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hpsc

Annual Epidemiological Report

October 2018

Hepatitis E in Ireland, 2017

Key Facts

Total number of cases, 2017:	54
Crude notification rate, 2017:	1.1/100,000 population
Number of clinical cases:	37
Crude notification rate clinical cases, 2017:	0.8/100,000 population
Number of cases detected through blood donor screening:	17
Percentage of blood donors HEV positive, 2017:	0.03%

The number of notifications of hepatitis E decreased by 40% in 2017 compared to 2016 (n=90). Over two thirds (69%) of hepatitis E notifications in 2017 were clinical cases, detected because they presented with clinical symptoms or had liver function test results consistent with viral hepatitis. The remaining 31% of cases were blood donors detected through routine screening of blood donations. Notification rates for clinical cases were highest in older males.

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Background

Hepatitis E infection is a disease of the liver caused by the hepatitis E virus (HEV). Most HEV infections are asymptomatic or mildly symptomatic.[1,2] In most cases infection is self-limiting and resolves in one to five weeks without any treatment. However, hepatitis E can be associated with severe disease and liver failure in a small number of at risk individuals and chronic hepatitis E infection may develop in people who have a suppressed immune system. Hepatitis E has also been reported in association with neurological symptoms such as Guillain-Barré syndrome and peripheral neuropathies.[1,2]

Four hepatitis E genotypes have been identified. The genotypes are associated with different geographic distribution and epidemiology. Genotypes 1 and 2 are restricted to humans and are transmitted via faecally contaminated water in developing countries. Genotypes 3 and 4 can infect humans, pigs and other mammals. HEV genotype 3 is the dominant genotype in Europe. It is thought that the majority of genotype 3 infections are foodborne, and likely to be acquired through consumption of undercooked pig and game meat, processed pork or shellfish.[1,2] Direct spread of hepatitis E from person to person is rare, although transmission associated with blood transfusion has been reported in some countries.[4] Most cases of hepatitis E in developed countries are sporadic, but clusters of cases associated with a common food source have been identified.[2]

In 2015, the Irish Blood Transfusion Service (IBTS) carried out a research study to determine the incidence and prevalence of HEV in Irish blood donors. They found that 5% of those who had donated blood between Setpember and December 2012 had evidence of past HEV infection and that from December 2013 to June 2014, 0.02% (5/24,985) of blood donors were infected at the time of blood donation. As a result of this study, the IBTS requested funding from the Department of Health for universal screening of blood donors for HEV for an initial 3 year period. This was granted and commenced on January 4th 2016.[5]

The growing evidence of the risk of indigenous hepatitis E in Europe also led to it becoming a notifiable disease in Ireland on December 15th 2015 (Amendment to the Infectious Diseases Regulations, SI 566).

Methods

In order to collect information on the clinical features and risk factors for HEV infection in Ireland, the Departments of Public Health and the IBTS agreed to complete enhanced surveillance forms (ESF) for hepatitis E cases (http://www.hpsc.ie/a-z/hepatitis/hepatitise/surveillanceforms/) for a one year period from the start of July 2016 to the end of June 2017. The IBTS had been collecting enhanced data using the Public Health England ESF for the first 6 months of 2016 and also provided these forms to HPSC.

The figures presented in this report are based on data extracted from the Computerised Infectious Disease Reporting (CIDR) System on 17th October 2018 and from an in-house database used for enhanced data. HEV notification rates for clinical cases are expressed per 100,000 population and are calculated using the 2016 census. The IBTS provided data on the total number of blood donors and the number who tested positive for current HEV infection, by age and sex, in 2017. These denominator data are used for calculating the percentage of blood donors who tested positive for HEV.

Epidemiology

Number of notifications and notification rates

There were 54 notifications of hepatitis E in 2017 (1.1/100,000 population). This was a decrease of 40% compared to 2016 (n=90) (figure 1). The most likely country of infection was available for 54% (n=29) of cases. Of these, 83% (n=24) were likely to have been infected in Ireland, 14% (n=4) were infected in other western European countries and one case was infected in Asia. Country of birth was available for 48% (n=26) of cases in 2017 and 85% (n=22) of these were born in Ireland.

Clinical cases (n=37)

Sixty nine percent (n=37, 0.8/100,000 population) of HEV notifications were clinical cases. These cases were detected because they presented with clinical symptoms or had liver function test results consistent with viral hepatitis. There were no cases notified in females who were pregnant or in patients with pre-existing liver disease. However five clinical cases (9%) were diabetic and one additional case had cancer. Data on patient type were available for 89% of clinical cases and of these, 35% (n=11) were hospitalised.

Enhanced surveillance forms were completed for nine clinical cases, of whom six were symptomatic. The most common symptoms reported were jaundice (67%, n=6), loss of appetite (56%, n=5), nausea (56%, n=5), dark urine (44%, n=4) and abdominal pain (33%, n=3).

The median age at notification for clinical HEV cases was 48 years (50 years for males and 46 years for females). The highest notification rates were in males aged 50 years and older (1.9/100,000 population), but cases were reported in adults in all age groups (age range: 21 to 84 years). Sixty two percent (n=23) of all clinical cases were male, but a gender disparity was only evident in older males: just over half (53%) of cases aged under 50 years were male but almost three quarters (72%) of cases aged 50 years or older were male (figure 2). Cases were distributed across most regions in Ireland but the notification rates for clinical cases were highest in HSE E and MW.

Figure 1. **Number of notifications of hepatitis E in Ireland, by type of case, Q1 2016-Q4 2017**

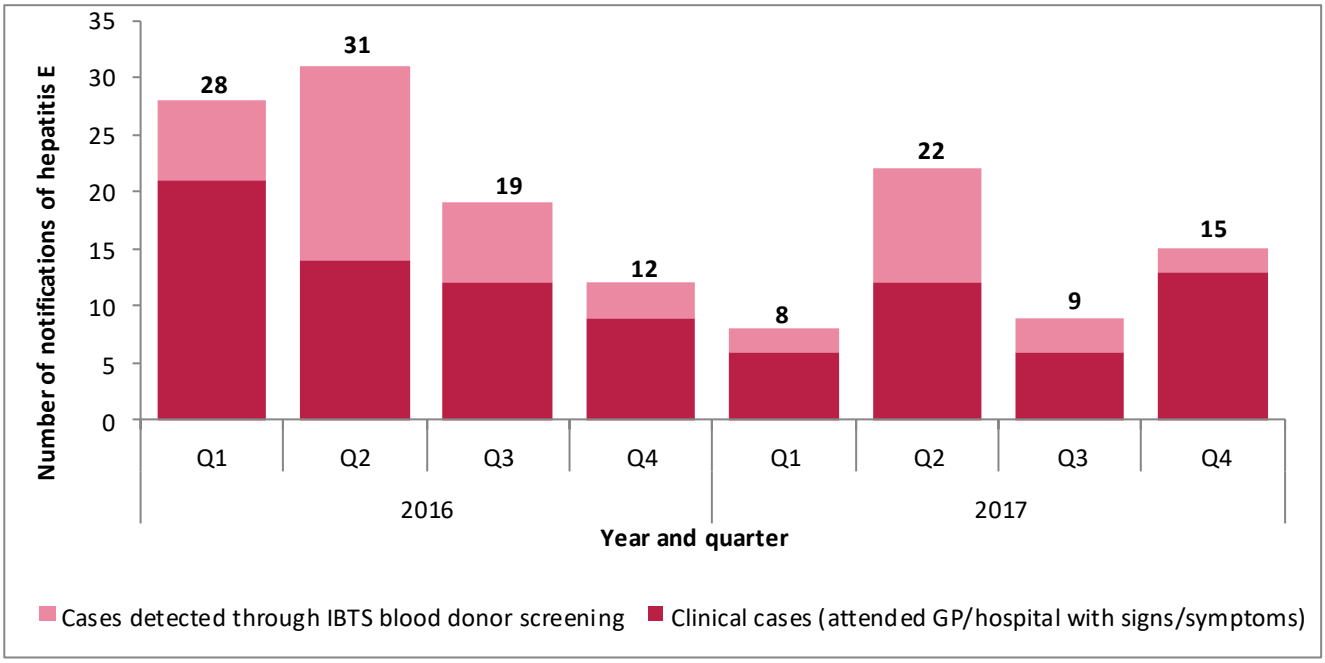
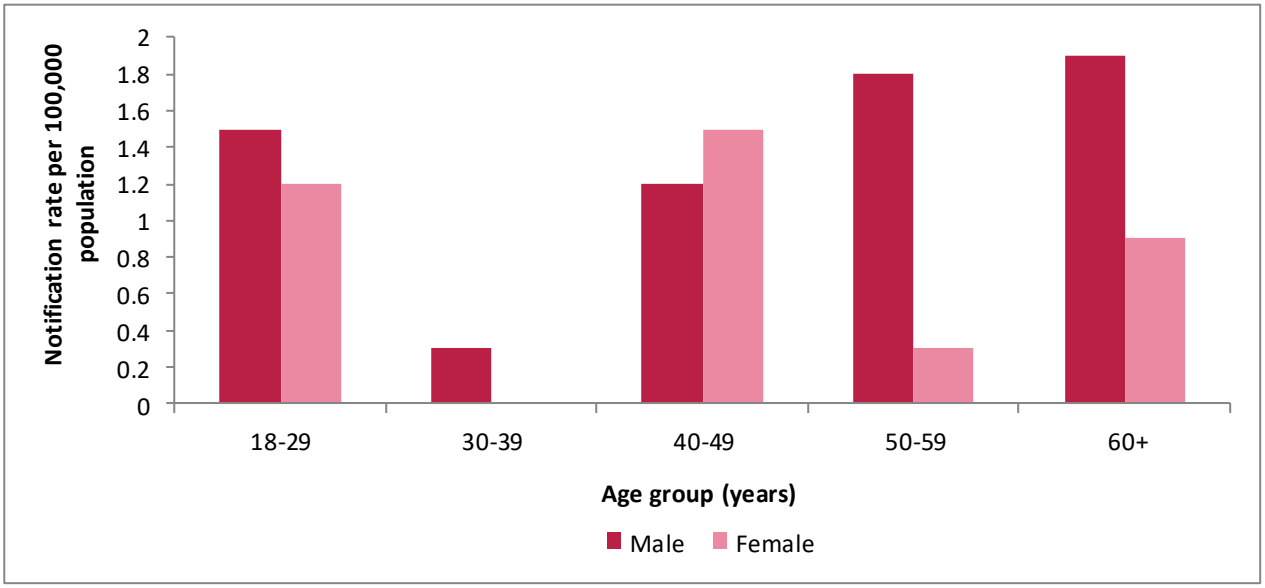


Figure 2. **Age and sex specific notification rates per 100,000 population for clinical cases of hepatitis E in Ireland, 2017**



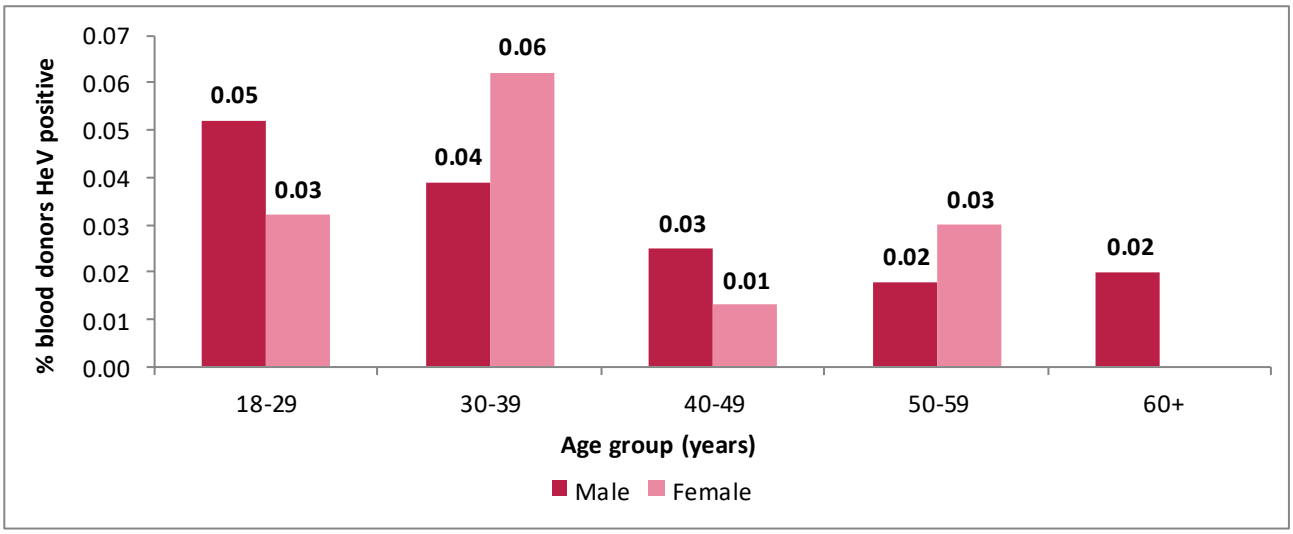
Cases diagnosed through IBTS blood donor screening (n=17)

Thirty one percent (n=17) of HEV cases notified in 2017 were blood donors detected through routine screening of blood donations. Enhanced surveillance forms were available for 82% (n=14). Cases diagnosed through blood donor screening were mostly asymptomatic, but 36% (n=5) disclosed mild symptoms (mostly fatigue) when questioned

post-diagnosis.
The age and sex distribution of HEV cases diagnosed through blood donor screening is influenced by the age and sex profile of blood donors. The IBTS provided denominator data on the number of blood donors in 2017 so that the percentage of donors testing HEV positive by age and sex could be calculated. Although the age and sex profile of blood donors is not the same as that of the general population, the percentage of blood donors who test positive for HEV provides a useful estimate of the incidence and prevalence of acute HEV infection in the general population in Ireland. The overall prevalence of HEV infection in blood donors in 2017 was 0.03%.

The percentage of male and female blood donors who tested positive for recent HEV infection was the same (0.03%) (figure 3). Cases of HEV diagnosed through blood donor screening were significantly younger than clinical cases. The prevalence of HEV among blood donors aged less than 40 years (0.045%) was more than double that of those aged 40 years or older (0.02%) (figure 3).

Figure 3. Percentage of blood donors who tested positive for hepatitis E in Ireland, by age group and sex, 2017 (IBTS data)



Food preferences and animal exposures

Food histories were completed for 23 cases of HEV (9 clinical cases and 14 blood donor screening cases). All but one reported that they had eaten one or more pork products in the nine weeks before illness or diagnosis (table 2). The one case who had not consumed pork was likely to have been infected outside Ireland. The most commonly consumed pork products were bacon (91%), pork sausages (87%), pork meat (74%) and sliced ham (68%). Except for cured pork, there were no statistically significant differences in food exposures between clinical and blood donor screening cases. Cured pork was consumed by 86% (n=12) of blood donor screening cases compared to 33% (n=3) clinical cases (odds ratio=12, p=0.017). The difference remained statistically significant after adjusting

for age.

Although physical contact with animals was also very common (59% of cases), this was mostly with pets such as dogs and cats, which are not currently thought to be sources of HEV infection. One case reported contact with pigs outside Ireland.

Table 1. Number and percentage of cases of hepatitis E who reported each exposure in the 9 weeks prior to illness or diagnosis (data available for 9 clinical cases and 14 blood donor screening cases), in Ireland

Exposure	Number of cases	% of cases
One or more pork products	22	95.7
Bacon	21	91.3
Pork sausages	20	87.0
Pork meat	17	73.9
Sliced ham, pre-packed	15	68.2
Cured pork e.g. salami	15	65.2
Ham, off the bone/joint	14	60.9
Black pudding	9	39.1
Pork pate, rilette	3	13.0
Pork liver	1	4.4
Pork pie, ready to eat	0	0.0
Other pork offal	0	0.0
Other pork products e.g. luncheon meat, lardons	1	4.8
Undercooked pork	1	5.6
Game	5	22.7
Shellfish	9	40.9
Worked at/visited farm/stable/petting farm/zoo	4	19.1
Physical contact with animals	13	59.1

Discussion

The number of notifications of HEV in Ireland decreased by 40% in 2017 compared to 2016 (n=90). Notification rates for clinical cases of HEV were highest in males aged 50 years and older. There was no gender disparity in HEV infections in blood donors and the age profile of cases diagnosed through blood donor screening also differed to that of symptomatic cases, with younger donors more likely to test positive. Overall indications in Ireland are that HEV infection can occur at all ages but that older males are more likely to present with symptomatic infection.

Pork consumption was almost universal amongst cases of HEV in Ireland for whom ESFs were completed. However, in the absence of a case control study, it is not possible to determine if this was a significant finding.

Similarly high levels of pork consumption have been found in other studies of hepatitis E in European countries. A hepatitis E case control study, carried out in England and Wales in

2011, found that 88% of cases had consumed sausages compared to 75% of controls and that 96% of cases had consumed ham compared to 83% of controls. These differences between cases and controls were not statistically significant. However, a statistically significant association was found between the consumption of sausages and ham purchased at a particular supermarket chain and HEV infection.[6]

A large matched case control study in Germany compared the food consumption habits of 270 non travel-related clinical cases of HEV to those of 1,159 matched controls. Consumption of pork, undercooked wild boar meat, ready to eat sausages and raw vegetables were all independently associated with an increased risk of infection. The highest population attributable fractions were for liver pate or liver sausage, boiled sausages and raw vegetables. Six percent of controls followed a diet avoiding consumption of pork compared to 0.4% of cases. The population attributable fraction for dietary exposure to pork was 94%.[7]

Only one HEV case notified in Ireland in 2017 reported knowingly having consumed undercooked pork. The Food Safety Authority of Ireland currently recommends cooking pork thoroughly to a minimum of 75°C in the thickest part of the meat.[8]

Further information

http://www.hpsc.ie/a-z/hepatitis/hepatitise/

https://www.fsai.ie/faq/hepatitis_E.html

https://www.efsa.europa.eu/en/efsajournal/pub/4886

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