TRENDS AND OBSERVATIONS

on the collection, testing and use of blood and blood components in Europe

European Committee (Partial Agreement) on Blood Transfusion CD-P-TS

EDQM

2001-2011 report

edqm
European Directorate for the Quality of Medicines & HealthCare | Direction européenne de la qualité du médicament & soins de santé

COUNCIL OF EUROPE
CONSEIL DE L'EUROPE

Trends and observations on the collection, testing and use of blood and blood components in Europe

2001-2011 report

M.P. Janssen,[1] L.R. van Hoeven[1] and G. Rautmann[2]

1. Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, The Netherlands

2. European Directorate for the Quality of Medicines & HealthCare, Council of Europe, Strasbourg, France

Trends and Observations on the Collection, Testing and Use of Blood and Blood Components in Europe is published by the European Directorate for the Quality of Medicines & HealthCare of the Council of Europe (EDQM).

Director of the Publication: Dr S. Keitel

Page layout and cover: EDQM

Prepared for

Department of Biological Standardisation, OMCL Network & HealthCare
European Directorate for the Quality of Medicines & HealthCare (EDQM)
Council of Europe
7 allée Kastner, CS 30026
F–67081 STRASBOURG
FRANCE
Website: www.edqm.eu

For further information concerning the work of the Council of Europe/ EDQM in the area of blood transfusion please contact:

E-mail: guy.rautmann@edqm.eu

Correspondence address

M.P. Janssen
HP Str. 6.131
P.O.-box 85.500
3508 GA Utrecht
E-mail: m.p.janssen@umcutrecht.nl
Internet: www.juliuscentrum.nl/tta

Visiting address

Stratenum 7.117
Heidelberglaan 100
3584 CX Utrecht
Tel: +31-(0)88-7553246

CONTENTS

SUMMARY

The work presented here is an attempt to provide information on trends in the collection, testing and use of blood and blood components in Europe. The basis for the analysis is formed by data provided annually since 2001 to the Council of Europe by its Member States (MSs). As of 2004, data collection and analysis have been performed under the aegis of the European Committee (Partial Agreement) on Blood Transfusion (CD-P-TS), a Steering Committee of the Council of Europe (CoE) supervising activities in the field of blood transfusion within the framework of the European Directorate for the Quality of Medicines & HealthCare (EDQM).[1] CD-P-TS strongly supported the analysis of trends in Europe, based on data provided during the reporting period 2001 to 2011, during which the proportion of responding countries averaged 72 %. Three subsequent trend reports have now been published, the first for the period 2001-2005, the second on trends from 2001 to 2008, and this third report covering trends over the full decade.

Data from countries that provided four or more annual observations were analysed together for the presence of an overall trend. Thanks to the consistent data supply from a proportion of responding countries, which facilitated robust statistical analyses, it was possible to make a number of observations.

There were no overall trends found in the number of (first-time) donors and the use of red blood cells (RBC), indicating a stable blood supply overall. Only the number of whole blood (WB) donations per 1,000 inhabitants slightly increased. There were however some clear trends (both upwards and downwards) in individual MSs. As in the 2001-2008 trend report, there was no trend in the number of plasma units used per inhabitant, nor was there a trend in the ratio of plasma or RBC usage, in the amount of plasmapheresis plasma obtained per inhabitant, or in the amount of plasma obtained for fractionation per inhabitant. A consistent increase in platelet use, as found in the previous trend report, continued until 2011. Also, the proportion of leuco-depleted RBCs consistently increased over this period. In contrast, the previously found positive trends in the percentage of platelets obtained by apheresis did not continue when considering the whole 11-year time period.

The data showed a consistent increase in the use of irradiated RBCs. A large decrease was observed in the use of WB and autologous blood units (20 % and 18 % per annum respectively). In addition, there was a negative trend in the presence of Hepatitis B (HBV) and Hepatitis C (HCV) virus infections among both repeat and first-time donors. The HIV incidence rate did no longer (as in the previous report) show an increasing trend. Also, a substantial increase was observed in the implementation of HIV- and HBV-NAT testing. Finally, an increasing number of MSs reported that a maintained Quality Assurance (QA) system had been established.

The trend analysis report will be updated every three years.

1. The EDQM is a Directorate of the Council of Europe, created in 1964 on the legal basis of the Convention on the Elaboration of a European Pharmacopoeia. 37 member states, the European Union and 27 observers co-operate within this framework.

ACKNOWLEDGEMENTS

The CoE and the authors are grateful to all colleagues and experts in MSs who collated data at a national level and provided it for inclusion in this report.

Data collection, compilation, analysis and preparation of this manuscript was largely initiated by Dr C. van der Poel (Julius Center and Sanquin Blood Supply Foundation) and co-ordinated by Dr G. Rautmann (Scientific officer, EDQM), supported by Ms C. Mischler (Secretarial Assistant, EDQM).

The report was prepared with the assistance of Mr D. Crowe, Ms Laura Richard and Ms Isabelle Vernay (EDQM Publications & Multimedia Department).

ABBREVIATIONS

CD-P-TS	European Committee (Partial Agreement) on Blood Transfusion
CI	Confidence Interval
CoE	Council of Europe
EC	European Commission
EDQM	European Directorate for the Quality of Medicines & HealthCare
EMA	European Medicines Agency
EU	European Union
FFP	Fresh frozen plasma
HBc	Hepatitis B core antigen
HBsAg	Hepatitis B surface antigen
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HIV	Human immunodeficiency virus
HTLV	Human T cell lymphotropic virus
ID	Identification
ISBT	International Society of Blood Transfusion
IU	International Unit
L	Litres
MSs	Member States of the Council of Europe
NAT	Nucleic acid amplification techniques
Ph. Eur.	European Pharmacopoeia
QA	Quality assurance
QS	Quality management system
RBC	Red blood cell
SP-R-GS	Select Committee of Experts on Quality Assurance in Blood Transfusion Services
SP-HM	Committee of Experts on Blood Transfusion and Immunohaematology
WB	Whole blood
WHO	World Health Organization

1. INTRODUCTION

Since 1989, the Council of Europe (CoE) has maintained a tradition of collating data on the collection, testing and use of blood in its Member States (MSs). Data were supplied by MSs in response to a questionnaire requesting detailed information on donors, collection, testing, distribution and quality aspects of blood and blood components. Reports assessing the blood supply in the MSs in 1989, 1991, 1993, 1995 and 1997 have been published. As of 2001, a new questionnaire was designed by SP-R-GS and the SP-HM bureau focusing on data from blood establishments. It was felt that even though hospital data would have been very much of interest, these would be far more difficult to obtain systematically. The 2001 questionnaire stems from discussions that led to European Union (EU) *Directive 2002/98/EC*, which as a result of the *Treaty of Amsterdam* also primarily focuses on regulating the 'producers' part of the blood transfusion chain. In contrast to the 1997 survey (Rejman *et al.*, 2000), since 2001 EU MSs have been included in the survey. As in 2001, a new systematic approach and new definitions were developed, and a qualitative evaluation report on the 2001 Questionnaire, with recommendations for improvement of the process, was prepared and reported to SP-HM in 2003. Improvements and amendments were included in the questionnaire following formal approval by the SP-HM bureau. As the new 2001 format could have generated initial difficulties in data retrieval, it was expected that the quality of the survey would improve through annual repetition. The consistency of the data in later years indicates that this may have been the case. If they were already established, existing definitions were used from regulatory documents of the CoE (*Guide to the preparation, use and quality assurance of blood and blood components*) and the EU (*Council Recommendation 98/463/EC* and *Directive 2002/98/EC*). Some definitions were established in the field. Infectious disease definitions were elaborated during an International Society of Blood Transfusion (ISBT) Working Party on Infectious Diseases in 1996 and later adopted by the European Medicines Agency (EMA) (within the framework of the *Guideline on epidemiological data on blood transmissible infections, EMEA/CPMP/BWP/3794/03*). This paved the way for greater convergence towards more uniform definitions and data collection within Europe. In the field, this means that data can be elicited consistently from blood bank automation systems without having to adapt different computer queries for different surveys. It is to be welcomed that the World Health Organization (WHO) Europe collaborated and also subscribed to the CoE questionnaire.

This report is the third trend analysis report on the outcome of these surveys, incorporating an additional three years to the previous report and now reporting over an 11-year period. The goal is to provide further insights into developments in the blood transfusion chain in Europe.

2. MATERIALS AND METHODS

2.1. Methods for data collection

For the analyses presented in this report, the CoE data from the annual surveys on 'The collection, testing and use of blood and blood products in Europe' for the years 2001 through 2011 were used. Data from the original reports covering the period 2009-2011 were added to the data reported in the second published trend analysis report, which reported over the period 2001-2008 (see reference list).

2.2. Methods for statistical analysis

Changes in the reported characteristics over time are derived from the newly constructed tables. A trend can to some extent be identified from these tables. In addition, statistical tests were performed to provide an objective identification of a trend for each individual country, as well as for an overall trend. Also, the magnitude of the trend, expressed in a rate of change per year, is assessed and reported.

In some cases, observations were classified as outliers and discarded in the trend analyses. Observations were classified as outliers whenever this seemed reasonable in the context of the complete data series reported. Obviously, in some instances it is difficult to judge whether deviant observations are the result of erratic processes or erroneous data collection or entry. All observations classified as outliers are presented in bold typeface in the tables. Outlier observations are discarded in the trend analyses.

2.2.1. Testing for a trend for a specific country

Testing for trends can be performed either by parametric or non-parametric statistical tests. For a parametric test, in contrast to a non-parametric test, a (mostly linear) relationship is presumed between time (T) and the outcome considered (Y). In addition, assumptions are commonly made on the distribution of the residuals, which is the difference between the prediction of the statistical model and the actual observed outcome. For non-parametric tests, no such assumptions are required, and these can therefore be applied to a wider class of observations. If the actual situation departs even slightly from the parametric assumptions, then the Mann-Kendall procedures will perform either as well as or better than parametric tests (Hirsch *et al.*, 1991; Önöz *et al.*, 2003). Therefore, in this report only the non-parametric test for trends was used. However, the drawback of non-parametric tests is their reduced statistical power in comparison to (valid) parametric tests.

Only countries that reported data from four or more years are included in the trend analyses.

2.2.1.1. *Non-parametric Mann-Kendall test for trend*

Mann first suggested using the Kendall's tau significance test for association as a test for trend (Mann, 1945), by simply using one of the variables as time and the other as the actual observed outcomes at various time points. The Mann-Kendall test can be stated most generally as a test for situations where observed values (Y) over time (T) tend to increase or decrease (monotonic change). The hypothesis tested is the following:

H_0: Prob $[Y_j > Y_i] = 0.5$, where time $T_j > T_i$.

H_1: Prob $[Y_j > Y_i] \neq 0.5$ (2-sided test).

No assumption of normality is required, but there must be no serial correlation for the resulting p-values to be correct. If a monotonic transformation such as the scale of powers is applied, the test statistic will remain identical to that obtained in the original units.

To perform the test, Kendall's S statistic is computed from the [T,Y] data pairs. The null hypothesis of no change is rejected when S (and therefore Kendall's tau of Y versus T) is significantly different from zero. It is then concluded that there is a monotonic trend in Y observed values over time.

2.2.1.2. *Estimation of the rate of change over time*

The Mann-Kendall test indicates the presence of a trend, but does not provide any indication of the magnitude of change over time. Sen's slope estimator is used to estimate the median slope (Sen, 1968). The median slope of the inclinations found between all pairs of observations is taken, so that the estimator of a set of two-dimensional points (x_i,y_i) is the median m of the slopes $(y_j - y_i)/(x_j - x_i)$ determined by all pairs of sample points. This median estimate can be shown to be an unbiased estimator of the true slope by simple linear regression. For many distributions of the response error, this estimator has a high asymptotic efficiency relative to least-squares estimation. Estimators with low efficiency require more independent observations to attain the same sample variance of efficient unbiased estimators. Also, Sen's estimator is more robust than the least-squares estimator because it is far less sensitive to outliers.

2.2.2. Overall trend and rate of change

To test whether there is an overall trend, the observations from various countries have to be considered together. This can be performed in two fundamentally different ways: the observations can either be weighted in accordance with the population size of the country or weighted equally. The first estimate reflects a trend among the European population, whereas latter reflects a trend among European MSs. As the report aims to highlight trends among MSs, trends are analysed using the data as reported (so no weighting is applied). Again, only countries which reported data from four or more years are included in the trend analysis.

For the statistical analysis of overall trends, an adjusted seasonal/regional Mann-Kendall test is used (Helsel *et al.*, 2006). In the conventional regional Mann-Kendall test, the regional test statistic is computed by summing the individual test statistics of each country, and dividing this by the summed and subsequently squared variances of all countries. In contrast, the adjusted regional test statistic reverses the computation: first the test statistic per country is divided by its standard deviation. When this measure is divided by the square root of the number of countries, we have the adjusted test statistic which has a standard normal distribution under the null hypothesis from which the *p*-value can be calculated as usual. The rationale behind this adjusted test is that, by using the ratio of the test statistic and variance per country, each country contributes with equal weight to the regional statistic. The median Sen's slope estimator as described above is used with data points

from all countries, but only considering pairs of points belonging to the same country. This gives an estimate of the overall median slope. Depending on what fits the data best, either raw values or the log of the values are used to model the overall median slope. The values of the estimated overall trend line are provided in the lower row of the tables.

3. RESULTS

3.1. Introduction

This chapter starts with a description of the number of MSs which responded to the questionnaire over the years. In the sections that follow, data tables and results of trend analyses are provided, corresponding to the tables from the individual annual CoE publications. The chapter finishes with an analysis of the total number of screening tests and QA implementation.

The tables with annual data per reporting MS contain three sections: country name, data provided per reporting year and an indication of the presence of a trend over time. Where an observation considered to be an outlier is provided, this observation is shown in bold typeface. Outliers have not been used in the analysis for determining the presence of a trend.

The columns on the extreme right of the data tables (under the header 'Trend') contain the sub-headers '*p*-value' and 'Slope'. The first of these columns refers to the *p*-value for the Mann-Kendall test for trend. A *p*-value of 5 % means that there is a 5 % probability that, given that there is no trend (i.e. the null hypothesis is true), a test statistic at least as extreme as the one that was actually observed would have been obtained. The *p*-values indicated are positive for positive trends and negative for negative trends. Furthermore, *p*-values are rounded up to values of 10 %, 5 % and 1 % to indicate a weak, strong or very strong indication for the presence of a trend. It was decided to show all trends with a *p*-value of 10 % or less, against standard statistical practice where, commonly, only *p*-values of 5 % or less are considered statistically significant. The reason for doing so is that less noticeable trends are highlighted for individual countries, even though the statistical significance of these trends might not otherwise have been sufficient for them to be labelled as such. However, only overall trends with a *p*-value less than 5 % are reported. The other column under the header 'Trend' provides an estimate for the slope of the trend whenever a trend exists (i.e. a *p*-value of 10 % or less for individual MSs).

The bottom row of each table provides the annual estimates for the overall trend (the trend among MSs). This is the median slope determined by applying Sen's method (see above, page 10). The associated *p*-value is that for the extended Mann-Kendall test for trend, which indicates the presence of an overall trend. An estimate for the slope of the trend is provided whenever a trend exists, ie a *p*-value of 5 % or less. This slope is to be interpreted as the average absolute change per year. Whenever the slope is presented as a percentage, the slope is estimated on a logarithmic scale and the number given is the relative reduction or increase (in %) per annum. Please note that true zero values are presented without any decimals in the tables.

3.2. Number of responses

Of a total of 46 MSs, 15 completed and submitted a questionnaire for all years from 2001 through to 2011, thus providing 11 responses. Seven MSs provided 10 responses, two MSs submitted 9 responses, four MSs submitted 8 responses, four MSs gave 7 responses, and the remaining fourteen MSs provided 6 responses or fewer. One MS did not provide any data. The distribution of the number of reporting years is presented graphically in Figure 1. Overall, 85 % (n=39/46) of MSs provided data for 4 or more years.

Table 1 (page 15) shows the response per country per year. The proportion of respondents, as well as the total number of respondents and the total number of MSs are presented in this table. From Table 1 it is clear that the highest response rate was observed in 2001. There is no statistically significant trend in the relative number of responses over the years.

It should be noted that both Serbia and Montenegro joined in 2002 and reported combined data up until 2004. From 2005 onwards, Montenegro provided its own data. Considering the fact that the population size of Serbia is roughly ten times that of Montenegro, the data from the combined countries for the reporting years 2002 through 2004 have been assigned to the data provided by Serbia.

No data could be obtained for Liechtenstein as blood transfusion activities are run by operators acting under the responsibility of control authorities from neighbouring countries.

Similar agreements may be in place between Andorra, San Marino and their respective neighbouring countries, thus accounting for the lack of reports from these countries.

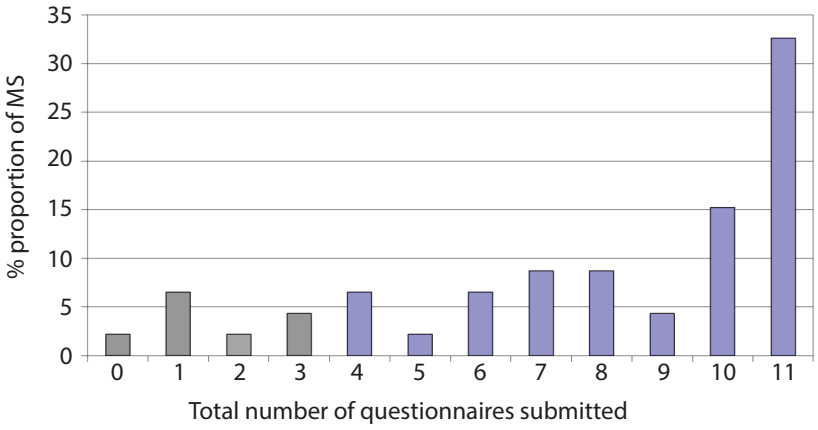


Figure 1. Distribution of number of questionnaires submitted

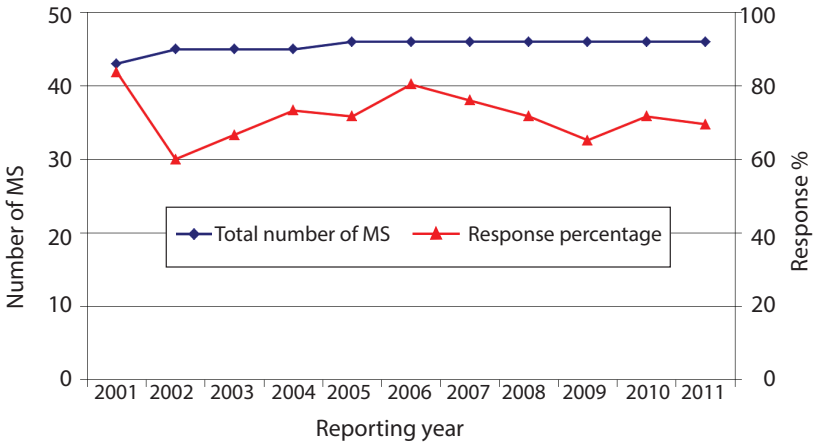


Figure 2. Number of member states and response rate per year

Table 1. Responses per member state per year

Country	Year											Total responses
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
Belgium												11
Croatia												11
Czech Republic												11
France												11
Germany												11
Greece												11
Iceland												11
Italy												11
Latvia												11
Netherlands												11
Norway												11
Romania												11
Slovak Republic												11
Sweden												11
Switzerland												11
Bulgaria												10
Denmark												10
Finland												10
Hungary												10
Ireland												10
Luxembourg												10
United Kingdom												10
Poland												9
Slovenia												9
Georgia												8
Lithuania												8
Serbia												8
Spain												8
Estonia												7
Malta												7
Moldova												7
Montenegro												7
Austria												6
Azerbaijan												6
Portugal												6
FYR Macedonia												5
Andorra												4
Bosnia / Herzegovina												4
Cyprus												4
Armenia												3
Turkey												3
Russian Federation												2
Albania												1
Liechtenstein												1
Ukraine												1
San Marino												0
Number responding	36	27	30	33	33	37	35	33	30	33	32	32.6
Total number MS	43	45	45	45	46	46	46	46	46	46	46	45.5
% responding	84 %	60 %	67 %	73 %	72 %	80 %	76 %	72 %	65 %	72 %	70 %	72 %

Data excluded from trend analyses

Average values

Data obtained	
No data obtained	
Not a member state	

3.3. Percentage first-time donors

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania	75												
Andorra		6								61			
Armenia	83		79		95	83	72					-	-
Austria		16	8	26		17	11	16	14	14		-	-
Azerbaijan	38	40		45									
Belgium	16	16	14	17	18	17	15	17	17	17	18	-	-
Bosnia/Herzegovina			20	25	52	54						10 %	0.13
Bulgaria	24	23	21	21	21	22	29	21		29	24	-	-
Croatia	12	22	19	17	15	14	15	15	14	11	8	-1 %	-0.01
Cyprus						31	12	9					
Czech Republic	10	11	9	8	9	7	9	14	15	15	12	-	-
Denmark	10		11	10		9	13	10	12	11	10	-	-
Estonia	31					22	27	27	25	19	12	-5 %	-0.02
Finland	12	11	11	11	10	11	10	14	12	13	11	-	-
France	25	22	22		23	43	24	27	25	17	21	-	-
FYR Macedonia			29			37		16		100			
Georgia	63	13	13	13		10	23	8			32	-	-
Germany			24	18	21	18	18	19	20	18	18	-	-
Greece	28	18	16	12	15	17	17	17	17	14	15	-	-
Hungary	14	18		18	18	16	15	17	20	16	24	-	-
Iceland	20	16	25	24	24	24	14	18	17	18	15	-	-
Ireland	32			15	27	20	13	15	14	16	14	-10 %	-0.01
Italy	15	20	20	15	16	15	18	18	21	22	22	5 %	0.01
Latvia	24	23	27	27	26	29	31	28	29	27	25	-	-
Liechtenstein													
Lithuania	34	36		38	52	43		53		31	28	-	-
Luxembourg	10	7	6	6	12	8	8	7	11		7	-	-
Malta							32	19	33	14	19	-	-
Moldova	23			27	31		33		34	32	32	10 %	0.01
Montenegro					34	42	41	49	40	50	41	-	-
Netherlands	9	10	7	7	6	8	7	7	10	11	10	-	-
Norway	11	13	13	14	17	14	12	13	13	19	15	10 %	0.00
Poland	39	39	38	38	40	41	40	41	38	35	34	-	-
Portugal	29					14				11	13	-	-
Romania	27	31	36	37	31	27			21	21	100	-	-
Russian Federation				27							34		
San Marino													
Serbia			40			100	100	100	100	100	100	-	-
Slovak Republic	25	19	19	16	20	22	24	31	27	30	30	5 %	0.01
Slovenia	10	11	10	9	10	11	10	9	10			-	-
Spain	30			30	30	27	24		25	22	19	-1 %	-0.01
Sweden	11	13	13	12	11	8	15	15	17			-	-
Switzerland	12	16	11	11	8	9	11	12	12	11	13	-	-
Turkey													
Ukraine			28										
United Kingdom	14	18	17	18	17		17	16	19	14	15	-	-
Median trend line	18	18	18	18	18	18	18	18	18	18	18	92 %	

No data obtained

3.4. Donors per 1000 inhabitants

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania													
Andorra		32								3			
Armenia	3		2		2	2	3					-	-
Austria	6	42	67	44		42	60	41	44	40		-	-
Azerbaijan	3	3		2									
Belgium	28	26	27	31	30	29	32	29	35	34	27	-	-
Bosnia/Herzegovina			11	13	14	14						10 %	1.0
Bulgaria	18	18	19	19	20	19	15	19		16	19	-	-
Croatia	44	20	22	21	20	21	21	22	23	24	25	10 %	0.3
Cyprus	33					90	63	63				-	-
Czech Republic	32	32	32	31	30	31	28	35	40	36	38	-	-
Denmark	49		47	51		41	48	46	49	46	45	-	-
Estonia	21					24	25	25	15	33	25	-	-
Finland	36	34	32	31	31	31	34	31	32	29	32	-	-
France	25	25	26		24	43	25	24	26	33	27	-	-
FYR Macedonia			13			4		12		2		-	-
Georgia	4	2	2	2		8	6	9			10	5 %	0.8
Germany			29	34	32	35	36	36	38	38	37	1 %	0.9
Greece	35	34	34	34	35	33	39	39	45	51	35	10 %	0.9
Hungary	38	36		37	36	35	35	27	28	32	24	-1 %	-1.0
Iceland	31	33	34	33	33	35	39	30	28	28	29	-	-
Ireland	31			30	23	28	23	22	22	21	20	-1 %	-1.1
Italy	23	26	26	25	26	26	27	27	28	29	30	1 %	0.5
Latvia	21	19	21	20	21	22	25	24	24	25	23	5 %	0.6
Liechtenstein													
Lithuania	9	10		11	12	15		18		22	28	1 %	1.7
Luxembourg	28	26	31	30	35	33	30	30	21		25	-	-
Malta							35	38	21	30	30	-	-
Moldova	10			16	14		19		20	17	18	-	-
Montenegro					0	28	17	20	28	21	18	-	-
Netherlands	39	33	31	31	31	26	25	24	22	21	20	-1 %	-1.6
Norway	22	22	23	23	20	23	22	22	22	25	24	-	-
Poland	11	10	11	11	13	22	16	24		18	19	1 %	1.1
Portugal	11					28				28	30	-	-
Romania	8	11	10	10	11	15			26	25	5	-	-
Russian Federation				20							12		
San Marino													
Serbia			24				19			28	6	-	-
Slovak Republic	28	23	26	27	22	24	27	20	26	22	25	-	-
Slovenia	50	56	54	53	54	54	54	57	62			-	-
Spain	23			26	26	25	25		26	25	27	-	-
Sweden	35	33	34	31	31	46	31	31	32	26	43	-	-
Switzerland	39	38	30	33	32	33	32	33	34	30	29	-	-
Turkey	16												
Ukraine			22										
United Kingdom	40	30	29	28	27		24	26	23	25	23	-1 %	-0.9
Median trend line	25.7	25.9	26.0	26.1	26.2	26.3	26.5	26.6	26.7	26.8	26.9	8 %	

No data obtained

3.5. Whole blood donations per 1000 inhabitants

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania													
Andorra		12								4			
Armenia	3		2		2	3	4					-	-
Austria	63	56	62	61		56	58	58	56	57		-	-
Azerbaijan	2	2		3									
Belgium	53	52	50	54	54	52	51	52	51	51	49	-	-
Bosnia/Herzegovina			9	10	14	19						10 %	3.9
Bulgaria	18	18	19	19	20	19	20	20		22	22	1 %	0.4
Croatia	35	35	36	35	35	35	36	37	39	40	41	1 %	0.6
Cyprus	33					62	63	64				10 %	3.1
Czech Republic	40	42	42	42	41	39	39	40	42	43	40	-	-
Denmark	67		73	74	68	71	67	64	67	61	56	-5 %	-1.6
Estonia	37					40	41	40	22	44	43	-	-
Finland	60	59	57	54	52	52	51	51	50	49	49	-1 %	-1.1
France	35	35	37	34	34	35	37	37	38	38	40	1 %	0.5
FYR Macedonia			24			9		10		12		-	-
Georgia	4	5	5	6		7	8	9			9	1 %	0.7
Germany	55	58	56	57	56	58	58	59	60	60	60	1 %	0.5
Greece	54	57	57	59	59	57	60	60	60	58	54	-	-
Hungary	43	44		50	43	42	42	42	42	42	43	-	-
Iceland	48	54	50	51	49	49	46	47	43	44	40	-1 %	-1.2
Ireland	36		37	39	37	36	36	35	35	33	31	-5 %	-0.6
Italy	36	38	38	40	41	41	41	42	43	45	45	1 %	0.9
Latvia	25	24	25	24	23	23	25	25	26	28	27	10 %	0.3
Liechtenstein													
Lithuania	21	22		24	26	27		28		21	26	-	-
Luxembourg	49	48	50	48	50	50	48	44	45		38	-5 %	-0.7
Malta				38		36	34	37	36	35	40	-	-
Moldova	11			18	15		21		21	19	20	-	-
Montenegro					**0**	23	22	23	24	25	24	-	-
Netherlands	44	44	41	39	37	35	34	35	35	33	32	-1 %	-1.2
Norway	42	42	44	44	43	43	42	42	42	**101**	41	-	-
Poland	21	23	23	24	24	25	25	26		29	31	1 %	0.8
Portugal	12				35	35				39	39	-	-
Romania	16	16	15	17	17	16	16	16	18	21	21	5 %	0.3
Russian Federation				0							16		
San Marino													
Serbia			21		31	29	2	33	33	**0**	31	-	-
Slovak Republic	34	32	30	26	31	32	34	34	37	38	37	5 %	0.8
Slovenia	45	45	43	43	43	42	42	46	48			-	-
Spain	36			38	36	36	38		38	38	38	-	-
Sweden	51	52	54	52	53	52	52	54	54	52	51	-	-
Switzerland	59	59	54	51	47	46	46	46	46	45	44	-1 %	-1.3
Turkey	13				17	7							
Ukraine			18										
United Kingdom	50	48	47	44	42		38	39	39	37	37	-1 %	-1.4
Median trend line	38.5	38.6	38.7	38.8	38.8	38.9	39.0	39.1	39.2	39.3	39.3	0.9 %	0.08

No data obtained

3.6. Plasmapheresis (L) per 1000 inhabitants

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania													
Andorra		0								0.01			
Armenia	0.02		0.54		0.02	0.01	0.05					-	-
Austria		5.29	0	0.01		12.86	0.81	0	0	0		-	-
Azerbaijan	0.00	0.09		0.13									
Belgium	9.79	10.17	9.25	9.17	7.99		5.06	4.48	5.21	5.20	5.57	-5 %	-0.57
Bosnia/Herzegovina				0									
Bulgaria	0.02	0.06		45.43	15.27	9.97	0.03	0.04		0.05	0.04	-	-
Croatia	1.59	0.06	0.07	0.95	0.08	0.09	0.01	0.09	0.09		0.02	-	-
Cyprus							0	0					
Czech Republic	3.02	4.08	4.61	5.26	5.26	4.92	6.37	20.08	38.35	49.64	44.46	1 %	4.14
Denmark	0.17		0.09	0.21	0.07	0.02	0.06	0.05	0.03	0.08	0.31	-	-
Estonia	0.02					0	0	0	0.18	0.32	0.55	10 %	0.08
Finland	0.30	0.32	0.31	0.27	0.32	0.45	0.48	0.49	0.52	0.51	0.53	1 %	0.03
France	1.24	1.47	2.14	2.24	2.58	3.14	2.47	2.93	3.71	4.75	7.16	1 %	0.38
FYR Macedonia			0					0					
Georgia	0.05	0.20	1.20	1.00		0.21		0			0	-	-
Germany	9.92	9.92	30.29	17.55	11.54	14.12	16.63	19.43	21.45	23.56	22.85	5 %	1.44
Greece	0.21	0.07	0.09	0.10	0.08	0.06	0.07	0.07	0.07	0.06	0.05	-1 %	0.00
Hungary	0.19	2.76		0.03		0	0	6.77		0		-	-
Iceland	0	0	0	0	0.05	0.06	0.08	0.15	0.25	0.43	0.28	1 %	0.03
Ireland	0		0		0	0	0	0	0	0	0	-	-
Italy	2.98	3.13	3.21	3.26	3.51	3.53	3.47	3.55	3.92	3.51	3.61	1 %	0.07
Latvia	0.69	7.71	7.93	4.58	0.29	0.51	0.40			0.05		-10 %	-0.44
Liechtenstein													
Lithuania	0.72	0.53		0						2.28	0.18	-	-
Luxembourg	7.59	7.65	9.99	6.64	6.69	6.92	3.60	3.31	4.92		3.52	-5 %	-0.46
Malta						0	0	0	0	0	0	-	-
Moldova	0.12			0.29	0.30		0.37		0.74	0.92	0.95	1 %	0.09
Montenegro								0	0	0			
Netherlands	4.83	8.17	9.27	20.81	10.61	10.28	10.67	11.45	12.60	13.28	12.68	1 %	0.56
Norway	0.38	0.80	0.32	0.52	0.09	0.74	0.95	0.72	0.27	0.56	0.51	-	-
Poland	1.59	1.12	0.92	0.54	0.33	0.24	0.48	1.85		0.83	0.36	-	-
Portugal					0	0.00							
Romania	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.05	0.00	0.00	-10 %	0.00
Russian Federation				2.11							2.71		
San Marino													
Serbia					0.44	0.15	0.13	0.11	0.09	0.09	0.09	-1 %	-0.02
Slovak Republic	0.27	1.48	0.07	0.00	0.00	0	0	0.00	0.01	0.01	0.01	-	-
Slovenia	0.49	0.22	0.15	0.14	0.27	0.28	0.31	0.11	0.19			-	-
Spain	0.34			0.33	0.37	0.39	0.42		0.32	0.37	0.63	-	-
Sweden	13.86	12.64	12.11	7.56	6.60	7.07	5.47	4.63	4.39	3.40	3.65	-1 %	-0.98
Switzerland	1.59	1.14	0.20	0.63	0.24	0.24	0.22	0.17	0.15	0.17	0.19	-1 %	-0.04
Turkey													
Ukraine													
United Kingdom	0.03	0.03	0.02	0.02	0.01		0.00	0.00	0.00	0.00	0.00	-1 %	0.00
Median trend line	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	64 %	

No data obtained

3.7. Percentage autologous out of total whole blood

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania	1.29												
Andorra		0								0.01			
Armenia	0.38		1.88		0.28	0.22	0.25					-	-
Austria	1.95	2.06	2.58	0.68		0.67	0.90	0.71	1.34	0.47		-	-
Azerbaijan		0		0									
Belgium	0.76	0.49	0.34	0.30	0.21	0.14	0.09	0.06	0.03	0.03	0.02	-1 %	-0.06
Bosnia/Herzegovina			0.02	0.03									
Bulgaria	0.20	0.19	0.12	**0.02**	0.26	0.13	0.19	0.05		0.07		-	-
Croatia	0.67	0.64	0.73	0.72	0.71	0.71	0.63	0.54	0.51		0.51	-5 %	-0.02
Cyprus							0	0					
Czech Republic	4.46	4.49	4.24	3.97	4.16	4.02	4.26	4.19	3.71	3.40	3.30	-1 %	-0.11
Denmark	0				0.01	0	0	0	0	0	0	-	-
Estonia	0.02						0	0.01	0	0	0	-	-
Finland	0	0	0	0	0	0	0	0	0	0	0	-	-
France	4.15	3.49	2.92	2.28	1.48	0.80	0.42	0.24	0.16	0.10	0.07	-1 %	-0.45
FYR Macedonia			0.04			0.40		0		0.00		-	-
Georgia	0			0				0			0.14	-	-
Germany	4.84	4.42	3.90	**0.10**	2.91	1.75	1.51	1.21	0.92	0.69	0.49	-1 %	-0.46
Greece	0.47	0.55	0.78	0.72	0.79	0.86	0.95	0.41	0.24	0.20	0.16	-	-
Hungary		0.48			0.32	0.25	0.47		0.10	0.13	0.18	-	-
Iceland	0	0.01	0.01	0.02	0.01	0.09	0	0	0	0	0	-	-
Ireland	0.07		0.01	0.01	0.01	0.00	0.00	0	0	0.00	0.01	-5 %	0.00
Italy	6.78	6.07	5.51	5.06	4.86	4.51	4.10	3.76	2.97	2.85	2.31	-1 %	-0.42
Latvia			0	0		0.01	0.01	0.00	0.00	0.00	0	-	-
Liechtenstein													
Lithuania											0.62		
Luxembourg	3.23	3.39	1.68	1.70	0.97	0.87	0.94	0.55	0.36		0.32	-1 %	-0.27
Malta						0	0	0	0.03	0.01	0	-	-
Moldova	0.09			0.26			0.17		0.06	0.06	0.04	-10 %	-0.01
Montenegro							0.14			0			
Netherlands	0.12	0.10	0.07	0.07	0.05	0.04	0.02	0.02	0.01	0.01	0.01	-1 %	-0.01
Norway	0	0.03	0.03	0.02		0.01	0.02	0.01	0.01	0	0.01	-	-
Poland	0.76	0.40	0.33	0.27	0.16	0.25	0.28	0		0.18		-5 %	-0.06
Portugal	0.14				0.62	0.62							
Romania	0.10	0.10	0.12						0.00	0	0.01	-	-
Russian Federation													
San Marino													
Serbia			0.07		2.19	0.14	0.08	0.02	0.02	0.39	0.00	-	-
Slovak Republic	0.95	0.57	1.73	1.29	0.59	0.55	0.84	0.27	0.53	0.47	0.43	-5 %	-0.05
Slovenia	2.53	1.99	2.21	2.28	2.36	2.15	2.12	1.65	2.33			-	-
Spain	1.56			1.53	1.30	1.19	0.88		0.66	0.61	0.52	-1 %	-0.12
Sweden	0.19	0.12	0.10	0.08	0.06	0.04	0.03	0.02	0.02	0.02	0.01	-1 %	-0.01
Switzerland	4.82	4.59	4.36	4.07	3.87	1.33	1.07	0.92	0.82	0.62	0.50	-1 %	-0.47
Turkey													
Ukraine													
United Kingdom	0.05	0.05	0.03	0.02	0.01		0.00	0.00	0	0.00	0.00	-1 %	-0.01
Median trend line	0.79	0.65	0.54	0.44	0.36	0.30	0.25	0.20	0.17	0.14	0.11	0.00 %	-18 % (rel)

No data obtained

3.8. Red blood cell units per 1000 inhabitants

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania													
Andorra		11								3			
Armenia	2		1		2	3						-	-
Austria	49	49	55	57		53	53	53	51	48		-	-
Azerbaijan	3	2		4									
Belgium	49	48	48	50	50	48	49	49	48	48	45	-	-
Bosnia/Herzegovina			9	9									
Bulgaria	16	16	17	18	20			20		25	21	1 %	0.6
Croatia	35	33	34	35	33		36	36	39	39	41	1 %	0.7
Cyprus	74						61	58					
Czech Republic	40	41	40	32	42	35	41	37	40	38	38	-	-
Denmark	62		71	73	64	67	64	60	60	57	53	-5 %	-2.1
Estonia	37						40	38	21	38	41	-	-
Finland	54	53	52	49	49	47	48	47	47	46	45	-1 %	-0.8
France	33	32	32	33	32	33				37	37	10 %	0.5
FYR Macedonia			48			10		20		12		-	-
Georgia		5	5	6				9			8	10 %	0.5
Germany	41	40	50	54	53	55	55	57	58	57	57	1 %	1.3
Greece	54	58	57	59	60	57	55	60	56	59	**126**	-	-
Hungary	37	30		41		40	40		36	**84**	42	-	-
Iceland	48	52	49	50	47		45	46	43	39	38	-1 %	-1.1
Ireland	30			35	33	33	35	32	33	31	30	-	-
Italy	38	38	39	41	43	42			42	42	43	5 %	0.5
Latvia	25		22	22	21	20			24	26	27	-	-
Liechtenstein													
Lithuania	18	44								24	29	-	-
Luxembourg	46	44	46	46	48	47	45	44	41		36	-10 %	-0.6
Malta				38		32	33	36	35	34	38	-	-
Moldova	6			6	6		8		13	10	10	5 %	0.6
Montenegro							18			22	23		
Netherlands	38	39	38	37	35	34	34	34	34	33	32	-1 %	-0.7
Norway	39	39	40	42		42	41	42	40	40	39	-	-
Poland	16	21	22	23	23	24	25			29	30	1 %	1.1
Portugal	12				34	26				32	26	-	-
Romania	15	16	15			16			17	21	21	5 %	0.5
Russian Federation											11		
San Marino													
Serbia			21		31		30			31	31	-	-
Slovak Republic	32	30	37	35	30	28	25	25	34	34	34	-	-
Slovenia	44			41	39	38	38	41	44			-	-
Spain	32			35	33	34	34		35	35	34	10 %	0.3
Sweden	49	51	50	50	50	51	50	52	53	52	51	5 %	0.3
Switzerland	39	39	43	42	42	42	41	41	41	40	39	-	-
Turkey	12												
Ukraine			0										
United Kingdom	46	45	44	41	40		36	36	36	35	34	-1 %	-1.2
Median trend line	38.1	38.1	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	18 %	

No data obtained

3.9. Percentage whole blood used out of total red blood cells

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania	20.62												
Andorra		0								0			
Armenia	0.92		2.76		0.11	0.13						-	-
Austria	0	0	0	0		0	0	0	0.07	0		-	-
Azerbaijan	76.15	55.17		73.45									
Belgium	0.00	0	0	0.02	0	0	0	0	0	0	0	-	-
Bosnia/Herzegovina			24.36	36.90									
Bulgaria	5.74	4.67	3.69	2.75	1.11			0.52		0.90	0.26	-1 %	-0.60
Croatia	5.05	3.66	2.67	2.43	1.36		1.72	0.32	0.26	0.27	0.31	-1 %	-0.42
Cyprus	59.21						0	0					
Czech Republic	0.27	0.31	0.29	0.37	0.30	0.11	0.20	0.07	0.06	0.10	0.10	-5 %	-0.02
Denmark	0.05		0.04	0.04	0	0	0	0	0	0	0	-5 %	0.00
Estonia	0.12						0.06	0.02	0.02	0.04	0.07	-	-
Finland	0.14	0.05	0.01	0.27	0.34	0.30	**0.00**	0.25	0.22	0.13	0	-	-
France	0	0	0	0	0	0				0	0	-	-
FYR Macedonia			51.15			3.31		50.14		8.33		-	-
Georgia		6.12	5.56	3.33				0.17			0.20	-10 %	-0.73
Germany	0.57	0.59	0.74	0.26	0.42	0.38	0.36	0.24	0.16	0.12	0.09	-1 %	-0.06
Greece	4.35	1.99	0.85	0.15	0.13	0.13	0.04	0.03	0.02	0.01	**55.88**	-1 %	-0.14
Hungary	0.02	0.00		0.00		0.00	0		0	**49.84**	0	-1 %	0.00
Iceland	0	0	0	0	0		0	0	0	0	0	-	-
Ireland	0.41			0	0.02	0.00	0	0	0	0	0	-5 %	0.00
Italy	1.89	1.37	2.18	1.06	0.86	0.78			0.17	0.12	0.09	-1 %	-0.17
Latvia	0.10		0	0	0	0.01			0	0	0	-	-
Liechtenstein													
Lithuania	0.18	**50.94**								0.03	0		
Luxembourg	0	0	0	0	0	0	0	0	0		0	-	-
Malta				0		0	0	0	0	0	0.01	-	-
Moldova	5.52			0.17	0.25		0.15		0	0.02	0.10	-10 %	-0.04
Montenegro							20.58			3.95	2.88		
Netherlands	0.00	0.01	0.05	0.04	0	0	0	0	0	0.11	0.11	-	-
Norway	0.09	0.09	0.14	0.08		0.03	0.06	0.03	0.04	0.04	0.06	-10 %	-0.01
Poland	1.47	0.17	0.19	0.02	0.09	0.02	0.03			0.06		-	-
Portugal	0.03				0	0.03				0.03	0	-	-
Romania	53.09	49.93	45.92			34.34			27.32	27.64	18.67	-1 %	-3.23
Russian Federation											0.14		
San Marino													
Serbia			32.55		4.97		7.40			2.29	5.00	-	-
Slovak Republic	11.06	11.06	12.09	13.53	5.44	4.83	3.00	0.99	0.53	0.51	0.27	-1 %	-1.32
Slovenia	2.63			0	0	0	0	0	0			-	-
Spain	0.41			0.08	0.04	0.01	0.01		0.00	0.01	0.01	-5 %	-0.01
Sweden	0.17	0.20	0.04	0.02	0	0	0	0	0	0	0	-1 %	-0.01
Switzerland	2.35	2.05	1.67	1.56	1.60	1.37	0.96	0.80	0.67	0.68	0	-1 %	-0.20
Turkey	80.33												
Ukraine			9.48										
United Kingdom	0.12	0.04	0.03	0.04	0.05		0.00	0.03	0.00	0.00	0	-5 %	-0.01
Median trend line	0.82	0.66	0.53	0.42	0.34	0.27	0.22	0.17	0.14	0.11	0.09	0.00 %	-20 % (rel)

No data obtained

3.10. Platelet units per 1000 inhabitants

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania													
Andorra		0.20								0.22			
Armenia	**0**		0.02		0.12	0.09							
Austria	2.44	3.83	4.89	3.16		4.38	3.61	4.35	4.45	4.13		-	-
Azerbaijan	0.00	0.01		0.02									
Belgium	4.65	4.57	4.87	5.81	6.98	6.10	6.09	6.19	6.39	6.40	6.28	1 %	0.15
Bosnia/Herzegovina			0.76	0.66	1.43	1.69						-	-
Bulgaria	1.38	2.02	2.16	0.71	0.70	0.67	0.95	0.53		0.90	0.75	-	-
Croatia	**13.05**	2.51	2.49	2.74	3.06	3.10	2.74	2.66	3.00	3.55	3.79	5 %	0.13
Cyprus	13.96					24.68	10.51	14.98				-	-
Czech Republic	2.11	2.29	2.19	2.37	2.10	2.28	2.23	2.95	3.12	3.08	3.30	5 %	0.12
Denmark	4.14		**18.95**	6.37	5.23	5.73	5.94	6.25	5.90	6.10	6.19	-	-
Estonia	1.98					4.15	4.50	4.40	2.23	4.54	4.76	10 %	0.12
Finland	6.67	6.66	6.07	6.17	6.42	7.07	7.25	7.00	7.46	7.97	7.76	1 %	0.16
France	3.26	3.22	3.32	3.35	3.50	3.67	3.85	3.95	4.04	4.28	4.48	1 %	0.13
FYR Macedonia			0.76			2.09		6.20		7.62		10 %	1.03
Georgia	0	0.30	0.30	0.40			0.37	1.02			1.32	5 %	0.11
Germany	3.27	3.27	4.04	4.53	4.45	5.10	5.46	5.76	5.70	6.07	6.36	1 %	0.31
Greece	11.67	12.88	12.63	15.85	14.95	15.08	14.49	12.95	12.64	12.70	0.01	-	-
Hungary	12.31	9.24		1.43	1.46	1.87	1.79	2.28	1.42	2.63	3.77	-	-
Iceland	3.21	2.42	3.38	3.17	3.66	3.41	5.36	6.96	6.21	5.26	6.53	1 %	0.39
Ireland	3.50		4.22	4.49	4.66	4.80	5.34	5.56	5.90	5.33	5.40	1 %	0.22
Italy	8.26	12.84	3.37	2.16	2.75				3.42	3.41	3.58	-	-
Latvia	1.06	1.70	1.80	1.66	1.74	2.09	2.00	2.70	2.76	3.07	3.32	1 %	0.21
Liechtenstein													
Lithuania	5.81	6.56		4.19	1.35	1.85		4.67		3.35	6.19	-	-
Luxembourg	4.15	4.06	**18.42**	4.83	4.79	5.10	4.93	7.77	4.69		4.39	-	-
Malta				38.25		1.92	2.19	2.92	2.69	3.85	3.16	-	-
Moldova	0.30			0.09	0.94		12.25		2.40	2.55	2.44	-	-
Montenegro					**0.00**	3.84	3.03		1.20		1.07	-10 %	-0.68
Netherlands	9.39	3.45	2.92	3.23	3.19	3.45	3.27	3.08	3.25	3.37	3.83	-	-
Norway	3.43	3.12	2.99	3.48	3.39	3.86	4.01	4.07	4.21	4.67	4.49	1 %	0.15
Poland	0.94	1.14	1.22	1.41	1.55	1.72	1.88	2.07	2.13	2.50	2.44	1 %	0.16
Portugal	7.17				1.74	2.37				6.29	2.67	-	-
Romania	1.57	1.84	1.84	2.72	3.13	3.22	0.75	0.94	1.15	1.19	1.51	-	-
Russian Federation											1.12		
San Marino													
Serbia			1.58		1.69	1.90	1.61			16.35	9.11	-	-
Slovak Republic	1.36	1.72	1.60	1.60	1.87	3.95	3.56	2.37	5.35	2.95	4.61	1 %	0.27
Slovenia	14.00	11.92	11.07	13.08	13.96	14.06	14.77	4.03	4.70			-	-
Spain	13.51			2.92	2.61	2.58	5.01		3.98	4.19	4.17	-	-
Sweden	3.52	3.79	3.63	3.90	3.67	3.86	4.15	4.21	4.63	4.55	5.26	1 %	0.13
Switzerland	2.43	2.02	3.12	2.51	2.69	2.97	3.02	3.59	3.85	4.04	4.23	1 %	0.22
Turkey	0.58				1.95	2.79							
Ukraine			0.12										
United Kingdom	4.50	4.42	4.53	4.44	4.39		4.22	4.36	4.55	4.61	4.87	-	-
Median trend line	2.84	2.98	3.13	3.27	3.41	3.56	3.70	3.84	3.99	4.13	4.27	0.00 %	0.14

No data obtained

3.11. Percentage platelets by apheresis

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania													
Andorra										1			
Armenia			100		100	0	2					-	-
Austria	80	67	57	65		71	89	79	76	69		-	-
Azerbaijan	100			75									
Belgium	26	21	22	46	54	44	41	38	40	48	48	-	-
Bosnia/Herzegovina			25	49	22	19						-	-
Bulgaria	1	1	2	6	**16**	7	12	21		31	29	1 %	3
Croatia	**1**	14	17	12	13	13	14	20	15	15	18	-	-
Cyprus						1	3	3					
Czech Republic	72	70	75	79	80	78	81	83	82	85	76	5 %	1
Denmark	5		4	2	10	8	4	5	4	2	3	-	-
Estonia	15					29	77	25	32	27	23	-	-
Finland	2	2	2	2	2	2	2	2	2	2	2	-	-
France	87	88	88	88	85	82	78	69	64	61	51	-1 %	-4
FYR Macedonia			6			1		2		0		-	-
Georgia		7	7	25				0			2	-	-
Germany	67	67	66	62	62	59	62	61	62	62	63	-10 %	0
Greece	10	14	13	14	16	19	11	13	13	17	18	-	-
Hungary		36		36	38	24	23	21	22	14	10	-1 %	-3
Iceland	34	54	39	58	52	51	51	58	62	65	59	5 %	2
Ireland	35		41	46	43	41	46	56	65	77	78	1 %	5
Italy	13	12	34	50	43				37	37	35	-	-
Latvia	56	78	78	78	73	67	58	55	55	52	50	-1 %	-3
Liechtenstein													
Lithuania	2	3		8	17	26		45		79	47	1 %	6
Luxembourg	30	35	46	43	36	45	42	37	40		29	-	-
Malta				2		53	39	27	28	33	34	-	-
Moldova									0	0	0		
Montenegro													
Netherlands	1	8	3	9	7	8	7		8	6	7	-	-
Norway	29	33	31	48	33	31	33	31	34	30	28	-	-
Poland	40	49	45	41	34	32	31	32	33	41	38	-	-
Portugal	1				12	11				6	11	-	-
Romania	1	8	7	1	2	2	14	20	21	30	26	1 %	3
Russian Federation													
San Marino													
Serbia					7	8	11			2	3	-	-
Slovak Republic	56	25	47	45	59	37	32	64	36	75	46	-	-
Slovenia	25	5	5	5	7	8	7	34	24			-	-
Spain				35	33	36	49		18	17	15	-	-
Sweden	39	34	41	41	41	40	36	35	34	33	31	-5 %	-1
Switzerland	83	87	89	87	91	92	93	93	90	85	78	-	-
Turkey	69				28	30							
Ukraine													
United Kingdom	40	40	38	43	39		62	64	74	79	83	1 %	5
Median trend line	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	34.0	21 %	

No data obtained

3.12. Fresh frozen plasma use per 1000 inhabitants

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania													
Andorra		0.8								5.8			
Armenia	2.2		1.4		2.4	2.9	3.9					10 %	51 %
Austria	8.5	10.5	10.9	11.4		7.5	15.5	9.5	8.9	7.3		-	-
Azerbaijan	0.8	0.1		0.9									
Belgium	8.9	9.6	9.2	10.0	8.8	8.5	8.2	8.7	8.1	8.6	7.9	-1 %	-14 %
Bosnia/Herzegovina			6.2	3.2	2.0	2.1						-	-
Bulgaria	9.4	10.0	10.9	11.9	11.6	10.1	11.5	8.1		12.7	11.5	-	-
Croatia	32.6	20.7	21.0	21.8	18.8	18.2	17.9	16.2	15.7	18.0	19.3	-5 %	-72 %
Cyprus	10.7					45.5	21.3	20.5				-	-
Czech Republic	16.3	17.1	16.6	17.4	27.5	19.1	18.9	18.7	19.3	19.5	18.1	10 %	30 %
Denmark	**0**		12.2	11.2	11.1	12.7	12.6	12.3	12.6	11.9	11.9	-	-
Estonia	21.4					26.2	25.3	23.7	5.3	20.3	22.9	-	-
Finland	7.0	7.6	8.2	7.6	7.3	8.8	9.6	9.9	9.4	9.9	9.2	1 %	29 %
France	4.2	4.3	4.4	4.3	4.5	4.6	4.9	5.1	5.2	5.9	5.8	1 %	16 %
FYR Macedonia						11.5		8.9		19.5			
Georgia	**0**	6.0	4.8	5.6			4.5	8.6			8.3	-	-
Germany	17.0	15.5	15.8	16.7	15.1	15.2	17.3	16.3	15.0	14.9	14.6	-5 %	-14 %
Greece	15.6	17.1	14.7	22.4	25.5	31.9	28.7	25.1	21.0	19.2	17.8	-	-
Hungary	8.9	7.7		9.2	9.2	8.8	8.7	9.4	9.4	9.6	9.8	5 %	9 %
Iceland	10.2	13.4	15.1	14.6	18.0	17.5	17.3	17.7	14.0	12.5	11.3	-	-
Ireland	6.2		5.7	6.9	6.0	6.4	0.2	0.1	0.1	5.2	5.1	-10 %	-18 %
Italy	2.5	9.1	8.8	9.6	9.1	8.4	9.2	8.4	8.6	6.6	7.3	-	-
Latvia	24.0	21.9	20.9	20.8	20.4	20.2	25.3	16.6	17.0	18.4	24.2	-	-
Liechtenstein													
Lithuania	9.8	22.4		7.8	8.8	10.5		10.0		9.0	11.6	-	-
Luxembourg	7.6	7.1	8.5	9.2	10.2	9.1	10.0	10.7	8.9		9.8	10 %	29 %
Malta				37.6		8.1	5.0	15.7	18.0	14.8	9.7	-	-
Moldova	4.9			8.7	8.5				16.3	16.5	17.6	5 %	128 %
Montenegro					0.0	8.9	11.5	13.4	14.0	15.2	13.1	-	-
Netherlands	6.2	6.1	6.9	5.7	4.2	5.6	5.6	5.9	5.5	4.9	5.2	-5 %	-10 %
Norway	6.9	8.0	8.7	8.6	8.5	9.6	8.4	9.9	9.3	9.2	9.8	5 %	21 %
Poland	7.3	8.1	9.2	9.5	8.9	9.4	8.7	8.3		10.1	10.3	10 %	20 %
Portugal	0.4				0.2	2.6				1.0	0.5	-	-
Romania	6.7	7.5	7.7		9.1	9.6	10.0	10.6	11.7	13.1	13.8	1 %	65 %
Russian Federation											13.4		
San Marino													
Serbia			14.2		15.6	14.4	19.7	22.1	22.2	19.6	17.3	-	-
Slovak Republic	16.9	13.5	3.6	9.5	13.8	10.5	9.7	14.0	15.2	16.1	15.4	-	-
Slovenia	13.5	17.3	16.6	16.8	17.0	15.1	15.5	14.8	15.6			-	-
Spain	4.6			6.4	5.3	5.6	5.5		5.1	4.4	4.6	-	-
Sweden	14.9	13.5	13.5	12.7	12.1	12.8	12.4	11.4	11.2	9.5	9.0	-1 %	-51 %
Switzerland	10.2	10.5	11.0	9.0	9.5	10.1	9.2	8.5	9.1	7.9	6.8	-1 %	-32 %
Turkey	4.5				5.6	8.8							
Ukraine			0.5										
United Kingdom	6.9	6.8	6.4	6.0	5.8		5.0	4.8	5.1	4.9	4.7	-1 %	-22 %
Median trend line	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	64 %	

No data obtained

3.13. Fresh frozen plasma red blood cell ratio

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania	0.79												
Andorra		0.07								2.01			
Armenia	1.13		1.76		1.04	0.98						-	-
Austria	0.18	0.22	0.20	0.20		0.14	0.29	0.18	0.17	0.15		-	-
Azerbaijan	0.29	**0.05**		0.24									
Belgium	0.18	0.20	0.19	0.20	0.18	0.18	0.17	0.18	0.17	0.18	0.18	-	-
Bosnia/Herzegovina			0.68	0.34									
Bulgaria	0.59	0.63	0.65	0.67	0.57			0.41		0.51	0.54	-	-
Croatia	0.94	0.64	0.61	0.62	0.56		0.50	0.45	0.40	0.46	0.47	-1 %	-0.03
Cyprus	0.15						0.35	0.36					
Czech Republic	0.41	0.42	0.41	0.55	0.66	0.55	0.47	0.51	0.49	0.52	0.48	-	-
Denmark			0.17	0.15	0.17	0.19	0.20	0.21	0.21	0.21	0.23	1 %	0.01
Estonia	0.58						0.64	0.63	0.25	0.53	0.56	-	-
Finland	0.13	0.14	0.16	0.16	0.15	0.19	0.20	0.21	0.20	0.21	0.21	1 %	0.01
France	0.13	0.13	0.14	0.13	0.14	0.14				0.16	0.16	5 %	0.00
FYR Macedonia						1.21		0.46		1.67			
Georgia		1.22	0.89	0.93				1.00			1.05	-	-
Germany	0.42	0.39	0.31	0.31	0.29	0.28	0.31	0.28	0.26	0.26	0.25	-1 %	-0.01
Greece	0.29	0.29	0.26	0.38	0.43	0.55	0.52	0.42	0.38	0.33	0.14	-	-
Hungary	0.24	0.26		0.23		0.22	0.22		0.26	0.11	0.23	-	-
Iceland	0.21	0.26	0.31	0.29	0.38		0.39	0.38	0.33	0.32	0.29	-	-
Ireland	0.20			0.20	0.18	0.20	0.00	0.00	0.00	0.17	0.17	-10 %	0.00
Italy	0.07	0.24	0.23	0.23	0.21	0.20			0.21	0.16	0.17	-	-
Latvia	0.97		0.96	0.95	0.99	1.00			0.72	0.71	0.90	-	-
Liechtenstein													
Lithuania	0.53	0.51								0.38	0.40	-	-
Luxembourg	0.17	0.16	0.19	0.20	0.21	0.19	0.22	0.24	0.22		0.27	1 %	0.01
Malta				1.00		0.26	0.15	0.43	0.52	0.44	0.25	-	-
Moldova	0.88			1.37	1.42				1.22	1.59	1.68	10 %	0.04
Montenegro							0.63			0.69	0.56		
Netherlands	0.16	0.16	0.18	0.15	0.12	0.17	0.17	0.17	0.16	0.15	0.16	-	-
Norway	0.18	0.20	0.22	0.21		0.23	0.21	0.24	0.23	0.23	0.25	1 %	0.01
Poland	0.46	0.39	0.43	0.41	0.39	0.40	0.35			0.35		-5 %	-0.01
Portugal	0.04				0.00	0.10				0.03	0.02	-	-
Romania	0.44	0.48	0.53			0.62			0.68	0.63	0.66	5 %	0.02
Russian Federation											1.19		
San Marino													
Serbia			0.67		0.50		0.64			0.63	0.56	-	-
Slovak Republic	0.52	0.45	0.10	0.27	0.46	0.38	0.38	0.56	0.44	0.47	0.46	-	-
Slovenia	0.31			0.41	0.44	0.40	0.41	0.36	0.36			-	-
Spain	0.15			0.18	0.16	0.17	0.16		0.14	0.12	0.13	-	-
Sweden	0.30	0.27	0.27	0.25	0.24	0.25	0.25	0.22	0.21	0.18	0.18	-1 %	-0.01
Switzerland	0.26	0.27	0.26	0.21	0.23	0.24	0.22	0.21	0.22	0.20	0.17	-1 %	-0.01
Turkey	0.36												
Ukraine			1.01										
United Kingdom	0.15	0.15	0.15	0.14	0.15		0.14	0.13	0.14	0.14	0.14	-5 %	0.00
Median trend line	0.27	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.25	0.25	0.25	10 %	

No data obtained

3.14. Litres plasma for fractionation per 1000 inhabitants

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania													
Andorra										0.00			
Armenia	0.00		2.82			0.00							
Austria		17.13	7.31	7.59		12.86	7.40	13.09	11.73	12.45		-	-
Azerbaijan	0	0		0									
Belgium	23.54	23.80	20.74	22.22	19.49	17.10	16.11	15.53	16.56	16.16	16.56	-1 %	-0.81
Bosnia/Herzegovina				0	1.86	2.17							
Bulgaria	1.32	1.31	1.36	1.50	1.65	1.93	1.77	1.54		2.19	2.09	1 %	0.09
Croatia	2.14	3.11	3.96	3.69	4.64	4.86	4.44	4.26	4.66	4.60	4.94	1 %	0.19
Cyprus	0					0	0	0				-	-
Czech Republic	6.17	8.05	7.67	7.58	8.48	8.05	11.29	24.01	40.98	52.38	48.91	1 %	4.27
Denmark	15.83		17.35	16.16	14.87	15.57	14.45	13.32	12.99	12.12	11.84	-1 %	-0.60
Estonia	5.29						0	3.55	5.10	5.26	5.76	-	-
Finland	14.42	13.77	13.89	8.58	12.31	13.57	11.24	12.87	11.32	14.58	13.50	-	-
France	7.87	8.80	9.57	9.65	10.10	10.23	10.89	12.04	12.80	13.14	13.35	1 %	0.54
FYR Macedonia			2.17					0		0			
Georgia	0.15	0.02	0.20	0.20				0			0	-	-
Germany	20.41	20.94	30.10	27.06	21.27	26.25	27.34	30.81	35.83	35.30	36.75	1 %	1.64
Greece	2.69	2.19	1.86	1.88	1.74	1.62	1.57	1.47	2.31	2.52	0.00	-10 %	-0.10
Hungary	6.05	8.21			7.16				7.41	8.43	8.46	10 %	0.22
Iceland		0	0	0	0	0	0	0	0	0	0	-	-
Ireland	0.61			0	0	0	0	0	0	0	0	-	-
Italy	7.95	8.92	9.28			10.12	10.31	10.80	11.45	12.04	12.39	1 %	0.42
Latvia	7.64	7.76	8.03	6.34	0	0.17	0.47	0.36	0.37	1.61	3.05	-	-
Liechtenstein													
Lithuania	3.23	4.82		5.67	3.62	3.24		21.60		2.48	1.63	-	-
Luxembourg	19.15	16.59	17.59	15.38	16.34	16.24	16.44	16.00	14.87		12.16	-1 %	-0.45
Malta						0	0	0	0	0	0	-	-
Moldova	0.93			1.65	3.71		2.31		1.35	1.18	1.15	-	-
Montenegro										0			
Netherlands	16.67	18.96	19.17	19.08	18.33	18.84	17.89	13.67	20.17	20.34	19.90	-	-
Norway	9.15	10.84	10.89	10.65	11.33	11.34	10.27	11.30	11.02	10.97	11.07	-	-
Poland	4.40	3.67	3.50	3.73	2.72	4.60	3.12	1.22			2.20	-	-
Portugal	0					0					0		
Romania	0.09						0	0	0	0	0	-	-
Russian Federation				1.31							0.94		
San Marino													
Serbia					1.62	1.20	1.26			0.24	0.77	-	-
Slovak Republic	2.21	1.75	3.11	2.87	4.44	5.24	3.59	8.56	4.59	4.94	4.87	5 %	0.34
Slovenia	6.50	6.98	5.58	5.35	5.45	5.38	5.16	7.05	7.05			-	-
Spain	5.56			6.62	6.86	6.88	7.29		8.08	8.29	7.97	1 %	0.27
Sweden	23.04	22.83	22.08	17.53	16.69	16.67	15.30	12.25	12.33	11.42	14.42	-1 %	-1.29
Switzerland	12.23	11.48	9.98	12.55	10.29	9.52	11.51	11.70	10.05	10.44	10.80	-	-
Turkey					0	0							
Ukraine			1.79										
United Kingdom	0	0	0		0		0	0	0	0	0	-	-
Median trend line	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	20 %	

No data obtained

3.15. Percentage leucocyte-depleted red blood cell[1]

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania	17												
Andorra										37			
Armenia	0		0			0							
Austria	100	100	100	100		100	100	100	100	100		-	-
Azerbaijan	0	0		7									
Belgium	24	29	35	45	100	100	100	100	100	100	100	1 %	7.9
Bosnia/Herzegovina			10	20	2	4						-	-
Bulgaria	3	10	12	6	6	6	4	6		8	1	-	-
Croatia	2	5	6	6	8	11	13	18	17	20	59	1 %	2.3
Cyprus	0					80	100	100				-	-
Czech Republic	8	12	8	13	16	11	21	21	29	29	32	1 %	2.6
Denmark	14		16	17	18	16	22	31	65	91	100	1 %	8.6
Estonia	3					5	5	5	6	7	9	1 %	0.6
Finland	14	19	100	100	100	100	99	100	100	100	100	5 %	0.1
France	100	100	100	100	100	100	100	100	100	100	100	-	-
FYR Macedonia			3			3		5		0		-	-
Georgia	2	5	5	5				0				-	-
Germany	83	83	100	100	100	100	100	100	100	100	100	5 %	0.0
Greece	30	30	35	35	36	35	35	35	37	38	40	1 %	0.8
Hungary	5	3		6	6	8	10	11	10	13	12	1 %	1.0
Iceland	5	10	16	16	20	20	19	22	21	23	25	1 %	1.5
Ireland	100		100	100	100	100	100	100	100	100	100	-	-
Italy	30	30	20	28	29				16	24	26	-	-
Latvia	59	61	65	65	74	11	40	15	15	14	4	-5 %	-6.3
Liechtenstein													
Lithuania	0			2	4	9		9		21	30	1 %	3.1
Luxembourg	0	100	100	100	100	100	100	100	100		100	-	-
Malta				100		100	100	100	100	100	100	-	-
Moldova					0					0			
Montenegro							10						
Netherlands	27	100	100	100	100	100	100	100	100	100	100	-	-
Norway	100	100	100	100	100	100	100	100	100	100	100	-	-
Poland	3	3	4	9	5	6	7			13		5 %	0.8
Portugal	100				100	100				100	100	-	-
Romania	15	3	3	4	6	7			5	6	5	-	-
Russian Federation											23		
San Marino													
Serbia					1	1	57	50	53	48	43	-	-
Slovak Republic	0	38	14	14	14	5	10	13	20	24	33	-	-
Slovenia	20	25	18	17	20	23	27	45	78			5 %	3.3
Spain	18			92	92	93	95		95	97	97	1 %	1.0
Sweden	43	54	61	64	69	74	85	83	87	84	89	1 %	4.6
Switzerland	100	100	100	100	100	100	100	100	100	100	100	-	-
Turkey	0												
Ukraine			5										
United Kingdom	100	100	100	100	100		100	100	100	100	100	-	-
Median trend line	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	0.00 %	0.0

No data obtained

1. Note that the median trend has slope 0. This is due to the fact that 42 % of the MSs with 4 or more observations have reported a constant proportion of leucocyte-depleted RBCs of 100 %, which implies no change over time.

3.16. Percentage irradiated red blood cell

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania	0												
Andorra										0			
Armenia	0		0			0							
Austria	10.0	5.8	6.0	7.4		7.0	10.0	9.0	12.0	14.0		5 %	0.9
Azerbaijan	0	0		0									
Belgium	0.9	0.9	1.0	0.5								-	-
Bosnia/Herzegovina			50.0	2.0									
Bulgaria	0	0	0		1.0	1.0		1.0		0		-	-
Croatia		0						77.0					
Cyprus	0						0	0					
Czech Republic		2.8	10.0	12.0	8.0	5.0	7.0	6.0	7.0	6.0	5.0	-	-
Denmark						5.0	9.0	2.0	2.0	4.0	4.0	-	-
Estonia	0.3					1.9	3.0	3.0	4.0	4.0	4.0	5 %	0.4
Finland	**20.0**	2.0	2.3	2.4	2.0	3.0	3.0	3.0	3.0	3.0	7.0	1 %	0.2
France	4.5	4.5	6.8	7.4	8.4	8.2					0	-	-
FYR Macedonia			0			0.1		0		0		-	-
Georgia	0			0				0			0	-	-
Germany				3.2	3.0	3.0	4.0	4.0	4.0	5.0	4.0	10 %	0.2
Greece		6.0	8.0	10.0	12.0	13.0	15.0	16.0	18.0	20.0	21.0	1 %	1.7
Hungary	1.0	**18.0**		1.3	4.0	4.0	5.0	5.0	3.0	7.0	8.0	1 %	0.7
Iceland	1.2	4.0	5.0	4.3	6.0	5.5	9.0	10.0	10.0	11.0	13.0	1 %	1.0
Ireland	10.0			7.3	2.5	2.5	12.0	24.0	13.0	8.0	11.0	-	-
Italy				7.0	8.0				5.0	5.0	6.0	-	-
Latvia	2.0	0.1	0.5	0.5	0.5	1.4	1.0	2.0	2.0	2.0	1.0	-	-
Liechtenstein													
Lithuania	0.6			1.3						7.0			
Luxembourg	**100**	0.3		1.5	2.0	1.5	1.0	1.0	0		1.0	-	-
Malta				1.0		1.0	1.0	26.0	5.0	5.0	3.0	-	-
Moldova					0					0			
Montenegro							0						
Netherlands		3.0	3.2	2.4	4.0	10.0	10.0		4.0	4.0	5.0	-	-
Norway		5.0		6.1	5.5	6.0	7.0	7.0	8.0	8.0	7.0	5 %	0.3
Poland	4.0	3.0	3.0	4.0	3.8	4.3	4.0			5.0		10 %	0.2
Portugal					15.0	13.0							
Romania	0.0	1.0	1.0	1.0	1.5	1.5						5 %	0.3
Russian Federation													
San Marino													
Serbia					0.2	0.2	1.0	2.0	2.0			10 %	0.6
Slovak Republic	1.0	11.0	22.4	25.0	25.0	0.8			1.0	3.0	4.0	-	-
Slovenia	1.0	3.0	3.0	5.0	15.0	15.0	16.0	5.0	3.0			-	-
Spain									4.0	4.0	5.0		
Sweden	2.0	4.0	3.3	3.1	2.5	4.0	4.0	4.0	4.0	4.0	5.0	5 %	0.2
Switzerland										4.0	2.0		
Turkey	0												
Ukraine													
United Kingdom	4.0	5.0	5.1	6.0			8.0	8.0	8.0	9.0	9.0	1 %	0.5
Median trend line	2.0	2.3	2.6	2.9	3.2	3.5	3.8	4.1	4.4	4.7	5.0	0.00 %	0.3

No data obtained

3.17. HIV repeat donor incidence rate[1]

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania													
Andorra													
Armenia			196										
Austria	**928**	0.7		1.5		1.7	1.1	2.8	1.6	1.4		-	-
Azerbaijan	62.8	6.7		86.4									
Belgium	0	0	0.4	0.8	0.8	0.8	0.7	0.4	0.6	0.3	0	-	-
Bosnia/Herzegovina			0	0	0	0						-	-
Bulgaria	1.8	0	0	0			0					-	-
Croatia		0	5.0	4.0	3.9	1.3	1.2	4.7	1.1	0	1.0	-	-
Cyprus						0	0	0					
Czech Republic	0.3	0	0	0.3	0.6	0.3	0.8	0.3	0.6	1.6	0.6	5 %	0.1
Denmark	0.4		0	0.9	0	1.5	0.9	0.4	0.4	0.9	0.4	-	-
Estonia	4.9					12.0	8.1	8.1	6.8	8.3	3.5	-	-
Finland	0	0.6	0.7	0	0.7	0.7	1.9	0.7	0.7	2.2	0	10 %	0.0
France	1.7	1.4	0.8		2.0	1.3	1.4		1.7	1.0	1.5	-	-
FYR Macedonia								**74.9**					
Georgia		0		42.9									
Germany			2.7	2.3	2.6	2.0	1.6	2.6	2.0	2.1	2.5	-	-
Greece	3.2	1.0	3.3	4.7	6.1	8.4	8.6	5.8	4.9	4.4	6.4	10 %	0.3
Hungary	0	2.7		0.6	0	0	0.3	1.3	2.3	0	1.1	-	-
Iceland	0	0	0	0	0	0	0	0	0	0	0	-	-
Ireland	1.2			0	0	0	2.4	0	0	0	0	-	-
Italy		3.1	3.3	2.7			5.0	3.6	4.1	4.1	4.9	10 %	0.2
Latvia			11.2	3.0	34.2	11.1	2.6	22.9	23.1	10.8	16.6	-	-
Liechtenstein													
Lithuania		55.8		0						31.9	8.4	-	-
Luxembourg	9.0	0	0	0	0	0	0	0	10.9		0	-	-
Malta						0	0	0	0	0	0	-	-
Moldova	0				0		0		0			-	-
Montenegro							0	0	29.0	0		-	-
Netherlands	0.5	1.7	0.2	0.9	0.4	1.0	0.8	0.3	0.6	0.3	0	-	-
Norway		0	0	0	0	1.1	1.1	0	1.1	0	0	-	-
Poland	2.0	2.9	5.0	0.8	4.0	3.7	2.4	5.8	6.4	7	5.8	5 %	0.5
Portugal	3.8					4.9				18.0	16.4	-	-
Romania	5.8	1.8	7.7	4.3	3.8	3.5			1.6	3.2		-	-
Russian Federation													
San Marino													
Serbia										0	0		
Slovak Republic	0	0	0	0	0	0	0	2.7	0	0	1.1	-	-
Slovenia		1.0	0	2.1	2.1	0	0	0	0			-	-
Spain	3.8			4.9	5.4	6.1	5.9		10.1	10.6	8.7	1 %	0.5
Sweden	0	0	0.8	0.8	1.4	0.3	0	0.8	0.4	0.4	0	-	-
Switzerland	2.5	0.5	1.0	2.3	0.9	1.4	1.9	0.4	0.9	1.9	1.0	-	-
Turkey													
Ukraine													
United Kingdom	0.1	1.6	0.9	0.9	1.3		0.8	1.0	1.2	0.4	0.9	-	-
Median trend line	1.74	1.76	1.78	1.80	1.82	1.84	1.86	1.89	1.91	1.93	1.95	23 %	

No data obtained

1. Incidence rate as the number of **infections** per 100 000 donor years.

3.18. HBV repeat donor incidence rate[1]

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania	6913												
Andorra													
Armenia	878		6984										
Austria		7.3		4.1		4.5	1.4	1.7	2.9	2.1		-	-
Azerbaijan	943	80.0		28.8									
Belgium	1.3	2.3	3.0	3.1	0.4	2.0	0.7	1.2	1.0	0.7	0.4	-10 %	-0.2
Bosnia/Herzegovina			24.2	45.6	0	0						-	-
Bulgaria		15.5	9.4	6.6	705	251	417	57.4				-	-
Croatia	24.4	20.1	23.9	9.2	15.6	43.5	10.0	13.0	7.8	5.4	1.0	-1 %	-2.1
Cyprus						12.5	18.8	18.2					
Czech Republic	15.1	11.0	12.9	15.9	9.6	2.4	3.8	1.6	2.5	2.5	3.8	-5 %	-1.4
Denmark	2.1		0.5	0.4	0	0	0	0		2.2	1.3	-	-
Estonia	4.9					28.0	16.1	16.1	0	5.5	6.9	-	-
Finland	0	0	0	0	0	0	0	1.4	0	1.5	0.6	5 %	0.0
France	0.9	0.8	0.9		0.4	0.4	0.4		0.4	0.5	0.5	-	-
FYR Macedonia								**1003**					
Georgia	1127	0		586									
Germany			3.4	1.5	2.2	1.7	1.5	1.4	0.6	0.8	0.8	-1 %	-0.2
Greece	175	53.9	113	114	93.5	99.9	94.5	85.5	76.9	74.0	64.6	-5 %	-6.6
Hungary	6.1	24.4		2.9	0.7	0.3	0.3	**88.3**	4.6	0.7	1.1	-	-
Iceland	14.0	0	0	0	0	12.5	0	0	0	0	0	-	-
Ireland	2.3			1.0	0	1.1	0	2.4	1.2	0	0	-	-
Italy		3.7	3.6	3.5			5.7	7.6	3.6	9.8	2.5	-	-
Latvia	0	6.0	64.6										
Liechtenstein													
Lithuania	0	525		65.1		17.2				27.9	16.8	-10 %	-17.5
Luxembourg	0	0	0	0	0	0	0	0	0		0	-	-
Malta						0	0	0	0	0	10.0	-	-
Moldova	0						0		0				
Montenegro					11.3	9.9	16.3	32.0	164	403	14.8	-	-
Netherlands	1.2	0.2	1.9	1.3	1.9	1.3	1.1	1.1	0.9	0	1.6	-	-
Norway		1.1	2.2	1.1	0	2.1	0	1.1	1.1	0	0	-10 %	-0.1
Poland	24.0	20.0	11.0	11.0	12.0	6.0	8.0	5.0	8.0	5.0	1.0	-1 %	-1.8
Portugal	6.4					3.8				33.3	28.3	-	-
Romania	141	161	170	160	493	30.9			0	2.6		-	-
Russian Federation													
San Marino													
Serbia										5.7			
Slovak Republic	5.4	7.0	5.3	1.6	5.5	10.0	5.5	12.1	8.1	1.2	3.2	-	-
Slovenia		3.0	1.0	1.1	2.1	3.1	0	0	0.9			-	-
Spain	4.6			5.0	6.7	4.5	3.3		4.4	3.6	2.8	-5 %	-0.2
Sweden	1.1	1.2	0.8	0.8	2.3	0.3	0.4	0.4	0	0.4	0.2	-5 %	-0.1
Switzerland	2.9	1.4	2.6	1.9	1.8	0.9	1.9	3.6	0.9	3.9	3.0	-	-
Turkey													
Ukraine													
United Kingdom	0.3	1.4	0.8	1.0	0.6		0.3	0.1	0.7	0.4	0.5	-	-
Median trend line	6.1	5.6	5.0	4.6	4.2	3.8	3.5	3.1	2.9	2.6	2.4	0.00 %	-9 % (rel)

No data obtained

1. Incidence rate as the number of **infections** per 100 000 donor years.

3.19. HCV repeat donor incidence rate[1]

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania	1367												
Andorra													
Armenia	1192		4439										
Austria		11.8		6.0		6.9	3.2	8.4	3.8	1.7		-	-
Azerbaijan	1231	167		48.0									
Belgium	3.9	1.4	1.3	1.5	1.6	1.2	2.1	2.0	0.3	0.7	0	-10 %	-0.2
Bosnia/Herzegovina			15.2	10.7	0	0						-	-
Bulgaria		4.6	3.4	3.3	90.9	59.0	128	7.8				-	-
Croatia	13.4	12.9	16.4	34.3	6.5	20.5	5.0	3.5	4.4	4.3	2.1	-5 %	-1.2
Cyprus						0	11.7	11.4					
Czech Republic	49.8	33.5	39.1	22.2	17.9	4.4	2.7	4.1	4.0	5.9	8.1	-5 %	-4.3
Denmark	0.8		0.5	0.4	1.3	0.5	0.4	0	0.4	0.9	0	-	-
Estonia	14.8					43.9	48.4	24.2	13.6	30.4	20.8	-	-
Finland	1.8	1.9	3.4	3.5	0	1.4	1.2	2.1	1.3	3.0	2.6	-	-
France	3.8	2.3	1.8		1.2	1.1	1.1		1.0	0.8	1.2	-1 %	-0.2
FYR Macedonia								**225**					
Georgia	**3629**	28.6		85.7									
Germany			3.6	3.3	3.5	2.4	2.1	2.2	2.2	2.1	1.5	-1 %	-0.3
Greece	36.3	12.9	32.2	41.8	31.4	15.4	14.8	26.0	16.3	18.8	55.7	-	-
Hungary	3.9	20.4		82.0	14.3	**0.7**	**0.7**	25.0	4.1	16.6	8.2	-	-
Iceland	0	12.7	0	0	0	0	0	0	0	14.0	25.6	-	-
Ireland	4.7			1.0	1.4	0	1.2	0	1.2	1.2	0	-	-
Italy		3.4	3.4	4.3			6.6	1.9	3.3	2.8	2.3	-	-
Latvia		21.1	435										
Liechtenstein													
Lithuania		720		293		121				148	151	-	-
Luxembourg	0	0	0	0	0	0	0	0	0		0	-	-
Malta						0	0	0	17.4	0	0	-	-
Moldova	0						0		0				
Montenegro					22.5				86.9		0		
Netherlands	0.2	0.6	0	0.6	0.2	1.3	0.3	0	0	0	0	-	-
Norway		2.3	1.1	0	0	2.1	0	1.1	0	0	0	-10 %	0.0
Poland	89.0	70.0	41.0	103.7	80.0	80.7	277.5	216	230	268	198	5 %	19.6
Portugal	0					10.2				22.2	10.8	-	-
Romania	44.7	47.3	19.6	128	156	11.9			3.5	2.6		-	-
Russian Federation													
San Marino													
Serbia										10.1			
Slovak Republic	0.9	26.0	8.0	4.1	8.8	11.0	5.5	12.1	7.1	7.1	6.4	-	-
Slovenia		0	0	0	0	2.1	0	0	0			-	-
Spain	15.2			3.8	4.1	2.9	3.8		3.4	2.8	2.2	-1 %	-0.3
Sweden	0.4	0.8	1.1	0	0.9	0.8	0.8	0	0.4	0.4	0.7	-	-
Switzerland	0.4	1.4	3.1	0.9	0.5	0.9	2.3	0	0.4	2.4	1.0	-	-
Turkey													
Ukraine													
United Kingdom	0.5	1.9	2.1	1.8	1.1		0.7	0.5	0.6	0.7	0.4	-10 %	-0.2
Median trend line	5.5	5.1	4.8	4.5	4.3	4.0	3.8	3.5	3.3	3.1	2.9	0.00 %	-6 % (rel)

No data obtained

1. Incidence rate as the number of **infections** per 100 000 donor years.

3.20. HIV first-time donor prevalence[1]

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania	53.6												
Andorra		0											
Armenia	26.1		459			0							
Austria		0		2.1		6.8	0	1.9	8.0	4.3		-	-
Azerbaijan	415	20.0		104									
Belgium	0	0	5.1	1.8	0	3.9	0	7.7	1.6	3.3	3.7	-	-
Bosnia/Herzegovina			0	0	0	0						-	-
Bulgaria	8.5	24.1	38.3	18.8	18.5	22.1	6.1			22.8	2.9	-	-
Croatia	4.4	0	10.9	6.4	0	0	0	6.9	0	0	11.6	-	-
Cyprus						9.4	17.1	22.1					
Czech Republic	49.8	33.5	39.1	22.2	17.9	4.4	3.8	2.0	6.5	9.1	8.1	-5 %	-4.3
Denmark	0		0	4.0		0		7.7		0	0	-	-
Estonia	112					97.0	43.3	32.5	99.2	57.7	53.3	-	-
Finland	0	5.0	5.3	0	0	5.5	0	4.4	0	0	0	-	-
France	6.8	6.1	5.8		5.1	1.2	4.2		2.6	5.0	4.4	-5 %	-0.3
FYR Macedonia			633					**528 820**					
Georgia	199	200	300	500				747				5 %	90.3
Germany	4.6	4.6	8.3	4.8	6.1	5.7	8.0	6.8	6.5	5.2	7.4	-	-
Greece	16.6	17.1	37.8	115	121	24.1	64.7	35.4	29.9	50.5	54.4	-	-
Hungary	3.6	3.0		1.5	1.5	0	9.1	10.9	3.6	3.9	5.3	-	-
Iceland	0	0	0	0	0	0	0	0	0	0	0	-	-
Ireland	0		3.9	5.7	7.6	4.2	7.6	6.9	14.7	0	0	-	-
Italy		12.2	13.0	16.1			21.8	19.1	15.8	12.9	15.2	-	-
Latvia	67.8	200	83.8	56.9	40.6	40.2	58.8	57.9	57.9	52.2	33.3	-5 %	-3.5
Liechtenstein													
Lithuania	9.3	163		13.2		4.6		41.4		35.5	47.8	-	-
Luxembourg	0	0	0	125	0	0	0	0	0		0	-	-
Malta				0			0	0	0	0	0	-	-
Moldova	64.3				59.8		113		178	147	97.3	-	-
Montenegro					21.5		23.8	16.8	28.8	61.2	21.3	-	-
Netherlands	0	0	2.8	0	3.3	3.1	11.0	7.0	0	0	2.8	-	-
Norway		7.8	0	0	0	0	8.2	0	7.1	0	0	-	-
Poland	14.2	10.2	7.7	8.0	10.1	6.5	7.5	7.6	13.9	9	14.8	-	-
Portugal	34.3					41.2							
Romania	56.8	16.5	22.2	27.1	17.7	19.3			28.1	39.5	42.0	-	-
Russian Federation													
San Marino													
Serbia										4.5	29.2		
Slovak Republic	5.4	4.2	3.8	0	0	0	8.8	6.0	0	2.8	2.5	-	-
Slovenia		17.3	0	0	0	0	9.7	0	0			-	-
Spain	19.4			28.7	16.7	19.5	14.1		22.3	25.8	26.2	-	-
Sweden	2.9	5.2	5.0	3.0	0	2.9	2.3	0	2.0			-5 %	-0.4
Switzerland	3.2	2.3	12.0	0	10.0	14.1	3.8	9.8	6.6	0	6.8	-	-
Turkey													
Ukraine													
United Kingdom	3.4	5.0	7.4	4.5	8.8		9.0	6.0	4.4	5.5	5.1	-	-
Median trend line	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	98 %	

No data obtained

1. Prevalence as the number of **infections** per 100 000 donors.

3.21. HBV first-time donor prevalence[1]

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania	7212												
Andorra		0											
Armenia	1749		565										
Austria		126		81		80	87	115	97	99		-	-
Azerbaijan	1851	2500		2204									
Belgium	142	155	144	128	57	85	87	77	81	83	77	-5 %	-8
Bosnia/Herzegovina			174	216	80	112						-	-
Bulgaria		10 129	9356	8737	5146	1833	5137	6149		3390	3224	-10 %	-767
Croatia	199	287	300	173	207	197	152	187	141	86	233	-10 %	-9
Cyprus						84	341	441					
Czech Republic	94	80	75	82	66	39	72	54	59	67	59	-5 %	-3
Denmark	52		48	36		32	32	38	57	29	16	-	-
Estonia	582					277	173	163	99	138	267	-	-
Finland	45	40	11	24	43	28	6	13	10	10	0	-5 %	-4
France	114	128	124		98	28	98		76	61	70	-5 %	-6
FYR Macedonia			2544					**528 820**					
Georgia	1057	23 100	30 300	21 000				31 919				-	-
Germany	155	155	160	157	144	149	133	137	125	116	116	-1 %	-5
Greece	1691	1939	2064	3104	3044	1957	1823	1388	1254	1197	1374	-	-
Hungary	994	505			2	7	7	339	46	2	9	-	-
Iceland	0	131	41	0	85	0	0	59	65	0	72	-	-
Ireland	8		8	11	19	13	31	27	29	26	39	1 %	3
Italy		263	265	470			241	288	240	196	168	-10 %	-11
Latvia	1568	1477	1127										
Liechtenstein													
Lithuania	3557	2148		1874		609		306		772	560	-5 %	-212
Luxembourg	80	264	264	250	111	0	197	0	0		0	-5 %	-18
Malta				139			0	170	179	456	174	-	-
Moldova	23 039						12 608		0				
Montenegro					861	739	595	521	101	245	149	-5 %	-122
Netherlands	40	53	63	68	87	66	55	56	55	43	34	-	-
Norway		39	7	20	25	27	33	36	14	42	28	-	-
Poland	700	680	670	680	692	659	581	592	570	542	555	-1 %	-16
Portugal	262					94							
Romania	3724	4442	3055	4389	4291	3666			1964	1843	3078	-	-
Russian Federation													
San Marino													
Serbia										79	818		
Slovak Republic	215	219	151	176	193	140	150	102	134	64	72	-1 %	-15
Slovenia		104	170	206	92	101	107	94	87			-	-
Spain	196			183	143	156	138		171	180	168	-	-
Sweden	59	47	50	36	60	50	30	25	43			-	-
Switzerland	108	83	172	158	145	164	107	127	128	137	146	-	-
Turkey													
Ukraine													
United Kingdom	24	26	32	34	36		29	35	36	40	38	1 %	1
Median trend line	163	157	151	146	140	135	130	125	121	116	112	0.00 %	-4 % (rel)

No data obtained

1. Prevalence as the number of **infections** per 100 000 donors.

3.22. HCV first-time donor prevalence[1]

Country	Year											Trend	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	*p*-value	Slope
Albania	509												
Andorra		0											
Armenia	2924		1872										
Austria		121		54		51	54	64	34		39	-	-
Azerbaijan	2947	2700		4259									
Belgium	70	93	74	50	61	33	42	42	38	39	47	-5 %	-4
Bosnia/Herzegovina			62	88	20	31						-	-
Bulgaria		1559	1377	2060	849	433	458	518		342	880	-	-
Croatia	97	168	109	45	57	98	109	55	56	140	68	-	-
Cyprus						19	171	221					
Czech Republic	283	247	228	215	132	127	99	127	205	216	143	-10 %	-11
Denmark	44		44	32		26	23	12	19	16	4	-1 %	-4
Estonia	1880					665	812	705	575	959	704	-	-
Finland	53	65	58	30	37	39	61	62		25	10	-	-
France	84	79	82		60	16	46		24	34	28	-5 %	-6
FYR Macedonia			1 725					**528 820**	43				
Georgia	2683	74 200	56 100	9000				57 895				-	-
Germany	93	93	99	85	81	75	69	72	77	62	69	-1 %	-3
Greece	329	325	591	868	636	318	299	398	251	1 202	293	-	-
Hungary	882	464			275	299	236	315	199	159	223	-5 %	-34
Iceland	114	131	0	43	169	0	59	0	0	0	0	-10 %	-9
Ireland	10		8	28	15	8	31	21	7	8	20	-	-
Italy		196	197	296			174	138	113	94	110	-5 %	-13
Latvia	4561	4180	2170										
Liechtenstein													
Lithuania	5261	3169		2039		978		567		1537	1939	-5 %	-332
Luxembourg	159	0	0	125	55	0	0	0	86	221		-	-
Malta				35			0	0	0	43	0	-	-
Moldova	15 395						5514		0				
Montenegro					689	585			86	170		-	-
Netherlands	9	36	26	35	33	16	11	14	26	20	16	-	-
Norway		70	65	34	62	33	25	93	35	33	47	-	-
Poland	900	890	690	725	727	677	849	832	830	901	1001	-	-
Portugal	209					165							
Romania	1858	1191	874	1279	3282	881			659	590	620	-5 %	-76
Russian Federation													
San Marino													
Serbia										614	65		
Slovak Republic	217	67	57	110	60	50	59	60	81	25	44	-10 %	-5
Slovenia		43	89	11	18	34	97	38	16			-	-
Spain	198			151	133	138	111		126	99	109	-1 %	-9
Sweden	120	109	83	67	97	58	69	43	59			-5 %	-8
Switzerland	70	32	120	64	85	61	73	78	69	51	57	-	-
Turkey													
Ukraine													
United Kingdom	49	36	35	35	42		29	30	30	37	33	-	-
Median trend line	115	109	102	97	91	86	81	76	72	68	64	0.00 %	-6 % (rel)

No data obtained

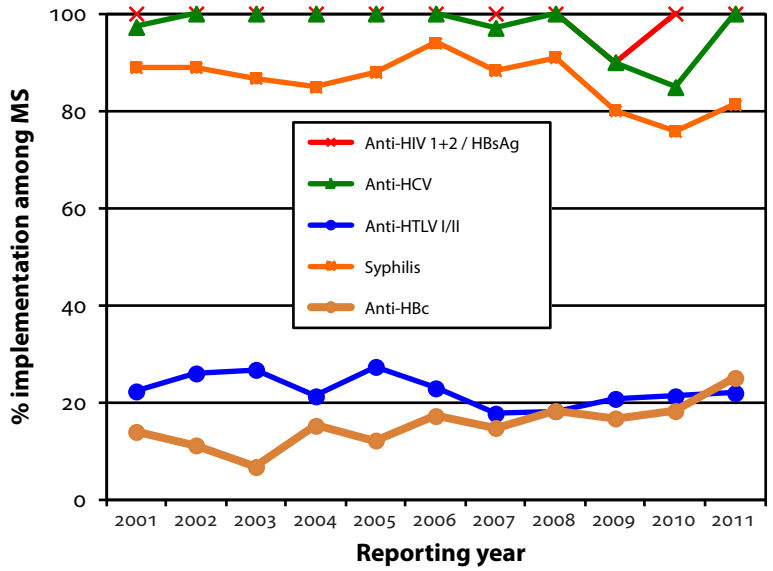
1. Prevalence as the number of **infections** per 100 000 donors.

3.23. Screening for infectious agents

In this section, the aggregated results of the level of implementation of various screening tests among MSs are presented and analysed.

3.23.1. Serological testing

The graph and table below show the proportion of MSs per reporting year which test all blood donations with the blood screening tests as indicated. For most tests the proportion remains stable, however for anti-HBc a statistically significant positive trend of 1.1 absolute percentage points per year is observed (p=0.4 %).

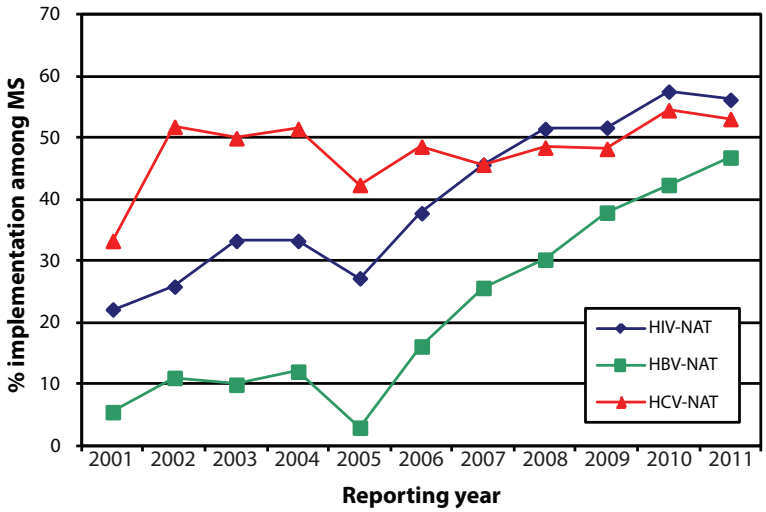


Reporting year	Test*				
	Anti-HIV 1+2/ HBsAg	Anti-HCV	Anti-HTLV I/II	Syphilis	Anti-HBc
2001	100	97	22	89	14
2002	100	100	26	89	11
2003	100	100	27	87	7
2004	100	100	21	85	15
2005	100	100	27	88	12
2006	100	100	23	94	17
2007	100	97	18	88	15
2008	100	100	18	91	18
2009	90	90	21	80	17
2010	100	85	21	76	18
2011	100	100	22	81	25

* Data refer to the proportion of reporting MSs that have implemented screening of all donations with the test indicated.

3.23.2. NAT testing

The graph and table below show the application of minipool-nucleic acid amplification techniques (NAT) testing on blood donations. For each year the proportion of reporting MSs that have implemented screening of all blood donations with respective NAT tests is shown, excluding NAT screening by establishments for plasma fractionation.



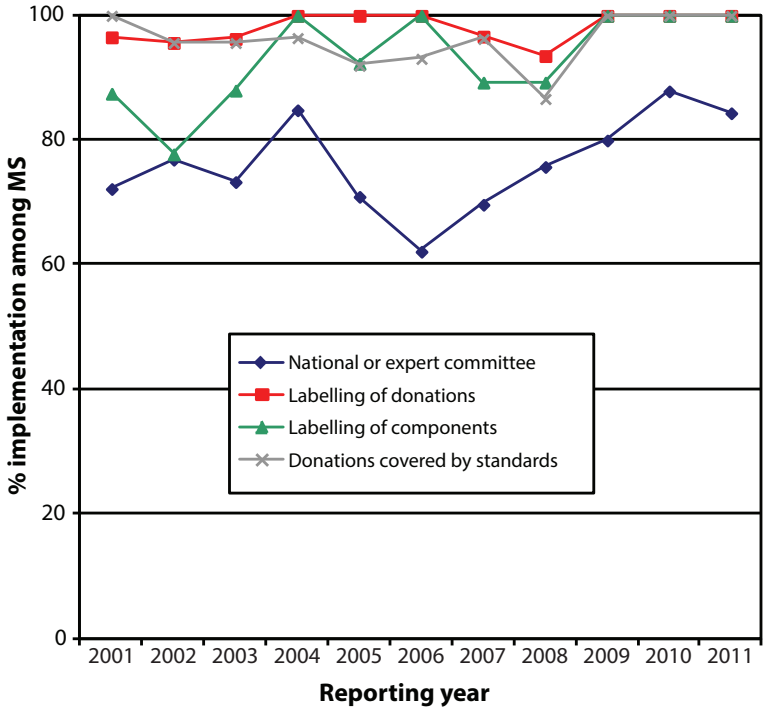
Statistically significant trends are found for HIV-NAT (a median increase of 3.8 absolute percentage points per year, p=0.02 %) and for HBV-NAT (a median increase of 4.5 absolute percentage points per year, p=0.06 %).

Reporting year	Test*		
	HIV-NAT	HBV-NAT	HCV-NAT
2001	22	6	33
2002	26	11	52
2003	33	10	50
2004	33	12	52
2005	27	3	42
2006	38	16	49
2007	46	26	46
2008	52	30	48
2009	52	38	48
2010	58	42	55
2011	56	47	53

* Data refer to the proportion of reporting MSs that have implemented screening of all donations with the test indicated.

3.24. Quality assurance and labelling

In this section, the level of implementation of Quality Assurance (QA) procedures, review programmes and labelling procedures is presented. The proportion of MSs each year that have implemented various programmes is shown.



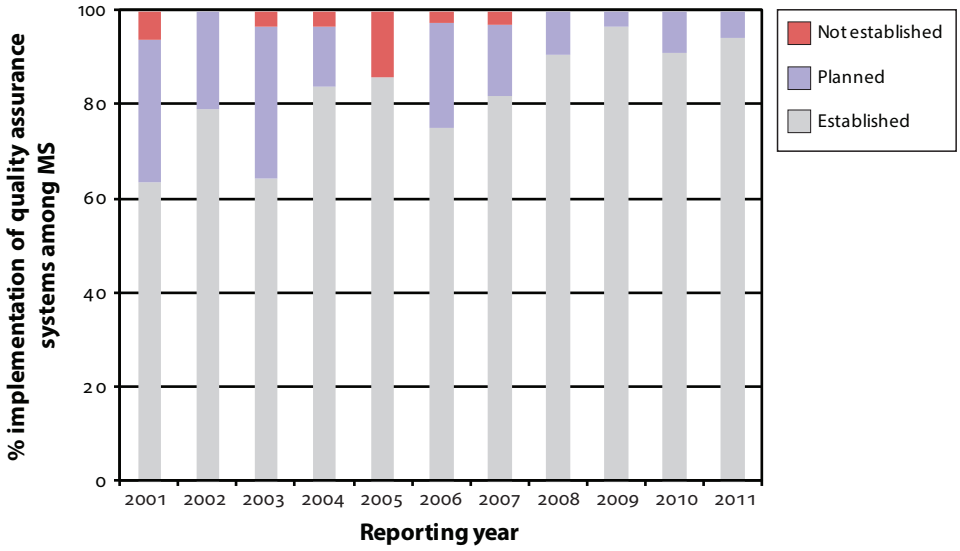
There is no indication of a consistent trend in the proportion of countries with a national or expert committee. Also no significant change is observed in the proportion of countries that label at least 50 % of donations or have at least 50 % of the donations covered by standards. There is however a statistically significant increase in the proportion of countries that labelled 50 % or more of all components (a median increase of 1.4 absolute percentage points per year, p=3 %).

Reporting year	Level of implementation*			
	National or expert committee	ID and labelling of donation number	ID and labelling of component code	Donations covered by standards†
2001	72	97	88	100
2002	77	96	78	96
2003	73	96	88	96
2004	85	100	100	96
2005	71	100	92	92
2006	62	100	100	93
2007	70	97	89	96
2008	76	94	89	87
2009	80	100	100	100
2010	88	100	100	100
2011	84	100	100	100

* Data refer to the proportion of reporting MSs that have implemented the procedures indicated.

† Standards refer to GMP, ISO or other.

The figure and table below show the level of implementation of quality management systems (QS) among reporting MSs each year. There has been a consistent increase in the proportion of MSs with an established QS over the reporting period (median increase of 2.7 absolute percentage points per year, p=0.5 %). The proportion of MSs with no established QS or a planned QS on the other hand both decreased (p=4 % and p=4 % respectively).



Reporting year	Level of implementation*		
	Not established	Planned	Established
2001	6	30	64
2002	0	21	79
2003	4	32	64
2004	3	13	84
2005	14	0	86
2006	3	22	75
2007	3	15	82
2008	0	9	91
2009	0	4	96
2010	0	9	91
2011	0	6	94

* Data refer to the proportion of reporting MSs that have reported the indicated level of implementation of a maintained QS.

4. DISCUSSION, CONCLUSIONS AND FUTURE PLANS

The work presented here is intended to provide information on trends in the collection, testing and use of blood and blood components in Europe. The basis for the analysis is formed by data provided annually by MSs over the reporting period 2001-2011. Analysis of the data obtained from consecutive years makes it possible to identify trends in the blood supply in Europe. Not only does it allow quantification of changes in the blood supply on a European level, but it also permits comparison of trends among MSs. Integration and reporting of data collected over a number of years might lead to new insights. It also provides additional means of data quality control.

On basis of the data provided in the reporting years 2001-2011, the following observations can be made:

- The proportion of annually reporting countries seems to fluctuate around an average of 72 %. However, there is a fairly constant base of reporting countries, which is a requirement for obtaining robust statistical estimates. Also, over the eleven observation years, 85 % of MSs have provided data for four or more years.
- There is a quite stable blood supply, as no overall trends are observed in the number of donors per inhabitant and the proportion of first-time donors. The number of **WB** donations per 1,000 inhabitants did show a small statistically significant overall increase of 0.08 per year. In contrast, some countries show a statistically significant decrease (a p-value less than 5 %) in the proportion of **WB** donations, namely Denmark, Finland, Iceland, Ireland, Luxembourg, the Netherlands, Switzerland and the UK. There is no European trend in the use of RBC units per inhabitant. However Germany and Poland show an increase of one unit or more, whereas Denmark, Iceland and the UK show a decrease of at least one RBC unit per 1,000 inhabitants.
- The downward trend in the percentage of WB of the total number of transfused RBCs reported in the 2001-2008 trend report is confirmed and strengthened by the additional three years of observation. The estimated overall reduction in WB use is 20 % per year (p<0.001 %).
- A similar pattern is observed for the proportion of autologous blood transfusions. Several countries which reported approximately 5 % autologous blood transfusions in 2001 (France, Germany, Italy, Luxembourg, Switzerland) have systematically and substantially reduced this number over the reporting period. The estimated overall reduction in autologous blood use is 18 % per year (p<0.001 %).
- There is a small but very clear overall increase in platelet use of 0.14 units per year (p<0.001 %). There is no change in the percentage of platelets obtained by apheresis (p=28 %).
- There is no overall trend in **FFP** units used per inhabitant, nor is there an overall trend in the ratio of FFP and RBC usage, in the amount of plasmapheresis plasma obtained per inhabitant or in the amount of plasma obtained for fractionation per inhabitant. Nevertheless, clear

upward and downward trends are present in individual MSs. Countries that use more FFP for transfusion per 1,000 inhabitants include: Finland, France, Hungary, Moldova, Norway and Romania. Countries that use less FFP are: Belgium, Croatia, Germany, the Netherlands, Sweden, Switzerland and the UK.

- There is a statistically highly significant overall increase in both the percentage of irradiation of RBCs (a median increase of 0.3 percentage points per year, $p<0.001$ %) and the percentage of leucocyte-depleted RBCs (a median increase of 0.00 percentage points per year, $p<0.001$ %). Note that the latter median increase is zero as a result of the fact that many countries which implement leucocyte-depletion do so for 100 % of their RBCs. As a result, over most of the time intervals considered there will be no change in the percentage of leucocyte depletion.
- Among repeat donors, there are significant negative trends in HBV and HCV incidence rates (decreasing by 9 % and 6 % per year respectively, $p<0.003$ %). Similar negative trends are found for first-time donors (with prevalences decreasing by 4 % and 6 % per year for HBV and HCV respectively, $p<0.001$ %). Both the HIV prevalence and incidence rate showed no statistically significant trends considering the 11-year time period as a whole.
- Downward trends for both HBV and HCV incidence rates are observed in Belgium, Croatia, the Czech Republic, Germany, Norway and Spain. A downward trend for at least two of the HIV, HBV and HCV prevalences are seen in Belgium, the Czech Republic, France, Germany, Italy, Lithuania, the Slovak Republic and Sweden, with all three decreasing in France and the Czech Republic.
- There are no changes in the proportion of MSs which test all donations with the following serological tests: Anti-HIV 1+2 / HBsAg, Anti-HCV, Anti-HTLV and Syphilis. Only anti-HBc testing increases by 1.1 absolute percentage points per year ($p=0.4$ %). A substantial increase is observed, however, in the implementation of HIV- and HBV-NAT for testing (respectively 3.8 and 4.5 absolute percentage points per year) of all donations, leading to 56 % (HIV-NAT), 47 % (HBV-NAT) and 53 % (HCV-NAT) of MSs testing all donations in 2011.
- There is no indication of a consistent trend in the proportion of countries with a national or expert committee. Also no significant change is observed in the proportion of countries that have implemented labelling of at least 50 % of donations or have at least 50 % of donations covered by standards. The proportion of MSs which label component codes significantly increases over the years, up to 100 % since 2009 ($p=3$ %).
- There is an overall increase of 2.7 percentage points per year in the proportion of MSs which have established a quality assurance system. Since 2008 all reporting MSs have either had an established QS or planned to establish one.

The use of data over a time-span of eleven years allows a more robust assessment of trends in this report than in the previous trend report (data from 2001 to 2008). Despite the fact that some of the trends previously identified for individual MSs have now changed, most of the overall trends (or the lack thereof) that were observed in the previous report have been sustained and confirmed by the additional data collected. Nevertheless, the following changes in overall trends in comparison to the previous report were found:

- In contrast to the results for 2001-2008, the data including the years 2008-2011 showed a statistically significant positive trend in the number of donations, with an estimated increase of 0.08 units per 1000 inhabitants per year.
- The small increase in platelet use from 2001-2008 is no longer present for the whole period 2001-2011. Also the previously reported small increase in the proportion of apheresis platelets is no longer apparent.

- The previously statistically significant increase in the overall HIV incidence rate is no longer present when data from the years 2009 to 2011 are included.

Limitations and future plans

Some observations obtained from the annual surveys are likely to be erroneous. However, the data utilised have been previously reported and, as such, have been approved. When these data are viewed in a historical perspective, the errors become apparent. A constant, consistent and annually repeated baseline of reporting MSs is a prerequisite for producing robust statistical estimates.

Since 2009 (reporting year 2007), the data have been collected using a web-based system. This has resulted in a more uniform dataflow and associated improvement of the data quality and reduction of processing time. It has been decided to pursue annual data collection and to produce an update of the trend analysis report every three years.

REFERENCES

- Council Recommendation 98/463/EC on the suitability of blood and plasma donors and the screening of donated blood in the European Community; Council of the European Union, June 1998.
- Directive 2002/98/EC of the European Parliament and of the Council of 27 January 2003, setting standards of quality and safety for the collection, testing, processing, storage and distribution of human blood and blood components and amending Directive 2001/83/EC; The European Parliament and the Council of the European Union, January 2003.
- Guide to the preparation, use and quality assurance of blood components, 17th edition, ISBN 978-92-871-7637-0; Council of Europe Publishing, 2013.
- Guideline on epidemiological data on blood transmissible infections for inclusion in the guideline on the scientific data requirements for a plasma master file, EMEA/CPMP/BWP/3794/03; Committee for medicinal products for human use, January 2005.
- Helsel D.R., Frans L.M.; Regional Kendall test for trend; Environmental Science & Technology 40 (13), 4066-4073, 2006.
- Hirsch R.M., Alexander R.B., Smith R.A.; Selection of methods for the detection and estimation of trends in water quality; Water Resources Research 27, 803-813, 1991.
- Mann H.B.; Nonparametric tests against trend; Econometrica 13, 245-259, 1945.
- Önöz B., Bayazit M.; Power of statistical tests for trend detection; Turkish J. Eng. Env. Sci. 27, 247-251, 2003.
- Questionnaire on the collection, testing and use of blood and blood products in Europe; Council of Europe Publishing, SP-HM (2002) 12, 22 May 2002.
- Rejman A.; The collection and use of human blood and plasma in the non-European Union Council of Europe member states in 1997; Council of Europe Publishing, Strasbourg, 2000.
- Sen P.K.; Estimates of the regression coefficient based on Kendall's tau; Journal of the American Statistical Association, 63, 1379-1389, 1968.
- The Collection, Testing and Use of Blood and Blood Components in Europe – 2011 Report; European Directorate for the Quality of Medicines & HealthCare (EDQM) of the Council of Europe, Strasbourg, CD-P-TS, 2014. http://www.edqm.eu/en/blood-transfusion-reports-70.html.
- Trends and Observations on the Collection, Testing and Use of Blood and Blood Components in Europe - 2001-2005 Report; European Directorate for the Quality of Medicines & HealthCare (EDQM) of the Council of Europe, Strasbourg, CD-P-TS, 2007. http://www.edqm.eu/en/blood-transfusion-reports-70.html.
- Trends and Observations on the Collection, Testing and Use of Blood and Blood Components in Europe – 2001-2008 Report; European Directorate for the Quality of Medicines & HealthCare (EDQM) of the Council of Europe, Strasbourg, CD-P-TS, 2011. http://www.edqm.eu/en/blood-transfusion-reports-70.html.

ENG

www.edqm.eu

The Council of Europe is the continent's leading human rights organisation. It comprises 47 member states, 28 of which are members of the European Union. The European Directorate for the Quality of Medicines & HealthCare (EDQM) is a directorate of the Council of Europe. Its mission is to contribute to the basic human right of access to good quality medicines and healthcare and to promote and protect public health.

edqm
European Directorate for the Quality of Medicines & HealthCare | Direction européenne de la qualité du médicament & soins de santé

COUNCIL OF EUROPE
CONSEIL DE L'EUROPE