

University of Groningen

## Psychosocial and medical determinants of long-term patient outcomes

Prihodová, Lucia

**IMPORTANT NOTE:** You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

*Document Version*

Publisher's PDF, also known as Version of record

*Publication date:*

2014

[Link to publication in University of Groningen/UMCG research database](#)

*Citation for published version (APA):*

Prihodová, L. (2014). Psychosocial and medical determinants of long-term patient outcomes: A specific focus on patients after kidney transplantation and with haemophilia. [S.l.]: [S.n.].

**Copyright**

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

**Take-down policy**

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

# Chapter 7

## HAEMOPHILIA CARE IN EUROPE: A SURVEY OF 19 COUNTRIES

Brian O'Mahony, Declan Noone, Paul L.F. Giangrande, Lucia Prihodova

*Haemophilia* 2011;17,35-40. DOI:10.1111/j.1365-2516.2010.02362.x

**ABSTRACT**

In 2009, a questionnaire was circulated to 19 national haemophilia patient organisations in Europe affiliated to the European Haemophilia Consortium (EHC) and the World Federation of Haemophilia (WFH) to seek information about the organisation of haemophilia care and treatment available at a national level. The responses received highlighted differences in the level of care despite the recent promulgation of consensus guidelines designed to standardize the care of haemophilia throughout the continent of Europe. There was a wide range in factor VIII consumption with usage ranging from 0.38 IU per capita in Romania to 8.7 IU per capita in Sweden (median: 3.6 IU per capita). Despite the specific inclusion of coagulation factor concentrate in the WHO list of essential medications, cryoprecipitate is still used in some eastern European countries.

**KEYWORDS:**

organisation, treatment, specialist care

## **INTRODUCTION**

A document outlining the European principles of haemophilia care, drafted by an inter-disciplinary group of haemophilia physicians with input from key patient opinion leaders and clinical nurse specialists, was published in 2008.<sup>1</sup> This document was subsequently endorsed by both the European Haemophilia Consortium (EHC) and the World Federation of Haemophilia (WFH) and was the subject of an official launch at the European Parliament in Brussels in January 2009. The 10 basic requirements outlined in Colvin et al. (2008) are:

1. Establishment of a central haemophilia organisation 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.<sup>1</sup>

A survey was planned to determine the extent to which these requirements of haemophilia care already applied in the various countries within Europe. The results could then serve as a baseline to monitor progress in subsequent years. The continent of Europe is a disparate one with a wide range of GDP<sup>2</sup> and health systems in individual countries. There are currently 27 member states of the European Union (EU), which now include 10 countries of the former communist eastern bloc. The coming decades are likely to see further expansion of the EU to incorporate other countries such as Croatia, the Former Yugoslav Republic of Macedonia and Turkey. Several other countries in the region such as Switzerland, Norway and Iceland have no plans to join the EU but already have various trade and other bilateral agreements with the EU in place.

## **METHODS**

Between February and August 2009, a questionnaire was developed and sent out to the 43 national haemophilia patient organisations affiliated to the EHC in all European countries. Responses were received from 19 countries. The national haemophilia organisations 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 (Table 7.1). The questionnaire was based on examining the extent to which the European principles of care reflect the reality of haemophilia care in these countries. The questionnaire consisted of 31 questions covering aspects of the 10 basic requirements for haemophilia care. The countries that responded included 16 member states of the EU and three non-EU countries (Russia, Bosnia-Herzegovina and Switzerland). The 19 countries covered a total of 28 916 patients with haemophilia A, 5545 patients with haemophilia B and 17 396 patients with von Willebrand disease.

**Table 7.1** Countries responding and not responding to the survey

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

**RESULTS**

*ORGANISATION OF PATIENT CARE AND NATIONAL PATIENT REGISTRIES*

Thirteen of the 19 countries stated that they have a central organisation for haemophilia care while six do not (Table 7.2). A total of 15 countries have national patient registries and four countries do not have a registry. The countries that do not yet have a registry are Latvia, Poland, Sweden and

the Netherlands. In Sweden and Netherlands, each hospital maintains a separate registry but there is no national registry. In terms of management of the registry, in six countries the national organisation is involved, in three countries the government is involved, in six countries clinicians are involved and in seven countries the national haemophilia patient organisation is involved. Five countries have more than one organisation involved in the registry. These countries are Romania, Russia, Slovakia, Hungary and Germany.

**Table 7.2** List of Countries with a central organisation for haemophilia care

Has a central organisation for haemophilia care	Does not have a central organisation for haemophilia care
Belgium	Bosnia-Herzegovina
Czech Republic	Bulgaria
Ireland	Germany
France	Portugal
Latvia	Sweden
Hungary	Switzerland
Lithuania	
Netherlands	
Poland	
Romania	
Russia	
Slovakia	
United Kingdom	

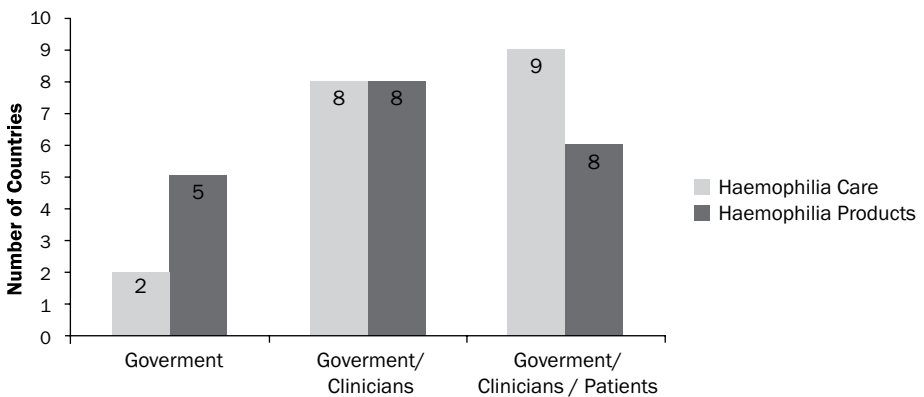
Fifteen of the 19 countries reported that they have comprehensive care centres (CCC's). Those countries that state that they do not have CCC's are Bosnia-Herzegovina, Bulgaria, Portugal and Hungary. A total of 16 countries stated that they have haemophilia treatment centres (HTC's). Those that state they do not have HTC's are Bosnia-Herzegovina (where no centre is officially recognized yet by the government), Russia and Sweden (in both Russia and Sweden 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 treatment products for haemophilia (Fig. 7.1). In relation to the decision making on haemophilia care nationally, four countries (Romania, Lithuania, Russia and Sweden) stated that the government played a significant role. A total of 16 countries stated that the health ministry played a significant role, three countries (France, UK and Ireland) stated that the hospitals

played a significant role, nine countries stated that the national haemophilia patient organisation played a significant role and 15 countries stated that clinicians played a significant role. In the majority of countries, the clinicians, the health ministry and the patient organisation were those who played a significant role in the decision making.

In relation to choice of haemophilia treatment products (Fig. 7.1), 12 countries stated that the health ministry were involved with the choice, one country (Sweden) stated that the regional government were involved, hospitals were involved in eight countries, patients in four countries, the national haemophilia patient organisation in three countries (Portugal, France and Germany), Clinicians in eight countries and a national procurement committee in three countries (Bosnia-Herzegovina, Hungary and Ireland). In the case of Ireland, the patient organisation is fully involved in the decision making as they have a formal role in the national procurement committee for factor concentrates. Ireland has a Haemophilia Product Selection and Monitoring Advisory Board which recommends all the products to be purchased on a national basis for Haemophilia, von Willebrands disease and rare bleeding disorders. The board sets the selection criteria, evaluates the products against these criteria and recommends the products to be purchased, the quantities to be purchased and the duration of each tender. The Board includes the three clinicians who are directors of the three comprehensive haemophilia treatment centres and two representatives from the national haemophilia patient organisation.<sup>3</sup> In the procurement committees in Hungary and Bosnia-Herzegovina, the national patient organisations are invited as observers but do not have a formal role in the process of product selection.

**Figure 7.1** Summary of groups involved in decision making on haemophilia care and products

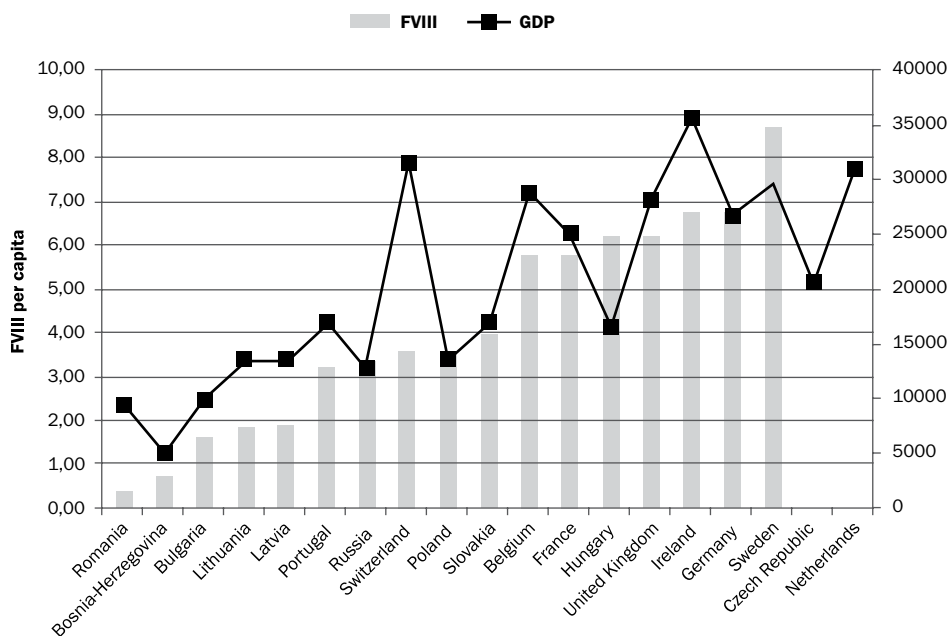


**AVAILABILITY OF SAFE AND EFFECTIVE CONCENTRATES AT OPTIMUM TREATMENT LEVELS**

The survey revealed enormous variation in relation to the availability of factor concentrates in the

European countries surveyed (Fig. 7.2). The country with highest per capita use was Sweden while consumption was lowest in Romania. A total of 17 countries reported figures for their factor VIII (FVIII) per capita use for 2009, which ranged from 0.38 to 8.7 IU per capita (median was 3.6 IU per capita; mean was 4.1 IU per capita, standard deviation was 2.4 IU per capita). Two countries (Romania and Bosnia-Herzegovina) reported a usage of <1 IU per capita whereas three countries (Bulgaria, Lithuania and Latvia) use <2 IU per capita. There was a clear correlation between per capita factor consumption and GDP per capita among the countries surveyed.

**Figure 7.2** Comparison of GDP per capita (€) and Factor VIII per capita use



If we use GDP per capita as a crude measure of economic strength, it is interesting to note that all five of the eastern European countries that use <2 IU per capita significantly under perform in relation to their FVIII per capita usage, given their relative economic strength. Of the western European countries, the consumption of FVIII in Portugal and Switzerland was less than that which might be predicted by overall GDP values. In the case of Ireland, the very rapid increase in GDP per capita over the previous 5 years has outstripped the high increase in per capita FVIII use (which increased from 1.9 IU per capita in 1997 to 6.75 IU per capita in 2009). Only Hungary and Sweden outperform in relation to their IU per capita FVIII use when compared with their GDP per capita. Sweden has been the pioneer in the use of prophylactic therapy for haemophilia and prophylactic therapy has been used in Sweden for the past 30 years.



*HOME TREATMENT AND PROPHYLAXIS*

Home treatment is available in 17 of the 19 countries surveyed and is delivered directly to the patients' home in six of the countries (Table 7.3). Home treatment is not available in Bosnia-Herzegovina and Romania. It is available to 75–100% in eight countries (Slovakia, Czech Republic, Lithuania, The Netherlands, France, Germany, Ireland and Sweden) and available to 50–75% of persons with haemophilia in another seven countries. Not surprisingly, the two countries where home treatment is not available are the same ones which consume <1 IU per capita of FVIII.

Prophylaxis is theoretically available to all persons with haemophilia in eight countries and available to some children in five countries. However, prophylaxis is limited or even unavailable in six countries. Prophylaxis is available to children with severe haemophilia in 10 countries to the extent that, 75–100% of children use prophylaxis (Belgium, Czech Republic, Hungary, Switzerland, The Netherlands, Portugal, UK, Germany, Ireland and Sweden). Prophylaxis is available to 50–75% of children with haemophilia in a further four countries (Poland, Russia, Slovakia and France). There is limited or no availability in Bosnia-Herzegovina, Bulgaria, Latvia, Lithuania and Romania. Adults with severe haemophilia have wide availability of prophylaxis in three countries (Hungary, The Netherlands and Sweden) and prophylaxis is available to up to 50% of adults with Haemophilia (probably on a case by case basis) in a further six countries (Russia, France, Portugal, UK, Germany and Ireland) (Table 7.3).

**Table 7.3** Breakdown of patient access to treatment in European countries

Country	GDP per capita (€)	Access to home treatment	Access Prophylaxis treatment	Children currently on Prophylaxis (<18 years)	Adults currently on Prophylaxis (≥18 years)	Access to ITT
<b>Belgium</b>	28,846	51-75%	Yes to all	76-100%	51-75%	76-99%
<b>Bosnia-Herzegovina</b>	5,077	None	Yes for some	1-25%	None	None
<b>Bulgaria</b>	9,923	10-50%	Yes for some	26-50%	None	None
<b>Czech Republic</b>	20,615	76-100%	Yes to all	76-100%	1-25%	100%
<b>France</b>	25,154	76-100%	Yes to all	51-75%	1-25%	100%
<b>Germany</b>	26,769	76-100%	Yes to all	76-100%	26-50%	76-99%
<b>Hungary</b>	15,231	Unknown	Yes to all	76-100%	76-100%	100%
<b>Ireland</b>	35,538	76-100%	Yes to all	76-100%	26-50%	100%
<b>Latvia</b>	13,692	51-75%	Yes to children	1-25%	None	100%
<b>Lithuania</b>	13,615	76-100%	Yes for some	None	None	None
<b>Netherlands</b>	31,000	76-100%	Yes to all	76-100%	76-100%	100%
<b>Poland</b>	13,308	51-75%	Yes to children	51-75%	None	None
<b>Portugal</b>	16,923	51-75%	Yes to children	76-100%	1-25%	<10%
<b>Romania</b>	9,385	None	Yes for some	1-25%	None	None
<b>Russia</b>	12,154	51-75%	Yes for some	51-75%	26-50%	10-25%
<b>Slovakia</b>	16,846	76-100%	Yes to children	51-75%	1-25%	100%
<b>Sweden</b>	29,615	76-100%	Yes to all	76-100%	76-100%	100%
<b>Switzerland</b>	31,462	51-75%	Yes for some	76-100%	26-50%	100%
<b>United Kingdom</b>	28,154	51-75%	Yes to children	76-100%	1-25%	76-99%

*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 7.4 and Table 7.5). Seven countries (Belgium, France, Germany, Ireland, Latvia, Lithuania and Romania) stated in their replies that they had access to all of these services at all times. It is difficult to accept that there would be a high standard of availability to all the specialities of comprehensive care in countries such as Romania, which has such a low per capita use of factor concentrate and no availability of home treatment or prophylaxis.

**Table 7.4** Access to specialist care for people with bleeding disorders in 19 European Countries

Country	Emergency medicine and acute surgery	Paediatrics	Infectious disease specialists (HIV)	Hepatology	Rheumatology	Orthopaedics	Physiotherapy	Dentistry
Belgium	Always	Always	Always	Always	Always	Always	Always	Always
Bosnia-Herzegovina	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Bulgaria	Always	Sometimes	Always	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes
Czech Republic	Always	Always	Always	Always	Always	Always	Sometimes	Always
France	Always	Always	Always	Always	Always	Always	Always	Always
Germany	Always	Always	Always	Always	Always	Always	Always	Always
Hungary	Always	Always	Always	Always	Always	Always	Always	Always
Ireland	Always	Always	Always	Always	Always	Always	Always	Always
Latvia	Always	Always	Always	Always	Always	Always	Always	Always
Lithuania	Always	Always	Always	Always	Always	Always	Always	Always
Netherlands	Always	Always	Always	Always	Always	Always	Always	Sometimes
Poland	Always	Always	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes
Portugal	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes
Romania	Always	Always	Always	Always	Always	Always	Always	Always
Russia	Sometimes	Always	Sometimes	Sometimes	Never	Always	Sometimes	Always
Slovakia	Always	Always	Always	Always	Always	Always	Always	Always
Sweden	Always	Always	Always	Always	Always	Always	Always	Always
Switzerland	Always	Always	Always	Always	Always	Always	Always	Always
United Kingdom	Always	Always	Always	Always	Always	Always	Always	Sometimes

The major disparities between countries in relation to access to comprehensive care seem to be in relation to access to infectious diseases specialists (three countries), Hepatology (four countries), Rheumatology (four countries), Orthopaedics (three countries), Physiotherapy (five countries) and surprisingly Dentistry (five countries). Genetics was not available in eight countries and social and psychosocial support was not available in 11 of the 19 countries. Pain management was not available in 10 countries. Urology was not available in 11 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.

**Table 7.5** Access to specialist care for people with bleeding disorders in 19 European Countries

Country	Dentistry	Obstetrics and gynaecology	Genetics	Social and psychological support	Pain management	General surgery	Urology
Belgium	Always	Always	Always	Always	Always	Always	Always
Bosnia-Herzegovina	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Bulgaria	Sometimes	Sometimes	Sometimes	Sometimes	Never	Always	Sometimes
Czech Republic	Always	Always	Always	Sometimes	Sometimes	Always	Always
France	Always	Always	Always	Always	Always	Always	Always
Germany	Always	Always	Always	Always	Always	Always	Always
Hungary	Always	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Ireland	Always	Always	Always	Always	Always	Always	Always
Latvia	Always	Always	Always	Always	Always	Always	Always
Lithuania	Always	Always	Always	Always	Always	Always	Always
Netherlands	Sometimes	Sometimes	Always	Always	Sometimes	Always	Sometimes
Poland	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes	Always	Sometimes
Portugal	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes
Romania	Always	Always	Always	Always	Always	Always	Always
Russia	Always	Sometimes	Sometimes	Never	Sometimes	Always	Sometimes
Slovakia	Always	Always	Sometimes	Sometimes	Sometimes	Always	Always
Sweden	Always	Always	Sometimes	Sometimes	Always	Always	Sometimes
Switzerland	Always	Always	Always	Sometimes	Always	Always	Always
United Kingdom	Sometimes	Always	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes

#### IMMUNE TOLERANCE FOR PATIENTS WITH INHIBITORS

Five countries (Bosnia-Herzegovina, Bulgaria, Lithuania, Poland and Romania) reported that immune tolerance therapy is not available at all. Immune tolerance is available for some patients in Russia. Immune tolerance is available in all the other countries surveyed when required.

#### PROVISION OF SAFE AND EFFECTIVE TREATMENT

In relation to the use of factor concentrates (Table 7.6), 10 countries stated that recombinant factor concentrates were always available with plasma-derived concentrates being rarely available; 13 countries stated that plasma-derived concentrates were always available but that recombinant factor concentrates were rarely available. Four Countries (Romania, Bosnia-Herzegovina, Lithuania and Russia) reported persisting but occasional use of cryoprecipitate. Romania is the only country that state they use fresh plasma exclusively, although it is also used infrequently in Bosnia-Herzegovina, Lithuania and Russia.

Recombinant concentrates were recorded as always available in all the countries which reported a FVIII consumption of 5 IU per capita or more. The countries where recombinant factor concentrates are the primary products used are Ireland, Sweden, France, Switzerland and the United Kingdom. Plasma-derived concentrates are the principal products employed in Bosnia-Herzegovina, Bulgaria, Lithuania, Latvia, Russia, Poland, Slovakia and Hungary.

**Table 7.6** Breakdown of access to treatments for bleeding disorders in European countries

Country	Haemophilia				Von Willebrand disease (vWD)			
	Plasma	Cryo	PDFC	RFC	Plasma	Cryo	PDFC	DDAVP
<b>Belgium</b>	Never	Never	Rarely	Always	Never	Never	Always	Always
<b>Bosnia-Herzegovina</b>	Rarely	Rarely	Always	Rarely	Never	Never	Always	Never
<b>Bulgaria</b>	Never	Never	Always	Rarely	Never	Never	Always	Never
<b>Czech Republic</b>	Never	Never	Always	Rarely	Never	Never	Always	Rarely
<b>France</b>	Never	Never	Always	Always	Never	Never	Always	Always
<b>Germany</b>	Never	Never	Always	Always	Never	Never	Always	Always
<b>Hungary</b>	Never	Never	Always	Always	Never	Never	Always	Rarely
<b>Ireland</b>	Never	Never	Never	Always	Never	Never	Always	Always
<b>Latvia</b>	Never	Never	Always	Never	Never	Never	Always	Always
<b>Lithuania</b>	Rarely	Rarely	Always	Rarely	Rarely	Rarely	Rarely	Always
<b>Netherlands</b>	Rarely	Never	Always	Always	Rarely	Never	Rarely	Always
<b>Poland</b>	Never	Never	Always	Never	Never	Never	Always	Never
<b>Portugal</b>	Never	Never	Always	Always	Never	Never	Always	Always
<b>Romania</b>	Always	Rarely	Rarely	Rarely	Rarely	Rarely	Rarely	Rarely
<b>Russia</b>	Rarely	Rarely	Always	Rarely	Rarely	Rarely	Always	Never
<b>Slovakia</b>	Never	Never	Always	Rarely	Never	Never	Always	Rarely
<b>Sweden</b>	Never	Never	Rarely	Always	Never	Never	Always	Always
<b>Switzerland</b>	Never	Never	Rarely	Always	Unknown	Unknown	Unknown	Unknown
<b>United Kingdom</b>	Never	Never	Rarely	Always	Never	Never	Always	Rarely

Cryo- Cryoprecipitate; PDFC - Plasma-derived Factor Concentrate; RFC - Recombinant Factor Concentrate; DDAVP - desmopressin acetate

**DISCUSSION**

The survey revealed significant variation in relation to the organisation of haemophilia care and availability of factor concentrates in the European countries surveyed. These findings are not, of course, entirely unexpected but they will serve as important baseline data to monitor progress over the coming years. It is also worth specifically noting the very dramatic improvements in access to treatment products in Russia and Poland in recent years. The government in Poland has improved access to factor concentrates to the extent that they are now at the median use of 3.6 IU per capita in Europe.

The improvement in Russia has been even more remarkable. In 2004, Russia was using <0.3 IU per capita and by 2009 this had increased to 3.36 IU per capita. This is attributed to the inclusion of factor concentrates in the federal budget and to the extremely hard work of the Russian national patient organisation and clinicians over many years.

Political support will be required to continue to develop haemophilia care in Europe and it is gratifying that the EHC launch of the European principles of care was hosted by the European parliament in January 2009 and attended by several Members of the European Parliament (MEP's). A meeting to promote optimal use of blood products under the aegis of the European Commission in 1999<sup>4</sup> made a number of recommendations which were precursors to the recent principles.<sup>1</sup> A follow-up meeting was held a decade later to monitor progress and a key recommendation is that the minimum national level of FVIII concentrate which should be used is 2 IU per capita (P. Giangrande and B. O'Mahony, Personal Communication).

Concerted efforts to supplant the use of cryoprecipitate for the treatment of haemophilia with good quality concentrates should perhaps be considered to be the first priority for implementation. The World Health Organisation (WHO) reaffirmed the inclusion of coagulation factor concentrates in the list of essential medications in 2005<sup>5</sup>, while also specifically making the point that cryoprecipitate is inherently less safe.

Official optimum treatment levels have not yet been defined, although the WFH in the past has stated that a minimum level of 1 IU of FVIII per capita is required in countries for basic treatment and survival.<sup>6</sup>

It is clear that there will be a continuing demand in Europe for both recombinant and plasma-derived concentrates for many years to come. Concentrate consumption has been shown to increase in line with economic development<sup>7</sup> and thus usage is likely to continue to grow significantly in the coming years.

**REFERENCES**

1. Colvin BT, Astermark J, Fischer K et al. European principles of haemophilia care. *Haemophilia* 2008; 14: 361–74.
2. The World Factbook, Central Intelligence Agency. Available at <http://www.cia.gov/library/publications/the-world-factbook/geos/aq.html>. Accessed December 5, 2009.
3. O'Mahony B. Guide to National Tenders for the Purchase of Clotting factor Concentrates, WFH, 2006.
4. Blood safety in the European Community: an initiative for optimal use. European Commission 1999 (ISBN 3-00-005705-6).
5. Essential medicines, WHO Model list (revised March 2005). 14th edn. Available at [http://whqlibdoc.who.int/hq/2005/a87017\\_eng.pdf](http://whqlibdoc.who.int/hq/2005/a87017_eng.pdf).
6. Evatt BL. Observation from Global Survey 2001: an emerging database for progress. *Haemophilia* 2002; 8: 153–56.
7. Stonebraker JS, Brooker M, Amand RE, Srivastava A. A study of reported factor VIII use around the world. *Haemophilia* 2010; 16: 33–46.