Ionad Naisiunta Faire Galair

EPI-INSIGHT

DISEASE SURVEILLANCE REPORT OF NDSC, IRELAND

ISSN: 1393-9548

Volume 5, Issue 5, May 2004

In Partnership for Prevention and Protection

Contents:

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New SARS Cases Reported from China

On 22nd April 2004, the Chinese Ministry of Health informed WHO of a probable case of SARS in Beijing.[1] The case is a 20-year-old nurse who became ill on 5th April and was admitted to hospital on 7th April. She was transferred to another hospital in Beijing on 14th April where she remains in intensive care. Her illness was identified as probable SARS on the basis of positive test results for antibodies to SARS coronavirus. As of 29th April, an additional eight cases have been reported, including one death.[2]

Investigation of this cluster have indicated that the first case to become ill was a 26-year-old graduate student who worked for a period of two weeks from March 7th to 22nd in the Chinese National Institute of Virology in Beijing. This institute is engaged in research involving the SARS coronavirus. She became ill on 25th March while in Anhui Province. She travelled by train to Beijing and was admitted to hospital there on 29th March. She returned to Anhui Province on April 2nd and is currently in hospital there. Laboratory test results on April 23rd showed evidence of antibodies to SARS coronavirus.[3] She has been classed as a probable SARS case (confirmation requires independent external laboratory verification).

While in hospital in Beijing she received nursing care from the 20-year-old nurse who later became ill with SARS. She also had been looked after by her mother at home in Anhui Province. The mother herself became ill on 8th April, was admitted to hospital with pneumonia, and subsequently died. Her illness has been identified as a possible SARS case. A fourth person to become ill with possible SARS is a 31-year-old graduate student who also worked at the National Institute of Virology. He has been admitted to hospital and is being treated as a possible SARS case.[3] Five contacts of the nurse who treated the Anhui student at a Beijing hospital were diagnosed as possible SARS cases. They include the nurse's parents, aunt and two woman who shared the same ward with the nurse when she was ill. As of 29th April the nurse's mother and aunt have been confirmed as probable SARS cases.[2]

This cluster has provided multiple opportunities for exposure and as of 26th April, close to 1000 contacts have been identified and are being followed-up.[4] Two doctors who treated one of the patients during her hospitalisation in Anhui have developed fever. A person in close contact with one of the doctors has also developed fever. Enhanced surveillance of SARS, influenza-like illness, and pneumonia of unknown aetiology have been introduced in China. The National Institute of Virology has been closed and personnel who may have been exposed are being screened. Investigations are ongoing to locate the source of infection. Screening of people at borders and ports of entry has been instigated.[3]

SARS was first recognised as a global threat in mid-March 2003. There were over 8098 cases and 774 deaths worldwide. Approximately 20% of cases were in healthcare workers. WHO estimates that the economic cost of SARS was between $US 30-140 billion.[5] Many healthcare systems in countries affected were brought to breaking point. The epidemic was controlled by traditional public health measures including active case finding and infection control. There was also an unprecedented level of international cooperation to control the epidemic. Preparedness and planning are essential in dealing with the threat of SARS or indeed any other public health emergency.

Although the level of risk of SARS in Ireland is low, there is a need for continuing vigilance for the possibility of SARS. The Department of Health and Children SARS Expert Group have produced interim guidelines for healthcare professionals on the management of SARS.[6] This document provides interim case definitions and guidance for the reporting and management of SARS in Ireland in two situations:
1. When there is no SARS transmission (person-to-person) globally and
2. When there is SARS transmission globally.

At present the guidance for 'no SARS transmission globally' should be followed as per WHO guidance. The evolving situation in China is being monitored by WHO and any changes to the current recommendations will be placed on the NDSC website. The guidelines have been circulated to all relevant healthcare professionals and institutions.

Additional information on SARS is available on the NDSC website at www.ndsc.ie and on the WHO website at www.who.int/

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5. Merianos A. SARS one year later; lessons learnt. Department of Health and Children and NDSC SARS information day. Dublin. 23rd April 2004.
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Epidemiology of Hepatitis C Infection in Ireland

Introduction

Hepatitis C virus (HCV) is a major cause of acute hepatitis and chronic liver disease worldwide. Most acute infections (90%) are asymptomatic but a large proportion (between 50% and 80%) progress to chronic infection. About half of those chronically infected will eventually develop cirrhosis or cancer of the liver.[1] There are an estimated 170 million persons chronically infected with hepatitis C around the world, with 3 to 4 million persons newly infected each year.[2] The overall prevalence of hepatitis C in Europe is around 1%, varying from 0.003% in Sweden to nearly 5% in Moldova.[3]

There is a dearth of information on hepatitis C in Ireland. Until January 2004 hepatitis C was not a notifiable disease, although it was sometimes notified under the category of *viral hepatitis - type unspecified.* The following is a summary of information from different sources on hepatitis C in Ireland.

Methods

1. A search of Medline (1966 to date) was carried out using the following search strategy: "hepatitis C" **or** HCV **and** Ireland **or** Irish. This search retrieved a total of 92 references. A summary of the studies which contained original information on the prevalence of hepatitis C in Irish populations can be seen in table A of the Appendix.
2. Relevant published reports were also obtained. Information from these reports is summarised in table B of the Appendix.
3. Notifiable diseases are reported by the health boards to the National Disease Surveillance Centre (NDSC) on a weekly basis, and have included demographic information (age and sex) since mid-2000.
4. The HIPE (Hospital In-Patient Enquiry) unit of the Economic and Social Research Institute (ESRI) provided data on the number of hospital discharges with a principal or secondary diagnosis of hepatitis C coded using ICD9-CM.
5. The Central Statistics Office (CSO) provided mortality data coded using ICD9.
6. The National Liver Transplant Unit (NLTU) provided information on the number of liver transplants, with an underlying aetiology of hepatitis C, carried out in Ireland.
7. The ERHA provided information on the results of hepatitis C screening of asylum seekers.
8. The National Virus Reference Laboratory (NVRL) provided information on the number of new hepatitis C antibody positive cases identified by them in 2002 (provisional data).
9. The Irish Blood Transfusion Service (IBTS) provided information on the prevalence of hepatitis C positive new donors identified between 1997 and 2003.

Results

Prevalence

There are no figures available on the prevalence of hepatitis C in the general population. Published (Appendix, table A and B) and unpublished data on different population groups shows the prevalence of exposure to hepatitis C varies widely, from 0.02% of new blood donors 1997-2003 (table 1, main article) to approximately 50-80% of IDUs. The decrease in prevalence of hepatitis C in blood donors between 1997 and 2003 probably reflects changes in the eligibility criteria for blood donation and improvements in the pre-donation screening process, rather than a real decrease in the prevalence of hepatitis C in the population.

Table 1. Summary of results of screening for hepatitis C from unpublished sources

Source	Population	Year(s)	Number Screened	HCV positive	% positive
ERHA[1]	Homeless people	1999-00	189	35	18.5%
ERHA[2]		1999	1986	14	0.7%
	Asylum seekers	2000	2163	31	1.4%
		2001	2145	41	1.9%
		2002	1925	37	1.9%
IBTS[3]		1997	17,994	10	0.06%
		1998	18,262	4	0.02%
		1999	22,491	5	0.02%
	New blood donors	2000	20,508	4	0.02%
		2001	25,314	4	0.02%
		2002	25,280	3	0.01%
		2003	20,767	2	0.01%

[1] Personal communication, Dr G Sayers (2001)
[2] Personal communication, Dr F O'Neill (2004)
[3] Personal communication, Dr J O'Riordan (2004)

Incidence

Clinical notifications

Since mid-2000 the viral cause of hepatitis notified under the unspecified category has sometimes been provided to NDSC. Most of the unspecified viral hepatitis notifications in 2001, 2002 and 2003 were hepatitis C (figure 1).

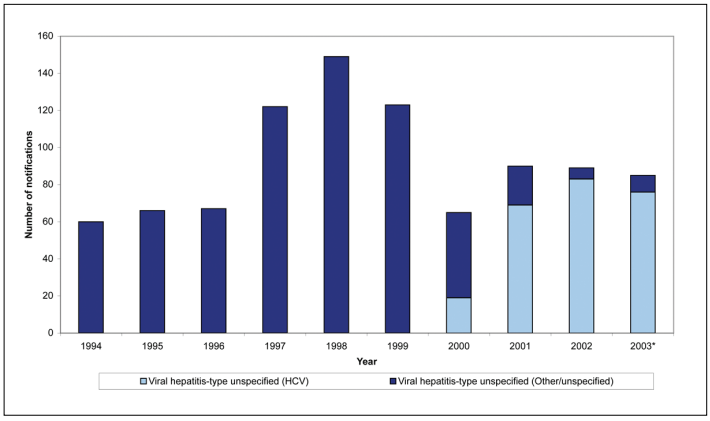

*Figure 1. Number of clinical notifications of viral hepatitis—type unspecified by viral cause 1994-2003**

*Provisional data

In addition, some *viral hepatitis-type unspecified* cases have been notified through the notification system for sexually transmitted infections (STIs). STI clinics provide NDSC with aggregate data on a quarterly basis. There were 90 cases notified in this way in 2001 and 68 cases in 2002.[4] These cases may be duplicates of the cases notified through the routine weekly notification system.

*Table 2. Age standardised incidence rates (per 100,000 population) of viral hepatitis—type unspecified by health board, 2001-2003**

Health Board (rate per 100,000 population)	2001	2002	2003*
ERHA	2.6	1.2	2.2
MHB	0.8	1.4	3.8
MWHB	1.5	2.1	1.2
NEHB	0.3	1.2	0.6
NWHB	2.4	0.4	1.4
SEHB	6.9	10.4	4.6
SHB	1.1	2.3	2.1
WHB	0.3	0.3	0.0
Ireland (crude rate)	**2.2**	**2.3**	**2.1**

*Provisional data

The age-standardised incidence rates of *viral hepatitis-type unspecified* vary across health boards (table 2). The age and sex distribution of clinical notifications 2001-2003 can be seen in figure 2.

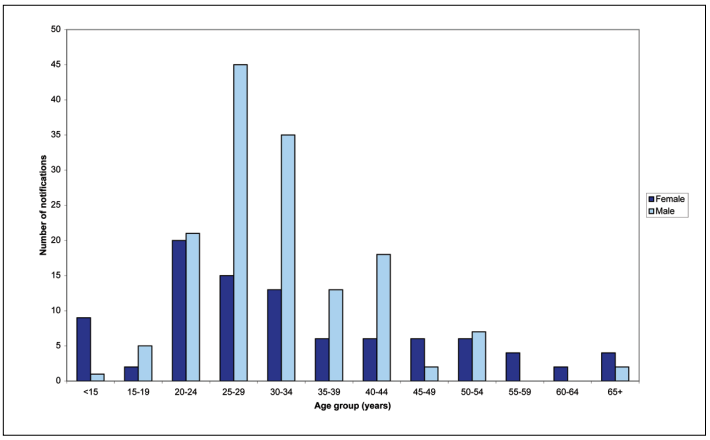

*Figure 2. Age and sex distribution of clinical notifications of viral hepatitis-type unspecified, 2001-2003**

*Provisional data

Laboratory data

The NVRL identified 1233 new cases of hepatitis C (HCV antibody positive) in 2002 (provisional data).

Special studies
The incidence of hepatitis C in injecting drug users in Ireland was recently estimated to be 66 per 100 person years at risk.[5]

Morbidity and mortality

Hospital data (HIPE)
HIPE is an event-based system which records information on discharges from participating acute hospitals. Up to 6 diagnoses are recorded per discharge. There were 6,085 discharges recorded between 1999 and 2001 containing a diagnosis of hepatitis C (2,000 in 1999, 2,046 in 2000 and 2,039 in 2001). Hepatitis C was the principal diagnosis in 18% of these discharges. Approximately 57% of the diagnoses were chronic hepatitis C, the remainder being coded as acute/unspecified hepatitis C. A total of 31% (1,891/6,085) of discharges were admitted as day-cases. The mean length of stay of inpatients (n=4,194) was 7 days (ranging from 1-419 days). The age and sex distribution of discharges can be seen in figure 3. Approximately 60% of the discharges between 1999 and 2001 were male. The mean age of the males was 36 years (the mean age for acute/unspecified hepatitis C was 35 years, and for chronic hepatitis C was 40 years). Females tended to be slightly older with a mean age of 39 years (the mean age for acute/unspecified hepatitis C was 34 years and for chronic hepatitis C was 42 years).

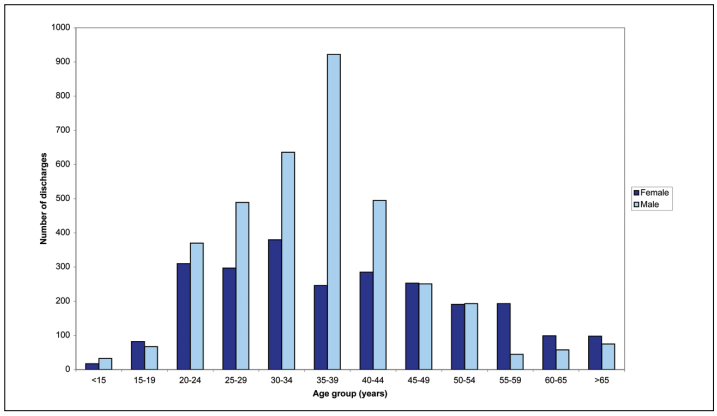

Figure 3. Number of hospital discharges containing a diagnosis of hepatitis C by age and sex 1999-2001

Of the 6,085 discharges with a diagnosis of hepatitis C:
- 7% also contained a diagnosis of hepatitis B.
- 24% also contained a diagnosis of HIV/AIDS.
- 37% also contained a diagnosis of drug or alcohol use or dependence, (21% of discharges had a diagnosis of opioid use or dependence).
- 11% also contained a diagnosis of chronic liver disease or sequelae.
- 0.4% also contained a diagnosis of liver cancer (0.3% had a diagnosis of primary liver cancer).

Liver transplants
Between 1993 and 2002, 262 adult liver transplants were carried out by the NLTU in St Vincent's University Hospital, Dublin. There was an underlying aetiology of hepatitis C in 8% of cases (n=21).[4]

Deaths
Data provided by the CSO do not provide sufficient coding detail to extract the number of records where the primary cause of death was attributed to hepatitis C specifically. Hepatitis C should be recorded in the ICD9 category of "070.4 other specified viral hepatitis" (i.e. other than hepatitis A and hepatitis B). Although deaths due to hepatitis E infection and hepatitis delta are also included in this category it is unlikely that these would contribute substantially to the figures. The number of deaths with a primary cause of death recorded in this category can be seen in figure 4, along with the number of unspecified hepatitis deaths (ICD9 070.5, 070.6). The breakdown of deaths by gender can be seen in figure 5

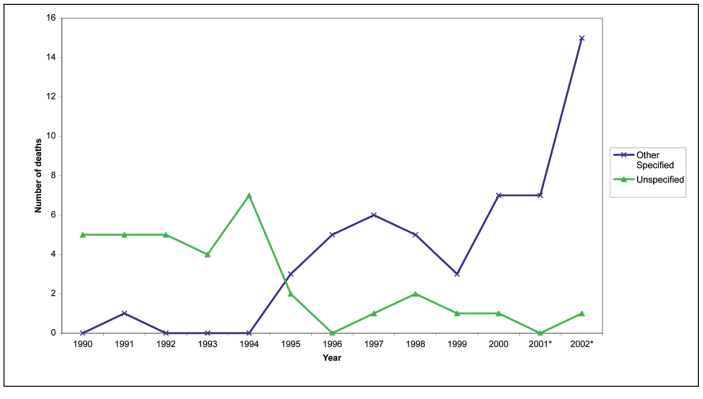

Figure 4. Number of deaths due to other specified viral hepatitis (070.4) and unspecified viral hepatitis (070.5 and 070.6), 1990-2002
Source: CSO, * provisional data (year of registration)

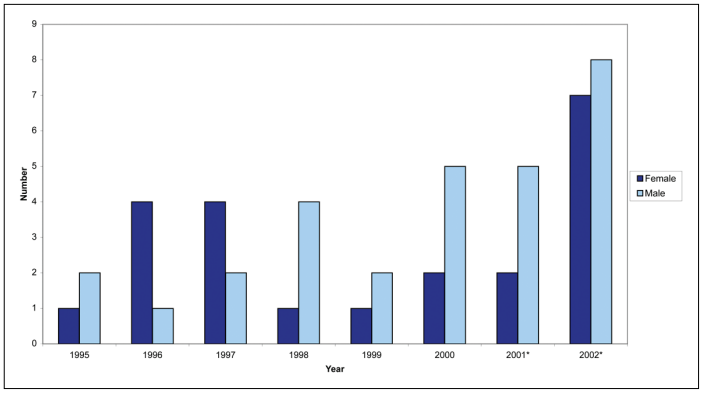

Figure 5. Number of deaths due to other specified viral hepatitis by sex, 1995-2002
Source: CSO, * provisional data (year of registration)

Discussion

There is little information on the prevalence of exposure to HCV infection in the general population. It is probably quite low, between 0.01% and 1.4% (this estimate is based on available data on two groups – blood donors and non-IDU prison entrants). The prevalence of exposure in some risk groups is extremely high. Approximately 80% of IDUs have been infected with HCV, 56%-75% of whom are PCR positive. Other groups with increased risk include homeless people (18%) and sex workers (8%), as well as those on dialysis and recipients of contaminated blood and blood products (see Appendix).

The enormous discrepancy between the number of notifications in 2002 (89 clinical notifications and 68 cases notified through the STI system) compared to the number of new cases of anti-HCV positive (n=1,233) identified by the NVRL in the same year highlights the inadequacy of hepatitis C surveillance in Ireland.

An amendment to the Infectious Diseases Regulations (1981) was introduced on 1st January 2004. Under this amendment, hepatitis C is now a notifiable disease and laboratory directors are also required to notify infectious diseases. These changes should enhance the information available in Ireland on the epidemiology of hepatitis C by improving the comprehensiveness and quality of notified data. In addition, an enhanced surveillance system for hepatitis C is required to identify risk factors and the information obtained from it could then be used to monitor and inform prevention and control strategies and to plan services.

Quarterly reports on the number of notified cases of hepatitis C will be published on the NDSC website (www.ndsc.ie).

Aline Brennan, Dr Lelia Thornton, NDSC;
Dr Jeff Connell, NVRL; Dr Winifred O Neill, ERHA;
Dr Joan O Riordan, IBTS

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Epidemiology of Hepatitis C infection in Ireland - Appendix

Table A. Summary of research articles containing information on the prevalence of hepatitis C infection in Ireland.

Study population	Year(s)	Methods	N	HCV pos (%)[a]
IDUs				
Attendees to one drug treatment centre[1]	1992-93	Tested for anti-HCV	272	229(84.2)
New attendees to one drug treatment centre[2]	1992-97	Tested for anti-HCV	733	453(61.8)
New attendees to one drug treatment centre, injecting <25 months[3]	1993-1996	Tested for anti-HCV	353	N/A (52.1)
New attendees to one drug treatment centre[4]	1996-97	Self reported positive Tested for anti-HCV	138 48	15(10.9) 26(54.2)
New attendees to the health promotion unit of a drugs service[5]	1997-98	Self reported	370	56(15.1)
HIV positive IDUs referred to a genitourinary medicine and infectious diseases clinic[6]	1999-00	Review of records for anti-HCV and PCR results	115	(92)
Opiate users attending 5 methadone dispensing clinics[7]	1997	Review of records for anti-HCV results	99	78(78.8)
Opiate users attending GPs for methadone maintenance[8]	1999	Review of records for HCV test results self-reported status	380	276(73)
Patients registered at a community based drug treatment centre[9]	2001	Review of records for anti-HCV results	94	70(75)
Prisons				
Prisoners[10]	1998	Questionnaire/salivary test for anti-HCV	1193	442(37.0)
IDUs			509	414(81.3)
Non-IDUs			669	25(3.7)
Entrants to prison[11]	1999	Questionnaire/salivary test for anti-HCV	596	130(21.8)
IDUs			173	124(71.7)
Non-IDUs			420	6(1.4)
Sex Workers				
Female prostitutes newly attending drop-in health clinic[12]	1991-97	Review of records for anti-HCV result	99	8(8)
Iatrogenic infections /special medical populations.				
Patients with liver disorders[13]	1989-90	Tested for anti-HCV	93	9(9.7)
Haemodialysis patients dialysed for ≥ 6 months[14]	1990	Tested for anti-HCV	266	5(1.9)
Patients with functioning renal transplants for ≥6 months[14]		Tested for anti-HCV	272	3(1.1)
Haemodialysis patients[15]		Tested for anti-HCV	45	(8.9)
Infants transfused with blood from infected donors[16]	1980-1991	Tested for anti-HCV	20	12(60)
IBTS Optional screening program[17]	1995	Tested for anti-HCV	14,917	61(0.4)
Paediatric HCV				
Infants born to anti-HCV positive women[18]	1994-99	Review of records	214	6.2% transmission

[a] Usually anti-HCV positive but some papers reported 'hepatitis C positive'±, or 'hepatitis C status'±

Table B. Summary of selected published reports containing information on the prevalence of hepatitis C infection in Ireland.

Source	Study population	Year(s)	Methods	N	HCV positive (%)
Tribunal of Inquiry into the Blood Transfusion Service Board[19]	Positive Action Irish Haemophilia Society Transfusion Positive Irish Kidney Association		Number of members of each group	1069 210 250 50	
NVRL[20]	IDUs	1992-93	Number tested by NVRL	1025	(76)
	Haemophiliacs		Number tested by NVRL		(40)
IBTS[21]	Women who received Anti-D	1994-2001	Screened by IBTS	65,996	1,026 (1.6)
	Optional screening	1994-2001	Screened by IBTS	14,919	42 (0.3)
	Lookback	1994-2001	Screened by IBTS	307	106 (34.5)
	HIV Screening Programme	1994-2001	Screened by IBTS	2153	0 (0)

All the above references are available on the ndsc website at www.ndsc.ie/DiseaseTopicsA-Z/HepatitisC/