

## Hematopoietic stem cell transplantation for hematological malignancies in Europe

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**Hematopoietic stem cell transplants (HSCTs) are considered the best treatment option for many hematological malignancies, and transplant numbers have increased five-fold during the last decade. Only a few controlled prospective studies are available, and different opinions prevail. Data from 118 167 HSCT (36% allogeneic, 64% autologous) collected within the EBMT activity survey from 1990 to 2001 were used to assess trends over time, transplant rates and coefficient of variation (CV) of transplant rates among European countries for acute myeloid leukemia (AML; 18.5%), acute lymphocytic leukemia (ALL; 12%), chronic myeloid leukemia (CML; 11.5%), myelodysplastic syndromes (MDS; 3%), lymphoproliferative disorders (LPS; 36.3%) and multiple myeloma (MM; 18.7%). Transplant rates increased in all countries and for all indications from 1990 to 2001 from 1.7-fold (CML) to 24.8-fold (MM). Transplant rates have declined for CML since 1999. Autologous HSCT are the preferred choice for LPS and MM, allogeneic HSCT for ALL and myeloid malignancies. CVs of less than 50% suggest consensus for allogeneic HSCT in AML, ALL, CML, MDS and NHL, for autologous HSCT in LPS and MM. These data give an overview of the current status of HSCT for hematological malignancies in Europe and provide objective information for health-care providers and patient counselling.**

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**Keywords:** hematological malignancies; HSCT; transplant rates; evolution; donor type

### Introduction

Hematological malignancies currently represent the main indications for hematopoietic stem cell transplantation (HSCT).<sup>1–5</sup> Clearly, autologous and allogeneic HSCT are established therapy in many situations and are integrated in the therapeutic strategy of most large multicenter cooperative study group trials. There are, however, few prospective randomized controlled trials comparing HSCT with standard conventional chemotherapy, and different opinions exist.<sup>6–13</sup> Recent publications have pointed in detail to the differences in therapeutic strategies for patients with leukemias in Europe or the US.<sup>14–16</sup> Similarly, differences in transplant rate for certain hematological malignancies between European countries have been previously described.<sup>17</sup> In addition, opinions can undergo rapid change, as was illustrated by the increase and decrease in HSCT for indications, such as breast cancer in the mid-1990s,<sup>18,19</sup> and chronic myeloid leukemia (CML) in the last 2 years.<sup>20</sup>

Assessment of best strategy for individual indications is further complicated by the factor of time. Generation of data based on evidence takes time. Even large cooperative groups take several years to recruit sufficient numbers of patients and additional

years of follow-up are required for meaningful analyses. This situation is of specific importance when comparisons involve strategies with initial high risk, for example, early transplant-related mortality and late benefits, for example, graft-versus-tumor effects. Evaluation at early time points gives different outcomes than evaluation at 10 years from treatment.<sup>21–23</sup> In addition, at the time of late analysis technologies might have changed, new methods been developed or more specific drug treatment been introduced. Change from bone marrow to peripheral blood, reduced intensity conditioning transplants or imatinib mesylate as drug for CML are such examples.<sup>5,10,24–26</sup>

Patients and treating physicians in contrast depend on an optimum of information for treatment decisions today. Large comprehensive observational databases provide an instrument to reflect current strategies. Taking the annual EBMT activity survey as a basis,<sup>5</sup> we therefore present a detailed analysis of the current HSCT strategy for hematological malignancies in Europe, including changes over time in transplant numbers and differences in transplant rates between European countries over the last 12 years. They describe current thinking of specialist teams in Europe.

### Patients and methods

#### *Data collection, selection and validation*

Data derived for these analyses come from the EBMT activity surveys introduced in 1990.<sup>27</sup> All EBMT members and affiliated nonmembers receive an annual survey sheet on which they can report numbers of patients by indication, stem cell source and donor type for the past year. This report includes data from 1990 up to and including 2001. This analysis includes hematological malignancies defined and classified as acute myeloid leukemia (AML), acute lymphocytic leukemia (ALL), CML, myelodysplastic syndromes (MDS), lymphoproliferative syndromes (LPS), with the subgroups non-Hodgkin's lymphoma (NHL), Hodgkin's lymphoma (HD) and chronic lymphocytic leukemia (CLL) and multiple myeloma (MM) (Table 1). Additional information on the stage of the disease was available for AML (first complete remission (CR) vs nonfirst CR), ALL (first CR vs nonfirst CR) and CML (first chronic phase vs nonfirst chronic phase). This information on disease stage at the time of transplant is not available for the other disease categories.

The EBMT survey forms an integral part of a prospective quality assurance program conducted by the EBMT (<http://www.ebmt.org>). Validation of data includes returning a computer print out of entered data to the reporting teams, crosschecking with national transplant registries and onsite visits.

**Table 1** Hematopoietic stem cell transplants for hematological malignancies in Europe 1990–2001

Year	AML	ALL	CML	MDS	LPS	MM	Total
1990	882	778	615	90	928	176	3469
1991	1022	815	635	95	1166	306	4039
1992	1158	910	735	142	1535	373	4853
1993	1397	976	854	171	2091	596	6085
1994	1618	1020	993	216	2752	1042	7641
1995	1696	1246	1099	289	3347	1402	9079
1996	1889	1284	1386	306	3732	1869	10 466
1997	2005	1299	1453	354	4527	2388	12 026
1998	2333	1440	1607	374	5096	2657	13 507
1999	2445	1431	1686	436	5326	3184	14 508
2000	2718	1459	1466	505	6065	3726	15 939
2001	2748	1477	1046	552	6365	4367	16 555
Total	21 911	14 135	13 575	3530	42 930	22 086	118 167

### Participating countries and teams

The report is based on 624 teams from 37 European countries. The numbers have increased from 143 teams in 1990 to the current status. For the 2001 report, there were responses from 599 teams. In all 25 contacted teams chose for unknown reasons not to reply, or failed to do so, despite several efforts to reach them. No major transplant team in Europe is missing from the list. Of the 599 teams reporting HSCT in 2001 328 (55%) do both allogeneic and autologous transplants; 242 teams (40%) restrict their activity to autologous, five teams (1%) to allogeneic transplants only. In all, 24 contacted teams (4%) did not perform transplants in 2001.

Contacted teams are listed in the Appendix in alphabetical order according to country, city and EBMT center code. Information reached us that no blood or marrow transplants were performed in Albania, Andorra, Armenia, Azerbaijan, Bosnia-Herzegovina, Georgia, Iceland, Liechtenstein, Malta, Moldavia, Monaco, San Marino and the Vatican.

### Definitions

**Transplants:** Transplants were defined by the EBMT (<http://www.EBMT.org>) as the infusion of hematopoietic stem cells following a conditioning regimen with the intention of replacing the existing hematopoiesis by injected stem cells. The information in this analysis is restricted to first transplants. Data in Table 1, for example, refers to individual patients not to transplant numbers.

**Transplant rates:** Transplant rates were defined as the number of HSCT per ten million inhabitants. They were computed for each disease indication, donor type and country. For each disease indication, transplant rates were assessed for all HSCT and separately for autologous and allogeneic HSCT. Population data were obtained from the US Census Office (<http://www.census.gov>).

**Coefficient of variation:** Coefficients of variation (CV) of transplant rates were calculated, as previously defined<sup>28</sup>, for each disease indication by donor type and, if applicable, disease stage ( $CV (\%) = (\text{standard deviation (s.d.)} / \text{mean} \times 100)$ ). To ascertain homogeneity, only those countries were included in the CV analysis which had more than 300 HSCT in 2001 (Table 2).

**Team density:** Team densities were defined as the number of transplant teams in participating countries per ten million inhabitants.

**Statistical analysis:** Mean, median and s.d.'s of numerical variables were calculated on an Excel spreadsheet. Groups were compared with  $\chi^2$  tests.

## Results

### Participating teams

**Numbers of HSCT for hematological malignancies from 1990 to 2001:** A total 118 167 HSCT, 42 868 (36%) allogeneic and 75 299 (64%) autologous were carried out in Europe from 1990 to 2001 (Table 1).

There were 21 911 HSCT for AML (18.5%), 14 135 HSCT for ALL (12%), 13 575 HSCT for CML (11.5%), 3530 HSCT for MDS (3%), 42 930 HSCT for LPS (36.3%) and 22 086 HSCT for MM (18.7%).

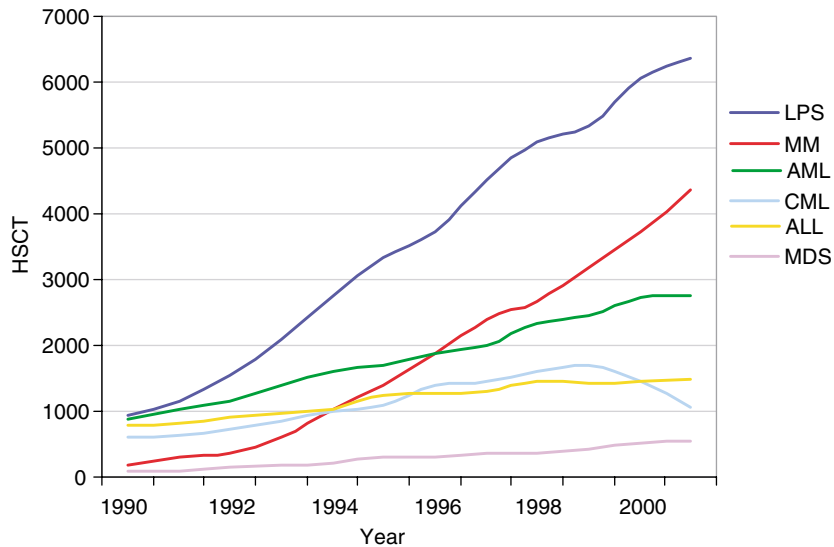
The increase in numbers and absolute numbers of HSCT per year for main disease categories is illustrated in Figure 1. There is an increase in all indications except for CML in the last 2 years. The slope of the curve reflecting the rate of increase since 1990 differs for individual disease categories and is highest for MM. Transplants increased 1.7-fold for CML, 1.9-fold for AML, 6.1-fold for MDS, 6.9-fold for LPS and 2.5-fold for MM (overall 4.8-fold).

Both allogeneic and autologous HSCT were used for all indications, but not to the same extent. The proportion of allogeneic compared to autologous transplants differed in individual disease categories and changed over time for some but not all disease categories, as illustrated in Figure 2. The highest proportion of allogeneic transplants was found in CML (95%) and MDS (93%), the lowest for MM (6%) and LPS (12%).

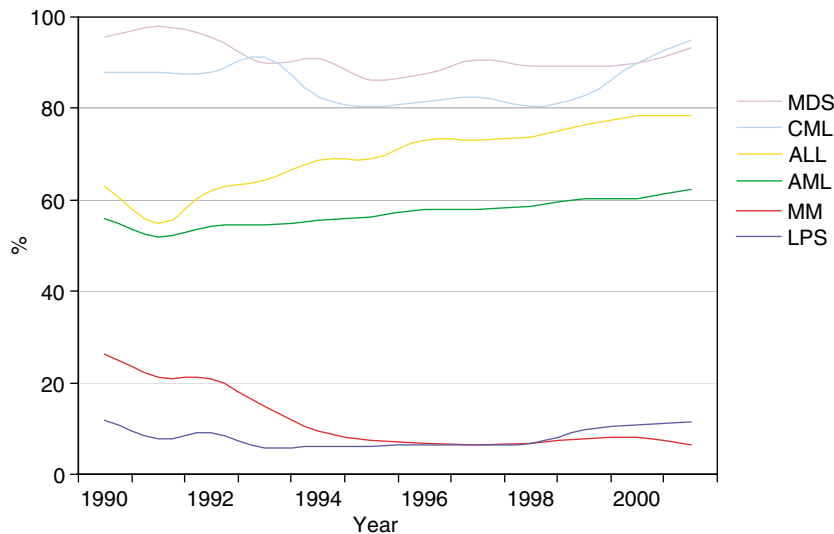
This difference in evolution of transplant numbers over time for allogeneic and autologous HSCT is further illustrated by separation into disease subcategories (Figure 3). For AML, similar numbers and trends were observed in first CR for allogeneic and autologous HSCT and similar numbers of allogeneic HSCT are performed in first CR or at later stages (Figure 3a). Autologous HSCT beyond first CR were done in low numbers throughout the observation period. In contrast, in ALL autologous HSCT remained low and more allogeneic HSCT

**Table 2** Participating countries: transplant rates and team density in 2001

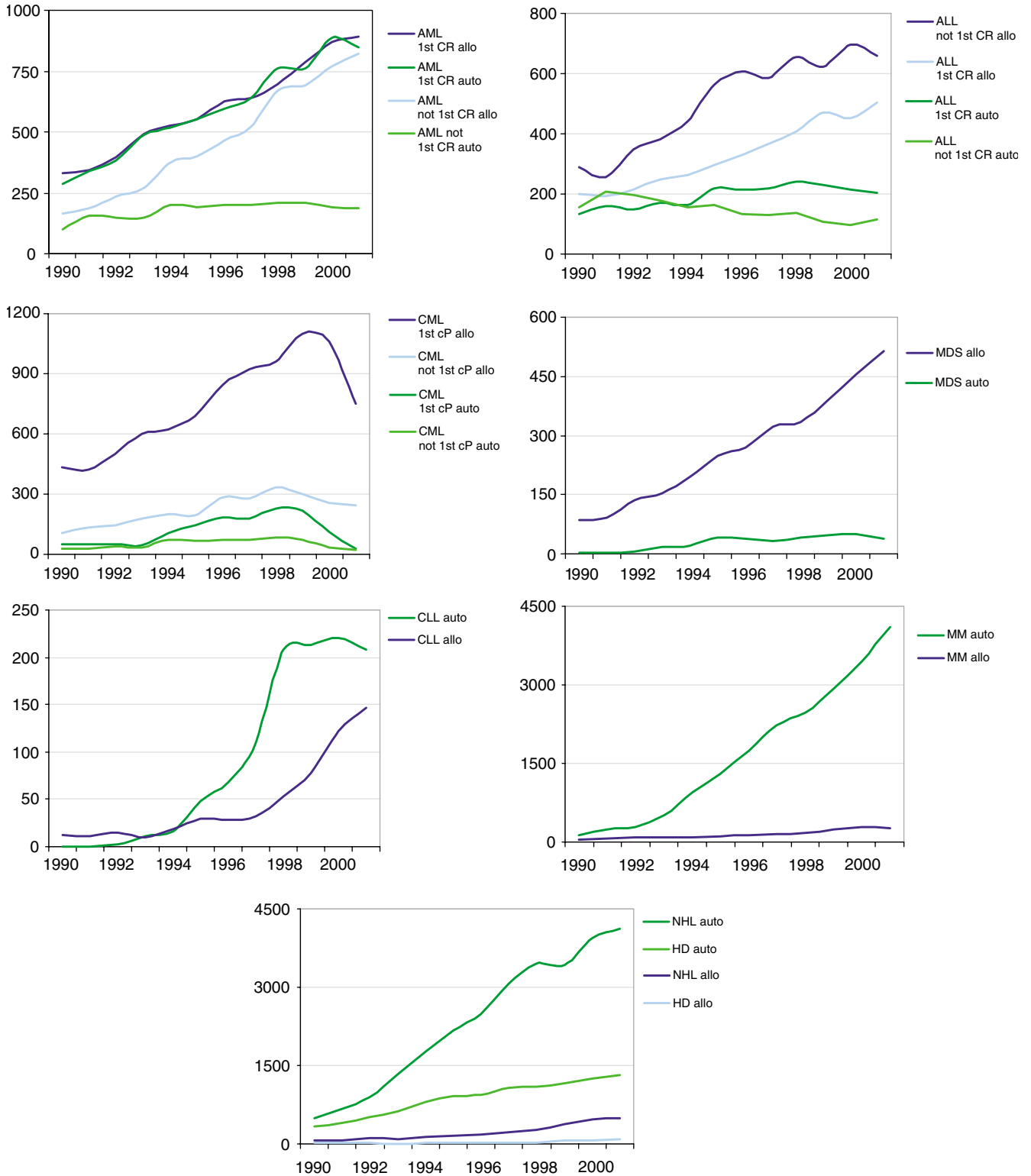
Total=12 country	Pop in Mio	Teams	Team density	Total HSCT	Transplants rates per 10 Mio		
					Allo	Auto	Total
Austria	8.2	15	18.3	317	144	243	387
Belgium	10.3	19	18.4	527	165	347	512
Czech rep.	10.3	10	9.7	443	110	320	430
Finland	5.2	7	13.5	277	183	350	533
France	59.9	71	11.9	3195	120	413	533
Germany	82.3	102	12.4	3499	167	258	425
Italy	57.9	95	16.4	3173	165	383	548
Netherlands	16.1	14	8.7	573	153	202	356
Spain	40.2	73	18.2	1889	112	358	470
Sweden	8.9	10	11.2	429	173	309	482
Switzerland	7.3	10	13.7	281	103	282	385
United Kingdom	59.9	53	8.8	2104	129	222	351
<b>Total</b>		<b>479</b>	<b>161.2</b>	<b>16 707</b>	<b>1723</b>	<b>3689</b>	<b>5412</b>



**Figure 1** Numbers of hematopoietic stem cell transplants for hematological malignancies in Europe according to main disease categories from 1990 to 2001. Allogeneic and autologous HSCT combined.



**Figure 2** Percentage of allogeneic HSCT compared to autologous HSCT for main disease indications from 1990 to 2001.



**Figure 3** Transplant numbers from hematological malignancies in Europe from 1990 to 2001 according to disease, stage of disease and donor type.

were performed beyond first CR (Figure 3b). CML was the leading indication up to 1999 with continuously increasing numbers of allogeneic and autologous HSCT. In 2001, autologous HSCT nearly ceased and allogeneic HSCT had dropped by 30% (Figure 3c). In CLL, interest in HSCT had

increased since 1996, initially with autologous HSCT, more recently with allogeneic HSCT (Figure 3c). In MDS, there was an increase but limited to allogeneic HSCT with only steady, small numbers of autologous HSCT (Figure 3d). The reverse situation was observed in MM. There was a massive increase in

autologous HSCT, but only a small increase in allogeneic HSCT (Figure 3f). The situation was similar for lymphomas with a primary increase in autologous HSCT and only a small increase in allogeneic HSCT for NHL over the last 3 years (Figure 3g).

**Transplant rates in European countries:** Transplant rates differed markedly between European countries, as reflected by the distribution of the 19 668 HSCT in Europe in 2001 (Figure 4). Transplant rates for all transplants, including both allogeneic and autologous HSCT, varied from 0 (several countries) to more than 400 per ten million inhabitants (several countries). The same basic difference in transplant rates between Eastern and Western European countries was observed if individual disease indications were represented by transplant rates (Figure 5). In addition, there was a marked over or under representation for certain disease indications (Figure 5a–c). Few transplants were performed in 2001 for CML in France (Figure 5c). Myeloma transplants were higher in France, Italy and the Nordic states (Figure 5e) and MDS transplants were higher in the Benelux states, Germany, Switzerland, Spain and Sweden (Figure 5d).

### Coefficient of variation

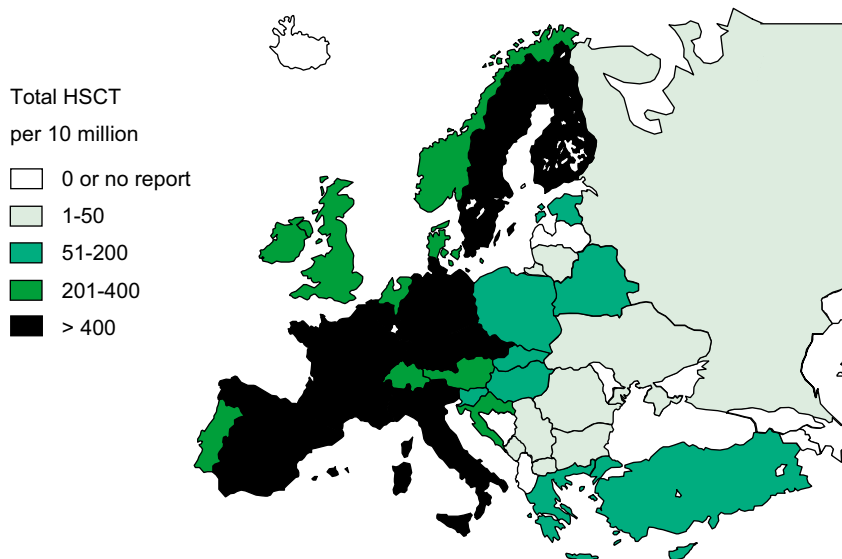
The visual differences in transplant rates for the individual disease indications (Figure 5s) was quantified by the CV. In order to adjust for the economic impact, this analysis was restricted to the 12 selected countries with more than 300 HSCT in 2001 (Table 2). They performed a total 16 707 HSCT (all indications) in 2001 with total transplant rates from 351 (UK) to 548 (Italy) (median 450 transplants per ten million inhabitants). Transplant rates for hematological malignancies in these 12 countries were calculated for all diseases, disease stages and donor types, as listed in Table 3. Transplant rates differed substantially with numbers for AML from 40.6 (UK) to 81.6 (Belgium) (median 60.2 per ten million inhabitants), for ALL from 16.5 (Czech Republic) to 40.5 (Spain) (median 30.6 per ten million inhabitants), for CML from 10.4 (France) to 41.6 (Sweden)

(median 22.4 per ten million inhabitants), for MDS from 9.7 (Czech Republic) to 29.1 (Belgium) (median 13.2 per ten million inhabitants), for MM from 73.2 (Austria) to 160.7 (Sweden) (median 99.9 per ten million inhabitants) and for LPS from 107 (Sweden) to 196 (Finland) (median 143.6 per ten million inhabitants). The difference in transplant rates in countries with lowest to those with highest transplant rates hence varied from 1.5-fold in LPS to 2.0-fold for AML, 2.1-fold for MM, 2.5-fold for ALL, three-fold for MDS and four-fold for CML.

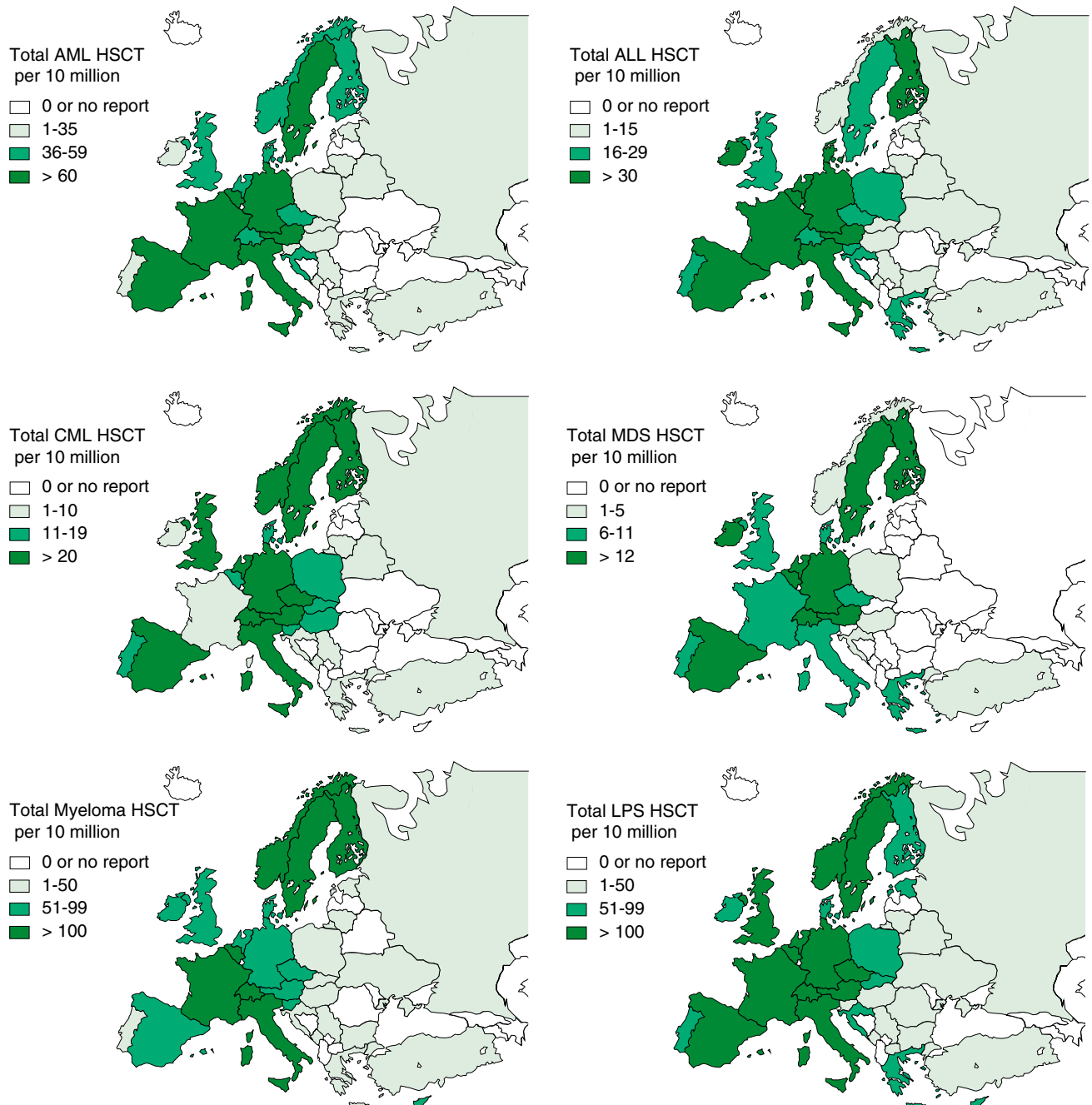
This variation of transplants rates, for example, CV, is listed in detail for all disease indications and donor types in Table 4. Variation is lowest for autologous HSCT for NHL (19.2%) and highest for autologous HSCT for CML beyond first CP (132.1%). It permits classification of disease into categories with high consensus (CV <50%), intermediate consensus (CV 50–80%) and no consensus (CV >80%) among the specialist teams concerning indications for HSCT. By using this approach, acute leukemias, CML, MDS and NHL were considered as accepted indications for allogeneic, MM, NHL and HD for autologous HSCT. In contrast, HD for allogeneic and ALL, CML, MDS and CLL for autologous, were not regarded as established indications for HSCT.

### Discussion

These data give a clear view of the current status of HSCT for hematological malignancies in Europe today, point to the changes in transplant rates over the last decade and illustrate similarities and discrepancies between the European countries. They illustrate the continuing increase for some disease categories, stable situations for others as well as increase and decrease for CML. In general, these trends reflect the prevailing considerations of transplant physicians and specialists in the field about the advantage or disadvantage for HSCT: an increase points to consensus on advantage of HSCT, stable low numbers reflect the experimental status of the procedure and decreasing numbers the advent of alternative therapies or a disadvantage of HSCT. In this context, it is comforting to see that CVs of



**Figure 4** Transplant rates in European countries 2001. Shades reflect numbers of HSCT per ten million inhabitants, all indications and all donor types.



**Figure 5** Transplant rates for hematological malignancies in Europe 2001. Shades reflect numbers of transplants for individual indications per ten million inhabitants. (a) Transplant rates for AML. (b) Transplant rates for ALL. (c) Transplant rates for CML. (d) Transplant rates for MDS (e) Transplant rates for MM (f) Transplant rates for LPS.

transplant rates are low in situations where prospective studies exist and where expert opinions agree.<sup>6,7,13,29,30,41-43</sup> CVs provide an objective instrument for consensus assessment.<sup>28</sup>

Data of this survey highlight to an additional conflict of interest, as illustrated by the difference in transplant rates for indications, such as MM or MDS. There are no data that disease prevalence is different in European countries. Hence transplant rates should be no different, if indications were agreed upon. These differences might reflect the impact of presence or absence of ongoing active study protocols by the respective national and regional study groups. As such, a lower transplant

rate might reflect absence, higher transplant rate, presence of a specific national study group protocol. Little or no information exists with regard to these aspects. A need for studies on decision-making at team level has been illustrated by the rapid decline in HSCT rates for CML, which began in 1999, 2 years ahead of any published data on the use of imatinib in CML treatment and far ahead of any studies on long-term outcome. Anticipation as the driving force has been discussed in this context.<sup>20</sup>

Data on comprehensive surveys, such as the EBMT activity survey, might at least give an objective analysis of the current

**Table 3** Transplant rates for hematological malignancies in Europe in 2001 in selected countries (in numbers per ten million inhabitants)

	AML	ALL	CML	MDS	MM	LPS	Total HSCT
Austria	59.8	30.5	23.2	13.4	73.2	112.2	387
Belgium	81.6	35.0	12.6	29.1	137.9	165.0	512
Czech Rep.	46.6	16.5	29.1	9.7	89.3	170.9	430
Finland	55.8	30.8	34.6	11.5	136.5	196.2	533
France	61.4	29.7	10.4	10.7	135.2	186.1	534
Germany	70.4	33.7	30.0	16.4	90.5	122.1	419
Italy	78.6	37.7	21.6	10.2	116.8	177.9	550
Netherlands	46.6	35.4	23.6	14.3	75.8	115.5	356
Spain	65.9	40.5	21.4	12.9	93.0	166.2	471
Sweden	60.7	28.1	41.6	15.7	160.7	107.9	482
Switzerland	49.3	19.2	20.5	15.1	106.8	117.8	385
United Kingdom	40.6	28.7	19.7	10.5	92.7	121.4	352
Median	60.2	30.6	22.4	13.2	99.9	143.6	450.6

**Table 4** CV according to disease indication and donor type

	Mean TR	(s.d.)	CV	Country with max. TR	Country with min. TR
AML total	59.8	(12.9)	21.5	Belgium (81.6)	United Kingdom (40.6)
AML allogeneic	39.5	(10.8)	27.3	Finland (55.8)	Czech Rep. (25.2)
1st CR	22.0	(7.6)	34.5	Finland (40.4)	United Kingdom (14.7)
Not 1st CR	17.5	(8.4)	47.9	Belgium (33.0)	Netherlands (3.7)
AML autologous	20.2	(10.8)	53.6	Spain (39.1)	Finland (0)
1st CR	16.6	(9.5)	57.0	Spain (32.6)	Finland (0)
Not 1st CR	3.6	(1.9)	52.5	Spain (6.5)	Finland (0)
ALL total	30.5	(7.0)	23.0	Spain (40.5)	Czech Rep. (16.5)
ALL allogeneic	24.3	(5.7)	23.3	Germany (30.3)	Czech Rep. (12.6)
1st CR	10.9	(3.9)	35.6	Netherlands (16.8)	Switzerland (2.7)
Not 1st CR	13.3	(3.5)	26.1	Italy (19.3)	Czech Rep. (6.8)
ALL autologous	6.2	(5.1)	82.4	Spain (18.9)	Sweden (0)
1st CR	4.2	(3.9)	93.5	Spain (11.4)	Finland, Sweden (0)
Not 1st CR	2.0	(2.0)	96.6	Spain (7.5)	Sweden (0)
CML total	24.0	(8.8)	36.4	Sweden (41.6)	France (10.4)
CML allogeneic	23.0	(9.1)	39.8	Sweden (40.4)	France (8.0)
1st cP	16.8	(7.3)	43.6	Sweden (32.6)	France (4.3)
Not 1st cP	6.2	(2.8)	45.5	Austria (9.8)	Belgium (1.9)
CML autologous	1.1	(0.9)	81.6	Switzerland (2.7)	A, FIN, NL (0)
1st cP	0.7	(0.8)	111.8	Switzerland (2.7)	A, FIN, NL, S (0)
Not 1st cP	0.4	(0.5)	132.1	France (1.3)	A, B, CZ, FIN, NL, CH (0)
MDS total	14.1	(5.2)	37.1	Belgium (29.1)	Czech Rep. (9.7)
Allo	12.4	(3.7)	29.6	Belgium (22.3)	Czech Rep. UK (9.7)
Auto	1.7	(2.0)	119.1	Belgium (6.8)	CZ, FIN, D (0)
CLL total	11.4	(9.2)	81.0	Finland (38.5)	Netherlands (4.3)
Allo	4.4	(2.7)	60.5	Finland (11.5)	Austria (1.2)
Auto	7.0	(7.3)	104.2	Finland (26.9)	Netherlands (0)
MM total	109.0	(28.0)	25.7	Sweden (160.7)	Austria (73.2)
Allo	6.3	(4.4)	70.7	Finland (13.5)	Austria (1.2)
Auto	102.8	(28.1)	27.3	Sweden (157.3)	Netherlands (62.7)
HD total	24.8	(11.3)	45.4	Spain(44.8)	Sweden (11.2)
Allo	1.4	(1.2)	82.3	Italy (3.5)	A, FIN, S (0)
Auto	23.4	(10.5)	44.8	Spain (42.8)	Sweden (11.2)
NHL total	110.4	(21.2)	19.2	France (147.2)	Switzerland (89.0)
Allo	11.8	(4.5)	37.8	Netherlands (19.3)	Sweden (4.5)
Auto	98.5	(20.0)	20.3	France (134.2)	United Kingdom (76.1)

**Table 5** Classification of indications according to CV

CV	Allogeneic HSCT	Autologous HSCT
<50	AML 1st CR AML not 1st CR ALL 1st CR ALL not 1st CR CML 1st cP CML not 1st cP MDS NHL	MM HD NHL
50–80	MM CLL	AML 1st CR AML not 1st CR
>80	HD	ALL 1st CR ALL not 1st CR CML 1st cP CML not 1st cP MDS CLL

status, when more than 95% of activity in the field is captured. These surveys cannot substitute for prospective control studies, but will become even more important when 10 years or more of follow-up are required for long-term analyses. As an example, all comparisons of allogeneic and autologous HSCT are hampered by two well-known facts.<sup>6,8,9,19,31,32</sup> Allogeneic HSCT is always associated with higher initial TRM, but a lower late relapse rate.<sup>3,33,44</sup> The balance of these events is never equal. Early events need limited observation time, late balance of graft-versus-host and graft-versus-tumor effects depends on the evolution of acute and chronic graft-versus-host disease, its prevention and treatment, application of donor lymphocyte infusions and/or concomitant chemotherapy treatment.<sup>21,22,34</sup> In situations with long follow-up, we risk comparing technologies which are no longer in use at the time of analysis. This is clearly the case for comparisons of chemotherapy and autologous HSCT in AML.<sup>9</sup> Bone marrow was a traditional source in 1990,<sup>27</sup> but it is hardly used today and has been replaced by peripheral blood.<sup>5</sup> Comparative studies with peripheral blood, in contrast, are still ongoing or short of follow-up.<sup>8,9</sup> The same holds true for the new technologies in allogeneic HSCT, such as reduced intensity conditioning.<sup>34–40</sup> Increased use has been seen over the last 3 years.<sup>24</sup> Effects of graft-versus-host and graft-versus-tumor effects are too early to be evaluated correctly. Only extrapolations are valid. However, decisions at individual patient and team level must be made.

As such, this present analysis does not give any data on outcome. This information is gathered elsewhere and published separately. This survey just concentrates on rapid description of the current status quo. It reflects the situation of HSCT for hematological malignancies in Europe, gives information on consensus or dissents among specialists in the field and provides an objective basis for patient counselling and health-care planning.

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## Appendix

2001 ([AG1] 2000): List of transplant centres in 2001 (numbers show total number of patients with first transplants (*total number of transplants*) followed by the allografts/autografts).

- Albania:** no report
- Andorra:** no report
- Armenia:** no report
- Austria** (15 teams; 317(422), 118/199)\*\*
  - Graz, University Hospital, Onco, CIC 278, H Samonigg, M Schmid (5(11), 0/5)
  - Graz, University Hospital, CIC 308, W Linkesch (48(62), 12/36)
  - Graz, Universitäts-Kinderklinik, CIC 593, Ch Urban (9(11), 4/5)
  - Innsbruck, Universitätsspital (hem, onco), CIC 271, G Gastl, D Nachbaur (36(41), 19/17)
  - Innsbruck, Universitätsspital (Internal Medicine), CIC 516, E Woell (3(6), 0/3)
  - Klagenfurt, General Hospital Klagenfurt CIC 716, D Geissler, M Heistingner (4(5), 0/4)
    - Linz, 1. Medizinische Abteilung, AO Krankenhaus, CIC 343, MA Fridrik (3(3), 0/3)
    - Linz, AOK der Elisabethinen, CIC 594, D Lutz, O Krieger (35(52) 7/28)
    - Salzburg, LKA Salzburg (Onco), CIC 356, Professor Hausmaninger (6(9), 0/6)
    - Vienna, Universitätsklinik für Innere Medizin I-AKH, CIC 227, HT Greinix, P Kalhs (81(98), 50/31)
    - Vienna-Lainz, Krankenhaus der Stadt Wien-Lainz, 5. Med Onko, CIC 362, G Baumgartner, E Ulsperger, Dr Mayer (0(0) 0/0)

Vienna, St Anna Kinderspital, CIC 528, H Gadner, C Peters (40/50), 26/14)

Vienna, Hanusch-Krankenhaus, CIC 743, E Pittermann, E Koller (16/21), 0/16)\*\*

Vienna, Donauspital, CIC 767, W Hinterberger (8/10), 0/8)

Vienna, Wilhelminerspital, CIC 828, H Ludwig (23/43), 0/23)

**Azerbaijan:** no report

**Republic of Belarus** (three teams; (63/64), 14/49)

Minsk, Belorussian Center, CIC 591, O Aleinikova (32/32), 10/22)

Minsk, Hospital no. 9, CIC 801, N Milanovitch (31/32), 4/27)

Minsk, Institute of Haematology, V Ivanov\*

**Belgium** (24 teams; (527/614), 170/357)

Aalst, OLV Ziekenhuis, E Wouters\*

Antwerpen, Stuivenberg ZH, CIC 339, P Zachée (38/44), 8/30)

Antwerpen-Edegem, University Antwerpen, CIC 648, W Schroyens (21/26), 7/14)

Antwerpen, AZ Middelheim, CIC 783, R de Bock (5/5), 0/5)

Brugge, AZ St Jan, CIC 506, D Selleslag, A Van Hoof, K Van Eygen (48/52), 14/34)

Brussels, Institut Jules Bordet and the Children's University Hospital, CIC 215, D Bron, E Sariban, C Devalck (40/55), 17/23)

Brussels, Clinique universitaire St Luc (Adults), CIC 234, A Ferrant (54/54), 19/35)

Brussels, Clinique Universitaire St Luc (peds), CIC 234, C Vermynen (7/8), 6/1)

Brussels, Hôpital Erasme, CIC 596, W Feremans, A Kentos, M Lambermont, A Deweiwere (24/32), 0/24)

Brussels, University Hospital, CIC 630, B Van Camp, A Schots (33/33), 14/19)

Brussels, Clinique Général Saint Jean, CIC 779, C Dubois, C Laurent, S Marichal (5/6), 0/5)

Brussels, Cliniques Universitaires St Luc, (onco), M Symann\*

Brussels, Institute Edith Cavalle Marie Depage (onco), C Vanhaelen\*

Charleroi, Hopital Notre-Dame, M André (15/18), 1/14)

Gent, University Hospital, CIC 744, LA Noens (32/34), 18/14)

Haine St Paul, Hôpital de Jolimont, CIC 234, A Delannoy, C Ravoet (14/20), 0/14)

Hasselt, Virgajesse Ziekenhuis CIC 632, D Vanstraelen, Dr Janssen (28/28), 0/28)

Jumet, Hôpital Civil de Jumet, A Duvivier\*

Leuven, University Hospital Gasthuisberg, CIC 209, MA Boogaerts, P Vandenberghe, J Maertens (71/83), 36/35)

Liège, CHR-Citadelle, CIC 353, B De Prijck (8/9), 0/8)

Liège, University Hospital Sart-Tilman, CIC 726, Y Béguin (43/56), 24/19)

Liège, Centre Hospitalier St Joseph (hem), L Longree\*

Roeselare, H Hartziekenhuis, F Van Aelst, J Tytgat, J Demol, CIC 646 (14/14), 2/12)

Yvoir, Clinique universitaire de Mont-Godinne CIC 234, C Doyen (27/37), 4/23)

**Bosnia-Herzegovina:** no report

**Bulgaria** (one team; 12/17), 1/11)

Sofia, University of Hospital 'Queen Johanna', CIC 346, (peds hem-onco), D Bobev (12/17), 1/11)

Croatia (two teams; 100/108), 23/77)

Zagreb, Hospital Merkur, CIC 159, B Jaksic, H Minigo (25/26), 4/21)

Zagreb, Clinical Hospital Center, CIC 302, B Labar, D Nemet, M Mrsic (75/82), 19/56)

**Cyprus** (one team; 11/11), 0/11)\*\*

Nicosia Makarios Hospital III, N Papaminas (11/11), 0/11)\*\*

**Czech Republic** (10 teams; 443/563), 113/330)

Brno, Masaryk University Hospital, CIC 597, J Vorlicek (86/120), 20/66)

Hradec Kralové, Charles University, CIC 729, S Filip, M Blaha (67/73), 11/56)

Olomouc, University Hospital, CIC 574, K Indrāk (47/52), 10/37)

Pilsen, Faculty Hospital, CIC 718, V Koza (59/71), 12/47)

Prague, Clinical Haematology, Charles University, CIC 318, T Kozak (36/47), 0/36)

Prague, Thomayer Memorial Hospital, CIC 375, J Abrahamova, J Nepomucka, L Boublikova (9/9), 0/9)

Prague, University Hospital Motol (peds hem), CIC 656, J Stary, E Kabickova (23/25), 23/0)

Prague, University Hospital Motol (peds onco), P Kavan CIC 656 (20/54), 0/20)

Prague, Institute of Hematology and Blood Transfusion, CIC 656, A Vitek, P Kobylka (47/48), 37/10)

Prague, Charles University, CIC 745, M Trneny (49/64), 0/49)

**Denmark** (three teams; 138/151), 60/78)

Aarhus, Amtssygehus, CIC 634, E Segel (6/6), 0/6)

Copenhagen, Rigshospitalet, CIC 206, N Jacobsen (112/119), 60/52)

Copenhagen, Herlev Hospital, University, CIC 568, HE Johnson (20/26), 0/20)

**Estonia** (one team; 12/13), 2/10)

Tartu, University Hospital, CIC 746, H Everaus (12/13), 2/10)

**Finland** (seven teams; 277/310), 95/182)

Helsinki, Children's Hospital, CIC 219, U Pihkala, S Vettenranta (28/37), 15/13)

Helsinki, University Hospital, Third Department of Medicine, CIC 515, T Ruutu (116/123), 67/49)

Helsinki, University Hospital, Department of Oncology, CIC 833, H Joensuu, T Wiklund (15/17), 0/15)

Kuopio, Department of Medicine, University Hospital, E Jantunen, T Nousiainen, CIC 369 (29/29), 0/29)

Oulu, University Central Hospital (haem/onco), CIC 690, P Koistinen, T Turpeenniemi-Hujanen (27/32), 0/27)

Tampere, University Hospital, CIC 635, E Koivunen, R Silvennoinen (29/37), 0/29)

Turku, University Central Hospital, CIC 225, K Remes (33/35), 13/20)

**France** (80 teams; 3195 (3 961), 719/2 476)\*\*

Amiens, CHU d'Amiens, B Desablens\*

Angers, Centre Hospitalier, CIC 650, N Ifrah, S François (56/65), 15/41)

Angers, Paul Papin, Dr Gamelin (2/4), 0/2)

Argenteuil, Centre hospitalier, M Urbajtel (24/24), 6/18)

Besançon, Hôpital Jean Minjoz and Hôpital St Jacques (adults and peds), CIC 233, P Hervé, J-Y Cahn, MN Cailleux, DrSurowka (78/92), 26/52)

Bobigny, Hôpital Avicenne (hem), P Casassus (0/0), 0/0)\*\*

Bordeaux, CHU Hôpital de Bordeaux Enfants, Y Perel\*

Brest, Centre Hospitalier, C Berthou (51/76), 0/51)

Caen, Centre Hospitalier Régional, CIC 251, O Reman (17/18), 0/17)

Caen, Hôpital Cote de Nacre (peds hem onco), P Boutard (1/1), 0/1)

Caen, Centre Régional François Baclesse, AM Peny (23/32), 0/23)

Clermont Ferrand, Centre Jean Perrin and CHU Hotel Dieu, CIC 273+589, J-O Bay, F Dèmeocq, P Travade (145/180), 27/118)

Clichy, Hôpital Beaujon, J Brière\*

Colmar, Hôpital civil, B Audhuy (22/23), 0/22)

- Corbeil Essonne, Hôpital Gilles de Corbeil, A Devidas (3(4), 0/3)
- Créteil, Hôpital H Mondor, CIC 252, C Cordonnier, M Kuentz (54(58), 25/29)
- Dijon, Hôpital d'Enfants, D Caillot (50(58), 0/50)
- Dunkerque, Centre Hospitalier (hem), M Wetterwald (12(15), 0/12)
- Grenoble, Centre Hospitalier (ads, allo peds), CIC 270, JJ Sotto, F Garban, P Drillat (54(74), 19/35)
- Grenoble, Centre Hospitalier (auto peds), D Plantaz, M Bost (5(5), 0/5)
- Lille, Hôpital Claude Huriez, CIC 277, F Bauters, JP Jouet (80(96), 29/51)
- Lille, Hôpital Jeanne de Flandre, Dr Nelken (5(6), 0/5)
- Lille, Centre Oscar Lambret (onco), Dr Depadt, Dr Defachelles (15(15), 0/15)
- Lille, Centre Hospitalier Saint Vincent, N Cambier\*
- Limoges, Centre Hospitalier Dupuytren (ads.), CIC 977, D Bordessoule, P Turlure (40(48), 0/40)
- Lyon, Centre Léon Bérard, CIC 241, P Biron, T Philip (58(74), 0/58)
- Lyon, Hôpital Edouard Herriot, CIC 671, D Fiere, E Archimbaud, A Belhabri, M Michallet (57(61), 36/21)
- Lyon Sud (Pierre Benite), Centre Hospitalier, B Coiffier (148(166), 0/148)
- Lyon, Hôpital Debrousse, N Philippe, C Galambrun, Y Bertrand (24(26), 21/3)
- Marseille, Institute of Paoli-Calmettes, CIC 230, D Blaise (222(310), 23/199)
- Marseille, Hôpital d'Enfants de la Timone (onco), CIC 301, C Coze, JL Bernard (11(13), 0/11)
- Meaux, Centre Hospitalier de Meaux, C Soussain (14(14), 0/14)
- Metz, Thionville Hôpital Notre-Dame de Bon-Secours (hem), V Dorvaux, B Christen (40(53), 0/40)
- Montpellier, CHU de Montpellier Hôpital Arnaud de Ville-neuve, F Bernard (5(5), 2/3)
- Montpellier, Centre Rég. De Lutte contre de Cancer, M Fabbro, J-B Dubois (15(15), 0/15)
- Montpellier, CHR Lapeyronie, JF Rossi (84(97), 7/77)
- Mulhouse, Hôpital du Hasenrain, M Ojeda, Ph. Hénon (14(17), 0/14)
- Nantes, Hotel Dieu, CIC 253, JL Harousseau, N Milpied (126(187), 29/97)
- Nice, Hôpital de Cimiez, CIC 523, JG Fuzibet, JP Cassuto, N Gratecos (52(72), 16/36)
- Nice, Fondation Lenval (peds), Dr Soler, Dr De Ricaud (1(1), 0/1)
- Nice, Centre Antoine Lacassagne, A Thyss (19(29), 0/19)
- Paris, Hôpital Necker (ads), CIC 160, B Varet, C Bélanger, A Veil (69(73), 30/39)
- Paris, Hôpital Necker des enfants malades, CIC 201, A Fischer (41(47), 35/6)
- Paris, Hôpital St Louis (allo, ads, peds), CIC 207+ CIC 748, E Gluckman, H Esperou, A Baruchel, M-F Auclerc (87(93), 86/1)
- Paris, Hôpital St Antoine, CIC 213, C Gorin, L Fouillard (40(60), 7/33)
- Paris, Hôpital D'enfants Armand-Trousseau, G Leverger, A Auvrignon, CIC 213 (11(11), 0/11)
- Paris, Hôtel Dieu (hem), CIC 222, J-P Marie, B Rio (68(76), 17/51)
- Paris, Hôpital Pitié Salpêtière (hem), CIC 262, J-P Vernant, V Leblond (80(82), 31/49)
- Paris, Institut Curie (ads/onco/peds), CIC 702, P Pouillart, J Michon, JM Zucker\*
- Paris, Hôpital Tenon, JP Lotz, CIC 747 (31(65), 0/31)
- Paris, Hôpital St Louis (auto), CIC 805, G Gisselbrecht (52(52), 0/52)
- Paris, Hôpital St Louis (auto-leuk), CIC 960, H Dombret, L Degos, P Rouselot (8(10), 0/8)
- Paris, Hôpital St Louis (auto immuno-Haem), CIC 969, J-C Brouet, B Royer, J-P Fermand (83(90), 0/83)
- Paris, Hôpital Robert Debré, P Rohrlisch, E Vilmer (27(29), 25/2)
- Paris, Hôpital Européen GP, JM Andrieu, C Le Maignan (10(14), 0/10)
- Paris, Hotel Dieu (onco), Professor Bernadou, L Chauvenet (4(4), 0/4)
- Paris, Hôpital d'Instruction des Armées Percy, Clamart, T de Revel, G Nedellec\*
- Paris, Hôpital Cochin, J-P Levy, F Dreyfus (31(38), 0/31)
- Pessac, Hôpital Haut-Lévêque, CIC 267, J Reiffers, Dr Fabères (96(132), 31/65)
- Poitiers, Hôpital Jean Bernard, CIC 264, F Guilhot (63(82), 23/40)\*\*
- Pontoise, Hospital Renè Dubois, CIC 961, F Morvan, Y Kernéis (22(39), 0/22)
- Reims, Hopital Robert Debré, CIC 959, B Pignon, C Himberlin (17(24), 0/17)
- Rennes, Hôpital Pontchaillou, C Dauriac, T Lamy (85(92), 24/61)
- Rennes, CHRU, Clinique Médical Infantil, E Le Gall, V Gandemer (8(11), 3/5)
- Rouen, Centre Henri Becquerel, H Tilly, P Lenain (59(66), 16/43)
- Rouen, Hôpital Charles Nicolle, P Tron\*
- St Cloud, Centre René Huguenin, M Janvier (7(8), 0/7)
- St Etienne, Hôpital Etienne, D Guyotat, JL Stephan\*
- Strasbourg, Hôpital de Haute-pierre, B Lioure (80(93), 17/63)
- Strasbourg, Hospices Civils, Service de Pédiatrie 5, P Lutz (17(26), 9/8)
- Toulouse, Hôpital de Purpan (hem), CIC 624, M Attal, J-C Nogaro (120(132), 26/94)
- Toulouse, Hôpital de Purpan (peds), H Rubie (6(6), 0/6)
- Toulouse, Centre Claudius Régaud, H Roche, C Chevreau (14(25), 0/14)
- Tours, Hôpital Bretonneau, CIC 272, P Colombat (80(90), 0/80)
- Valenciennes, Hospital De Valenciennes, M Simon\*
- Vandœuvre-les-Nancy, Hôpital d'Enfants, P Bordigoni (39(50), 28/11)
- Vandœuvre-les-Nancy, CHU Nancy-Brabois (hem auto), P Lederlin, F Witz (45(72), 0/45)
- Villejuif, Institut G Roussy (peds), CIC 503, O Hartmann, DValteau-Couanet (45(86), 0/45)
- Villejuif, Institut G Roussy (ads), CIC 666, J-H Bourhis, C Boccaccio, J-M Vantelon (118(143), 30/88)
- Villejuif, Hôpital Paul Brousse, B Delmas-Marsalet (5(6), 0/5)
- Georgia: no report
- Germany (102 teams; 3499(4378), 1 375/2 124)\*\*
- Aachen, Universitätsklinikum RWTH, Med Klinik IV, CIC 348, R Osieka, U Fabry (7(12), 0/7)
- Augsburg, Zentralklinikum, Med Klinik II, G Schlimok, P Müller (29(37), 4/25)
- Bad Saarow, Humaine Klinikum, G Schultze, H Fuss (34(38), 0/34)
- Berlin, Universitätsklinikum Charité Virchow Klinikum, CIC 293+CIC 807, W Siegert, D Huhn, R Arnold (98(112), 59/39)
- Berlin, Charité Virchow Klinikum (peds), CIC 336, W Ebell, G Gaedicke (28(37), 27/1)

- Berlin, University Charité der Humboldt Universität Campus, Robert- Rössle Klinik (onco), CIC 518, B Dörken, G Maschmeyer (23(37), 0/23)
- Berlin, Universitäts-Klinik der FU Benjamin Franklin, CIC 590, W Knauf, E Thiel (38(52), 7/31)
- Berlin, KH Neukölln, AC Mayr, C Kerschgens (1(1), 0/1)
- Bielefeld, Krankenanstalten Gilead (hem, onco), U Kruempelmann, J Klempin (2(2), 0/2)
- Bielefeld, Franziska Hospital, HJ Weh, A Zumsprekel (5(10), 0/5)
- Bochum, Knappschafts-Krankenhaus, U Graeven, W Schmiegel (20(25), 0/20)
- Bonn, Medizinische Klinik und Poliklinik 1, T Sauerbruch, I Schmidt-Wolf, A Glasmacher (34(34), 0/34)
- Bonn, Universitäts Kinderklinik, U Bode, C Hasan (6(6), 0/6)
- Bremen, Zentralkrankenhaus Mitte, CIC 602, CR Meier, H Rasche (17(22), 0/17)
- Bremen, DIAKO, DRST 28001, T Wolff, KH Pflüger (15(17), 0/15)
- Chemnitz, KH Küchwald, F Fliedler, R Nowak (24(27), 0/24)
- Cottbus, Carl-Thiem Klinikum, Med Klinik II, H Steinhauer (14(26), 0/14)
- Dortmund, St Johannes Hospital, H Plelken, M Nahler (2(3), 0/2)
- Dresden, Universitätsklinikum Carl Gustav Carus, CIC 808, G Ehniger, M Bornhäuser (126(169), 74/52)
- Duisburg, St Johannes Hospital, CIC 519, C Aul, J Anhuf (22(35), 0/22)
- Düsseldorf, Heinrich-Heine Universität; Medizinische Klinik (haem, onco), CIC 390, R Haas, P Schneider (93(110), 30/63)
- Düsseldorf, Heinrich-Heine Universität; Zentrum für Kinderheilkunde, CIC 651, K Göbel, W Nürnberger, D Dilloo (22(33), 9/13)
- Erlangen, Universitäts-Klinik für Kinder und Jugendliche, CIC 809, W Rascher, W Holter, JD Beck, J Greil (10(11), 3/7)
- Erlangen, Universität Erlangen-Nuremberg, Med Klinikum III, CIC 809, M Gramatzki, J-R Kalden (18(24), 7/11)
- Eschweiler, St Antonius Hospital, R Fuchs (6(7), 0/6)
- Essen, Universitäts-Klinik (ads), CIC 259, UW Schaefer, DW Beelen, V Runde, W Havers, O Basu (122(126), 115/7)
- Essen, Universitäts-Klinik (peds), CIC 259, W Havers, B Kremens (21(22), 17/4)
- Essen, Evangelisches Krankenhaus Essen-Werden GmbH, CIC 784, W Heit, M Wattad (59(64), 0/59)
- Essen, Universitäts-Klinik (hem), G Brittinger, U Dührsen, R Noppeney (24(29), 0/24)
- Essen, West German Cancer Center, S Seeber, P Bojko (49(99), 0/49)
- Frankfurt Universitätskinderklinik (peds), CIC 138, T Klingebiel (19(19), 14/5)
- Frankfurt a M, JW Goethe-Universität (ads), CIC 297, D Hoelzer, H Martin B Kornhuber, D Schwabe (51(61), 17/34)
- Frankfurt, KH Nordwest, A Knuth, E Jäger (0(0), 0/0)
- Freiburg i Br, Universitätsklinik (ads), Med Klinik I, CIC 810, J Finke, W Lange, S Fetscher (94(104), 59/35)
- Freiburg i Br, Universitätskinderklinik, CIC 810, C Niemeyer, U Kontny, B Strahm, U Duffner (22(23), 21/1)
- Giesen, Universitätskinderklinik, CIC 326, A Reiter (11(12), 6/5)
- Göttingen, Georg-August Universität, T Hagemann (44(67), 3/41)
- Greifswald, Ernst-Moritz-Arndt Universität (ads+peds), CIC 530, G Dölken, T Kiefer (34(36), 12/22)
- Gütersloh, Städtkrankenhaus, C Gropp (4(7), 0/4)
- Hagen, Kath. Krankenhaus, CIC 536, H Eimermacher, W Kalitschke (10(16), 0/10)
- Halle, Martin Luther Universität, CIC 338+CIC 654, H-J Schmoll, H Wolf, S Burdach (24(56), 1/23)
- Hamburg, KH St George, CIC 153, P Dreger, N Schmitz, B Seyfarth (9(9), 0/9)
- Hamburg, Allgemeines Krankenhaus Altona, CIC 366, Dr Braumann, C Hummel (25(29), 0/25)
- Hamburg, Eppendorf-Krankenhaus (KMT) CIC 614, AR Zander (95(105), 80/15)
- Hamburg, Eppendorf-Krankenhaus (hem, onco), CIC 673, D Hossfeld, K Kösters (28(33), 0/28)
- Hameln, Kreiskrankenhaus Hameln, H Schmidt, K Buhmann (7(7), 0/7)
- Hamm, St Marien Hospital, H Dürk, B Schmid (7(10), 0/7)
- Hannover, Medizinische Hochschule, CIC 295, A Ganser, B Hertenstein (76(88), 43/33)
- Hannover, Medizinische Hochschule, Abt. Kinderheilkunde, CIC 295, K Welte, K Sykora (23(23), 17/6)
- Hannover, KH Siloah, CIC 342, H Kirchner, M Sosada (12(12), 0/12)
- Heidelberg, Ruprecht-Karls Universitäts-Poliklinik, CIC 524, AD Ho (165(195), 38/127)
- Homburg/Saar, Universität des Saarlandes, CIC 785, L Trümper, M Pfreundschuh (52(66), 22/30)
- Idar-Oberstein, Klinik für Hämato-/Onkologie, CIC 592, AA Fauser, M Kiehl, N Basara (55(64), 45/10)
- Jena, Klinik für Innere Medizin II, CIC 533, HG Sayer, K Hoeffken (35(52), 16/19)
- Jena, Universitäts-Kinderklinik, CIC 750, F Zintl, D Fuchs (27(28), 16/11)
- Kaiserslautern, Westpfalz-Klinikum, CIC 357, F-G Hagmann, H Link, C Wollermann (9(14), 0/9)
- Karlsruhe, Städtisches Klinikum, CIC 290, J Fischer, T Kubin (9(15), 0/9)
- Kassel, Städtische Kliniken, WD Hirschmann, K Schultes, E Steinhauer (3(3), 0/3)
- Kiel, Christian-Albrechts-Universität (ads, peds), CIC 256, N Schmitz, M Kneba, J Schaub, M Suttorp (91(118), 28/63)
- Köln, Universitäts-Klinik (ads,peds), CIC 534, V Diehl, D Söhngen, Ch Scheid, F Berthold, T Simon (65(92), 16/49)
- Krefeld, Klinikum Krefeld, Med Klinik III, M Planker, R Peceny (5(9), 0/5)
- Leipzig, Universitäts-Klinik, CIC 389, D Niederwieser, W Helbig, R Krahl, W Pönisch (86(92), 53/33)
- Lemgo, Klinikum Lippe, HP Lohrmann (15(15), 0/15)
- Lübeck, Med.Universität (ads, peds), CIC 367, T Wagner, P Bucsky, Ch Schultz, K Kruse (16(16), 0/16)
- Lübeck, Städtisches KH Sud, M Thalheimer, H Bartels (11(16), 0/11)
- Magdeburg, Otto-von-Guericke Universität, CIC 359, A Franke, M Koenigsmann (19(25), 0/19)
- Magdeburg, Städt. Klinikum Magdeburg, E Kettner, H Kröning (2(2), 0/2)
- Mainz, Medizinische Klinik der Universität, CIC 786, C Huber, K Kolbe, H-G Derigs (101(110), 41/60)
- Mannheim, III Med. Klinik, R Hehlmann, J Hastka (11(12), 0/11)
- Marburg, Med. Universitätsklinik der Philipps Universität, CIC 645, A Neubauer, J Beyer, R Vietzke (40(53), 22/18)
- Minden/Westfalen, Med. Klinik, H Bodenstern, HJ Tischler (11(12), 0/11)
- Mönchengladbach, KH Maria Hilf II, Dr Berkovic, D Kohl, H-E Reis (7(7), 0/7)

Munich, Klinikum Grosshadern (ads) CIC 513, H-J Kolb, W Hiddemann (117(164), 79/38)  
 Munich, Klinikum Grosshadern (peds), CIC 513, C Bender-Götze (9(10), 7/2)  
 Munich, Dr v Haunersches Kinderspital (hem and onco), CIC 513, RJ Haas, D Stachel, S Schulz (8(11), 7/1)  
 Munich, SKH München-Harlaching, CIC 664, R Hartenstein, R Munker (10(14), 0/10)  
 Munich, Städt Krankenhaus Schwabing (peds), P Emmerich, L Stengel-Rutkowski (7(10), 5/2)  
 Munich, Klinikum Innenstadt, B Emmerich, C Straka (31(33), 0/31)  
 Munich, SKH München-Schwabing, Ch Nerl, N Fischer, C Waterhaus (10(17), 0/10)  
 Munich, Klinikum rechts der Isar, CIC 558, M Sandherr, C Peschel, Cv Schilling (43(52), 0/43)  
 Münster, Westfälische Wilhelms-Universität kinderKlinik (hem+onco), CIC 505, H Jürgens, M Paulussen, J Vormoor (25(29), 14/11)  
 Münster, Westfälische Wilhelms-Universität Klinik, Innere Med. CIC 680, W Berdel, J Kienast (97(133), 36/61)  
 Neuss, Lukaskrankenhaus, T Wieberding, P Czygan, T Nieberding (0(0), 0/0)  
 Nürnberg, Klinikum, CIC 625, W Gallmeier, H Wandt, K Schäfer-Eckart (60(76), 15/45)  
 Oldenburg, Klinikum Oldenburg, CIC 749, B Metzner, H Illiger (52(80), 0/52)  
 Potsdam, Klinikum Potsdam, A Haas, R Pasold (19(24), 0/19)  
 Regensburg, Universitäts Klinikum, CIC 787, E Holler, R Andreesen, A Reichle (69(105), 33/36)  
 Rostock, Universitäts Klinikum, CIC 585, M Mathias, M Freund, J Casper (49(57), 27/22)\*\*  
 Siegen, St Marien Krankenhaus, CIC 135, T Gaska (8(12), 0/8)  
 Stuttgart, Robert-Bosch-Krankenhaus, CIC 145, S Martin, W Aulitzky (32(38), 0/32)  
 Stuttgart, Olgahospital, Pädiatrisches Zentrum, CIC 701, U Gross, J Treuner, E Koscielniak (8(12), 1/7)  
 Stuttgart, Bürgerhospital, H Benöhr, W Grimminger, D Hahn (16(24), 0/16)  
 Stuttgart, Diakonissen Krankenhaus, E Heidemann, J Kaesberger (7(13), 0/7)  
 Stuttgart, Katharinenhospital, J Schleicher, H-G Mergenthaler (7(9), 0/7)  
 Tübingen, Medizinische Universitäts-Klinik, CIC 223, L Kanz, H Einsele, W Brugger, C Faul (124(161), 54/70)  
 Tübingen, Medizinische Universitäts-Klinik, Abteilung Pädiatrie, CIC 535, J Greil, D Niethammer (36(38), 31/5)  
 Ulm, Medizinische Universitäts-Klinik, CIC 204, H Döhner, D Bunjes (103(130), 45/58)  
 Ulm, Kinderklinik der Universität, CIC 204, W Friedrich, K Debatin (31(32), 29/2)  
 Wiesbaden, Deutsche Klinik für Diagnostik, CIC 311, R Schwerdtfeger, M Prumbaum (80(85), 70/10)  
 Wiesbaden, Dr Horst-Schmidt Klinikum, CIC 586, N Fric-khofen, B Jung (15(19), 0/15)  
 Wuppertal, Klinikum Wuppertal GmbH, A Raghavachar (5(6), 0/5)  
 Würzburg, Universitätsklinikum, Würzburg, M Wilhelm, K Wilms, M Braun (22(24), 0/22)  
**Greece** (11 teams; 184(196), 77/107)  
 Alexandroupolis, Thrace University Medical School (Haem), CIC 681, G Bourikas, D Pantelidou (2(2), 0/2)  
 Athens, Laikon General Hospital, CIC 328, Y Rombos, D Boutsis, V Kalotychou (12(13), 0/12)

Athens, Medical Center, CIC 603, A Pigadito (4(4), 0/4)  
 Athens, University of Athens, CIC 604, I Dervenoulas (7(7), 1/6)  
 Athens, Evangelismos Hospital, CIC 622, D Karakasis, A Skandalis, N Harhalakis, E Nikiforakis (44(47), 25/19)  
 Athens, Diagnosis and Therapy Centre 'Hygeia', Maroussi, CIC 643, G Karianakis (10(10), 3/7)  
 Athens, Hellenic Cancer Institute St Savas, CIC 751, A Efremedis, M Stamatellou, K Papanastassiou, M Pouli (25(28), 5/20)  
 Athens, 'Aghia Sophia' Children's Hospital, CIC 752, S Graphakos (28(29), 23/5)  
 Crete, University Hospital of Heraklion (peds, hem-onco), CIC 352, M Kalmanti (0(0), 0/0) starting in 2002  
 Thessaloniki, The George Papanicolaou General Hospital, CIC 561, AS Fassas (45(47), 18/27)  
 Patras, University Medical School, CIC 281, NC Zoumbos, M Tiniakou (7(9), 2/5)  
**Hungary** (four teams; 132(133), 36/96)\*\*  
 Budapest, National Medical Centre, CIC 504, A Poros, A Barta, E Torbagyi (27(27), 14/13)\*\*  
 Budapest, Szent Laszlo Hospital, CIC 739, T Masszi, P Reményi, G Kriván (71(72), 20/51)  
 Miskolc, Postgraduate Medical School (peds), CIC 599, N Kalman, K Kiss, G Marton (13(13), 2/11)  
 Pécs, Internal Medicine, University of Pécs, CIC 682, H Losonczy, M Dávid, Á Szomor (21(21), 0/21)  
**Iceland** (one team; 0(0), 0/0)  
 Reykjavik, National University Hospital, CIC 605, S Reykdal (0(0), 0/0)  
**Iran** (two teams; 166(166), 135/31)  
 Shiraz, Nemazee Hospital, M Ramzi (20(20), 20/0)  
 Teheran, Shariati Hospital (Hem-Onco), CIC 633, A Ghamzadeh (146(146), 115/31)  
**Ireland** (six teams; 92(109), 32/60)\*\*  
 Cork, University Hospital, P Cotter (3(3), 0/3)  
 Dublin, St James's Hospital, CIC 257, SR McCann (50(57), 20/30)  
 Dublin, St Vincent's Hospital (onco), CIC 541, J Crown (16(25), 0/16)  
 Dublin, Our Lady's Hospital of Sick Children, Crumlin, CIC 774, A O'Meara (18(19), 12/6)  
 Dublin, Mater Hospital (hem), B Otridge (5(5), 0/5)  
 Limerick, Regional Hospital, M Cahill (0(0), 0/0), starting in 2002  
**Israel** (seven teams; 368(447), 173/195)  
 Haifa, Rambam Medical Center (ads,peds), CIC 345, J Rowe (113(153), 37/76)  
 Jerusalem, Hadassah University Hospital (ads,peds), CIC 258, R Or, S Slavin (88(100), 67/21)  
 Petach-Tikva, Children's Medical Center, CIC 755, J Stein (32(35), 17/15)  
 Revohot, Kaplan Hospital, CIC 327, A Berribi (9(9), 0/9)  
 Tel Aviv, Sourasky Medical Center, CIC 161, E Naparstek (22(27), 6/16)  
 Tel Hashomer, Chaim Sheba Medical Center (hem ads, peds) CIC 754+CIC 572, A Nagler, A Shimoni, A Toren, H Golan, B Bielorai (104(123), 46/58)  
**Italy** (95 teams; 3173(3 863), 953/2 220)\*\*  
 Alessandria, SS Antonio e Biagio e C Arrigo, CIC 825, A Levis, A Allione, M Pini, F Salvi (25(34), 6/19)  
 Ancona, Nuovo Ospedale Torrette, CIC 788, P Leoni, A Olivieri (47(60), 10/37)  
 Avellino, AOS Giuseppe Moscati, CIC 789, E Volpe, N Cantore (21(21), 4/17)

- Avezzano, Ospedale Civile di Avezzano, CIC 921, F Recchia (5(5), 0/5)
- Aviano, CRO Aviano, CIC 162, M Michieli, M Rupolo, M Mazzucato, F Lollo (17(17), 0/17)
- Bari, Policlinico, CIC 649, V Pavone, V Liso (3(3), 0/3)
- Bergamo, Ospedale Riuniti, CIC 658, T Barbui, A Rambaldi (73(92), 23/50)
- Bologna, St Orsola-Malpighi (haem), CIC 240, G Bandini, F Bonifazi, M Bacarani (98(124), 37/61)
- Bologna, St Orsola-Malpighi, Oncologia Medica, CIC 657, A Martoni, C Zamagni (10(15), 0/10)
- Bologna, Poli S Orsola, Clinica pediatrica III, CIC 790, A Pession, G Paolucci (24(35), 12/12)
- Bolzano, Ospedale S Maurizio, CIC 299, M Casini, P Fabris, P Coser (29(51), 5/24)
- Brescia, Ospedali Civili, CIC 288, T Izzi, G Rossi, C Almici (44(52), 1/43)
- Brescia, Università, CIC 741, F Porta, A Ugazio (26(30), 21/5)
- Brindisi, Ospedaliera 'A Di Summa', Perrino Hospital, CIC 920, G Quarta, S Pinna (2(2), 0/2)
- Cagliari, Ospedale Oncologica 'AB', CIC 791, G Broccia, P Dessalvi (20(24), 3/17)
- Cagliari, Cattedra di Genetica, University of Cagliari CIC 811, L Contu, G La Nasa (16(18), 13/3)
- Cagliari, Ospedale per le Microcitemie (peds), CIC 812, F Argioli, A Cao (10(12), 9/1)
- Catania, Ospedale Ferrarotto, CIC 792, R Giustolisi, G Milone (34(34), 9/25)
- Cremona, Ospedale Maggiore, Medicina II, CIC 226, S Morandi, C Bergonzi (20(20), 1/19)
- Cuneo, Hospital S Croce E Carle (hem), CIC 606, A Gallamini, M Grasso (24(28), 0/24)
- Ferrara, St Anna Hospital, CIC 330, F Lanza, G Castoldi (16(18), 0/16)
- Firenze, Policlinico di Careggi, CIC 304, A Bosi (56(61), 28/28)
- Firenze, Azienda Ospedale, 'A.Meyer', CIC 600, L Faulkner, G Bernini (7(9), 0/7)
- Forli, Morgagni-Pierantoni Hospital, CIC 298, GL Frassinetti, D Amadori (8(15), 0/8)
- Genova, Università, CIC 139, F Patrone, A Ballestrero (29(48), 0/29)
- Genova, Ospedale S Martino, CIC 217, A Bacigalupo, A Carella, G Santini (106(123), 83/23)
- Genova, Istituto Giannina Gaslini, CIC 274, G Dini (40(53), 19/21)
- Genova, Ist Nat. per la Ricerca s. Cancro, CIC 340, M Venturini, R Rosso (1(1), 0/1)
- Latina, Ospedale S Maria Goretti, CIC 379, A De Blasio, E Zappone (14(18), 0/14)
- Lodi, Ospedale Maggiore Lodi, CIC 532, G Nalli, V Fregoni (0(0), 0/0)
- Milano, Ospedale di Niguarda (onco ST), CIC 184, S Siena, P Pedrazzoli, R Schiavo (37(40), 5/32)
- Milano, Università, CIC 265, G Lambertenghi Delilieri (40(52), 18/22)
- Milano, Ospedale Fatebenefratelli e Oftalmico (onco), CIC 269, A Scanni, C Bianchi, D Pedretti (4(4), 0/4)
- Milano, Ospedale di Niguarda (hem), CIC 294, P Marengo, R Cairoli (45(59), 10/35)
- Milano, Istituto Europeo di Oncologia, CIC 331, G Martinelli (80(149), 0/80)
- Milano, 1st Clinico Humanitas (hem-onco), CIC 354, A Santoro, L Castagna (101(136), 12/89)
- Milano, Istituto Nazionale Tumori di Milano (onco, peds), CIC 381, R Luksch (24(34), 0/24)
- Milano, Istituto Nazionale Tumori, CIC 616, A Gianni (61(103), 9/52)
- Milano, S Carlo Borromeo Hospital (onco), CIC 683, L Tedeschi (4(4), 0/4)
- Milano, Istituto Scientifico HS Raffaele, CIC 813, M Bregni (59(77), 26/33)
- Modena, University of Modena, CIC 543, F Narni, G Torelli, R Sabbatini (36(46), 4/32)
- Monza, Ospedale S Gerardo, CIC 279, C Uderzo (23(25), 18/5)
- Monza, Ospedale S Gerardo de' Tintori, CIC 544, P Pioltelli, E Pogliani (33(53), 8/25)
- Napoli, Div. Di Oncologia, CIC 313, C Battista, G Pacilio, B Chiurazzi, G Iodice (15(15), 0/15)\*\*
- Napoli, Hospital 'Pausilipon' (hem peds), CIC 341, V Poggi, M Ripaldi (9(9), 4/5)
- Napoli, Cardarelli Hospital (hem), CIC 607, F Ferrara (40(41), 0/40)
- Napoli, Università, CIC 766, B Rotoli, C Selleri, G De Rosa (35(40), 6/29)
- Noale, Civic Hospital (onco), CIC 563, O Vinante, G Azzarello (18(19), 6/12)
- Nuoro, Ospedale San Francesco, CIC 793, A Gabbas, A Palmas (13(20), 0/13)
- Orbassano, Ospedale San Luigi Orbassano, CIC 378, G Saglio, A Guerrasio (20(35), 0/20)
- Padova, Centro Leucemie Infantili, CIC 285, C Messina, S Cesaro, L Zanesco (30(41), 14/16)
- Padova, Centro Oncologia Regionale, CIC 319, S Aversa, S Monfardini (11(14), 0/11)
- Palermo, Ospedale V Cervello, CIC 392, R Scimè, A Cavallaro (49(52), 19/30)
- Palermo, Ospedale 'La Maddalena', CIC 692, M Musso, F Porretto, A Crescinanno (56(71), 11/45)
- Palermo, Uni degli studi di Palermo (hem), CIC 814, G Mariani (20(20), 1/19)
- Parma, Università degli studi, CIC 245, V Rizzoli (20(25), 4/16)
- Parma, Ospedaliera Di Parma (onco), CIC 364, V Franciosi, S Cascinu, G Vasini (2(4), 0/2)
- Pavia, Policlinico S Matteo (hem), CIC 286, EP Alessandrino (75(84), 33/42)
- Pavia, Policlinico St Matteo peds), CIC 557, F Locatelli (79(84), 64/15)
- Pavia, Policlinico St Matteo (onco), CIC 562, E Ascari, M Danova (23(31), 0/23)
- Pavia, Fondazione Clinica del Lavoro, CIC 771, A Zambelli, G Robustelli della Cuna (17(20), 6/11)
- Perugia, Policlinico Montelucente, CIC 573, AM Liberati, F Grignani (10(14), 0/10)
- Perugia, Policlinico Montelucente, Università, CIC 794, MF Martelli, F Aversa, A Tabilio (80(80), 45/35)
- Perugia, Silvestrini Hospital, CIC 815, A Amici (0(0), 0/0)
- Pesaro, Ospedale San Salvatore, CIC 529, G Lucarelli, G Visani (26(26), 26/0)
- Pescara, Ospedale Civile, CIC 248, P di Bartolomeo (31(33), 25/6)
- Piacenza, Ospedale Civile (hem-onco), CIC 163, L Cavanna (13(17), 0/13)
- Pisa, St Chirara Hospital (ads onco) CIC 320, PF Conte, C Bengala (14(14), 4/10)
- Pisa, University of Pisa (Ads hem, peds hem+onco), CIC 795, P Macchia, M Petrini (46(63), 13/33)

Ravenna, Ospedale Civile, CIC 306, G Rosti (53(77), 0/53)  
 Reggio di Calabria, Azienda Ospedale 'Riuniti e Morelli', CIC 587, P Iacopino (73(108), 21/52)  
 Reggio Emilia, Arcispedale S Maria Nuova (Hem), CIC 660, L Gugliotta (16(25), 4/12)  
 Roma, Università 'La Sapienza', CIC 232, W Arcese, F Mandelli, G Meloni (126(131), 42/84)  
 Roma, Ospedale S Camillo, CIC 287, I Majolino, A Locasciulli (42(50), 11/31)  
 Roma, Università Cattolica, CIC 307, S Cuore, S Sica, G Leone (41(45), 12/29)  
 Roma, Ospedale Bambino Gesù, CIC 315, G De Rossi (6(6), 3/3)  
 Roma, Università S Eugenio, CIC 756, S Amadori, L Cudillo (41(44), 21/20)  
 Roma, Ospedale Bambino Gesù, CIC 796, G Deb (12(13), 0/12)  
 San Giovanni Rotondo, Hospital Casa Sollievo Sofferenza (onco), CIC 314, G Lelli (4(4), 0/4)  
 San Giovanni Rotondo, Hospital Casa Sollievo Sofferenza (peds), CIC 350, P Paolucci (4(4), 0/4)  
 San Giovanni Rotondo, Hospital Casa Sollievo Sofferenza (hem), CIC 526, AM Carella, MT Corsetti (69(80), 23/46)\*\*  
 Siena, Ospedale Sclavo, CIC 321, F Lauria (20(22), 2/18)  
 Taranto, Ospedale Nord, CIC 332, P Mazza, G Palazzo, B Amurri (57(58), 11/46)  
 Taranto, Ospedale SS Annunziata, CIC 384, Dr Pezzella (0(0), 0/0)  
 Torino, University Hospital of Turin, Magg. San Giovanni Battista, CIC 231a, M Falda, F Locatelli, E Gallo (59(70) 25/34),  
 Torino, Department of Pediatrics, University, CIC 305, E Madon, F Fagioli (40(40), 14/26)  
 Torino, S Giovanni Antica Sede Hospital, CIC 322, M Airoidi (0(0), 0/0)  
 Torino, Ospedale Mauriziano Umberto 1, IRCC, CIC 377, M Aglietta, A Capaldi; F Carnevale (23(25), 7/16)  
 Torino, Ospedale S Giovanni, CIC 696, M Boccadoro, M Massaia, C Tarella, B Benedetto, D Caracciolo, A Pileri (151(151), 16/135)  
 Trieste, Istituto per l'Infanzia, Clinical Pediatrica, CIC 525, M Andolina, A de Manzini (12(13), 10/2)  
 Udine, Policlinico Universitario, CIC 705, A Sperotto, R Fanin (78(81), 28/50)  
 Venezia, Ospedale Civile Riuniti di Venezia, CIC 502, T Chisesi, M Vespignani, M Chinello (14(18), 0/14)  
 Verbania Pallanza, Ospedale di Verbania, CIC 385, M Bersi (2(4), 0/2)  
 Verona, Policlinico di Borgo Roma (hem, onco), CIC 623+CIC 514, G Perona, F Benedetti, G Cetto (56(56), 14/42)  
 Vicenza, Ospedale S Bortolo (hem), CIC 797, R Raimondi, F Rodeghiero (50(61), 14/36)  
**Latvia:** no report  
**Liechtenstein:** no report  
**Lithuania:** (one team; 13(13), 5/8)  
 Vilnius, University Hospital (hem), I Trociukas (13(13), 5/8)  
**Luxemburg** (two teams)\*  
 Centre Hospitalier, M Dicato\*  
 Esch-Alrette, Hopital de la Ville Esch/Alzette, CIC 545, F Le Moine\*  
**Macedonia:** (one team; 9(12), 3/6)  
 Skopje, Medical Faculty (haem), B Georgievski (9(12), 3/6)  
**Malta:** no report  
**Moldova:** no report  
**Monaco:** no report  
**Netherlands** (14 teams; 573(605), 247/326)

Amsterdam, Academic Medical Center (ads, peds), CIC 247, J van der Lelie, H van den Berg (peds) (27(27), 5/22)  
 Amsterdam, Free University Hospital (onco), CIC 380, E van der Wall (0(0), 0/0)  
 Amsterdam, Free University Hospital (Haem), CIC 588, GM Ossenkuppe (68(71), 12/56)  
 Amsterdam, The Netherlands Cancer Institute, CIC 976, S Rodenhuis J Baars (17(30), 0/17)  
 Enschede, The Medisch Spectrum Twente, CIC 360, Dr Schaafsma (17(17), 0/17)  
 Groningen, University Hospital (hem), CIC 546, E Vellenga (36(36), 0/36)  
 The Hague, Leyenburg Hospital, CIC 547, PW Wijermans (20(20), 0/20)  
 Leiden, University Medical Centre (ads, peds), CIC 203, J Vossen, R Willemze (83(89), 57/26)  
 Maastricht, University Hospital (haem, onco), CIC 565, HC Schouten, J Wagstaff (42(43), 24/18)  
 Nieuwegein, St Antonius Hospital, CIC 200, D Biesma, G Veth, O de Weerd (8(8), 0/8)  
 Nijmegen, University Hospital (ads, peds, onco), CIC 237, A Schattenberg, L Beex, P Hoogerbrugge (92(94), 57/35)  
 Rotterdam, Dr Daniel den Hoed Cancer Center, CIC 246, JJ Cornelissen (75(77), 38/37)  
 Utrecht, University Hospital (ads+peds), CIC 239, LF Verdonck, NM Wulfraat, D Biesma (83(88), 54/29)  
 Zwolle, Isala Klinieken / Sophia Ziekenhuis, CIC 548, M von Marwijk Kooy (5(5), 0/5)  
**Norway** (five teams; 127(129), 43/84)  
 Bergen, Haukelands Sjukhus, P Ernst (18(18), 0/18)  
 Oslo, Rikshospitalet, CIC 235, D Albrechtsen, L Brinch (54(56), 43/11)  
 Oslo, The Norwegian Radium Hospital, CIC 782, S Kvaloy (33(33), 0/33)  
 Oslo, Ullevals Sjukhus (haem), F Wisslöf, J-M Tangen (9(9), 0/9)  
 Trondheim, St Olavs Hospital, J Hammerstrom, A Waage (13(13), 0/13)  
**Poland** (16 teams; 577(640), 216/361)  
 Gdansk, Medical University, CIC 799, A Hellmann (45(48), 14/31)  
 Katowice, Silesian Medical Academy, CIC 677, J Holowiecki (136(146), 50/86)  
 Krakow, CMUJ, CIC 553, A Skotnicki (36(38), 8/28)  
 Lodz, Medical University of Lodz (Hem), CIC 171, T Robak (10, (10), 0/10)  
 Lublin, Ped Hem Onco, CIC 678, J Kowalczyk (17(17), 8/9)  
 Lublin, University Medical School, CIC 695, A Dmoszynska, M Wach, A Walter-Croneck, W Legiec (28(32), 0/28)  
 Poznan, Institute of Pediatrics, CIC 641, J Wachowiak (17(17), 15/2)  
 Poznan, Medical Academy, CIC 730, J Hansz (64(71), 33/31)  
 Warsaw, Institute of Haematology and Blood Transfusion, CIC 693, B Marianska, L Konopka (17(19), 4/13)  
 Warsaw, Maria Skłodowska-Curie, Centre of Oncology, CIC 800, J Walewski (35(45), 1/34)  
 Warsaw, Central Clinical Hospital, Military Medical Academy, CIC 816, K Sulek (16(16), 6/10)  
 Warsaw, Central Military Hospital (onco), CIC 824, C Szczylik (8(8), 2/6)  
 Warsaw, Central Clinical Hospital, CIC 954, W Wiktor-Jedrzejczak, A Dzwigala, M Rokicka (32(50), 9/23)  
 Wroclaw, K Diuske Hospital, CIC 538, A Lange (59(62), 33/26)

Wroclaw, Medical Academy (Hem), CIC 699, K Kuliczowski (5(5), 0/5)

Wroclaw, University of Medicine, Department of Children, CIC 817, A Chybicka (52(56), 33/19)

**Portugal** (six teams; 223(249), 90/133)

Coimbra, University Hospital, CIC 164, N Costa (19(19), 0/19)

Lisbon, Instituto Portugues de Oncologia, CIC 300, M Abecasis, F Leal Costa (57(63), 24/33)

Lisbon, Hospital de Santa Maria, CIC 636, J Alves do Carmo, F de Lacerda (38(46), 25/13)

Lisboa, Hospital de St Antonio dos Capuchos, CIC 826, A Botelho de Sousa (16(16), 0/16)

Porto, Instituto Portugues de Oncologia, CIC 291, P Pimentel, F Campilho (76(87), 41/35)

Porto, Hospital S Joao (hem. onco), CIC 329 (merged with CIC 572, F Principe), JE Guimaraes (17(18), 0/17)

**Romania:** (three teams; 4(4), 0/4)\*\*

Bucharest, Fundeni University Hospital, CIC 296, AD Moicean, D Colita, C Arion (1(1), 0/1)

Targu-Mures, Sectia Clinica de Hematologie, CIC 178, I Benedek (1(1), 0/1)\*\*

Timisoara, University of Medicine (III peds Hem/Onco), CIC 174, M Serban (2(2), 0/2)

**Russia** (14 teams; 166(174), 59/107)

Ekaterinburg, City Hospital No. 7, LB Filatov (3(4), 0/3)

Ekaterinburg, Regional Hospital No. 1, TS Konstantinova, VA Shalaev (11(15), 0/11)

Moscow, Russian Children's Hospital, CIC 694, A Maschan, E Skorobogato, E Pachanov (26(26), 17/9)

Moscow, Cancer Research Center, CIC 757, V Ptuschkin (17(17), 0/17)

Moscow, Institute of Biophysics, AE Baranov\*

Moscow, Cancer Research Center peds Hem/onco, G Mentrevich (5(5), 5/0)

Moscow, Research Hematology Center of RAS, VG Savtchenko (25(27), 12/13)

Novosibirsk, Institute of Clinical Immunology, CIC 376, I Lisukov (11(11), 2/9)

Samara, Regional Hospital, VA Rossiev (21(21), 2/19)

St Petersburg, Clinical Center for Advanced Medical Tech, CIC 370, E Podoltseva, V Soldatenkov, O Rysanyanskaya (6(6), 1/5)

St Petersburg, Military Medical Academy, CIC 520, A Novik (3(3), 0/3)

St Petersburg, Research Institute of Hematology, CIC 724, KM Abdulkadirov (7(7), 5/2)

St Petersburg, State Pavlov Medical University, CIC 725, BV Afanassiev, L Zubarovskaya (31(32), 15/16)

Yaroslavl, City Hospital No. 8, VA Lapin\*

**San Marino:** no report

**Slovakia** (four teams; 107(115), 31/76)

Bansra Bystrica, Roosevelt Hospital, CIC 333, I Markuljak, E Kralikova (16(23), 1/15)

Bratislava, National Cancer Institute, CIC 560, J Lakota (50(50), 8/42)

Bratislava, University Hospital, CIC 610, M Mistrik (24(25), 13/11)

Bratislava, second Children's Clinic, University Hospital, CIC 684, J Lukac (17(17), 9/8)

Slovenia (one team; 27(31), 7/20)

Ljubljana, University Medical Centre, CIC 640, J Pretnar (27(31), 7/20)

**Spain** (76 teams; 1889(2031), 450/1439)\*\*

Alicante, Hospital General, C Rivas-Gonzales (19(19), 0/19)

Barcelona, Hospital Clinic, CIC 214, E Montserrat, E Carreras (94(100), 38/56)

Barcelona, Santa Creu I Sant Pau (adults), CIC 260, J Sierra, S Brunet (88(101), 39/49)

Barcelona, Santa Creu I San Pau (peds), CIC 260, I Badell Serra, J Cubells-Riero (10(10), 4/6)

Barcelona, Santa Creu I Sant Pau (onco), CIC 260, Dr JJ Lopez, C Solia (32(32), 0/32)

Barcelona, Hospital M Infantil, CIC 527, J Ortega (45(46), 28/17)

Barcelona, Hospital Mutua de Terrasa (hem-onco), CIC 556, J Marti (5(5), 0/5)

Barcelona, Hospital General 'Vall d'Hebron', CIC 583, A Julia Font, J Zuazu (28(29), 7/21)

Barcelona, Hospital Universitario Germans Trias i Pujol, CIC 613, J Rivera (28(29), 3/25)

Barcelona, Hospital Sant Joan de Deu, CIC 668, J Estella Aguado (10(10), 0/10)

Barcelona, Instituto Dexeus (hem), CIC 670, A Granena, J Sarra, J Garcia (0(0), 0/0)

Barcelona, Hospital Duran i Reynals (Hem), Institut Catala d'Oncologia, CIC 759, A Granena, C Ferra, J Berlanga (34(36), 12/22)

Barcelona, Instituto Hematologico Torre Vilana, CIC 777, P Vivancos (3(3), 0/3)

Barcelona, Instituto de Oncologia Corachan, D Alfonso-Modolell (2(2), 0/2)

Barcelona, Sant Cugat del Vallés, Hospital General de Catalunya, M Sureda-Gonzales\*

Caceres, Hospital San Pedro de Alcantara, J Bergua Burgues (16(16), 0/16)

Cadiz, Hospital del SAS de Jerez, CIC 612, A Leon (43(47), 5/38)

Cadiz, Hospital Universitario 'Puerta del Mar', CIC 679, J Gil (13(20), 0/13)

Canary Isles, Las Palmas, Hospital Insular, CIC 335, F Fernandez-Fuentes, J Gonzalez-San Miguel (10(12), 0/10)

Canary Isles, Las Palmas, Hospital Materno-Infantil (haem, onco), J Lodos Rojas, A Molinés (1(1), 0/1)

Canary Isles, Las Palmas, Hospital Universitario de Gran Canaria 'Dr Negrin', T Molero, R Mataix, C Campo, S Jiménez (19(21), 8/11)

Canary Isles, Tenerife, Hospital Universitario de Canarias, L Hernandez Nieto, MT Hernandez Garcia (18(18), 0/18)

Canary Isles, Tenerife, University Hospital, P Rios Ru (12(12), 0/12)

Castellon de La Plana, Hospital General de Castellon (haem), R Garcia-Boyer (5(5), 0/5)

Cordoba, Hospital Reina Sofia, CIC 238, A Torres Gomez (46(48), 34/12)

Cordoba, Hospital de la Cruz Roja de Cordoba (haem), J-M Garcia-Castellano (2(2), 0/2)

Cruces-Barakaldo, Hospital de Cruces, CIC 393, I Zuazua-Verde (35(37), 0/35)

Galdakao, Hospital de Galdakao, Hem, CIC 975, J Ojangueren, K Atucha (9(9), 0/9)

Granada, Hospital Virgen de la Nieves, CIC 559, JM de Pablos Gallego (25(29), 7/18)

Jaen, Hospital Ciudad de Jaen (haem), A Alcalam, (14(14), 0/14)

La Coruna, Complejo Hospitalario Juan Canalejo, CIC 361, FJ Batlle, C Ramirez, P Torres, R Varela (38(42), 8/30)

Lérida, Hospital Arnau de Villanova, J Macia (12(12), 0/12)

Lugo, Hospital Xeral-Calde, CIC 371, M Gonzales-Lopez (5(5), 0/5)

- Madrid, Hospital de la Princesa, CIC 236, JM Fernández Rañada, A Figuera, A Alegre (66(73), 33/33)
- Madrid, Hospital Doce de Octubre, CIC 382, JJ Lahuerta (hem), H Cortés Funes (onco), J Lopez Perez (peds) (52(58), 1/51)
- Madrid, Hospital Ramon y Cajal (ads), CIC 615, J Odriozola, J Pérez de Oteyza, J Lopez, J Garcia Larana (44(44), 11/33)
- Madrid, Hospital Ramon y Cajal (peds), CIC 615, A Munoz Villa, MS Maldonado (5(5), 1/4)
- Madrid, Clinica Puerta de Hierro, CIC 728, MN Fernandez (35(41), 15/20)
- Madrid, Hospital Nino Jesus, CIC 732, LM Madero (44(44), 16/28)
- Madrid, Hospital Universitario San Carlos (hem, onco), CIC 733, M Martin, J Diaz Mediavilla, L Llorente, E Diaz-Rubio, A Casado, JA Lopez-Martin (32(32), 0/32)
- Madrid, Hospital La Paz Infantil, CIC 734, A Martinez-Rubio, A Sastre, P Garcia-Miguel (47(51), 6/41)
- Madrid, Unidad de TMO-ONC 4, Hospital Gregorio Marañon, CIC 819, JL Diez Martin (30(34), 9/21)
- Madrid, Clinica La Luz, H Cortés-Funes, J Hornedo (0(0), 0/0), starting in 2002
- Madrid, Clinica Moncloa (hem), JM Fernandez, Q Escudero (9(9), 0/9)
- Madrid, Clinica Ruber, JM Fernandez-Ranada, Q Escudero (17(17), 0/17)
- Madrid, Hospital Ruber Internacional, J Diaz Mediavilla (1(1), 0/1)
- Madrid, Hospital Universitario de Getafe (hem), F Oña Compan, N Somolinos, (11(12), 0/11)
- Madrid, Hospital General La Paz (ads), F Hernandez Navarro, M Canales (32(34), 1/31)
- Madrid, Fundacion Jimenez Diaz, CIC 309, J Tomas, C Paniagua, F Lobo (20(21), 6/14)
- Madrid, Hospital Militar Gomez Ulla, F Sancho-Cuesta, S Enrech-Frances (1(1), 0/1)
- Malaga, Hospital Regional, CIC 576, J Maldonado (37(38), 12/25)
- Murcia, Hospital Virgen de la Arrixaca, CIC 323, R Candel Parra (16(17), 0/16)
- Murcia, Hospital General Uni. Morales Meseguer, CIC 735, JM Moraleda, V Vicente-Garcia, I Heras (34(39), 14/20)
- Orense, Hospital Cristal-Pinor (hem), J-L Sastre-Moral (16(18), 0/16)\*\*
- Oviedo, Hospital Covadonga, CIC 642, D Carrera Fernandez, C Rodriguez Pinto (47(51), 5/42)
- Palma de Mallorca, Hospital Son Dureta, CIC 722, J Besalduch, HS Dureta (23(27), 5/18)
- Palma de Mallorca, Policlínica Miramar, J Besalduch, A Sampol (4(4), 1/3)
- Pamplona, Hospital Provincial de Navarra, CIC 577, E Pérez Equiza, MJ Uriz Pascual, J Gastearena (19(19), 0/19)
- Pamplona, Clinica Universitario de Navarra, CIC 737, J Rifon (12(14), 3/9)
- Pontevedra, Hospital Montecelo, CIC 549, M Constela (16(16), 0/16)
- Salamanca, Complejo Hospital, CIC 727, D Caballero (70(78), 21/49)
- San Sebastian, Hospital Nostra Senora de Aranzazu, CIC 598, J Marin, D Martinez (23(30), 3/20)
- Santander, Hospital Universitario M de Valdecilla, CIC 242, A Iriando, E Conde, E Bureo, A Zubizarreta-Pina (67(76), 15/52)
- Santiago de Compostela, Hospital Xeral de Galicia, CIC 570, JL Bello (22(22), 1/21)
- Sevilla, Hospital Universitario Virgen del Rocio, CIC 769, JM Rodriguez Fernandez (44(45), 14/30)
- Sevilla, Clinica Del Sagrado Corazon, JM Rodriguez\*  
Tarragona, Hospital de Tarragona Joan XXIII (hem), A Llorente Cabrera (10(10), 0/10)
- Valencia, Hospital Clinico Universitario, CIC 282, J Garcia-Conde, C Solano (67(71), 16/51)
- Valencia, Hospital Universitario La Fe (peds), CIC 653, V Castel, A Verdeguer (22(23), 8/14)
- Valencia, Hospital Universitario La Fe, CIC 663, MA Sanz, GF Sanz (72(82), 30/42)
- Valencia, Hospital Doctor Peset (hem), P Ribas Garcia (7(8), 0/7)
- Valencia, Instituto Valenciano de Oncologia, V Guillen, J Palau\*
- Valladolid, Hospital Rio Hortega, CIC 611, J Garcia Frade (13(13), 0/13)
- Vigo, Hospital Xeral-Cies, A Martinez-Dalmau (24(24), 4/20)
- Zaragoza, Clinico Universitario Lozano Blesa (haem, onco), CIC 531, A Tres, L Palomera, M Gutierrez, J Mayordomo (29(29), 0/29)
- Zaragoza, Hospital Miguel Servet (hem+onco), M Giralt, G Pérez-Lugmus, D Rubio-Félix, A Anton (28(28), 6/22)
- Sweden** (10 teams; 429(498), 154/275)
- Goteborg, CHECT (ads), CIC 289, M Brune (70(99), 20/50)
- Goteborg, CHECT (peds), CIC 289, A Fasth, J Abrahamson, K Mellgren, S Berg, S Óskarsdóttir (9(11), 6/3)
- Huddinge, Hospital, CIC 212, P Ljungman (95(98), 58/37)
- Linköping, University Hospital, CIC 740, G Juliusson (37(46), 15/22)
- Lund, University Hospital, CIC 283, AN Bekassy (50(57), 14/36)
- Malmö, University Hospital, I Turesson (5(5), 0/5)
- Örebro, Medical Center Hospital, CIC 738, U Tidefelt (12(12), 0/12)
- Stockholm, Karolinska Hospital, CIC 626, M Björkholm (36(43), 0/36)
- Umea, Norrland University Hospital, CIC 731, A Wahlin, P Hörnsten, J Lindh, L Eliasson (40(48), 15/25)
- Uppsala, University Hospital, CIC 266, B Simonsson, K Carlson, G Oberg (75(79), 26/49)
- Switzerland (10 teams; 281(377), 75/206)
- Aarau, Kantonsspital, CIC 316, M Wernli, M Bargetzi (11(12), 0/11)
- Basel, Kantonsspital, CIC 202, A Gratwohl, T Kühne, R Herrmann (50(78), 32/18)
- Bellinzona, Ospedale San Giovanni, CIC 829, F Cavalli, M Ghielmini, L Leoncini (10(14), 0/10)
- Berne, Inselspital (hem/onco), CIC 221, A Tobler, K Leibundgut, M Fey (32(36), 0/32)
- Geneva, Hôpital Cantonal Universitaire, CIC 261, B Chapuis, Y Chalandon, P Wacker (15(21), 14/1)
- Lausanne, CHUV, CIC 820+CIC 579, M Schapira, T Kovacsovics, S Leyvraz, N Ketterer, N Nenadov-Beck (65(82), 0/65)
- St Gallen, Kantonsspital, CIC 324, U Hess (10(11), 0/10)
- Zurich, University Hospital (ads, hem/onco), CIC 208, U Schanz, J Halter, R Stahel, L Jost (69(93), 20/49)
- Zurich, University Hospital (peds), CIC 334, R Seger (12(15), 9/3)
- Zurich, Klinik Im Park, CIC 700, J Gmür, U Breitenstein, A von Rohr (7(15), 0/7)
- Turkey** (25 teams; 373(382), 170/203)
- Ankara-Sihhiye, Hacettepe University Medical School (hem), CIC 168, O Ozcebe, H Goker (2(2), 2/0)
- Ankara-Besevler, Gazi University (hem), CIC 169, R Haznedar (0(0), 0/0), starting in 2002

Ankara, Gazi University Medical School (peds Hem/Onc), CIC 182, O Gulyuz (0/0), 0/0)

Ankara, Hacettepe University, Institute Of Oncology Hematopoietic Stem Cell Transplantation Unit, CIC 292, E Kansu, C Akyüz (21(22), 1/20)

Ankara-Etlik, GATA BMT Center, CIC 372, A Yalcin, F Arpacı, A Özet, C Beyan, A Ural (43(43), 12/31)

Ankara, Childrens Hospital Hacettepe University, CIC 509, A Tuncer, D Uckan (19(20), 18/1)

Ankara, Ibn-i Sina Hospital, CIC 617, H Koc (50(51), 31/19)

Ankara, University of Ankara (peds), CIC 620, E Unal (8(8), 8/0)

Ankara, Numune Education and Research Hospital, CIC 691, T Demirer, D Suleyman (55(56), 26/29)

Antalya, Akdeniz University hospital, CIC 618, MA Yesilipek, V Hazar, O Yegin (12(12), 11/1)

Antalya, Akdeniz University hospital, CIC 685, L Undar (6(6), 5/1)

Balcali, Hospital, CIC 821, A Tanyeli (8(8), 7/1)

Eskisehir, Osmangazi University, CIC 686, Z Güblas (9(9), 4/5)

Istanbul, Maltepe Medical Faculty, CIC 210, K Ozerkan, A Tamkan (0(0), 0/0) starting in 2004

Istanbul, Marmara University, Altunizade, CIC 714, S Ratip, T Akoglu (4(4), 1/3)

Istanbul, University of Istanbul, CIC 760, S Kalayoglu-Besisik (30(31), 14/16)

Istanbul, Cerrahpasa Medical School, CIC 761, B Ferhanoglu, T Soysal, Z Baslar (11(12), 5/6)

Istanbul, Tip Fakultesi, CIC 762, G Gedikoglu (16(16), 12/4)

Istanbul, GATA Haydarpasa Egitim Hst, CIC 687, A öztürk (0(0), 0/0) starting in 2002

Istanbul, Institute of Oncology, CIC 689, H Onat, M Basaran (8(8), 0/8)

Izmir, Ege University Medical Faculty (peds), CIC 621, S Kansoy (5(5), 2/3)

Izmir, Ege University Medical Faculty (ads), CIC 628, S Cagirgan (39(40), 3/36)

Izmir, Dokuz Eylul University, CIC 688, U Yilmaz (3(5), 0/3)

Kayseri, Erciyes University Hospital, CIC 627, A Unal, M Cetin, (16(16), 4/12)

Trabzon, Karadeniz Technical University, CIC 170, E Ovali (8(8), 4/4)

**Ukraine:** (two teams; 37(44), 2/35)

Kiev, Kiev City BMT Center, CIC 176, E Karamanescht, V Chomenko, I Korenkova, S Borodkin (26(28), 0/26)

Kiev, Kiev Regional Oncologic Hospital, CIC 177, S Donska, O Ryzhak (11(16), 2/9)

**United Kingdom** (53 teams; 2104 (2 303), 772/1332)\*\*

Aberdeen, The Royal Infirmary, CIC 344, DJ Culligan (19(19), 6/13)

Bangor, Gwynedd Hospital, CIC 736, M Gilleece (9(9), 0/9)

Bath, Royal United Hospital, CIC 619, C Knechtli (5(5), 0/5)

Belfast, Belvoir Park Hospital, CIC 268, P Abram (0(0), 0/0)

Belfast, Royal Victoria Hospital (CIC 268) and City Hospital (CIC 753), F Jones, TCM Morris (41(42), 12/29)

Birmingham, Heartlands Hospital, CIC 284, DW Milligan (47(50), 18/29)

Birmingham, Queen Elizabeth Hospital, CIC 387, C Craddock, P Mahendra (99(101), 44/55)

Birmingham, The Birmingham Childrens Hospital, CIC 781, PJ Darbyshire, MW Williams (35(38), 28/7)

Bournemouth, Royal Bournemouth Hospital, CIC 765, S Killick (14(15), 0/14)

Bristol, Royal Hospital for Sick Children, JM Cornish and Avon Haematology Unit, Bristol, CIC 386, J Hows, D Marks (71(76), 51/20)

Cambridge, Addenbrooke's Hospital and Norwich Hospital, CIC 566+391, RE Marcus, J Craig, M Deane (58(60), 11/47)

Cardiff, University Hospital of Wales, CIC 303, KMO Wilson, AK Burnett, JA Whittaker, CH Poynton, (49(52), 11/38)

Cheltenham, Cheltenham General Hospital, CIC 398, E Blundell (12(12), 0/12)

Coventry, University Hospital and Warwickshire NHS Trust, N Jackson (14(15), 0/14)

Dundee, Ninewells Hospital, CIC 719, D Bowen (6(6), 0/6)

Edinburgh, Western General Hospital, (hem) CIC 228, JM Davies, PRE Johnson, MJ Mackie, PH Roddie (27(27), 5/22)

Exeter, Royal Devon and Exeter Hospital, CIC 571, C Rudin (13(13), 0/13)

Glasgow, Royal Infirmary, CIC 244, A Parker, IG McQuaker (55(56), 21/34)

Glasgow, The Western Infirmary, CIC 325, T Fitzsimons (25(25), 0/25)

Glasgow, Royal Hospital for Sick Children, CIC 707, B Gibson (11(13), 10/1)

Leeds, St James's University Hospital and The General Infirmary, CIC 254, G Cook, S Kinsey, JA Child (126(126), 27/99)

Leicester, Royal Infirmary, CIC 713, AE Hunter (49(54), 14/35)

Liverpool, Royal Liverpool University Hospital, CIC 501, RE Clark, A Pettitt (58(61), 17/41)

Liverpool, Alder Hay, M Caswell (10(10), 4/6)

London, Hammersmith and Charing Cross Hospital, CIC 205, JM Goldman, J Apperley, D Samson, C Giles, E Kanfer (112(128), 47/65)

London, Royal Free Hospital, CIC 216, HG Prentice, M Potter (76(83), 52/24)

London, Royal Marsden Hospital, CIC 218, R Powles, J Mehta (115(159), 38/77)

London, University College Hospital, CIC 224, S MacKinnon, AH Goldstone (122(135), 55/67)

London, Institute of Child Health, CIC 243, P Veys, IM Hann (56(66), 43/13)

London Oncology Marrow Transplantation Group, CIC 263, PJ Gravett (7(16), 0/7)

London, St George's Hospital, CIC 539, J Marsh, S Ball, EC Gordon-Smith, C Dearden (24(25), 13/11)

London, Guy's Hospital, CIC 721, S Schey (32(34), 2/30)

London, King's College, CIC 763, A Pagliuca, GJ Mufti (60(74), 35/25)

London, St Bartholomew's, CIC 768 and the Royal London Hospital, CIC 269, M Barnett, AC Newland, J Cavenagh (68(68), 18/50)

Manchester, Royal Children's Hospital, CIC 521, AM Will (22(24), 19/3)

Manchester, The Royal Infirmary, CIC 601, JA Yin (43(48), 26/17)

Manchester, Christie Hospital, CIC 780, R Chopra (98(114), 27/71)

Manchester, Hope Hospital, PA Carrington (4(4), 0/4)

Manchester, Trafford General Hospital, PA Carrington (4(4), 0/4)

Newcastle upon Tyne, Royal Victoria Infirmary, CIC 276, GH Jackson, SJ Proctor, P Taylor, A Cant, R Skinner (84(88), 38/46)

Norwich, Norfolk and Norwich Hospital (hem), CIC 391, G Turner (10(10), 0/10)

Nottingham, City Hospital, CIC 717, N Russell (81(96), 36/45)

Oxford, John Radcliffe Hospital, Headington, CIC 255, TJ Littlewood, C Bunch, C Mitchell, C.Hatton, G Hall, J Wainscoat (41(41), 12/29)

Plymouth, Derriford Hospital, CIC 823, MD Hamon (35(36), 13/22)\*\*

Poole, Dorset Cancer Centre, CIC 580, A Bell (17(20), 0/17)

Sheffield, Royal Hallamshire Hospital — J Snowdon, Weston Park Hospital - L Evans, The Children's Hospital — A Vora, and Rotherham General Hospital, CIC 778:1/2/3/5, H Barker (40(44), 18/22)

Somerset, Taunton and Somerset Hospital, SA Johnson, S Bolam (14(15), 0/14)

Southampton, CRC Wessex, CIC 704, K Orchard, A Duncombe, J Kohler (44(44), 1/43)

Stoke-on-Trent, North Staffordshire Royal Infirmary, R Chasty (9(9), 0/9)

Sunderland, The Sunderland Royal, PJ Carey (3(3), 0/3)

Swansea, Singleton Hospital, Sketty, CIC 554, S Al Ismail (11(11), 0/11)

Swindon, Princess Margaret Hospital (Hem), CIC 608, NE Blesing, A Gray, S Green, A Koster (7(7), 0/7)

Wakefield, Pinderfield's and Pontefract Hospitals NHS Trust, CIC 764, MC Galvin, D Wright (12(12), 0/12)

**Yugoslavia (Serbia and Montenegro)** (four teams; 20(21), 6/14)

Belgrade, Mother and Child Health Institute, CIC 358, D Makic, D Vujic (0(0), 0/0)

Belgrade, Clinical Centre of Serbia, CIC 373, M Colovic, A Bogdanovic (0(0), 0/0) not transplanting presently

Belgrade, Military Medical Academy, CIC 582, M Malesevic (20(21), 6/14)

Novi Sad, Institute of Internal Diseases, CIC 655, D Pejcin (0(0), 0/0) starting in 2002

\*No report.

\*\*Late change or late data, not included in tables and figures.

Final data: Total 599 teams; 19 668(23 154), 6426/13 242) November 2002.