Hepatitis C in the North West

2014 Report
About Public Health England

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The Field Epidemiology Service is a new service established as part of Public Health England. It comprises of approximately 100 staff working from a number of teams across England. The service supports local and national Public Health England Centres in analysis and interpretation of surveillance data, field investigations and response to outbreaks, incidents and other exposures to hazards to health, research and development of the evidence base, learning and development, and contributing to Public Health England programmes and priorities.

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# Contents

**Executive Summary**
- Hepatitis C in England 5
- Hepatitis C in the North West 5
- Epidemiology 5
- Cost 5
- Action 6

**Recommendations**
- General practitioners 7
- Local Authorities 7
- Commissioners 7
- Providers 8
- Laboratories 8

**Introduction and Background**
- Epidemiology of Hepatitis C 10

**Epidemiology of Hepatitis C**
- Hepatitis C in England 10
- Hepatitis C in the North West 10
- Hepatitis C Laboratory Reports 10
- Hepatitis C in the North West Local Authorities 13
- Hepatitis C – Age and Gender 13
- Hepatitis C – Ethnicity 15
- Hepatitis C – People who inject drugs 16
- Hepatitis C in Prisons 18
- Hospital admission for Hepatitis 19
- Mortality from Hepatitis C related conditions 21
- Transplants 23

**Estimating the future burden of Hepatitis C in the North West** 24
**Increasing awareness and reducing undiagnosed disease** 24
**Prevention and harm reduction** 24
**Treatment and Care** 24
**North West Examples of Good Practice** 26
**Data Sources** 28
**Appendices** 30
**References** 37
**Acknowledgements** 38
Figures

Figure 1. Number of laboratory reports of Hepatitis C by Public Health England Centre of residence, 2005 to 2013

Figure 2. Number of individuals tested for Hepatitis C antibody and percentage positive by service type in sentinel laboratories in the North West 2009 - 2013
Figure 3. Age group and gender of sentinel laboratory reports of Hepatitis C for the North West, 2013.
Figure 4. Number of young persons tested and testing positive for Hepatitis C in the five sentinel laboratories in the North West region, 2009 to 2013
Figure 5. Number of South Asian individuals tested and testing positive for Hepatitis C antibody by ethnicity in sentinel laboratories in the North West 2009 to 2013
Figure 6. Number of persons who inject drugs tested and proportion testing positive for Hepatitis C in the North West region, 2009 to 2013
Figure 7. Persons who inject drugs - Percentage who have received a Hepatitis C test 2012/13
Figure 8. Individuals resident in the North West region admitted to hospital with a diagnosis of Hepatitis C, 2009 to 2013
Figure 9. Hospital admission rate for Hepatitis C related end-stage liver disease/hepatocellular carcinoma (crude rate per 100,000) 2012/13
Figure 10: Number of deaths from end stage liver disease or hepatocellular carcinoma in those with Hepatitis C mentioned on their death certificate by Public Health England Centre 2008-2013 (per 100,000 population)
Figure 11. Under 75 mortality rate from Hepatitis C related end-stage liver disease/hepatocellular carcinoma 2011 to 2013 (crude rate per 100,000)
Figure 12. Number of people, resident in the North West, receiving first liver transplants with post-Hepatitis C cirrhosis as primary indication at registration from 2009 and 2013
Figure A. Percentage of individuals testing positive for Hepatitis C antibody by risk or reason for test in sentinel laboratories in the North West region 2009 to 2013 (Sentinel Laboratory Reports, 2013)
Figure B. Laboratory report of Hepatitis C for the North West by Local Authority and Public Health England Centre area 2005 to 2013
Figure C. Laboratory report of Hepatitis C for the North West by Local Authority and Public Health England Centre area 2005 to 2013
Figure D. Laboratory report of Hepatitis C for the North West by Local Authority and Public Health England Centre area 2005 to 2013
Figure E. Estimated burden of disease by Drug and Alcohol Team
Figure F. Outcomes of Liverpool community collaborative Hepatitis C testing (DATE)
Executive Summary

This report focuses on epidemiology of Hepatitis C virus infection in the North West using surveillance data that are routinely available.

**Hepatitis C in England**

Recent national estimates suggest that around 214,000 individuals are chronically infected with Hepatitis C virus in the UK.

**Hepatitis C in the North West**

- Hepatitis C virus is a significant problem in the North West, with recent estimates indicating that 40,000 people in the region are living with Hepatitis C chronic infection.
- In 2013 the total number of North West Hepatitis C laboratory reports was 1,992. Greater Manchester has greatest number of reports, followed by Cumbria and Lancashire, with Cheshire and Merseyside having the lowest number of reports.

**Epidemiology**

- More males than females are infected with Hepatitis C virus. The greatest number of cases of Hepatitis C infection is within the 35-44 age group.
- Injecting drug use remains by far the most significant risk factor, with 19% of injecting drug users in the region tested in 2013 having evidence of infection.
- Hepatitis C virus prevalence among people who inject drugs participating in the Unlinked Anonymous Monitoring Survey in 2013 varied across England, with prevalence ranging from 37% in the North East region to 68% in the North West.
- The number of positive tests in individuals aged 15 to 24 years can be used as a proxy indicator for incidence, as most new infections are acquired via injecting drug use, in late adolescence and early adulthood. From 2012 to 2013 the rate of positive tests in 15 to 19-year-olds has increased from 0.2% to 0.9%, equating to an increase of 12 cases. The increase in this age group has been most notable in Greater Manchester and this requires further investigation and consideration.
- In 20 to 24-year-olds from 2009 to 2013, the rate of positive tests has steadily decreased, from 1.5% to 0.9%. This may indicate that people who are injecting drugs may be practicing more safely or that intravenous drug use has decreased in this population.
- The number of individuals of South Asian ethnicity being tested for Hepatitis C is increasing, with a detection rates of 2.7%. The highest rates of people of South Asian origin testing positive for Hepatitis C are in Greater Manchester (3.6%), followed by Cumbria and Lancashire (3.2%) and Cheshire and Merseyside (2.0%).

**Cost**

- The total drug cost to treat backlog of current infections in the region is estimated to be £70,679,000 with an annual drug cost of £13,147,000 to treat newly diagnosed infections. However, information on numbers receiving treatment is limited.
Action

- Action plans and work programmes have driven improvements in the prevention, diagnosis and treatment of Hepatitis C. However, more needs to be done as the morbidity and mortality from Hepatitis C related liver disease continues to rise.
- United Kingdom public health recommendations regarding prevention, diagnosis, testing and awareness of infection, treatment and care, surveillance and research are detailed within Hepatitis C in the UK: 2014 report (Public Health England, 2014).
Recommendations

General Practitioners are advised to:

- ensure that those people at increased risk of infection (for example people who inject drugs or individuals of South Asian origin) are identified, tested and the chronically infected are referred to a specialist for follow-up

- explore ways to improve their knowledge of Hepatitis C, including considering completing the Royal College of General Practitioners online module on the detection, diagnosis and management of Hepatitis B and C

Local Authorities are advised to:

- raise the profile of Hepatitis C in their area, highlighting the costs associated with the sequelae, the benefits of early diagnosis and treatment and the need for quality prevention services for people who inject drugs

- seek assurance that there are robust local care pathways in place

- ensure the inclusion of Hepatitis C in the health and wellbeing board’s joint strategic needs assessment

- ensure that a broad range of prevention services (including harm reduction advice and needle exchange) is available for people who inject drugs and ensure that there is a high rate of Hepatitis C testing in those attending specialist services for drug users

- ensure that specialist services for drug users collect robust information on Hepatitis C testing

- work closely with Clinical Commissioning Groups to ensure that commissioning is aligned and that clear pathways are developed from testing into treatment services

- ensure that sexual health services are offering Hepatitis C testing to those at increased risk

Commissioners are advised to:

- ensure that integrated and robust pathways of care are available for patients with Hepatitis C, ideally coordinated through a clinical network. This includes pathways for patients who test positive for Hepatitis C in primary care
consider delivery of Hepatitis treatment to people who inject drugs in a community drug treatment setting

commision to ensure that acute providers provide robust information on the numbers of patients with Hepatitis C who are referred, seen and treated for Hepatitis C and their clinical outcomes

take measures to increase testing in primary care, especially in those areas with large populations at increased risk for example people who inject drugs or communities of South Asian origin

improve the uptake of Hepatitis C testing in prisons and ensure that testing and detection rates are monitored as part of provider performance monitoring

ensure that Prison Health Services have testing strategies and written care pathways that allow equitable access to treatment services for offenders

Providers of Hepatitis C services are advised to:

• provide robust information on the numbers of patients with Hepatitis C who are referred, seen and treated for Hepatitis C and their clinical outcomes

• consider delivery of Hepatitis treatment to people who inject drugs in a community drug treatment setting

• develop testing strategies and written care pathways that allow equitable access to treatment services for offenders. These should be designed to meet the challenges of both the prison environment and continuity of care in the community. All prison health services should increase reported testing of Hepatitis C

Laboratories are advised to:

• automatically test samples that are positive for Hepatitis C antibody for the presence of Hepatitis C virus (for example, using a polymerase chain reaction [polymerase chain reaction] assay), or refer the sample to a laboratory which can perform this test
Introduction and background

Hepatitis C is a virus that can cause long-lasting infection and damage to the liver. It is transmitted when blood from an infected person gets into the bloodstream of another.

Infection with this virus is seen as ‘silent’ as most individuals will be asymptomatic in the early stages of infection and remain undiagnosed. It is estimated that around 214,000 individuals are chronically infected with Hepatitis C in the UK. In England, modelled estimates indicate that 160,000 adults are chronically infected with Hepatitis C, equating to 0.4% of the adult population (Public Health England, 2014).

In the UK, injecting drug use is the most important risk factor for Hepatitis C infection.

Late diagnosis can result in serious liver disease. Early diagnosis and treatment can improve disease outcomes, preventing long term conditions which require expensive and complicated treatment.

This report outlines Hepatitis C across the North West, encompassing the area of Cheshire and Merseyside, Cumbria and Lancashire and Greater Manchester Public Health England Centres. The data presented is sourced from:

- routine laboratory reports and laboratory reports from sentinel laboratories, providing additional demographic information on people tested for Hepatitis C
- published modeling based on literature, on prevalence of Hepatitis C and estimates of the future burden of disease
- national surveys conducted by the Health Protection Agency (now part of Public Health England) such as the Unlinked Anonymous Monitoring Survey of HIV and Hepatitis in people who inject drugs
- routinely collected data on hospital admissions, transplants and deaths from Hospital Episode Statistics, Office of National Statistics and National Health Service Blood and Transplant routinely available surveillance data.

Much of the data provided is presented by Public Health England Centre because local authority level data is not available.
Epidemiology of Hepatitis C

Estimating the true number of new cases of Hepatitis C and number of people living with Hepatitis C is challenging as most individuals will be asymptomatic in the early stages of infection and remain undiagnosed. Additionally, there is no laboratory marker indicating ‘recent’ or acute Hepatitis C infection.

Hepatitis C in England

The most recent national estimates suggest that around 214,000 individuals are chronically infected with Hepatitis C in the UK. In England, latest estimates from evidence synthesis models, which date to 2005, indicate that 160,000 adults are chronically infected with Hepatitis C, equating to 0.4% of the adult population (Public Health England, 2014).

Hepatitis C in the North West

In the North West, it is estimated that the number there are nearly 40,000 people living with Hepatitis C. These estimates equate to 10,959 people in Cheshire and Merseyside, 11,250 people in Cumbria and Lancashire and 17,452 in Greater Manchester. The estimates indicate that the greatest numbers of people living with Hepatitis C reside within Liverpool (2,613), Cheshire (2,946), Manchester (5,124) and Lancashire (5,653).

Hepatitis C virus Laboratory Reports in the North West

Laboratory reports are grouped by region according to the patient’s postcode (or General Practitioner postcode where patient postcode is not known), not where samples were tested. In 2002, the Sentinel Surveillance of Hepatitis Testing Study was set up to enhance routine surveillance of Hepatitis C. It collects data on laboratory test results and demographic data for all individuals tested for Hepatitis C antibody in 24 sentinel laboratories in England, covering approximately one-third of the population. Information collected by the sentinel laboratory includes location of test, reason for test and ethnicity. This additional information gives an insight into the effectiveness of awareness campaigns in particular at-risk groups.

Limitations of the data include some duplication of individual patients and exclusion of dried blood spot, oral fluid, reference testing, and testing from hospitals referring all samples. Individuals aged less than one year, in whom positive tests may reflect the presence of passively-acquired maternal antibody rather than true infection, are also excluded. Participating sentinel laboratories in the North West are Manchester Public Health England laboratory (incorporating previous Health Protection Agency laboratories in Chester, Liverpool, Manchester and Preston) and Liverpool Royal University Hospital.

The number of laboratory reports of Hepatitis C by Public Health England Centre of residence, 2005 to 2013 are shown below in Figure 1.
Figure 1. Number of laboratory reports of Hepatitis C by Public Health England Centre of residence, 2005 to 2013 (Sentinel Laboratory Reports, 2013)

Data are summarised by PHE centre of residence, not PHE centre of laboratory. Data are assigned to PHE centre by patient postcode where present; if patient postcode is unknown, data are assigned to PHE centre of registered General Practitioner practice; where both patient postcode and registered General Practitioner practice are unknown data are assigned to PHE centre of laboratory.

Includes individuals with a positive test for Hepatitis C antibody and/or detection of Hepatitis C RNA. Due to the variability in the quality of laboratory reports and the inability of current serological assays to differentiate acute from persistent infections we are unable to estimate the actual proportion of cases with evidence of past infection or persistent infection.

Rates per 100,000 population have been calculated using mid-year population estimates supplied by the Office for National Statistics (ONS). 2013 population data was not available at date of analysis; 2013 rates have been calculated using 2012 population estimates.

In 2013 the total number of North West reports was 1,992. The highest number of total North West reports were 2,148 in 2009; this declined until 2011 and subsequently increased between 2012 and 2013. Generally, by Public Health England Centre area of residence, Greater Manchester has the greatest number of reports, followed by Cumbria and Lancashire, with Cheshire and Merseyside having the lowest number of reports.

Laboratory reports are sent to Public Health England Centre for individuals with a positive test for Hepatitis C antibody (a marker of past infection) or detection of Hepatitis C Ribonucleic acid (a marker of active infection) and therefore cannot differentiate between past and current infection. Consequently, laboratory reports are not able to provide information about incidence or prevalence. Instead, they reflect patterns of testing and provide some insight into the impact of awareness-raising interventions with healthcare workers and at-risk individuals. In addition, monitoring infection in low-risk blood donors can help to identify new groups of individuals who may be at increased risk.
Figure 2 illustrates where patients with samples sent to sentinel laboratories were tested between 2009 and 2013. This can provide insight into where additional resources may be required to increase awareness in particular groups of healthcare professionals or health services. To note, these data do not include dried blood spot testing and oral fluid testing, which are commonly used in drug services. These data show that most patients tested for Hepatitis C are tested at general practice, fertility services, inpatient services (including cardiology, dermatology, haematology, ultrasound, x-ray), genitourinary medicine clinics and occupational health.

Figure 2. Number of individuals tested for Hepatitis C antibody and percentage positive by service type in sentinel laboratories in the North West 2009 – 2013 (Sentinel Laboratory Reports, 2013)

Between 2009 and 2013, the largest number of people are tested within general practice (35,000), 1,179 are positive. This only represents 3.4% positive. Whereas, the services with the highest proportion of positive tests come from drug dependency services (25.6% tests positive from 1,201), prison services (19.2% tests positive from 5,493) and obstetrics and gynaecology services (7.2%).

Only 18 tests were conducted within HIV services, with no positive results. The National Aids Trust (NAT) and National Institute of Health and Care Excellence (NICE) guidelines recommend regular Hepatitis C testing in HIV-positive men who have sex with men (NAT, 2012, NICE, 2012). Therefore, higher rates of Hepatitis C testing within HIV services would be expected to be higher.

The reason for testing provides interesting insight into motivation for healthcare professionals testing for Hepatitis C (Appendix). Around 71% of all positive cases were not attributed to a risk or reason for testing. This is followed by screening at 9% and people who inject drugs at 5%. The greatest number of people testing positive for Hepatitis C antibody by reason for testing are people who inject drugs at 46%, followed by 18% as a confirmatory test and 9% as study participants. Testing for confirmation of results, may suggest duplication of results.
Hepatitis C in North West Local Authorities

Laboratory reports for Hepatitis C local authority in the North West 2005 to 2013 can be reviewed in the Appendices. Between 2005 to 2013, the Local Authorities with the highest total number of reports were Manchester (5,499), Lancashire (2,901) and Liverpool (1,452). The Local Authorities with the lowest total number of reports between 2005 to 2013 are Halton (45), St Helens (79) and Bury (98).

Hepatitis C - Age and Gender

Age group and gender of sentinel laboratory reports of Hepatitis C for the North West, 2013 indicate that more males than females are infected with Hepatitis C virus, as indicated below in Figure 3. The greatest number of cases of Hepatitis C infection is within the 35-44 age group in males, and 25-34 and 35-44 in females.

**Figure 3. Age group and gender of sentinel laboratory reports of Hepatitis C for the North West, 2013 (Sentinel Laboratory Reports, 2013)**

![Bar chart showing age group and gender distribution of Hepatitis C cases in the North West, 2013](chart.png)

Data are summarised by PHE centre of residence, not PHE centre of laboratory. Data are assigned to PHE centre by patient postcode where present; if patient postcode is unknown, data are assigned to PHE centre of registered General Practitioner practice; where both patient postcode and registered General Practitioner practice are unknown data are assigned to PHE centre of laboratory.

Includes individuals with a positive test for Hepatitis C antibody and/or detection of Hepatitis C RNA. Due to the variability in the quality of laboratory reports and the inability of current serological assays to differentiate acute from persistent infections we are unable to estimate the actual proportion of cases with evidence of past infection or persistent infection.
The number of positive tests in individuals aged 15 to 24 years can be used as a proxy indicator for incidence, as most new infections are acquired via injecting drug use, in late adolescence and early adulthood. Figure 4 illustrates the numbers of young people who have been tested for Hepatitis C and the proportion that are positive.

In the North West, the number of persons tested has remained relatively constant since 2009 in both 15 to 19-year-olds and 20 to 24-year-olds. From 2012 to 2013 the rate of Hepatitis C positive tests in 15 to 19-year-olds has increased from 0.2% to 0.9%.

Although this increase is not statistically significant, it this requires further consideration, as the increase in 13 cases was seen only within Greater Manchester, alongside a 15% decrease in number of 15 to 19-year-olds tested from 2012 to 2013. This increase in cases may be due more targeted testing of individuals at greater risk but requires further analysis linked to person, time and place.

In 20 to 24-year-olds from 2009 to 2013, the rate of positive tests has steadily decreased, from 1.5% to 0.9%. This may indicate that people who are injecting drugs may be practicing more safely or that intravenous drug use has decreased in this population.

* Excludes dried blood spot, oral fluid, reference testing, and testing from hospitals referring all samples. Data are de-duplicated.

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**Figure 4. Number of young persons tested and testing positive for Hepatitis C in the five sentinel laboratories in the North West region, 2009 to 2013 (Sentinel Laboratory Reports, 2013)**
subject to availability of date of birth, soundex and first initial. Excludes individuals aged less than one year, in whom positive tests may reflect the presence of passively-acquired maternal antibody rather than true infection. All data are provisional.

**Hepatitis C - Ethnicity**

South Asians are more at risk of Hepatitis so the number of tests and the proportions positive among this group are of interest. As ethnicity is not routinely available from participating laboratories, a computer programme (NamPenchan) was used to estimate those names of South Asian origin. However, it is possible that this may result in some inaccuracies in data relating to ethnicity because name is not always an indicator of ethnicity.

As displayed in Figure 5, in the North West in 2013, 2,760 people of South Asian origin were tested, 2.7% were positive for Hepatitis C, compared to 2.3% of all tests in the same year. In 2010, 2,195 people of South Asian origin were tested for Hepatitis C; this has increased to 2,760 in 2013.

Between 2009 to 2013, the percentage of people of South Asian origin testing positive for Hepatitis C varies between Public Health England Centre area. The highest rates of people of South Asian origin testing positive for Hepatitis C are in Greater Manchester (3.6%), followed by Cumbria and Lancashire (3.2%) and Cheshire and Merseyside (2.0%).

**Figure 5. Number of South Asian individuals tested and testing positive for Hepatitis C antibody by ethnicity in sentinel laboratories in the North West 2009 to 2013 (Sentinel Laboratory Reports, 2013)**
Hepatitis C - People who inject drugs

The number of persons who inject drugs tested and proportion testing positive for Hepatitis C in the North West region, 2009 to 2013 is displayed in Figure 6. From 2011 to 2013, the number of persons who inject drugs tested has decreased from around 1,605 tests per year to 1,184 tests per year. The proportion testing positive has decreased from over 30% in 2009 to 19% in 2013.

Figure 6. Number of persons who inject drugs tested and proportion testing positive for Hepatitis C in the North West region, 2009 to 2013 (Sentinel Laboratory Reports, 2013)

These sentinel surveillance data exclude reference testing, Concateno data and testing from hospitals referring all samples. Data are de-duplicated subject to availability of date of birth, soundex and first initial. Excludes individuals aged less than one year, in whom positive tests may reflect the presence of passively-acquired maternal antibody rather than true infection. All data are provisional.

Three participating laboratories have rolled out dried blood spot testing of anti-Hepatitis C. These data are presented from 2009 and are shown by PHE centre of the requesting clinician.

The Unlinked Anonymous Monitoring Survey aims to measure the prevalence of Human Immunodeficiency Virus (HIV), Hepatitis B and Hepatitis C in people who inject drugs who are in contact with specialist drug agencies (e.g. needle and syringe programmes and treatment centres). Participants who take part provide a biological specimen that is tested anonymously for HIV, Hepatitis C and Hepatitis B. Hepatitis C prevalence among people who inject drugs participating in the Unlinked Anonymous Monitoring Survey in 2013 varied across England, with prevalence ranging from 37% in the North East region to 68% in the North West. This finding is supported by statistical modelling, which shows that the prevalence of infection among individuals
in England who have ever injected drugs is markedly higher in London and the North West (Public Health England, 2014).

The Unlinked Anonymous Monitoring Survey indicates that Hepatitis C counselling and voluntary testing uptake has increased significantly from 63% in 2003 to 88% in 2011. In 2013 80% of those responding reported uptake of Hepatitis C counselling and voluntary testing, this is not a statistically significant decrease compared to 2011 (Public Health England, 2014).

Level of direct sharing in the preceding four weeks to the Unlinked Anonymous Monitoring Survey was highest in 2004 (30%) and statistically significantly lower in 2012 (5.5%). In 2013 12% of those responding reported direct sharing, this is not a statistically significant increase compared to 2012 (Public Health England, 2014).

Level of direct and indirect sharing in the preceding four weeks to the Unlinked Anonymous Monitoring Survey was highest in 2005 (54%) and statistically significantly lower in 2012 (22%). In 2013 38% of those responding reported direct sharing, this is not a statistically significant increase compared to 2012 (Public Health England, 2014).

As shown in Figure 7, in the North West, the percentage of people who inject drugs who have received a Hepatitis C test ranges from 27.5% to 88.3%. The North West average is 58.2% and England average of 70.3%. There are significantly higher proportion of people who inject drugs (compared to the England average) who have received a Hepatitis C test in Blackburn with Darwen, Salford, Sefton, Warrington and Wirral.

**Figure 7. Persons who inject drugs - Percentage who have received a Hepatitis C test 2012/13 (Public Health England, 2013)**
Hepatitis C in Prisons

With high numbers and high proportions of positive tests in prison services, there may be further opportunity to raise awareness of Hepatitis C testing in prison settings.

Across North West prisons, prison health performance and quality indicators highlight that the percentage of Hepatitis C tests performed is 11.4%, however this ranges from 0% to 67.5%. It must be noted that this data may not necessarily be complete and accurate.

Prison health performance and quality indicators are currently being replaced by Health and Justice Indicators of Performance which in future will begin to capture the following:

- % of patients offered Hepatitis C testing, within 72hrs of Reception
- % of eligible patients who have undertaken a Hepatitis C test
- % of patients Hepatitis C positive patients who underwent Hepatitis C polymerase chain reaction testing
Annual Hepatitis C Report

- % of those testing Hepatitis C polymerase chain reaction positive being referred to a specialised service
- % of those testing Hepatitis C polymerase chain reaction positive being initially assessed by a specialist who have a treatment plan developed, within 18 weeks

Since 2013 a National Partnership Agreement has existed between Public Health England, National Health Service England and the National Offender Management Service which includes a commitment to introduce an opt-out blood-borne viruses testing policy in prisons. There are currently 11 pilot sites and the intention is to extend testing to all prisons in 2017.

The Public Health England Health and Justice Team is currently undertaking an evaluation of the opt out blood-borne virus testing pilot in 11 Pathfinder Prisons, this should include testing and detection rates for each site. Five of these prisons are in the North West (Her Majesty’s Prisons Kirkham, Manchester, Buckley Hall and Young Offender Institute Forest Bank)

Hospital admission for Hepatitis C

Information on Hepatitis C related hospital admissions arises from Hospital Episode Statistics. As displayed in Figure 8, since 2009, the number of admissions for Hepatitis C appears to be relatively stable. However, in 2013, there were around 2,300 individuals resident in the North West region admitted to hospital with a diagnosis of Hepatitis C. This is an increase of 275 admissions from the previous year. In 2014, 386 individuals from the North West were admitted with end stage liver disease and 65 individuals admitted with hepatocellular carcinoma.

Figure 8. Individuals resident in the North West region admitted to hospital with a diagnosis of Hepatitis C, 2009 to 2013
Data source: Health and Social Care Information Centre, Hospital Episode Statistics; Copyright © 2014, re-used with the permission of the Health and Social Care Information Centre, all rights reserved.

Data relate to the number of individuals admitted to hospital where the hospital episode ended in each calendar year. Where individuals had more than 1 hospital episode in the calendar year they have been counted once, i.e. all patients with Hepatitis C /end stage liver disease/hepatocellular carcinoma admissions were de-duplicated to give 1 admission per individual with Hepatitis C /end stage liver disease/hepatocellular carcinoma per calendar year.

Hepatitis C /end stage liver disease/hepatocellular carcinoma admissions were extracted from all diagnosis codes (information about a patient’s illness or condition - this includes primary/secondary/subsidiary diagnoses). The following ICD10 codes were used: acute Hepatitis C (B171), chronic viral Hepatitis C (B182), liver cell carcinoma (C220), end stage liver disease is defined by codes or text entries for ascites (R18), bleeding oesophageal varices (I850), hepato-renal syndrome (K767), hepatic encephalopathy or hepatic failure (K704, K720, K721, K729).

* Patient counts are based on the unique patient identifier, HESID. This identifier is derived from a patient’s date of birth, postcode, sex, local patient identifier and National Health Service number, using a standard algorithm. Where data are incomplete, HESID might wrongly link episodes or fail to recognise episodes for the same patient. Care is therefore needed, especially where the data includes duplicate records. Patient counts must not be summed across a table where patients may have episodes in more than one cell.

** Defined by codes for, ascites, bleeding oesophageal varices; hepato-renal syndrome, hepatic encephalopathy or hepatic failure.

*** Hospital Episode Statistics data cannot be used to determine the cause of death of a patient while in hospital. Deaths recorded on the Hospital Episode Statistics database may be analysed by the main diagnosis for which the patient was being treated during their stay in hospital, which may not necessarily be the underlying cause of death. For example, a patient admitted for a hernia operation (with a primary diagnosis of hernia) may die from an unrelated a heart attack. The Office for National Statistics collects information on the cause of death, wherever it occurs, based on the death certificate and should be the source of data for analyses on cause of death.

**** Hospital Episode Statistics (HES) data for 2013 were analysed for the first time using the HES Data Interrogation System (HDIS) this year. HDIS is a remotely accessed secure data portal provided and hosted by the Health and Social Care Information Centre (HSCIC) for the purposes of analysing HES data in a secure environment.

As seen in Figure 9, the hospital admission rate for Hepatitis C related end-stage liver disease/hepatocellular carcinoma in the North West ranges from 1.6 per 100,000 to 13.6 per 100,000, compared to the North West average of 5.6 per 100,000 and England 3.5 per 100,000. In Bolton, Liverpool, Manchester, Rochdale, Salford, Sefton and Wirral this is statistically significantly higher than the England rate.

Figure 9. Hospital admission rate for Hepatitis C related end-stage liver disease/hepatocellular carcinoma (crude rate per 100,000) 2012/13 (Public Health England, 2013)
Mortality from Hepatitis C (related conditions)

The number of deaths from Hepatitis C-related liver disease is indicated by the Office of National Statistics and collected from death certification. However, there is a possibility that not all Hepatitis C-related deaths will have this cause of death documented.

Deaths by Public Health England Centre per 100,000 population from end stage liver disease or hepatocellular carcinoma vary across England, with highest rates observed in London and the North West.
Figure 10 shows that along with London, Greater Manchester has the highest rate of death from end stage liver disease or hepatocellular carcinoma. Cumbria and Lancashire, and Cheshire and Mersey have the next highest rates of death.

**Figure 10: Number of deaths from end stage liver disease* or hepatocellular carcinoma in those with Hepatitis C mentioned on their death certificate by Public Health England Centre 2008-2013** (per 100,000 population) (Public Health England, 2014)

![Map showing number of deaths from ESLD* or HCC in those with Hepatitis C mentioned on their death certificate by Public Health England Centre 2008-2013](image)

Figure 11 illustrates that within the North West under 75 mortality rate from Hepatitis C related end-stage liver disease/hepatocellular carcinoma ranges from 0.19 to 3.36 per 100,000. The North West average is 0.88 per 100,000 and England average is 0.59 per 100,000. Blackpool, Lancashire, Manchester, Oldham, Rochdale all have statistically significantly rates higher than the England rate. However, only Blackpool and Manchester have statistically significantly rates higher when compared to the North West rate.
**Figure 11. Under 75 mortality rate from Hepatitis C related end-stage liver disease/hepatocellular carcinoma 2011 to 2013 (crude rate per 100,000) (Public Health England, 2013)**

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<td>0.08</td>
<td>1.13</td>
</tr>
<tr>
<td>Eury</td>
<td>0.19</td>
<td>0.00</td>
<td>1.08</td>
</tr>
<tr>
<td>Cheshire East</td>
<td>0.69</td>
<td>0.28</td>
<td>1.43</td>
</tr>
<tr>
<td>Cheshire West and Chest...</td>
<td>0.22</td>
<td>0.03</td>
<td>0.80</td>
</tr>
<tr>
<td>Cumbria</td>
<td>0.22</td>
<td>0.05</td>
<td>0.65</td>
</tr>
<tr>
<td>Halton</td>
<td>0.28</td>
<td>0.01</td>
<td>1.58</td>
</tr>
<tr>
<td>Knowsley</td>
<td>0.99</td>
<td>0.27</td>
<td>2.54</td>
</tr>
<tr>
<td>Lancashire</td>
<td>1.02</td>
<td>0.70</td>
<td>1.44</td>
</tr>
<tr>
<td>Liverpool</td>
<td>0.61</td>
<td>0.26</td>
<td>1.20</td>
</tr>
<tr>
<td>Manchester</td>
<td>1.78</td>
<td>1.16</td>
<td>2.61</td>
</tr>
<tr>
<td>Oldham</td>
<td>1.42</td>
<td>0.65</td>
<td>2.70</td>
</tr>
<tr>
<td>Rochdale</td>
<td>1.52</td>
<td>0.69</td>
<td>2.88</td>
</tr>
<tr>
<td>Salford</td>
<td>1.36</td>
<td>0.62</td>
<td>2.50</td>
</tr>
<tr>
<td>Sefton</td>
<td>0.82</td>
<td>0.30</td>
<td>1.78</td>
</tr>
<tr>
<td>St. Helens</td>
<td>1.03</td>
<td>0.33</td>
<td>2.41</td>
</tr>
<tr>
<td>Stockport</td>
<td>0.64</td>
<td>0.21</td>
<td>1.50</td>
</tr>
<tr>
<td>Tameside</td>
<td>1.14</td>
<td>0.46</td>
<td>2.35</td>
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<tr>
<td>Trafford</td>
<td>0.16</td>
<td>0.00</td>
<td>0.88</td>
</tr>
<tr>
<td>Warrington</td>
<td>0.35</td>
<td>0.04</td>
<td>1.27</td>
</tr>
<tr>
<td>Wigan</td>
<td>0.90</td>
<td>0.39</td>
<td>1.77</td>
</tr>
<tr>
<td>Wirral</td>
<td>0.80</td>
<td>0.32</td>
<td>1.66</td>
</tr>
</tbody>
</table>

Source: Public Health England (based on ONS source data)

**Transplants**

Number of people, resident in the North West, receiving first liver transplants with post-Hepatitis C cirrhosis as primary indication at registration from 2009 and 2013 is 107 (Figure 12). This number has increased sharply from 37 patients from 1999 to 2003 and 48 patients from 2004 to 2008. This is of considerable concern due to the limited number of livers available for transplantation.
This illustrates the importance of Hepatitis C prevention, and early detection and treatment of those already infected.

**Figure 12. Number of people, resident in the North West, receiving first liver transplants with post-Hepatitis C cirrhosis as primary indication at registration from 2009 and 2013**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of first registrations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2003</td>
<td>30</td>
</tr>
<tr>
<td>2004-2008</td>
<td>50</td>
</tr>
<tr>
<td>2009-2013</td>
<td>100</td>
</tr>
</tbody>
</table>

Data source: National Health Service Blood and Transplant, UK Transplant Registry

* Figures are based on registry data as at 2nd July 2014

** New national registration criteria for selecting adult patients for elective liver transplantation were introduced in September 2007. (National Health Service Blood and Transplant website 2009. Available at: www.organdonation.nhs.uk. [Accessed 18/07/2014])

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**Estimating the future burden of Hepatitis C in the North West**

Models developed by Public Health England to estimate the future burden of Hepatitis C disease in 2023 can be referred to in the Appendices. The model highlights the estimated total infected population by Drug and Alcohol Team, disease stage and estimated costs for existing cases and additional cases (Public Health England, 2014).
Based on modelling, it is estimated in that 1,669 individuals will have cirrhotic or end stage liver disease in the North West in 2023. This suggests that there is significant unmet need in the community at present as in 2014, 386 individuals from the North West were admitted with end stage liver disease. The total drug cost to treat backlog of current infections is estimated to be £70,679,000 with an annual drug cost of £13,147,000 to treat newly diagnosed infections.

Therefore, increasing awareness, reducing undiagnosed disease and treatment should be a priority, as this will save the National Health Service money in the medium to long-term.

**Increasing awareness and reducing undiagnosed disease**

The Hepatitis C Action Plan for England identified that awareness-raising was an important component of reducing burden of undiagnosed infection (Department of Health, 2004). The National Institute for Health and Clinical Excellence published its public health guidance to promote and offer testing to people at increased risk of blood-borne virus, including Hepatitis C. Awareness campaigns in England are now well established, particularly targeting people who inject drugs and the South Asian communities in the UK.

**Prevention and Harm reduction**

Prevention strategies primarily focus on injecting drug use, as this is the most important risk factor for acquisition of the virus in England today.

Reducing the number of individuals who begin injecting drugs; encouraging injectors to quit injecting; reducing risky behaviour (e.g. sharing needles and syringes) in those who continue to inject; and the early diagnosis and treatment of those who become infected with Hepatitis C are all components of the prevention programme.

The delivery of successful prevention programmes in people who inject drugs requires an integrated cross-sector approach.

**Treatment and care**

Co-ordination of high quality services for assessment and treatment is one of the key actions outlined in the Hepatitis C Action Plan. If patients are left undiagnosed and untreated, this can lead to an increase in transmission and the future burden of the disease is likely to be substantial.

Current National Institute of Health and Care Excellence (NICE) guidelines recommend the use of combination therapy with pegylated interferon for the treatment of people aged 18 years and over with chronic Hepatitis C. However new treatments are currently being reviewed by NICE so recommendations are likely to change.
Annual Hepatitis C Report

To help tackle Hepatitis C infection, public health programmes need to make progress in the following areas:

- prevention of new infections
- increasing awareness of infection among the general population and people at increased risk of Hepatitis C and of healthcare professionals and others providing services for people at increased risk of Hepatitis C
- increasing testing and diagnosis in primary care, prisons, drugs services and sexual health services.
- getting diagnosed individuals into treatment and care
- Commissioning and co-ordination of Hepatitis C testing and treatment services
- Laboratory services for Hepatitis C testing

North West examples of good practice

Across the North West, there are examples of work being undertaken to increase access to screen and treatment for Hepatitis C these are outlines in the boxes below.
### Pathway for clients at risk of Hepatitis C and testing positive for Hepatitis C

**Location:** Blackpool, Lancashire

**Description:**
Blackpool substance misuse commissioners, providers and local hepatology services have developed a Liver Disease Care Pathway for clients accessing substance misuse services. The aim of the pathway is to ensure access to Hepatitis C screening, treatment and ongoing community and medical support for clients at risk of Hepatitis C and clients who are Hepatitis C positive.

### Hepatitis C in the South Asian Community

**Location:** Blackburn with Darwin, Lancashire

**Description:**
Blackburn with Darwin Public Health Team is working with local hepatology services, Cumbria and Lancashire Public Health England Centre and the Hepatitis C Trust on the development of a pilot which aims to improve outcomes for viral Hepatitis (HBV & Hepatitis C), particularly amongst the South Asian community where evidence suggests there may be a burden of undetected disease, late diagnosis and poor outcomes. The pilot has been funded from Public Health budgets and will be led by a consultant in public health. Additional staff will be commissioned to work directly with four General Practices to analyse current practice, support with case finding and provide educational input.

The project aims to improve outcomes by:

- Improving awareness of Hepatitis C & HCB amongst healthcare professionals in primary care. Improving case finding using risk profiling on primary care practice systems.

- Increasing awareness of Hepatitis C & HCB risk factors and symptoms amongst the South Asian community

- Increasing uptake of HBV vaccination

- Increasing early detection of HBV & Hepatitis C

### Hepatitis C testing in Wirral 2008 to 2015

**Location:** Wirral, Merseyside
Description:

In 2008 1 in 5 (20%) of previous/current people who inject drugs in Wirral drug treatment services were aware of their hepatitis C status. This was an issue that needed to be addressed urgently.

A partnership was established to encourage greater uptake of testing, through a programme of key actions:

1. Improving Data Reporting and Data Quality
3. Raising Hepatitis C Awareness
4. Introducing Dried Blood Spot (DBS) Testing
5. Hep C Trust Peer Education Programme: Peer Led Support (P2P)

Improving Data Reporting and Data Quality, Introducing Dried Blood Spot (DBS) Testing and the Hep C Trust Peer Education Programme: Peer Led Support had the greatest impact on increasing numbers people who inject drugs testing for Hepatitis C.

As a result of this programme, in 2015 75% of previous/current people who inject drugs in Wirral drug treatment services are aware of their hepatitis C status.

Lessons learnt from this programme include:

- Importance of creating an open dialogue with local service users about Hepatitis C, while actively listening to their needs.

- The client’s response to the offer of Hepatitis C testing is dependent upon how the offer is delivered. ‘Opt out’ arrangements offer greater chances of success.

- DBS Testing is seemingly more preferable to clients, while it offers greater scope for testing to be delivered easily, across many sites, by a greater range of professionals than just nurses. Many more drug workers could be trained to deliver testing.

- Peer Education offers a range of potential benefits which can support local treatment providers to address barriers to Hepatitis C testing/treatment. Peer Educators seemingly garner trust, as examples of success stories of how Hepatitis C treatment has worked for them. Such programmes require little investment and offer considerable value for money.

Pilot - Liverpool community collaborative Hepatitis C testing (DATE)

Location: Liverpool, Merseyside
Description:

The Addaction drug service worked collaboratively with Liverpool Public Health, the Royal Liverpool University Hospital and Liverpool Shared Care general practitioners to improve chronic Hepatitis C case finding through a pilot integrated community Hepatitis C testing programme from October 2014 to January 2015.

This pilot programme accessed a ‘hard-to-reach’ group who were unlikely to be tested for Hepatitis C elsewhere. The Liverpool Shared Care service covers 28 GP practices, two Addaction community clinics and provides care for around 1200 drug users. The Addaction key workers work alongside General Practitioners in the surgeries to provide care for people on opiate substitution therapy (methadone, buprenorphine).

Hepatitis C near-patient testing was delivered by the Addaction drugs key workers as part of the key working session. All Addaction key workers (approximately 100) were trained to administer an oral antibody test. These were offered to all service users.

The oral antibody test gave an instant result. If the antibody test was positive, the service user was offered a Dried Blood test for the continuing presence of Hepatitis C virus, in the same key working session or shortly afterwards. A cohort of key workers (20) had additional training to administer the Dried Blood Spot tests.

Dried Blood Spot results were available 10 days later and given to the service user by their usual key worker. If the Dried Blood Spot test was positive, the service user was offered direct referral to the Royal Liverpool University Hospital’s liver unit. The pilot was facilitated by a nurse coordinator and the patient’s general practitioner was informed. The results for clients with no previous oral test are outlined in the appendices.

The pilot programme provides a potential platform to develop community treatment of Hepatitis C anchored in the community specialist drug services.

Data sources

Morbidity (burden of disease plus risk factor data)
<table>
<thead>
<tr>
<th>Data source(s)</th>
<th>Short description of use(s)</th>
<th>Potential Limitation(s)</th>
<th>Core</th>
<th>Non-essential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory surveillance (LabBase)</td>
<td>Quantifying burden of laboratory confirmed disease – overall and in specific groups/locations</td>
<td>Reporting variation makes it difficult to identify acute and chronic HBV cases</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>HPZone</td>
<td>Through data linkage - supports efforts to quantify burden of disease</td>
<td>Cannot be a primary source of morbidity data</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Sentinel Surveillance of blood-borne virus (Hepatitis B and C)</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Unlinked Anonymous Monitoring of Persons Who Inject Drugs (people who inject drugs)</td>
<td>Current burden of disease in a key at-risk population, secular trends, levels of protective and risky behaviour</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>CIDSC National Hepatitis C Commissioning Template</td>
<td>Estimates to support health service commissioning, projections and prioritization of resources.</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Hospital Episode Statistics</td>
<td>Burden of disease (more severe end of the spectrum) and complications</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Primary Care datasets (General Practitioner Extraction Service, Royal College of General Practitioners Research and Surveillance Centre, etc.)</td>
<td>Burden of disease, information on risk factors/ exposure, testing and referral patterns</td>
<td>At present not possible but with time (improved linkage) may provide information on all Hepatitis C /HBV patients registered with General Practitioners</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Genitourinary Medicine (GUMCAD)</td>
<td>Screening/testing of a restricted sub-group of the population</td>
<td>Highly selected population</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>NOIDS</td>
<td>Quantify burden of diagnosed disease (including clinical diagnosis)</td>
<td>Incomplete and likely to underestimate the size of the problem</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

**Clinic activity, Treatment, vaccination and other data on health service provision**

| Coverage of Vaccination Evaluated Rapidly (COVER) | Useful information on the uptake of an important preventive measure in defined risk groups                                                                                                                                                           | ✓                                                                                                             |      |               |
| National Health Service Infectious Diseases in Pregnancy Surveillance | Trends in testing of a potentially low-risk population – secular trends can provide an early indication of any changes in the burden of disease                                                                                                     | ✓                                                                                                             |      |               |
### Annual Hepatitis C Report

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prison Infection Prevention Programme</td>
<td>HBV coverage in a high risk population – emergence of quality standards may provide some additional information of use</td>
<td>✓</td>
</tr>
<tr>
<td>Hepatitis C drug treatment data (Pharmaceutical sales_SUPPLY data at regional level)</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>NDTMS</td>
<td>Information on offer and uptake of testing and vaccination as well as prevalence information in a key risk group</td>
<td>✓</td>
</tr>
<tr>
<td>Care pathways survey</td>
<td>Describe the extent to which local economies have developed and implemented structures/processes and built effective partnerships</td>
<td>Old survey needs to be repeated given the recent changes in the healthcare system</td>
</tr>
<tr>
<td>National Health Service Blood &amp; Transplant</td>
<td>Measure of clinical activity to address an important complication/end-point of Hepatitis C /HBV infection</td>
<td>✓</td>
</tr>
</tbody>
</table>

#### Mortality data

<table>
<thead>
<tr>
<th>Source</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONS mortality data</td>
<td>Outcome information used to quantify the impact of disease including premature death and inequities</td>
<td>✓</td>
</tr>
<tr>
<td>Cancer registry data</td>
<td>May not contain information needed for attribution.</td>
<td>✓</td>
</tr>
</tbody>
</table>

---

**Appendices**

**Figure A. Percentage of individuals testing positive for Hepatitis C antibody by risk or**
### Figure B. Laboratory report of Hepatitis C for the North West by Local Authority and Public

<table>
<thead>
<tr>
<th>Reason for Test</th>
<th>% of all positive cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenatal screening</td>
<td>50%</td>
</tr>
<tr>
<td>Confirmatory test</td>
<td>40%</td>
</tr>
<tr>
<td>Contact testing</td>
<td>30%</td>
</tr>
<tr>
<td>Fertility treatment screening</td>
<td>20%</td>
</tr>
<tr>
<td>LFTs - abnormal result</td>
<td>10%</td>
</tr>
<tr>
<td>Liver disease symptoms</td>
<td>0%</td>
</tr>
<tr>
<td>Maternal/vertical exposure</td>
<td>0%</td>
</tr>
<tr>
<td>Needlestick donor/recipient</td>
<td>0%</td>
</tr>
<tr>
<td>Other medical condition</td>
<td>0%</td>
</tr>
<tr>
<td>PWID</td>
<td>0%</td>
</tr>
<tr>
<td>Renal patient</td>
<td>0%</td>
</tr>
<tr>
<td>Risk of infection</td>
<td>0%</td>
</tr>
<tr>
<td>Screening</td>
<td>0%</td>
</tr>
<tr>
<td>Sexual exposure</td>
<td>0%</td>
</tr>
<tr>
<td>Study participants</td>
<td>0%</td>
</tr>
<tr>
<td>Symptoms (non-liver)</td>
<td>0%</td>
</tr>
<tr>
<td>Travel or lived abroad</td>
<td>0%</td>
</tr>
<tr>
<td>Unknown</td>
<td>100%</td>
</tr>
</tbody>
</table>

Excludes dried blood spot, oral fluid, reference testing, and testing from hospitals referring all samples. Data are de-duplicated subject to availability of date of birth, soundex and first initial. Excludes individuals aged less than one year, in whom positive tests may reflect the presence of passively-acquired maternal antibody rather than true infection. All data are provisional.

Other ward types includes cardiology, dermatology haematology, ultrasound, x-ray.

This refers to infectious disease services, hepatology departments and gastroenterology departments.

These are hospital services which are currently being investigated to identify specific service type, and may include any of the secondary care services mentioned above.

These services are currently being investigated to identify specific service type, where possible.
Data are summarised by upper tier local authority of residence, not upper tier local authority of laboratory. Data are assigned to upper tier local authority by patient postcode where present; if patient postcode is unknown, data are assigned to upper tier local authority of registered General Practitioner practice; where both patient postcode and registered General Practitioner practice are unknown data are assigned to upper tier local authority of laboratory.

Includes individuals with a positive test for Hepatitis C antibody and/or detection of Hepatitis C RNA. Due to the variability in the quality of laboratory reports and the inability of current serological assays to differentiate acute from persistent infections we are unable to estimate the actual proportion of cases with evidence of past infection or persistent infection.

Rates per 100,000 population have been calculated using mid-year population estimates supplied by the Office for National Statistics (ONS). 2013 population data was not available at date of analysis; 2013 rates have been calculated using 2012 population estimates.
### Health England Centre area Cumbria and Lancashire 2005 to 2013. (Sentinel Laboratory Reports, 2013)

#### Data are summarised by upper tier local authority of residence, not upper tier local authority of laboratory. Data are assigned to upper tier local authority by patient postcode where present; if patient postcode is unknown, data are assigned to upper tier local authority of registered General Practitioner practice; where both patient postcode and registered General Practitioner practice are unknown data are assigned to upper tier local authority of laboratory.

#### Includes individuals with a positive test for Hepatitis C antibody and/or detection of Hepatitis C RNA. Due to the variability in the quality of laboratory reports and the inability of current serological assays to differentiate acute from persistent infections we are unable to estimate the actual proportion of cases with evidence of past infection or persistent infection.

#### Rates per 100,000 population have been calculated using mid-year population estimates supplied by the Office for National Statistics (ONS). 2013 population data was not available at date of analysis; 2013 rates have been calculated using 2012 population estimates.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackburn with Darwen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blackpool</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumbria</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lancashire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

![Graph showing laboratory reports by upper tier local authority]

---

34
Figure D. Laboratory report of Hepatitis C for the North West by Local Authority and Public Health England Centre area Greater Manchester 2005 to 2013 (Sentinel Laboratory Reports, 2013)

Data are summarised by upper tier local authority of residence, not upper tier local authority of laboratory. Data are assigned to upper tier local authority by patient postcode where present; if patient postcode is unknown, data are assigned to upper tier local authority of registered General Practitioner practice; where both patient postcode and registered General Practitioner practice are unknown data are assigned to upper tier local authority of laboratory.

Includes individuals with a positive test for Hepatitis C antibody and/or detection of Hepatitis C RNA. Due to the variability in the quality of laboratory reports and the inability of current serological assays to differentiate acute from persistent infections we are unable to estimate the actual proportion of cases with evidence of past infection or persistent infection.

Rates per 100,000 population have been calculated using mid-year population estimates supplied by the Office for National Statistics (ONS). 2013 population data was not available at date of analysis; 2013 rates have been calculated using 2012 population estimates.
## Figure E Estimated burden of disease by Drug and Alcohol Team (Public Health England 2014)

<table>
<thead>
<tr>
<th>PHE Centre</th>
<th>DAT</th>
<th>Estimated total infected population</th>
<th>Predicted numbers in disease state at 2023</th>
<th>Current number remaining diagnosed and untreated</th>
<th>Total drug cost to treat backlog of current infections</th>
<th>Annual new diagnoses</th>
<th>Annual drug cost of treating newly diagnosed infections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mild/Moderate</td>
<td>Cirrhotic or end stage</td>
<td>Died (all causes)</td>
<td>Sustained virologic response</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cheshire &amp; Merseyside (C&amp;M)</td>
<td>Cheshire</td>
<td>2,946</td>
<td>1,382</td>
<td>124</td>
<td>335</td>
<td>191</td>
<td>763</td>
</tr>
<tr>
<td></td>
<td>Halton</td>
<td>518</td>
<td>243</td>
<td>22</td>
<td>59</td>
<td>34</td>
<td>134</td>
</tr>
<tr>
<td></td>
<td>Liverpool</td>
<td>2,613</td>
<td>1,226</td>
<td>110</td>
<td>298</td>
<td>169</td>
<td>678</td>
</tr>
<tr>
<td></td>
<td>Merseyside</td>
<td>1,161</td>
<td>545</td>
<td>49</td>
<td>132</td>
<td>75</td>
<td>301</td>
</tr>
<tr>
<td></td>
<td>St. Helens</td>
<td>827</td>
<td>388</td>
<td>35</td>
<td>94</td>
<td>54</td>
<td>215</td>
</tr>
<tr>
<td></td>
<td>Wirral</td>
<td>1,598</td>
<td>750</td>
<td>67</td>
<td>182</td>
<td>104</td>
<td>415</td>
</tr>
<tr>
<td></td>
<td>Total for C&amp;M</td>
<td>10,959</td>
<td>5,142</td>
<td>461</td>
<td>1,248</td>
<td>711</td>
<td>2,845</td>
</tr>
<tr>
<td>Cumbria &amp; Lancashire (C&amp;L)</td>
<td>Blackburn with Darwen</td>
<td>1,207</td>
<td>566</td>
<td>51</td>
<td>137</td>
<td>76</td>
<td>313</td>
</tr>
<tr>
<td></td>
<td>Blackpool</td>
<td>1,397</td>
<td>656</td>
<td>59</td>
<td>159</td>
<td>91</td>
<td>363</td>
</tr>
<tr>
<td></td>
<td>Cumbria</td>
<td>2,992</td>
<td>1,404</td>
<td>126</td>
<td>341</td>
<td>194</td>
<td>777</td>
</tr>
<tr>
<td></td>
<td>Lancashire</td>
<td>5,653</td>
<td>2,652</td>
<td>238</td>
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Commissioning template (Public Health England, 2014)
Figure F Outcomes of Liverpool community collaborative Hepatitis C testing (DATE)

- Offered oral swab (n=347 clients)
  - 60% accept (n=207)
  - 203 swabs performed
  - 70% oral swabs negative (n=142)
  - 2% inconclusive (n=6)
  - 17% oral swabs positive (n=55)
- 51 offered dried blood spot test as part of pilot
- 80% accepted dried blood spot test (n=41)
  - 39 results received
  - 64% positive (n=25)
  - 36% referred to RLUH (n=11)
  - 3% invalid (n=1)
  - 33% negative (n=13)
  - 12% declined dried blood spot test (n=6)
  - 8% failed to wait for results of oral test (n=4)
References


Acknowledgments

Dr Evdokia Dardamissis - Consultant in Communicable Disease Control, Health Protection Team, Cheshire and Merseyside Public Health England Centre

Dr Merav Kliner - Consultant in Communicable Disease Control, Health Protection Team, Greater Manchester Public Health England Centre

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Paul Duffy - Health Improvement Manager (Alcohol and Drugs), Public Health England