Estimating the incidence and prevalence of chronic hepatitis C (HCV) in Ireland

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RCPI, Faculty of Public Health Summer Scientific Meeting
30th May 2018
Outline of presentation

Summarise 3 studies which used available data or specimens to estimate the incidence & prevalence of chronic HCV in Ireland

Assess the estimates from these studies in relation to the latest available information
Hepatitis C virus (HCV)

Most commonly transmitted through blood

~ 75% of those infected develop chronic infection

Most have no symptoms initially
  • Cases may remain undiagnosed for years
  • Most cases are diagnosed through screening “at risk” cohorts

Why estimate the prevalence & incidence of chronic HCV in Ireland?
  • 20-30% develop cirrhosis after 25-30 years of infection
  • At risk of liver failure, hepatocellular carcinoma and liver-related death
  • Treatable: new direct acting antivirals available since 2015 - 95% cure
  • Estimates of numbers infected needed to plan HCV screening & treatment
  • Elimination now a realistic goal (WHO target – elimination by 2030)
Study 1. NVRL diagnoses + HPSC Notifications

First commercial test for HCV 1991

Hepatitis C only became notifiable in 2004

NVRL best source of data on HCV pre 2004 – 95% of confirmatory tests

However NVRL laboratory data is based on specimens rather than people

What was done?

1. Custom matching database developed to create an NVRL patient-based database with linked HCV positive lab results, 1989-2004

2. Added HPSC notifications, 2005-2009 (adjusted for NVRL overlap *61%)

3. Literature estimates of chronicity, mortality, underdiagnosis
NVRL diagnoses, 1989-2004

NVRL diagnoses + HPSC Notifications results

1989-2004
NVRL (95%) + other labs:
~11,000 diagnosed with HCV

2005-2009
~4000 HPSC notifications (adj 61%)

~15,000 individuals diagnosed with HCV, 1989-2009

75% chronically infected

13% deceased

~10,000 (9913) alive and diagnosed with chronic HCV by end 2009

What % of all cases of HCV are diagnosed?

50% In the UK

~20,000 alive and chronically infected with HCV at end 2009 (0.5%)

End 2017
~30,000 (0.65%)
Study 2: HRB data on people who inject drugs (PWID)

Used data on PWID in treatment to estimate the number of injectors, by year first injected, to end 2014.

Applied published & estimated HCV incidence rates for PWID.

Assumed 75% became chronically infected with HCV.

Just PWID – what about others cohorts?
Migrants: Census 2011 - over ¾ million migrants.
Published HCV prevalence data by country of birth:

~8,500 (1.1%) migrants likely to be chronically infected with HCV.

Others: smaller number of cases acquired through other risk factors incl. sex, vertical transmission, blood products.
Incidence of chronic HCV in PWID in Ireland

Study 3. Seroprevalence study

Joint HPSC & NVRL study, 2016

Tested anonymised residual sera from adults for HCV

Excluded samples from likely high HCV prevalence sources:
• Drug treatment clinics
• STI clinics
• Hepatology and infectious disease services, asylum seeker screening services
• Samples submitted for hepatitis/STI screens

Sampling frame -18,173 specimens
• General diagnostic specimens (55%)
• Antenatal screen (42%)
• Pre-employment screen (3%)

Random sample
general population age/sex distribution

3795 samples tested

33 HCV antigen positive
Weighted prevalence: 0.6% of adults
19,606 (95% CI 13,758 - 27,860)
adults chronically infected
with HCV
Bringing it all together

| Study 1. NVRL diagnoses and HPSC notifications |
| ~10,000 alive & diagnosed with chronic HCV at end 2009 |
| If 50% undiagnosed |
| ~20,000 chronically infected end 2009 |
| Add adjusted HPSC notifications to end 2017 |
| ~15,000 diag, 30,000 total |

| Study 2. HRB data |
| 9,317 PWID chronically infected with HCV end 2014 |
| Migrants |
| Census data by country of birth * published HCV prevalence data |
| ~8,500 |
| Others |
| ~19,000-20,000 |

| Study 3. NVRL general population residual samples |
| Weighted prevalence 0.6% adults |
| 19,606 (0.6%) adults chronically infected with HCV |
| 95% CI ~14,000-28,000 (0.4-0.8% of adults) |

**Limitations:**

- Study 1 did not adjust for HCV treatment – low uptake/SVR at time the level of underdiagnosis in Ireland is also unknown - ? Lower than in UK?
- Study 2 did not adjust for HCV treatment or deaths in PWID and migrants in Ireland may have a lower HCV prevalence than the population in their country of birth
- Study 3: No risk factor information, underestimate? due to excl high risk sources
Estimates based on available data indicate that approximately **20,000-30,000** people are living with chronic hepatitis C in Ireland (0.4-0.65% of the population).

A national hepatitis C treatment programme was established in 2015:
- to provide treatment to patients based on clinical need
- ultimate aim of effectively eliminating hepatitis C in Ireland
- needs estimates of total numbers chronically infected with hepatitis C to plan treatment

Further studies, including modelling, both in PWID and the general population, would be useful.
Acknowledgements

• Lead authors and co-authors of the 3 studies described (references below)
• Departments of Public Health in all HSE areas: SPHMs, SMOs, Surveillance Scientists, IPCNs, Administration staff
• Notifiers: Laboratory Directors and their staff, and Clinicians

References

