are available in all five countries NDB. In at least three countries, procedures are available as well. The number of diagnoses and procedures listed for each discharge differs between the countries and ranges from 20 in Australia to 3 in Norway.

The U.S. NDB contains information on payment source. In some of the countries this information is less relevant as they have comprehensive health insurance coverage.

f. Classification systems

In 10 years, the five countries have used five classification versions:

| | |
|----------------|-----------------------------|
| ICD-9 | Canada Norway up to 1998 |
| ICD-9-CM | U.S. Israel |
| ICD-9-CM-AU-I | Australia |
| ICD-9-CM-AU-II | Australia |
| ICD-10 | Australia Norway |

This inter and intra country variability contributes to the complexity of international comparisons of hospitalization rates.

g. Population Estimates

All five countries use population estimates based on residents in the country. The number of hospitalizations also includes non-residents, the latter are estimated as there are very few in all of the countries and therefore do not affect estimated rates. The U.S. uses only the civilian population in hospitalization estimates as well as in population estimates.

h. Data dissemination

All five countries produce printed publication reports. The printed reports may be available only in the native language. U.S., Canada, Australia and Israel disseminate micro-data files as well, with national confidentiality restrictions.

Conclusion of pilot

Pilot testing the questionnaire in five countries raised several issues that might induce major discrepancies in comparison of international hospitalization rates. It also raised issues that were not addressed in the questionnaire and have the potential of causing distorted international comparison. Such issues are the principal of choosing the main or first listed diagnoses; cause of admission, main condition treated etc. Currently there are no internationally accepted rules for selecting the first diagnosis in patient records (parallel to the underlying cause of death) or on the number and order for listing multiple diagnoses and there is no rule for listing relevant state-post conditions. The number and order of listing diagnoses and procedures is subject to national as well as inter-hospital and intra-hospital policies. These policies are often influenced by payment schemes and could affect the place, order and frequency for listing diagnoses and injuries on the patient record.

The differences in classification version would require extensive bridging procedures to overcome the variability and enable international comparisons.

The pilot questionnaire and comments that were made by the countries and persons completing the questionnaire raised a number of issues that should be addressed in the final questionnaire:

1. Data availability intervals; annual or periodical.
2. Type of injuries excluded from database e.g., poisoning, physiological fractures.
3. Identification of transfers between and between different departments within hospital.
4. Emergency room admissions, the criteria for inclusion.
5. Day care admissions, the criteria for inclusion.
6. Injury severity threshold for hospital admission.
7. Evaluation of coding quality.
8. Plans to implement ICD-10.

A draft report on the comparability of hospitalization NDB in the countries participating in ICE on Injuries is planned for March 2000. To achieve this goal, the following time table is planned:

- | | |
|--|-----------------------|
| 1. Comments to questionnaire from ICE participants | August 1999 |
| 2. Updated questionnaire design | November 1999 |
| 3. Dissemination of updated questionnaire | December 1999 |
| 4. Receiving completed questionnaires | January-February 1999 |
| 5. Draft summary report | March 1999 |

Full and timely cooperation is needed in order to achieve the goal.

Appendix

Questionnaire on Hospital Injury Morbidity Data

First Draft , November 1, 1998

Is a national estimate of inpatient injury morbidity available for your country?

If so, please provide documentation you feel would assist us in developing a more detailed questionnaire whose aim is to enumerate differences between countries that might affect comparisons of injury morbidity both in terms of numbers and rates of "hospitalizations". In addition to your written responses, please send any written documentation as well as recent tabular material on injury morbidity.

In your response, please try to address the following issues:

1. Are data based
 - On a national census of hospitals?
 - On a national sample survey of hospitals? (specify also size and type of sample)
 - On another kind of sample?
2. What is the basic source of information?
 - Patient records
 - Hospital administrative records
 - Patient interviews
3. How are data obtained?
 - direct abstraction from patient record
 - special survey/census forms used
4. How is the universe of hospitals defined?
 - Inclusions
 - Exclusions
5. Are there within hospital inclusions or exclusions?
6. What information can be used to "describe" the injury? What is collected, tabulated?
 - Hospital characteristics
 - Patient characteristics
 - Injury diagnoses:
7. For injury diagnoses, what classification scheme is used?
8. How many diagnoses
 - a. per recorded?
 - b. Published/Tabulated?
 - c. Available for analysis?

(Both external cause of injury E-codes as well as Nature of injury diagnosis?)

9. What agencies: collect, process and disseminates the data
10. What is the denominator of morbidity rates (what population is included or excluded)
11. How are data disseminated?
Reports (printed or magnetic media)
Data tapes (individual - micro)