National Epidemiological Surveillance Network: Hepatitis

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Since 1930 there has been a system of surveillance of infectious diseases.

In 1995 the National Network of Epidemiological Surveillance was created by law.

During 1997 the protocols of statutory notification of diseases were approved and implemented.

The 17 Autonomous Regions have wide powers in surveillance.

National decisions are taken by consensus.

All practising doctors are obliged to notify.
Main notification systems

Statutory notification of cases
Outbreak reporting
Source: General Practitioner

Microbiological Information System
Source: Microbiological laboratories

Local level
Area level
Autonomous Region
National level
National Centre of Epidemiology (Ministry of Health)
International level
Statutory notification of cases

Hepatitis A and hepatitis B

- Passive surveillance system
- Notified by all medical practitioners of public and private health care system.
- Clinical suspected cases
- Aggregated data notified weekly.

Individual cases with basic common epidemiological data notified annually:
  - Case classification (suspected / probable, confirmed)
  - Immunization status
  - Age, sex and week of notification
Hepatitis A, hepatitis B and **Hepatitis C**

- Passive surveillance system
- Notified by microbiological laboratories.
- Confirmed recent infection cases
- Individual data notified weekly.
- Coverage 25% of the whole of Spain
- Information provided: age, sex, time and place
Outbreaks reporting system

- **Urgent notification**: the outbreaks which, by law, are defined as being “supra-communitary” (considered to be of national/ international interest)

- **Reported quarterly**: all outbreaks, excepts the “supra-communitary”

- **Reporting format** in accordance with WHO recommendations

- **Information provided**: age, sex, symptoms, agent, mode of transmission, place, contributing factors, applied measures...
Complementary systems

Hospital discharge

- Information provided: age, sex, place, time, diagnosis

Mortality surveillance

- Information provided: age, sex, place, time, cause of death

Seroepidemiological surveys

Sentinel surveillance

Special Registries
### Variables under surveillance and their source

<table>
<thead>
<tr>
<th></th>
<th>Statutory diseases</th>
<th>Microbiological system</th>
<th>Outbreaks</th>
<th>Hospital discharge</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disease</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Agent</td>
<td>-/X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mode of transmission</td>
<td>-/X</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Risk factor</td>
<td>-/X</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Place</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Time</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Age</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sex</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Death</td>
<td>-/X</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Weekly reports

(Statutory Notification System. Aggregated data)

Per 100,000

- $y = -0.34x + 4.69$
- $R^2 = 0.56$

SPAIN

[Graph showing the annual incidence of Hepatitis A in Spain from 1997 to 2005, with data points and a trend line indicating a decrease over time.]
Hepatitis A by Autonomous region

% of increase in incident rate period 2003-2005 relative to 2000-02

- Castilla-La Mancha: 285.4%
- Castilla-León: 102.7%
- Galicia: -26.6%
- Extremadura: 214.3%
- Cantabria: -7.1%
- Aragón: 17.5%
- Canarias: -36.7%
- Andalucía: 210%
- Madrid: 67.4%
- La Rioja: 9.0%
- España: 0.9%
- Murcia: 28.0%
- Baleares: -50.2%
- Navarra: -19.9%
- País Vasco: -30.8%
- Valencia: -26.6%

(Statutory Notification System. Aggregated data)

Per 100,000

vaccination

SPAIN

CATALONIA

Incidences of Hepatitis A by sex and age: Mean 1997 – 2005

(Statutory Notification System. Individual data)
Incidence of Hepatitis A by age group
Spain & Catalonia, 2005

(Statutory Notification System. Individual data)

(Statutory Notification System. Individual data)
Hepatitis A

Hospital discharge

Number Hospitalizations

### Hepatitis A

#### Outbreaks Reporting System

<table>
<thead>
<tr>
<th>Year</th>
<th>N Outbreaks</th>
<th>Total cases</th>
<th>Mean cases per</th>
<th>Sd</th>
<th>Máx num Cases</th>
<th>Mín num cases</th>
<th>Total cases hospitalized</th>
<th>% hospitalized</th>
<th>Sd % hospitalized</th>
<th>Mín % hospitalized</th>
<th>Mín % hospitalized</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>36</td>
<td>202</td>
<td>5,6</td>
<td>6,3</td>
<td>28</td>
<td>2</td>
<td>15</td>
<td>7,4%</td>
<td>16,9%</td>
<td>60,0%</td>
<td>0,0%</td>
</tr>
<tr>
<td>2004</td>
<td>44</td>
<td>175</td>
<td>4,0</td>
<td>4,1</td>
<td>26</td>
<td>2</td>
<td>20</td>
<td>11,4%</td>
<td>19,8%</td>
<td>75,0%</td>
<td>0,0%</td>
</tr>
<tr>
<td>2005</td>
<td>38</td>
<td>309</td>
<td>8,1</td>
<td>10,1</td>
<td>45</td>
<td>2</td>
<td>52</td>
<td>16,8%</td>
<td>25,4%</td>
<td>100,0%</td>
<td>0,0%</td>
</tr>
<tr>
<td>Total general</td>
<td>118</td>
<td>686</td>
<td>5,8</td>
<td>7,3</td>
<td>45</td>
<td>2</td>
<td>87</td>
<td>12,7%</td>
<td>21,1%</td>
<td>100,0%</td>
<td>0,0%</td>
</tr>
</tbody>
</table>
## Hepatitis A

### Mortality

<table>
<thead>
<tr>
<th>Year</th>
<th>Men</th>
<th>Women</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2000</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2001</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2002</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2003</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2004</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
### Hepatitis B seroprevalence by age group

<table>
<thead>
<tr>
<th>age group</th>
<th>sample (N)</th>
<th>prevalence %</th>
<th>IC-95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-5</td>
<td>418</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6-9</td>
<td>439</td>
<td>0,3</td>
<td>0 - 0,9</td>
</tr>
<tr>
<td>10-14</td>
<td>481</td>
<td>0,6</td>
<td>0 - 1,7</td>
</tr>
<tr>
<td>15-19</td>
<td>513</td>
<td>1,3</td>
<td>0,4 - 2,2</td>
</tr>
<tr>
<td>20-24</td>
<td>545</td>
<td>3,7</td>
<td>1,9 - 5,5</td>
</tr>
<tr>
<td>25-29</td>
<td>539</td>
<td>7,4</td>
<td>3,6 - 11,3</td>
</tr>
<tr>
<td>30-39</td>
<td>564</td>
<td>9,8</td>
<td>6,7 - 12,9</td>
</tr>
</tbody>
</table>

**Chart:**
- HBsAg prevalence: 0, 0, 0.21, 0.39, 0.92, 1.11, 1.95
- anti-HBs prevalence: 0, 0.23, 0.21, 1.17, 2.02, 5.94, 7.8

**Legend:**
- HBsAg: yellow
- anti-HBs: blue

**Survey Information:**
- National seroprevalence survey 1996
- Spain

**Infection:**
- Hepatitis B

**Markers:**
- HBsAg: Hepatitis B surface antigen
- anti-HBs: Hepatitis B surface antibody
Annual Incidence of Hepatitis B: 1997 – 2005

(Statutory Notification System. Aggregated data)

y = -0.16x + 3.023
R² = 0.88

SPAIN

Per 100,000

0 0.5 1 1.5 2 2.5 3 3.5


2.96 1.45
Hepatitis B incidence rates per 1000,000 pop. by Autonomous Region
1997-99 ; 2004-2005
Incidence of Hepatitis B by sex and age: mean 1997 – 2005

(Statutory Notification System. Individual data)
Hepatitis B

Hospital discharge

Number of Hospitalizations

0  200  400  600  800  1,000  1,200  1,400  1,600  1,800

Hepatitis B

(Microbiological Information System)
### Hepatitis B

#### Outbreaks Reporting System

<table>
<thead>
<tr>
<th>Year</th>
<th>N Outbreaks</th>
<th>Total cases</th>
<th>Mean cases per outbreak</th>
<th>Sd</th>
<th>Máx num Cases</th>
<th>Mín num cases</th>
<th>Total cases hospitalized</th>
<th>% hospitalized</th>
<th>Sd</th>
<th>Máx % hospitalized</th>
<th>Min % hospitalized</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>4</td>
<td>10</td>
<td>2.5</td>
<td>0.5</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>2004</td>
<td>4</td>
<td>8</td>
<td>2.0</td>
<td>0.0</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>2005</td>
<td>5</td>
<td>15</td>
<td>3.0</td>
<td>1.3</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>20.0%</td>
<td>24.9%</td>
<td>50.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Total gen</td>
<td>13</td>
<td>33</td>
<td>2.5</td>
<td>0.9</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>9.1%</td>
<td>17.0%</td>
<td>50.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>
Hepatitis B Mortality by sex and age. Mean rate per 100,000 population 1999-2004.
Hepatitis C

Hospital discharge

Number Hospitalizations

Hepatitis C

Microbiological Information System

Cases

0 200 400 600 800 1000 1200


Hepatitis C Spain
Hepatitis C

Microbiological Information System

![Graph showing cases of Hepatitis C by age group and gender. The x-axis represents age groups (<1, 1-4, 5-14, 15-24, 25-44, 45-54, 55-64, >64), and the y-axis represents cases. The graph includes bars for men (blue) and women (orange).]
## Hepatitis C

### Outbreaks Reporting System

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Cases</th>
<th>Hospitalized</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>1</td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2004</td>
<td>1</td>
<td>17</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2005</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Hepatitis C

Mortality

Hepatitis C Mortality by sex and age.
Mean rate per 100,000 population 1999-2004
Main notification systems

Statutory Notification System: Hepatitis A and B
Microbiological Information System: Hepatitis A, B and C
Outbreaks Reporting System: Hepatitis A, B, and C