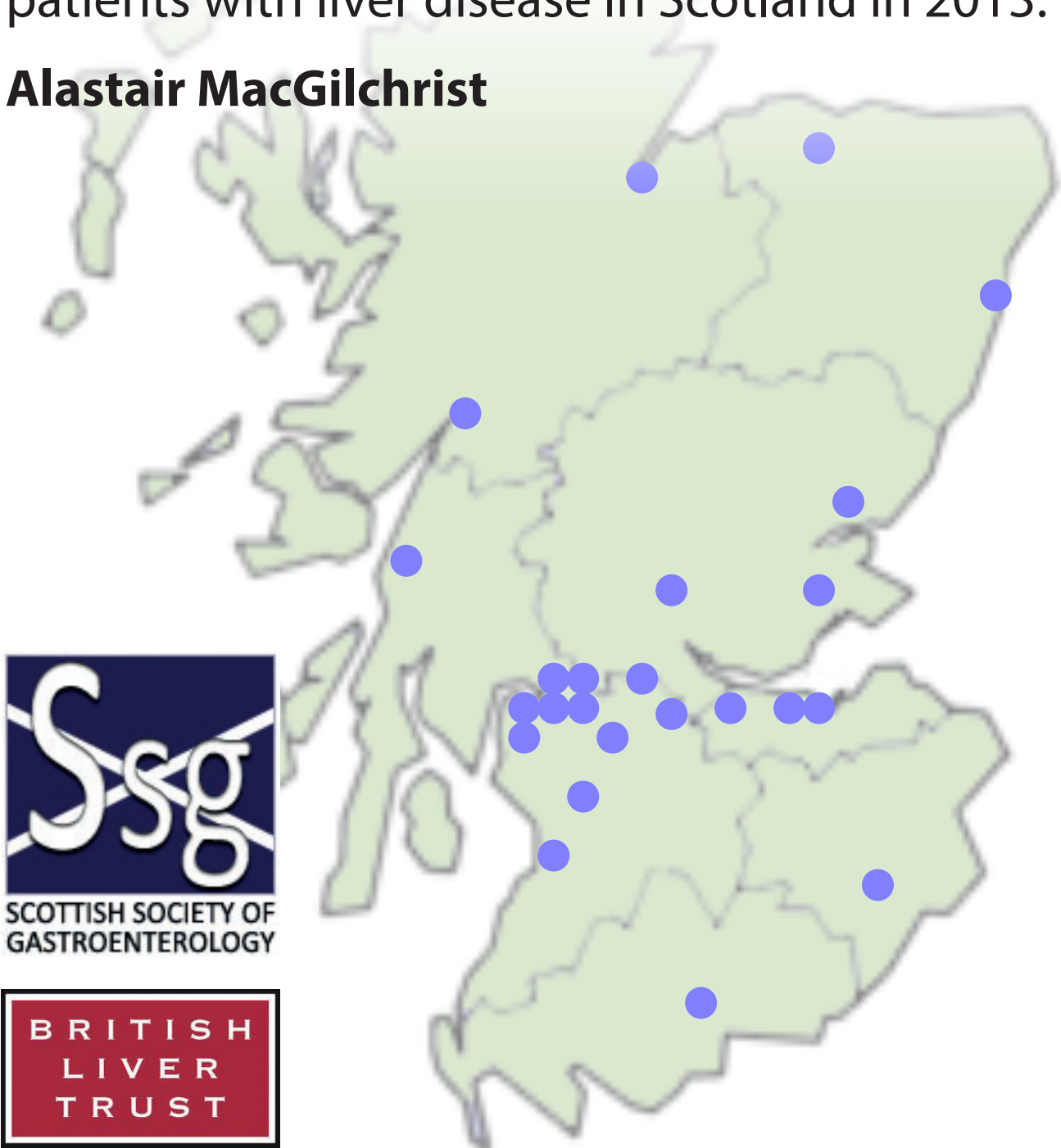


Survey of Liver Services in Scotland

A survey commissioned by The British Liver Trust and the Scottish Society of Gastroenterology on the provision of secondary care services for patients with liver disease in Scotland in 2013.

Alastair MacGilchrist



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Foreword

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Scotland faces a high level of demand for the treatment of chronic liver disease, fuelled principally by the consumption of alcohol. Scottish Government action to reduce the availability of cheap alcohol through minimum pricing should be effective but meantime there will be very many deaths. The success of the national liver transplant programme represents the visible tip of a large and very sick iceberg of misery for patients and their families.

This report highlights the provision of hospital services, which are unevenly distributed, and suggests ways of using resources more effectively through more formal arrangements for the investigation and treatment of severe cases. Perhaps the most striking finding is the paucity of nurses available to give advice to the thousands of alcohol related admissions to hospitals, many of whom may be motivated to give up or reduce their alcohol intake if skilled advice and support were available. I hope that this survey will enable those planning acute services to target resources effectively to meet the needs of patients, their families and the public affected by this chronic and severe illness.

Introduction

Liver disease is a major cause of death and ill health in Scotland.

Mortality from chronic liver disease (CLD) in Scotland has risen dramatically over the past quarter-century, and although there has been a fall in recent years, it remains twice what it was thirty years ago, with over 750 deaths in 2012 (Figure 1). CLD has become the fifth commonest cause of death and, unlike other common fatal conditions such as ischaemic heart disease and cancer which are predominantly diseases of the elderly, the mean age of death from liver disease is only 59 years. Although this is a UK-wide problem, it is much more severe in Scotland, with mortality from CLD in Scotland twice that of England. CLD mortality varies widely across the country, from 5.27 per 10⁵ population in Dumfries to 19.38 per 10⁵ in Glasgow (Table 1). This is linked to the degree of deprivation: a man living in one of most deprived areas in Scotland is 11 times more likely to die from liver disease compared to a man living in one in the least deprived areas.

The principal reason for this increased mortality is the rise in harmful alcohol consumption. The proportion of liver deaths due to alcohol has risen from 50% thirty years ago to 85 % now. Hepatitis C and non-alcohol related fatty liver disease (NAFLD), which is due to obesity and diabetes, are the other major causes of CLD.

Table 1: Age-standardised mortality rates per 10⁵ population in Scotland by Health Board

	1982	2012
Ayrshire and Arran	5.88	13.25
Borders	3.96	10.06
Dumfries & Galloway	6.46	5.27
Fife	7.33	8.64
Forth Valley	7.63	7.74
Grampian	6.07	9.37
Greater Glasgow & Clyde *	11.29	19.38
Highland	4.78	9.54
Lanarkshire	8.56	18.44
Lothian	8.56	9.81
Orkney	-	18.66
Tayside	4.60	9.89
Shetland	19.65	-
Western Isles	-	14.88
Scotland	7.98	12.73

*Glasgow only in 1982

Liver disease is also a major cause of morbidity and a burden on hospital services with hospital discharge rates continuing to rise (Figure 2). Patients with severe liver disease, such as alcohol related hepatitis or complications of cirrhosis including ascites and bleeding oesophageal varices, occupy a large number of in-patient beds.

There is a need to know how secondary care provides the services necessary to deal with this high demand. Therefore the British Liver Trust and the Scottish Society of Gastroenterology (SSG) jointly undertook a survey of liver disease services in Scotland.

This work built on an earlier survey of liver services undertaken by Dr Forrest, Consultant Hepatologist in Glasgow in 2009 and on a Gap Analysis for liver disease undertaken by Sarah Bray on behalf of the Scottish Government in 2011.

Figure 1: Age-standardised mortality rates per 10⁵ population for CLD in Scotland, 1982-2012

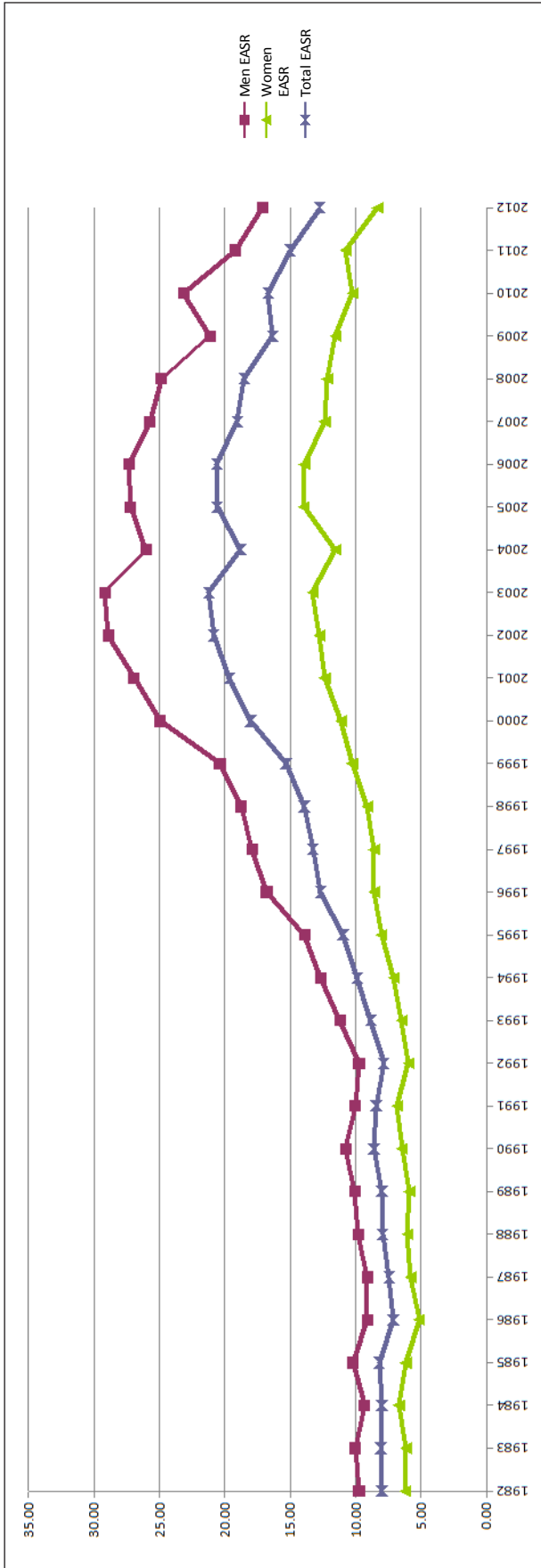


Figure 2: Age-standardised hospital discharges rates per 10⁵ population 1982-2012

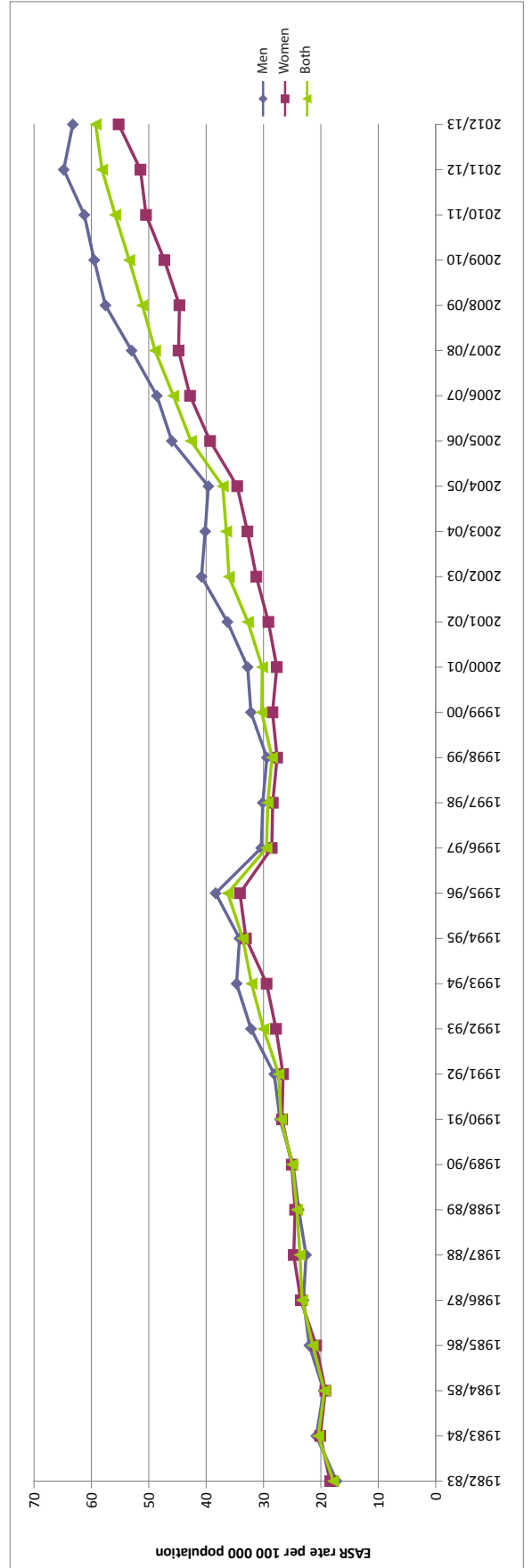


Figure 3: Gastroenterologists in Scotland, indicating those doing general medicine, those with a liver interest and pure hepatologists, by number of posts

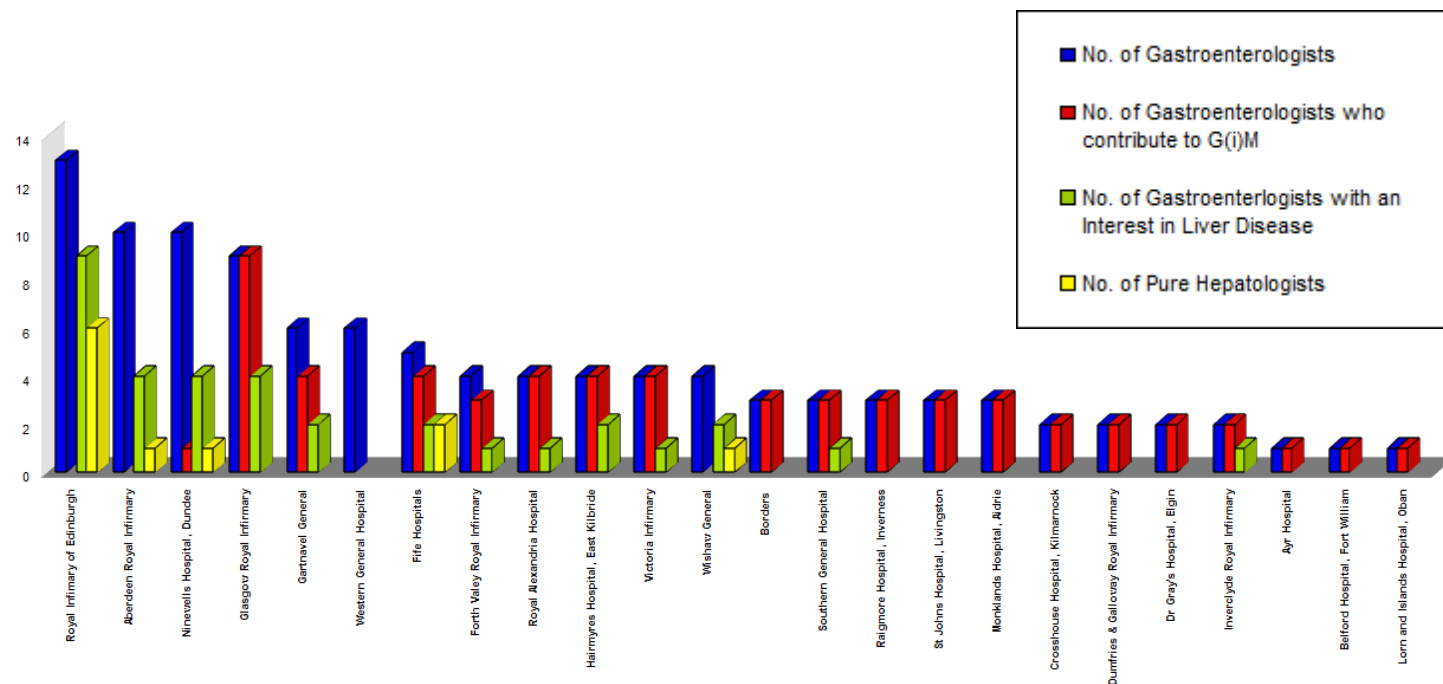
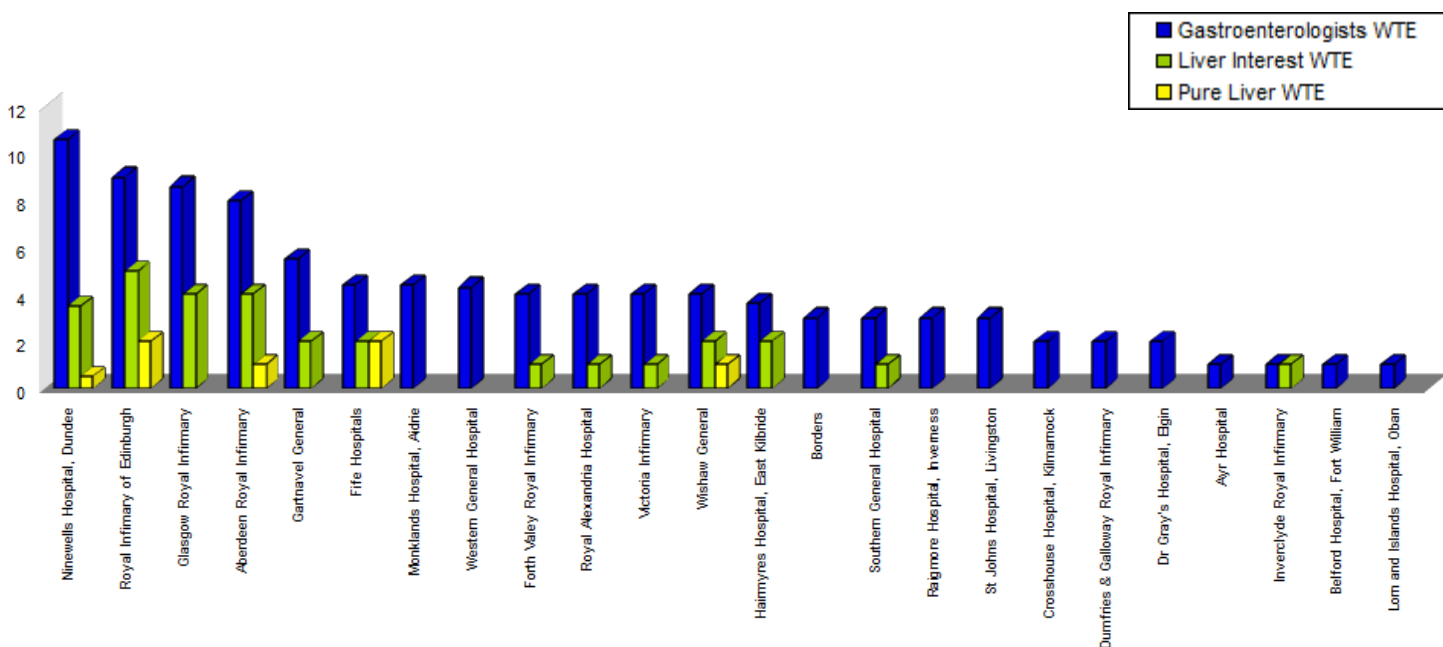


Figure 4: Gastroenterologists in Scotland, indicating those with a liver interest and pure hepatologists, by number of Whole Time Equivalents (WTEs)



Methods

A questionnaire was sent to a designated SSG contact in each hospital in mainland Scotland. (The hospitals serving the Western Isles, Orkney and Shetland were omitted, having no SSG contact and, at the time, no gastroenterologist.) Replies were received from all 24 hospitals approached (see table 2). The questions asked are listed the Appendix. They were asked about their workforce, both medical and nursing. They were also asked about their provision of elective care (e.g. antiviral treatment for hepatitis C) and emergency care (e.g. treatment for bleeding oesophageal varices). They were also asked about the provision of specialist back-up services in radiology and pathology.

Table 2: Hospitals surveyed

Health Board	Hospital	Respondent
Ayrshire & Arran	Ayr Hospital	Dr C Gillen
Ayrshire & Arran	Crosshouse Hospital, Kilmarnock	Dr A Taha
Borders	Borders General Hospital, Melrose	Dr J Fletcher
Dumfries & Galloway	Dumfries & Galloway Royal Infirmary	Dr S Saha
Fife	Fife Hospitals	Dr H Jafferbhoy
Forth Valley	Forth Valley Royal Hospital	Dr S Paterson
Grampian	Aberdeen Royal Infirmary	Dr Balasubramaniam
Grampian	Dr Gray's Hospital, Elgin	Dr D Williams
Greater Glasgow & Clyde	Gartnavel General Hospital, Glasgow	Prof P Mills
Greater Glasgow & Clyde	Glasgow Royal Infirmary	Dr E Forrest
Greater Glasgow & Clyde	Inverclyde Royal Infirmary, Greenock	Dr G Curry
Greater Glasgow & Clyde	Royal Alexandra Hospital, Paisley	Dr M Heydtman
Greater Glasgow & Clyde	Southern General Hospital, Glasgow	Dr S Datta
Greater Glasgow & Clyde	Victoria Infirmary, Glasgow	Dr Judith Morris
Highland	Belford Hospital, Fort William	Dr B Tregaskis
Highland	Lorn and Islands Hospital, Oban	Dr H Fattah
Highland	Raigmore Hospital, Inverness	Dr H Younger
Lanarkshire	Hairmyres Hospital, East Kilbride	Dr T Reilly
Lanarkshire	Monklands Hospital, Airdrie	Dr A Prach
Lanarkshire	Wishaw General Hospital	Dr A El-Nujumi
Lothian	Royal Infirmary of Edinburgh	Dr A MacGilchrist
Lothian	St John's Hospital, Livingstone	Dr C Goddard
Lothian	Western General Hospital, Edinburgh	Dr I Arnott
Tayside	Ninewells Hospital, Dundee	Dr E Henry

Results

The responses to the questions are presented in Table 3 (staffing) and Table 4 (services). The answers to Question 5 (the total number of sessions devoted to hepatology per week) varied widely among respondents reflecting different interpretations. This prevents meaningful comparisons and has therefore been omitted from the results.

A. Staffing

At the time the questionnaire was answered in 2013, there were 103 gastroenterologists in Scotland, with least 1 in every hospital on the mainland (Figure 3). Numbers per hospital varied from 1 to 13. 57 of these 103 undertook general/acute medical duties. However those who did not do general medicine were mainly concentrated in large teaching hospitals, and in fact gastroenterologists have a major general medical commitment in 20 of the 24 hospitals.

Defining a gastroenterologist with a liver interest as one whose clinical duties (excluding general medicine) are greater than 50% devoted to liver or biliary work, there are 34 such liver doctors in Scotland (33%), 11 of whom practice solely hepatology with no other gastroenterology duties (10.7%)(Figure 3). 6 of these 11 are academic hepatologists in one institution, the Royal Infirmary

of Edinburgh. This is where Scotland’s national liver transplant unit is sited. The clinical work distribution is better represented by Whole Time Equivalents (WTEs), taking account of less than full time working and non-clinical academic commitments. In 2013 Scotland had 94.4 WTE gastroenterologists of whom 29.5 WTEs had a liver interest (31.3%) and 6.5 WTEs were solely hepatologists (6.9%)(Figure 4).

11 hospitals (45.8%) had no doctor with a specific liver interest. In the 12 hospitals with 4 or more gastroenterologists, only one has none with a liver interest. By contrast, of the 12 hospitals with 3 or fewer gastroenterologists, only 2 have a gastroenterologist with a liver interest. 4 of 11 Health Boards have no doctor with a specific liver interest (as defined).

The number of gastroenterologists with a liver interest (as WTEs) per 100,000 of the population was calculated for each Health Board. The results are shown in Figure 5.

Non-consultant career grade doctors made up only a small proportion of the liver-related workforce with 9 doctors, largely part-time, contributing 3.5 WTEs in total in Scotland.

Most hospitals employed liver nurse specialists, with a total of 47 (32.2 WTEs) such specialist nurses in Scotland. Only 7 hospitals (29.1%) had no liver nurses. The majority of these are employed to undertake treatment of hepatitis C. The percentage of liver specialist nurse time devoted to hepatitis C varied from 25% to 100% with a median of 67.1%.

The number of liver nurse specialists (as WTEs) per 100,000 of the population was calculated for each Health Board. The results are shown in Figure 6.

Figure 5: Number of gastroenterologists with a liver interest (as WTEs) per 10⁵ population by Health Board

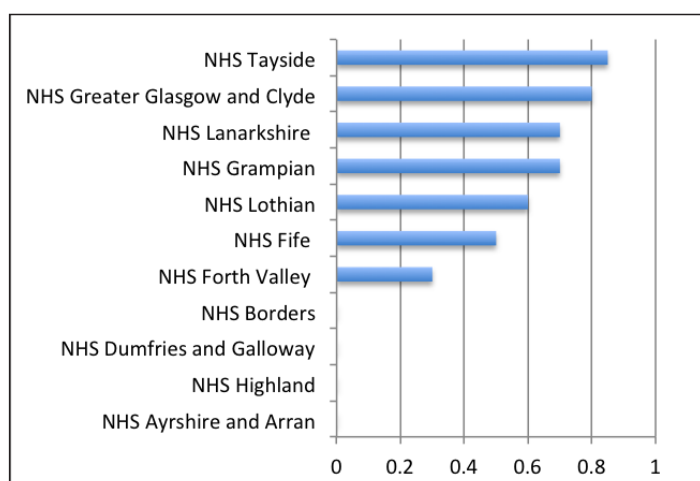
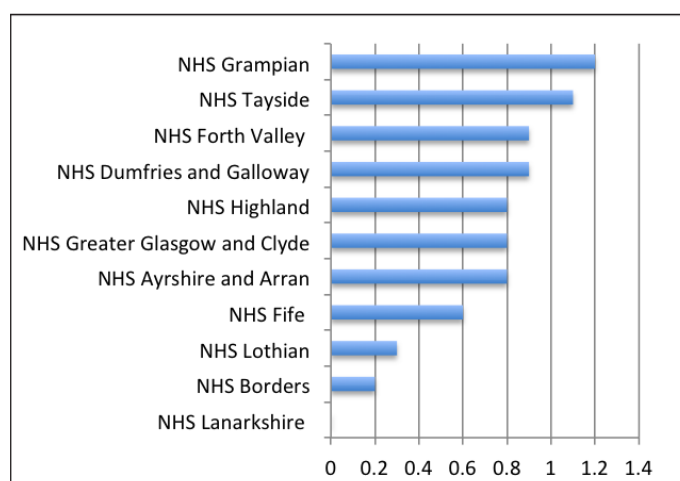


Figure 6: Number of liver nurse specialists (as WTEs) per 10⁵ population by Health Board.



B. Services

Bleeding Varices

A 24/7 service for managing bleeding oesophageal varices was only available in 7 hospitals. 5 of these 7 are large teaching hospitals. In only 2 of the remaining 17 hospitals were there formal arrangements for transferring such patients to another hospital (Figure 7).

Radiology

- TIPSS** – Every hospital had access to transjugular intrahepatic portosystemic stent shunts (TIPSS). This was available on site in 6 large hospitals, and all other hospitals transferred patients requiring TIPSS to 3 of these 6 hospitals, although the arrangements were largely ad hoc and not necessarily geographical (Figure 8).
- Expert Opinion** – On-site access to a radiologist with liver expertise was available in 12/24 hospitals (50%), with arrangements for a radiology opinion from elsewhere in a further 4 hospitals, meaning that 8/24 (33.3%) hospitals have no access to expert liver radiology (Figure 9).
- Transjugular liver biopsy** – Only 1 hospital had no access to transjugular liver biopsies. These were available on-site in 11 hospitals, with the remaining 12 hospitals having arrangements to send patients elsewhere for such biopsies (Figure 10).

Fig 7: Out-of-hours Service for the Endoscopic Management of Variceal Haemorrhage

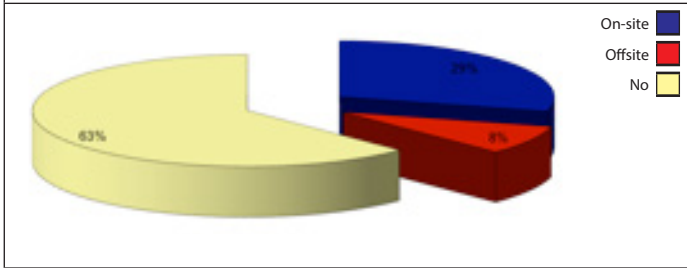


Fig 8: Access to TIPSS

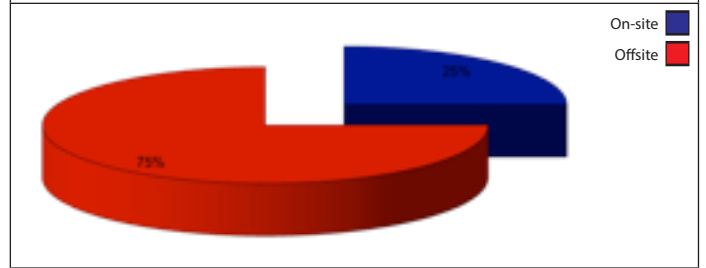


Fig 9: Access to a Radiologist with a Specific Interest in Liver Imaging

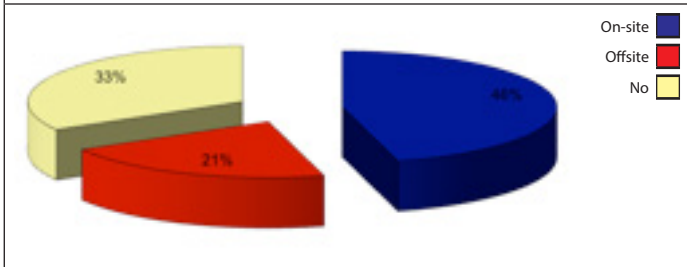


Fig 10: Access to Transjugular Liver Biopsies

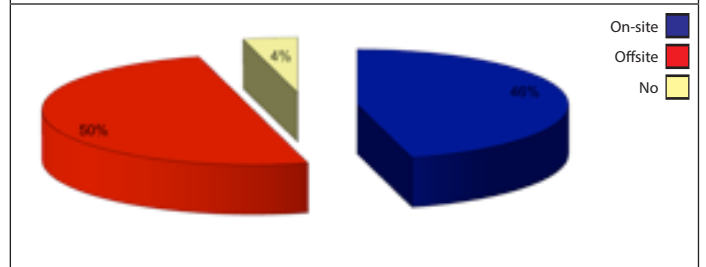


Fig 11: Access to a Pathologist with a Specific Interest in Liver Pathology

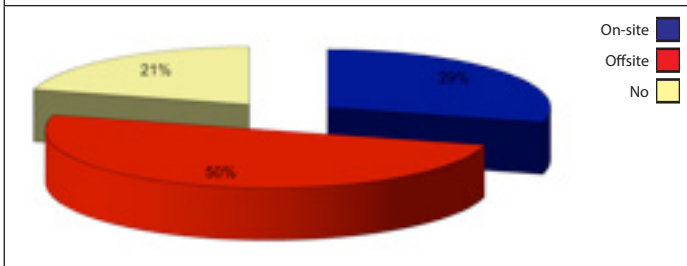


Fig 12: Access to Fibroscan

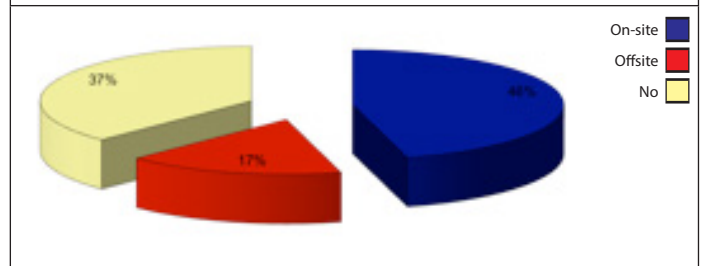


Fig 13: Access to Serological Markers of Fibrosis

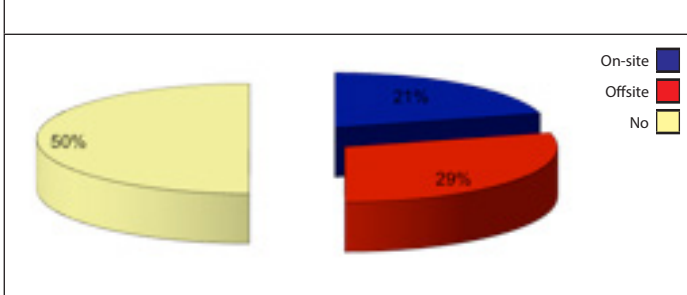


Fig 14: Hepatitis C Treatment

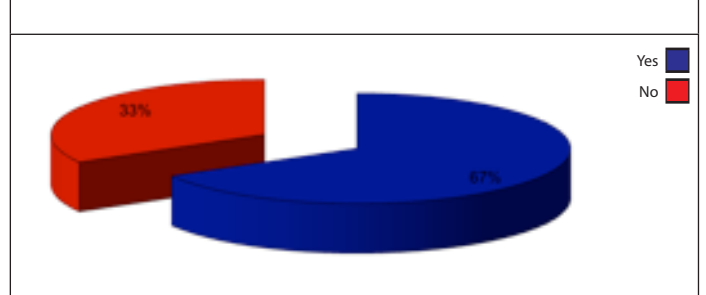


Fig 15: Cirrhosis Clinics

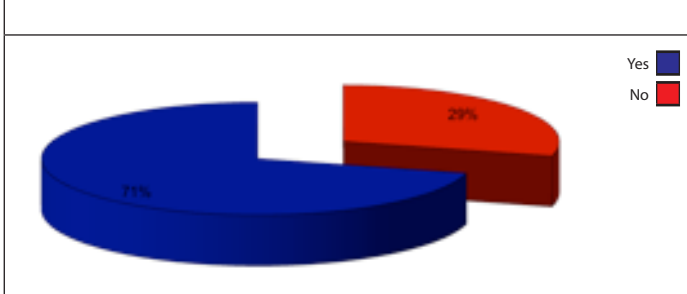
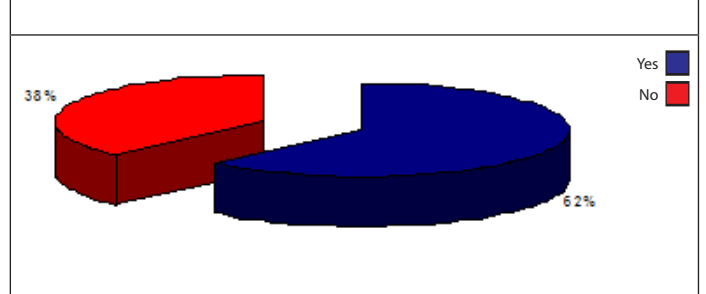


Figure 16: Access to Alcohol Liaison Nurse Support



Pathology

3 hospitals (12.5%) had no access to a hepatic histopathologist. 7 hospitals had a hepatic histopathologist on-site, and the remaining 14 hospitals referred cases elsewhere (Figure 11).

Non-invasive assessment of Fibrosis

11 hospitals (45.8) had a Fibroscan machine for assessing hepatic fibrosis by measuring transient elastography, and a further 4 hospitals had off-site access to a Fibroscan (Figure 12). In contrast only 4 hospitals offered on-site measurement of serum fibrosis markers, with a further 8 having off-site access (Figure 13).

Hepatitis

15 hospitals (62.5%) undertook treatment of hepatitis C (Figure 14).

Surveillance for hepatocellular carcinoma in cirrhosis

Only 6 hospitals (25%) ran specialised cirrhosis clinics (Figure 15).

Some form of ultrasound surveillance programme for early detection of asymptomatic hepatocellular carcinoma was almost universal (23/24 hospitals, or 95.8%). Ultrasound scans were performed 6 monthly in 21 hospitals and annually in 2 (interval not stated in one). Recall systems varied. The most common arrangement was to book scans at out-patient clinics; in 5 hospitals the scans were organised by liver nurse specialists, in 2 with the aid of a database; other arrangements included use of a radiology database or a secretary's diary. Regular measurements of serum alpha fetoprotein (AFP) were undertaken in 17 hospitals but AFP was not used for HCC surveillance in 2 hospitals and only in some patients in one other (not stated in 5).

Support for Alcohol problems

Alcohol Liaison Nurses (ALNs) were available in 15/24 hospitals (62.5%) and unavailable in 9/24 (37.5%). Gastroenterologists in 4 of 11 Health Boards do not have access to ALNs (Figure 16).

Nutritional support

Dieticians with liver expertise were available in all hospitals, but in 7/24 (29.2%), this was only for in-patients, with no expert dietetic advice available to out-patients with liver disease.

Off-site referral patterns

Referral pathways for off-site services, where stated, were as follows:

Fibroscan:

- IRA* to RAH
- DGE to ARI
- WGH to RIE

Fibrosis markers:

- Ayr to Crosshouse
- BGH, Fife, SJH and WGH all to RIE
- Oban to GGH

Pathology:

- Ayr to Crosshouse
- BGH, SJH, WGH all to RIE
- DGE to ARI
- GGH, GRI, IRA, RAH all to SGH
- Fort William to Raigmore

Radiology:

- DGE to ARI
- SGH to GRI
- Fort William to Raigmore
- WGH to RIE

Transjugular biopsy:

- DGE to ARI
- BGH, SJH, WGH all to RIE

Varices 24/7:

- SJH, WGH to RIE

TIPSS:

- Ayr, BGH, Fife, Forth Valley, Fort William, Hairmyres, SJH, WGH all to RIE
- DGE to ARI
- IRA, VIG, Oban, Hairmyres all to GRI
- IRA, RAH, SGH, VIG all to GGH
- Fort William to Raigmore

[* hospital abbreviations: ARI Aberdeen Royal Infirmary; BGH Borders General Hospital, Melrose; DGE Dr Gray's Hospital, Elgin; IRA Inverclyde Royal Infirmary, Greenock; GGH Gartnavel General Hospital, Glasgow; GRI Glasgow Royal Infirmary; RAH Royal Alexandra Hospital, Paisley; RIE Royal Infirmary of Edinburgh; SGH Southern General Hospital, Glasgow; SJH St John's Hospital, Livingstone; VIG Victoria Infirmary, Glasgow; WGH Western General Hospital, Edinburgh.]

Conclusions

There is wide variation in the provision of liver services in Scotland. The British Society of Gastroenterology recommend that every District General Hospital should have at least one gastroenterologist with a special interest in liver disease. Although one third of the gastroenterologists in Scotland have an interest in liver disease, they are concentrated in the larger, urban hospitals. The total numbers are skewed by the number of academic appointments and the WTE figures better reflect the provision of clinical services. **4 of the 11 mainland Health Boards, and almost half (11/24) of all hospitals in Scotland do not have liver specialist.** This may adversely affect management of liver disease in the areas of the country served by such hospitals. For example, without a liver specialist to liaise with primary care doctors in the area there may be reduced detection and treatment of early disease. Without a liver specialist participating in the care of hospital admissions, there may be reduced recognition and appropriate management of advanced disease, including onward referral for tertiary services such as TIPSS and liver transplant.

The apparent gaps in service provision may be partly compensated by informal networks of onward referral to specialist centres, including the liver transplant centre. However the survey suggests that such referral pathways are often unclear and poorly developed.

The support measures for liver disease which are such a vital part of a comprehensive liver service are also patchy, both for elective and emergency work. Although it is reassuring that all hospitals have access to radiology services such as TIPSS, the referral pathways are not always clear or logical.

The apparent satisfaction with specialist liver histopathology advice outwith the major teaching centres is perhaps surprising, given the likely low numbers of liver biopsies and the specialist interpretation skills required. The reasonably widespread availability of newer, non-invasive tools such as elastography by Fibroscan is encouraging.

Each hospital admission with alcohol related liver disease provides an opportunity to encourage and assist the patient to stop drinking. Consequently, **the limited access to alcohol liaison nurses is a major concern given the huge number of admissions with alcohol-related liver disease in every hospital.**

The number of liver nurse specialists and their fairly wide distribution is welcome. It is clear that the vast majority of their work concerns hepatitis C treatment, resulting from the success of the hepatitis C Managed Clinical Networks. Only a few hospitals have widened the scope of liver nurse specialists beyond hepatitis C to areas such as surveillance for hepatocellular carcinoma in cirrhosis. It is reassuring that such surveillance is almost universally practised, but the recall systems are often not robust. The use of databases, nurse-led clinics and virtual clinics provide examples of best practice for others to follow.

The lack of on-site facilities or clear referral pathways to deal with emergency bleeding varices is a significant clinical risk with potentially fatal consequences. How to provide out-of-hours therapeutic endoscopy in general is a vexed question exercising all Health Boards. There are a few examples of robust "hub and spoke" arrangements, of necessity based in hospitals with sufficient staff to man rotas, which provide possible solutions.

Next steps

The information provided in this survey will be made available to the Scottish Government Health Department, to every Health Board in Scotland and to gastroenterologists throughout Scotland via the Scottish Society of Gastroenterology. It allows comparison of the resources, both staffing levels and support services, between hospitals. It should encourage those responsible for managing liver disease in each hospital to think about what is required to provide a safe, comprehensive and local service. In some cases this may mean identifying a gastroenterologist with a liver interest either within existing staff or in future appointments. In others it may mean a greater input of resources such as alcohol liaison nurses. Since the majority of hospitals will never have the staffing or resources to provide a stand-alone service, this survey provides an incentive for hospitals and Health Boards to continue to work together to ensure that resources such as radiological and pathological expertise are shared, and that referral pathways are constructed which are more robust, visible and geographically sensible than the present arrangements which can be patchy and haphazard. It is particularly important that every hospital has a plan, whether local, adjacent or regional for managing bleeding oesophageal varices. As part of that plan, the arrangements for TIPSS rescue therapy for patients with bleeding varices where endoscopic therapy has failed, need to be agreed, clarified, and where necessary, resourced.

Summary

This survey indicates that the provision of services to cope with the vastly increased burden of liver disease varies widely across Scotland. Hopefully it will provide an incentive for improvement in those hospitals which are under-staffed or lacking in support measures. There are examples of best practice to follow, and a network of co-operation to build on.

Acknowledgements

I would like to gratefully acknowledge the assistance of the following, without who this survey would not have been possible: Mr Duncan Russell and Ms Lin Wang, 2 interns who assisted with data collection and presentation; the British Liver Trust, particularly its CEO, Mr Andrew Langford and the chair of the Scottish Liver Alliance, Mr Michael Deighan; the Scottish Society of Gastroenterology; the Scottish Government Health Department and Nine Health CIC who provided support for the 2 interns; and the SSG representatives from each hospital who responded to the questionnaire: Dr I Arnott, Dr V Balasubramaniam, Dr G Curry, Dr S Datta, Dr A El-Nujumi, Dr H Fattah, Dr J Fletcher, Dr E Forrest, Dr C Gillen, Dr C Goddard, Dr E Henry, Dr M Heydtman, Dr H Jafferbhoy, Prof P Mills, Dr Judith Morris, Dr T Reilly, Dr S Paterson, Dr A Prach, Dr S Saha, Dr A Taha, Dr B Tregaskis, Dr D Williams and Dr H Younger.

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Table 3: Questionnaire results (Staffing)

Health Board	Hospital	gastroenterologists		general medicine		hepatologists		staff grades		liver nurses		hep C (%)	
		number	WTE	number	sessions	number	liver interest	number	WTE	number	WTE		
Ayrshire & Arran	Ayr Hospital	1	1	1	7	0	0	0	0	0	0		
Ayrshire & Arran	Crosshouse Hospital, Kilmarnock	2	2	2	8	0	0	2	NS	3	3	30	
Borders	Borders General Hospital, Melrose	3	3	3	6	0	0	0	0	2	0.25	10	
Dumfries & Galloway	Dumfries & Galloway Royal Infirmary	2	2	2	?	0	0	0	NS	2	1.4	60	
Fife	Fife Hospitals	5	4.4	4	4	2	2	2	0	3	2.2	70	
Forth Valley	Forth Valley Royal Hospital	4	4	3	9	1	1	0	0	3	2.8	85	
Grampian	Aberdeen Royal Infirmary	10	8	0	0	4	4	1	0.75	8	3	90	
Grampian	Dr Gray's Hospital, Elgin	2	2	2	10	0	0	0	0	2	0.1	90	
Greater Glasgow & Clyde	Gartnavel General Hospital, Glasgow	6	5.5	4	9	2	2	0	0.2	4	4	100	
Greater Glasgow & Clyde	Glasgow Royal Infirmary	9	8.6	9	2	4	4	0	0	4	3.2	70	
Greater Glasgow & Clyde	Inverclyde Royal Infirmary, Greenock	2	1	2	10	1	1	0	0.3	1	1	50	
Greater Glasgow & Clyde	Royal Alexandra Hospital, Paisley	4	4	4	8	1	1	0	1	2	0.5	100	
Greater Glasgow & Clyde	Southern General Hospital, Glasgow	3	3	3	3	1	1	0	0	2	2	50	
Greater Glasgow & Clyde	Victoria Infirmary, Glasgow	4	4	4	NS	1	1	0	0	2	2	75	
Highland	Belford Hospital, Fort William	1	1	1	8	0	0	0	0	0	0		
Highland	Lorn and Islands Hospital, Oban	1	1	1	6	0	0	0	0	0	0		
Highland	Raigmore Hospital, Inverness	3	3	3	?	0	0	0	0	3	2.5	60	
Lanarkshire	Hairmyres Hospital, East Kilbride	4	3.6	4	12	2	2	0	NS	2	NS	75	
Lanarkshire	Monklands Hospital, Airdrie	3	4.4	3	9	0	0	0	0	0	0		
Lanarkshire	Wishaw General Hospital	4	4	0	0	2	2	1	0	0	0		
Lothian	Royal Infirmary of Edinburgh	13	9	0	0	9	5	6	2	3	2.8	85	
Lothian	St John's Hospital, Livingston	3	3	3	12	0	0	0	0	0	0		
Lothian	Western General Hospital, Edinburgh	6	4.3	0	0	0	0	0	0	0	0		
Tayside	Ninewells Hospital, Dundee	10	10.6	1	NS	4	3.5	1	0.5	1	5	4.5	63.5
Total or Mean		105	96.4	57	-	34	29.5	11	6.5	9	51	35.25	68.4

Table 4: Questionnaire results (Services)

Health Board	Hospital	cirrhosis clinics	hep C Rx	fibroscan	fibrosis markers	pathology	radiology	TJ biopsy		HCC surveillance		AFP	OOH varices	TIPSS	ALN	dietician
								Y/N	interval	recall	interval					
Ayrshire & Arran	Ayr Hospital	No	No	No	off-site	off-site	No	on site	Yes	6m	book in OP clinic	yes	No	off-site	Yes	Yes
Ayrshire & Arran	Crosshouse Hospital, Kilmarnock	No	No	on-site	on-site	on-site	on-site	off-site	Yes	6m to 8m	PMS	NS	No	off-site	Yes	Yes
Borders	Borders General Hospital, Melrose	No	Yes	No	off-site	off-site	No	off-site	Yes	6m	radiology database	NS	No	off-site	No	Yes
Dumfries & Galloway	Dumfries & Galloway Royal Infirmary	No	Yes	No	on-site	No	No	No	Yes	6m	secretary diary	yes	No	off-site	Yes	Yes (IP only)
Fife	Fife Hospitals	Yes	Yes	No	off-site	No	on-site	on-site	Yes	6m	database, nurse-led	yes	on-site	off-site	No	Yes
Forth Valley	Forth Valley Royal Hospital	Yes	Yes	on-site	on-site	on-site	on-site	on-site	Yes	6m	nurse virtual clinic	yes	No	off-site	Yes	Yes (IP only)
Grampian	Aberdeen Royal Infirmary	Yes	Yes	on-site	off-site	off-site	off-site	on-site	Yes	6m	run by nurse	yes	on-site	on-site	No	Yes
Grampian	Dr Gray's Hospital, Elgin	No	Yes	off-site	off-site	off-site	off-site	off-site	Yes	6m	book in OP clinic	yes	No	off-site	No	Yes
Greater Glasgow & Clyde	Gartnavel General Hospital, Glasgow	Yes	Yes	on-site	on-site	off-site	on-site	on-site	Yes	6m	NS	yes	on-site	on-site	Yes	Yes (IP only)
Greater Glasgow & Clyde	Glasgow Royal Infirmary	Yes	Yes	on-site	on-site	off-site	on-site	on-site	Yes	6m	database	yes	on-site	on-site	Yes	Yes
Greater Glasgow & Clyde	Inverclyde Royal Infirmary, Greenock	No	Yes	on-site	off-site	off-site	on-site	off-site	Yes	6m	book in OP clinic	yes	No	off-site	Yes	Yes
Greater Glasgow & Clyde	Royal Alexandra Hospital, Paisley	No	Yes	off-site	off-site	off-site	on-site	off-site	Yes	6m	book in OP clinic	yes	No	off-site	Yes	Yes (IP only)
Greater Glasgow & Clyde	Southern General Hospital, Glasgow	No	Yes	on-site	on-site	on-site	off-site	on site	Yes	6m	book in OP clinic	yes	No	off-site	Yes	Yes (IP only)
Greater Glasgow & Clyde	Victoria Infirmary, Glasgow	No	Yes	on-site	on-site	on-site	No	on site	Yes	6m	book in OP clinic	yes	No	off-site	Yes	Yes
Highland	Belford Hospital, Fort William	No	No	No	off-site	off-site	off-site	off-site	Yes	12m	NS	yes	on-site	off-site	No	Yes
Highland	Lorn and Islands Hospital, Oban	No	No	No	off-site	No	No	off-site	Yes	NS	NS	NS	No	off-site	No	Yes
Highland	Raigmore Hospital, Inverness	No	Yes	No	on-site	on-site	on-site	on-site	Yes	6m	database, nurse-led	yes	No	on-site	Yes	Yes
Lanarkshire	Hairmyres Hospital, East Kilbride	Yes	Yes	on-site	No	No	No	off-site	Yes	NS	NS	NS	No	off-site	Yes	Yes
Lanarkshire	Monklands Hospital, Airdrie	No	No	No	No	No	No	off-site	Yes	6m	book in OP clinic	some	No	off-site	Yes	Yes
Lanarkshire	Wishaw General Hospital	No	No	off-site	off-site	off-site	on-site	off-site	Yes	6m	book in OP clinic	no	No	off-site	No	Yes
Lothian	Royal Infirmary of Edinburgh	No	Yes	on-site	on-site	on-site	on-site	on-site	Yes	6m	book in OP clinic	yes	on-site	on-site	Yes	Yes (IP only)
Lothian	St John's Hospital, Livingston	No	No	No	off-site	off-site	No	off-site	Yes	12m	ad hoc	yes	off-site	off-site	Yes	Yes
Lothian	Western General Hospital, Edinburgh	No	No	off-site	off-site	off-site	off-site	off-site	No			no	off-site	off-site	No	Yes (IP only)
Tayside	Ninewells Hospital, Dundee	Yes	Yes	on-site	on-site	on-site	on-site	on-site	Yes	6m	run by nurse	yes	on-site	on-site	No	Yes

Appendix

Survey of Liver Services in Scotland 2013

1. How many consultant gastroenterologists work at your hospital?
 - 1a. Number of individuals
 - 1b. Number of whole time equivalents (WTEs)
2. How many of these consultant gastroenterologists contribute to General Medicine?
 - 2a. Number of individuals
 - 2b. Total number of sessions per week committed to general medicine by the gastroenterologists at your hospital
3. How many of these consultant gastroenterologists have a special interest in liver disease (i.e. over 50% of their gastroenterology work is liver)?
4. How many of these gastroenterologists are pure hepatologists (i.e. do no luminal gastroenterology work)?
5. Approximately how many consultant sessions per week are committed to hepatology at your hospital (include ERCP and HPB EUS)?
6. Do you have any non-consultant, non-trainee medical staff (e.g. speciality doctors or associate specialists) doing liver work?
 - 6a. Number of individuals
 - 6b. Number of WTEs
7. How many Hepatology clinical nurse specialists work at your hospital?
 - 7a. Number of individuals
 - 7b. Number of WTEs
8. What percentage of the work of these clinical nurse specialists is for Hepatitis C?
9. Do you have nurse-led Cirrhosis monitoring clinics?

If YES, number of clinics per week
10. Do you manage chronic Hepatitis C at your hospital?

If NO, where is it managed?
11. Do you have access to a Fibroscan?

If YES, is it on-site or off-site?
12. Do you have access to serological markers of fibrosis?

If YES, is it on-site or off-site?
13. Do you have access to a Pathologist with a specific interest in liver pathology?

If YES, is it on-site or off-site?
14. Do you access to a Radiologist with a specific interest in liver imaging?

If YES, is it on-site or off-site?
15. Do you access to transjugular liver biopsies?

If YES, is it on-site or off-site?
16. Do you have regular Hepatocellular carcinoma surveillance by Ultrasound?

If YES, what surveillance interval do you recommend?
What is your recall system?
Do you also use AFP measurement for HCC surveillance?
17. Do you have a comprehensive out of hours service for the endoscopic management of variceal haemorrhage?

If YES, is it on-site or off-site?
18. Do you have access to TIPSS?

If YES, is it on-site or off-site?
19. Do you have access to Alcohol Liaison Nurse Support for patients with Alcohol related Liver Disease?
20. Do you have access to dietetic support for liver disease patients?

If YES, is it for in-patients or out-patients?



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