ESPN/ERA Registry

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An update on the Registry – January 2026

The ESPN/ERA Registry collects data on kidney replacement therapy (KRT) in children via national and regional renal registries in Europe. So far, data from seventeen subsequent years on ~33,000 paediatric patients across Europe have been included. This Annual Report shows epidemiological data on paediatric KRT in Europe for the year 2023 based on 32 countries.

In 2023, the incidence of KRT in children below the age of 15 years was 6.3 per million age-related population (pmarp) and ranged from 0.0 pmarp (as no patients initiated KRT in 2023) in Croatia, Estonia, Iceland, Ireland, and Latvia to 20.3 pmarp in Albania. Most children commenced KRT on dialysis (74%), with a similar distribution between haemodialysis and peritoneal dialysis as first treatment modality. Pre-emptive kidney transplantation was performed in 26% of incident patients in 2023. Congenital anomalies of the kidney and urinary tract was the most common cause of kidney failure, affecting approximately one third of incident KRT patients.

The prevalence on 31st of December 2023 was 40.7 pmarp and ranged from 11.0 pmarp in Bosnia and Herzegovina to 98.1 pmarp in Finland. Most prevalent patients were living with a functioning kidney transplant (75%) followed by HD (13%) and PD (12%).

Five-year patient survival was 94.3% after the start of KRT and ranged from 90.0% in 0-4 year old patients to 97.0% in 10-14 year old patients. Cause of death was unknown for 26% of cases, whereas infections (22%) were reported as the most frequent known cause of death.

In 2025, three papers have been published and one paper has been accepted for publication.

American Journal of Transplantation published our paper on clinical outcomes of paediatric KRT after childhood cancer. Nephrology Dialysis and Transplantation published two papers, one on adult outcomes of childhood KRT in Europe from 2008 to 2019, and one paper on access to kidney transplantation and re-transplantation in transplant candidates from childhood to adulthood. The full publication list can be found below.

An important part of the Registry's research activities arise from the successful internship programme. In the past year, several fellows were hosted at the ESPN/ERA Registry:

- Evgenia Preka, a paediatric nephrologist from Paris, France, finished her part-time PhD trajectory and successfully defended her thesis entitled "Understanding the trajectories and related risk factors in European children on KRT through epidemiological studies" last December.
- Lucy Plumb, a paediatric nephrologist from Bristol, United Kingdom, continued her project on sex differences in paediatric KRT patients. A manuscript is in preparation.
- Sevcan Bakkaloglu, the ESPN/ERA Registry Chair and paediatric nephrologist from Ankara, Türkiye, won the first ESPN/ERA Registry Travel Grant. She visited the Registry for a period of 10 weeks to work on a project on outcomes in paediatric dialysis patients with a history of allograft failure.

If you are also interested in performing a research project at the Registry or you would like to know more about participating in the ESPN/ERA Registry, please contact Marjolein Bonthuis:
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These results would not have been possible without the great dedication and efforts of those who contribute to the ESPN/ERA Registry. We would like to thank all contributors for their fruitful collaboration and hope to keep working together in the future to improve paediatric nephrology care and research in Europe. We would also like to thank the patients, their families and the staff of all the dialysis and transplantation units who have contributed data via their national renal registries.

Table 1: Incident patients on KRT

Incident paediatric patients accepted for kidney replacement therapy in 2023 and general population characteristics in the same year.

Country	Total KRT patients 0-14 years		General Population Characteristics		
			Children 0-14 years	Total Population 0-99 years	Children 0-14 years
	N	pmarp	N	N	percent
Albania	9	20.3	443.227	2.761.785	16.0
Austria	10	7.6	1.315.044	9.104.772	14.4
Belarus	11	7.4	1.495.659	9.155.978	16.3
Bosnia and Herzegovina	4	7.4	543.719	3.531.159	15.4
Croatia	0	0.0	545.506	3.856.431	14.1
Cyprus	2	13.6	146.982	957.721	15.3
Czech Republic	5	2.9	1.739.283	10.864.041	16.0
Denmark	7	7.4	942.863	5.946.953	15.9
Estonia	0	0.0	222.124	1.370.288	16.2
Finland[1]	8	9.6	836.280	5.583.912	15.0
France	49	4.2	11.684.382	68.372.289	17.1
Germany-CERTAIN[2]	15	1.3	11.628.358	83.287.276	14.0
Greece	5	3.6	1.375.440	10.407.352	13.2
Hungary	4	2.9	1.389.116	9.592.184	14.5
Iceland	0	0.0	70.275	385.664	18.2
Ireland[3]	0	0.0	1.016.092	5.311.540	19.1
Italy[4]	7	1.0	7.265.183	58.984.217	12.3
Latvia	0	0.0	296.647	1.877.445	15.8
Lithuania	1	2.3	427.127	2.857.279	14.9
North Macedonia	1	3.2	307.992	1.829.954	16.8
Norway	8	8.8	913.604	5.519.599	16.6
Poland	30	5.4	5.603.165	36.687.352	15.3
Portugal	11	8.1	1.362.620	10.578.174	12.9
Republic of Serbia	6	6.3	956.039	6.623.180	14.4
Romania	18	5.9	3.052.258	19.061.060	16.0
Slovakia	4	4.6	870.425	5.426.742	16.0
Spain	53	8.2	6.483.796	48.352.527	13.4
Sweden	11	6.1	1.816.338	10.536.632	17.2
the Netherlands	20	7.4	2.720.708	17.877.115	15.2
Türkiye[5]	9	0.5	18.523.372	85.325.965	21.7
Ukraine	34	7.2	4.713.000	33.288.000	14.2
UK (England, N. Ireland, Wales, Scotland)[6]	93	8.0	11.648.215	68.265.209	17.1
Total[7]	**404**	**6.3**	**63.921.834**	**410.670.797**	**15.6**

[1]Data from Finland were provided on an aggregated level.
[2]Germany only provides data on transplantation patients, these data are provided by the CERTAIN (Cooperative European paediatric Renal Transpl-Ant INitiative) Registry, and are based on 16 transplantation centres. In 2023, 133 patients under the age of 21 years were transplanted in Germany.
[3]The incidence in Ireland is an underestimation of the true incidence.
[4]The incidence in Italy is an underestimation of the true incidence, with coverage of 65% to 85% of all patients.
[5]The incidence in Türkiye is an underestimation of the true incidence.
[6]In the UK the incidence is underestimated by approximately 7.5% due to one centre not providing data and patients opting out of data sharing for research purposes.
[7]Germany, Ireland, Italy and Türkiye were excluded from the overall incidence.

Table 2: Treatment modality at start of KRT in 2023

Treatment modality at day 1, among patients <15 years of age starting KRT in 2023.
Patients from Germany, Ireland, Italy and Türkiye are excluded.

	N	Percent	Pmarp
HD at start	146	36.1	2.3
PD at start	154	38.1	2.4
Pre-emptive transplantation	104	25.7	1.6
Unknown	0	0.0	0.0

Table 3: PRD distribution at start of KRT in 2023

Cause of kidney failure, among patients <15 years of age, starting KRT in 2023
According to new (2012/2018) and old (1995) ERA PRD codes (Boenink et al, Clin Kidney J 2024; 18(2): sfae405.).
Patients from Germany, Ireland, Italy and Türkiye are excluded.

	N		Percent		Pmarp	
	New	Old	New	Old	New	Old
CAKUT	125	122	31.4	30.6	1.96	1.91
Glomerulonephritis	47	41	11.9	10.4	0.74	0.65
Cystic kidney disease	53	54	12.7	12.9	0.79	0.80
Hereditary nephropathy	-	25	-	5.8	-	0.36
Metabolic and tubulointerstitial disorders	12	7	3.0	1.8	0.19	0.11
Toxic/ischemic renal failure	10	6	2.5	1.5	0.16	0.09
HUS	20	20	5.1	5.1	0.32	0.32
Vascular	5	5	1.3	1.3	0.08	0.08
Miscellaneous	70	29	17.7	7.3	1.10	0.46
Unknown	62	95	14.4	23.3	0.90	1.45

Table 4: eGFR at start of KRT

Estimated GFR based on age, height and serum creatinine levels, calculated according to the new bedside Schwartz formula, among incident KRT patients, aged <15 years in 2023.
Patients from Germany, Ireland, Italy, and Türkiye are excluded.

	N	Percent
eGFR <8 ml min^{-1} per 1.73 m^2	52	37.1
eGFR 8-15 ml min^{-1} per 1.73 m^2	71	50.7
eGFR >15 ml min^{-1} per 1.73 m^2	17	12.1

Table 5: Prevalent patients on KRT

Prevalent paediatric patients on kidney replacement therapy on the 31st of December 2023.
Prevalent counts and prevalence per million age-related population, by age groups.

Country	Total KRT		Age Groups		
	0-14 years		Infants 0-4 years	Children 5-9 years	Adolescents 10-14 years
	N	pmarp	pmarp	pmarp	pmarp
Albania	17	38.4	15.2	78.2	19.0
Austria	44	33.5	16.2	40.2	43.6
Belarus	43	28.7	28.4	18.2	39.5
Bosnia and Herzegovina	6	11.0	5.7	5.7	20.8
Croatia	26	47.7	0.0	50.7	87.5
Cyprus	8	54.4	19.8	63.2	81.7
Czech Republic	33	19.0	10.9	15.3	30.0
Denmark	37	39.2	19.4	35.6	61.5
Estonia	4	18.0	0.0	13.3	37.9
Finland[1]	82	98.1	80.2	106.4	104.0
France	485	41.5	13.2	40.0	66.0
Germany-CERTAIN[2]	328	28.2	6.8	33.3	44.3
Greece	28	20.4	2.5	17.7	36.4
Hungary	45	32.4	21.7	27.7	48.0
Iceland	5	71.1	130.4	44.8	40.1
Ireland[3]	8	7.9	0.0	17.6	5.3
Italy[4]	171	23.5	3.9	23.4	38.3
Latvia	6	20.2	0.0	9.2	50.0
Lithuania	9	21.1	23.5	13.4	26.7
North Macedonia	10	32.5	21.7	27.7	46.6
Norway	53	58.0	14.4	75.3	78.5
Poland	220	39.3	17.2	36.2	61.0
Portugal	52	38.2	14.0	38.4	59.1
Republic of Serbia	30	31.4	6.4	31.1	55.7
Romania	60	19.7	5.3	16.4	35.3
Slovakia	18	20.7	14.1	16.8	31.0
Spain	327	50.4	20.4	40.3	80.5
Sweden	90	49.6	17.6	51.8	76.1
the Netherlands	114	41.9	9.2	40.1	73.2
Türkiye[5]	322	17.4	3.5	17.7	29.0
Ukraine	123	26.1	8.8	29.1	38.6
UK (England, N. Ireland, Wales, Scotland)[6]	624	53.6	20.4	47.1	88.2
Total[7]	**2599**	**40.7**	**15.9**	**37.9**	**64.2**

[1]Data from Finland were provided on an aggregated level.
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[3]The prevalence in Ireland is an underestimation of the true prevalence.
[4]The prevalence in Italy is an underestimation of the true prevalence, with coverage of 65% to 85% of all patients.
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[7]Germany, Ireland, Italy and Türkiye were excluded from the overall prevalence.

Table 5: Prevalent patients on KRT (continued)

Prevalent paediatric patients on kidney replacement therapy on the 31st of December 2023.
Prevalent counts and prevalence per million age-related population, by sex and treatment modality.

Country	Gender		Treatment Modality		
	Male 0-14 years pmarp	Female 0-14 years pmarp	HD 0-14 years pmarp	PD 0-14 years pmarp	Transplantation 0-14 years pmarp
Albania	31.1	45.8	27.1	2.3	4.5
Austria	39.9	25.1	0.8	2.3	30.4
Belarus	43.1	13.8	0.7	5.3	22.7
Bosnia and Herzegovina	14.3	7.6	9.2	0.0	1.8
Croatia	53.6	41.4	3.7	22.0	22.0
Cyprus	66.1	42.0	0.0	27.2	27.2
Czech Republic	20.2	17.7	1.7	5.2	12.1
Denmark	59.9	17.4	0.0	1.1	38.2
Estonia	17.6	18.5	0.0	4.5	13.5
Finland[1]	114.6	80.7	0.0	2.4	95.7
France	48.7	34.0	6.0	3.3	32.2
Germany-CERTAIN[2]	36.6	19.4	-	-	26.7
Greece	28.3	12.0	8.7	2.9	8.7
Hungary	36.4	28.1	1.4	5.8	24.5
Iceland	82.7	58.8	14.2	0.0	56.9
Ireland[3]	11.6	4.0	0.0	1.0	6.9
Italy[4]	30.2	16.4	1.8	5.1	16.5
Latvia	19.6	20.9	0.0	3.4	16.9
Lithuania	27.4	14.4	2.3	7.0	11.7
North Macedonia	50.3	13.4	0.0	3.2	29.2
Norway	81.0	33.8	2.2	2.2	51.4
Poland	48.0	30.1	5.4	7.9	25.9
Portugal	47.3	28.6	5.9	5.9	26.4
Republic of Serbia	42.6	19.4	5.2	12.6	12.6
Romania	19.8	19.5	12.4	3.6	3.6
Slovakia	20.2	21.2	3.4	6.9	10.3
Spain	64.1	35.9	5.4	2.0	43.0
Sweden	50.3	48.7	0.6	6.1	42.9
the Netherlands	51.6	31.7	1.5	2.6	37.9
Türkiye[5]	19.2	15.5	2.2	7.1	8.1
Ukraine	30.1	21.9	5.1	4.5	16.5
UK (England, N. Ireland, Wales, Scotland)[6]	65.9	40.6	5.8	6.1	41.6
Total[7]	**49.3**	**31.6**	**5.1**	**4.7**	**30.7**

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[7]Germany, Ireland, Italy and Türkiye were excluded from the overall prevalence.

Table 6: Hypertension and height in children on KRT

Height z-score based on recent national reference charts, or, if unavailable, on reference charts for Northern and Southern Europe (Bonthuis et al, PLoS ONE 7(8): e42506. doi:10.1371/journal.pone.0042506). Blood pressure z-score was calculated following the fourth report of the National High Blood Pressure Education Program (NHBPEP). Hypertension was defined as having a systolic or diastolic blood pressure z-score ≥ 1.64 (≥ 95th percentile) (Pediatrics 2004; 114: 555–576).

	Dialysis	Transplantation
Blood pressure		
% of patients with hypertension	46.6 (45.0-48.1)	28.1 (27.1-29.1)
Mean z-score systolic blood pressure	1.32 (1.27-1.36)	0.82 (0.79-0.84)
Mean z-score diastolic blood pressure	1.20 (1.15-1.25)	0.73 (0.71-0.76)
Height		
% of patients with height z-score <-2	48.2 (47.0-49.5)	37.2 (36.1-38.3)
Mean height z-score	-2.01 (-2.06;-1.96)	-1.69 (-1.73;-1.65)

Figure 1: Five-year patient survival

Incident KRT patients aged <15 years starting KRT from 2007 onwards. Follow-up until 31st of December 2023.

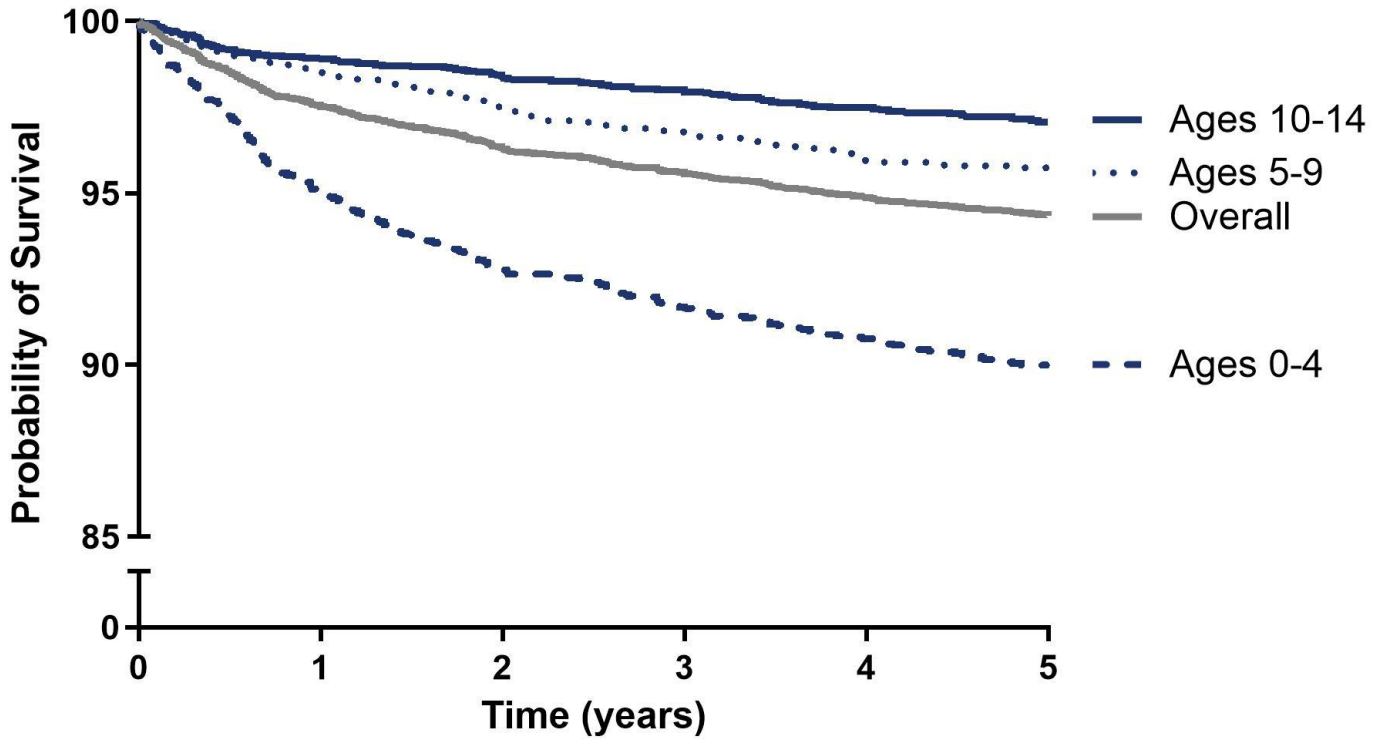


Table 7: Causes of death

Causes of death according to the ERA coding list (Boenink et al, Clin Kidney J 2024; 18(2): sfae405.).
Incident KRT patients <15 years starting KRT from 2007 onwards are included. Follow-up until 31st of December 2023.

Cause of death	Number of deaths	Percent
Myocardial ischemia and infarction	5	0.7
Cardiac failure	79	11.8
Cardiac arrest/sudden death other cause	55	8.2
Cerebro-vascular accident	24	3.6
Infection	148	22.2
Suicide/refusal or cessation of treatment	2	0.3
Treatment withdrawn	20	3.0
Cachexia	1	0.1
Malignant disease	32	4.8
Other identified cause of death	131	19.6
Cause of death uncertain/not determined	170	25.5

ESPN/ERA Registry

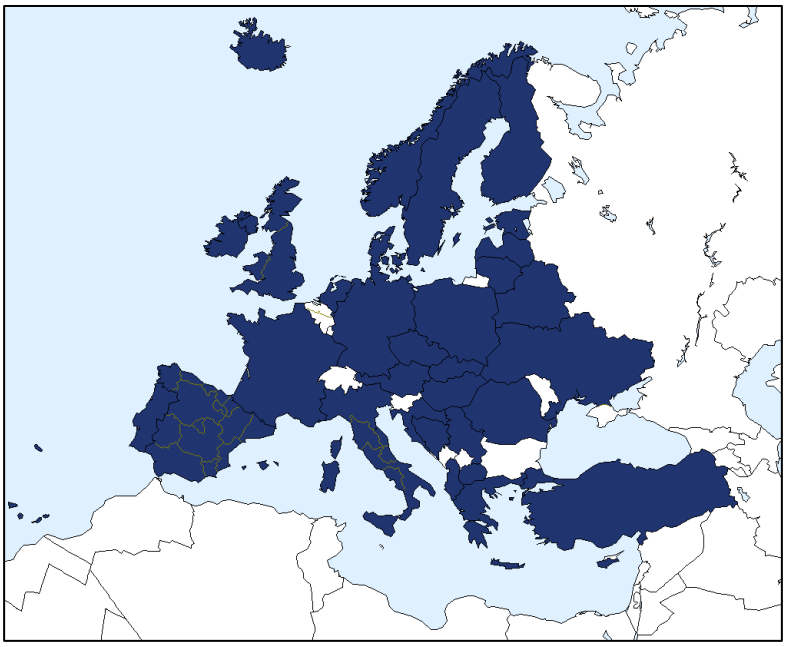
Department of Medical Informatics
Amsterdam University Medical Centers, location AMC

Publication list 2025

1. Clinical outcomes of pediatric kidney replacement therapy after childhood cancer – An ESPN/ERA Registry study. Kaijansinkko H, Bonthuis M, Jahnukainen K, Harambat J, Vidal E, Bakkaloğlu SA, Inward C, Sinha MD, Roperto RM, Kuehni CE, Biró E, Kwon T, Mota C, Adams B, Szczepańska M, Bieniaś B, Höcker B, Fomina S, Gjerstad AC, Vondrak K, Alpay H, Plumb LA, Hommel K, Molchanova MS, Hubmann H, Alonso-Melgar A, Jager KJ, Jahnukainen T. *Am J Transplant. 2025;25(4):767-779. doi:10.1016/j.ajt.2024.11.002*

2. Adult outcomes of childhood kidney replacement therapy in Europe from 2008 to 2019: an ERA Registry study. Montez de Sousa IR, Bonthuis M, Kramer A, Ordoñez FA, de la Cerda Ojeda F, Rydell H, Helve J, Groothoff JW, Hommel K, Buchwinkler L, Segelmark M, Arici M, Palsson R, Bell S, Trujillo-Alemán S, Bakkaloglu SA, Sørensen SS, Vila A, Ortiz A, Stel VS, Jager KJ. *Nephrol Dial Transplant. 2025;40(4):707-719. doi:10.1093/ndt/gfae189*

3. Access to transplantation and re-transplantation in European kidney transplant candidates from childhood to adulthood: Long-term data from the ERA Registry. Preka E, Bonthuis M, Marks SD, Kramer A, de Vries APJ, Sørensen SS, Bakkaloğlu SA, Bistrup C, Jahnukainen T, Rodriguez Arévalo OL, Buchwinkler L, Segelmark M, Sanchez JE, Arnol M, Ordóñez-Álvarez FA, de la Cerda-Ojeda F, Plumb LA, Methven S, Palsson R, Lundgren T, Ríos H, Ortiz A, Stel VS, Harambat J, Jager KJ. *Nephrol Dial Transplant 2025;40(8):1580-1589. doi: 10.1093/ndt/gfaf025*



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Albania	D Shtiza
Austria	G Mayer, J Kerschbaum, L Buchwinkler, and D Kaiser-Feistmantl
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Bosnia Herzegovina	D Pokrajac
Bulgaria	D Roussinov
Croatia	I Kos, J Ivančić, M Ban, H Matkovic, M Davidovic, L Lamot, K Vrljičak
Cyprus	A Elia
Czech Republic	K Vondrak
Denmark	K Hommel
Estonia	Ü Toots
Finland	J Helve, P Finne
France	C Couchoud, M Lassalle, J Hogan
Georgia	T Davitaia
Germany - CERTAIN	K Krupka, B Höcker, L Pape, B Tönshoff
Greece	G Moustakas
Hungary	G Reusz, O Horváth, Cs Berecki, A Szabó, T Szabó, O Lakatos
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Malta	V Said-Conti
North Macedonia	N Abazi
Norway	A Åsberg, AV Reisæter, A Bjerre
Poland	A Zurowska, I Zagozdzon
Portugal	C Mota, JE Esteves, M Abranches, C Gomes
Romania	G Mircescu, L Garneata
Russia	EA Molchanova, EV Zakharova, AM Andrusev
Serbia	M Kostić, B Spasojević, M Cvetković, I Gojković, D Paripović, G Miloševski-Lomić
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Sweden	KG Prütz, M Stendahl, M Evans, T Lundgren, H Rydell, and M Segelmark
Switzerland	E Maurer, GF Laube, CE Kuehni, P Parvex, S Tschumi, L Mader
The Netherlands	P Verschoor, L Heuveling, and M ten Dam
Türkiye	S Bakkaloglu
Ukraine	SP Fomina
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