Epidemiology of hepatitis B in the UK (England and Wales)

Mary Ramsay
Health Protection Agency
Centre for Infections
Hepatitis B: surveillance

Objectives
• determine incidence, prevalence & burden
• choose and monitor control strategies
• identify outbreaks

Routine sources of data
• statutory notifications (clinical)
• laboratory reporting
• deaths
Laboratory reports of hepatitis B
England and Wales, Scotland 1980-2003

No of cases

Year

England and Wales
Scotland
Age distribution of HBV laboratory reports

_England and Wales and Scotland, 1995-2003_

- <15 years
- 15 - 24 years
- 25 - 34 years
- 35 - 44 years
- 45+ years

- **Yellow** England and Wales
- **Red** Scotland
Acute HBV laboratory reports to CfI
By sex, 1990-2003
Acute HBV by major exposure categories
England and Wales, 1985-2003

<table>
<thead>
<tr>
<th>Year</th>
<th>Not known</th>
<th>Other risk</th>
<th>Heterosexual</th>
<th>Sex between men</th>
<th>Injecting drug use</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1986</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1987</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1988</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1989</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1992</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1993</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1994</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Hepatitis B in injectors
England and Wales, Scotland 1995-2003

No of cases

Year

England and Wales
Scotland

Health Protection Scotland
Reports of acute hepatitis B

- Incidence fell in late 1980s and early 1990s
  - Fall in cases in IDUs
- Minor increase in cases in IDUs since mid 1990s
  - Confirmed by prevalence of anti-HBc in UAPMP
  - Also increase in cases with no reported history
  - Age and sex profile of NRI cases and secular trends follow those of IDUs
- IDUs driving the epidemiology of hepatitis B
Anti-HBc prevalence in IDUs attending services in England, UAPMP

- Former and current initiates
- Recent initiates

Percentage range: 0% to 40%
Years: 1990 to 2004
Estimating the true incidence of acute and chronic hepatitis B

• Incidence of infection estimated from laboratory reports
  – Allowing for under-reporting
  – Allowing for age dependent chance of being symptomatic
• Incidence of chronic infection
  – Allowing for age-dependent risk of becoming a chronic carrier
• Adjusted incidence rate 5.5 per 100,000 per year
• However – risk is not homogenous
Proportion of hepatitis B infections symptomatic and developing carriage by age

- Proportion symptomatic
- Proportion developing carriage

age (years)
Reported acute HBV infections by exposure category (n=675/yr)
Estimated new HBV infections by exposure category (n=2,876/yr)
Estimated new chronic infections by exposure category (n=216/yr)
Who is at risk of acquiring chronic infection?

- Annual estimated total of 216 chronic infections per year
  - adult risk groups form majority of reported cases (particularly IDUs)
  - Contribution of perinatal and childhood infections is relatively more important to new chronic infections
- Small contribution to current pool of 150,000-200,000 carriers
  - Also contribution of estimated 6,500 chronic infection from new inward immigration
- Is risk of UK acquired infection higher in immigrants and ethnic minority groups?
Hepatitis B - names analysis

- Validated programme for assigning South Asian ethnicity using names (Nam Pechan)
- Applied Nam Pecham to laboratory reports
  - 8.5% with South Asian names
- Possible perinatal infections were excluded
  - Preventable by antenatal screening
- Incidence in South Asians
  - 3.1 times greater overall (p<0.0001)
  - 11 times greater in children (p<0.0001)
Cumulative incidence of hepatitis B infection, England and Wales, by ethnic group

- South Asian ethnicity
- non-South Asian ethnicity

The graph shows the cumulative incidence of chronic HBV infection per 100,000 population, increasing with age.
Incidence of hepatitis B in ethnic minority children

- Analysis suggests higher than background incidence in south Asian children, different risk factor profile
  - Probably children travelling to country of origin
- Likely to be similar or higher for other ethnic minorities with origin in high prevalence countries
- Oral fluid study of (anti-HBc) of inner city children in four localities (aged 8-11 years)
  - Incidence of post-natal infection for UK born children was 11.7 per 100,000 (18.26 per 100,000 for those with parents born in high prevalence areas)
- Equivalent to a chronic infection risk of around 2 per 100,000
  - compares to an overall rate of 0.3 per 100,000 person years
Selective vaccination of high risk groups

• Gay men
  – Generally better vaccination in this group in GUM clinics
  – Identified as part of sexual health strategy
  – Vaccine provided centrally to clinics
  – Evidence of major increase in coverage

• Injecting drug users
  – Initial failure to vaccinate in specialist services
  – Additional resources identified
  – Major drive to vaccinate in prison
  – Coverage in IDUs improving slowly
Self-reported coverage of hepatitis B vaccine IDUs attending services by year, UAPMP
Summary

- **UK is a very low incidence country**
  - acute cases predominantly in adults
  - high proportion in high risk groups
  - ethnic minority children may also be at risk
- **UK is a low prevalence country**
  - carriage rates high in ethnic minorities
  - Role of vaccination limited within UK
  - many carriers acquired infection in childhood (prior to immigration to UK)
  - Scope for improving current control
Acknowledgements

• Lesley Wallace (Health Protection Scotland)
• Koye Balogun, Anjna Mistry and Usha Gungabissoon, Susan Hahne at Centre for Infections
• Microbiologists in all laboratories that report to CfI and HPS