THE EFFECT OF THE ITALIAN SMOKING BAN ON HOSPITAL ADMISSIONS FOR ACUTE MYOCARDIAL INFARCTION (AMI)

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BACKGROUND
- Second-hand smoke is a well-known risk factor for several diseases, including lung cancer, acute myocardial infarction (AMI), chronic obstructive pulmonary disease, asthma, and stroke.
- Even short exposures (30 minutes) have been documented to increase the risk of AMI.
- In industrialized countries, 40% of cardiovascular diseases occurring among men and 13% of that occurring among women in the age group 30-69 years has been estimated to be attributable to smoking.
- On January 10, 2005, the Italian Government implemented a ban of smoking in all indoor public places, including workplaces, pubs, bars and restaurants. The law was designed to protect the health of non-smokers.

4 ITALIAN REGIONS 28% OF THE POPULATIONS

RESULTS
- For the four regions combined, AMI absolute numbers and rates linearly increased over time between 2001 and 2004 and decreased in 2005. (R² = 0.99)
- Expected value estimated by a linear regression model for 2005 was significantly higher than observed value (+13%).
- At regional level the decrease in 2005 was observed for each Region.
- Incidence rate ratio observed/expected for year 2005 statistically significant 0.87 CI (0.84—0.93)

-7.8% of AMI in 2005 respect to same period of 2004

-15% of AMI in 2005 observed Age-standardized incidence rate compared to expected when linear regression has been fitted

Incidence rate ratio year 2005 observed/expected 0.87 CI (0.84—0.93)

METHODS
- People resident in four Italian regions (more than 5 million - 28% of the Italian population) in north-east, north-west, centre and south of Italy; Age between 40 and 64 years
- Records of hospital admissions between 10 January and 10 March from 2001 to 2005 with a primary discharge diagnosis of AMI (ICD-9-CM code: 410) were obtained from the regional Hospital Discharge Registries.
- Only the first admissions were considered.
- Age group 40-64 years was chosen because the risk of myocardial infarction is higher among persons over 40 years. The 40-64 year category represents a group that has a higher probability of being employed, in good health, and thereby more sensitive to acute changes in exposure of second hand smoke in public places (especially workplaces).
- Analysis of hospital admissions for AMI from 2001 to 2005 uses absolute values and incidence rates (crude and standardized), by Region, sex and age.
- Expected values in 2005 were estimated by fitting a linear regression line to the 2001-2004 data

40-64 YRS THE AGE GROUP
10TH JAN—10TH MARCH PERIOD OF OBSERVATION 2001—2005 YEARS OF OBSERVATION

- Admissions for AMI - Total

<table>
<thead>
<tr>
<th>Year</th>
<th>Population 40-64 yrs</th>
<th>Number</th>
<th>Age-standardized incidence rate* (95% Conf. Int.)</th>
<th>difference (+/-)%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>1449407</td>
<td>1309</td>
<td>24.7 (23.3 - 26.0)</td>
<td>6.9</td>
</tr>
<tr>
<td>2002</td>
<td>1450908</td>
<td>1408</td>
<td>26.4 (25.0 - 27.8)</td>
<td>6.9</td>
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<tr>
<td>2003</td>
<td>1461042</td>
<td>1511</td>
<td>28.2 (26.7 - 29.6)</td>
<td>6.6</td>
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<tr>
<td>2004</td>
<td>1475032</td>
<td>1589</td>
<td>29.5 (28.0 - 31.0)</td>
<td>4.6</td>
</tr>
<tr>
<td>2005</td>
<td>1493510</td>
<td>1498</td>
<td>27.2 (25.8 - 28.6)</td>
<td>-7.8</td>
</tr>
<tr>
<td>Expected</td>
<td>1690</td>
<td>31.3 (29.9 - 32.7)</td>
<td>15.1</td>
<td></td>
</tr>
</tbody>
</table>

* Age-standardized according to the European Standard Population

LIMITATIONS
- Designing of the study — Ecological fallacy
- Only four regions considered;
- Period considered limited to the first two months after the ban;
- Data on the smoke exposure status of patients was not measured;
- Trends analysis used a too short period

CONCLUSIONS
- We observe a health outcome in correspondence with a public intervention
- Admissions for AMI drop in 2005 among age group probably more "protected" by the ban.
- The effect is limited to men
- The effect could be due either to a reduction of passive smoking exposure or to a change in smokers behaviour.
- It's difficult to think about other factors with a so strong association