

FINAL DRAFT

Health Needs Assessment:

Hepatitis C in Greater Manchester

2006

Authors:

Dr Erika Duffell

Consultant in Communicable Disease Control

Andrea Fallon

Associate in Public Health (SpT)

On behalf of:

The Greater Manchester Hepatitis C Strategy Group

Lead agency:

Greater Manchester Health Protection Unit.

Floor 7b, Peel House, Albert Street, Eccles, Salford.

Manchester

M30 0NJ. Tel: 0161 786 6710

Date of first draft: August 2006

CONTENTS

Section	Title	Page
i	Acknowledgements	5
ii	Executive Summary	6
iii	Lists of tables and figures	7
1.0	Introduction	8
	1.1 Background	8
	1.2 Purpose of the needs Assessment	9
2.0	Methods	10
	2.1 Objectives	10
	2.2 Which type of needs assessment?	10
	2.3 Tools Used	11
3.0	Management of hepatitis C infection	13
	3.1 Testing	13
	3.1.1 Reason for testing	13
	3.1.2 Access to testing	13
	3.1.3 Pre and Post-test discussion	13
	3.1.4 Which groups should be tested?	14
	3.1.5 Virological tests	15
	3.2 Treatment	16
	3.2.1 Components of the service	16
	3.2.2 Initial Contact with specialist services	17
	3.2.3 Specialist Investigations	18
	3.2.4 Antiviral treatment for chronic hepatitis	18
	3.2.5 Management of complications of hepatitis C infection	20
	3.2.6 Special Groups	21
	3.2.7 Complementary therapies	21
4.0	The Epidemiology of hepatitis C in England	22
	4.1 General	22
	4.2 Main 'at risk' population groups.	23
	4.2.1 Injecting Drug Users	25
	4.2.2 Prisoners	26
	4.2.3 Individuals with Haemophilia	27
	4.2.4 Individuals requiring haemodialysis	27
5.0	The Epidemiology of hepatitis C in Greater Manchester	28
	5.1 About the Greater Manchester Area	28
	5.2 Estimates of local prevalence	28
	5.2.1 Laboratory data for Greater Manchester	28
	5.2.2 Healthcare activity data	31
	5.2.3 Local Death Data	32
	5.3 Estimated local prevalence of hepatitis C	32
	5.3.1 Prevalence amongst current Injecting Drug Users	32
	5.3.2 Across Greater Manchester	32
	5.4 Estimating the future incidence of HCV related disease	36
6.0	Current Service provision	38
	6.1 General	38
	6.2 Testing	38
	6.2.1 Specialists	39

	6.2.2 Gastroenterologists (Testing)	40
	6.2.3 Drug Services	40
	6.2.4 Prisons	41
	6.2.5 Laboratory Services	42
	6.3 Treatment	42
	6.3.1 Gastroenterologists (Treatment)	43
	6.3.2 Specialist Services	45
	6.4 Prevention and Health Promotion	47
	6.5 Policies, procedures and Staff Training	48
7.0	Corporate Needs Assessment	50
	7.1 Testing	50
	7.2 Treatment	51
	7.3 Health promotion and prevention	53
	7.4 Policies, procedures and Staff training	53
8.0	Comparative Needs Assessment	54
9.0	Conclusions and Recommendations	55
	9.1 Conclusions	56
	9.2 Recommendations	57
	Draft Local Action Plans	
	Action 1	58
	Action 2	59
	Action 3	60
	Action 4	62
10.0	References	63
11.0	Appendices	
	Appendix 1	67
	Appendix 2	68
	Appendix 3	80
	Appendix 4	82
	Appendix 5	83
	Appendix 6	84
	Appendix 7	85
	Appendix 8	86
	Appendix 9	87
	Appendix 10	88
	Appendix 11	89
	Appendix 12	90

i) ACKNOWLEDGEMENTS

Our thanks go to all service providers who agreed to participate by returning completed questionnaires or by agreeing to be interviewed.

In addition we would like to acknowledge the contribution from Dr Fortune Ncube from the Centre for Infections at Colindale for sharing with us the results of a needs assessment he had undertaken in Surrey in partnership with his colleague, Fiona Neely.

We also acknowledge the contributions from colleagues within GMHPU, including Jane Richardson, for obtaining data and helping to develop epidemiological models, and to Lorraine Lighton for suggestions in relation to the provider questionnaire.

Thanks also to Keith Paver for providing data from the Manchester Virology Laboratory and to the North West Public Health Observatory for providing the death and health service data.

ii EXECUTIVE SUMMARY

The publication of a national strategy for hepatitis C in 2002, and an Action plan for hepatitis C in 2004 highlighted the public health importance of this disease. The overall prevalence in England has been estimated as 0.5% with higher levels in areas such as Greater Manchester where there are high numbers of injecting drug users (IDUs). If left untreated, a significant proportion of those infected will develop features of chronic disease, which include cirrhosis and hepatocellular carcinoma. Many of those affected are unaware of their infection until several years later when symptoms of liver disease become apparent.

A local health needs assessment was commissioned in order to inform the development of a local implementation plan. The needs assessment included a review of current service provision, the underlying epidemiology and the associated literature. The assessment included stakeholder interviews and postal questionnaires with key service providers with views collected from respondents around current and future service provision. This report presents the findings.

Estimating the prevalence of hepatitis C was challenging, however, the most reliable estimate of the number of cases of hepatitis C within Greater Manchester is between 10,000 and 22,000 cases, with the true figure expected to be closer to the higher estimate. Current figures on the numbers who are receiving treatment or who have received treatment in Greater Manchester indicate that this is only a small proportion of this total estimate. Therefore, a large number of individuals within the conurbation who are untreated and many who are undiagnosed, many of whom are likely to be ex-IDU's.

Recent local data suggests a fourfold increase in the number of acute hospital admissions for chronic or acute hepatitis C since 1996. This data suggests that the overall burden of the disease will continue to rise significantly across Greater Manchester in the absence of appropriate and timely action.

Across Greater Manchester prevention services require urgent strengthening with increased collaboration between organisations. In terms of treatment services, barriers to effective local management of cases include complex funding arrangements, lack of clarity regarding around different testing methods and strategies, limited resources and confusion around referral pathways. All respondents emphasised that current services were already stretched in relation to treating patients with Hepatitis C. The addition of a number of specialist nurses across the conurbation was identified as an important step towards enabling services to deliver according to the national action plan, a role which may also support the development of further health promotion activity.

Management of hepatitis C cases by consultant gastroenterologists within some of the local hospitals was viewed as a positive step towards enhancing patient choice, particularly as improved local access to treatment was felt to be an essential component in increasing attendance at appointments and compliance with treatment. To this end, the development of a clinical pathway for management was suggested as a means of supporting effective management across Greater Manchester. The needs assessment has highlighted several options for services seeking to meet the requirements of the national hepatitis C action plan that are described in full in the 'recommendations' section.

iii LISTS OF TABLES AND FIGURES

List of Tables

Table No	Subject	Page Number
1	Transmission of Hepatitis C, England 1992 – 2002	22
2	Main client groups and prevalence estimates for Hepatitis C	23
3	Expected numbers of people in Greater Manchester with HCV based on numbers in key risk groups	31
4	Estimated numbers of persons with Hepatitis C in Greater Manchester based on estimates of current and past IDU's	33
5	Results summary for groups indicating offering testing services	35
6	Number of clients reported tested by responding drug services	38
7	Results summary for groups indicating offering treatment services	40
8	Summary of prevention and Health promotion services provided	45
9	Policies, procedures and staff training reported by those responding	46

List of Figures

Figure No	Subject	Page Number
1	Age distribution of laboratory confirmed cases of hepatitis C 1992 – 2004	21
2	Hepatitis C positive lab reports – men and women compared for all cases between 1992 – 2004	22
3	Trends in equipment sharing past Hepatitis B & C infection, and HIV infection amongst current injecting drug users in England and Wales, 1992 to 2004	27
4	Number of patients with hepatitis C who are seen in hospital with diagnoses of cirrhosis, ascites, oesophageal carcinoma, hepatic encephalopathy or hepatocellular carcinoma across Greater Manchester between 1996 and 2004	32

1.0 INTRODUCTION

1.1 Background

The discovery of the hepatitis C Virus in 1989 marked the emergence of this disease as an emerging public health problem (Department of Health, 2002^a). The disease is often referred to as a 'hidden epidemic', as the disease is often symptom-less in the acute stages of illness, and as many of those who become chronically infected show no symptoms for years the vast majority remain unaware of their infection.

Of those infected with hepatitis C only 1 in 5 people are able to clear the virus and do not develop chronic infection. Of those who are infected and left untreated, 80% become chronic carriers; of these, 80% will develop chronic hepatitis after 2-3 years; up to 1/3 progress to cirrhosis within 20 years; a smaller number will develop liver cancer after 20-30 years. Treatment of hepatitis C is relatively successful, as the advent of new drug therapies has meant that the disease can be treated successfully.

Hepatitis C is a blood borne virus and is spread by contact with blood or body fluids from an infected person through sharing drug injecting equipment; vertically from a mother to her baby; by skin piercing, acupuncture or tattooing with inadequately sterilised equipment; and occasionally sexually. Prior to the introduction of viral inactivation of blood products, and before the screening of blood donors in 1991, transmission via blood transfusion was not uncommon. However, the vast majority of cases of hepatitis C infection in England are now spread via the sharing of contaminated injecting equipment by injecting drug users (Department of Health, 2004).

The development of a national infectious diseases strategy for England (Department of Health, 2002^b) marked a focus upon describing the scope and nature of the threat posed by infectious diseases to the health of the population of England and a renewed emphasis on establishing priorities for action in order to combat the present as well as possible future threats posed by infectious diseases.

The subsequent identification of hepatitis C as an emerging threat to public health was marked with the publication of the national strategy for hepatitis C (Department of Health 2002^a) which followed the principles laid down within the NHS plan in seeking to propose improvements in prevention, diagnosis and treatment. In order to support local activity to improve services, the publication of a hepatitis C action plan for England (Department of Health, 2004) outlined key 'action points' for services. This action plan focuses on four key areas:

- *Improving surveillance*
- *Increasing professional and public awareness*

- *Providing high quality health and social-care services*
- *Prevention*

The action plan is in line with the recent change in direction at the Department of Health which is away from the production of specific health service 'targets'. As such there are no predetermined 'deliverables' contained within the hepatitis C action plan.

The decision to convene a Greater Manchester Strategy Group has been a result of consultation by Greater Manchester Health Protection Unit with local Directors of Public Health, with the purpose of developing a coordinated and strategic approach to tackling the disease across the conurbation in line with national guidance and according to local need. Members of this strategy group are outlined in appendix 1.

1.2 Purpose Of This Needs Assessment

This needs assessment will seek to provide a baseline assessment of the current position regarding prevalence of the disease, and to provide an outline of current service provision to inform the development of the Greater Manchester Hepatitis C strategy, and a subsequent a plan for local implementation.

2.0 METHODS

2.1 Objectives

The five key objectives in undertaking health needs assessment are to:

1. Review the current 'picture' of hepatitis C infection within the UK
2. Estimate the prevalence of hepatitis C within Greater Manchester
3. Identify effective interventions/services
4. Obtain the views of local service providers regarding current service provision and perceived gaps in the service
5. Describe current service provision for hepatitis C in Greater Manchester

2.2 Which Type Of Needs Assessment?

Several types of needs assessment exist, which are broadly themed into three categories (Stevens et al, 2004):

Comparative: A comparison of the services provided and received within one area, to another.

Epidemiological: Describes the burden of disease, and identifies evidence based interventions to meet this need.

Corporate: Includes the demands, wishes and alternative perspectives of stakeholders.

This needs assessment has been undertaken predominantly from epidemiological and corporate perspectives, but has also sought information from other areas in order to make comparisons where possible. As such a combination of all three types of needs assessment have been utilised.

2.3 Tools Used

2.3.1 Strategy for reviewing the evidence

The initial process of 'fact finding' necessitated a review of the available published medical literature around hepatitis C. This proved relatively straightforward, as the publication of 'Getting Ahead of the Curve', a national strategy for infectious diseases (Department of Health 2002), the national Hepatitis C Strategy (Department of Health 2002), the Action Plan for Hepatitis C in England (Department of Health 2004) and most recently the Health Protection Agency (HPA) annual report which focused upon hepatitis C (HPA, 2005) provided a welcome and relatively comprehensive review of the current knowledge base around the disease.

In addition to this, access to an unpublished strategy for hepatitis C for Surrey Health Authority which had been developed prior to the publication of the national documents provided an extremely useful starting point on which to build a search strategy, and in developing some of the subsequent data collection methods.

One of the main reasons for undertaking a review of the literature was to obtain epidemiological information in order to develop estimates of incidence and prevalence of the disease within the Greater Manchester area, and the likely prevalence in key 'at-risk' groups. To this end, key databases were searched, including Embase, Medline, CINAHL and Cochrane. In addition a general 'Google' (scholar) search also revealed some additional papers, particularly those recently published. Additional sources of information were utilised, and included websites of the Public Health Observatory, the World Health Organisation and the British Liver Trust.

Current guidance relating to the testing, treatment and care of those with, or at risk of, HCV was also sought through the literature review. Evidence to support this guidance was identified through Medline and searching for reports from national experts or organisations. The search aimed to identify the best quality evidence available.

2.3.2 Obtaining information from service providers

To ensure that the views of all relevant agencies were obtained, the means of collection of information was considered important in ensuring that sufficient data was collected regarding current service provision. To this end, information was collected from several key service providers via a detailed semi-structured interview. Each interview was focused around key aspects of their service, but broadly followed the structures within the locally developed questionnaire. (see appendix 2)

A questionnaire was developed for service providers, which was intended to enable collection of both quantitative and qualitative information around aspects of testing, treatment, health promotion and policy making activity. This questionnaire, which was based on the one used in the Surrey needs assessment, was adapted for local use and piloted prior to distribution. Ensuring ease of completion was a priority in developing the questionnaire, as obtaining a good response rate would ensure a representative view of current service provision within Greater Manchester was obtained.

The questionnaire was sent out to a broad selection of local service providers, for return within two weeks. A return envelope was included, along with an explanatory letter. Several individuals were contacted by telephone prior to posting the questionnaire out in order to attempt to increase the return rate. Some of those individuals who did not return their completed questionnaires on time were given a courtesy call to ask if there had been any difficulties, and to encourage completion and return. A list of those interviewed or sent questionnaires is included in appendix 3

2.3.3 Obtaining the views of clients

The strategy group recognised that gaining the views of clients will be crucial in developing effective services. The means by which service users views can be incorporated into the strategy development process need to form part of future discussions by the strategy group.

2.3.4 Analysis of data

Since there are a small number of individuals involved in providing information around current service provision, and that some of this is of a qualitative nature, a simple method of data analysis was sought. As the numbers of completed interviews and questionnaires was relatively small a thematic analysis was undertaken within the broad headings of 'testing', 'treatment', 'health promotion' and 'policies, procedures and training', under which results are summarised.

3.0 MANAGEMENT OF HEPATITIS C INFECTION

3.1 TESTING

3.1.1 Reason for testing

There are several key reasons for offering hepatitis C testing to a patient who may have been at risk of infection or who shows evidence of liver disease that may indicate testing. (Department of Health & General Health Protection, 2004) These reasons are that testing:

- Provides an opportunity to refer those infected to a specialist for further investigation and if appropriate treatment
- Provides an opportunity to discuss harmful patterns of behaviour
- Can allay anxiety

3.1.2 Access to testing

Identification of people at risk of HCV infection provides the opportunity to discuss risk reduction and HCV antibody testing. Early detection of hepatitis C aims to identify those infected with HCV to allow assessment of their liver disease, advice about lifestyle changes (e.g. avoidance of alcohol) and where indicated antiviral therapy.

People may be tested in a number of different settings including genitourinary medicine clinics, drug treatment centers, prison health care centers, general practice surgeries and other more specialist settings such as hepatology, renal or gastroenterology units. As hepatitis C may be diagnosed in a range of different specialist medical service, it is therefore essential that there is a clear pathway of referral to hepatitis C specialist services. (Department of Health, 2002^b)

Individuals should be able to seek advice about testing through their general practitioners or through other settings where they may access healthcare e.g. prison medical centre. For drug users, testing should be part of a wider package of care, involving discussion of harm reduction and disease prevention strategies, including hepatitis B immunisation.

3.1.3 Pre and post test discussion

All those offered testing or requesting a test should have confidential pre and post test discussion with a suitably trained professional. The testing should also be linked with the opportunity for referral for specialist assessment. The discussion should enable the individual to understand the implications of the test, make an informed decision about taking the test, and provide a better understanding about the likely routes of transmission and the nature of the disease.

The General Medical Council guidance 'Serious Communicable Diseases' (General Medical Council, 1999.) states that consent must be sought before testing for any serious communicable disease, including hepatitis C, except in certain specified and rare circumstances. Consent should only be given after receipt of appropriate information about the implications of the test and the patient must have time to consider and discuss the implications. 'It is the responsibility of the doctor treating the patient to obtain consent to testing for diagnostic purposes'. The guidance also states that those working in laboratories 'may test blood or other specimens for serious communicable diseases only for the purposes for which the samples have been obtained, or for closely related purposes which are in the direct interest of the patient.'

Many clients diagnosed with HCV infection in future are likely to be drug users with complex psychological, emotional and social problems. They and their families will need support immediately following diagnosis or when problems occur. This support could be provided by a specialist nurse based at a specialist unit. Support in the community can be provided by the members of the Primary Care Team, but if their knowledge of hepatitis C is limited this may be inadequate and some clients may not be registered with a GP. Support for drug users is available from drug services provided by NHS and non-statutory organisations. Professionals within these organisations should be appropriately trained so that they can offer additional support to clients with HCV infection. Valuable support and information is also provided by national and local patient organisations.

3.1.4 Which groups should be tested?

Individuals in high risk groups should be counselled and offered testing if they are considered to be at risk of having hepatitis C, but only after pre test discussion.

Diagnostic testing for hepatitis C should be offered to people who have otherwise unexplained liver disease and in the absence of any clinical features of liver disease, testing should be offered to people with the following risk factors (Department of Health, 2002^b):

- those who have ever injected illicit drugs
- recipients of a blood transfusion or blood products prior to 1991
- recipients of organ transplants before 1991
- anyone with a needle-stick injury from a known or likely source of hepatitis C
- past and present renal dialysis patients
- children of HCV positive mothers
- people with tattoos or other body piercing where standard infection control procedures may not have been followed
- regular sexual partners of people with HCV
- Men who has sex with men and involved in high risk sexual practices

- Individuals from countries with high prevalence, particularly if symptomatic or liver test elevated

Other individuals who may be considered for testing include those people who have shared crack pipes or equipment for snorting drugs and people who may have been exposed through medical treatment overseas.

3.1.5 Virological tests

Diagnostic antibody tests for HCV became available in 1989. The diagnosis of HCV infection is usually made on the basis of a blood test that detects antibody to HCV virus in an enzyme linked immunosorbent assay (ELISA). Reactive specimens are retested using a different assay.

A positive antibody test, indicates whether a person has been infected with hepatitis C but does not distinguish between current or resolved infection. About 20-40% of people infected with hepatitis C clear the virus in the acute phase, but they still have positive antibody results.

It can take up to 3 months for antibodies to become detectable following infection. Therefore in patients whose exposure has been recent and whose first test is negative the hepatitis C antibody test should be repeated 3 months after exposure in order to avoid misdiagnosis during this 'window period'.

If the antibody test is positive the next step is to establish if the virus is still present through an HCV RNA detection test (e.g. a PCR test). Molecular assays can be used to detect, quantify and determine the genotype of the HCV RNA in infected patients. Genotyping and HCV viral load are only carried out if a patient is to be offered antiviral therapy and are used to predict response to treatment and select treatment regimens.

3.2 Treatment

The management of patients with hepatitis C covers their care from diagnosis through to palliative care for end stage liver disease and should form a seamless integrated pathway of care. Care of patients with hepatitis C can involve a wide range of professionals in the NHS, but may also involve staff working in different organisations. Communication and collaboration between these professional groups and co-ordination of services are essential for delivery of good quality care. Patients who are newly diagnosed with hepatitis C need support, accurate and consistent advice and information.

3.2.1 Components of the service

The Department of Health in the Hepatitis C Strategy for England has specified the key components of the specialist services. (Department of Health, 2002^b) These include:

- ***An expert clinician, experienced in the management of viral hepatitis.***

This is most likely to be hepatologists or gastroenterologists with an interest in liver disease, although this role may also be filled by a consultant in infectious diseases working closely with other colleagues.

- ***Hepatitis nurses***

Clinical nurse specialists are able to provide an individualized service to patients by providing a range of care including discussions with patients after a positive test result as well as ongoing support and monitoring side effects during antiviral treatment.

- ***Access to an accredited virology laboratory***

To provide a routine diagnostic service, and be capable of providing the following groups of tests:

- confirmatory antibody testing for hepatitis C
- qualitative hepatitis C RNA detection and hepatitis C genotyping
- quantitation of hepatitis C RNA.

- ***Access to a liver pathologist***

This is necessary to perform routine assessment of liver biopsies, grading and staging of liver histology according to internationally established criteria.

- ***Access to a radiology department***

Necessary for routine diagnosis and monitoring of patients with liver diseases.

The Department of Health consider that specialist services should be provided within a 'geographically accessible managed clinical network' covering geographically defined areas, which are most likely to be the size of strategic health authorities.

Although specialist hepatology units are envisaged to be at the hub of these networks providing treatment and care to patients with hepatitis, it is recognised that with the expected increase in the number of patients with hepatitis C, services for these patients cannot be restricted to specialist units. Whilst treatments should be instigated as a specialist activity there should be some shared care with secondary and primary care services, including the prison services, which will require additional education and training. (Department of Health, 2002) Links should be established between these specialist units and primary and other secondary care services and it is recommended that management protocols should be developed especially in relation to care pathways for "special" groups of patients such as those with HIV co-infection, children and prisoners.

3.2.2 Initial contact with specialist services

All new patients who are found to be HCV antibody positive should be offered the opportunity of referral to a specialist. It is generally accepted, though without any formal evidence, that all people with chronic hepatitis C should receive appropriate advice and information from health care professionals who are expert and experienced in the diagnosis and management of viral hepatitis (NICE, 2004)

Patients should have had informed discussions before and after their HCV test but many patients will be anxious about their condition and require considerable explanation and reassurance. The time from diagnosis to receiving specialist advice should be short. An explanation of the nature of the infection, the potential sources of infection and the natural history of the illness as far as is known will be required. It is important for the clinical team to explain what investigations are appropriate, the plan for follow-up and possible treatment options. Patients should be given relevant written information and encouraged to call back with further questions. A Clinical Nurse Specialist can have an important role in providing ongoing information and support.

3.2.3. Specialist investigations

HCV antibody positive people require clinical assessment on an individual basis to determine if they are eligible for antiviral treatment. Investigations generally involve relevant serological tests, including PCR for HCV-RNA (if not already undertaken) and genotype tests, liver function tests, ultrasound examination of the liver and where appropriate, liver biopsy. Liver biopsy, though often valuable, is not always a pre-requisite for drug treatment and NICE recommends that people for whom a liver biopsy poses a substantial risk (such as those with haemophilia) and people with symptoms of extra-hepatic HCV infection sufficient to impair quality of life, may be treated on clinical grounds without prior histological classification (NICE, 2004)

3.2.4 Antiviral treatment in chronic hepatitis

There are two licensed treatments for hepatitis C – interferon alfa and ribavirin. The precise antiviral mode of action of interferon alfa is not known although it does appear to alter host cell metabolism. It is quickly eliminated from the body and needs to be given by sub-cutaneous injection on at least 3 days a week. Injections can be given by clinical staff or by the patient after training. Many people find interferon alfa therapy hard to tolerate, as there are many adverse effects associated with treatment. These include influenza-like symptoms (fatigue, headache, fever), gastrointestinal complaints (loss of appetite, nausea), dermatological symptoms (alopecia), psychiatric disturbances (depression, insomnia) and arthralgia.

Until the late 1990s interferon alfa monotherapy was the only treatment option. The duration of monotherapy is 48 weeks and a sustained response to treatment is seen in around 30% of patients. (Poynard et al, 1996) Higher doses and longer duration of treatment increases the response rate but this must be balanced against the increased risk of side effects. (Howie & Major, 1998) Treatment is stopped in those who do not respond within three months. More than half of those who clear the virus after treatment however, relapse within 6 months of treatment cessation and for those who remain clear of the virus after 6 months over 90% do so after 6 years.

Ribavirin is a nucleoside analogue with a broad spectrum of antiviral activity against RNA viruses. It is not effective on its own and is only licensed for use in combination with interferon alfa. Ribavirin is administered orally, usually in divided doses according to the patient's weight. Regular monitoring of the full blood count is needed to detect for haemolytic anaemia, one of the main side effects. Both drugs have several absolute and relative contraindications and should only be prescribed after specialist assessment.

In the late 1990's combination treatment with interferon alfa and ribavirin commenced after evidence emerged from clinical trials that ribavirin alone had no activity against HCV and that the effect of the combination of the two drugs was much better than with interferon alfa monotherapy. In 1999 combination therapy with interferon alfa and ribavirin was licensed and in 2000 the National Institute for Clinical Excellence (NICE) issued guidance on the use of the combination therapy interferon alpha and ribavirin for the treatment of people over the age of 18 years with moderate to severe hepatitis C. (NICE, 2000)

The NICE guidance was reviewed and revised in 2004. In the 2004 guidance the following recommendations were made about the use of interferon alfa, peginterferon alfa and ribavirin:

1. Combination therapy with peginterferon alfa + ribavirin should be used to treat people aged 18 years or older who have moderate to severe chronic hepatitis C, whether or not they have been treated before with interferon alfa or peginterferon alfa monotherapy or with interferon alfa + ribavirin combination therapy. People who have previously been treated with peginterferon alfa + ribavirin combination therapy should not be retreated.
2. The length of the treatment depends on the HCV genotype and how well a person initially responds to the drugs. For people infected with HCV genotypes G2 and/or G3, treatment should last for 24 weeks. For people infected with HCV genotypes G1, G4, G5 or G6, or more than one of these genotypes, treatment should first be for 12 weeks. The viral load should be measured at this time; if it has reduced to less than one hundredth of its level at the start of treatment, treatment should continue for a further 36 weeks. If the viral load has not reduced to this level, treatment should be stopped.
3. People currently being treated with interferon alfa may be switched to peginterferon alfa. People who cannot take ribavirin, or have bad side effects from it, should be treated with peginterferon alfa monotherapy for 12 weeks. Treatment should continue for a further 36 weeks if the viral load has reduced to less than one hundredth of its original level, or stopped after 12 weeks if it has not.
4. People who are likely to have complications from the procedure do not need to have a liver biopsy to find out how extensive their liver damage is before treatment is started. This includes people with a condition that causes excessive bleeding known as haemophilia, people who had complications from a previous liver biopsy, and people who have significant symptoms of HCV infection in parts of the body other than in the liver.

5. Because of the limited evidence on the use of the drugs in certain groups of people, combination therapy with either interferon alfa or peginterferon alfa is not recommended for the following groups:
- people who have previously had combination therapy with peginterferon alfa and/or
 - people aged under 18, and/or
 - people who have had a liver transplant.

Antiviral treatment is regarded as successful if abnormal liver function tests return to normal and the HCV RNA is undetectable in the serum. A complete response is defined as response at the end of treatment and a sustained response is one that is maintained for at least 6 months after the treatment is stopped. Patients with a sustained response are thought unlikely to develop cirrhosis and liver failure. It is acknowledged that these outcomes are surrogate markers and it is still unclear whether a sustained response improves the long-term prognosis or if a sustained response equates to a cure.

In patients with minimal or mild inflammation with no fibrosis treatment can be deferred pending the future development of improved drug treatments. Such patients may be offered a further biopsy every 3-5 years to monitor progression and reassess indications for treatment. There is no evidence yet for the benefit of treating patients with mild disease. However there may be certain circumstances where patients may benefit from treatment of mild disease. Further NICE guidance are expected in the summer 2006.

During drug treatment, patients should be monitored at regular intervals for complications associated with the treatment. HCV PCR should be checked at 6 months, on completion of therapy, and at 6 months post treatment. Patients should be monitored annually thereafter.

In those in whom antiviral treatment is not considered appropriate, ongoing counselling, monitoring of liver disease and screening for complications of liver disease are important. The timing of clinic visits will depend on individual patient needs. Most asymptomatic patients with early liver disease can be reviewed annually and liver function tests monitored.

3.2.5 Management of complications of hepatitis C infection

Patients with cirrhosis are at risk of developing gastro-oesophageal varices and hepatocellular carcinoma and need regular monitoring. Patients with liver cancer or decompensated liver disease (i.e. ascites or encephalopathy) should be considered for liver transplantation.

3.2.6 Special groups

3.2.6.1 Pregnant women

Counselling and support are vitally important in pregnant women infected with HCV. Drug treatment with ribavirin is contra-indicated because of its teratogenic effects and should only be used in patients using effective contraception. Pregnancy should be avoided for a further six months after stopping treatment. The risk of vertical transmission to baby is low, at around less than 5% and there is little evidence to suggest the best method of delivery or to suggest mothers should not breast feed.

3.2.6.2 Children born to mothers who are HCV antibody positive

Antibodies cross the placental barrier, therefore babies born to mothers who are HCV antibody positive will also be HCV antibody positive. Antibody testing should be deferred until after the baby is 12 months old. All children testing positive should be referred to a paediatrician for assessment and follow up.

3.2.6.3 Prisoners

Those committed to custody who are already attending a specialist clinic should be permitted to continue to attend such a clinic. Prisoners newly diagnosed as suffering from HCV infection should be offered the opportunity of referral to an appropriate specialist clinic. (Gore et al, 1998) PCTs and prisons locally have joint responsibility in planning for the delivery of services to HCV positive prisoners, in order to ensure that this group is not disadvantaged on account of being in custody.

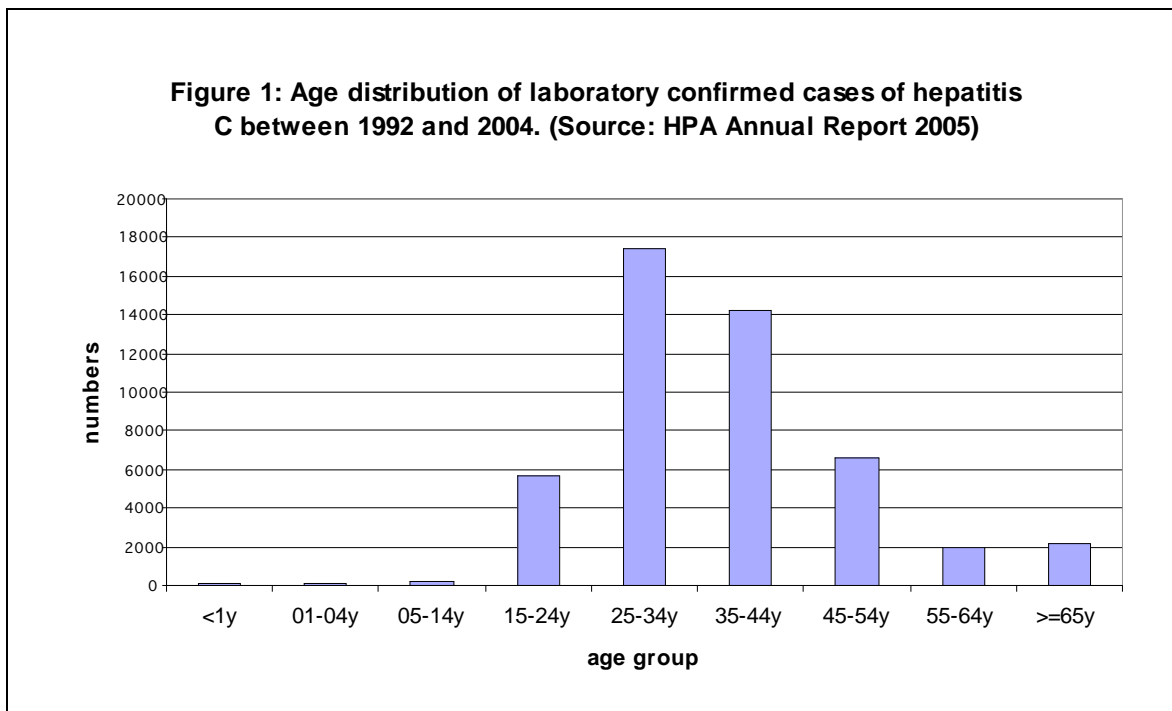
3.2.7 Complementary therapies

Many hepatitis C individuals are exploring the potential benefit of complementary and alternative therapies, such Chinese medicine. At present there is no good evidence for the effectiveness or safety of complementary therapies, although there is anecdotal evidence that some therapies provide symptomatic relief. Large, well-designed studies with appropriate baseline data and outcome measures are needed to evaluate the effectiveness of complementary and alternative medicines in the management of hepatitis C.

4.0 THE EPIDEMIOLOGY OF HEPATITIS C IN ENGLAND

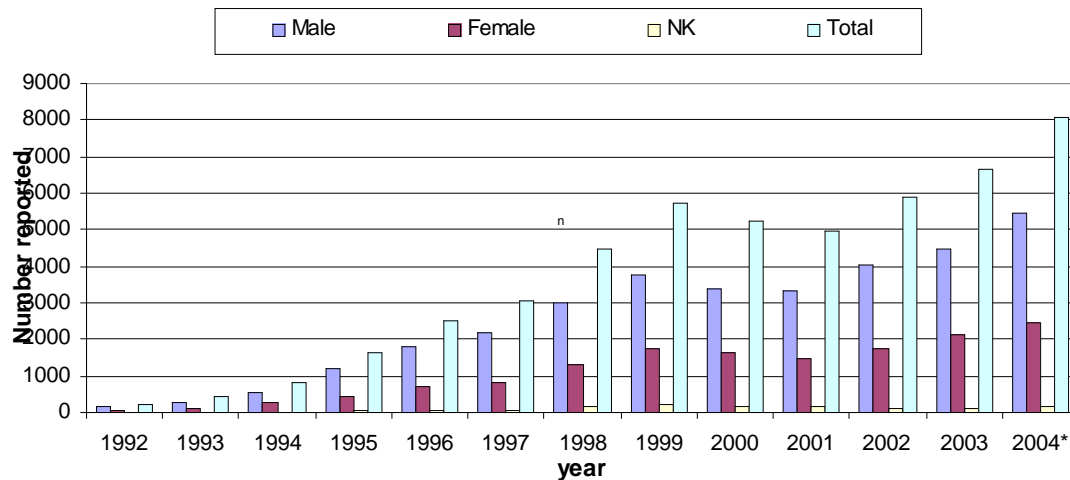
4.1 General

The majority of hepatitis C infections occur in the 15 – 54 age- group. (See figure 1) This may in part be a reflection of the increase in the use of injecting drug use in England during the 1960s and 1970s through to the present day, and also a result of increasing prevalence, plus improved detection of the virus via testing. The apparent higher prevalence in these groups may however, in part be due to the increased exposure of these age groups to testing services, particularly if they are current IDUs.



It is estimated that around 0.5% of the general population in England (approximately 250,000 people) has been infected with hepatitis C. About 20% of those infected are able to clear the virus naturally without treatment. Thus, 0.4% of the population (around 200,000 people) are estimated to be chronically infected with hepatitis C, yet only 38,000 diagnoses have been reported. (Department of Health, 2004). The number of diagnoses made each year increased steadily during the 1990s, although recent laboratory data indicates that this trend may now be changing. Those infected are predominantly men (See figure 2)

Figure 2: Hepatitis C positive lab reports - men and women compared for all cases between 1992 and 2004 (Source: HPA Annual Report - 2005)



4.2 Main 'At Risk' Population Groups

There have been many surveys undertaken to establish the prevalence of hepatitis C amongst specific client and population groups. Groups for whom prevalence studies have sought to establish the prevalence of hepatitis C infection include injecting drug users (IDUs), prisoners, haemophiliacs, patients requiring haemodialysis, women attending antenatal clinics, genito-urinary medicine (GUM) clinic attendees, healthcare workers exposed to needle-stick injuries, hospital in-patients, organ donors, patients undergoing assisted conception, and blood transfusion recipients. These groups also correspond in the main, with the known risk behaviours or conditions associated with laboratory reports of confirmed hepatitis C infection. (See table 1)

Table 1: Transmission of hepatitis C in England 1992–2002 (Source: Department of Health, 2002)

Risk factor	Number of laboratory reports of hepatitis C infection (Percentage total)
Injecting drug use	10,057 (91.1)
Blood transfusion	279 (2.5)
Blood product recipient	249 (2.3)
Sexual exposure	195 (1.8)
Renal failure	108 (0.9)
Other known (i.e. organ/tissue transplant, surgical/medical, skin piercing, occupational)	90 (0.8)
Vertical (mother to baby) or family/household	67 (0.6)
Total	11,045 (100)

A summary of the population groups for whom prevalence data is available, together with the data source and prevalence estimates are shown in table 2.

Table 2: Main client groups and prevalence estimates for hepatitis C.

Client group	References	Prevalence estimates (anti-HCV unless stated)
<u>Injecting drug users</u> - Current and past users	Judd et al (2005) UAPMP (2004) HPA (2004)	43.7% 42% (<i>59% in the North West</i>) 41%
- First injected < 3years ago	HPA (2004)	20%
<u>Prisoners</u> - Overall	Wield et al (2002)	9.0%
-Adult Male remand	- As above	20%
-Adult Male convicted	- As above	7.1%
-Female remand	- As above	11%
-Female convicted	- As above	11%
-Young Offender remand	- As above	1.4
-Young Offender convicted	- As above	0
- Amongst IDU prisoners	Gore et al (1999)	49%
<u>Haemophilia</u> (exposed pre 1985)	Watson et al (1992) Makris (1990)	87% 59%
Exposed after 1988:	Lee (2001)	as general population
Haemodialysis patients	Conway et al (1992)	10.2% (London)
Antenatal women	Balogun et al (2000) Ades et al (2000)	0.43% (London) - 0.21% (N & Yorkshire) 0.36-.04 (London) 0.19 – 0.22 (outer London)
GUM clinic attenders	Balogun et al, (2003)	1% (overall for GUM) 37% (GUM attenders with IDU) 0.6% (GUM attender not IDU)
Sexual partners of HIV infected	Win, et al (1994)	5.3%
Healthcare workers exposed to needlestick injury	Neil et al (1997)	2%
Hospital inpatients	Balogun et al, (2002)	0.7%
Organ donors	DH (2000)	0.54%
Patients undergoing assisted conception	Abusheikha, et al (1999)	0.54%
General population	HPA (2005)	0.5%
Blood transfusion recipients	PHLS (1995 – 2000)	negligible (2 'probable' cases)

From the table above it can be seen that certain groups have a higher prevalence than that for the general population, and as such are considered to be 'at risk' groups. In particular, these include those with a history of injecting drug use, prisoners, haemophiliacs, and patients requiring haemodialysis. In addition, there is some evidence that unsafe practice in tattooing presents a risk to infection. These groups will be discussed in turn, in order to establish best estimates for prevalence which

can then be applied to the local population.

4.2.1 Injecting Drug Users

IDUs constitute the largest group of clients affected by hepatitis C infection. Between 1992 and 2002 they constituted 91.1% of positive laboratory reports of hepatitis C infection in England (Table 1). Transmission is most likely due to the sharing of contaminated injecting equipment.

The Unlinked Anonymous Prevalence Monitoring Programme (UAPMP) survey of IDUs has undertaken surveillance of hepatitis C and other blood borne virus infections. This survey has included two areas from the Greater Manchester area: Wigan and Central Manchester.

A report published in December 2004 indicated that these two areas have the highest prevalence for hepatitis C across the study area at 66% in Manchester and 74% in Wigan (Hope et al, 2004) Overall across the five sites, (which also included Bristol, Devon and Middlesbrough) 54% of the samples were anti-HCV positive. There is marked regional variation, and the study found the North west to have the highest prevalence of hepatitis C amongst current and previous IDUs (59%). This is felt to be due to historical differences in risk taking behaviour and access to services.

There is wide variation of transmission across the UK. Within England and Wales one in six of those who started to inject since the beginning of 2002 have become infected, whilst in Glasgow, one in two IDUs who had been injecting for less than two years in 2004 had become infected. This demonstrates the potential for infection amongst all areas of the UK.

Another recent study also sought to establish the incidence of hepatitis C amongst new IDUs (Judd et al, 2005). For this study, researchers recruited 428 IDUs, aged below 30 years or who had been injecting for six years or less, and followed them up one year later. Prevalence of hepatitis C was found to be 41.8%.

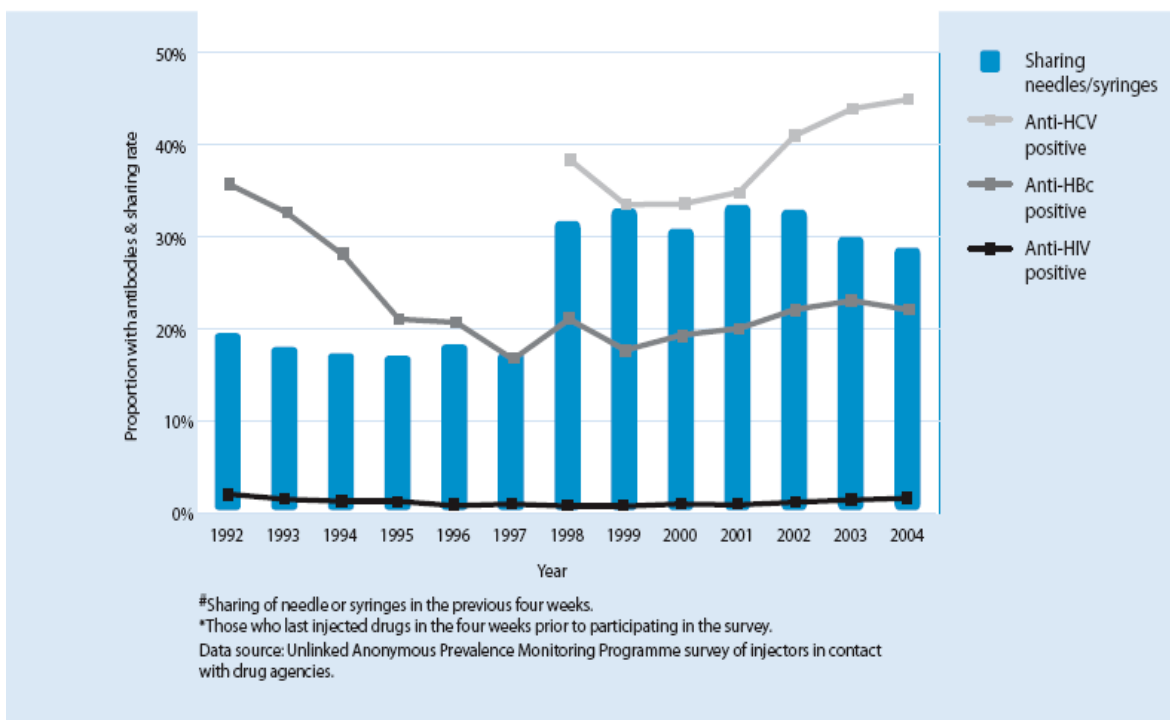
Since hepatitis C appears to be a disease predominantly affecting IDUs and the latency period of the disease is long, any estimates of the actual population prevalence will almost certainly require an estimation of the number of individuals who are both current and past IDUs.

A study undertaken on behalf of the Home Office in 2004 entitled "*Estimating the prevalence of problematic and injecting drug users for Drug Action Team areas in England*" compiled data from various drug action team (DAT) areas to obtain estimates (Frischer et al, 2004). This study tested the feasibility of using a 'multiple indicator method' to estimate the number of problematic and injecting drug users for each DAT area, based upon existing knowledge about known drug indicators. These

estimates were undertaken for 13 'anchor points', which were selected DAT catchment areas, ten of these 'anchor points' were from the Greater Manchester locality. These are also co-terminous with local authority boundaries and provide good estimates of the probable local prevalence.

Figure 3 highlights the increasing trend of hepatitis C infection among current Injecting drug users in England and Wales. Possible contributing factors to this increase include a rise in the number of injectors, without any increase in the number of syringes distributed through syringe programmes, more risky injecting behaviour in newer injecting drug users, and greater levels of crack injection.

Figure 3: Trends in equipment sharing* past hepatitis B & C infection, and HIV infection amongst current injecting drug users in England and Wales, 1992 to 2004 (source: Shooting Up: HPA, October 2005)



4.2.2 Prisoners

At least 10,000 young people aged 15-21 years are estimated to be in prison at one time across England (Department of Health, 2002^a). Within Greater Manchester there are four prisons, with a total population of around 3000 inmates.

Surveys of prisoners have shown very high rates of drug use and dependence before imprisonment. Among remand prisoners (men and women) around 50% have reported some degree of drug dependency in the year before imprisonment, and more than 40% of sentenced prisoners have reported drug dependence (Singleton et al, 1997).

The prevalence of hepatitis C among prisoners has been estimated at around 9% (Weild et al, 2000), although among prisoners with a history of injecting drug use prevalence has been found to be as high as 49% (Gore, et al 1999).

Prevalence varies considerably according to the classification of prisoner with highest prevalence found in male remand prisoners and lowest among young offenders. Weild (2000) was able to stratify prevalence amongst prisoners by category of prison (see table 2), and although the sample was biased towards older inmates and testing was via a salivary swab (with a lower sensitivity than serology), this study provides perhaps the best indication of prisoner infection in England and Wales.

4.2.3 Individuals with haemophilia

Virtually all haemophiliacs treated with clotting-factor concentrates before 1985 have been exposed to the hepatitis C virus (HCV) and almost 100% of these are said to have been HCV-antibody positive. Two recent studies relating to prevalence of hepatitis C among haemophiliacs undertaken in 1992 (Watson) and 1990 (Makris et al) found the prevalence of HCV to be 87% and 59% respectively. Both studies were undertaken after the introduction of heat-treated concentrates. From routine data, it is not possible to identify haemophiliacs who have received only heat-treated blood products, but prevalence today is likely to be at the lower end of the scale as most current haemophiliacs will be too young to have received non-heat-treated products.

4.2.4 Individuals requiring haemodialysis

Hepatitis C infection is relatively common among chronic hemodialysis patients. In the past, blood transfusion appeared to be the primary risk factor; however evidence of nosocomial HCV transmission in the hemodialysis setting has recently been reported (Sullivan, 2001). One study from London reported a prevalence of 10.2% (Evans et al, 1995), amongst chronically haemodialysed patients in the absence of other risk factors.

5.0 THE EPIDEMIOLOGY OF HEPATITIS C IN GREATER MANCHESTER

5.1 About The Greater Manchester Area

The current population of Greater Manchester is just over two and a half million. The population has decreased by about 3% during the last 20 years mainly due to people migrating from the area. Greater Manchester has a younger population when compared to the population of England as a whole but as in England the older population is set to increase during the next 10-20 years.

The ethnic population profile is similar to that in England but there are large variations across Greater Manchester. Information from the 2001 census indicates that the proportion of ethnic minority groups range from less than 1% of the total population in one area to over 25% in the central Manchester area. (Office for National Statistics, 2003) Most of the ethnic minority population is comprised of Asians of Pakistani, Bangladeshi or Indian origin.

Greater Manchester contains some of the most deprived communities in England, with nearly 40% of the population living in the most deprived 20% of areas in England (Office of the Deputy Prime Minister, 2004) and large variations across the conurbation. Life expectancy at birth in Manchester is lower than the national average for both men and women and the infant mortality rate is higher than across England as a whole.

5.2 Estimates Of Local Prevalence

5.2.1 Laboratory data for Greater Manchester

5.2.1.1. The Denominator Study

The denominator study is a national study coordinated through the HPA that collects laboratory and basic epidemiological information on cases of hepatitis from several participating sentinel centres around the country. Manchester is a participating centre and data from the denominator study for Manchester was available for a 14-month period between 9th September 2002 and 31st October 2003:

- 16,162 individuals were tested for anti-HCV in Greater Manchester (14,000/year)
 - 1,101 (6.8%) were anti-HCV positive
- 573 of the individuals who were anti-HCV positive (52%) were also tested by PCR
 - 429 (74.9%) of these were positive for RNA

In this context 'Greater Manchester' was defined as where the postcode or town of the clinician requesting the anti-HCV test was from Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Stockport, Tameside, Trafford, Wigan. This includes individuals tested in hospitals and by GPs in these areas. Testing data from Royal Albert Edward Infirmary were not available in the dataset.

It is important to note with this data that individuals may have been counted more than once within the whole study data set, if for example they moved between sites. Although the actual level of duplication in this data set is expected to be at a very low level.

A major problem with this source of data is that it essentially monitors demand for testing and the data currently available is only for a limited period. The data is useful in terms of providing an additional source of data to triangulate local sources against for validity. However, it is not possible to draw any major conclusions from the data with regard to local prevalence or trend.

5.2.1.2. Data from Manchester Virology Laboratory

5.2.1.2.1 General data

Laboratory data for residents from across Greater Manchester is available for the period between April 2003 and March 2005. During this 23-month period the laboratory processed a total of 33,729 specimens (17,500/year). It is likely that a significant proportion of these specimens are repeat specimens taken from individuals and therefore the figures in the table provide an overestimate of the actual number of individuals tested. However there are some conclusions that can be drawn from the data.

Firstly, Central Manchester submits the highest number of specimens for testing. Other areas with a high amount of testing include North and South Manchester areas, Salford and Stockport. The lower numbers of samples being sent for testing from other areas may be due to other laboratories across Greater Manchester processing local specimens. However, it is probable that the high volume testing from the central Manchester area is also related to the central location of several key services.

Secondly, there is variation in the number of specimens in each area being tested for anti-HCV and PCR. In one or two areas as many specimens or more are processed for PCR as anti-HCV e.g. Ashton, Wigan and Leigh. However, in other areas such as Oldham only one specimen is tested for

PCR for every 20 that are tested for anti-HCV. This suggests that in some areas local laboratories are testing for anti-HCV, with the Manchester laboratory just being used to confirm the test or undertake the PCR test.

Overall 855 (2.5%) of the total number of specimens were positive for both anti-HCV and PCR. 1671 (5.3%) of the 31321 specimens processed for anti-HCV were positive. 1910 (26.2%) of the 7277 specimens processed for PCR were positive. (Appendix 4)

This source of data has similar problems to the data from the Denominator Study in relation to providing any useful estimate of local prevalence. As with the study data this source of data essentially provides information regarding the demand for testing and it is not possible to draw any major conclusions from the data with regard to local prevalence.

5.2.1.2.2. Antenatal data

For the three year period 2003 – 2005 a total of 59 women were screened antenatally for hepatitis C and found to be anti-HCV positive. Of these 29 (49.2%) were positive on PCR testing, 12 (20.3%) had negative results, 1 result was equivocal and 18 had no PCR result.

The table in appendix 5 shows the geographical residence of women by PCT area and shows that nearly half of all women found to be anti-HCV positive were from the Manchester Local Authority area. It is likely that several local laboratories are undertaking the testing of specimens from women which may explain why the burden of cases fall in the central Manchester area close to the virology laboratory. Anecdotal reports indicate that antenatal testing of high risk women across Greater Manchester is ad hoc.

5.2.1.2.3. Children

Data from the virology laboratory in Manchester indicates that for the 3 year period between 2003 and 2005 a total of 94 children under the age of 5 years were screened and found to be positive for anti-HCV. 8 of these were positive by PCR and 50 negative, with 14 having indeterminate results. Children were tested at different ages with the average age of testing for children over this period being around 8 months. Several of the children had multiple samples taken at different times. The ages children were tested ranged from

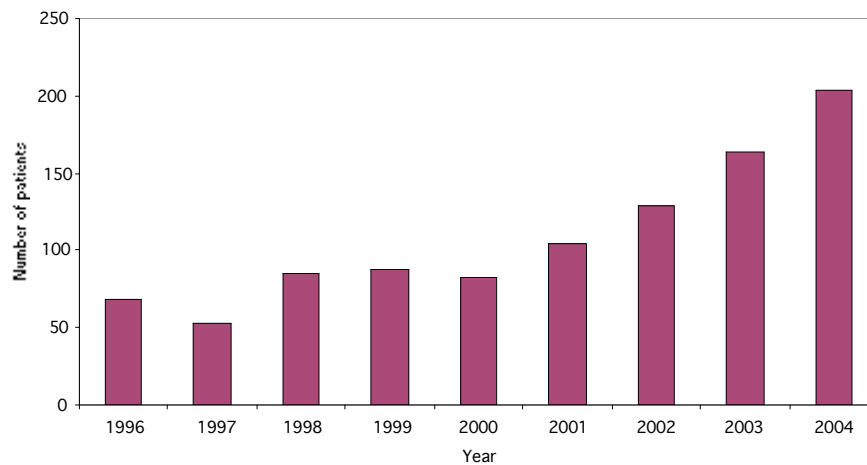
0 days to 5 years with 15 of the children being tested in the first month of life.

The table in appendix 6 shows the geographical residence of the children by PCT area. This shows that again many of the children are from the central Manchester area, which again could reflect the local testing issue discussed above.

5.2.2 Local healthcare activity data

The table in appendix 11 shows hospital admission data for Greater Manchester residents between 1996 and 2004 by local authority area of residence. This table illustrates a huge increase in admissions over this period from a total of 297 in 1996 to 1227 in 2004, an increase of over 400%. The table also shows that most admissions are from Manchester residents followed by residents from Rochdale and Wigan. Figures 4 illustrates a steady increase in patients with complications resulting from hepatitis C infection seen in acute hospital trusts across Greater Manchester over a 9 year period.

Figure 4: Number of patients with hepatitis C who are seen in hospital with diagnoses of cirrhosis, ascites, oesophageal carcinoma, hepatic encephalopathy or hepatocellular carcinoma across Greater Manchester between 1996 and 2004 (Source: North West Public Health Observatory)



The table in appendix 12 illustrates this increase in complications in hepatitis C patients broken down by type of complication. This indicates an increase in all types of complication, with ascites and oesophageal carcinoma showing a four fold increase over this period and cirrhosis accounting for the greatest number of complications.

5.2.3 Local death data

Since 2001 a total of twenty eight deaths across Greater Manchester have been attributed to either acute or chronic Hepatitis C.

5.3 Estimated Local Prevalence Of Hepatitis C

5.3.1 Prevalence amongst current IDUs

Estimating the burden of hepatitis C via injecting drug users in Greater Manchester is easier than estimating the burden among the rest of the population as there have been a number of relatively well-conducted prevalence surveys among IDUs. The most consistent and recent of these is the Unlinked Anonymous Prevalence Monitoring Programme's (UAPMP) survey. From a report published in December 2004 the overall prevalence of IDUs who were anti-HCV positive was 54%, with a specific prevalence of 66% and 74% for the Manchester and Wigan areas respectively.

If the average prevalence figure from the UAPMP survey is applied to the two estimates of the current population of IDUs in Greater Manchester (see Appendix 7), then between 4410 and 6739 IDUs could be infected with hepatitis C. However as the prevalence of hepatitis C found in the two study sites in the Greater Manchester area were considerably higher than the average prevalence figure it is likely that these figures provide an underestimate of the situation. If the higher prevalence figure from Wigan of 74% is applied to the higher estimate of the current number of IDUs in Greater Manchester a figure of 8734 is obtained. It is therefore likely that the number of current IDUs with hepatitis C is between 4410 and 8734.

5.3.2 Across Greater Manchester

There are several possible methods for estimating the prevalence of hepatitis C in Greater Manchester, of which three of the key methods are described.

The first method is simply applying the hepatitis C prevalence estimate from the NICE guidance of 0.4% for the general UK population to current population estimate for Greater Manchester. Using this method the prevalence estimate is 10,060. It is likely that this estimate is an underestimate of the burden of infection as Greater Manchester has a relatively high number of IDUs compared to other areas in the country and the prevalence figure for the area would be expected to be well above the country average.

The second method uses estimates from the key groups at risk of HCV obtained from local information sources, and the expected prevalence in these groups (from the literature review). The estimated numbers in these groups are totalled and as the literature shows that between 20-50% of people infected with HCV have no identifiable risk factors (Balogun, 2000; Soldan et al, 1998; McLindon et al, 1995; Crawford et al 1994; PHLS, 2000) On account of this the expected number of infected individuals has been adjusted accordingly in table 3.

Table 3: Expected numbers of people in Greater Manchester with HCV based on numbers in the key risk groups

At risk client group	Information source	Expected prevalence of HCV (%) (95%CI)	Population size (at December 2005)	Expected numbers with HCV
Haemophilia	Department of Haemophilia, MRI	59 (51 – 67)	1600 (a)	300 (e)
Prisons:				
<u>HMP Forest Bank</u>	HMP Forest bank			
Adult male - convicted		7.1 (6.1 – 8.1)	910 (a)	65 (e)
Adult male - remand		20 (16 – 24)	120 (a)	24 (e)
<u>HMP Manchester</u>	HMP Manchester			
Adult male - convicted		7.1 (6.1-8.1)	995 (a)	71 (e)
Adult male – remand		20 (16-24)	215 (a)	43 (e)
<u>HMP Buckley Hall</u>	HMP Buckley Hall			
Adult male Convicted		7.1 (6.1-8.1)	400 (e)	28 (e)
<u>HMP Hindley</u>	HMP Hindley			
Young Adults, male convicted		1.4	360 (a)	5 (e)
Total (Prisons)			3000	236 (e)
Haemodialysis				
Bolton General Hospital	http://www.renal.org/unit/index.	14 (7-13.4) (e)	48 (a)	7 (e)
NMGH				
Wythenshawe			40 (a)	6 (e)
MRI			72 (a)	11 (e)
Rochdale (Birch Hill)			182 (a)	25 (e)
			64 (a)	9 (e)
Total (haemodialysis)			406 (a)	58 (e)
IDUs	Anchor Study point estimate of current IDUs (appendix 7)	66	8166	5390 (f)
	Total currently in contact with drug treatment services (appendix 7)	66	11803	7790 (g)
				Average of f and g = 6590
Adjusted total				11052 (8980 – 14368)

*UAPMP estimate for Manchester 2004 (Frischer et al, 2004)

From this method it is estimated that the likely number of persons with hepatitis in Greater Manchester is somewhere between 9000 and 14,000. One problem with this method is that it fails to take account of the large number of past IDUs who are likely to be infected with hepatitis C as the estimates are based on the current population of IDUs. It is therefore likely that this estimate is an under estimate of the overall burden of hepatitis C.

The third method is based on obtaining prevalence figure of hepatitis C from the current and past drug using population using the “lifetime prevalence” estimate and adding this to a prevalence from the rest of the population. In this method two estimates are obtained to identify the highest and lowest possible figures. In calculating the lower estimate the overall UK estimates of lifetime injecting drug use and of hepatitis C prevalence for this group is used. In calculating the upper estimate the lifetime prevalence of injecting drug use is multiplied by a factor of four to account for the fact that injecting drug use is four times more prevalent in Manchester than the UK population as a whole. (Home Office, 2004) In this estimate the higher figure of hepatitis C prevalence from the two Greater Manchester sites in the UAPMP survey was used.

In both estimates 358 is added to the total to reach a final estimate. This figure is relates to the number of persons estimated to have hepatitis C in Greater Manchester in the haemodialysis and haemophilia risk groups. These groups are most likely to excluded from the general population and lifetime prevalence estimates and should therefore be added to the total. Prisoners are not added to this total as most will have acquired their infection from injecting drug use and will be included in the lifetime prevalence estimate.

From this method, the estimated number of persons with hepatitis c in Greater Manchester is between 4000 and 22,000. As there is good evidence that injecting drug use in Greater Manchester is considerably higher than the overall UK population it is therefore likely that the actual figure is closer to the higher estimate than the lower estimate. This method is arguably the most robust as it includes the population of past IDUs in the estimate.

Table 4: Estimated numbers of persons with hepatitis C in Greater Manchester based on estimates of current and past IDUs

	Population	Prevalence of behaviour	Population with Behaviour	Prevalence of hepatitis C in this group	Estimated Number with hepatitis C
Estimate Using UK figures for lifetime prevalence of injecting drug use and for the prevalence of hepatitis C in this group					
Lifetime Prevalence Injecting Drug Use 16-74	1744305	0.004*	6977.2	0.42	2930.4
General Population	2,514,756	1	2514756	0.00033**	829.9
Total					3760.3
Adjusted total †					4118
<u>Estimate using Manchester specific figures for lifetime prevalence of injecting drug use and for the prevalence of hepatitis C in this group</u>					
Upper Estimate Adjusting For GM Factors					
Injecting Drug Use 16-74	1744305	0.016***	27908.9	0.74††	20652.6
General Population	2,514,756	1	2514756	0.00033**	829.9
Total					21482.4
Adjusted total †					21840

* Lifetime prevalence taken from Tobacco, Alcohol and Drugs and Mental Health. London: National Statistics, 2000.

**Prevalence of hepatitis C among new blood donors used for general population estimate of hepatitis C as considered population most likely to have never injected drugs (http://www.hpa.org.uk/infections/topic_az/BIBD/sur_inf_bds.htm)

*** Adjusted to take account of the higher prevalence of injecting drug behaviour in Greater Manchester as found in Home Office study in 2004 (Home Office, 2004) – both UK lifetime prevalence and current drug use multiplied by four

† Adjusted to include figures for haemophilia and haemodialysis risk groups

†† Upper prevalence estimate from UAPMP survey for Greater Manchester

5.4 Estimating The Future Incidence Of HCV-Related Disease

The essential ingredients of a model to estimate the future incidence of HCV-related liver disease are:

- estimates of the incidence of infection over the previous decades especially estimates among injecting drug users
- estimates of the incubation period of HCV infection from the time of its acquisition to the presentation of, for example, cirrhosis and/or liver failure
- the impact of antiviral therapy in preventing HCV disease progression.

In the absence of evidence-based estimates, a crude estimate of the number of persons who might go on to develop cirrhosis of the liver can be generated. If it assumed that:

- 21,840 HCV antibody positive persons are currently alive (see Manchester specific estimate from method 3 above)
- Infection, on average, occurred ten years ago
- The rate of progression to cirrhosis is 20% within 20 years of infection
- 5% of cases will die prematurely of non-HCV-related conditions.

Since relatively few people are receiving antiviral therapy at present and since the long term impact of treatment is still uncertain a factor for treatment effect is not included. Thus, by the year 2016 there could be an estimated 4150 additional cases of cirrhosis as a result of hepatitis C infection ($95/100 \times 21,840 \times 20/100$). (MacLennan et al, 1994)

6.0 CURRENT SERVICE PROVISION

Information on current service provision was obtained through the semi-structured interviews with key service providers and through the questionnaires. A summary of the respondents is included in appendix 9.

6.1 General

Greater Manchester includes 11 local authority areas. There are 28 NHS organisations within the Strategic Health Authority's (SHAs) boundaries: 14 primary care trusts; 3 mental health trusts; 1 ambulance service trust; 9 hospital trusts; and 1 specialist cancer trust based.

Within Greater Manchester there is one centre providing hepatology services for adults based at Central Manchester and Manchester Children's Hospital Trust. This service provides care for residents of Greater Manchester as well as for residents from outside Greater Manchester. Within the conurbation there is a specialist infectious disease unit based at North Manchester General Hospital site within the Pennine Acute Hospital Trust. Virology laboratory services are provided at Central Manchester and Manchester Children's University Hospital Trust.

6.2 Testing

Six types of service indicated that they were involved in testing patients for hepatitis C. These included gastroenterologists, drug services, prison healthcare services, and specialist services (Consultant in Infectious Diseases and the Consultant Hepatologist).

Table 5: Results summary for groups indicating offering testing services:

Category	Gastro- enterologists	Drug & alcohol services	Prisons	GUM	Voluntary Agencies	Infectious Diseases & Hepatology
Sampling method						
Blood	7 /7	4 /7	3 /4	1/1	1 /4	2 /2
Oral swab		6 /7	1 /4		1 /4	0
Tests offered						
Antibody test	7 /7	7 /7	3 /4	1/1	1 /4	2 /2
PCR	4 /7	6 /7	3 /4	1/1	1 /4	2 /2
Viral Load	3 /7		1 /4	1/1		2 /2
Genotyping	3 /7		1 /4	1/1		2 /2
Where are specimens sent						
MRI	6 /7	4 /7	3 /4	1/1	1 /4	2 /2
Altrix Glasgow / Warrington		5 /7			1 /4	
Local lab		2 /7				
Referral onto others for testing						
No	3 /7			1/1		2 /2

Yes - to NMGH		3 /7	1 /4			
Yes - to GP		2 /7				
Pre/Post-test discussion						
Pre test discussion		7 /7	3 /4	1/1	1 /4	
Post test discussion– if test +ve		7 /7	3 /4	1/1	1 /4	
Post test discussion if test –ve		7 /7	3 /4		1 /4	
Trained Counsellors used?						
Yes		3 /7	1 /4	1/1	1 /4	
No		4 /7	2 /4			

6.2.1 Specialists

Two specialists were interviewed, a Consultant in Infectious Disease at North Manchester General Hospital (NMGH), and the Consultant Hepatologist at Manchester Royal Infirmary (MRI). Both noted that a full range of tests were available, although many patients had already been confirmed as PCR positive prior to referral, and limited testing may be required for some patients.

The respective specialities of the two consultants were felt to be complementary, with the Infectious Disease Unit at NMGH providing specialist support for patients requiring complex care related to communicable diseases (e.g. co-infected with HIV, drug use), and MRI providing care for patients with complex hepatological conditions (e.g. decompensating cirrhosis). However, both units treat patients who fall outside these groups.

In the case of NMGH, referral sources were most likely to be from drug services, then GP's, maternity services and Genito-urinary medicine. Some drug services were noted to refer all their hepatitis C positive clients to NMGH, and none to MRI. Patients were also reported to be offered a HIV test alongside hepatitis C testing, which was stated as important, as treatment may be different if co-infected.

At MRI, referral sources were most likely from GP's and other hospital consultants (e.g. gastroenterologists or other medical specialties). Only one of the responding drug services reported that they referred patients to MRI. Patients requiring a liver transplant are referred to transplant services in Leeds via the Consultant Hepatologist at MRI.

6.2.2 Gastroenterologists (Testing)

Samples were taken from patients via blood samples for hepatitis C antibody (anti-HCV), and PCR testing, samples being sent to the laboratory services at Manchester Royal Infirmary. However, many patients had already been tested for anti-HCV prior to referral.

Patients testing positive (anti-HCV and PCR) were reported to be referred to the specialist hepatology services at MRI, unless the local gastroenterology services was providing treatment (1 hospital). None of the gastroenterologists were utilising oral swab testing for ascertainment of anti-HCV.

The vast majority of referrals to Gastroenterologists for hepatitis C were from General Practitioners. Others included maternity services, community mental health services, Genito-urinary medicine (GUM) clinics and other hospital consultants. In many cases patients had already been tested prior to referral (particularly if coming from GPs or Community Drugs Services).

Pre-test counselling tended to be offered pre-referral, and as such was not usually required from gastroenterologists. However, one Gastroenterologist reported referring patients to the Infection Control Nurse if additional support was needed.

6.2.3 Drug services

Drug services mainly tested using only oral swabs. In one area bloods alone were used and in one area both oral swabs and bloods were taken. Oral swab samples are sent to the Altrix laboratory (Warrington or Glasgow) and blood samples are sent to MRI or local hospital laboratory services (depending on where the patient lives).

Referrals to local drug services were mainly via self-referral. Anti-HCV testing (oral swab or blood sample) was undertaken in the first instance, all but one drug service (who was soon to start testing) reported offering PCR testing alongside anti-HCV. One service reported that PCR was requested after a positive anti HCV result had been received.

Taking blood samples from injecting drug users was cited as an issue, as venous access was reportedly difficult in many cases. NMGH has offered training (theory and practical) for some Manchester drug workers to take blood samples via the external jugular vein route. However the oral swab test was reported as a preferred method for sampling in this respect.

Pre and post-test counselling appears to be offered throughout Drug Services. In three services counsellors are 'trained' counsellors. In other

cases the counsellor was reportedly trained in a related field e.g. mental health nursing, or drug and alcohol work.

The number of clients tested varied by drug service (see table 6), and for shared care services the information was difficult to collect as testing is often undertaken by a commercial company processing the oral swabs and blood tests. Drug services most frequently reported that clients were referred to specialist services at NMGH with only one service referring to MRI.

Table 6: Number of clients reported tested by responding drug services

Drugs Service	No reportedly tested (2005)	Referral of positive clients to ...
Tameside Substance Misuse Service	34	<i>Not stated</i>
Pennine Care Substance Misuse Service (Bury)	N/A (not yet testing)	<i>N/A</i>
Shared Care Support team, Manchester Drug Service	Not stated (32 clinics)	<i>NMGH</i>
Rochdale Community Drug Team, Heywood and Middleton	177	<i>NMGH</i>
Stockport Community Drug team	42	<i>NMGH & MRI</i>
Oldham Substance Misuse Service	15	<i>NMGH</i>
Bolton Substance misuse Service	N/A	<i>Bolton General Hospital</i>

6.2.4 Prisons

All four prisons in Greater Manchester reported that they undertook testing for hepatitis C. HMP Hindley (young offenders) reported that they had undertaken only one test in 2005, whilst HMP Forest Bank reported to undertaking over 100, and HMP Buckley Hall 118. HMP Manchester reported undertaking 60 tests.

All samples collected from prisoners were blood samples, which were sent to either the laboratory services at Wigan Infirmary (HMP Hindley only), or to MRI. All prisons tested for both Anti-HCV and PCR. Pre and post test counselling was offered to prisoners testing either positive or negative, although in only one case (HMP Hindley with only one prisoner tested) was this via a trained counsellor. Prisoners with a positive PCR result are reportedly referred to NMGH.

6.2.5 Laboratory Services

The two Consultant Virologists interviewed from the Virology Department at Manchester Royal Infirmary reported that samples are sent to MRI via local GP practices, drugs services, and hospital departments. Turnaround for processing an antibody test was reported to be around 24 hours. A full range of tests relevant to hepatitis C including anti-HCV, PCR, genotyping and viral load is undertaken. The laboratory currently does not process any oral specimens for anti-HCV.

Several testing protocols have been developed, including ones around neonates, needle-stick injuries, PCR and renal dialysis patients. The protocol relating to hepatitis C screening is included in appendix 10.

When surveyed, three microbiology laboratories reported that they were undertaking anti-HCV testing locally (appendix 8). One of these laboratories only undertook anti-HCV testing of renal patients in the hospital, with all other samples referred on to MRI. All other laboratories in Greater Manchester referred specimens to MRI for anti-HCV testing. All PCR tests in Greater Manchester are undertaken at MRI.

6.3 Treatment

Side effects from treatment are recognised as an obstacle in completion of treatment regimes, thus IDUs or those who abuse alcohol encouraged to address their risk taking behaviour prior to treatment. There may be differences amongst clinicians as to perceptions of risk for individual patients, but all patients are assessed on a case-by-case basis. Three of those surveyed reported that they provide treatment for individuals. These were a Gastroenterologist at one of the district general hospitals (about to start treating patients soon), the Consultant Hepatologist at MRI, and a Consultant in Infectious Diseases at NMGH. Treatment was reported as being offered as per the NICE guidance.

Table 7: Results summary for groups indicating offering treatment services:

Questionnaire category	Gastro enterology	MRI (Hepatology)	NMGH (ID)
Treat patients ?	Wigan	Yes	Yes
Treat following oral testing result alone?	No	No	No
Average time from first appointment to start treatment		Variable. Average 5.4 months (range 0-10 months)	4 weeks 1st appt. 2-3 months start treatment. Liver biopsy – 3 months wait.

Number of referrals received for patients requiring treatment	Wigan one only so far	MRI – approx 280 invitations for appt sent annually	NMGH – approx 20 per week
Number commenced on treatment	Wigan 1 to commence	130 in 2004 (year on year increase in numbers treated from 63 in 2001)	93 treated April 2004 – April 2005
% of patients requiring case by case funding request to relevant PCT	Wigan –1 patient	77	0
% who commence and then complete treatment	n/a	unavailable	Approx 88%
Yes- do consider treating if			
Alcohol use	Wigan - case by case (unlikely if abuse)	case by case (unlikely if abuse)	case by case (unlikely if abuse)
Injecting Drug Use	Wigan - case by case (unlikely if exposure via IDU a high risk)	case by case (unlikely if exposure via IDU a high risk)	case by case (unlikely if continuing at risk of re-infection by sharing equipment).
% referred who do not commence treatment - DNA or drop out	n/a	13% fail to book 1 st appt Of those who book, 15% DNA 1 st appt	44.3%
Defaulting (DNA) patients – how managed	n/a	Referrer (e.g. DAT worker) checks patient/client attended MRI – letter to GP re: DNA	Must be re-referred (patients seen once can self-refer). Onus of referrer to check if patient/client attended.

6.3.1 Gastroenterologists (Treatment)

Three Gastroenterologists expressed an interest in treating uncomplicated cases, but cited funding as a potential problem. Patients were referred to them for assessment, and then cases were usually referred onto either NMGH or MRI (mainly). Some gastroenterologists reported undertaking aspects of clinical ‘workup’ prior to referral on including requesting liver biopsy, undertaken within local hospital radiography departments. One of the gastroenterologists confirmed that he was about to start treating one relatively uncomplicated hepatitis C case after successfully obtaining funding from the PCT.

Differences in the delay from referral for liver biopsy to the biopsy being undertaken varied, with one trust reporting a wait of around 6 weeks and another of around 4-6 months. Although it was recognised that the disease has a relatively long-term rate of progression, long delays in the availability of a liver biopsy for patients was cited as a potential barrier to the optimisation of treatment.

Current arrangements for funding hepatitis C treatment are via the Primary Care Trust where the patient is living. At present, for many patients requiring treatment, the treating clinician must request funding from the appropriate Primary Care Trust. It is therefore difficult for local gastroenterologists to offer accurate information to patients regarding likely timescales for commencement of treatment. The difficulty experienced by a large number of patients in meeting the requirements of treatment for hepatitis C was recognised, as a large number were reported to have relatively chaotic lifestyles due to injecting drug use, or mental health problems.

Gastroenterologists stated that although they may be able to manage treatment for a very small number of patients within current capacity, all stated that in reality the effects of treatment and the nature of the client group require additional support, and a specialist nurse was cited as a possible solution. In general, specialist nurses for management of hepatitis patients were identified by most gastroenterologists to be an essential component of local services aimed at tackling hepatitis C.

It was identified that a specialist nurse would need advanced knowledge of hepatitis C treatment, but would also need to be skilled in working with IDUs. The most effective location for delivering the work of specialist nurses (i.e. hospital, community or both) was not specified, however gastroenterologists identified a need for specialist nurses to keep close contact with the hospital services to enable completion of treatment regimes.

Gastroenterologists stated that there needed to be increased awareness across primary care regarding testing, with a focus on getting more patients referred on for treatment.

Referral sources to gastroenterologists are mainly from general practitioners and via specialist drug services, maternity services, community mental health services, GUM clinics and from other hospital specialities. However, some gastroenterologists reported that they received relatively few referrals from local drug services, there was an assumption that this group of patients are probably referred straight to NMGH and to a lesser extent to MRI.

6.3.2 Specialist Services

6.3.2.1 Manchester Royal Infirmary

The Specialist Hepatology Service at MRI is the principal treatment centre in the conurbation for patients with complex liver disease. The service currently is made up of a Consultant Hepatologist, one Hepatology Nurse Specialist (currently on long term leave, whose workload is temporarily covered by a full time Associate Specialist /Registrar) and one 0.5 Hepatology Support Nurse. The unit offers teaching to rotating Senior House Officers, but does not have a liver transplant centre, and consequently attracts lower numbers of hepatology training grade doctors.

MRI receives both local and tertiary referrals, and the pathway to treatment for many patients (especially those from tertiary centres) can be lengthy. Patients referred from their GP (e.g. after a positive blood test), wait for an invitation to book an appointment, then ring, confirm and wait for the appointment (13% don't book an appointment, of those who do, 15% DNA). Further invitations to book are not sent unless the patient is re-referred. After the initial assessment a decision for treatment is made.

If the patient is not from the catchment area of the local PCTs (Central, North and South Manchester PCTs) MRI must then apply to the patients home PCT for funding (129 cases in 2005) then wait for confirmation of funding (current average wait from request to decision 2.3 months – range 0-11 months) until an appointment can be offered. MRI currently takes referrals for any type of hepatitis C patient (all levels of severity).

Mainstream funding for additional staff has reportedly been difficult to secure, with funding from the private sector having been crucial in securing a part time nurse and to support the funding for another full time nurse. Thus a large proportion of the current specialist nursing provision at MRI is provided from the private sector, without which a substantial amount of the treatment services offered for hepatitis C could not be offered.

The Consultant Hepatologist has been able to provide support and input into two groups intended to develop hepatology care and treatment. The North West Hepatology Network is intended for gastroenterologists with an interest in hepatology to meet to discuss all areas of hepatology practice. In addition to this group, a wider Viral Hepatitis Group has been formed, which is intended for all those involved in treatment of viral hepatitis, including

Gastroenterologists, Nurse Specialists, Infectious Disease Physicians and Haematologists.

6.3.2.3 North Manchester General Hospital

Current staffing consists of 5 Consultants in Infectious Disease and 1 full time nurse (band 7 - funded by industry). Funding has also been obtained from industry for a 0.2 WTE pharmacist specifically to deal with hepatitis C drugs.

Referrals to the service currently follow a positive blood test (Anti-HCV and PCR positive). An oral swab test alone is considered insufficient. NMGH receives around 20-25 referrals of new cases of hepatitis C per week. Non-attendance rates are high at 33% for the first appointment (better if drug service worker brings clients) and 25% for follow up appointments. Between April 2004 and April 2005 93 patients were commenced on treatment for hepatitis C. Over this period there were 20 treatment failures (10 stopped treatment and 10 medically discontinued), and 63 completed treatment (with 10 ongoing).

New patients can usually expect an appointment within 2 months, and a liver biopsy within 3 months, with treatment starting within 2 months (although the service is limited to 10 new patients starting treatment a month). Recently the waiting time has increased due to increasing numbers of referrals without sufficient staff. NMGH have a treatment agreement for funding with all Greater Manchester PCTs.

Links between NMGH and the local prison (HMP Manchester) are established, with one of the consultants providing an in-reach infectious diseases clinic at the prison on a monthly basis. Most of the prisoners seen in this clinic are being investigated or treated for hepatitis C, B or HIV. Aside liver biopsy, all investigations and treatment for prisoners can be undertaken in the prison setting. Training and support are offered to healthcare teams at Buckley Hall and Forest Bank.

The Infectious Diseases Service at North Manchester General Hospital accepts referrals for hepatitis C treatment from a range of sources. An established history of working with IDUs (and thus drug services) has been developed from their work with HIV patients and general infection in drug using population. A large proportion of the referrals for hepatitis C treatment from drug services in Greater Manchester are to NMGH. The appointments system at NMGH can cause difficulty for IDUs however, as only one appointment is sent out, and referrers are not informed if clients do not attend. If clients do attend their first appointment, they are reportedly highly

likely to continue treatment. Attendees come from as far as Macclesfield, and having drug service workers supporting clients by reminding them of appointments and offering to take patients to appointments improves attendance.

NMGH has provided training to primary care and drug teams across Manchester and reports to have good existing community links and infrastructures. NMGH also offers a community clinic at 'The Bridge', which is part of Manchester Drug Service, however non-attendance rates at this service are comparable to hospital clinics.

It was identified that many straightforward cases at NMGH could be managed via a nurse-led service using outreach and community clinics and with supervision from a specialist consultant. The number of cases at NMGH has escalated over recent years and as with the service at MRI, without industry funding the treatment of majority of cases would be extremely difficult. Demands on the infectious disease service have increased due to the increased prevalence of HIV (due to more effective treatments), and development of nurse led interventions for hepatitis C management considered essential. The broad nature of a specialist nurse role (e.g. counselling, testing, supporting those on treatment and providing information) are identified as cost-effective means of increasing capacity. However medical staff need supervising adequately to ensure a high quality service

6.4 Prevention And Health Promotion

Two of the groups surveyed reported that they offered health promotion and prevention services. These were drug services, and prison healthcare services.

Table 8: Summary of prevention and health promotion services provided

	Drug Services (of those responding)	Prison Healthcare (of those responding)
Provision of prevention and health promotion services to:		
General public	2 /8	1 /4
Other professionals	4 /8	1 /4
People living with hepatitis C	4 /8	-
Carers of people living with hepatitis C	1 /8	-
People co-infected with HIV	3 /8	1 /4
Schools		1 /4
Drug Users	7 /8	2 /4
Prisoners	1 /8	3 /4
Type of activity:		

Written information	7 /8	3 /4
One-to-one advice	7 /8	3 /4
Groupwork	3 /8	-
Provision of condoms	7 /8	2 /4
Provision of needles and syringes	6 /8	-
Providing vaccination against hepatitis A	4 /8	2 /4
Providing vaccination against hepatitis B	7 /8	3 /4
Types of information:		
Preventing infection	7 /8	3 /4
Testing	7 /8	3 /4
Treatment	6 /8	3 /4
Lifestyle and or living with hepatitis C	6 /8	3 /4
Employment/benefits	2 /8	1 /4

There appeared to be a large amount of consistency amongst responses within the drugs services and prison healthcare services. A wide range of methods and activities were reported, and these were aimed at a wider audience than the respective clients targeted by the two groups of services. One drug service had attempted to raise awareness within one primary care practice, particularly for patients from a particular minority ethnic group. The GP practice had 2000 eligible patients, and the impact of a significant number of these patients coming forward for testing was felt to be beyond the capacity of the practice at the time.

One drugs service highlighted the stigma felt by those testing positive, and the apparent concern about family and friends. Additionally, not all clients were felt to be ready to address the issue. The importance of effective health promotion methods which are able to reach those who are most at risk was recognised throughout the questionnaires and interviews, as was the difficulty in managing the additional workload and cost which would result, firstly regarding testing, and then treatment. The absence of a local blood borne virus specialist nurse was also cited as a barrier to undertaking health promotion and prevention work.

6.5 Policies, Procedures And Staff Training

Table 9 shows the groups reporting that they had policies/procedures and protocols for hepatitis C service provision, and who offered and received training on hepatitis C.

Table 9: Policies, procedures and staff training reported by those responding

	Gastro- enterologists	Specialists	Drugs services	Prison Health care	Virologists
Local policies developed			4 /8		2/2
Policies utilised from elsewhere			2 /8	1 /4	
Policies relate to					
Counselling			4 /8	1 /4	
Prevention			3 /8	1 /4	
Referral	1 /7		5 /8	1 /4	
Testing			5 /8	1 /4	2/2
Treatment	1 /7	1 /2	2 /8		
Training is offered to staff in own service	1 /7	1 /2	5 /8	2 /4	2/2
Training offered by you to other staff	1 /7		2 /8	2 /4	

Overall, policies existed primarily with regard to referral and testing and to a lesser extent regarding counselling, prevention and treatment, and these were generally locally developed policies. Policies for treatment were likely to be based upon the NICE guidance.

Training on hepatitis C did not feature very frequently in any of the responses, with only 10 (out of 23 eligible) of those responding reporting that staff in their service received training about hepatitis C. In addition, only 4 respondents reported that they offered training to others about hepatitis C. Two of these were within two of the prisons, one was a drugs service and the other was the Infectious Diseases Service at NMGH (which related to an annual update/training day). Thus only a limited amount of activity regarding training is currently being undertaken.

7.0 CORPORATE NEEDS ASSESSMENT

A corporate needs assessment was undertaken to ascertain the views and perspectives of key stakeholders. This review did not however include the views of patients and clients and as such offers an incomplete assessment of the situation. Analysis of 'user' views was felt to be outside of the capacity of this needs assessment, although could be undertaken at a later date.

Like many NHS services, high existing workloads were apparent for all those included within this needs assessment. There exists a strong commitment across all service providers towards ensuring that the uptake of testing was increased, and to promoting and supporting treatment those with hepatitis C.

7.1 Testing

There are no common testing protocols or referral protocols for hepatitis C in Greater Manchester. Services providing testing around Greater Manchester are perceived to have largely developed in an ad-hoc way in relation to who does which tests and for whom.

The establishment of high quality laboratory processes at MRI are seen as an essential component of local services for hepatitis C. It was also felt that assurances on quality control from other laboratories undertaking anti-HCV testing should be identified. Some limitations of a centralised laboratory service were noted, particularly in relation to the cost of transport, and disseminating results back to local services quickly, as not all areas reported they were able to receive laboratory data electronically.

The virologists reported that MRI laboratory services had the capacity to process more samples. However, it was also noted that there is a recognized skills deficit within all NHS laboratory services, as staff are lost to the private sector after they are sufficiently experienced (largely as a result of the large pay differentials between the public and private sector).

A frequently reported issue around the processing of specimens is the problem that positive antibody tests are not always systematically followed up by a PCR test. This could be done within the laboratory using the same sample directly following an antibody positive result. Undertaking PCR on all samples found to be anti-HCV positive was cited as a means to speeding up the whole diagnostic process and avoiding the problem of obtaining further blood specimens.

Many drug services noted they preferred using the oral swab testing method. Although the local virology laboratory does not process tests from oral swabs, their use was considered by the virologists to be beneficial if it enabled more individuals to be tested, particularly those in high risk

groups who had difficult venous access. The virologists noted that it would be difficult to develop a local oral testing service, as there are issues around the validation of tests and obtaining oral testing kits.

Several concerns around oral testing for hepatitis C were noted, particularly around the sensitivity of testing using this method which is only 95% and the implications for local surveillance of a private company undertaking testing, as positive results are not incorporated into existing NHS surveillance systems. NMGH cited a recent 'false negative' case, which highlighted their concern that the accuracy of the test needs to be carefully considered prior to any widespread recommendation of its use. The NMGH team also reported that a positive result from an oral swab alone would be insufficient for referral. Despite these concerns most felt that the relative merits and costs of all testing methods, including oral swabs, should be considered in developing testing protocols.

The virologists reported that the optimal testing was through 'near patient' testing (i.e. an 'immuno-chromatographic test'), which is not yet available. Testing was reported to be possible from a finger-prick blood spot sample (relatively easier to obtain than venous blood samples) and it was noted that a pilot from the National Treatment Agency may provide further information on this method.

Some drug services reported that clients often decline testing and referral for a variety of reasons. These include 'felt stigma', fear of tests (especially liver biopsy), previous bad experiences with services, long waiting times, and 'physical barriers' to accessing services (e.g. geographical location, cost of transport), particularly those in central Manchester. Thus, non-attendance rates were noted to be 'very high', with one service reporting a non-attendance rate of approximately 65% for clients referred on to specialist services. Drug services also noted the difficulties in reaching out to ex-injecting drug users and that getting ex-injecting drug users to come forward for testing was a major challenge.

7.2 Treatment

The Hepatology Service at MRI are required to apply for funding on a case by case basis for patients from several of the local PCTs and this was felt to lead to inequitable delays in access for many patients. In general it was noted that patients with a more complex hepatological status are usually referred to this service, although the service is also referred many uncomplicated cases.

Referral of clients to NMGH was reported by some drug services to be the result of historical practices, patient preference, and existing relationships with the hospital. Many drug services noted that they are referring solely to NMGH, citing patient access and acceptability as key factors. The acceptability of services to clients was felt to be crucial in ensuring

adherence to treatment. Clinicians at NMGH do not have to seek case by case funding, so decisions to commence treatment for individual patients are not subject to any delays in relation to funding decisions, and patients are able to commence treatment more quickly.

Both NMGH and MRI report substantial non-attendance rates for hepatitis C referrals, which is felt to be a common among IDUs. Appointment systems within both hospitals differ, although both systems are considered to be relatively inflexible to the needs of IDUs. Several suggested that it may be useful to review appointment systems for hepatitis C patients.

A common finding from the interviews and questionnaires was that the Infectious Disease service at NMGH is considered the most appropriate service provider for those requiring care for their infection/ immunological condition (e.g. HIV), and MRI the most appropriate service provider for those with more complex hepatological conditions (e.g. patients with decompensating cirrhosis).

For hepatitis C clients without complications, there was a general consensus that management by local gastroenterologists could be a step toward getting more patients commenced on treatment and increasing adherence to treatment. Indeed, most respondents thought it would be good if local gastroenterologists were to begin to routinely provide treatment for hepatitis C patients.

For gastroenterologists to treat local hepatitis C patients, it was recognised that they would need additional specialist nurse support (either 'hepatology' or 'blood borne virus' specialist nurses). It was felt that these nurses would require expertise and skills which were clinical in nature, whilst also being able to work well with IDUs and local drug services. Currently most of the specialist nursing around hepatitis C is funded from the private sector, as local services have been unable to secure sufficient funding from the NHS. The preferential location of these nurses (i.e. acute based, community based or both) was not specified.

Many identified a need to clarify the referral options for patients, as many find it hard to identify which type of service patients may require from the outset. It was noted that the development of common referral pathways could assist in this process.

7.3 Prevention And Health Promotion

There was widespread recognition that the drug services agenda in recent years has become increasingly focused around crime reduction at the expense of harm reduction. This shift in emphasis has been driven from a national level and there is concern that as a result of this shift in focus local harm reduction services for drug users have become patchy. Many felt that in relation to preventative activities around drug users there is little

collaboration between drug services and NHS health promotion services in PCTs.

The absence of specialist blood borne virus/hepatology nurses was cited as a major barrier in undertaking health promotion activities for hepatitis C. Additionally, the capacity of current services to either test and more significantly treat those identified was seen as a critical factor in undertaking health promotion work. The consequences of a large campaign on local services was highlighted, particularly primary care, within which it was felt that knowledge around the management of hepatitis C patients was limited.

The recommendation from the National treatment Agency that Injecting Drug users should all be encouraged to take up a test for hepatitis C (principally targeted at clients in contact with drug services) was generally welcomed. However, several noted that the implications for this on current services has yet to be explored and planned for.

The need for co-ordinated and targeted health promotion activities were felt to be key components in a successful local hepatitis C strategy or action plan.

7.4 Policies, Procedures And Training

Although several services had existing policies, there appeared to be none which were commonly used across all agencies. The development of local referral criteria and care pathways were cited as a priority.

Some training for hepatitis C is currently available locally, although it was identified that this could be increased, and that there is a need for training across all services, especially within primary care.

8.0 COMPARATIVE NEEDS ASSESSMENT

On exploring the literature two previous health needs assessments around hepatitis C services were found which include detailed descriptions of local services. Both assessments were undertaken in 2000, one in Surrey and the other in Scotland. Although neither areas are closely comparable to Greater Manchester in terms of geography or the underlying demography of the population and the work is now six years out of date, these reviews provide a baseline of services which can be used for comparison. In relation to hepatitis C, Greater Manchester has more in common with Scotland than Surrey, which has only a small number of IDUs.

In the Surrey needs assessment a number of local gaps in service provision were found. Prevention and education interventions were found to be provided by too few organisations for too narrow a range of client groups and overall there was a perceived lack of written information. Insufficient time was spent for both pre and post-test counselling and the availability of treatment across the area was patchy. Hepatitis B vaccination of people with hepatitis C was also found to be variable.

Further to the needs assessment in Surrey a strategy was developed which included plans to develop a treatment centre, led by one hepatologist. Resources were identified by local commissioners to fund combination therapy and a drug company agreed to provide the drugs at a discounted price and fund a new HCV Nurse Specialist post. Protocols for testing and treatment were developed. Health promotion expanded their HCV education programmes, particularly in schools and youth centres through an integrated programme for blood-borne viruses, sexual health and drug misuse. Drug services made plans to improve injecting equipment exchange, information provision, access to testing, support groups and staff training. The hepatology team set up HCV outreach clinics in prisons and measures were implemented to improve HBV vaccination uptake in prisons and drug services.

The Scottish needs assessment found that services provided for prevention, detection and management of chronic hepatitis C in some health board areas had developed in an ad hoc manner with little strategic planning or identified funding. In terms of surveillance systems, there was poor local information flow to departments of public health. At the time of the review there was no national strategy to provide guidance on prevention, detection and management. The review found inequity across Scotland in provision of testing, specialist assessment and access to the effective treatment. Clinical services that existed were delivered by a wide range of specialists in a variety of clinical settings. Only one area had a dedicated service for hepatitis C patients and only three areas had clinical nurse specialists.

The review led to a series of recommendations which included education and training for healthcare professionals and other occupational groups within the public, private and voluntary sector who work with drug users. It was also recommended that a lead clinician or clinicians should develop, deliver and co-ordinate appropriate local services to ensure an integrated pathway of care for all patients with hepatitis C. It was recommended that these changes could be facilitated by the appointment of clinical nurse specialists. The review also identified the need for an enhanced national register of hepatitis C cases to be established in collaboration with existing clinical databases so that the natural history of hepatitis C, the impact of treatment and the healthcare resources utilized by infected patients can be monitored. .

Services in Greater Manchester have several areas in common to both areas. The lack of protocols, care pathways or strategic planning of services appear to have been common problems for all areas. An in-reach service into prison is clearly identified as an important step towards tackling the problem in this setting, this already exists in one of the prisons in Manchester. Vaccination of hepatitis C cases against hepatitis B is patchy in areas and identified as a common problem. The provision of dedicated hepatitis nurses is identified as an important development by both needs assessments. Poor surveillance information is common to all areas and the establishment of an enhanced register of hepatitis C cases would be helpful to local services in Greater Manchester.

9.0 CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

Estimates of local prevalence of chronic hepatitis C infection for the population of Greater Manchester indicated a considerably higher level than across England as a whole. This higher local prevalence is likely to reflect the high rates of injecting drug use in the area and the high prevalence of hepatitis C infection found among IDUs. The greatest risk of hepatitis C infection appears amongst white males, aged from 30-44, who have had a history of injecting drug use.

The number of individuals who have chronic hepatitis C infection within the greater Manchester area was estimated using different methods. The method considered most robust, as it includes estimates of past injecting drug use as well as current use, provides an estimate of between 4,000 and 21,000 individuals affected. When considered alongside the estimates from the other methods it is likely that the true figure lies between 10, 000 and 21, 000. As the known prevalence of injecting drug use and hepatitis C prevalence in Manchester is much higher than the national average, the actual number affected is likely to be at the higher end of this estimate.

The needs assessment has highlighted a number of issues for services. These are further described alongside recommendations, which are structured around the hepatitis C action plan key points at the end of this chapter. In summary:

Testing

- Testing is undertaken using both blood and oral testing methods and by a number of services but there are currently no commonly used testing protocols available for those undertaking testing in community or hospital settings.
- The oral test is preferred by drug services, largely because it is more acceptable to clients and it is easier to collect the sample. However, blood tests are preferred by clinical specialists for a variety of different reasons including accuracy of the test, perceived validity of the method, ability of local laboratories to undertake the testing and inclusion of the data from the testing in local surveillance systems which is important for planning purposes.
- Non-attendance rates at appointments for testing are high.
- Referrers do not always know if a patient has defaulted and requires re-referral, and appointment systems do not cater for the difficulties faced by injecting drug users.

Treatment

- Up to fairly recently treatment has only been provided by specialists in two central locations, at the hepatology unit and the infectious disease unit, and the numbers of patients who have been started on treatment is relatively small compared to the population of people with chronic hepatitis C in Greater Manchester. Although one local gastroenterologist is currently starting to undertake local treatment of cases, the capacity of current services to expand to meet the unmet need of untreated cases is clearly limited.
- Although there are now three different types of service providing treatment for hepatitis C within Greater Manchester, there are no defined referral pathways that would help identify which of these services are most appropriate for referring people with hepatitis C.
- Ease of access to treatment differs across the conurbation with most individuals referred to centralised services in Manchester for treatment, which some consider does not provide equitable access.
- Local Gastroenterologists have expressed an interest in treating relatively uncomplicated cases and a development in this direction is widely supported. Treatment by local gastroenterologists would necessitate the need for common treatment protocols for patients that currently do not exist, apart from the NICE guidance.
- Funding arrangements for treatment are cumbersome and time consuming for clinicians.

- Adherence to treatment is an issue, and patients require considerable support and monitoring to enable to successfully complete treatment. There are insufficient specialist nurses to support existing patients, and a large proportion of the funding for those that currently exist has been obtained via drug companies.

Health Promotion and Prevention

- There appears to be only a limited amount of health promotion work occurring around hepatitis C and little collaboration of this work across services. The focus of the drug services agenda around crime reduction has diverted resources away from harm reduction services and resulted in patchy services for drug users around prevention.

Policies and Protocols

- Several policies were being utilised for both testing and treatment, although none were common to all agencies.

9.2 Recommendations

Recommendations are laid out alongside the Hepatitis C Action Plan key action points (see table)

DRAFT: LOCAL ACTION PLAN (Towards national plan 'action points')

Action 1: SURVEILLANCE AND RESEARCH					
Actions	Purpose	Progress on Action	Suggested Future Local Action	Lead Agency	Timescale
ONGOING ACTIONS					
Improve estimate & incidence prevalence of HCV in general & injecting drug populations	Impact & prevention means can be detected & evaluated	Estimates of incidence and prevalence in HPA 2005 Annual Report. Local prevalence estimates undertaken by GMHPU	Increase data collection and reporting locally. Support development of database for ongoing monitoring of situation.	HPA	
Gain 'better' picture of the burden of liver disease	Inform and planning of services for patients	Local attempt to obtain data from services in relation to this	As above + improve local collection of outcome data e.g. treatment, transplants and deaths.	HPA	
NEW ACTIONS					
Develop system for monitoring the offer & uptake of testing to those attending specialist drug services & needle exchange services.	Monitoring offering & uptake to ascertain baseline & impact of measures to increase uptake testing	Drug services have system of recording the numbers of clients tested	Improve local systems for monitoring numbers with development standard databases and sharing of this data locally to improve surveillance information	National Treatment Agency for Substance misuse	
Produce annual report on Hepatitis C	To monitor number of laboratory confirmed reports, proportion of IDUs attending drug services who are aware of their infection and the prevalence of HCV among recent injectors	HPA 2005 GMHPU 2006	Local epidemiological report produced by GMHPU	HPA	
Develop Modelling Techniques	Project future numbers of patients needing specialist treatments & care for HCV and report and inform planning	Crude estimates of future burden calculated for needs assessment	Using national models develop detailed local projections	HPA	
Investigate prevalence of body piercing	Identify potential 'risk' of HCV from this route	-	Work with local authorities to investigate situation locally ??? possibility of an audit on current services	HPA /LA	

Action 2 : INCREASING AWARENESS AND REDUCING UNDIAGNOSED INFECTION

Actions	Purpose	Progress on Action	Suggested Future Local Action	Lead Agency	Timescale
ONGOING ACTIONS					
Develop professional awareness of HCV	Raise awareness and knowledge	Limited awareness raising provided locally	Local awareness raising opportunities, variety of settings including primary care. ? Role for specialist nurses		
Sustained public awareness raising campaign	Raise awareness, targeting affected groups.	Local public campaign imminent (FaCe It Campaign run by DoH in Manchester March 2006)	Support local delivery of national campaign. Identify local opportunities for increasing awareness in target groups.		
Testing facilities to be provided by NHS in a range of clinical & community settings e.g. GUM, Clinics, GP, Drug treatment centres.	Increase uptake of testing and overcome barriers to access for marginalised groups	Testing available from variety of services locally	Strengthen testing services, ensure adequate funding available, develop clear testing protocols, undertake awareness raising and skills building (e.g. taking blood samples).	Local services	
NEW ACTIONS					
Promote inclusion of up to date information about HCV in education for health professionals	Improve understanding and knowledge among professionals	-	Opportunistic educational events across Greater Manchester e.g. Grand Rounds, GP training days, etc.		

Action 3 : HIGH QUALITY HEALTH & SOCIAL CARE SERVICES

Actions	Purpose	Progress on Action	Suggested Future Local Action	Lead Agency	Timescale
ONGOING ACTIONS					
Commissioning of specialist devices for hepatitis C needed for patient population in line with national definition of specialised services	Provision appropriate local services	Needs assessment undertaken for strategy development	Development of business plan for funding for local specialist services to increase capacity of current provision to meet local need.	PCT/ Commissioning Services	
Develop clinical networks for the assessment and treatment of patients	Improve provision of care	Local hepatitis and hepatology networks set up	Support for existing groups and development of other groups e.g. around prisoners	Local healthcare services	
Access to accredited laboratory services, including histopathology services, & radiology	To facilitate diagnosis, monitoring and management of patients	Accredited central laboratory services at MRI with some local laboratories undertaking some sample analysis and Altrix undertaking analysis of oral specimens	Local laboratory services due to be assessed with pathology modernisation review		
Develop local protocols /patient pathways between primary and secondary care	To provide standardised testing, referral and treatment	Some services already using locally developed protocols	Development of common protocols and patient pathways with support from local network groups	PCTs Networks	
Workforce development arrangements which meet future service needs	Ensure future workforce sufficient to deliver service	Small specialist staff workforce locally which is insufficient to meet unmet demand of people with hepatitis C	Review of specialist workforce in light of strategy decisions, with focus around possible expansion of specialist nurse team and development of their role. This would have to be matched with increasing numbers of Consultants to supervise them. Gastroenterologists to start treating once funding arrangements streamlined. However current treatment centres will need further	Strategy Group PCT Commissioning groups	

			staff to meet current demand and to expand as it will be required		
NEW ACTIONS					
Arrangements in place to achieve the above actions.	Actions can be achieved	GM strategy Group	Development of Local Action Plan and identification of deliverables and timescales	Local strategy Group	

Action 4 : PREVENTION					
Actions	Purpose	Progress on Action	Suggested Future Local Action	Lead Agency	Timescale
ONGOING ACTIONS					
The NTA, Drug Action Teams and Prison Service to review and strengthen harm reduction services	To prevent transmission of infection	Wide range of services providing needle exchange, safe disposal of needles and syringes, outreach and peer education services, provision of drug treatment services, provision of information and advice about hepatitis C	Strengthening of prevention activities and greater collaboration between local services Comprehensive review of all preventative services Input to local services from specialist nurse Extra input into prisons around provision of information	NTA, DATs in Prisons	
Good infection control practice across NHS organisations including occupational health checks for staff and effective management of occupational blood exposure incidents.	Minimize risk of HCV spread in health care settings	Infection control practice and occupational health services provided in line with national standards	Dissemination of good practice across local organisations	NHS Organisations	
Audit and promotion of good infection control practice in cosmetic skin piercing businesses	Prevention of transmission	Local authorities inspect and regulate local services	Possible input from local infection control teams	NHS and Local Authorities	
NEW ACTIONS					
Development of relevant health promotion information for prisoners	Increase awareness and reduce risk of transmission	DoH developing material	Work with local prison services to support delivery of health promotion material.	DOH, Local Health Promotion & Prison services	
Develop information for ethnic minority groups	Increase awareness and reduce risk of transmission	DoH developing material	Work with locally established groups and organisations to support delivery of health promotion material.	DOH Local Health Promotion service	

10. REFERENCES

Abusheikha, N., Akagbosu, F., Marcus, S. *et al.* (1999). Viral screening and Assisted Conception Treatment — The Bourn Hall Experience. *J. Assist. Reprod. Genet.*, **16**, 337–339.

Ades AE, Parker S, Walker J, et al.(2000) HCV prevalence in pregnant women in the UK. *Epidemiol Infect* 2000;125:399–405.

Allwright,S Bradley,F ., Long,J., Barry,J., Prevalence of antibodies to hepatitis B, hepatitis C, and HIV and risk factors in Irish prisoners: results of a national cross sectional survey. *BMJ*, 2000 - bmj.bmjournals.com

Balogun K, (2000) Communicable Disease Surveillance Centre, Colindale. *Personal Communication. Laboratory reports for HCV - 1992-1999.* Sep 2000.

Balogun,MA., Ramsay,ME., Hesketh,LM., Andrews,N (2002). The Prevalence of Hepatitis C in England and Wales- - *Journal of Infection.*

Balogun,MA., Ramsay,ME., Parry,JV., Donovan,L., Andrews,NJ., Newham,JA., McGarrigle,C., Harris,KA., Teo,CG. (2003). A national survey of genitourinary medicine clinic attenders provides little evidence of sexual transmission of hepatitis C infection. *Sexually Transmitted Infections.*

Conway M, Catterall AP, Brown EA, et al (1992). Prevalence of antibodies to hepatitis C in dialysis patients and transplant recipients with possible routes of transmission. *Nephrol Dial Transpl* 7:1226-1229, 1992.

Crawford RJ, Gillon J, Yap PL, Brookes E, McOmish F, Simmonds P et al Prevalence and epidemiological characteristics of hepatitis C in Scottish blood donors. *Transfusion Medicine*, Jun 1994; 4(2): p.121-124.

Department of Health (2002^a) *Getting ahead of the curve: A strategy for combating infectious diseases 9including other aspects of health protection).*HMSO.

Department of Health (2002^b) *Hepatitis C Strategy for England.* HMSO.

Department of Health (2004) *Hepatitis C Action Plan*, HMSO.

Department of Health & General Health Protection. (2004) *Hepatitis C: Essential information for professionals and guidance on testing.*

Frischer, M., Heatlie, H., Hickman, M., (2004) (UAMAP) *Estimating the prevalence of problematic and injecting drug users for Drug Action Team areas in England : a feasibility study using the multiple indicator method*. Home Office, 2004. Web-link on 12.10.05 <http://www.homeoffice.gov.uk/rds/pdfs04/rdsolr3404.pdf>.

General Medical Council. *Serious communicable diseases*. 1999

Gore SM, Bird AG, Cameron SO, Hutchinson SJ, Burns SM, Goldberg DJ. Prevalence of Hepatitis C carriage in Scottish prisons: Willing Anonymous Salivary Hepatitis C (WASH-C) surveillance linked to self-reported risk behaviours. *Quarterly Journal of Medicine* 1999; 92:225-232.

Haley RW, Fischer RP. (2001) Commercial tattooing as a potentially important source of hepatitis C infection. Clinical epidemiology of 626 consecutive patients unaware of their hepatitis C serologic status. *Medicine* 2001;80:134-51.

HPA, SCIEH, National Public Health Service for Wales, CDSC Northern Ireland, DRDHB, and the UASSG.(2004) *Shooting up; Infections among injecting drug users in the United Kingdom 2003*. London: Health Protection Agency.

Health Protection Agency Centre for Infections, Health Protection Scotland. Supplementary data tables of the Unlinked Anonymous survey of Injecting Drug Users in contact with services: data to the end of 2004. Surveillance Update, 2005
(http://www.hpa.org.uk/infections/topics_az/hiv_and_sti/publications/Annual2005_uu/ua_idu_2004.pdf accessed 12.03.06)

HPA (2005) Hepatitis C in England: The First Health Protection Agency Annual report. HPA.

Hope, V.D., Judd, A., Hickman, M., Lamagni, T., Hunter, G., Stimson, G.V., et al. Prevalence of hepatitis C among injection drug users in England and Wales: Is harm reduction working? *American Journal of Public Health*. January 2001; 91 (1): p 38-41.

Hope V D et al. (2004) *Enhancing the Unlinked Anonymous Prevalence Monitoring Programmes Survey of Injecting Drug Users: Blood Borne virus infection, health behaviours and risk among injecting drug users recruited from community settings in England*. Report to the National Treatment Agency for Substance Misuse. December 2004.

Howie H, Major K. (1998) *Ribavirin and Interferon alfa in the treatment of Chronic Hepatitis C*. Aberdeen, SHPIC.

Judd A, Hickman M, Jones S, McDonald T, Parry JV, Stimson GV, Hall AJ (2005) Incidence of hepatitis C virus and HIV among new injecting drug users in

London - prospective cohort study. *British Medical Journal* 2005; 330:24-25

Lee,C (2001) The management of hepatitis C in haemophilia. *CME Bulletin Haematology* 2001; 3(3):55-57

MacLennan S, Moore MC, Hewitt PE, Nicholas S, Barbara JA. A study of antihepatitis C positive blood donors: the first year of screening. *Transfusion Medicine* 1994; 4(2):125-133.

Makris M, Preston FE, Triger DR, Underwood JC, Choo QL, Kuo G, Houghton M. Hepatitis C antibody and chronic liver disease in haemophilia. *Lancet* 1990; 335 (8698): 1117 – 9.

Makris M, Preston FE. Chronic hepatitis in haemophilia. (1993) *Blood Reviews*, 1993; 7: 243-250

McLindon JP, Paver WK, Babbs C, Yates AD, McMahon RF, Love EM et al. Hepatitis C-related chronic liver disease among asymptomatic blood donors in the north west of England. *Journal of Infection*, May 1995; 30(3): 253-259.

NcCube,F., Neely,F (?2001) Hepatitis C Needs Assessment and Local Strategy Surrey Health Authority.

Neil,KR., (1997) Prevalence of hepatitis C antibodies among healthcare workers of two teaching hospitals. Who is at risk? *BMJ* 1997;314:179

NICE. Interferon alfa (pegylated and non-pegylated) and ribavirin for the treatment of chronic hepatitis C. *Technology Appraisal* 75. 2004.

NICE, Inteferon Alfa and ribavirin for the treatment of chronic hepatitis C. 2000.

Office for the Deputy Prime Minister (2004). *Index of Multiple Deprivation* 2004.

Office for National Statistics, 2003: *Census 2001*, Stationery Office, London

PHLS - National Blood Service. *Six monthly infection surveillance report - no.11*. National Blood Service Infection Surveillance. 30 Jun 2000.

Poynard T, Leroy V, Cohard M, Thevenot T, Mathurin P, Opolon P et al. (1996) Metaanalysis of interferon randomized trials in the treatment of viral hepatitis C: effects of dose and duration. *Hepatology* 1996; 24(4):778-789

Seymour C. (1996) Screening asymptomatic people at high risk for hepatitis C The case for. *BMJ* 1996; 312:1347-1348.

Singleton,M., Farrell,M., Meltzer,H., (2003) Substance misuse among prisoner in England and Wales. *International Review of Psychiatry*.15, 150–152

Soldan K, Barbara JA, Heptonstall J. (1998) Incidence of seroconversion to positivity for hepatitis C antibody in repeat blood donors in England, 1993-5. *BMJ*, 9 May 1998;316(7142): p.1413-1417.

Stein K, Dalziel K, Walker A, Jenkins B, Round A, Royle P. (2003) Screening for hepatitis C in genito-urinary medicine clinics: a cost utility analysis. *Journal of Hepatology*, 2003;39(5):814-825

Stevens,A., Raftery,J., Mant,J (2004) An Introduction to HCNA
The epidemiological approach to health care needs assessment. Found at:
<http://hcna.radcliffe-oxford.com/introduction.htm#fig2>

Sullivan DG, Kim SS, Wilson JJ, Stehman-Breen C, Gretch DR (2001) Investigating hepatitis C virus heterogeneity in a high prevalence setting using heteroduplex tracking analysis. *J Virol Methods*. Jul; 96 (1) 5-16.

Watson HG, Ludlam CA. (1992) Immunological abnormalities in haemophiliacs. *Blood Rev* 1992; 6: 26-33.

Weild,A.R., Gill,O.N., Bennett,D., Livingstone,S.J.M., Parry,J.V., Curran,L (2000) Prevalence of HIV, hepatitis B, and hepatitis C antibodies in prisoners in England and Wales: a national survey. *Commun Dis Public Health* 2000; 3: 121-6.

Wessex Institute of Public Health Medicine. (2001) *Good public health practice – general professional expectations of public health physicians in public health.*

Appendix 1

Members of the Greater Manchester Hepatitis C Strategy Group

Dr Erika Duffell (Chair)	Consultant in Communicable Disease Control, Greater Manchester Health Protection Unit
Les Allen	
Jonathan Evans	Greater Manchester Collaborative Commissioning Team
Debbie Carr	Shared Care Facilitator, Shared Care Support Team, Manchester
Dr Judith Chaloner	Consultant in Communicable Disease Control, Greater Manchester Health Protection Unit (Regional HPA Prison Lead)
Andrea Fallon	Specialist Trainee in Public Health, Greater Manchester Health Protection Unit
Dr Shaun Greer	Consultant Gastroenterologist, Royal Albert Edward Infirmary
Dr Rachael Harry	Consultant Hepatologist, Central Manchester and Manchester Children's Hospital University Hospital Trust
Bridget Hughes	Sexual Health Manager, Manchester Health Promotion Specialist Service, North Manchester PCT
Dr Paul Klapper	Consultant Virologist, Clinical Virology and HPA
Dr Ken Mutton	Consultant Virologist, Clinical Virology and HPA Laboratory, Manchester Medical Microbiology Partnership
Dr Kadukkavil Padmakumar	Consultant Gastroenterologist, Bolton Infirmary
Dr Keith Paver	Clinical Scientist, Clinical Virology and HPA Laboratory, Manchester Medical Microbiology Partnership
Dr Sheila Will	Director of Public Health, Heywood, Middleton and Rochdale PCT Chair of the Harm Reduction and Blood Borne Virus Core Group,
Alexandra Smith	Manchester Drug Service
Dr F Javier Vilar	Consultant in Infectious Diseases, North Manchester General Hospital
Dr Sheila McCorkindale	General Practitioner. Ellenbrook Medical Centre. Worsley. Salford.
Dr Chris Babbs	Consultant Gastroenterologist. Hope Hospital. Salford.
Colin Wisely	Salford Drug and Alcohol Action Team
Pegeen Murphy	Rochdale Drug and Alcohol Action Team
Matt Brierley	Lifeline
Keith Hughes	NTA

Appendix 2



HEPATITIS C SERVICE PROVIDER QUESTIONNAIRE

Once complete, please return this questionnaire to

Dr Erika Duffell,
Consultant in Communicable Disease Control
Greater Manchester health Protection Unit
Floor 7b, Peel House, Albert Street, Eccles, Salford, M30 0NJ

BY 14th FEBRUARY 2006

DETAILS ABOUT YOU AND YOUR SERVICE:

Please state your name and role:

Please state the name of your organisation:

Please describe the area/s in greater Manchester you/your service covers:

1.0 HEPATITIS C TESTING

1.1 Are you/your service involved with testing patients for hepatitis C? (if No, go to 2.0)

	Yes	No
1.2 With regard to testing for Hepatitis C, do you/your service collect samples directly from patients?		(if No, <u>go to 1.6</u>)

	Yes	No
1.3 How many samples did you/your service collect from patients in 2005?		

.....

1.4 Are these samples

	Yes	No
Blood samples?		

Oral swabs?	Yes	No
-------------	-----	----

1.5 From whom are patients referred to your service for Hepatitis C testing?

	Yes	No
GP referral		

Self referral	Yes	No
---------------	-----	----

Specialist drug services	Yes	No
--------------------------	-----	----

Outreach services	Yes	No
-------------------	-----	----

A&E department	Yes	No
----------------	-----	----

Maternity services	Yes	No
--------------------	-----	----

Family Planning	Yes	No
-----------------	-----	----

Community mental health services	Yes	No
----------------------------------	-----	----

Genito-urinary medicine (GUM) clinics	Yes	No
---------------------------------------	-----	----

Hospital	Yes	No
----------	-----	----

Other Yes No

If 'other' please specify:.....

1.6 Which of the following Hepatitis C tests do you/your service offer?

Antibody test Yes No

PCR Yes No

Viral Load Yes No

Genotyping Yes No

Other Yes No

If 'other' please specify:.....

1.7 To which laboratory do local specimens get sent for testing?

.....

1.8 With regard to testing for Hepatitis C, do you refer your patients/clients onto other services for samples to be taken for testing?

(If 'No' go to 1.10)

Yes No

1.9 If you/your service refers patients to another service for Hepatitis C testing, which service is this?

.....

1.10 How many patients did you refer on for Hepatitis C testing in 2005 (please state 'actual' or 'estimated')?

.....

1.11 How many test results did you receive back for patients whom you had referred to another service for Hepatitis C testing in 2005 (please state 'actual' or 'estimated')?

.....

1.12 Do you/your service offer pre-test counselling for individuals intending to undergo testing for Hepatitis C?

Yes No

1.13 Do you/your service offer post-test counselling and/or follow up to

Those who test positive

Yes No

Those who test negative

Yes No

1.14 Are the people who offer counselling for Hepatitis C testing on behalf of your service (i.e. pre/post test) trained counsellors?

Yes No

1.15 If you wish to comment on any ways in which the Hepatitis C **testing** component of your service or the service/s you use could be improved, please do so below

.....

.....

.....

2.0 TREATMENT

2.1 Do you treat patients for Hepatitis C infection? **(If no, please go to 3.0)**

Yes No

2.2 Do you undertake pre-treatment clinical assessment of Hepatitis C positive cases?

Yes No

2.3 If yes, please give an outline of what this clinical assessment includes:

.....
.....
.....

2.4 If you/your service does not undertake this pre-treatment clinical assessment, where is this done?

.....
.....
.....

2.5 Would you accept referrals based only upon a positive Hepatitis C antibody test done from a commercial oral testing kit?

Yes No

2.6 What range of treatments do you/your service offer for Hepatitis C (please describe)

.....
.....
.....

2.7 For the patients you/your service treat, from whom are they referred?

GP	Yes	No
GUM clinic	Yes	No
Self referral	Yes	No
Drug & Alcohol Team	Yes	No
Gastroenterologist	Yes	No
Other	Yes	No

If 'other' please specify:.....

2.8 Do you/your service provide treatment for any of the following groups?

Children	Yes	No
People co-infected with HIV and HCV	Yes	No
Patients with haemophilia	Yes	No
Prisoners	Yes	No

If you/your service do not provide treatment for any of the above groups, where would these patients normally be referred?

.....
.....
.....

2.9 Do you/your service consider any of the following a reason for not offering treatment to people with a positive diagnosis of Hepatitis C?

Intravenous drug use	Yes	No
Alcohol use	Yes	No
Other	Yes	No

- If 'other' please specify:.....
- 2.10 How many referrals did you receive in 2005 for patients requiring treatment for Hepatitis C?
.....
- 2.11 How many patients did not attend their first appointment in 2005?
.....
- 2.12 How many patients did you/your service commence on treatment for Hepatitis C in 2005?
.....
- 2.13 How many of your patients completed treatment for Hepatitis C in 2005?
.....
- 2.14 What is your (approximate) average time from referral to first appointment for Hepatitis C treatment?
.....
- 2.15 What is your (approximate) average time from first appointment to commencement of treatment for Hepatitis C?
.....
- 2.16 If patients default on appointments (DNA), how are they managed (please describe) e.g. sent further appointment?
.....
.....
.....
- 2.17 If you have identified any barriers in the pathway to treatment for Hepatitis C patients, please describe these below:
.....
.....

.....

2.18 If you wish to comment on any ways in which the **treatment** component of your service could be improved, please do so below:

.....

.....

.....

.....

.....

.....

3.0 PREVENTION AND HEATH PROMOTION

3.1 Do you/your service undertake preventive and or health promotion work regarding Hepatitis C? **(if 'no' go to 4.0)**

Yes No

3.2 Which of the following groups do you/your service provide Hepatitis C prevention and health promotion services for?

The general public **Yes No**

Other professionals **Yes No**

People living with hepatitis C (PLWHCV) **Yes No**

Carers/families of PLWHCV **Yes No**

People co-infected with HIV **Yes No**

School pupils **Yes No**

Drug Users **Yes No**

Prisoners **Yes No**

Other **Yes No**

If 'other' please specify:.....

3.3 Do you/your services Hepatitis C prevention and health promotion work include any of the following?

Provision of written information (e.g. leaflets) **Yes No**

Delivery of one to one advice **Yes No**

Delivering group work **Yes No**

Provision of condoms **Yes No**

Provision of needles and syringes **Yes No**

Provision of vaccination against Hepatitis A **Yes No**

Provision of vaccination against Hepatitis B	Yes	No
Other	Yes	No

If 'other' please specify:.....

3.4 What types of information and advice do you/your service offer relating to Hepatitis C?

About Prevention	Yes	No
About testing	Yes	No
About treatment	Yes	No
About Lifestyle & living with Hepatitis C	Yes	No
Employment and/or benefits	Yes	No
Other	Yes	No

If 'other' please specify:.....

3.5 If you wish to comment on any ways in which the **prevention and health promotion** component of your service could be improved, please do so below:

.....

.....

.....

4.0 POLICIES, PROCEDURES AND STAFF TRAINING

4.1 Do you/your service have policies, procedures and or protocols for Hepatitis C service provision? **(If no go to 4.5)**

Yes No

4.2 Have you developed any Hepatitis C policies for local implementation?

Yes No

4.3 Have you utilised policies developed elsewhere?

Yes No

4.4 In relation to Hepatitis C, what do the policies/procedures refer to?

Prevention **Yes No**

Counselling **Yes No**

Treatment **Yes No**

Testing **Yes No**

Referral **Yes No**

Other **Yes No**

If 'other' please specify

.....

4.5 Is training to other staff in your service offered about Hepatitis C?

Yes No

4.6 Do you/your service offer training to other organisations about Hepatitis C?

Yes No

4.7 If you wish to comment on any ways in which the **policy, procedures and staff training** component of your service could be improved, please do so below

.....

(END OF QUESTIONS)

If you have any further comments to add which were not covered in this questionnaire, please add these below.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Thank-you very much for taking time to answer these questions, the results will be used to inform the development of a Greater Manchester Strategy for Hepatitis C Service. If you would like to be kept up to date with the progress of the strategy, please tell us your email address here:

--

Appendix 3

Hepatitis C consultation – Service Provider list-

Interviews undertaken with:

	Deborah Carr	Manchester Shared Care Service – Drug Services
	Dr Rachael Harry	Consultant Hepatologist, Manchester Royal Infirmary
	Dr Javier Vilar	Consultant in Infectious Disease, North Manchester Royal Infirmary
	Paul Klapper	Consultant Virologist, Manchester Royal Infirmary
	Dr Ken Mutton	Consultant Virologist, Manchester Royal Infirmary
	Dr Kadukkavil Padmakumar	Consultant Gastroenterologist, Royal Bolton Hospital
	Dr Sheila McCorkindale	General Practitioner, Ellenbrook Medical Practice
	Dr Chris Babbs	Consultant Gastroenterologist, Hope Hospital
	Dr Gerry O'Shea	General Practitioner, City Centre Urban Village Practice

Telephone interviews undertaken with

	Hari Panigrahi	Microbiology NMGH
	Mairi Cullen	Microbiology Wythenshawe
	Microbiology	Stockport
	Microbiology	Bolton
	Microbiology	Bury
	Microbiology	Wigan
	Microbiology	Trafford
	Microbiology	Salford
	Microbiology	Oldham

Questionnaires sent & introductory phone call/discussion with:

	Jeanette Staley	Chair, Greater Manchester Drug and Alcohol Teams Gp
	Karen Morley	Health Care Manager, HMP Hindley, Wigan
	Carmel Vyas	Health Care Manager, HMP Buckley Hall, Rochdale
	Andy Leigh	Health Care Manager, HMP and YOI Forest Bank, Manchester
	Kath Crowther	Health Care Manager, HMP Manchester.
	Elaine Cartwright	Day centre manager, Tameside and Glossop 'Mind'
	Hilary Barnsley	Stockport and Disctrict 'Mind'

Questionnaires (with letter) sent to:

Dr Das	Cons Gastro-enterologist, Stepping Hill Hosp, Stockport
Dr Jones	Cons Gastro-enterologist, Wythenshawe Hosp, Sth Mcr
Dr Sommerton	Cons Gastro-enterologist, Trafford Gen Hospital, Trafford
Dr Foster	Cons Gastro-enterologist, Rochdale Infirmary, Rochdale
Dr Babbs	Cons Gastro-enterologist, Hope Hospital, Salford
Dr Haslem	Cons Gastro-enterologist, Fairfield General Hospital, Bury
Dr Conlong	Cons Gastro-enterologist, Royal Oldham Hospital
Dr Klass	Cons Gastro-enterologist, North Manchester Gen Hosp
Don Richards	Drug and Alcohol Team, Salford
Lisa Leese	Drug and Alcohol Team, Tameside
Debbie Carr	Shared Care Support team, (DAA Services) Manchester
Sandie Saunders	Drug and Alcohol Team, Bolton
Helen Boyle	Drug and Alcohol Team, Stockport
Billy Hooley	Team leader, DA service, Rochdale
Liz McCoy	Service Manager, Oldham Substance Misuse Service
Sarah Sparkes	Team Manager, Trafford Substance Misuse Service
Mary Hopper	Needle Exchange Co-ordinator, Tameside DAAT
Karen Tipping	Needle Exchange Co-ordinator, Rochdale
Steve Whiston	Needle Exchange Co-ordinator, Bury
Mike Liffen	Needle Exchange Co-ordinator, Oldham
Kay French	Connexions, Oldham
David Barrie	Bury MBC
Alex Smith	Chair – Harm reduction & BBV Core Gp. Manchester Drugs Service
Bridget Hughes	Sexual health Manager, Manchester Health Promotion Specialist Service, NM PCT
Nicola Yates	Community Manager for Drug Services, Wigan MBC
Sr Shirley Rowbotham	Ward Manager, Renal Dialysis Unit. MRI
Dr Ash Sukthankah	Consultant in Genito-urinary medicine
Matt Brierley	Team Leader, Lifeline project, Manchester

Appendix 4

Laboratory data for Greater Manchester residents by PCT for the period April 2003 to March 2005 (Source: Keith Paver, Manchester Virology Department)

PCT	Anti-HCV tests			PCR tests			PCR positive & anti HCV positive	Total number of specimens
	Total number tested anti HCV	Total anti HCV positive	Anti HCV positive (no PCR result)	Total number tested for PCR	Total PCR positive	PCR positive (no Anti HCV result)		
Ashton, Wigan or Leigh	37	16	6	83	43	33	10	108
Bolton	307	135	20	162	95	12	81	339
Bury	842	50	31	43	17	8	9	859
Central Manchester	11491	807	352	1499	773	455	314	12480
North Manchester	3615	528	241	1312	615	403	208	4470
Oldham	1430	80	50	81	36	16	20	1463
Rochdale	1983	175	89	198	87	30	57	2051
Salford	2528	239	60	288	91	31	60	2669
South Manchester	3688	126	63	223	73	33	40	3811
Stockport	3240	108	50	3220	41	9	32	3278
Tameside	1358	83	54	128	28	11	16	1389
Trafford	802	2391	27	40	11	3	8	812
Total	31321	1671	1043	7277	1910	1044	855	33729

Appendix 5

Anti-HCV positive women screened antenatally by PCT area 2003 – 2005
(source: (Source: Keith Paver, Manchester Virology Department))

PCT	Number of women (% total)
Ashton, Leigh and Wigan	4 (6.8%)
Bury	4 (6.8%)
Central Manchester	7 (11.9%)
North Manchester	5 (8.5%)
Oldham	2 (3.4%)
Rochdale	6 (10.2%)
Salford	5 (8.5%)
South Manchester	16 (27.1%)
Stockport	3 (5.1%)
Tameside	7 (11.9%)
Total	59

Appendix 6

Anti-HCV positive children under 5 years age by PCT area 2003 – 2005
(source: (Source: Keith Paver, Manchester Virology Department))

PCT	Number of children (% total)
Ashton, Leigh and Wigan	3 (3.2%)
Bolton	6 (6.4%)
Bury	13 (13.8%)
Central Manchester	21 (22.3%)
North Manchester	9 (9.6%)
Oldham	1 (1.1%)
Rochdale	13 (13.8%)
Salford	8 (8.5%)
South Manchester	4 (4.3%)
Stockport	9 (9.6%)
Tameside	4 (4.3%)
Trafford North	3 (3.2%)

Appendix 7

Estimated number of drug users in Greater Manchester

	a	b	c	d	e
	Anchor estimate*	OPCS**	Calculated from a and c	DAAT figures***	Anchor estimate
Locality	Injecting drug user rate/ 100,000	Mid Year Population Estimates	Estimated number of injecting drug users	Total in contact with treatment services	Problem use
Manchester	808	432400	3494	2695	6037
Rochdale	355	206700	734	1329	1688
Bolton	338	263700	891	1174	2434
Tameside	266	213600	568	969	1130
Salford	233	216400	504	1354	1529
Bury	206	181700	374	849	906
Wigan	200	303846	608	1449	1633
Oldham	156	218000	340	809	1522
Trafford	144	211700	305	511	1078
Stockport	123	282600	348	618	1318
Totals		2530646	8166	11757	19255

* Anchor estimates obtained through a study using the multiple indicator method in Home Office Report (Frischer et al, 2004).

**OPCS mid year population estimates for 2005.

*** Prevalence of those in contact with treatment services aged 16-44 in 2003-4 *NTA for Substance misuse. 'Drug treatment in the North west of England. 2003/2004 Analysis of the National Drug treatment Monitoring System'*. found at http://www.nta.nhs.uk/programme/national/docs/Numbers_in_treatment_by_DAT_2003.04.pdf

Appendix 8

Information gathered from Greater Manchester Microbiology departments regarding local laboratory testing for hepatitis C

Hospital	Do the laboratory undertake any local hepatitis screening tests?	If no, where are local samples sent for testing?	If local testing is undertaken what test is done (manufacturer used)?	What confirmatory testing is undertaken on samples processed locally?	Are any other hepatitis C tests undertaken locally e.g. PCR?	Other issues
Birch Hill, Rochdale	No	MRI	-	-	No	-
Bolton General	Yes	-	Antibody (Abbott)	Same sample gets sent to MRI for antibody testing - but only if the patient has never been tested before	No	-
Booth Hall & RMCH	No	MRI	-	-	No	-
Bury General	No	MRI	-	-	No	-
Hope, Salford	Yes –for renal patients only	MRI	Antibody (Bio-Rad)	Same sample gets sent on to MRI for antibody testing	No	-
NMGH	No	MRI	-	-	No	-
RAEI	Yes	-	Antibody (Abbott)	None	No	Have funding for specimens from IVDUs to be sent for PCR – otherwise local policy states the only samples to be sent for PCR are those where PCR would affect clinical management
Royal Oldham Hospital	No	MRI	-	-	No	
St Thomas, Stockport	No	MRI	-	-	No	
Tameside General	No	MRI	-	-	No	
Trafford General	No	MRI	-	-	No	
Wythenshawe	No	MRI	-	-	No	

Appendix 9

Summary of respondents

In total 38/53 organisations or professionals responded, giving a response rate of 71%. 9 people were interviewed directly and 9 microbiology departments were interviewed via telephone. Questionnaires were also sent to 34 key service providers (totalling 53 potential respondents).

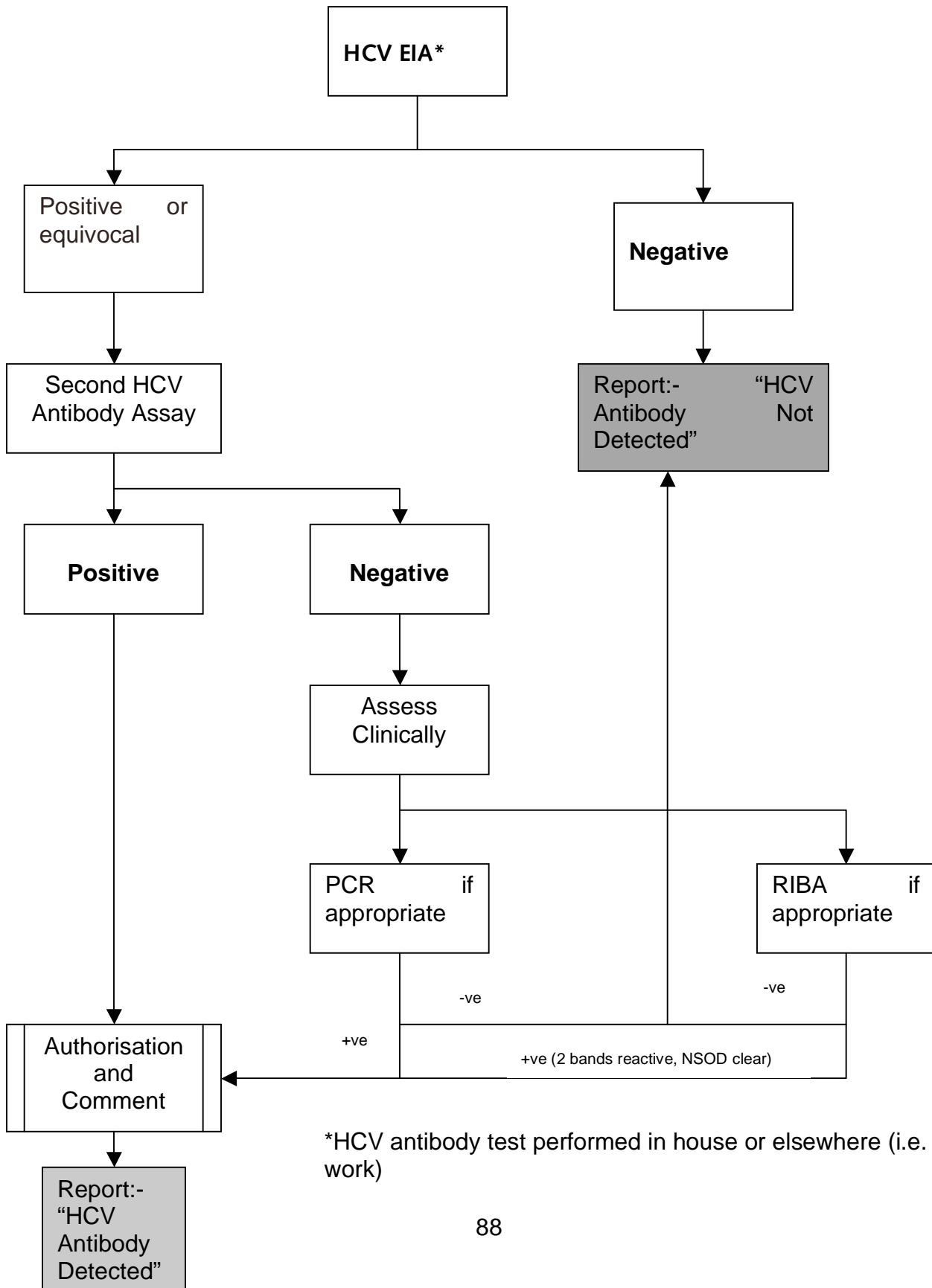
Summary of respondents

Respondents (grouping)	Responded	Sent
Specialists (Consultant in Infectious Disease and Consultant Hepatologist)	2	2
Gastroenterologists	7	10
Microbiology departments	9	9
Consultant in GUM	1	1
Drug Services & Needle Exchange Services	8	17
Virologists	2	2
Prison Healthcare Services	4	4
General practitioners	1	2
Renal unit	0	1
Other – including Voluntary Agencies	4	5
Totals	38	53

Appendix 10

Hepatitis C Screening

(Testing protocol from Manchester Virology Laboratory)



*HCV antibody test performed in house or elsewhere (i.e. referred work)

Appendix 11

Admission episodes for acute or chronic hepatitis C for Greater Manchester residents by local authority* between 1996 and 2004 (Source: North West Public Health Observatory)

LA	1996	1997	1998	1999	2000	2001	2002	2003	2004	Total
Bolton	28	33	41	45	40	48	51	46	49	381
Bury	27	16	26	26	12	40	28	33	52	260
Manchester	94	124	202	165	145	174	193	318	474	1889
Oldham	24	19	29	37	29	39	58	118	112	465
Rochdale	16	36	48	82	89	82	79	157	209	798
Salford	8	20	26	30	33	34	44	82	108	385
Stockport	33	26	48	51	43	44	30	59	58	392
Tameside	20	20	20	20	49	30	26	52	59	296
Trafford	25	24	31	24	23	33	21	41	49	271
Wigan	22	25	51	48	65	73	67	92	57	500
Total	297	343	522	528	528	597	597	998	1227	5637

* Excluding High Peak

Appendix 12

**Number of patients with complications from hepatitis C who are seen in hospitals across Greater Manchester between 1996 and 2004
(Source: North West Public Health Observatory)**

Year	Cirrhosis	Ascites	Oesophageal carcinoma	Hepatic encephalopathy	Hepatocellular carcinoma
1996	32	9	10	16	11
1997	23	9	15	*	6
1998	37	26	10	6	7
1999	37	25	6	7	12
2000	33	26	17	*	7
2001	32	26	27	10	8
2002	55	26	24	11	13
2003	56	36	36	11	25
2004	66	38	57	20	22

(Source: North West Public Health Observatory)