

Assisted reproductive technology in Europe, 2010: results generated from European registers by ESHRE[†]

M.S. Kupka*, A.P. Ferraretti, J. de Mouzon, K. Erb, T. D’Hooghe, J.A. Castilla, C. Calhaz-Jorge, C. De Geyter, V. Goossens, and The European IVF-monitoring (EIM)[‡] Consortium, for the European Society of Human Reproduction and Embryology (ESHRE)

ESHRE Central Office, Meerstraat 60, Grimbergen B-1852, Belgium

*Correspondence address. Fertility Center Gynaecologikum, Altonaer Str. 59, D-20357 Hamburg, Germany. Tel: +49 (0) 40 30 68 36 0; E-mail: mail@prof-kupka.de

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STUDY QUESTION: The 14th European IVF—monitoring (EIM) report presents the results of medically assisted reproduction treatments including assisted reproductive technology (ART) cycles and intrauterine insemination (IUI) cycles initiated in Europe during 2010: are there changes in the trends compared with previous years?

SUMMARY ANSWER: Despite some fluctuations in the number of countries reporting, the overall number of ART cycles has continued to increase year by year, and while pregnancy rates in 2010 remained similar to those reported in 2009, the number of transfers with multiple embryos (three or more) further declined.

WHAT IS KNOWN ALREADY: Since 1997, ART data in Europe have been collected and reported in 13 manuscripts, published in *Human Reproduction*.

STUDY DESIGN, SIZE, DURATION: Retrospective collection of European ART data by the EIM Consortium for ESHRE; data were collected from cycles started between 1st January and 31st December 2010 by the National Registries of individual European countries, or on a voluntary basis by personal information for European countries without a national registry.

PARTICIPANTS/MATERIALS SETTING, METHODS: Out of 31 countries, 991 clinics reported 550 296 ART treatment cycles: IVF (125 994), ICSI (272 771), frozen embryo replacement (FER, 114 593), egg donation (ED, 25 187), *in vitro* maturation (493), preimplantation genetic diagnosis/preimplantation genetic screening (6399) and frozen oocyte replacements (4859). European data on IUI using husband/partner’s semen (IUI-H) or donor semen (IUI-D) were reported from 22 and 19 countries, respectively. A total of 176 512 IUI-H (+8.4% compared with 2009) and 38 124 IUI-D (+30.4% compared with 2009) cycles were included.

MAIN RESULTS AND THE ROLE OF CHANCE: In 16 countries where all clinics reported to the national ART registry, a total of 267 120 ART cycles were performed in a population of 219 million inhabitants, corresponding to 1221 cycles per million inhabitants. For IVF, the clinical pregnancy rates per aspiration and per transfer increased to 29.2 and 33.2%, respectively, and for ICSI, the corresponding rates also increased to 28.8 and 32.0%, when compared with the rates of 2009. In FER cycles, the pregnancy rate per thawing was 20.3%; in ED cycles the pregnancy rate per fresh transfer was 47.4% and per thawed transfer 33.3%. The delivery rate after IUI-H was 8.9 and 13.8% after IUI-D. In IVF and ICSI cycles, one, two, three and four or more embryos were transferred in 25.7, 56.7, 16.1 and 1.5%, respectively. The proportions of singleton, twin and triplet deliveries after IVF and ICSI (combined) were 79.4, 19.6 and 1.0%, respectively, resulting in a total multiple delivery rate of 20.6% compared with 20.2% in 2009, 21.7% in 2008, 22.3% in 2007, 20.8% in 2006. In FER cycles, the multiple delivery rate was 12.8% (12.5% twins and 0.3% triplets). Twin and triplet delivery rates associated with IUI cycles were 9.6/0.5 and 8.5/0.2%, following treatment with husband and donor semen, respectively.

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[‡]EIM Committee 2013–2015: chairman: M.S.K.; chairman elect: T.D.H.; past chairman: A.P.F. members: J.d.M., K.E., J.A.C., C.C.-J. and C.D. V.G. is a science manager at ESHRE Central Office, Brussels. See also Appendix for contributing centres and contact persons representing the data collection programmes in the participating European countries.

LIMITATIONS, REASONS FOR CAUTION: The method of reporting is not standardized in Europe but varies among countries. Furthermore registries from a number of countries have been unable to provide some of the relevant data such as initiated cycles and deliveries. Therefore, results should be interpreted with caution.

WIDER IMPLICATIONS OF THE FINDINGS: The 14th ESHRE report on ART and IUI treatments shows a continuing expansion of the number of ART treatment cycles in Europe, with more than half a million of cycles reported in 2010. The use of ICSI may have reached a plateau. When compared with 2009/2008, pregnancy and (multiple) delivery rates after IVF and ICSI remained relatively stable. The number of multiple embryo transfers (three or more embryos) has shown a decline.

STUDY FUNDING/COMPETING INTERESTS: The study has no external funding; all costs are covered by ESHRE. There are no competing interests.

Key words: Europe / IVF / ICSI / intrauterine insemination / registry

Introduction

This report is the 14th annual publication by the European IVF Monitoring (EIM) Consortium on behalf of the European Society of Human Reproduction and Embryology (ESHRE) with respect to European data on treatments with assisted reproductive technology (ART) and intrauterine insemination (IUI). The 13 previous reports, also published in *Human Reproduction* (ESHRE, 2001a, b, 2002, 2004–2008; Nyboe Andersen et al., 2009; de Mouzon et al., 2010, 2012; Ferraretti et al., 2012, 2013) (<http://www.eshre.eu/Data-collection-and-trials/Consortia/EIM/Publications.aspx>), covered treatment cycles from 1997 to 2009. As in the last reports, the printed version contains the four most significant tables. Additionally, a total of 19 supplementary tables are available online, making the whole report consistent with publications from previous years. In the Results section, these tables are referred to as *Supplementary data, Tables SI–SXIX*. The main results of this report were presented at the annual ESHRE congress in London, July 2013, and for the first time three figures are included.

Materials and Methods

Data on ART were collected from 31 European countries, covering IVF, ICSI, frozen embryo replacement (FER), egg donation (ED), *in vitro* maturation (IVM), pooled data on preimplantation genetic diagnosis (PGD) and preimplantation genetic screening (PGS) as well as frozen oocyte replacements (FOR). In addition to ART, data on IUI using husband/partner's semen (IUI-H) and donor semen (IUI-D) were also included.

The report includes treatments started between 1 January 2010 and 31 December 2010. Data on pregnancy outcomes are derived from follow-up of the cohort treated during this time period (calendar year 2010).

The method of reporting data in 2010 was similar to that used in the previous years, making almost all tables comparable. One extra table with an overview of all countries has been added in the current report (*Supplementary data, Table SI*). Although some titles of the tables were changed, their content remained similar to that of previous years.

After revision of the data collection forms, a few additional pieces of information were collected regarding registry characteristics (validation process, public access to individual clinical data and financial support) and regarding the number of fresh IVF cycles performed with semen donation or surgically obtained partner's semen.

In addition, ED cycles were divided into fresh and frozen replacements and data on embryo donation were also collected.

To clarify what kind of information was needed, extra footnotes were added. The main focus of the EIM reports is to cover the huge variety of treatments in Europe with all the different regulations and laws behind them.

The questionnaire was sent out to the co-ordinator of each participating country in April 2012. Data were directly entered in an online ESHRE computer system by each country co-ordinator. Data analysis was performed in ESHRE's central office by V. Goossens.

A software tool for an automated analysis including trend analysis and consistency controls is under construction. This will also make the recording and analysis of the data less time consuming.

After the first tables had been created each participating country had the opportunity to correct the data in March 2014.

As is evident from the tables, the only complete data reported from all countries were on the number of aspirations and the number of centres.

Three countries were able to provide data for the 2009 report but failed to do so for the 2010 data collection. Four countries did not provide any data for two consecutive years (2009 and 2010). No 'new' country provided data.

The number of pregnancies and the number of transfers were reported by all but one country (Czech Republic). Registries from six countries did not provide data on initiated cycles and registries from five countries did not provide data on deliveries; in addition, several countries showed a high percentage of pregnancies that are lost to follow-up.

Therefore, complete outcome data were only available on the pregnancy rate per aspiration, while some of the more reliable indicators of treatment success (clinical pregnancies and deliveries per initiated cycle) cannot be reported correctly and comparing countries should be done with some caution.

Total values (in terms of numbers and percentages) presented in the tables refer to those countries where all data have been reported, as underlined in the footnotes.

Definitions refer to the glossary of ART terminology published jointly by the International Committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (Zegers-Hochschild et al., 2009).

Results

Participation

The present report includes data from 31 of 47 European countries (*Supplementary data, Table SI*).

In contrast to the 2009 report, three countries were not able to send data: Croatia, Cyprus and Latvia (contributing in 2009 with 3029 cycles all together). Turkey (one of the main contributors in 2008 with 107 clinics and 43 928 cycles), Bosnia, Estonia and Albania reported in 2008 but for 2 years these countries have not contributed to the ESHRE EIM report.

The proportion of clinics reporting data was 82.5% of all clinics practicing ART (85.2% in 2009) (Table I). In 16 countries (21 in 2009), the

Table 1 Treatment frequencies after ART (assisted reproductive technology) in European countries in 2010.

	IVF clinics in the country													Cycles/million ^a
	IVF clinics	Reporting IVF clinics	IUI labs	Reporting IUI labs	IVF	ICSI	FER	PGD	ED	IVM	FOR	All	Women 15-45 years	
Austria	29	29			1014	4768	620					6402	3939	779
Belgium	18	18	34	27	4526	13 131	8815	637	1412			28 521	14 494	2736
Bulgaria	21	7			680	3993	272	9	76			5030		
Czech Republic	32	32			12 864	4303	488					20 020	9380	1962
Denmark	20	20	66	65	6635	5599	3371	124	225			15 954	17 669	2893
Finland	18	18	24	24	2632	2229	3280	13	763	2	393	9312	9719	1772
France	107	104	101	94	21 783	34 709	21 376	473	979	107		79 427		
Germany	124	114		47	9545	35 150	17 876					62 571	4152	766
Greece	50	9			823	1931	451	36	446		6	3693		
Hungary	12	12			1217	3874	413	14	44			5562	2710	557
Iceland	1	1	1	1	279	223	205	0	117			824	12 656	2667
Ireland	7	6	8	6	1856	1320	882		20			4078		
Italy	202	202	357	357	8797	43 864	3758				2441	58 860	4944	969
Kazakhstan	10	3			1282	348	289	58	298		1	2276		
Lithuania	4	1	6	1	59	53	19					131		
Macedonia	4	4	4	4	323	1086	49		29	10		1497	3288	722
Moldova	2	1	3	1	284	340	0	0	0			624		
Montenegro	3	3	3	3	29	417	6					452	3183	678
Norway	11	11	7	7	3118	3439	2443			7		9007	9810	1926
Poland	38	29		27	347	8621	3733	256	248	80	40	13 325		
Portugal	25	25	27	27	1736	4139	921	89	282	6	6	7179	3331	669
Romania	13	10	13	10	566	357	208		20			1151		
Russia	116	72		64	14 239	13 071	3760	492	2147	223	94	34 026		
Serbia	14	10	14	4	419	1065						1484		
Slovenia	3	3	2	2	1233	2371	760	36	16	1	2	4419	10 977	2206
Spain	160	103	221	122	3456	29 047	8760	2743	12 928	2	1799	58 735		
Sweden	16	16			5754	5838	5520	159	357			17 628	11 990	1943
Switzerland	26	25			799	4683	4058					9540		
The Netherlands	13	13		18	8750	8148	6729					23 627	7376	1426
Ukraine	31	18		18	2382	2882	1240	57	524			7085		
The UK	72	72	102	102	21 431	23 211	10 476	715	1891	55	77	57 856	4693	928
All	1202	991	993	1013	125 994	272 771	114 593	6399	25 187	493	4859	550 296	6258	1221

Treatment cycles in IVF and ICSI refer to initiated cycles. For Austria, Belgium, France, Germany and Iceland treatment cycles refer to aspirations. For Belgium, the Czech Republic and Germany the total number of initiated cycles was only available for IVF and ICSI together, being 20 572, 12 864 and 55 687, respectively. For Austria in 379 cycles it is not known whether IVF or ICSI was performed, these cycles were included in ICSI. For the Czech Republic, no distinction between IVF and ICSI is made. All cycles are counted as ICSI. For Belgium there are 824 extra aspiration cycles for which it is not known whether IVF or ICSI was performed. Treatment cycles in FER refer to thawings. For Finland, Hungary and the Netherlands treatment cycles refer to transfers. Treatment cycles in PGD contain both fresh and frozen cycles and refer to initiated cycles in the fresh cycles and aspirations in the frozen cycles. Treatment cycles in ED refer to donation cycles and contain fresh and frozen cycles. ED fresh; for France and Iceland treatment cycles refer to aspirations. ED frozen; for France, Iceland, Kazakhstan, Spain, Sweden and the UK treatment cycles refer to aspirations. Treatment cycles in IVM refer to aspirations. Treatment cycles in FOR refer to thawings; for Finland it refers to transfers. Women of reproductive age and population were found at the following link: <http://www.census.gov/population/international/data/idb/region.php>. IVF, in vitro fertilization; IUI, intrauterine insemination; ICSI, intracytoplasmic sperm injection; FER, frozen embryo replacement; ED, egg donation; IVM, in vitro maturation; PGD, preimplantation genetic diagnosis; FOR, frozen oocyte replacements (FOR).

coverage reached 100% (Table I, [Supplementary data, Table SIV](#)). Switzerland, Moldova and Ireland were each able to report data from all centres but one.

In France and Germany >90% of the centers participated in this report. In Germany this is the result of a fundamental change in the structure of the data-collection and data-analysis in 2012 and 2013. In France three clinics sent data too late to be included in the national report.

Participation was very low in Greece (18%), and limited in Lithuania (25%), Kazakhstan (30%) and in Bulgaria (33%). Among the countries with the largest populations in Europe, the proportion of participating centers was 100% in Italy and UK, 97% in France, 92% in Germany, 64% in Spain (66% in 2009) and 62% in Russia (72% in 2009).

Comparing the numbers of countries which provided data in 2009 and 2010 the number of registered IVF + ICSI cycles increased from 383 439 to 385 901 (0.6%).

The total number of registered cycles (IVF + ICSI + FER) increased from 482 590 to 496 191 (2.8%).

Reporting methods and size of the clinics

Among the 16 countries with complete registration and reporting to EIM ([Supplementary data, Tables SIII and IV](#)), national registration was compulsory for 14 countries (11 held by a National Health Authority and 3 by a Medical Organization) and voluntary for 2 countries (1 held by a Medical Organization and 1 by a National Health Authority).

Seven registers were based on individual forms, i.e. cycle-by-cycle data.

In the 15 countries with partial registration and reporting to EIM, 13 registers were voluntary and 2 compulsory. Two were held by a National Health Authority, 11 by a Medical Organization and 2 by personal initiative; only 3 countries collect cycle-by-cycle data.

Thirteen countries (Austria, Belgium, Finland, France, Germany, Hungary, Italy, Poland, Serbia, Spain, Sweden, Switzerland and the UK)

reported some kind of data validation process. Public access to individual clinic data was available only in six countries: Hungary, Ireland, Macedonia, Romania, Spain and the UK. Public (\pm industry or professional society) financial support was present in 19 countries, while in 12 countries (Bulgaria, Germany, Iceland, Ireland, Lithuania, Montenegro, Poland, Portugal, Serbia, Slovenia, Switzerland and the UK) all the expenses were covered by the centers themselves.

The distribution of clinics according to the number of cycles varied considerably among the countries ([Supplementary data, Table SII](#)). For instance, small clinics, providing < 100 cycles annually, accounted for 5 out of 10 reporting centers in Romania (50%), 10 of 29 in Poland (35%) and 68 of 202 in Italy (34%). Large clinics performing > 1000 cycles a year constituted 12 of 18 (67%) in Belgium, 2 of 3 (67%) in Slovenia and 7 of 13 (54%) in the Netherlands.

Number of treatment cycles per technique and availability

In total, 550 296 cycles were reported (Table I), 12 833 more than in 2009 (+2.4%).

The 398 765 fresh cycles reported in 2010 included 125 994 (32%) IVF cycles and 272 771 ICSI (68%) cycles. For ~10 years an increase in the proportion of ICSI to IVF was described. Since 2008 a plateau seems to be established (Fig. 1).

Among the fresh aspirations, 19 countries reported 10 773 of 218 276 cycles performed with donor semen (4.9%) and 20 countries reported 14 200 of 239 879 cycles performed with surgically obtained partner's semen (5.9%).

FER was performed in all countries but Moldova and Serbia, with a total of 114 593 cycles reported (+10 440 compared with 2009). Overall, the proportion of FER cycles to 'fresh' cycles was 28.0% (26% in 2009), but in some countries the proportion was much higher: 43% in Switzerland, 32% in Sweden, 29% in Poland and 40% in Finland.

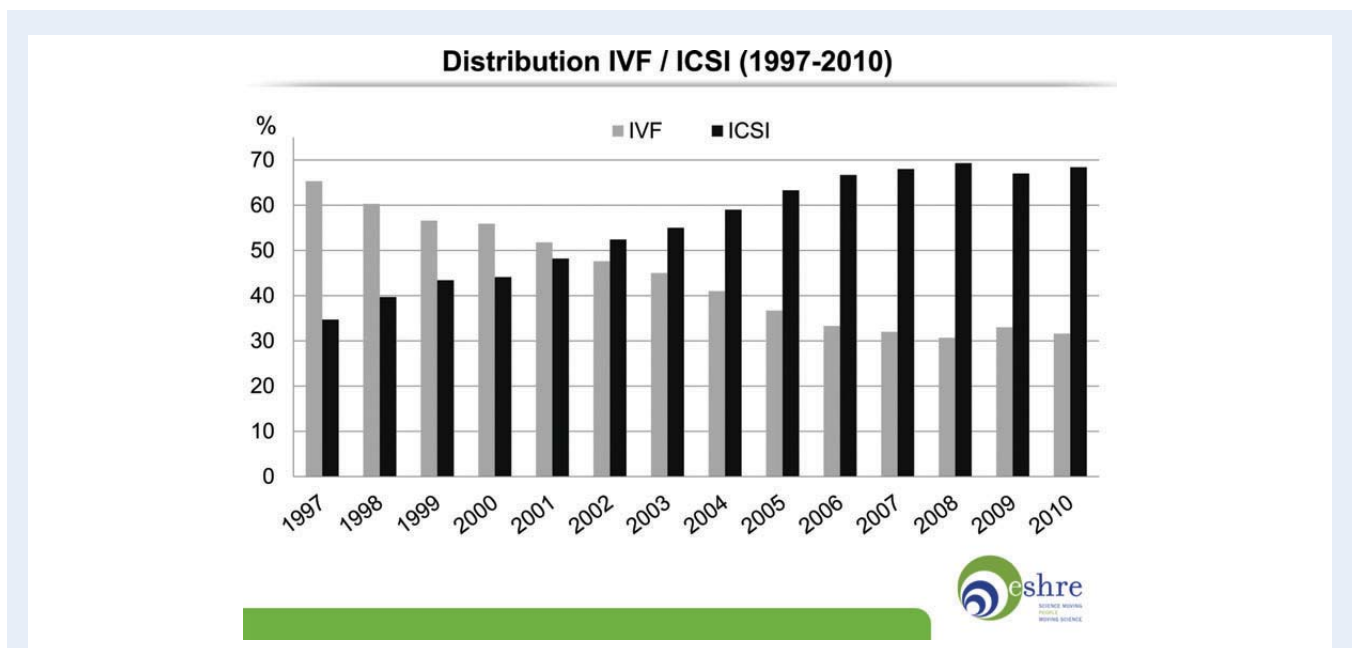


Figure 1 Proportion of IVF to ICSI over 14 years in Europe.

The number of ED cycles, reported by 21 countries, was 25 187 (+16.6% compared with 2009).

Table I also shows the number of cycles per million women of reproductive age (15–45 years) and per million inhabitants. Details for the 16 countries where data coverage was 100% are reported in [Supplementary data, Table SIV](#).

Pregnancies and deliveries after treatment

Table II shows pregnancy and delivery rates per aspiration for IVF and ICSI, and pregnancy and delivery rates per thawing for FER. Four countries (Czech Republic, Hungary, Lithuania and Romania) did not provide data on deliveries. Two countries (Austria and the Netherlands) provided only total cumulative deliveries after IVF and ICSI combined. Thus, the mean pregnancy and delivery rates were computed for countries providing the relevant information.

There were significant national variations in clinical outcomes. On average, pregnancy rates per aspiration were 29.2% (+0.3% compared with 2009) and 28.8% (28.7% in 2009) for IVF and ICSI, respectively, and 20.3% per thawing for FER (−0.6%).

As shown in [Supplementary data, Tables SXIII and XIV](#), several countries experienced difficulties in gathering full pregnancy outcome data. Overall, the pregnancies lost to follow-up starting from the stage of clinical pregnancy were 7.3% for IVF and ICSI (7 767/106 662) and 6.5% for FER (1 446/22 382).

The mean delivery rates per aspiration for IVF, ICSI and FER (per thawing) were 22.4, 21.1 and 14.1%, respectively (Table II). These figures represent the actual recorded deliveries, even though a number of deliveries may have occurred in the lost to follow-up group. A detailed account of numbers of cycles, aspirations, transfers, pregnancies, deliveries and the corresponding rates per technique in each country are reported in [Supplementary data, Table SV](#) for IVF, [Supplementary data, Table SVI](#) for ICSI and [Supplementary data, Table SVII](#) for FER.

The numbers of documented pregnancy losses (miscarriages) were reported by 24 countries for IVF and ICSI and by 22 countries for FER ([Supplementary data, Tables SXIII and XIV](#)). In these countries, the rates varied from 9.9 to 23.0% for fresh cycles (mean of 17.3%) and from 0 to 33.3% for FER (mean of 21.7%).

The figures may be underestimated because of pregnancies lost to follow-up.

In the nine countries with complete follow-up, the figures were 20.3% for fresh cycles and 25.3% for FER.

ED was reported by 20 countries ([Supplementary data, Table SVIII](#)). In most of the countries where data were not reported, this technique was not allowed. Since last data collection (2009) the donor cycles (aspirations) and the recipient cycles (transfers) were divided into fresh or frozen/thawed cycles.

Frozen/thawed cycles include cycles after oocyte as well as embryo cryopreservation. The mean pregnancy rate was 47.4% in fresh transfers and 33.3% in thawed transfers. In total, 8735 clinical pregnancies resulted from 20 357 embryo transfers (excluding the Czech Republic) with a pregnancy rate of 42.9% per transfer (42.3% in 2009). The mean delivery rates were 29.4% per transfer and 35.1% per donation in the countries reporting deliveries. The pregnancies lost to follow-up were 1018 (11.6%).

Twelve countries reported data on embryo donation: 1420 transfers were performed, with 490 pregnancies (34.5%) and 347 deliveries (24.4%).

In total, 120 634 infants were recorded as having been born as a consequence of IVF, ICSI, FER, ED and PGD in the 27 countries where the reporting included newborns (Table II).

Of the 120 634 ART infants, 94 609 (78.4%) were born after IVF/ICSI fresh cycles, 17 689 (14.7%) after FER, 7302 (6.0%) after ED and 1034 (0.9%) after PGD.

In Finland, Iceland and Switzerland, one of three ART infants was born after FER.

In the countries with 100% coverage for the relevant data, the percentage of babies conceived through ART of the national births varied from 1.7% in Italy and 1.8% in Montenegro to 5.9% in Denmark. More details are provided in [Supplementary data, Table SIV](#), showing that the percentage of ART babies was >3.0% in the Nordic countries.

Age distribution

The age distribution of women treated with IVF and ICSI varied across countries ([Supplementary data, Tables SIX and SX](#)). The highest percentages of women aged 40 years or more were found in Greece, Italy and Switzerland, whereas the highest percentages of women aged 34 years or less were found in Kazakhstan, Poland and Ukraine.

As expected, pregnancy rates associated with IVF and ICSI decreased with advancing age. The same trend was seen for delivery rates.

FER cycles ([Supplementary data, Table SXI](#)) included a relatively higher percentage of young women (≤ 34 years) and, as in fresh cycles, pregnancy and delivery rates decreased with age. In ED cycles ([Supplementary data, Table SXII](#)), the age of the recipient was 40 years or more in 58.7% of cases on average, and few countries reported <40%: Slovenia (37.5%), Romania (36.8%), Hungary (34.3%) and Sweden (10.5%). Pregnancy and delivery rates in oocyte recipients were comparable across different age groups.

Number of embryos transferred and multiple births

Table III summarizes the number of embryos transferred after IVF and ICSI combined. The total proportion of single embryo transfers (SETs) was 25.7% (24.2% in 2009 and 22.4% in 2008). Double embryo transfers (DETs) occurred in 56.7% (57.7% in 2009 and 53.2% in 2008); triple embryo transfers in 16.1% (16.9% in 2009 and 22.3% in 2008) and four or more embryos were transferred in 1.5% (1.2% in 2009 and 2.1% in 2008).

Information on numbers of elective single transfers is not yet available.

As shown in Table III, major differences were seen between countries concerning the number of embryos transferred. In 2010, three countries reported an SET rate of over 50% (Belgium 50.4%, Finland 67.5% and Sweden 73.3%).

The proportion of triple or more embryo transfers ranged from 0 in Sweden and Iceland and 0.2% in Finland to $\geq 40\%$ in Bulgaria, Greece, Italy, Lithuania, Moldova, Montenegro, Romania and Serbia. Within these countries, the transfer of four or more embryos ranged from 0 in 12 countries (and up to 2% in 5 countries) to 20.8% in Romania.

In FER cycles, the proportion of single, double, triple and four or more embryo transfers were 36.8, 53.2, 9.6 and 0.4%, respectively. In ED, the figures were 19.7, 70.2, 9.5 and 0.6%.

In fresh IVF/ICSI cycles, the percentages of multiple deliveries were 19.6% for twins (19.4 in 2009, 20.7% in 2008 and 21.3% in 2007) and 1.0% for triplets (0.8 in 2009, 1.0% in 2008 and 2007) (Table III, Fig. 2).

Table II Results after ART in 2010.

Country	Initiated cycles IVF + ICSI		IVF Aspirations		Pregnancies per aspiration (%)		Deliveries per aspiration (%)		ICSI Aspirations		Pregnancies per aspiration (%)		Deliveries per aspiration (%)		FER Thawings FER		Pregnancies per thawing (%)		Deliveries per thawing (%)		ART infants per national births (%)	
	IVF + ICSI	Aspirations	Pregnancies per aspiration (%)	Deliveries per aspiration (%)	Aspirations	Pregnancies per aspiration (%)	Deliveries per aspiration (%)	Aspirations	Pregnancies per aspiration (%)	Deliveries per aspiration (%)	Thawings FER	Pregnancies per thawing (%)	Deliveries per thawing (%)	Thawings FER	Pregnancies per thawing (%)	Deliveries per thawing (%)	ART infants	ART infants	per national births (%)	per national births (%)		
Austria	6161	1014	32.5	19.6	4768	34.9	17.9	620	25.6	1559	2.0						1559	2.0				
Belgium	20572	4526	26.8	24.5	13131	25.8	17.9	8815	18.3	5199	4.0						5199	4.0				
Bulgaria	4673	666	29.9	22.4	3960	28.8	22.7	272	22.4	1595	2.1						1595	2.1				
Czech Republic	12864				4303																	
Denmark	12234	6304	25.1	22.4	5417	25.6	23.0	3371	17.0	3724	5.9						3724	5.9				
Finland	4861	2516	31.0	25.0	2147	27.8	22.1			1859	3.0						1859	3.0				
France	21783	241	24.1	18.6	34709	27.5	21.6	21376	16.1	16500	2.0						16500	2.0				
Germany	51720	9545	27.9	19.1	35150	27.6	19.0	17876	19.2	14123	2.1						14123	2.1				
Greece	2754	710	33.7	27.7	1703	31.1	23.8	461	28.0	1102												
Hungary	5091	1211	32.5	21.5	3863	30.3	27.8	205	29.3	216	4.4						216	4.4				
Iceland	279	279	26.2	25.6	223	32.7	26.1	882	17.5	971	1.2						971	1.2				
Ireland	3176	1483	31.2	16.6	1173	32.7	15.7	3758	17.2	9794	1.7						9794	1.7				
Italy	52661	7606	24.1	25.8	39843	23.0	22.4	289	25.6	701												
Kazakhstan	1630	1282	34.9	32.2	348	32.5	22.4	289	25.6	701												
Lithuania	112	57	26.3	32.2	53	34.0	33.9	19	36.8	611												
Macedonia	1409	283	44.2	31.6	1009	41.3	33.5	49	24.5	242	0.6						242	0.6				
Moldova	624	272	38.2	48.1	328	39.6	21.3	0		136	1.8						136	1.8				
Montenegro	446	27	48.1	48.1	417	28.3	23.7	6	33.3	2098	4.1						2098	4.1				
Norway	6557	2942	29.3	24.4	3314	27.9	26.3	2443	19.9	3500	0.8						3500	0.8				
Poland	8968	335	37.3	16.7	8501	34.5	24.1	3733	23.2	1962	1.9						1962	1.9				
Portugal	5875	1571	35.1	26.6	3856	31.0	24.1	921	20.3	1962	1.9											
Romania	923	506	41.1	25.2	352	48.9	23.8	208	24.5	9500												
Russia	27310	13817	34.2	23.9	12508	33.8	27.5	3760	24.7	484												
Serbia	1484	410	31.5	28.0	1050	35.4	22.3	760	21.3	1131	5.1						1131	5.1				
Slovenia	3604	1205	34.4	17.5	2310	28.1	19.7	8760	27.9	13385	2.8						13385	2.8				
Spain	32503	2880	33.8	24.5	25994	32.7	24.3	5520	25.0	4025	3.5						4025	3.5				
Sweden	11592	5348	31.8	16.7	5499	31.3	18.4	4058	19.1	1733	2.2						1733	2.2				
Switzerland	5482	741	21.5	21.3	4452	23.9	24.3	4058	19.1	5015	2.7						5015	2.7				
The Netherlands	16898	7895	28.5	27.7	7639	31.8	30.4	1240	26.9	2455												
Ukraine	5264	2328	38.2	27.0	2794	36.5	27.6	10476	21.9	17014	2.2											
The UK	44642	18738	30.9	22.4	23160	31.2	21.1	104181	20.3	120634												
All ^b	352090	118280	29.2	22.4	249671	28.8	21.1	104181	20.3	120634												

For IVF and ICSI there were for France, Greece, Ireland, Kazakhstan, Russia and Spain, respectively 177, 46, 1, 8, 543 and 27 deliveries with unknown outcome. These were accepted as singletons to calculate the ART infants. For FER there were for France, Greece, Kazakhstan, Russia and Spain, respectively 41, 4, 2, 8 and 4 deliveries with unknown outcome. These were accepted as singletons to calculate the ART infants. For the Netherlands no data on the number of thawings were available. For ED there were for France, Greece, Kazakhstan, Poland, Russia, Spain and Ukraine, respectively 1, 2, 1, 1, 23, 8 and 9 deliveries with unknown outcome. These were accepted as singletons to calculate the ART infants. For PGD there was for Russia 1 delivery with unknown outcome. This one was accepted as singleton to calculate the ART infants. In the Czech Republic, IVF and ICSI were reported together, no details on pregnancies and deliveries.

^aART infants also include ED.

^bTotal rates refer to those countries where all data were reported for the given technique.

Table III Number of embryos transferred after ART and deliveries in 2010.

Country	IVF + ICSI				FER							
	Transfers	1 embryo (%)	2 embryos (%)	3 embryos (%)	4+ embryos (%)	Deliveries	Twin (%)	Triplet (%)	Deliveries	Twin (%)	Triplet (%)	
Austria	6032	26.5	66.6	6.4	0.5	1253	23.1	0.6	1094	11.8	0.2	
Belgium	15 883	50.4	39.8	8.1	1.5	3232	11.1	0.2	47	21.3	0.0	
Bulgaria	3724	15.8	33.5	39.3	11.4	1060	35.8	2.2				
Czech republic												
Denmark	9967	45.2	49.1	5.6	0.0	2657	15.2	0.4	493	16.1	0.7	
Finland	4123	67.5	32.3	0.2	0.0	1105	10.6	0.3	588	7.3	0.0	
France	50 085	28.3	61.2	9.7	0.8	11 558	17.7	0.3	2477	9.8	0.1	
Germany	42 780	14.3	67.5	18.2	0.0	8517	28.6	3.9	2150	15.0	1.1	
Greece	2203	14.6	31.5	46.3	7.7	602	27.0	3.1	98	35.8	2.1	
Hungary	4800	12.6	52.8	30.9	3.7							
Iceland	412	42.5	57.5	0.0	0.0	122	13.9	0.0	49	10.2	0.0	
Ireland	2425	28.0	63.3	8.5	0.2	685	19.0	0.7	123	10.6	0.8	
Italy	40 468	19.2	38.2	38.1	4.4	7508	20.4	1.9	434	17.3	0.7	
Kazakhstan	1499	19.1	46.3	32.4	2.2	409	23.4	1.0	51	15.7	0.0	
Lithuania	110	6.4	17.3	76.4	0.0							
Macedonia	1182	18.2	42.2	39.6	0.0	433	32.6	1.6	8	12.5	0.0	
Moldova	575	10.1	31.7	51.7	6.6	196	22.4	0.5				
Montenegro	414	16.9	22.9	59.4	0.7	102	31.4	0.0	2	0.0	0.0	
Norway	5417					1502	11.1	0.3	383	8.9	0.5	
Poland	7786	20.3	70.6	8.6	0.5	2289	18.6	0.4	549	10.9	0.0	
Portugal	4752	19.7	73.5	6.8	0.0	1347	20.2	0.7	140	12.1	0.7	
Romania	816	7.5	43.3	28.4	20.8							
Russia	23 825	16.1	63.2	17.8	2.9	6457	22.1	1.1	563	19.0	0.5	
Serbia	1316	17.6	15.7	54.4	12.2	387	14.7	5.2				
Slovenia	3031	32.2	64.7	3.2	0.0	852	15.0	0.0	130	12.3	0.0	
Spain	24 759	17.4	69.5	13.2	0.0	5616	23.6	0.4	1353	16.0	0.3	
Sweden	9593	73.3	26.7	0.0	0.0	2648	5.8	0.1	1051	4.7	0.2	
Switzerland	4314	18.4	62.9	18.7	0.0	942	19.4	0.4	544	9.9	0.2	
The Netherlands	16 898					3529	10.5	0.1	1055	4.6	0.0	
Ukraine	4811	11.0	54.3	31.2	3.4	1496	23.9	1.1	251	18.3	0.8	
The UK	38 408	29.9	65.0	5.1	0.0	11 451	19.6	0.3	2021	17.1	0.0	
All ^a	332 408	25.7	56.7	16.1	1.5	77 955	19.6	1.0	15 654	12.5	0.3	

^aTotals refer only to those countries where data on number of transferred embryos and on multiplicity were reported.

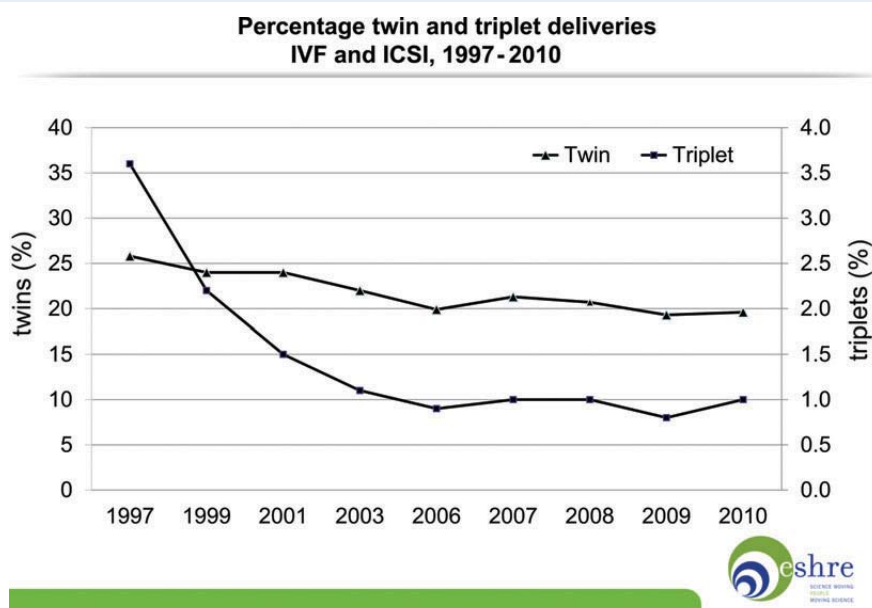


Figure 2 Multiple birth rate (delivery of two or more children) in IVF/ICSI over 14 years in Europe.

After FER, the percentages were 12.5% for twins (12.7% in 2009, 13.4% in 2008 and 13.1% in 2007) and 0.3% for triplet deliveries (also 0.3% in 2009, 2008 and 2007).

Additional data on pregnancy outcome, singleton and multiple deliveries are provided in [Supplementary data, Tables SXIII and SXIV](#).

In ED, of 5763 deliveries with known data on multiplicity, 1430 were twins (24.8%) and 32 were triplets (0.6%) (data not presented in tables).

Perinatal risks and complications

[Supplementary data, Table SXV](#) summarizes the occurrence of preterm deliveries according to the number of newborns. Data were available from 17 countries. These show that the risk of extreme preterm birth (gestational weeks 20–27) remained stable from 1.1% (0.9% in 2009) for a singleton delivery to 3.3% (3.0% in 2009) for twins and 12.3% (13.6% in 2009) for triplets. The same trend was noted for very preterm birth (28–32 weeks), from 2.4 to 10.4 and 31.0%, respectively.

Term delivery (37+ weeks) rates were 88.0% for singleton, 46.3% for twins and only 9.5% for triplets.

Ovarian hyperstimulation syndrome (OHSS) was reported in 25 of the 31 countries ([Supplementary data, Table SXVI](#)). In total, 1500 cases of OHSS were recorded, corresponding to a prevalence of 0.3% (0.8% in 2009) of all stimulated cycles in the countries reporting the data. The table also includes data on the incidence of other adverse outcomes, such as bleeding (641 cases), infection (53 cases) and fetal reductions (441 cases). Maternal death was reported in two cases (one in 2009).

PGD/PGS

PGD/PGS activity, recorded from 17 countries (15 in 2009), involved 6399 cycles, 5384 aspirations, 4070 embryo transfers, 1352 pregnancies (25.1% per aspiration) and 957 deliveries (17.8% per aspiration), the main contributor being Spain with 2743 cycles. More complete data

and detailed analysis of PGD/PGS in Europe are published separately by ESHRE's PGD Consortium ([Moutou et al., 2014](#)).

In vitro maturation

IVM was recorded in 10 countries (Table I). A total of 493 aspirations (1334 in 2009 and 562 in 2008) and 314 transfers were recorded, resulting in 69 pregnancies and 43 deliveries. Russia accounted for 45% of cycles and 21% of deliveries.

Frozen oocyte replacement

FOR was recorded by 10 countries, with a total of 4859 thaws, 4049 transfers, 1235 pregnancies and 755 deliveries (Table I). The majority (87%) was performed in Italy and Spain.

Intrauterine insemination

The number of IUI laboratories present in the countries was recorded in 2009 for the first time. Only 18 countries reported the figure, with a total of 993 units, 857 of which (86.3%) were reporting to the National Register (Table I). Moreover, in four countries, the total number of IUI units in the countries was not available, only the number of reporting units.

Table IV provides data on IUI-H and IUI-D cycles. With regard to IUI-H, 176 512 cycles (+13 669) were reported by 23 countries—the main contributors being France, Italy and Spain.

Among the countries reporting deliveries, the mean delivery rate per cycle was 8.9% (8.3 in 2009), with 9.3% (10.4% in 2009) of deliveries being twins and 0.5% (0.7% in 2009) triplet deliveries.

For IUI-D, 38 124 cycles were reported (+8889) by 20 countries, the main contributors being Denmark, France, Spain and the UK. The delivery rate per cycle was 13.8% (13.4% in 2009), with multiple delivery rates of 7.9% (10.3% in 2009) for twins and 0.2% (0.5% in 2009) for triplets.

Table IV Intrauterine insemination with husband (IUI-H) or donor (IUI-D) semen in 2010.

Country	IUI-H				IUI-D							
	Cycles	Deliveries	Deliveries (%)	Singleton (%)	Twin (%)	Triplet (%)	Cycles	Deliveries	Deliveries (%)	Singleton (%)	Twin (%)	Triplet (%)
Austria												
Belgium	11 247	688	6.1	96.5	3.5	0.0	6218	564	9.1	96.9	2.9	0.2
Bulgaria	2109	251	11.9	90.8	9.2	0.0	683	132	19.3	75.0	25.0	0.0
Czech republic												
Denmark	11 900	1531	12.9	89.7	9.7	0.6	9553	1308	13.7	94.0	6.0	0.1
Finland	4061	376	9.3	94.4	4.8	0.8	955	124	13.0	96.8	3.2	0.0
France	55 873	5486	9.8	89.1	10.4	0.4	4024	697	17.3	88.9	10.6	0.4
Germany												
Greece	495	47	9.5	88.6	11.4	0.0	65	10	15.4	70.0	30.0	0.0
Hungary												
Iceland												
Ireland	1691	149	8.8	91.3	8.7	0.0	275	54	19.6	96.3	3.7	0.0
Italy	32 069	2220	6.9	89.6	9.5	0.9						
Kazakhstan	881	66	7.5	100.0	0.0	0.0	94	17	18.1	100.0	0.0	0.0
Lithuania	155											
Macedonia	598	51	8.5	74.5	9.8	2.0	53	6	11.3	83.3	16.7	0.0
Moldova	110	14	12.7	100.0	0.0	0.0	73	21	28.8	100.0	0.0	0.0
Montenegro	256	12	4.7	100.0	0.0	0.0						
Norway	435	49	11.3	87.8	12.2	0.0	397	73	18.4	91.8	8.2	0.0
Poland	11 890	889	7.5	93.1	6.9	0.0	1918	270	14.1	92.0	8.0	0.0
Portugal	2044	219	10.7	88.6	11.4	0.0	161	25	15.5	88.0	12.0	0.0
Romania	1024						120					
Russia	6142	791	12.9	91.1	7.8	1.0	2398	468	19.5	92.7	7.3	0.0
Serbia	920											
Slovenia	740	65	8.8	80.0	20.0	0.0	7	1	14.3	100.0	0.0	0.0
Spain	22 087	1655	7.5	88.6	10.9	0.5	6117	762	12.5	87.7	11.7	0.7
Sweden							585	100	17.1	95.0	4.0	1.0
Switzerland												
The Netherlands												
Ukraine	1491	191	12.8	91.3	2.9	0.0	622	88	14.1	92.0	8.0	0.0
The UK	8294						3806	506	13.3	93.3	6.7	0.0
All ^a	176 512	14 750	8.9	90.0	9.3	0.5	38 124	5226	13.8	91.9	7.9	0.2

Italy, Spain: underestimation of deliveries because of high number of pregnancies is lost to follow up. Macedonia: Data from two clinics only. Poland: For IUI-H and IUI-D there were, respectively, 282 and 63 pregnancies with unknown outcome.

^aTotal refers to those countries where data were reported and mean percentage was computed for countries with complete information.

Data available on outcomes in women <40 years and 40 years or more are presented in [Supplementary data, Tables SXVII and XVIII](#). The delivery rate associated with IUI-H declined with age (9.0% <40 versus 3.7% above) and the multiple delivery rates decreased from 8.9 to 5.3% for twins and from 0.6 to 0.0% for triplets.

Similar findings were seen in IUI-D, where delivery rates decreased with age from 14.5 to 7.2%, twin deliveries from 7.9 to 3.8% and triplets from 0.2 to 0.0%.

Sum of fresh and FER ('cumulative') delivery rates

[Supplementary data, Table SXIX](#) gives an estimate of a cumulative delivery rate per aspiration in countries performing FER and reporting deliveries.

The calculation, presented as the sum of fresh and FER deliveries with the basic number as the number of aspirations obtained during the same year, is not a true cumulative delivery rate per aspiration, but it shows that the delivery rate (fresh versus cumulative) can increase in the countries reporting the relevant data.

Overall, the increase after inclusion of FER deliveries was from 20.0 to 23.7%, but in some countries the increment was more substantial (Switzerland +9.9%, Finland +12.1%).

In countries where the proportion of aspirations and thawings was >40% the 'benefit' using our definition of cumulative delivery rate was >4%.

Cross-border reproductive care

Only eight countries reported data on patients undergoing cross-border reproductive care (CBRC): Greece, Iceland, Macedonia, Moldova, Poland, Slovenia, Spain and Switzerland. A total of 4867 cycles were reported, 69.4% of which involved IVF/ICSI with the couple's own gametes, 16.0% were oocyte donations and 11.9% were IUI or IVF with semen donation.

Information regarding the countries of origin was very incomplete and not reliable enough to draw any conclusions. The main reason (58%) reported by patients was to seek a higher quality treatment than available in their home countries (data not presented in tables).

Discussion

The present report is the 14th, consecutive annual European report on ART data. Taken together, these reports cover >5 million treatment cycles from 1997 to 2010. Since 2003 also the infants born after ART have been included—nearly 600 000 (Fig. 3).

As shown in the tables, the method of reporting varies among countries and registries from a number of countries have been unable to provide some of the relevant data, such as initiated cycles and deliveries ([Supplementary data, Table SIII](#)).

It can be argued that as long as data are incomplete and generated through different methods of collection, results should be interpreted with caution. Nevertheless, the findings reported in this paper reveal important trends in practice and outcomes in Europe and give a clear picture of the differences existing among countries.

In comparison with 2009, the number of countries reporting to the ESHRE's EIM Consortium decreased again to 31: Albania, Bosnia, Croatia, Cyprus, Estonia, Latvia and Turkey were not able to contribute data.

Most of the independent European states that have never contributed data are very small countries (Andorra, Armenia, Liechtenstein, Luxembourg, Malta, Monaco, San Marino and Vatican City). Data have never been available from Azerbaijan, Belarus and Kosovo but, overall, EIM has been collecting data from 80% of the European countries for several years ([Supplementary data, Table SI](#)).

The EIM Consortium is working on a method of support for those countries with no existing national registry or with difficulties in providing data again.

In 2010, the coverage of all clinics in countries which provided data was 82.5%, a figure nearly similar to 2009 (85.2%), 2008 (84.5%) and 2007 (86%).

The number of countries with 100% coverage decreased to 16 (21 in 2009, 19 in 2008).

As in previous years, the lowest reporting rate was from Greece (9 of 50 clinics).

Overall, the number of reported cycles increased by 2.4% since 2009 (+13 009), reaching a total of 550 296 despite fewer countries contributing data.

Clear reasons for this trend are not distinct but the economic situation in some countries could offer a partial explanation.

Elsewhere in the world in 2010, 147 260 cycles were reported from the USA ([CDC, 2012](#)) and 61 774 initiated cycles from Australia and New Zealand ([AIHW, 2012](#)).

As shown in [Table I](#) and [Supplementary data, Table SIV](#), the average number of treatment cycles per million inhabitants in the countries with 100% coverage was 1221 and 6258 per million women of reproductive age (15–45 years). Data for inhabitants are coming from the [www.census.gov](#) webpage.

This number varied hugely among countries, with the highest figures from Denmark (2883), Iceland (2594) and Belgium (2736) and the lowest from Hungary (557).

An even better way to define the availability of ART is to use women of reproductive age as the denominator, which eliminates the impact of age differences across the countries. Using this denominator, there were also striking differences in the number of ART cycles per million women of reproductive age, ranging from 2703 cycles in Hungary to 17 701 in Slovenia, 17 669 in Denmark and 14 494 in Belgium.

Countries able to provide over 8000 cycles per million women of reproductive age and over 1700 cycles per million inhabitants were the Czech Republic, Finland, Norway, Slovenia and Sweden.

Overall, the highest availability was reported by Slovenia and the Nordic countries. Finally, the percentage of newborns conceived through ART varied from 0.6% in Moldova to 5.9% in Denmark ([Table II](#) and [Supplementary data, Table SIV](#)).

The pregnancy rate per aspiration remained relatively stable with an ongoing small increase compared with the previous year: 29.2% for IVF (2009 28.9%, 2008 28.7%) and for ICSI 28.8% (2009 28.5%, 2008 28.7%).

However, the pregnancy rate per thawing has increased steadily since 2008 (19.3 in 2008, 20.9 in 2009 and 20.3 in 2010), this improvement could be related to the incorporation of vitrification in the embryology laboratory.

Delivery rates per aspiration and per transfer (22.4 and 25.5% for IVF and 21.1 and 23.5% for ICSI, respectively) showed a marginal increase, compared with figures from 2009 (20.6 and 23.0% for IVF and 19.3 and 21.5% for ICSI, respectively) and 2008 (21.2 and 24.3% for IVF and 20.4 and 22.7% for ICSI, respectively).

EIM, 1997-2010

year	countries	clinics	cycles	Increase (%)	ART infants
1997	18	482	203,225		
1998	18	521	232,225	+ 14.3	
1999	21	537	249,624	+ 7.5	
2000	22	569	275,187	+ 10.2	
2001	23	579	289,690	+ 5.3	
2002	25	631	324,238	+ 11.9	
2003	28	725	365,103	+ 12.6	68,931
2004	29	785	367,056	+ 0.5	67,973
2005	30	923	419,037	+ 14.2	72,184
2006	32	998	458,759	+ 9.5	87,705
2007	33	1029	493,420	+ 7.6	96,690
2008	36	1051	532,260	+ 7.9	107,383
2009	34	1033	537,287	+ 1.0	109,239
2010	31	1202	548,734	+ 2.1	120,676
total			5,295,845		593,877



Figure 3 Number of countries, clinics and cycles over 14 years in Europe. EIM, The European IVF-monitoring Consortium.

The delivery rate per thawing for FER of 14.1% also indicates a small increase (13.3% in 2009 and 13.7% in 2008) but this indicator of outcome may be always strongly influenced by the missing data on deliveries.

After a decrease in 2009 the proportion of ICSI versus conventional IVF procedures showed a marginal increase compared with data from the previous year and is now on the level of 2007 (Fig. 1). The figure is likely to have been driven by the absence of data from Turkey, a country with a very high proportion of ICSI cycles (98%) in 2008.

Table I demonstrates a marked variation in the relative proportions of IVF and ICSI within Europe, and the difference seems to have a geographic distribution.

In several countries from northern and eastern Europe (Denmark, Finland, Iceland, Ireland, Kazakhstan, Lithuania, Romania, Russia, Sweden and The Netherlands), IVF remains the dominant technology; in contrast, in most countries from western and central Europe (Germany, Italy, Spain, Austria and Switzerland) ICSI was used in 75% of cases.

In Australia and New Zealand, 67.3% of all cycles used ICSI in 2010 and in the USA the corresponding figure was 74.0%, reflecting a uniform trend throughout the world in performing ICSI in the majority of the cycles.

The marked increase in the use of ICSI cannot be explained by a similar increase in male infertility but rather by a more liberal use of this technique in cases with mixed infertility, unexplained infertility, mild male factor infertility, low oocyte number and fertilization failures (Jain and Gupta, 2007; Nyboe Andersen *et al.*, 2008). This is, however, unlikely to fully account for the observed differences, which can only be explained by differences in professional strategy, clinical decision-making and economic requirements.

In the USA, 53% of ICSI cycles were performed in couples without a clear diagnosis of male factor infertility (CDC, 2012).

Overall, in 2010, the number of transfers with three or more embryos (17.6%) was lower compared with 2009 (18.1%) and 2008 (24.4%), while the mean percentage of SETs (intended and not intended) increased from 22.4% in 2009 and 24.2% in 2008 to 25.7%.

The proportion of DET decreased from 57.7% in 2009 to 56.7% (Table III).

For the second time since 1997, the proportion of three or more embryo transfers was <20% and the proportion of SETs was higher than that of triple embryos transfers.

The highest proportions of SETs were found in Sweden (73.3%), Finland (67.5%), Belgium (50.4%) and Denmark (45.2%). In contrast, 50% of three or more embryo transfers were reported in Bulgaria, Greece, Italy, Lithuania, Moldova, Montenegro and Serbia.

The EIM reports are unable to discriminate between elective SET (eSET) versus SET in general, but the increase in the number of transfers of one embryo seen in the last years is undoubtedly due to an increase in eSET.

Despite huge differences in embryo transfer policy across countries, the overall trend towards transferring fewer embryos seen over the last 10 years seems to continue.

In comparison with the situation in Europe, data from other registers show that SET was performed in 69.6% of cycles in Australia and New Zealand (AIHW, 2012) and 15.4% in the USA (CDC, 2012).

Similar observations can be made for the multiple delivery rates.

In 2010, the multiple delivery rates (twins + triplets) remained relatively stable compared with previous years: 20.6% in 2010, 20.2% in 2009, 21.7% in 2008, 22.3% in 2007 and 20.8% in 2006.

Overall, a remarkable reduction in triplet deliveries over the years is seen (3.6% in 1997 and 1.0% in 2010), but major differences are still evident across countries (Table III). Some countries registered a high triplet delivery rate like Serbia (5.2%), Bulgaria (2.2%) and Italy (1.9%). Several other countries were able to maintain the triplet deliveries at $\leq 0.2\%$ (Belgium, Sweden and The Netherlands).

In this context fetal reduction in multiple delivery rates has to be mentioned. In ED the multiple delivery rate is higher than cycles with own egg. SET would reduce the high multiple delivery rate (Clua et al., 2012).

The twin delivery rate ranged from 5.8% in Sweden to 32.6% in Macedonia.

We have included data describing preterm birth rates according to the number of fetuses in the pregnancy (Supplementary data, Table SXV), which was completed by 16 countries. The risk of extreme preterm birth (28 weeks) was increased 3-fold for twins and 13-fold for triplets.

The risk of very preterm birth (28–32 weeks) is increased almost 5-fold for twins and 20-fold for triplets.

Fetal reductions are almost always performed in triplet or higher order gestations. Thus, when analyzing the range of triplet delivery rates in different countries, the number of fetal reductions should also be considered. A total of 441 procedures were reported (43 less than in 2008) (Supplementary data, Table SXVI).

However, the number is likely to be an underestimate since several countries, including large countries, such as Germany and Italy, did not report on this intervention. Without fetal reductions, the proportion of triplet deliveries would have been much higher than the number of recorded triplet deliveries in IVF and ICSI (788 in total).

The delivery rates in Europe remain lower than in the USA, where in fresh non-donor cycles performed in 2010 the delivery rate per aspiration was 33.7% and the delivery rate per transfer was 36.8% (CDC, 2012).

However, outcomes in Europe were very similar to those achieved in Australia and New Zealand, where the delivery rates per transfer in fresh cycles were 23.6 and 20.2% per aspiration (AIHW, 2012).

Data on deliveries and infants must be considered and compared with some caution because of the difficulties met by several European countries in gathering pregnancy outcome (Supplementary data, Table SXIV), while the pregnancy loss to follow-up was close to 0% in the annual reports both in the USA and in Australia/New Zealand.

Multiple infant birth rates (twins, triplets or more) point to important differences between the USA (30.3%), Europe (20.6%) and Australia/New Zealand (7.8%).

With the noticeable decline in the number of embryos transferred and the increasing proportion of FER cycles, the cumulative delivery rate per started cycle may be the most relevant end-point in ART.

However, such a result can only be obtained a few years after the initial oocyte aspiration.

In Supplementary data, Table SXIX, the cumulative delivery rate is presented as the sum of fresh and FER pregnancies obtained in the same calendar year. The method of calculation can be methodologically flawed, but the estimate may be close to the actual figure. In several countries, FER deliveries added substantially to the delivery rates per cycle: Finland (22.7–34.8%), Belgium (15.7–21.0%), Sweden (22.8–31.9%) and Norway (22.9–28.7%), justifying their transfer and freezing policies.

Regarding direct risks of ART, OHSS was recorded only in 0.3% of all stimulated cycles. However, there may be a degree of under-reporting of this complication as the rate varied between 0 and 2.6% in the countries reporting it.

For the ninth consecutive year, the present report includes European data on treatments with IUI-H (176 512 cycles) and IUI-D (38 124), which show an increase compared with 2009 and 2008. Since the inception of IUI data collection, no significant differences have been noted in terms of delivery rates and in the incidence of multiple pregnancies.

In 2009, the EIM Consortium decided to continue to address the phenomenon of CBRC. An optional module was added to the data collection sheets asking for the numbers of CBRC patients, the type of treatment requested, main countries of origin and the reason for travelling abroad. Only a total of 4177 cycles were reported by 6 countries. As in 2008 and 2009, the number was much lower compared with the estimation, based on the CBRC study performed in Europe (Shenfield et al., 2010): 11 000–14 000 patients and 25 000–30 000 cycles per year.

In addition, only incomplete information was reported regarding the countries of origin and reasons for travelling.

In summary, the 14th ESHRE report on ART for Europe shows a continuing moderate expansion in the number of treatment cycles, with more than half a million cycles reported in 2010. The use of ICSI seems to have reached a plateau.

(Multiple) pregnancy and delivery rates after IVF and ICSI remained relatively stable, compared with 2009 and 2008. The number of multiple embryo transfers (three or more embryos) has shown a decline.

Supplementary data

Supplementary data are available at <http://humrep.oxfordjournals.org/>.

Authors' roles

V.G. performed the calculations. M.S.K. helped with the calculations and wrote the paper. All other co-authors reviewed the document and made appropriate corrections and suggestions for improving the document. Finally, this document represents a fully collaborative work.

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Conflict of interest

None declared.

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Appendix

The details of contact persons who are collaborators and represent the data collection programmes in participating European countries, 2010 are given below.

Austria

Prof. Dr Heinz Strohmer, Dr Obruca and Dr Strohmer Partnerschaft Goldenes Kreuz-Kinderwunschzentrum, Lazarettgasse 16-18, 1090 Wien, Austria. Tel.: +43 401 111 400; Fax: +43 401 111 401. E-mail: heinz.strohmer@kinderwunschzentrum.at

Belgium

Dr Kris Bogaerts, I-Biostat, Kapucijnenvoer 35 bus 7001, 3000 Leuven, Belgium. Tel.: +32 (0) 16 33 68 90; Fax: +32 (0) 16 33 70 15. E-mail: Kris.Bogaerts@med.kuleuven.be

Prof. Thomas D'Hooghe, Leuven University Fertility Center, Dept of Obstetrics and Gynecology, UZ Gasthuisberg, 3000 Leuven, Belgium; Tel: +32 (0) 16 34 36 24; Fax: +32 (0)16 34 43 68; E-mail: thomas.dhooghe@uz.kuleuven.ac.be

Bulgaria

Prof. Stanimir Kyurkchiev, Institute of Reproductive Health, Ob/Gyn Hospital Dr Shechterevev, 25-31, Hristo Blagoev Strasse, 1330 Sofia, Bulgaria. Tel.: +359 292 009 01; E-mail: kyurkch@hotmail.com

Irena Antonova, ESHRE Certified Clinical Embryologist (2011), Ob/Gyn Hospital Dr Shechterevev, 25-31, Hristo Blagoev Strasse, 1330 Sofia, Bulgaria. Tel.: +359 887 127 651; E-mail: irendreaming@gmail.com

Czech Republic

Dr Karel Rezabek, Medical Faculty, University Hospital, CAR—Assisted Reproduction Center, Gyn/Ob Department, Apolinarska 18, 12000 Prague, Czech Republic. Tel.: +420 224 967 479; Fax: +420 224 922 545; Mobile: +420 724 685 276; E-mail: krezabek@vfn.cz

Mgr. Jitka Markova, Institute of Health Information and Statistics of the Czech Republic, Palackeho namesti 4, 12801 Prague, Czech Republic. Tel.: +420 224 972 832; Mobile: +420 721 827 532; E-mail: markova@uzis.cz

Denmark

Dr Karin Erb, Odense University Hospital, Fertility Clinic, Sdr. Boulevard 29, 5000 Odense C, Denmark. Tel.: +45 65 41 23 24; Fax: +45 65 90 69 82; E-mail: karin.erb@rsyd.dk

Finland

Prof. Mika Gissler, THL National Institute for Health and Welfare, P.O. Box 30, 00271 Helsinki, Finland. Tel.: +385 29 524 7279; E-mail: mika.gissler@thl.fi

Dr Aila Tiitinen, Helsinki University Central Hospital, Dept. of Ob/Gyn, Haartmaninkatu, 2, PO Box 140, 00029 HUS—Helsinki, Finland. Tel +358 50 427 1217; E-mail: aila.tiitinen@hus.fi

France

Prof. Dominique Royere, Agence de la Biomédecine, 1 Av du stade de France, 93212 Saint-Denis La Plaine Cedex, France. Tel.: +33 1 559 365 55; Fax: +33 1 559 365 61; E-mail: dominique.royere@biomedecine.fr

Germany

Dr Klaus Bühler, Centre for Gynaecol. Endocrinology and Reproductive Medicine, Kinderwunsch-Zentrum Stuttgart, Friedrichstraße 45, D-70174 Stuttgart (Germany). Tel.: +49(0) 711 997 806-0; Fax: +49(0) 6805 90 99 756; Mobile: +49 170 81 55 300; E-mail: buehler.kf(at)t-online.de

Ms Monika Uszkoriet, D.I.R. Geschäftsstelle, Torstrasse 140, D-10119 Berlin, Germany. Tel.: +49 30 398 007 43; E-mail: d.i.r.geschaefsstelle@mru-consulting.de

Greece

Dr Dimitris Loutradis, Athens Medical School, 1st Department of OB/GYN, 62, Sirinon Street, 17561 P. Faliro, Athens, Greece. Tel.: +30 198 335 76; Fax: +30 198 838 34; Mobile +30 693 242 1747; E-mail: loutradi@otenet.gr

Prof. Basil C. Tarlatzis, Papageorgiou Hospital, Unit of Human Reproduction, 1st Dept. of Ob/Gyn, Periferiakos Odos, Nea Efkarpi, 56403 Thessaloniki, Greece. Tel.: +30 231 099 1508; Fax: +30 231 099 1510; Mobile +30 694 431 5345; E-mail: basil.tarlatzis@gmail.com

Hungary

Prof. G. Kosztolanyi, University of Pecs, Dept. of Medical Genetics and Child Development, Jozsef A.u;7., 7623 Pecs, Hungary. Tel.: +36 7 2535977; Fax: +36 7 2535972; E-mail: gyorgy.kosztolanyi@aok.pte.hu

Prof. Janos Urbancsek, Semmelweis University, 1st Dept. of Ob/Gyn, Baross utca 27, 1088 Budapest, Hungary. Tel.: +36 1 266 01 15; Fax: +36 1 266 01 15; E-mail: urbjan@noil.sote.hu

Iceland

Mr Hilmar Bjorgvinsson, Art Medica, Baejarlind 12, 201 Kopavogur, Iceland. Tel.: +354 515 81 00; Fax: +354 515 81 03; E-mail: Hilmar@artmedica.is

Ireland

Dr Edgar Mocanu, Human Assisted Reproduction Ireland Rotunda Hospital, HARI Unit, Master's House, Parnell Square, 1 Dublin, Ireland. Tel.: +353 180 72 732; Mobile: +353 86 818 839; Fax: +353 18 727 831; E-mail: emocanu@rcsi.ie

Italy

Dr Giulia Scaravelli, Istituto Superiore di Sanità, Registro Nazionale della Procreazione Medicalmente Assistita, CNESPS, Viale Regina Elena, 299, 00161 Roma, Italy. Tel.: +394 99 04 050; Fax: +394 99 04 324; E-mail: giulia.scaravelli@iss.it

Kazakhstan

Prof. Dr Vyacheslav Lokshin, The Urban Center of Human Reproduction, Tole Be Street 99, 50012 Almaty, Kazakhstan. Tel.: +7 727 234 3434; Fax: +7 727 264 66 15; Mobile: +7 701 755 8209; E-mail: vyacheslav.lokshin@ipsen.kz

Dr Valiyev Ravil, The Scientific Center for Obstetrics, Gynecology and Perinatology, Dostyk street 125, 050020 Almaty, Kazakhstan. Tel.: +7 727 300 4530; Fax: +7 727 300 4529; Mobile: +7 777 225 8189; E-mail: rvaliev@mail333.com

Lithuania

Dr Zivile Gudleviciene, Baltic American Clinic, IVF Laboratory, Nemencines rd 54A, 10103 Vilnius, Lithuania. Tel +370 523 420 20; Mobile +370 686 824 17; E-mail embriologija@gmail.com

Dr Giedre Matkeviciute, Baltic American Clinic, IVF laboratory, Nemencines rd 54A, 10103 Vilnius, Lithuania. Tel +370 523 420 20; Mobile +370 652 98290; E-mail: dienanakti@gmail.com

Macedonia

Dr Slobodan Lazarevski, Clinical Hospital Acibadem-Sistina, Skupi 5a 1000 Skopje, Macedonia. Tel.: +389 230 733 35; Fax: +389 230 733 98; Mobile: +389 70 382 931; E-mail: dr.lazarevski@sistina.com.mk

Moldova

Prof. Dr Veaceslav Moshin, Medical Director at Repromed Moldova, Center of Mother @ Child Protection, State Medical and Pharmaceutical University 'N.Testemitanu', Bd. Cuza Voda 29/1, Chisinau, Republic of Moldova. Tel.: +37322 263855; Mobile: +37369724433; E-mail: mosin@repromed.md

Montenegro

Dr Tatjana Motrenko Simic, Medical Centre Cetinje, Human Reproduction Departement, Vuka Micunovica 4, 81310 Cetinje, Montenegro,

Tel.: +382 41 232 690; Fax: +382 41 231 212; Mobile: +382 69 052 331; E-mail: motrenko@t-com.me

Dragana Vukicevic, Hospital 'Danilo I', Humana reprodukcija, Vuka Micunovica bb, 86000 Cetinje, Montenegro. Tel.: +382 675 513 71; E-mail: vukicevic.dragana@yahoo.com

Norway

Dr Johan T. Hazekamp, IVF-klinikken Oslo AS, PB 5014 Maj., 0301 Oslo, Norway. Tel.: +47 2250 8116; Fax: +47 2320 4401; Mobile +47 9132 3197; E-mail: hazekamp@ivfoslo.nhn.no

Poland

Prof. Rafal Kurzawa, Pomeranian Medical Academy, Department of Reproductive Medicine and Gynaecology, 2 Siedlecka Street, 72-010 Szczecin, Poland. Tel.: +48 91 487 3755; Fax: +48 91 425 33 12; Mobile: +48 601 776 305; E-mail: rafal.kurzawa@vitrolive.pl

Portugal

Prof. Dr Carlos Calhaz—Jorge, CNPMA, assembleia da Republica, Palacio de Sao Bento, 1249-068 Lisboa, Portugal. Tel.: +351 21 391 93 03; Fax: +351 21 391 75 02; E-mail: calhazjorgec@gmail.com

Ms. Ana Rita Laranjeira, CNPMA, Assembleia da Republica, Palaio de Sao Bento 1249-068 Lisboa, Portugal, Tel +351 21 391 93 03; Fax +351 21 391 75 02; E-mail cnpma.correio@ar.parlamento.pt

Romania

Mrs Ioana Rugescu, Gen Secretary of AER Embryologist Association and Representative for Human Reproduction Romanian Society. Tel.: +40744500267; E-mail: irugescu@rdsmail.ro

Russia

Dr Vladislav Korsak, International Center for Reproductive Medicine, General Director, Liniya 11, Building 18B, Vasilievsky Island, 199034 St-Petersburg, Russia C.I.S. Tel.: +7 812 328 2251; Fax: +7 812 327 19 50; Mobile: +7 921 9651977; E-mail: korsak@mcrn.ru

Serbia

Prof. Nebojsa Radunovic, Institute for Obstetrics and Gynecology, Vise-gradska 26, 11000 Belgrade, Serbia. Tel.: +38 111 361 55 92; Fax: +38 111 361 56 03; Mobile: +381 63 200 204; E-mail: radunn01@gmail.com

Dr Sci. Nada Tabs, Klinika za ginekologiju i akuserstvo, Klinicki Centar Vojvodine, Branimira Cosica 37, 21000 Novi Sad, Serbia. Mobile: +381 63 50 81 85; E-mail: nada.tabs@yahoo.com

Slovenia

Dr Tomaz Tomazevic, University Medical Centre Ljubljana, Department of Obstetrics and Gynecology, Slajmerjeva 3, 1000 Ljubljana, Slovenia. Tel.: +386 1 522 60 13; Fax: +386 1 431 43 55; Mobile: +386 415 346 23; E-mail: tomaz.tomazevic@guest.arnes.si

Dr Irma Virant-Klun, University Medical Centre Ljubljana, Department of Obstetrics and Gynecology, Slajmerjeva 3, 1000 Ljubljana, Slovenia. Tel.: +386 1 522 60 13; Fax: +386 1 431 43 55; Mobile: +38631625774. E-mail: irma.virant@kclj.si

Spain

Dr Juana Hernandez Hernandez, Hospital San Pedro, Servicio de Ginecologia y Obstetricia, Calle Piqueras 98, 26006 Logrono, Spain. Tel.: +34 941 273 077; Fax: +34 941 273 081; E-mail: jhernandezh@telefonica.net, jhernandez@riojasalud.es

Dr José Antonio Castilla Alcalá, Hospital Virgense las Nieves, Unidad de Reproduccion, Avenida de las Fuerzas Armadas 2, 18014 Granada, Spain. Tel.: +34 607 338 890; Fax: +34 958 020 226; E-mail: josea.castilla.sspa@juntadeandalucia.es

Sweden

Prof. Christina Bergh, Sahlgrenska University Hospital, Department of Obstetrics and Gynaecology, Bla Straket 6, 413 45 Göteborg, Sweden. Tel.: +4631 3421000, +46736 889325; Fax +4631 418717; Mobile +46 736 889325; E-mail: Christina.bergh@vgregion.se

Switzerland

Ms. Maya Weder, Administration FIVNAT, Postfach 754, 3076 Worb, Switzerland. Tel.: +41 (0)31 819 76 02; Fax +41 (0)31 819 89 20; E-mail: fivnat@bluewin.ch

Prof. Christian De Geyter, University Women's Hospital of Basel, Abteilungsleiter gyn. Endokrinologie und Reproduktionsmedizin, Spitalstrasse 21, 4031 Basel, Switzerland. Tel +41 61 265 93 15; Fax +41 61 265 91 94; E-mail cdegeyter@uhbs.ch

The Netherlands

Dr Jesper M.J. Smeenk, St Elisabeth Hospital Tilburg, Dept. of Obstetrics and Gynaecology, Hilv, The Netherlands. Tel +31 13 539 31 08; Mobile +31 622 753 853; E-mail: j.smeenk@elisabeth.nl

Dr Cornelis Lambalk, Free University Hospital, Reproductive Medicine, de Boelaan 1117, PO Box 7057, 1007 MB Amsterdam, The Netherlands. Tel: +31 204 440 070; Fax: +31 204 440 045; Mobile +32 629 037 632; E-mail: cb.lambalk@vumc.nl)

Ukraine

Dr Viktor Veselovsky, Clinic of Reproductive Medicine Nadiya, 28-A, Andriyivsky Uzviz str., 01125 Kyiv, Ukraine. Tel.: +380 445377598; Fax: +380 44532775499; E-mail: v.veselovskyy@ivf.com.ua

The UK

Mr Richard Baranowski, Deputy Information Manager, Human Fertilization and Embryology Authority (HFEA), Finsbury Tower, 103-105 Bunhill Row, London EC1 Y 8HF, UK. Tel.: +44 (0) 20 7539 3329; Fax: +44 (0) 20 7377 1871; E-mail: Richard.baranowski@hfea.gov.uk.