Acquired brain injury in Tuscany, Italy, 2003-2006: estimating the size of the problem by combining different sources of data

Valeria Di Fabrizio and M. Mancuso, F. Posteraro, C. Gaudiano, S. Rodella

e-mail: valeria.difabrizio@arsanita.toscana.it
Acquired Brain Injuries (ABI) are a crucial issue for healthcare and social services.

Study objectives according to Consensus Conferences in Italy (Modena, 2000 - Verona, 2005):

1) to estimate the burden of ABI in Tuscany (3.5 million inhabitants); how many?
2) to trace the post-hospital experience of surviving patients (follow up and mortality); what?
3) to identify a cohort of people with ABI to be included in a mid-term surveillance future goal!
**Selection and definition of ‘new cases’ of ABI**

**Descriptive analysis of ‘new cases’**

**Mortality**
(in-hospital, 30 days & 1 yr)

**Follow up & Rehabilitation**

**Data sources**

**HDRs**
(Hospital Discharge Records)

**RMR**
(Regional Mortality Records)

**PHRRs**
(Post-Hospital Rehabilitation Records)
Methods:

Selection and definition of ‘new cases’

Study period: 2003-2006

Resident & admitted in Tuscany

Discharge codes ICD IX-CM (hemorrhagic, ischemic or traumatic)

Transit in intensive care or neurosurgery unit

‘New cases’

HDRs

NO
day-hospital and
‘after effect’

Discharge in the latest 365 days

Following discharge

2002

2003

<365 dd

<365 dd

2004
Period: 2003-2006

How many?

8611 ‘new cases’
(discharge & resident in Tuscany)

- 4867 (57.52%) Traumatic
- 3020 (35.07%) Hemorrhagic
- 610 (7.08%) Ischemic
- 114 (1.32%) Mixed

Yearly crude rate per 1 million inhabitants

- 597.06 hospitalization rate
- 533.03 Standardized rate*
- 624.10 incidence rate
- [CI 544.45-521.54]

*(Population standard: Italian 2001 census)
Period: 2003-2006

8611 ‘new cases’

Results:

How many?

61,11% males

Trend of new cases by type of ABI

73,71% aged 50+ yrs
43,73% aged 70+ yrs
Results: What?… Mortality

In-hospital mortality

8611 ‘new cases’
(discharge & resident in Tuscany, 2003-2006)

- 20.39% overall
  - 12.47% Traumatic
  - 32.15% Hemorrhagic
  - 42.36% Ischemic
  - 34.21% Mixed

RMR mortality

4388 ‘new cases’
(discharge & resident in Tuscany, 2003-2004)

- 18.57% 30 days
- 26.27% 1 year

Time intervals between hospital admission and death
Results:

Period: 2003-2005

What?… Follow up

6537 ‘new cases’ (discharge & resident in Tuscany)

5251 (80,33%) ‘new cases’ survived

1 yr follow up
55,68%

No. hospital admissions
[min 1 – max 29]

6 cases per day in Tuscany
5 cases per day in Tuscany

• 62,8% within 1 day
• 77,9% within 30 days
Results: What?… Rehabilitation

5251 (80.33%) ‘new cases’ survived

Access to any type of rehabilitation

Access to rehabilitation within 1 yr: distribution by time interval from hospital discharge

<table>
<thead>
<tr>
<th>Time interval (days)</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-30</td>
<td>60.62%</td>
</tr>
<tr>
<td>31-90</td>
<td>20.70%</td>
</tr>
<tr>
<td>91-180</td>
<td>10.20%</td>
</tr>
<tr>
<td>181-365</td>
<td>8.49%</td>
</tr>
</tbody>
</table>

HR: Hospital-based Rehabilitation

PHR: Post-Hospital Rehabilitation

Yes 31.19%
No 68.81%

less than 2 out of 5 cases per day
Key messages:

**PROS**

- An overall estimate of ABI is provided; (literature: incidence rates published for ABI sub-types)

- Patients’ pathway is monitored through current data sources (low cost, highly available...)

Key messages:
CONS

- Incidence of ‘serious’ ABI is overestimated, due to:
  - lack of information on residual disabilities

- and underestimated, due to:
  - lack of information on cases not reaching hospital

- Inaccuracy of rehabilitation data, due to:
  - record linkage procedures
  - lack of reliable post-hospital information system

- Data quality and completeness:
  - not satisfactory in current sources
  - lack of information on severity of injury
Conclusions

- Our estimate is consistent with other published data and is useful to support health policymakers.

- This study is a first step in monitoring ABI occurrence.

- We need to build registries or plan surveys to:
  - collect disability data
  - track patient across healthcare services (pathways)
  - validate current data sources
  - collect information about organizational and professional issues in specific geographical areas.
Thank you!

You will find further information in the proceedings of the congress

or you may contact me:
by mail: valeria.difabrizio@arsanita.toscana.it
by phone: +39 055 4624386