Haemophilia
The Official Journal of the World Federation of Hemophilia,
European Association for Haemophilia and Allied Disorders and
the Hemostasis & Thrombosis Research Society

Haemophilia (2013), 1–9 DOI: 10.1111/hae.12125

ORIGINAL ARTICLE

Haemophilia care in Europe – a survey of 35 countries

B. O'MAHONY,* D. NOONE,* P. L. F. GIANGRANDE† and L. PRIHODOVA‡
**Irish Haemophilia Society, Dublin, Ireland; †Oxford Comprehensive Haemophilia Centre, Oxford, UK; and ‡Graduate School, Kosice Institute for Society and Health, Medical Faculty, PJ Safarik University, Kosice, Slovak Republic*

Summary. A questionnaire was circulated in 2012 to national haemophilia patient organizations in Europe affiliated to the European Haemophilia Consortium (EHC) and the World Federation of Hemophilia (WFH) to seek information about the organization of haemophilia care and treatment available at a national level. The 35 responses received highlighted major differences in the availability of treatment and care. There was a wide range in factor VIII consumption with usage ranging from 0.20 IU per capita in Armenia to 8.56 IU per capita in Sweden (median: IU per capita). The decrease in health budgets in many countries was not matched by decreases in use of FVIII per capita. In the 19 countries that responded to the previous survey, there was a significant improvement in access to prophylaxis and home treatment.

Keywords: Organisation, Specialist Care, Treatment

Introduction

A document outlining the European principles of haemophilia care, drafted by an interdisciplinary group of haemophilia physicians with input from key patient opinion leaders and clinical nurse specialists, was published in 2008 [1]. This document was subsequently endorsed by both the European Haemophilia Consortium (EHC) and the World Federation of Hemophilia (WFH) and was the subject of an official launch at the European Parliament in Brussels in January 2009.

The ten basic requirements outlined in this article [1] are:

1. Establishment of a central haemophilia organization in each country with supporting local group.
2. National Haemophilia patient registries.
3. A network of multidisciplinary comprehensive care centres and complementary haemophilia treatment centres.
4. Partnership of health care professionals and patients in the delivery of haemophilia care.
5. Safe and effective concentrates at optimum treatment levels.
6. Home treatment and delivery.
7. Prophylaxis.
8. Specialist services and emergency care.
9. Management of inhibitors.
10. Encouragement of education and research.

In 2010, a report on the Optimal Use of Blood and Blood products was published by the European division for the quality of medicine [2]. Among the specific recommendations made in relation to treatment of Haemophilia was that at national level the minimum acceptable level of FVIII use should be at least 2 IU per capita.

In 2009, we carried out a survey to determine the extent to which these requirements of haemophilia care already applied in the various countries within Europe. [3]. A total of 19 countries responded. A further survey was carried out in 2012 and a total of 35 countries responded.

Methods

Between February and July 2012, a questionnaire was developed and sent out to the 43 national haemophilia patient organizations affiliated to the EHC in all European countries. Responses were received from 35 countries. The national haemophilia organizations that responded were not asked to specify the sources of their data, but typically they would have consulted clinicians and the national registry, where one exists, in addition to their own records. It was not practical to ascertain the precise sources of the information used by each national member organization in providing data for this survey, however, all information provided was provided with the best available knowledge

Correspondence: B. O'Mahony, Irish Haemophilia Society, Cathedral Court, New Street, Dublin 8, Ireland.
Tel.: +35 31 657 9900; fax: +35 31 657 9901;
e-mail: brian@haemophilia.ie

Accepted after revision 12 February 2013

of the organizations. A greater degree of accuracy may be expected from countries where there is a national register and where this information is available to the national member organization. Organizations were requested to supply factor usage for the calendar year 2011, however, due to the lack of access to this information in some countries this information may be older than this but the best available to the organization when the survey was completed. The questionnaire was based on examining the extent to which the European principles of care and the EDQM recommendations on optimal use reflect the reality of haemophilia care in these countries. The questionnaire consisted of 35 questions covering aspects of the 10 basic requirements for haemophilia care. The countries that responded (Table 1) included 23 member states of the EU and 12 non-EU countries. The 35 countries covered a total of 45 627 patients with haemophilia A, 8,980 patients with haemophilia B and 27 963 patients with von Willebrand's disease.

Results

Organization of patient care and national patient registries

Nineteen of the 35 countries stated that they have a National Haemophilia Council or coordinating group which includes representatives from the treatment centres, Patient organization and Ministry of Health while 16 do not (Table 2). In 13 of the 19 countries that have such a group, the group has a formal role in advising on or organizing Haemophilia care nationally. A total of 27 countries have national patient registries and 8 countries do not have a registry. The countries that do not yet have a registry are Albania, Denmark, Finland, Hungary, Macedonia, Netherlands, Portugal, Sweden and Ukraine. Following the outcome of the recent Health Technology Assessment in Sweden [4], Sweden will be developing a national registry. In terms of management of the registry, in 6 countries the national organization (NHC or coordinating group) is involved, in 4 countries the government is involved, in 11 countries clinicians are involved, in 4 countries an academic organization is involved and in 6 countries the national haemophilia patient organization is involved. Eight countries have more than one organization involved in the registry. In 18 countries there is a treatment centre which is designated as the National treatment centre with responsibility for coordination including the national register. A total of 13 countries have a system for the classification of their Haemophilia treatment centres.

Twenty-four of the 35 countries reported that they have comprehensive care centres (CCC's). Those who state that they do not have CCC's are Albania, Armenia, Bosnia-Herzegovina, Bulgaria, Hungary, Latvia, Lithuania, Macedonia, Portugal, Serbia and Ukraine. Of the four countries that previously reported in 2009 that they did not have comprehensive care centres, none have since developed such centres. A total of 33 countries stated that they have haemophilia treatment centres (HTC's). Those that state they do not have HTC's are Bosnia-Herzegovina (where no centre is officially recognized yet by the government) and Russia (where all centres are categorized as CCC's).

In relation to partnership in the delivery of haemophilia care, countries were asked who has a significant role in relation to national decision making on haemophilia care and also who has a role in the choice of

Table 1. Countries responding and not responding to the survey.

Countries that Responded		Countries that did not Respond	
EU	Non-EU	EU	Non-EU
Austria	Albania	Cyprus	Georgia
Belgium	Armenia	Estonia	Iceland
Bulgaria	Azerbaijan	Luxembourg	Israel
Czech Republic	Belarus		Moldova
Denmark	Bosnia-Herzegovina		Norway
France	Croatia		
Finland	Macedonia		
Germany	Russia		
Greece	Serbia		
Hungary	Switzerland		
Ireland	Turkey		
Italy	Ukraine		
Lithuania			
Latvia			
Netherlands			
Poland			
Portugal			
Romania			
Slovak Republic			
Slovenia			
Spain			
Sweden			
United Kingdom			

Table 2. Countries with a National Haemophilia Council or Coordinating Group which include representatives from the Treatment Centres, Patient Organization and Ministry of Health.

Countries with a National Haemophilia Council or Coordinating Group	
Formal role	No formal role
Albania	Belgium
Armenia	Germany
Czech Republic	Lithuania
Finland	Netherlands
France	Spain
Greece	Turkey
Ireland	
Italy	
Poland	
Serbia	
Slovakia	
Slovenia	
UK	

treatment products for haemophilia (Fig. 1). In relation to the decision making on haemophilia care nationally, six countries (Azerbaijan, Belarus, France, Greece, Ireland and Ukraine) stated that the government played a significant role. A total of 27 countries stated that the health ministry played a significant role (including the 6 countries that stated that the Government played a significant role), 3 countries (Finland, France, and Turkey) stated that the Ministry of Social affairs played a significant role, 4 countries (France, Slovenia, Switzerland and the UK) stated that patients played a significant role, whereas 23 countries stated that the national haemophilia patient organization played a significant role (including these 4) and 23 countries stated that clinicians played a significant role. In the majority of countries, the clinicians, the health ministry and the patient organization were those that played a significant role in the decision making with 14 countries stating that all 3 played a significant role, 3 countries stating that the Health Ministry and clinicians played a significant role and 3 countries stating that the clinicians and patient organization played a significant role.

Factor replacement therapy

In relation to choice of haemophilia treatment products (Fig. 1), 18 countries stated that the health ministry were involved with the choice, 4 countries (Italy, Slovenia, Turkey and Ukraine) stated that the regional government were involved. Regional Government was reported to be involved by Sweden in the previous survey, but this has changed and they now report the Health Ministry as being involved. Hospitals were involved in 11 countries, patients in 6 countries, the national haemophilia patient organization in 6 countries (Ireland, Poland, Russia, Serbia, Slovakia and UK), clinicians in 16 countries and a national procurement committee in 7 countries (Belarus, Finland, Ireland, Italy, Serbia, Slovakia and UK). In the case of Ireland, the patient organization is fully involved in the decision making as they have a formal role in the national procurement committee for factor concentrates. A total of 17 countries have a national tender for the procurement of factor concentrates.

Availability of safe and effective concentrates at optimum treatment levels

The survey revealed enormous variation in relation to the availability of factor concentrates in the European countries surveyed (Fig. 2). The country with highest per capita use was Sweden whereas consumption was lowest in Armenia. A total of 32 countries reported figures for their factor VIII per capita use for 2011 which ranged from 0.10 in Armenia to 8.56 IU per capita in Sweden (median was 3.59 IU per capita; mean was 3.45 IU per capita and standard deviation was 2.6 IU per capita). Three countries (Austria, Finland and Netherlands) did not report figures for factor use five countries (Albania, Armenia, Romania, Bosnia-Herzegovina and Ukraine) reported a usage of less than 1 IU per capita, whereas six countries (Azerbaijan, Belarus, Latvia, Macedonia, Serbia and Turkey) use less than 2 IU per capita. Encouragingly, Bulgaria and Lithuania that have reported FVIII use per capita below 2 in 2009 were now above this figure at 2.14 and 3.37 respectively. The median reported use of FVIII per capita for the 20 EU member states for which we have figures of 5.4 IU per capita with a mean of 4.94 IU per capita. For the 12 non-EU countries for which we have data, the median FVIII use per capita was significantly lower at 1.50 IU per capita with a mean of 1.83 IU per capita. Only 1 of the 5 countries that reported FVIII use as less than 1 IU per capita is an EU member state (Romania) and an additional 1 of the 6 countries that reported use as

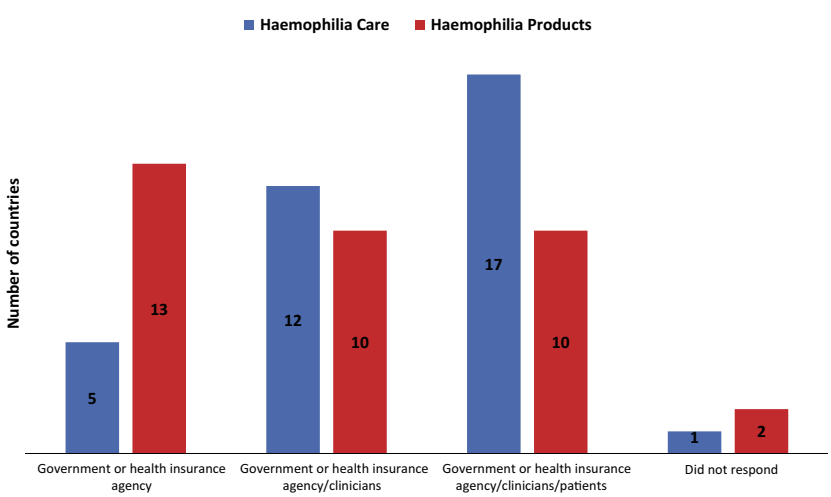

Fig. 1. Summary of groups involved in national decision making and haemophilia care and products.

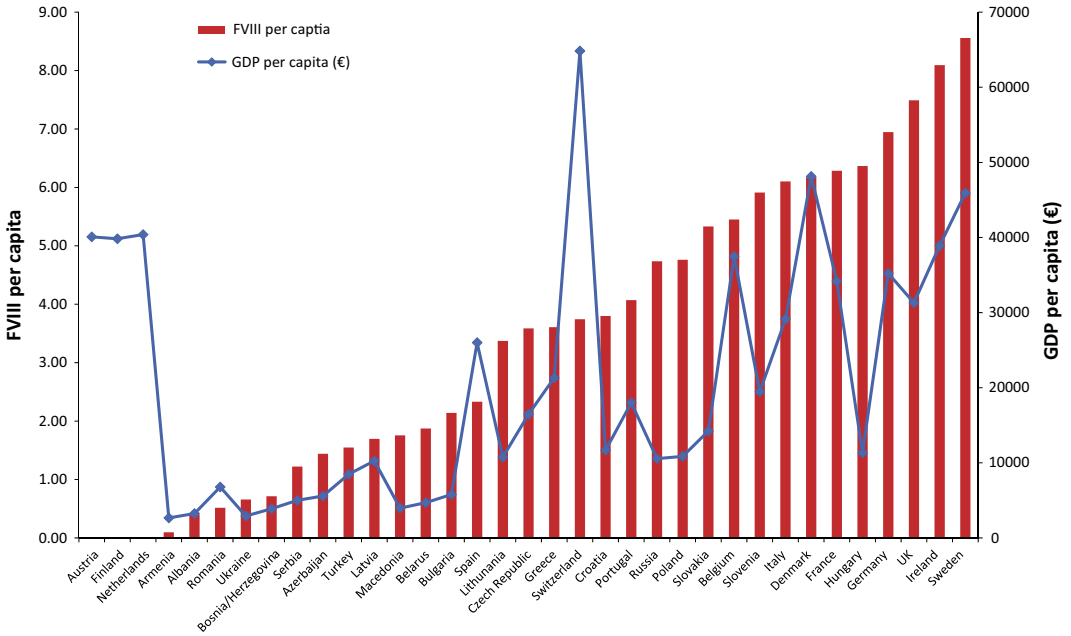

Fig. 2. Comparision of GDP per capita (€) and factor VIII per capita use.

between 1 and 2 IU per capita is an EU member state (Latvia).

FIX use varied from 0.016 IU per capita (Albania) to 2.66 IU per capita (Ireland). FIX per capita use in Ireland is high due to the fact that Ireland uses recombinant FIX for all patients with Haemophilia B and Ireland has the highest incidence globally of FIX deficiency [5]. Median FIX use was 0.22 IU per capita; mean was 0.44 IU per capita, standard deviation was 0.54 IU per capita.

If we use GDP per capita as a crude measure of economic strength, the countries that underperform are Switzerland, Spain and at lower factor VIII usage Romania and Armenia (Fig. 2). Hungary continues to perform very impressively in relation to their GDP, but since the last survey in 2009, the most marked increase in the FVIII use can be seen in Lithuania, Russia, Czech Republic, Bulgaria and Slovakia. Ireland and the UK show significant increase in FVIII use despite their economic difficulties. If we look at the changes in the 19 countries that responded to the previous survey in 2009, GDP has decreased in 1 country (Ireland), health expenditure has decreased in 11 countries ranging from 1% (Germany) to 10% (Ireland). Despite this decrease in health spending, FVIII use decreased in only 2 countries. One of these (Latvia) had a decrease in health spending. FVIII use increased in 15 countries ranging from a 1.4% increase (Germany) to 73% increase (Lithuania). The reported change in treatment practise since 2009 in Lithuania was the introduction of prophylaxis for all children.

Home treatment and prophylaxis

Home treatment is available in 32 of the 35 countries surveyed and is delivered directly to the patients home in 13 of the countries (Table 3). Home treatment is not available in Albania, Armenia and Romania. It is available to 75–100% of people with Haemophilia in 19 countries, available to 50–75% in 5 countries and available to 10–50% in further 5 countries. The three countries where home treatment is not available each consume less than 1 IU per capita of factor VIII, although Ukraine, which also consumes less than 1 IU per capita, reports that they do have availability of home treatment but to less than 10% of people with Haemophilia.

Prophylaxis is theoretically available to all persons with haemophilia in 18 countries, (Table 3) available for some people in further 12 countries and available to children in 4 countries. Prophylaxis is not available in the 3 countries where home treatment is not available Prophylaxis is available to children with severe haemophilia in 18 countries to the extent that 75–100% of children avail prophylaxis. Prophylaxis is available to 50–75% of children with haemophilia in a further 6 countries. Prophylaxis is available for 1–25% of children in 7 countries.

In Sweden, 76–100% of adults are on prophylaxis. In 4 countries, 51–75% of adults are on prophylaxis. In 10 countries, 26–50% of adults are on prophylaxis. In 12 countries, up to 25% of adults are on prophylaxis. Seven countries report no adults having availability of prophylaxis, whereas UK does not report the percentage of adults on prophylaxis (Table 3).

Table 3. Patient access to treatment in European countries.

Country	FVIII per Capita	Access to home treatment	Access to Prophylaxis treatment	Children currently on Prophylaxis (<18 years)	Adults currently on Prophylaxis (≥18 years)	Access to Immune-Tolerance Therapy (ITT)
Albania	0.40	less than 10%	Yes for Some	None	None	None
Armenia	0.10	less than 10%	No	None	None	None
Austria	0.00	76–100%	Yes to All	51–75%	1–25%	76–100%
Azerbaijan	1.44	less than 10%	Yes for Some	1–25%	1–25%	None
Belarus	1.87	10–50%	Yes for Some	1–25%	1–25%	1–25%
Belgium	5.45	76–100%	Yes to All	76–100%	51–75%	76–100%
Bosnia/Herzegovina	0.71	less than 10%	Yes for Some	1–25%	None	None
Bulgaria	2.14	10–50%	Yes for Some	51–75%	1–25%	None
Croatia	3.80	10–50%	Yes to All	1–25%	1–25%	1–25%
Czech Republic	3.59	76–100%	Yes to All	76–100%	1–25%	Unknown
Denmark	6.17	51–75%	Yes for Some	76–100%	26–50%	76–100%
Finland	0.00	76–100%	Yes to All	76–100%	51–75%	76–100%
France	6.28	76–100%	Yes to All	76–100%	26–50%	26–50%
Germany	6.95	76–100%	Yes to All	76–100%	51–75%	76–100%
Greece	3.61	76–100%	Yes to Children	76–100%	26–50%	76–100%
Hungary	6.37	51–75%	Yes to All	76–100%	26–50%	76–100%
Ireland	8.09	76–100%	Yes to All	76–100%	26–50%	76–100%
Italy	6.10	76–100%	Yes to All	51–75%	26–50%	76–100%
Latvia	1.70	76–100%	Yes for Some	1–25%	None	76–100%
Lithuania	3.37	76–100%	Yes to Children	76–100%	None	1–25%
Macedonia	1.76	76–100%	Yes to Children	76–100%	1–25%	None
Netherlands	0.00	76–100%	Yes to All	76–100%	51–75%	76–100%
Poland	4.76	76–100%	Yes to Children	76–100%	26–50%	76–100%
Portugal	4.07	51–75%	Yes for Some	51–75%	1–25%	26–50%
Romania	0.51	less than 10%	Yes for Some	None	None	None
Russia	4.74	51–75%	Yes for Some	51–75%	26–50%	26–50%
Serbia	1.22	10–50%	Yes for Some	1–25%	1–25%	None
Slovakia	5.33	76–100%	Yes to All	76–100%	26–50%	76–100%
Slovenia	5.91	10–50%	Yes to All	26–50%	26–50%	76–100%
Spain	2.33	76–100%	Yes to All	76–100%	1–25%	76–100%
Sweden	8.56	76–100%	Yes to All	76–100%	76–100%	76–100%
Switzerland	3.74	76–100%	Yes to All	76–100%	1–25%	76–100%
Turkey	1.55	51–75%	Yes to All	51–75%	1–25%	1–25%
UK	7.49	76–100%	Yes to All	76–100%	Unknown	76–100%
Ukraine	0.66	less than 10%	Yes for Some	1–25%	None	1–25%

Immune tolerance for patients with inhibitors. Eight countries reported that immune-tolerance therapy is not available at all. Immune tolerance is available for the majority of patients in 18 countries and to some patients in further 8 countries and availability is not reported in 1 country (Table 3).

Specialist care

In relation to the elements of comprehensive care, countries were asked the degree of access they have to various elements of comprehensive care. This included access to emergency medicine and acute surgery, paediatrics infectious disease specialists, hepatology, rheumatology, orthopaedics, physiotherapy, dentistry, obstetrics and gynaecology, genetics, social and psychosocial support, pain management, general surgery and urology (Table 4). Seven Countries (Austria, Belgium, France, Germany, Ireland, Lithuania and Sweden) stated in their replies that they had access to all of these services at all times.

The specialist services which were reported as being most widely available were orthopaedics (29), emergency medicine, acute surgery (27) and general surgery (26). The least available reported services were social and psychological support (14), pain management (14) and rheumatology (17). There was no access to infectious diseases specialists in 2 countries with 7 countries reporting sporadic access, 12 countries reporting sporadic access to physiotherapy and 9 reporting sporadic access to dentistry. Genetics was not available in 3 countries and sporadically available in 12. Social and psychosocial support was not available in 6 countries and sporadically available in 14 countries. Pain management was not available in 6 countries and sporadically available in 13 countries. Clearly there is a major divergence in relation to access to the different specialities, which are either a core part of or augment the comprehensive care team.

Treatment for haemophilia

In relation to the use of factor concentrates (Table 5), 18 countries reported that both plasma-derived and recombinant factor concentrates were always available. A total of 24 countries stated that recombinant factor concentrates were always available and 27 countries stated that plasma-derived concentrates were

Table 4. Access to specialist care for people with bleeding disorders in 35 European Countries.

Country	Emergency medicine and acute surgery	Paediatrics	Infectious disease specialists (especially HIV)	Hepatology	Rheumatology	Orthopaedics	Physiotherapy	Dentistry	Obstetrics and gynaecology	Genetics	Social and psychological support	Pain management	General surgery	Urology
Albania	Sometimes	Sometimes	Never	Sometimes	Never	Sometimes	Sometimes	Sometimes	Never	Never	Yes	Never	Sometimes	Sometimes
Armenia	Unknown	Yes	Unknown	Unknown	Unknown	Yes	Yes	Yes	Unknown	Unknown	Yes	Unknown	Unknown	Unknown
Austria	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Azerbaijan	Yes	Yes	Never	Sometimes	Yes	Yes	Yes	Yes	Yes	Never	Sometimes	Yes	Yes	Yes
Belarus	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Never	Yes	Yes	Yes
Belgium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bosnia/ Herzegovina	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Bulgaria	Yes	Yes	Yes	Yes	Sometimes	Yes	Sometimes	Sometimes	Yes	Sometimes	Sometimes	Never	Yes	Sometimes
Croatia	Yes	Yes	Sometimes	Sometimes	Sometimes	Yes	Yes	Yes	Sometimes	Yes	Sometimes	Sometimes	Yes	Yes
Czech Republic	Yes	Yes	Yes	Yes	Sometimes	Yes	Yes	Yes	Yes	Yes	Yes	Sometimes	Sometimes	Yes
Denmark	Sometimes	Yes	Sometimes	Yes	Sometimes	Yes	Sometimes	Sometimes	Unknown	Yes	Sometimes	Sometimes	Yes	Yes
Finland	Yes	Yes	Sometimes	Yes	Yes	Yes	Yes	Yes	Yes	Sometimes	Sometimes	Yes	Yes	Yes
France	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Germany	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Greece	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Sometimes	Yes	Yes
Hungary	Yes	Yes	Yes	Yes	Sometimes	Yes	Sometimes	Sometimes	Unknown	Sometimes	Never	Never	Yes	Sometimes
Ireland	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Italy	Yes	Yes	Yes	Yes	Sometimes	Yes	Yes	Yes	Yes	Yes	Sometimes	Sometimes	Yes	Yes
Latvia	Yes	Sometimes	Sometimes	Sometimes	Never	Sometimes	Sometimes	Yes	Never	Sometimes	Never	Sometimes	Sometimes	Sometimes
Lithuania	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macedonia	Unknown	Yes	Sometimes	Sometimes	Sometimes	Yes	Yes	Yes	Yes	Sometimes	Never	Never	Never	Never
Netherlands	Yes	Yes	Yes	Yes	Yes	Yes	Sometimes	Sometimes	Yes	Yes	Yes	Sometimes	Yes	Sometimes
Poland	Yes	Yes	Unknown	Sometimes	Sometimes	Yes	Yes	Yes	Sometimes	Sometimes	Sometimes	Yes	Yes	Sometimes
Portugal	Sometimes	Yes	Yes	Yes	Never	Yes	Sometimes	Sometimes	Yes	Yes	Yes	Sometimes	Sometimes	Yes
Romania	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Sometimes	Sometimes	Yes	Sometimes	Yes
Russia	Sometimes	Yes	Sometimes	Sometimes	Never	Yes	Sometimes	Yes	Sometimes	Sometimes	Never	Never	Yes	Sometimes
Serbia	Yes	Yes	Yes	Sometimes	Sometimes	Sometimes	Sometimes	Yes	Sometimes	Sometimes	Sometimes	Never	Yes	Sometimes
Slovakia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Sometimes	Yes	Yes	Yes	Yes
Slovenia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Sometimes	Sometimes	Yes	Yes	Yes
Spain	Yes	Yes	Yes	Yes	Sometimes	Sometimes	Sometimes	Sometimes	Yes	Yes	Sometimes	Sometimes	Yes	Sometimes
Sweden	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Switzerland	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Sometimes	Sometimes	Yes	Yes
Turkey	Yes	Yes	Yes	Sometimes	Sometimes	Yes	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes	Yes	Yes
UK	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Sometimes	Yes	Yes	Sometimes	Sometimes	Yes	Yes
Ukraine	Sometimes	Yes	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes	Yes	Sometimes	Never	Never	Sometimes	Sometimes	Yes

Table 5. Access to treatments for bleeding disorders in European countries.

	Haemophilia				Von Willebrand's disease			
Country	Plasma	Cryoprecipitate	Plasma-derived Factor Concentrate	Recombinant Factor Concentrate	Plasma	Cryoprecipitate	Plasma-derived Factor Concentrate	DDAVP
Albania	Rarely	Always	Never	Rarely	Never	Never	Never	Rarely
Armenia	Always	Always	Rarely	Rarely	Always	Always	Rarely	Rarely
Austria	Never	Never	Always	Always	Never	Never	Always	Always
Azerbaijan	Rarely	Unknown	Always	Always	Rarely	Unknown	Rarely	Unknown
Belarus	Rarely	Rarely	Always	Never	Never	Always	Rarely	Rarely
Belgium	Never	Never	Rarely	Always	Never	Never	Always	Always
Bosnia/Herzegovina	Unknown	Unknown	Always	Rarely	Unknown	Unknown	Always	Unknown
Bulgaria	Never	Never	Always	Always	Never	Never	Always	Rarely
Croatia	Never	Never	Always	Always	Never	Never	Always	Rarely
Czech Republic	Never	Never	Always	Rarely	Never	Never	Always	Always
Denmark	Never	Never	Rarely	Always	Never	Never	Always	Always
Finland	Never	Never	Always	Always	Never	Never	Always	Always
France	Never	Never	Rarely	Always	Never	Never	Always	Always
Germany	Never	Never	Always	Always	Never	Never	Always	Always
Greece	Never	Never	Always	Always	Never	Never	Always	Always
Hungary	Never	Never	Always	Always	Unknown	Unknown	Always	Unknown
Ireland	Never	Never	Never	Always	Never	Never	Always	Always
Italy	Never	Never	Always	Always	Never	Never	Always	Always
Latvia	Never	Never	Always	Rarely	Never	Never	Rarely	Always
Lithuania	Never	Never	Always	Always	Never	Never	Rarely	Rarely
Macedonia	Never	Never	Always	Rarely	Always	Always	Rarely	Never
Netherlands	Never	Never	Always	Always	Never	Never	Always	Always
Poland	Never	Never	Always	Rarely	Never	Never	Always	Always
Portugal	Never	Never	Always	Always	Never	Never	Always	Always
Romania	Never	Never	Always	Always	Rarely	Rarely	Always	Rarely
Russia	Rarely	Rarely	Always	Rarely	Rarely	Rarely	Always	Never
Serbia	Never	Never	Always	Rarely	Never	Never	Always	Rarely
Slovakia	Never	Never	Always	Always	Never	Never	Always	Never
Slovenia	Rarely	Never	Always	Always	Rarely	Never	Always	Rarely
Spain	Never	Never	Always	Always	Never	Never	Always	Always
Sweden	Rarely	Never	Always	Always	Rarely	Never	Always	Rarely
Switzerland	Never	Never	Always	Always	Never	Never	Always	Always
Turkey	Rarely	Never	Always	Always	Rarely	Never	Always	Rarely
UK	Never	Never	Rarely	Always	Never	Never	Always	Always
Ukraine	Rarely	Rarely	Rarely	Rarely	Rarely	Rarely	Rarely	Never

always available. Four countries (Belgium, Denmark, France and UK) reported that recombinant concentrates were always available and plasma derived was rarely used and 1 country (Ireland) used only recombinant concentrates. Seven countries always use plasma-derived concentrates and rarely use recombinant (Bosnia-Herzegovina, Czech Republic, Latvia, Macedonia, Poland, Russia and Serbia), whereas Belarus always uses plasma-derived concentrates and never use recombinant. Two countries (Albania and Armenia) continue to use cryoprecipitate regularly and 3 countries report use of cryoprecipitate rarely (Belarus, Russia and Ukraine). Armenia is the only country that state they always use fresh plasma, whereas 8 additional countries report using plasma infrequently.

Treatment for von Willebrand's Disease

A total of 27 countries always use plasma-derived factor VIII for treatment of von Willebrand's disease with a further 7 countries rarely using plasma-derived factor. Of these 7, countries, 3 (Armenia, Belarus and Macedonia) reported always using cryoprecipitate. Seventeen countries always use DDAVP, 11 countries rarely use DDAVP and 4 countries report never using DDAVP. (Table 5)

Of the 35 European countries surveyed, one country uses only recombinant products for haemophilia (Ireland) and one county uses only plasma-derived products (Serbia). The other 32 countries use both plasma derived and recombinant. In these countries, recombinant use as a percentage of the total FVIII use constitutes 75–100% in 9 countries (Denmark, Sweden, Greece, Belgium, UK, France, Italy, Slovenia and Switzerland), 50–74% in 1 country (Portugal), 25–49% in 4 countries (Germany, Hungary, Lithuania and Romania) and 1–24% in 8 countries (Turkey, Russia, Bulgaria, Bosnia/Herzegovina, Czech Rep., Slovakia, Macedonia and Poland). Eleven countries did not provide information on the breakdown of plasma-derived or recombinant products.

Discussion

The survey revealed significant variation in relation to the organization of haemophilia care and availability

of factor concentrates in the European countries surveyed. The impact and utility of the previous survey was, in the opinion of the authors, a major reason for the greatly increased number of countries responding to the survey on this occasion. Political support will be required to continue to develop haemophilia care in Europe and it is gratifying that the results of this survey was the subject of a roundtable conference organized by the European Haemophilia Consortium at the European Parliament in October 2012.

If we compare the results in the 19 countries that completed the survey in both 2009 and 2012, some interesting results are evident. The impact of the economic crisis is seen by the fact that the GDP has decreased in 1 country (Ireland) and health expenditure has decreased in 11 countries. In 2 countries (Ireland and Bulgaria) FVIII use per capita has increased despite decreased health expenditure. In Ireland, FVIII use increased from 6.75 to 8.09 IU per capita (20% increase). This increase coincided with a fall in GDP of 3% and a fall in health expenditure of 10%. The reason for the increase in factor use is primarily due to the work of the Haemophilia Product Selection and Monitoring Advisory Board that carry out the national tenders. A lower health budget was managed by this group by achieving significantly lower prices for FVIII by competitive national tender using rigorous scoring criteria and also by elimination of handling and distribution fees resulting from a change in contract holder [6]. This allowed the purchase of greater amounts of factor concentrate without affecting the quality of the concentrates purchased and allowed targets to be met for lower national health expenditure in this area. In Bulgaria, health spending decreased by 6%, but FVIII use per capita increased from 1.62 to 2.14. This increase in the use of FVIII was partially due to the advocacy efforts of the national Haemophilia patient organization and their work in bringing together key stakeholders (personal communication J. Nedevski, Bulgarian Haemophilia Society). In Lithuania, FVIII use increased from 1.82 to 3.37 IU per capita. Although this increase is very significant, it must be remembered that the initial level FVIII use was relatively low. Individual improvements of note include the establishment of a National Haemophilia committee in Germany, the recognition of a national Haemophilia treatment centre with responsibility for the national register in Switzerland and a national register being established in Latvia. Availability of home treatment has increased in 7 of the 19 countries (Belgium, Bosnia/Herzegovina, Latvia, Poland, Romania, Switzerland and UK) and availability of prophylaxis has improved in 6 countries (Latvia, Lithuania, Portugal, Slovakia, Switzerland and UK). The proportion of children treated with prophylaxis has increased in 4 countries (Bulgaria, France, Lithuania and Slovakia) and the proportion of adults treated with prophylaxis has increased in 2 countries (Poland and Slovakia). Availability of immune-tolerance therapy has improved in 3 countries (Poland, Portugal and Russia). It is encouraging that the general trend towards lower health expenditure has not been mirrored by lower availability of replacement therapy or access to prophylaxis or home treatment in the majority of countries. We attribute this to the strong and well-established profile of haemophilia treatment in many countries and the active work of the patient organizations and their collaboration with the haemophilia clinicians. It is surprising that only 17 of the 35 countries have a national tender for procurement of factor concentrates. In countries where this is the case and where the results are known to the authors, this mechanism, providing that the key clinicians and national patient organization are involved, has led in several countries to very significant reductions in the cost of factor concentrates and therefore has contributed to maintaining or even increasing (as in the cases of Ireland and the UK) the national use of factor concentrates.

If we look at the availability of factor replacement therapy separately in EU and non-EU countries, the median per capita FVIII use is significantly higher in EU countries (5.4 IU per capita compared to 1.5 IU per capita in non-EU countries). It is not our view that EU membership has in itself greatly contributed to higher standards of haemophilia care in member states. The differences in access to replacement therapy are due in large part, in our view, to economics. Of the 10 countries with the lowest GDP per capita, 8 are non-EU member countries. EU member states generally have stronger economies (although the highest GDP per capita is a non-EU member state- Switzerland) and the original 15 EU member states more specifically are wealthier economies and have longer established and better resourced systems of national haemophilia care.

There has been no improvement in availability of specific aspects of comprehensive care which were reported as being absent or sporadically available in 2009 [3]. In 2009, dental services were reported as being absent or sporadically available in 5 of 19 countries. In 2012, this is the case in 9 of 35 countries. Physiotherapy services were reported as being absent or sporadically available in 5 of 19 countries. In 2012, this is the case in 12 of 35 countries. Genetic services were reported as being absent or sporadically available in 8 of 35 countries. In 2012, this is the case in 15 of 35 countries. Social and psychosocial support services were reported as being absent or sporadically available in 1 of 19 countries. In 2012, this is the case in 20 of 35 countries. Pain management was reported as being absent or sporadically available in 8 of 19 countries. In 2012, this is the case in 19 of 35 countries. Some countries have seen improvements in

specific areas. Poland has reported improved access to physiotherapy, dental services and pain management. This allied to the increased use of FVIII in Poland (from 3.60 to 4.76 IU per capita) is a clear indication of the strong advocacy work of the Polish Haemophilia Society. Portugal has improved access to genetics and psychological support and the Czech Republic has improved access to physiotherapy and psychological support. There has been an improvement with regard to genetic services in the UK as well as access to dental care. There were problems in the past with dental care, related to concern about vCJD [7]. Slovakia has reported improved access to pain management and Sweden to genetics.

The survey results can and should be used by national member organizations in collaboration with their haemophilia clinicians to advocate with their government for improving care in their specific country where deficiencies have been identified. Countries where the FVIII per capita use is significantly out of step with their GDP per capita could use this data to advocate for increased availability of treatment with their government. In using this data for advocacy purposes, comparisons can be made by a particular country with the overall findings (e.g. Latvia uses 1.70 IU per capita of FVIII compared to an EU mean of 5.4 IU per capita) and the European Principles of Care and EDQM Guidelines can be referenced. In some cases, it may be more advantageous with the government to compare the results with neighbouring countries with similar economic indicators (for the above example, Latvia could be compared with Lithuania where FVIII per capita use is 3.37 IU per capita, use has increased very significantly since 2009 and the decrease in health expenditure in that time at 7% was greater than the decrease in Latvia which was 5%). Similarly, if the national patient organization in the Czech Republic was advocating for a national tender, they could refer the fact that 17 of the 35 European countries surveyed have such a system in place or it may be more advantageous to refer the fact that their neighbour, Slovakia, has such a tender in place. Health policy is not the responsibility of the EU – it remains a national responsibility. There is no real prospect of harmonization of availability of treatment and care in the EU based on legislation, but consensus guidelines such as the European Principles of Care or EDQM Guidelines can and do constitute powerful advocacy tools in arguing for improved care. This applies, not only to EU member states, but to candidate countries that aspire to EU membership. They can also be applied to non-EU member states as recommendations agreed by key clinician's and patient organization representatives from many countries and therefore are as close as we may get to agreed standards of care in a European context.

The results of this survey are broadly encouraging as the decrease in health expenditure in many countries has not been matched by a corresponding decrease in access to haemophilia treatment or care. We look forward to commenting on the changes in these 35 countries when this survey is repeated in 2014.

Disclosures

The authors stated that they had no interests which might be perceived as posing a conflict or bias.

References

1 Colvin BT, Astermark J, Fischer K *et al.* , for the Interdisciplinary Working Group. European principles of haemophilia care. *Haemophilia* 2008; **14**: 361–74.

2 Optimal Clinical Use of Blood Components, International Symposium co-organised by the EDQM & HealthCare/DBO - Transfusion Medicine, Council of Europe PEI, the German Official National Agency for Biologicals, The Transfusionsmedizin und Haemostaseologie, Klinikum der Universitaet Muenchen. April 24–25, 2009.

3 O'Mahony B, Noone D, Giangrande PLF, Prihodova L. Haemophilia care in Europe: a survey of 19 countries. *Haemophilia* 2011; **17**: 35–40.

4 Farrugia A, O'Mahony B, Cassar J. Health technology assessment and haemophilia. *Haemophilia* 2012; **18**: 152–7.

5 Stonebraker JS, Brooker M, Amand RE, Srivastava A. A study of reported factor VIII use around the world. *Haemophilia* 2010; **16**: 33–46.

6 Clotting Factor Concentrates and Other Biological Products Act. S.I. No. 135/2012, Available at http://www.irishstatutebook.ie/2012/en/act/pub/0008/index.html. 2012. Accessed March 21, 2013.

7 Brewer AK, Giangrande PLF. Good Dental Care. *Br Dent J* 2005; **197**: 217.