ORIGINAL ARTICLE

The role of the general practitioner in the screening and clinical management of chronic viral hepatitis in six EU countries

A. BECHINI[1*], M. LEVI[1*], A. FALLA[2], A. AHMAD[3], I. VELDHUIJZEN[4], E. TISCIONE[1], P. BONANNI[1]
[1] Department of Health Sciences, University of Florence, Florence, Italy; [2] Department of Public Health, Erasmus MC, University Medical Center Rotterdam, The Netherlands; [3] Department of Health Sciences, Hamburg University of Applied Sciences, Hamburg, Germany; [4] Division of Infectious Disease Control, Public Health Service Rotterdam-Rijnmond, Rotterdam, The Netherlands
[*]A. BECHINI and M. LEVI contributed equally to this work, and are the co-first authors.

Keywords

General practice • Hepatitis B • Hepatitis C

Summary

Introduction. *Chronic viral hepatitis is still a major public health concern in the EU. In order to halt the progression of the disease and to prevent onward transmission, timely recognition and accurate clinical management are crucial. The aim of the present study was to investigate the role of the general practitioner (GP) in the screening of persons at risk and in the clinical management of chronic viral hepatitis patients in six EU countries.*
Methods. *An online survey among GPs and secondary-care specialists was conducted in the UK, Germany, the Netherlands, Hungary, Italy and Spain. In the GP survey, we used a four-point Likert scale to find out how commonly risk groups are screened. In both surveys, we measured GPs involvement in monitoring clinical indicators in patients undergoing antiviral treatment, and explored whether patients in four clinical scenarios are referred back to primary care.*
Results. *Between five and 10 experts per professional group were surveyed, except for Spain (GPs: n = 2; Specialists: n = 4) and, in the case of the GP survey, Hungary (GPs: n = 1) and Germany (GPs: n = 4). Migrants are variably or not routinely screened for hepatitis B/C in the majority of cases. The majority of GPs reported that hepatitis B/C screening was routinely offered to people who inject drugs. In Hungary, Italy and in the Netherlands, screening sex workers is not a regular practice. As to whether GPs offer screening to men who have sex with men, responses varied; in Germany, the Netherlands and Italy, screening was "variably" or "commonly" implemented, while in Hungary the practice seems to be sporadic. In the UK, screening for hepatitis B seems to be common practice among GPs, while hepatitis C testing is only occasionally offered to this risk group. Most GPs (> 44%) in all countries except Hungary reported that hepatitis B/C screening was very commonly offered to HIV patients.*
The role of GPs in monitoring hepatitis cases and the referral of cases back to GPs by specialists varied both within and between countries. GPs are unlikely to monitor clinical outcomes other than side effects in patients undergoing treatment. Patients who have had a sustained virological response are usually referred back to GPs, whereas patients undergoing antiviral treatment and those who do not respond to treatment are rarely referred back.
Conclusions. *The GP's decision to offer screening to risk groups often seems to be an individual choice of the healthcare professional. Raising GPs' awareness of the disease, for example through the adoption of effective strategies for the dissemination and implementation of the existing guidelines for general practice, is strongly needed. The role of GPs and specialists involved in the management of chronically infected patients should also be clarified, as opinions sometimes differ markedly even within each professional group.*

Introduction

Viral hepatitis B and C are of major public health concern in the European Union, although there are distinct geographical variations in the prevalence and incidence of viral hepatitis across countries. In the EU, the burden of disease is generally low in the north-western countries and higher in the south-eastern region: the prevalence in the general population varies from 0.4% to 5.2% for anti-HCV and from 0.1% to 5.6% for HBsAg [1, 2]. However, as there is a lack of representative data in higher-risk populations, such as migrants from countries where hepatitis is endemic [3], the true prevalence is probably higher. In order to halt the progression of the disease to advanced hepatic fibrosis, cirrhosis, and/or hepatocellular carcinoma, and to prevent onward transmission, timely recognition and accurate clinical management of the disease are of extreme importance. Both the general practitioner (GP) and the secondary-care specialist are involved in the diagnosis of chronic viral hepatitis and in the clinical management of infected patients. Several studies have explored the primary-care physician's role and experiences in treatment and shared-care with specialists in North America [4-6], in Australia [7-9] and in some parts of Asia [10, 11]. To the best of our knowledge, however, the remit of the GP in the clinical management of the disease in the EU member states has not been extensively evaluated. The aim of the present study, which is part of the EU funded Project "HEPscreen: Screening for hepatitis B and C among migrants in the European Union", was

Tab. I. Response rate by professional group and by country.

	UK n (%)	DE n (%)	NL n (%)	HU n (%)	IT n (%)	ES n (%)	Total n (%)
GPs	10 (25)	4 (10)	9 (22.5)	1 (2.5)	14 (35)	2 (5)	40 (100)
Specialists	10 (15.6)	9 (14.1)	22 (34.4)	10 (15.6)	9 (14.1)	4 (6.3)	64 (100)
Total n (%)	20 (19.2)	13 (12.5)	31 (29.8)	11 (10.6)	23 (22.1)	6 (5.8)	104 (100)

n: number of health professionals who participated in the survey.

to investigate, by means of a semi-quantitative online survey, the role of the GP in the screening of persons at risk and in the clinical management of chronic viral hepatitis patients in six EU countries: Germany, Hungary, Italy, the Netherlands, Spain and the United Kingdom.

Methods

Two semi-quantitative online surveys were developed and administered, respectively, to general practitioners (GPs) and to secondary-care specialists (SPs), i.e. gastroenterologists, hepatologists and infectious-disease specialists, working in the six EU countries. Both surveys were pilot tested, translated into the national languages of the study countries, uploaded into the open-source online software package LimeSurvey, and sent by email to healthcare professionals, who were board members of clinical associations and professional networks. Rather than reaching a large representative sample of practising clinicians, the aim was to involve 5-10 experts deemed able to reflect on practices within their specialty in both professional groups. Respondents were contacted via email in July 2012 and further reminded twice during data collection, which closed in September 2012. Data were exported from LimeSurvey to SPSS 19.2 (Inc. Chicago, IL) for descriptive analysis. In the GP survey, we aimed to find out how commonly population groups at higher risk, namely migrants from endemic countries, people who inject drugs (PWID), sex workers, men who have sex with men (MSM), HIV positive patients and patients with abnormal liver function test (LFT) results, are screened for hepatitis B/C by GPs in the six countries. To this end, we used a four-point Likert scale ("very common"; "variable or not routinely"; "rarely or never"; "unsure").

In both the GP and specialist survey, the same scale was used to determine whether GPs were involved in the clinical management of patients: specifically, whether they were involved in monitoring alanine aminotransferase (ALT), viral load and side effects in patients undergoing antiviral treatment. We also explored whether patients were referred back to primary care in four clinical/patient scenarios, i.e. i) patients not qualifying for treatment after the initial evaluation; ii) those undergoing antiviral treatment; iii) those who have a sustained virological response (SVR) due to treatment; and iv) those who are non-responders to treatment. The replies given by the two professional groups were compared.

Results

Respondent profile (Tab. I)

The respondent target of between five and 10 experts per professional group was achieved, except in the cases of Spain (GPs: n = 2; Specialists: n = 4), Hungary (GPs: n = 1) and Germany (GPs: n = 4) (Tab. I).

The majority of specialists (77%) were gastroenterologists/hepatologists; 21% were infectious-disease specialists and a small proportion were community/practice nurses. Overall, around half of the participating GPs see a few (1-10) chronic hepatitis patients per year, whereas more than 90% of the secondary-care specialists see chronic hepatitis patients on a weekly basis.

Screening by GPs for groups at higher risk (Tab. II)

Migrants from endemic countries. Results from the GP survey showed that 75% of respondents in Germany, 56% in the Netherlands, the one in Hungary and one of the two in Spain stated that it was very common to offer hepatitis B testing to migrants from endemic regions. On the other hand, approximately half of the respondents in the UK (60%) and Italy (50%) and the other respondent in Spain answered that this was not routine.

Except for Hungary, where the one respondent was unsure, most GPs in the study countries stated that they either routinely or variably offered screening for hepatitis C to migrants from endemic regions.

People who inject drugs. The majority of GPs from the UK, Germany and Italy, along with the one in Hungary and the two in Spain, reported that they routinely offered hepatitis B/C screening to PWID. In the Netherlands, although screening for hepatitis C appears to be commonly practised by GPs for PWID, screening for hepatitis B varied between very commonly (44%) or variably (44%) offering the test.

Sex workers. In Germany and the UK most GPs (75% and 70%, respectively) answered that it was very common to offer a hepatitis B test to sex workers, and the two respondents in Spain were also of this opinion. The single Hungarian GP stated that it was a variable practice. In the Netherlands, respondents were split between judgements of "very common" and "variable". In Italy, no apparent trend could be discerned.

The majority of GPs in the UK, Germany and the Netherlands, and both respondents in Spain, stated that it was very common to recommend hepatitis C testing to sex workers. In Italy, most replies were split between "very common" and "variable". The respondent in Hungary reported that it was not routinely practised.

Tab. II. Frequency of screening for hepatitis B or C for population groups at higher risk by primary-care physicians in the six countries.

Migrants						
HBV	UK	DE	NL	HU	IT	ES
	(n = 10)	(n = 4)	(n = 9)	(n = 1)	(n = 14)	(n = 2)
Very common	20%	75%	56%	100%	14%	50%
Variable or not routinely	60%	25%	22%	0%	50%	50%
Rarely or never	10%	0%	22%	0%	29%	0%
Unsure	10%	0%	0%	0%	7%	0%
HCV	UK	DE	NL	HU	IT	ES
	(n = 10)	(n = 4)	(n = 9)	(n = 1)	(n = 14)	(n = 2)
Very common	40%	75%	67%	0%	29%	50%
Variable or not routinely	30%	25%	11%	0%	57%	50%
Rarely or never	10%	0%	22%	0%	14%	0%
Unsure	20%	0%	0%	100%	0%	0%
People who inject drugs						
HBV	UK	DE	NL	HU	IT	ES
	(n = 10)	(n = 4)	(n = 9)	(n = 1)	(n = 14)	(n = 2)
Very common	90%	75%	44%	100%	64%	100%
Variable or not routinely	0%	25%	44%	0%	14%	0%
Rarely or never	0%	0%	0%	0%	14%	0%
Unsure	10%	0%	12%	0%	8%	0%
HCV	UK	DE	NL	HU	IT	ES
	(n = 10)	(n = 4)	(n = 9)	(n = 1)	(n = 14)	(n = 2)
Very common	50%	75%	67%	100%	72%	100%
Variable or not routinely	30%	25%	22%	0%	14%	0%
Rarely or never	0%	0%	11%	0%	14%	0%
Unsure	20%	0%	0%	0%	0%	0%
Sex workers						
HBV	UK	DE	NL	HU	IT	ES
	(n = 10)	(n = 4)	(n = 9)	(n = 1)	(n = 14)	(n = 2)
Very common	70%	75%	44%	0%	36%	100%
Variable or not routinely	0%	25%	45%	100%	29%	0%
Rarely or never	0%	0%	11%	0%	14%	0%
Unsure	30%	0%	0%	0%	21%	0%
HCV	UK	DE	NL	HU	IT	ES
	(n = 10)	(n = 4)	(n = 9)	(n = 1)	(n = 14)	(n = 2)
Very common	60%	75%	56%	0%	36%	100%
Variable or not routinely	20%	25%	33%	100%	43%	0%
Rarely or never	0%	0%	11%	0%	14%	0%
Unsure	20%	0%	0%	0%	7%	0%

Tab. II.

Men who have sex with men						
HBV	UK	DE	NL	HU	IT	ES
	(n = 10)	(n = 4)	(n = 9)	(n = 1)	(n = 14)	(n = 2)
Very common	60%	50%	44%	0%	36%	0%
Variable or not routinely	20%	50%	56%	100%	36%	50%
Rarely or never	0%	0%	0%	0%	21%	0%
Unsure	20%	0%	0%	0%	7%	50%
HCV	UK	DE	NL	HU	IT	ES
	(n = 10)	(n = 4)	(n = 9)	(n = 1)	(n = 14)	(n = 2)
Very common	20%	50%	44%	0%	36%	50%
Variable or not routinely	50%	50%	45%	100%	43%	50%
Rarely or never	0%	0%	11%	0%	21%	0%
Unsure	30%	0%	0%	0%	0%	0%
Patients with HIV						
HBV	UK	DE	NL	HU	IT	ES
	(n = 10)	(n = 4)	(n = 9)	(n = 1)	(n = 14)	(n = 2)
Very common	80%	75%	67%	0%	79%	50%
Variable or not routinely	0%	25%	22%	100%	0%	50%
Rarely or never	0%	0%	0%	0%	7%	0%
Unsure	20%	0%	11%	0%	14%	0%
HCV	UK	DE	NL	HU	IT	ES
	(n = 10)	(n = 4)	(n = 9)	(n = 1)	(n = 14)	(n = 2)
Very common	50%	75%	44%	0%	71%	100%
Variable or not routinely	30%	25%	22%	100%	14%	0%
Rarely or never	0%	0%	11%	0%	7%	0%
Unsure	20%	0%	23%	0%	8%	0%
Screening for hepatitis B for patients with abnormal liver funcion test results						
1ST Abnormal Test Results	UK	DE	NL	HU	IT	ES
	(n = 10)	(n = 4)	(n = 9)	(n = 1)	(n = 14)	(n = 2)
Very common	40%	50%	44%	100%	64%	50%
Variable or not routinely	50%	50%	45%	0%	22%	0%
Rarely or never	0%	0%	11%	0%	14%	50%
Unsure	10%	0%	0%	0%	0%	0%
2ND Abnormal Test Results	UK	DE	NL	HU	IT	ES
	(n = 10)	(n = 4)	(n = 9)	(n = 1)	(n = 14)	(n = 2)
Very common	60%	100%	89%	100%	64%	50%
Variable or not routinely	30%	0%	11%	0%	36%	0%
Rarely or never	0%	0%	0%	0%	0%	50%
Unsure	10%	0%	0%	0%	0%	0%

Tab. II.

Screening for hepatitis C for patients with abnormal liver funcion test results						
1ST Abnormal Test Results	UK	DE	NL	HU	IT	ES
	(n = 10)	(n = 4)	(n = 9)	(n = 1)	(n = 14)	(n = 2)
Very common	40%	50%	33%	100%	64%	50%
Variable or not routinely	40%	50%	34%	0%	29%	50%
Rarely or never	0%	0%	33%	0%	7%	0%
Unsure	20%	0%	0%	0%	0%	0%
2ND Abnormal Test Results	UK	DE	NL	HU	IT	ES
	(n = 10)	(n = 4)	(n = 9)	(n = 1)	(n = 14)	(n = 2)
Very common	60%	100%	56%	100%	79%	50%
Variable or not routinely	20%	0%	33%	0%	22%	50%
Rarely or never	0%	0%	11%	0%	0%	0%
Unsure	20%	0%	0%	0%	0%	0%

Men who have sex with men. As to whether GPs offer screening to MSM, replies indicated that it was "variably" and "commonly" practised in Germany, the Netherlands and Italy, while in Hungary it seems to be a sporadic practice. In the UK, while screening for hepatitis B seems to be common practice among GPs, the majority view is that hepatitis C testing is offered only occasionally to MSM.

Patients with HIV. Most GPs (> 44%) in all countries reported that it was very common practice to offer hepatitis B/C screening to HIV patients, except in Hungary, where the respondent stated that screening was not routinely offered.

Patients with abnormal liver function test results. A first abnormal LFT result would very commonly prompt approximately half of the GP respondents in each country and the one in Hungary to screen a patient for hepatitis B, while the others stated that this would not routinely be the case. On the other hand, a second abnormal LFT result would alert most GPs to recommend a hepatitis B test to their patients. While a first abnormal LFT result would only lead half of the GPs to request a hepatitis C test, apart from Italy and Hungary, where most would ask for a hepatitis C test, a second or repeat abnormal LFT would prompt the majority of GPs in all countries to screen for hepatitis C.

The involvement of GPs in the clinical management of the disease (Tab. III)

ALT. In Germany, the majority of respondents indicated that it was very common for GPs to monitor ALT in patients undergoing antiviral treatment. A similar, but less marked, trend could be seen in Italy, where over half the GPs selected "very common". GPs in Spain appeared to be involved in monitoring ALT variably according to the vast majority of respondents. The trends in these three countries contrast with that observed in the Netherlands, where nearly three quarters (71%) indicated that GPs were rarely or never involved in monitoring ALT. In the UK and in Hungary, over half (55%) indicated that GPs were rarely or never involved, the remaining replies being distributed across the other answer options.

Viral load. The results from both the GPs' and specialists' surveys show that, in the UK, the Netherlands, Hungary and Spain, most GPs are rarely or never involved in monitoring viral load among patients undergoing antiviral treatment. Also in Italy, despite the diverse spread of opinion, the largest proportion (39%) indicated that GPs were rarely or never involved. In Germany, a slight trend towards "very common" was observed.

Side effects. A diversity of opinion emerged from both surveys in most countries. The clearest picture emerged from Germany, where the majority view (62%) was that GPs were very commonly involved in monitoring side effects. The dominant view in Italy was more towards very common (35%) or variable (52%) monitoring of side effects by GPs, whereas the majority view inclined more towards variable to rarely or never in the UK, the

Tab. III. GPs' involvement in monitoring clinical indicators and side effects of antiviral treatment.

GPs involvement in monitoring ALT						
ACCORDING TO GPs	UK (n = 10)	DE (n = 4)	NL (n = 9)	HU (n = 1)	IT (n = 14)	ES (n = 2)
Very common	20%	75%	0%	100%	64%	50%
Variable or not routinely	40%	0%	22%	0%	21%	50%
Rarely or never	20%	0%	56%	0%	14%	0%
Unsure	20%	25%	22%	0%	0%	0%
ACCORDING TO SPECIALISTS	UK (n = 10)	DE (n = 9)	NL (n = 22)	HU (n = 10)	IT (n = 9)	ES (n = 4)
Very common	0%	56%	0%	10%	33%	0%
Variable or not routinely	10%	11%	23%	10%	67%	100%
Rarely or never	90%	11%	77%	60%	0%	0%
Unsure	0%	22%	0%	20%	0%	0%
COMBINED RESULTS	UK (n = 20)	DE (n = 13)	NL (n = 31)	HU (n = 11)	IT (n = 23)	ES (n = 6)
Very common	10%	62%	0%	18%	52%	17%
Variable or not routinely	25%	8%	23%	9%	39%	83%
Rarely or never	55%	8%	71%	55%	9%	0%
Unsure	10%	23%	6%	18%	0%	0%

Tab. III.

GPs involvement in monitoring viral load						
ACCORDING TO GPs	UK (n = 10)	DE (n = 4)	NL (n = 9)	HU (n = 1)	IT (n = 14)	ES (n = 2)
Very common	0%	50%	0%	0%	36%	0%
Variable or not routinely	30%	25%	11%	0%	43%	50%
Rarely or never	50%	25%	67%	100%	21%	50%
Unsure	20%	0%	22%	0%	0%	0%
ACCORDING TO SPECIALISTS	UK (n = 10)	DE (n = 9)	NL (n = 22)	HU (n = 10)	IT (n = 9)	ES (n = 4)
Very common	0%	33%	0%	0%	22%	0%
Variable or not routinely	0%	22%	0%	10%	11%	25%
Rarely or never	100%	22%	100%	70%	67%	75%
Unsure	0%	22%	0%	20%	0%	0%
COMBINED RESULTS	UK (n = 20)	DE (n = 13)	NL (n = 31)	HU (n = 11)	IT (n = 23)	ES (n = 6)
Very common	0%	38%	0%	0%	30%	0%
Variable or not routinely	15%	23%	3%	9%	30%	33%
Rarely or never	75%	23%	90%	73%	39%	67%
Unsure	10%	15%	6%	18%	0%	0%
GPs involvement in monitoring side effects						
ACCORDING TO GPs	UK (n = 10)	DE (n = 4)	NL (n = 9)	HU (n = 1)	IT (n = 14)	ES (n = 2)
Very common	10%	75%	0%	0%	50%	100%
Variable or not routinely	50%	0%	22%	100%	36%	0%
Rarely or never	20%	25%	56%	0%	14%	0%
Unsure	20%	0%	22%	0%	0%	0%
ACCORDING TO SPECIALISTS	UK (n = 10)	DE (n = 9)	NL (n = 22)	HU (n = 10)	IT (n = 9)	ES (n = 4)
Very common	10%	56%	0%	10%	11%	0%
Variable or not routinely	40%	11%	46%	20%	78%	50%
Rarely or never	50%	11%	55%	40%	11%	50%
Unsure	0%	22%	0%	30%	0%	0%
COMBINED RESPONSES	UK (n = 20)	DE (n = 13)	NL (n = 31)	HU (n = 11)	IT (n = 23)	ES (n = 6)
Very common	10%	62%	0%	9%	35%	33%
Variable or not routinely	45%	8%	39%	27%	52%	33%
Rarely or never	35%	15%	55%	36%	13%	33%
Unsure	10%	15%	7%	27%	0%	0%

Netherlands and Hungary. In Spain no majority opinion emerged.

Referral back to GPs/primary care from specialist secondary care (Tab. IV)

Patients who do not qualify for treatment after an initial evaluation. In the Netherlands and in Spain, the majority of respondents in both surveys agreed that patients who do not qualify for treatment after an initial evaluation are only variably or not routinely referred back to primary-care practitioners. Specialists' opinion was in contrast with that of GPs in the UK, where 90% of specialists (*vs* 10% of GPs) indicated that these patients were rarely or never referred back to Gps. In Italy, although the majority of specialists (56%) selected "variable", around one third indicated "rarely or never", while 57% of GPs selected "very common". In Germany, the majority opinion was divided between patients being very commonly (54%) and variably (39%) referred back to GPs. In Hungary, no dominant opinion could be observed.

Patients undergoing antiviral treatment. Overall, the majority of respondents in all countries (84% in the Netherlands, 83% in Spain, 65% in the UK, 64% in Hungary, 48% in Italy and 38% in Germany) stated that patients undergoing antiviral treatment were rarely or never referred back to GPs. Only in Germany and Italy did the majority of GPs (75% and 57%, respectively) indicate that these patients were very commonly referred back to GPs, although around one quarter selected "rarely or never". In Germany, although 44% of specialists reported "rarely or never" referring back patients undergoing antiviral treatment, the same percentage indicated that referral was variable. In Italy, 78% of secondary-care specialists indicated that these patients were rarely or never referred back to GPs (while 57% of GPs stated that it was very common).

Patients with a sustained virological response due to treatment. In the UK, despite divergent opinions from GPs, most GP and specialist respondents reported that referral back to GPs was very common for patients who have SVR on account of treatment. This was also the dominant opinion in Germany (61%) and in the Netherlands (49%), where, however, 42% stated that patients with these characteristics were variably or not routinely referred back to GPs. In Hungary, opinion was divided between "very commonly" and "rarely or never". In Ita-

Tab. IV. Frequency of referral back to GPs for: i) patients who do not qualify for treatment after the initial evaluation; ii) patients undergoing antiviral treatment; iii) patients with sustained virological response due to treatment; and iv) patients who are non-responders to treatment.

Patients who do not qualify for treatment after initial evaluation						
ACCORDING TO GPs	UK (n = 10)	DE (n = 4)	NL (n = 9)	HU (n = 1)	IT (n = 14)	ES (n = 2)
Very common	50%	50%	33%	100%	57%	50%
Variable or not routinely	10%	50%	56%	0%	21%	0%
Rarely or never	10%	0%	11%	0%	21%	50%
Unsure	30%	0%	0%	0%	0%	0%
ACCORDING TO SPECIALISTS	UK (n = 10)	DE (n = 9)	NL (n = 22)	HU (n = 10)	IT (n = 9)	ES (n = 4)
Very common	10%	56%	14%	20%	11%	0%
Variable or not routinely	0%	33%	59%	30%	56%	100%
Rarely or never	90%	0%	27%	30%	33%	0%
Unsure	0%	11%	0%	20%	0%	0%
COMBINED RESULTS	UK (n = 20)	DE (n = 13)	NL (n = 31)	HU (n = 11)	IT (n = 23)	ES (n = 6)
Very common	30%	54%	19%	27%	39%	17%
Variable or not routinely	5%	39%	58%	27%	35%	67%
Rarely or never	50%	0%	23%	27%	26%	17%
Unsure	15%	8%	0%	18%	0%	0%
Patients undergoing antiviral treatment						
ACCORDING TO GPs	UK (n = 10)	DE (n = 4)	NL (n = 9)	HU (n = 1)	IT (n = 14)	ES (n = 2)
Very common	0%	75%	11%	0%	57%	0%
Variable or not routinely	40%	0%	22%	0%	14%	0%
Rarely or never	40%	25%	56%	100%	29%	100%
Unsure	20%	0%	11%	0%	0%	0%
ACCORDING TO SPECIALISTS	UK (n = 10)	DE (n = 9)	NL (n = 22)	HU (n = 10)	IT (n = 9)	ES (n = 4)
Very common	10%	0%	0%	10%	22%	25%
Variable or not routinely	0%	44%	5%	0%	0%	0%
Rarely or never	90%	44%	95%	60%	78%	75%
Unsure	0%	11%	0%	30%	0%	0%
COMBINED RESULTS	UK (n = 20)	DE (n = 13)	NL (n = 31)	HU (n = 11)	IT (n = 23)	ES (n = 6)
Very common	5%	23%	3%	9%	43%	17%
Variable or not routinely	20%	31%	10%	0%	9%	0%
Rarely or never	65%	38%	84%	64%	48%	83%
Unsure	10%	8%	3%	27%	0%	0%

ly, although the majority judged referral to be very common, one third selected "rarely or never" and one quarter "variably or not routinely". Opinion was also divided in Spain, where half of the respondents selected "rarely or never", one third "very common", and 17% "variably or not routinely".

Non-responders to treatment. Non-responders to treatment are rarely or never referred back to GPs, according to the majority of respondents in all countries except Italy, where 44% stated that referral back to GPs was very common for these patients (the percentage was higher among GPs: 64%). In Germany, most reported that referral back to the GP occurred variably or not routinely.

Discussion

In patients with chronic viral hepatitis, shared management based on close collaboration between the GP and the specialist physician, through the identification of their respective tasks, is necessary for the appropriate diagnostic and therapeutic management of the patient along the care pathway. Since most people with chronic hepatitis are asymptomatic until cirrhosis or hepatocellular carcinoma are established, the initial diagnosis and management of chronic hepatitis relies on primary-care physicians to identify and screen high-risk individuals [12]. The GP can contribute significantly by promptly identifying and screening of those at risk, by providing counselling and information, by referring the patient to the specialist for disease staging and also by liaising/cooperating with the hospital services involved in the specialist management of patients.

Non-uniform practices are likely to create or exacerbate health inequalities, and might be an important cause of the "under-treatment" phenomenon, i.e. the disparity between the number of chronic hepatitis patients and the number of patients actually receiving treatment [13]. To our knowledge, this is the first study conducted contemporarily in six EU countries with the aim of investigating the role of the GP in the screening practices for risk groups and in the clinical management of chronic viral hepatitis patients. Given the careful selection of the survey participants and national representatives of the experts in their respective fields, it may justifiably

Tab. IV.

Patients with sustained virological response due to treatment						
ACCORDING TO GPs	UK (n = 10)	DE (n = 4)	NL (n = 9)	HU (n = 1)	IT (n = 14)	ES (n = 2)
Very common	10%	50%	22%	0%	57%	0%
Variable or not routinely	30%	25%	56%	0%	14%	0%
Rarely or never	20%	25%	11%	100%	29%	100%
Unsure	40%	0%	11%	0%	0%	0%
ACCORDING TO SPECIALISTS	UK (n = 10)	DE (n = 9)	NL (n = 22)	HU (n = 10)	IT (n = 9)	ES (n = 4)
Very common	70%	67%	59%	40%	22%	50%
Variable or not routinely	10%	22%	36%	0%	44%	25%
Rarely or never	10%	0%	5%	30%	33%	25%
Unsure	10%	11%	0%	30%	0%	0%
COMBINED RESULTS	UK (n = 20)	DE (n = 13)	NL (n = 31)	HU (n = 11)	IT (n = 23)	ES (n = 6)
Very common	40%	61%	49%	36%	44%	33%
Variable or not routinely	20%	23%	42%	0%	26%	17%
Rarely or never	15%	8%	6%	36%	30%	50%
Unsure	25%	8%	3%	27%	0%	0%
Patients non-responders to treatment						
ACCORDING TO GPs	UK (n = 10)	DE (n = 4)	NL (n = 9)	HU (n = 1)	IT (n = 14)	ES (n = 2)
Very common	20%	50%	11%	0%	64%	0%
Variable or not routinely	20%	25%	44%	100%	21%	0%
Rarely or never	20%	25%	22%	0%	14%	100%
Unsure	40%	0%	22%	0%	0%	0%
ACCORDING TO SPECIALISTS	UK (n = 10)	DE (n = 9)	NL (n = 22)	HU (n = 10)	IT (n = 9)	ES (n = 4)
Very common	10%	11%	0%	0%	11%	25%
Variable or not routinely	0%	44%	0%	10%	33%	0%
Rarely or never	90%	33%	100%	50%	55%	75%
Unsure	0%	11%	0%	40%	0%	0%
COMBINED RESULTS	UK (n = 20)	DE (n = 13)	NL (n = 31)	HU (n = 11)	IT (n = 23)	ES (n = 6)
Very common	15%	23%	3%	0%	44%	17%
Variable or not routinely	10%	38%	13%	18%	26%	0%
Rarely or never	55%	31%	77%	46%	30%	83%
Unsure	20%	8%	7%	36%	0%	0%

be assumed that the replies gathered provide a fair picture of the GP's remit in the countries considered. However, caution is needed in interpreting the results where the respondent target of five to ten experts could not be reached (in Spain and Hungary).

According to our results, the GP's role and referral back to GPs vary within and between countries. What seems certain is that GPs are unlikely to monitor any clinical outcomes (such as viral load) other than some side effects in patients undergoing treatment, indicating that this is considered the remit of specialists in secondary care.

Results from a Turkish study showed that GPs were not able to follow up chronic viral hepatitis B and C patients because of their limited awareness of diagnostic facilities and treatment options [14]. Indeed, while the majority of GPs had adequate knowledge of HBV and HCV transmission and of risk factors, a low percentage was well informed about the treatment of chronic patients with elevated ALT. In particular, the Turkish study identified gaps in GPs knowledge of the appropriate use of diagnostic tests and interventions to identify and manage patients with chronic viral hepatitis. The authors concluded that further coordination with secondary-care specialists was warranted in order to ensure that patients were followed up in the primary-care setting [14].

Strategic programmes of health education and awareness-raising, for both professionals and risk groups, should be established. In the EU, two different strategies are used to identify persons with HBV or HCV infection: population screening and healthcare provider-initiated testing (based on identified risk-factors). Population screening is not cost-effective, owing to the low prevalence of HBV and HCV infections in the general EU population, while the healthcare provider-initiated identification of HBV or HCV infection among defined risk groups is a valuable instrument in secondary prevention. Making GPs aware of risk factors, such as demographic, behavioural, occupational and medical risk factors, and clinical signs or symptoms of hepatitis, may efficiently improve case identification. Patients with chronic HBV or HCV infection should be referred for medical care and case-management, and those testing negative but with risk factors for acquiring HBV or HCV infection should receive counselling on prevention (those at risk of HBV infection should also be offered vaccination) [15].

In the USA, approaches to the screening, diagnosis and management of viral hepatitis patients vary considerably among primary-care physicians. Indeed, studies in the USA have shown deficiencies in the way some primary-care providers diagnose, treat or refer patients with HCV [16-23]. One such study investigated the association between the characteristics of the physician or practice and screening and treatment for HCV infection: more experienced physicians (longer in practice) and those based in affluent, suburban settings were more likely to order ALT tests [16]. In another study, a cross-sectional mail survey of 217 family physicians revealed insufficient levels of knowledge about screening and counselling for chronic hepatitis and hepatocellular carcinoma; in addition, around half of the physicians referred patients with chronic HBV or HCV to the specialist for further management [12]. Our results show that patients who have had a sustained virological response are generally referred back to the GP, while patients undergoing antiviral treatment and those who do not respond to treatment are rarely referred back to primary care.

As new treatment options, especially for hepatitis C, have become available in recent years, access and adherence to treatment are important determinants of the success of screening programmes [2].

Since 2012, population-based anti-HCV screening of all adults born between 1945 and 1965 has been recommended in the USA, where the prevalence of anti-HCV is highest in black non-Hispanics (6.42%) and in Mexican Americans (3.26%) [24]. In the EU, particular attention should be paid to providing screening and treatment for hepatitis B and C for migrant groups at high risk of chronic infection. The adoption of a targeted screening and treatment programme in primary care could be an effective strategy. Results from our study in the UK, suggest that standard screening practices are lacking, and allude to a shared role for GPs in the clinical monitoring of ALT, viral load and side effects. Referral back to the GP of patients undergoing antiviral treatment is not common, although GPs and specialists differed markedly in their estimates of the frequency of referral back to GPs of patients who do not qualify for treatment. In a recent UK study, GPs expressed concerns about screening and treating patients in primary care, considering their workload and also the sustainability of such a strategy [25]. Immigrants mentioned practical barriers, such as language and communication difficulties, limited time on account of long working hours, and, in some cases, limited trust and confidence in general practice-based care [25].

Indeed, chronic hepatitis B and C infections are often undiagnosed in primary care. According the 'Hepatitis B and C surveillance in Europe – 2012' report, in the minority of cases in which information on the testing facility was available, 27% of hepatitis B and 21% of hepatitis C cases were diagnosed in general practice [26]. One German study, involving 21,008 subjects, reported that the prevalence of HBsAg, anti-HCV and HCV-RNA was 0.52%, 0.95%, and 0.43%, respectively. Infections were previously unknown in 85% and 65% of HbsAg- and anti-HCV-positive individuals, respectively [27]. German hepatitis B and C treatment guidelines recommend HBsAg and anti-HCV screening in several pre-defined risk groups. According to the participants in our survey, most GPs in Germany report commonly screening population groups at higher risk. The management of patients undergoing treatment seems to be shared between GPs and specialists. Easy to apply guidelines with defined risk scenarios may help to diagnose previously unknown infections [27]. Previous results from the HEPscreen Project showed that the availability of training programmes to improve skills and knowledge of viral hepatitis differed across the six EU countries. Among the experts interviewed (268 health professionals), 80% and 73% were aware of hepatitis B and hepatitis C guidelines, respectively, in their country [28]. The findings of the present study could provide impetus to the formulation of precise and clear guidelines targeting primary-care physicians and secondary-care specialists. These should explicitly specify, in a shared-care model, the different responsibilities in the management of chronic hepatitis patients, so as to deliver more effective healthcare.

Conclusions

Although the GP's role in the screening and clinical management of chronic viral hepatitis is crucial to timely diagnosis and linkage to specialist care, the diversity of responses often observed suggests inadequate awareness of explicit recommendations, which results in a lack of uniform practices among experts. The GP's decision to offer screening to risk groups often seems to be an individually motivated choice of the healthcare professional. The inconsistencies observed in screening practices may mean that many chronic infections remain undetected. This underscores the need to raise GPs' awareness of this silent epidemic, for example through the adoption of effective strategies for the dissemination and implementation of the existing guidelines for general practice. The role of GPs and specialists involved in the management of chronically infected patients should also be clarified, as opinions sometimes differed markedly even within each professional group.

Acknowledgements

The authors thank Justine Tanoey for performing the analysis of the results on screening.

This study was part of "HEPscreen: Screening for hepatitis B and C among migrants in the European Union"; a project co-funded by the Health Programme of the European Union (EU-HEP-SCREEN, Grant Agreement 20101105).

Conflicts of interest: none declared

Disclaimer

Responsibility for the information and views set out in this study lies entirely with the authors. The European Commission is not responsible for any use that may be made of the information contained herein.

Declarations

Ethical approval: ethical approval was not required. All healthcare professionals identified as potential participants in the survey received written information about the project and its aims, and were subsequently invited to participate. We stressed that participation in this study was voluntary and withdrawal from the study was possible at any time. The anonymity of participants was maintained throughout.

Authors' contributions

AB and ML study concept and design, literature search, acquisition of data, analysis and interpretation of data, drafting of the manuscript; AF and AA interpretation of data, critical revision of the manuscript for important intellectual content; IV and ET critical revision of the manuscript for important intellectual content; PB critical revision of the manuscript for important intellectual content, supervised the study, obtained funding; all authors revised the manuscript and contributed to improving the paper; all authors read and approved the final manuscript.

References

[1] Hahné SJM, Veldhuijzen IK, Wiessing L, Lim T-A, Salminen M, Laar M van de. *Infection with hepatitis B and C virus in Europe: a systematic review of prevalence and cost-effectiveness of screening*. BMC Infect Dis 2013;13:181. doi: 10.1186/1471-2334-13-181.

[2] European Centre for Disease Prevention and Control. *Hepatitis B and C in the EU neighbourhood: prevalence, burden of disease and screening policies*. Stockholm: ECDC; 2010. Available at: http://www.ecdc.europa.eu/en/publications/Publications/TER_100914_Hep_B_C%20_EU_neighbourhood.pdf [Accessed 10/10/2015]

[3] European Centre for Disease Prevention and Control. *Assessing the burden of key infectious diseases affecting migrant populations in the EU/EEA*. Stockholm: ECDC; 2014. Available at: http://ecdc.europa.eu/en/publications/Publications/assessing-burden-disease-migrant populations.pdf [Accessed 10/10/2015]

[4] Sarkar M, Shvachko VA, Ready JB, Pauly MP, Terrault NA, Peters MG, Manos MM. *Characteristics and management of patients with chronic hepatitis B in an integrated care setting*. Dig Dis Sci 2014;59:2100-8. doi: 10.1007/s10620-014-3142-2.

[5] Burman BE, Mukhtar NA, Toy BC, Nguyen TT, Chen AH, Yu A, Berman P, Hammer H, Chan D, McCulloch CE, Khalili M. *Hepatitis B management in vulnerable populations: Gaps in disease monitoring and opportunities for improved care*. Dig Dis Sci 2014;59:46-56. doi: 10.1007/s10620-013-2870-z.

[6] Clark EC, Yawn BP, Galliher JM, Temte JL, Hickner J. *Hepatitis C identification and management by family physicians.* Fam Med 2005;37:644-9.

[7] Wallace J, McNally S, Richmond J, Hajarizadeh B, Pitts M. *Challenges to the effective delivery of health care to people with chronic hepatitis B in Australia.* Sex Health 2012;9:131-7.

[8] Dev A, Nguyen JNH, Munafo L, Hardie E, Iacono L. *Chronic hepatitis B: a clinical audit of GP management.* Aust Fam Physician 2011;40:533-8.

[9] Wallace J, Hajarizadeh B, Richmond J, McNally S. *Challenges in managing patients in Australia with chronic hepatitis B: the General Practitioners' perspective*. Aust N Z J Public Health 2013;37:405-10. http://doi.wiley.com/10.1111/1753-6405.12127.

[10] Peksen Y, Canbaz S, Leblebicioglu H, Sunbul M, Esen S, Sunter AT. *Primary care physicians' approach to diagnosis and treatment of hepatitis B and hepatitis C patients*. BMC Gastroenterol 2004;4:3.

[11.] Ren J-J, Liu Y, Ren W, Qiu Y, Wang B, Chen P, Xu KJ, Yang SG, Yao J, Li LJ. *Role of general practitioners in prevention and treatment of hepatitis B in China*. Hepatobiliary Pancreat Dis Int 2014;13:495-500.

[12] Ferrante JM, Winston DG, Chen PH, de la Torre AN. *Family physicians' knowledge and screening of chronic hepatitis and liver cancer.* Fam Med 2008;40:345-51.

[13] Cohen C, Holmberg SD, McMahon BJ, Block JM, Brosgart CL, Gish RG, London WT, Block TM. *Is chronic hepatitis B being undertreated in the United States?* J Viral Hepat 2011;18:377-83.

[14] Peksen Y, Canbaz S, Leblebicioglu H, Sunbul M, Esen S, Sunter AT. *Primary care physicians' approach to diagnosis and treatment of hepatitis B and hepatitis C patients*. BMC Gastroenterology 2004;4:3.

[15] Fretz R, Negro F, Bruggmann P, Lavanchy D, De Gottardi A, Pache I, Masserey Spicher V, Cerny A. *Hepatitis B and C in Switzerland – healthcare provider initiated testing for chronic hepatitis B and C infection*. Swiss Med Wkly 2013;143:w13793.

[16] Nicklin DE, Schultz C, Brensinger CM, Wilson JP. *Current care of hepatitis C-positive patients by primary care physicians in an integrated delivery system*. J Am Board Fam Pract 1999;12:427-35.

[17] Shehab TM, Sonnad SS, Lok AS. *Management of hepatitis C patients by primary care physicians in the USA: results of a national survey*. J Viral Hepat 2001;8:377-83. http://onlinelibrary.wiley.com/doi/10.1046/j.1365-2893.2001.00310.x/abstract

[18] Shehab TM, Sonnad S, Gebremariam A, Schoenfeld P. *Knowledge of hepatitis C screening and management by internal medicine residents: trends over 2 years*. Am J Gastroenterol 2002;97:1216-22.

[19] Navarro VJ, St Louis TE, Bell BP. *Identification of patients with hepatitis C virus infection in New Haven County primary care practices.* J Clin Gastroenterol 2003;36:431-5.

[20] Shehab TM, Orrego M, Chunduri R, Lok AS. *Identification and management of hepatitis C patients in primary care clinics.* Am J Gastroenterol 2003;98:639-44.

[21] Coppola AG, Karakousis PC, Metz DC, Go MF, Mhokashi M, Howden CW, Raufman JP, Sharma VK. *Hepatitis C knowledge among primary care residents: is our teaching adequate for the times?* Am J Gastroenterol 2004;99:1720-5.

[22] Rocca LG, Yawn BP, Wollan P, Kim WR. *Management of patients with hepatitis C in a community population: diagnosis, discussions, and decisions to treat.* Ann Fam Med 2004;2:116-24.

[23] Clark EC, Yawn BP, Galliher JM, Temte JL, Hickner J. *Hepatitis C identification and management by family physicians.* Fam Med 2005;37:644-9.Gastroenterol 2004;4:3.

[24] Smith BD, Morgan RL, Beckett GA, Falck-Ytter Y, Holtzman D, Ward JW. *Hepatitis C virus testing of persons born during*

1945–1965: recommendations from the Centers for Disease Control and Prevention. Ann Intern Med 2012;157:817-22.

[25] Sweeney L, Owiti JA, Beharry A, Bhui K, Gomes J, Foster GR, Greenhalgh T. *Informing the design of a national screening and treatment programme for chronic viral hepatitis in primary care: qualitative study of at-risk immigrant communities and healthcare professionals*. BMC Health Serv Res 2015;15:97.

[26] European Centre for Disease Prevention and Control. *Hepatitis B and C surveillance in Europe.* 2012. Stockholm: ECDC; 2014. Available at: http://ecdc.europa.eu/en/publications/Publications/hepatitis-b-c-surveillance-europe-2012-july-2014.pdf [Accessed 10/10/2015].

[27] Wolffram I, Petroff D, Bätz O, Jedrysiak K, Kramer J, Tenckhoff H, Berg T, Wiegand J; German Check-Up 35+ Study Group. *Prevalence of elevated ALT values, HBsAg, and anti-HCV in the primary care setting and evaluation of guideline defined hepatitis risk scenarios*. J Hepatol 2015;62:1256-64.

[28] Bechini A, Falla A, Ahmad A, Veldhuijzen I, Boccalini S, Porchia B, Levi M. *Identification of hepatitis B and C screening and patient management guidelines and availability of for chronic viral hepatitis among health professionals in six European countries: results of a semi-quantitative survey*. BMC Infect Dis 2015;15:353.

■ Received on November 26, 2015. Accepted on February 2, 2016.

■ Correspondence: Miriam Levi, Department of Health Sciences, University of Florence, viale G.B. Morgagni 48, 50134 Florence, Italy - E-mail: miriam.levi@unifi.it