DAJ
Življenju priložnost

Donorska in transplantacijska dejavnost
v Sloveniji v letu 2018

slovenija transplant

GIVE
Life a chance

Donor and transplantation activity
in Slovenia in 2018

Daj življenju priložnost - Donorska in transplantacijska dejavnost v Sloveniji v letu 2018

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Kazalo

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Slovarček temeljnih izrazov

BOLNIŠNIČNA KRVNA BANKA: enota, ki v bolnišnici shranjuje in razdeljuje kri ter krvne komponente in opravlja predtransfuzijsko testiranje ter bolnišnične transfuzijske dejavnosti. Za zbiranje krvi torej ni pooblaščena.

BOLNIŠNIČNI TRANSPLANTACIJSKI KOORDINATOR: zakon določa način imenovanja, naloge bolnišničnih koordinatorjev in pravilnik o koordinatorjih. Naloge bolnišničnih transplantacijskih koordinatorjev so: organizacija in koordinacija dela na vseh področjih transplantacijske dejavnosti v bolnišnici, od odkrivanja možnih mrtvih darovalcev do organizacije in koordinacije odvzemov v bolnišnici ter pospeševanje programa pridobivanja organov in tkiv za presaditev. Delo opravljajo zdravniki specialisti, ki so pridobili dodatna znanja o vseh področjih transplantacijske dejavnosti v bolnišnici oz. donorskem centru.

CENTRALNI TRANSPLANTACIJSKI KOORDINATOR: zdravnik z dodatnimi znanji, ki organizira in koordinira transplantacijsko dejavnost od zaznave možnega darovalca do odvzema. Centralni transplantacijski koordinatorji so v pripravljenosti 24 ur na dan vse dni na leto.

ČAKALNI SEZNAM (PREJEMNIKOV): zbirka podatkov zaporedno vpisanih pacientov, ki čakajo na presaditev z namenom zdravljenja. Indikacije za presaditev so za vsak organ/tkivo/celico specifične.

DAROVALEC: oseba, ki daruje del telesa za namen zdravljenja, ne glede na to, ali do darovanje pride za časa življenja ali po njeni/njegovi smrti.

DAROVANJE: darovanje dela telesa, namenjenega za zdravljenje s presaditvijo.

DEJANSKI UMRLI DAROVALEC: aktiven darovalec, od katerega je bil presajen vsaj en organ.

DODELJEVANJE: postopek, po katerem se izbere najustreznejšega prejemnika.

DONORSKA BOLNIŠNICA ALI CENTER: javnozdravstveni zavod ali enota tega zavoda, ki izvaja dejavnost pridobivanja delov telesa za namen zdravljenja s presaditvijo.

HUD NEŽELEN DOGODEK: kateri koli neželen ali nepredviden dogodek v zvezi s katero koli stopnjo postopka darovanja do presaditve, ki lahko povzroči prenos nalezljive bolezni, smrt, ogrozi življenje, povzroči invalidnost ali nezmožnost za delo, katerega posledica je hospitalizacija ali obolevnost, ali ki podaljša hospitalizacijo ali obolevnost.

HUDA NEŽELENA REAKCIJA: nenameren odziv, vključno s pojavom prenosljive bolezni, pri živem darovalcu ali prejemniku, ki bi lahko bil povezan s katero koli stopnjo postopka od darovanja do presaditve, ki je smrten, smrtno nevaren, ki povzroča invalidnost ali nezmožnost za delo, ali katerega posledica je hospitalizacija ali obolevnost ali ki podaljša hospitalizacijo ali obolevnost.

INTENZIVNO ZDRAVLJENJE/INTENZIVNA NEGA: zdravljenje, ki zahteva hitro odzivno diagnostiko, terapijo, nego in stalni nadzor življenjskih funkcij bolnika ponavadi v enoti za intenzivno zdravljenje.

MOŽEN UMRLI/MRTVI DAROVALEC: oseba, katere klinično stanje kaže na verjetnost, da izpolnjuje merila za možgansko smrt.

NACIONALNA IDENTIFIKACIJSKA ŠTEVILKA DAROVALCA OZIROMA PREJEMNIKA: identifikacijska oznaka, ki jo v skladu z nacionalnim sistemom identifikacije darovalcu ali prejemniku dodeli Slovenija-transplant in služi kot povezovalni znak, prek katerega se sledi darovalcu in prejemniku organa, zlasti pri izmenjavi podatkov med donorskimi centri, transplantacijskimi centri in drugimi državami članicami Evropske unije.

PRIMEREN UMRLI/MRTVI DAROVALEC: medicinsko ustrezna oseba, pri kateri je bila ugotovljena smrt na podlagi nevroloških meril, glede na relevantno zakonodajo.

SLEDLJIVOST: možnost, da se najde in identificira organ v vseh fazah preskrbe z organi ali uničenja, vključno z možnostjo, da se identificirata darovalec in donorski center, poiščejo prejemniki pri transplantacijskem centru ter identificirajo vsi pomembni neosebni podatki v zvezi s proizvodi in materiali v stiku z organom.

STOPNJA ODKLONITVE: odstotek odklonitev svojcev oz. oseb, ki so blizu umrlemu, za darovanje po smrti.

STOPNJA ZAVRNITEV: odstotek zavrnitev presadka pri prejemniku.

TRANSPLANTACIJSKA DEJAVNOST: zdravstvena dejavnost, ki vključuje postopke darovanja, pridobivanja, testiranja in razdeljevanja organov ter darovanja, pridobivanja, testiranja, predelave, konzerviranja, shranjevanja in razdeljevanja tkiv in celic za potrebe zdravljenja s presaditvijo.

TRANSPLANTACIJSKI CENTER: javnozdravstveni zavod ali enota tega zavoda, ki izvaja dejavnost zdravljenja s presaditvijo organov.

TRANSFUZIJSKI CENTER: organizacijska enota, ki je v bolnišnici odgovorna za zbiranje krvi, testiranje, predelavo zbrane krvi v krvne komponente in njihovo shranjevanje. Izvaja predtransfuzijsko testiranje in bolnišnične transfuzijske dejavnosti ter bolnišnice in druge porabnike oskrbuje s krvjo in krvnimi komponentami.

TRANSFUZIJSKI ZAVOD OZIROMA ZAVOD RS ZA TRANSFUZIJSKO MEDICINO V LJUBLJANI: na državni ravni odgovoren za strokovno raven preskrbe s krvjo in krvnimi pripravki ter povezovanje transfuzijske medicine z bolnišnično dejavnostjo. Zavod usklajuje vse dejavnosti v zvezi z izbiro krvodajalcev, zbiranjem, testiranjem, predelavo, hrambo in razdeljevanjem krvi ter krvnih pripravkov, klinično rabo krvi in nadzorom nad težkimi neželenimi dogodki oziroma reakcijami v zvezi s transfuzijo krvi. Zavod RS za transfuzijsko medicino na državni ravni usklajuje in povezuje mrežo bolnišničnih transfuzijskih oddelkov in bolnišničnih krvnih bank, vodi enoten informacijski sistem, strokovno izobraževanje in razvojno-raziskovalno dejavnost ter sodeluje z mednarodnimi organizacijami, zvezami in sorodnimi zavodi v drugih državah.

Uvodnik

Donorsko in transplantacijsko dejavnost v Sloveniji povezuje, koordinira, pospešuje ter nadzira javni neprofitni Zavod RS za presaditve organov in tkiv Slovenija-transplant, ki deluje pod okriljem Ministrstva RS za zdravje. Zavod se od ustanovitve (leta 2000) naprej nenehno razvija v skladu s priporočenimi mednarodnimi smernicami, stremi k ustvarjanju kohezivne strokovne javnosti ter vztrajno povečuje zaupanje med splošno javnostjo. Preko članstev v mednarodnih odborih ter s sodelovanjem v več konzorcijih evropskih projektov je vpet v mednarodno okolje ter tudi aktivni soustvarjalec strategij in aktivnosti s področja. Pri urejanju in vodenju področja pridobivanja in uporabe delov človeškega telesa za namen zdravljenja Slovenija-transplant sledi načelom:

samozadostnosti ❙ enakosti za bolnike ❙ optimalne učinkovitosti ❙
veljavne zakonodaje ❙ medicinske etike in deontologije ❙ profesionalnosti ❙
nekomercialnosti ❙ transparentnosti ❙ prostovoljnosti.

Slovenija-transplant je prav tako osrednja povezovalna ustanova ter centralna koordinacijska pisarna nacionalne transplantacijske mreže, ki je bila ustanovljena leta 1998. Nacionalno mrežo sestavlja enajst donorskih centrov, transplantacijski center v UKC Ljubljana in Center za tipizacijo tkiv, ki deluje v sklopu Zavoda RS za transfuzijsko medicino. Nacionalna mreža omogoča delovanje donorskega in prejemniškega programa ter zagotavlja, da imajo do zdravljenja s presaditvijo pravico in dostop vsi slovenski državljani. Mreža deluje nepretrgoma, zato so ustrezne strokovne ekipe v pripravljenosti 24 ur na dan, vse dni v letu (več glej *www.slovenija-transplant.si*).

Ker ima Slovenija relativno majhno število prebivalcev, ni mogoče v vseh primerih najti tkivno skladnega ter v vseh ozirih ustreznega darovalca za bolnega oz. tudi obratno, ustreznega prejemnika za vse pridobljene organe. Zaradi teh razlogov je Slovenija izpolnila številne pogoje in se januar-

ja 2000 priključila mednarodni zvezi Eurotransplant. Eurotransplant je neprofitna organizacija in mednarodna transplantacijska mreža, ki koordinira ter organizira izmenjavo organov med transplantacijskimi centri Belgije, Nizozemske, Luksemburga, Nemčije, Avstrije, Hrvaške, Madžarske in Slovenije. Združuje območje z okoli 135 milijoni prebivalcev. Sedež organizacije je v Leidnu na Nizozemskem. Algoritmi dodeljevanja in izmenjav so natančno določeni. Sodelovanje v mreži ima izjemen pomen in zagotavlja večje možnosti za preživetje pacientov z nenadno (akutno) odpovedjo delovanja jeter ali srca, ko je potrebno urgentno zdravljenje s presaditvijo, ter omogoča zdravljenje pri visoko senzibiliziranih bolnikih (več o organizaciji, glej *www.eurotransplant.org*).

Publikacija je namenjena vsem zainteresiranim javnostim. V njej so predstavljeni pomembni dogodki in presežki preteklega leta ter pregledno zbrani in predstavljeni izbrani rezultati donorskega programa po potrjeni smrti ter prejemniških programov za leto 2018. Umeščeni so v pomembne mednarodne kontekste ter tudi širši časovni okvir, kar omogoča ustreznejše razumevanje rezultatov in uspehov posameznih let. V publikaciji sicer v ospredje postavljamo kvantificiran vidik naše dejavnosti, a za vse vpletene, tako strokovnjake kot bolne, je za vsako »številko« zelo specifična ter individualizirana zgodba in izkušnja. Za vsako uspešno transplantacijo stoji predan in usklajen multidisciplinarni tim strokovnjakov, prostovoljni darovalec ter sodelujoči bolnik.

Zahvaljujemo se vsem vidnejšim in manj vidnim članom, tako iz vrst strokovnih kot laičnih javnosti, ki so sodelovali in sodelujejo v donorskem in prejemniškem programu ter omogočajo uspešno delovanje transplantacijske medicine v Sloveniji.

Presežki in zaznamki leta 2018

1. Opredelitev za darovanje tudi prek spleta

Novembra smo v sodelovanju z Ministrstvom za javno upravo RS in Zavodom za zdravstveno zavarovanje Slovenije za prebivalce in rezidente Republike Slovenije omogočili elektronsko opredelitev glede darovanja na spletni platformi *eUprava*. S tem smo se odzvali na številne pobude javnosti, hkrati pa sledimo dosežkom sodobne digitalne oz. informacijske dobe in jih uvajamo v vsakdanjo prakso z namenom, da omogočimo prijaznejšo in bolj praktično možnost za opredelitev za darovanje za časa življenja. Po pričakovanjih je prožnejša oblika vpisa v register prispevala k bistvenemu zvišanju števila opredeljenih oseb. V letu 2018 smo tako zbrali najvišje letno število opredelitev glede darovanja (Glej poglavje: Register opredeljenih oseb glede darovanja organov in tkiv po smrti).

2. Prva presaditev obeh pljučnih kril v UKC Ljubljana

V drugi polovici leta 2018 je multidisciplinarna ekipa slovenskih strokovnjakov ponovno pričela s presaditvijo pljuč v transplantacijskem centru UKC Ljubljana. Pred tem so presaditve pljuč za slovenske prejemnike opravljali v univerzitetni bolnišnici na Dunaju. Za obravnavo in pripravo bolnika pred presaditvijo ter sledenje po presaditvi organa so že do sedaj skrbeli na pristojnih oddelkih UKC Ljubljana.
V letu 2018 sta bili v Ljubljani opravljeni dve presaditvi obeh pljučnih kril, zdaj pa bodo slovenski torakalni kirurgi v večini primerov presaditev organa opravili v UKC Ljubljana. Ekipa Slovenija-transplanta je sledila zahtevam koordinacije v novih razmerah in prilagodila svoje protokole.

3. Uspeh donorskega programa v UKC Maribor

Število pridobljenih umrlih darovalcev se je v donorski bolnišnici UKC Maribor povzpelo na 13 dejanskih umrlih darovalcev, kar je najvišje število v zadnjih 15. letih. K dobremu rezultatu so prispevale organizacijske spremembe, izvedene v drugi polovici leta 2017. Okrepljene ekipe so zagotovile izboljšanje zaznavanja in vzdrževanja možnih umrlih darovalcev. Namesto enega bolnišničnega transplantacijskega koordinatorja zdaj v donorskem programu sodeluje pet zdravnikov anesteziologov intenzivistov, ki se med seboj enakovredno dopolnjujejo in nadomeščajo, vlogo vodje ekipe pa je prevzela Tanja Kuprivec, dr. med. Vsem sodelujočim se zahvaljujemo za zavzetost in iskreno čestitamo za kakovostno opravljeno delo.

4. Sodelovanje z donorskimi bolnišnicami

V letu 2018 smo tesneje sodelovali z vsemi donorskimi bolnišnicami (DB). Na novo smo oblikovali ekipe koordinatorjev, v kateri je poleg bolnišničnega transplantacijskega koordinatorja (BTK) še vsaj en član ekipe, ki opravlja funkcijo pomočnika in/ali namestnika BTK. Sestavili smo nove pogodbe za sodelovanje in natančno opredelili naloge in njihove izvajalce. Pri odločanju o primernosti darovalca smo uvedli posvetovanje po t.i. piramidi odločanja, na podlagi katere želimo zmanjšati pred-presojo glede primernosti darovalca s strani lečečih zdravnikov, ki ni v skladu s najsodobnejšimi smernicami. Po drugi strani pa želimo s tem načinom odločanja in ocenjevanja primernosti za darovanje zmanjšati breme odločitve na strani zdravnikov v Enotah intenzivne terapije. Poleg tega smo v letu 2018 prvič uspešno izvedli zunanjo revizijo v vseh 10 DB z izjemo UKC Ljubljana, kjer pa smo v istem letu z zavzetim sodelovanjem bolnišničnega koordinatorja dr. Staniča in vodstva uspeli sestaviti ekipo BTK s pomočniki na vseh šestih oddelkih intenzivnega zdravljenja. Nova ekipa bo pripomogla k izboljšanju zaznavanja možnih umrlih darovalcev in vzdrževanja do odvzema organov.

5. Publikacija »Donorski program: postopki za izvajanje v donorskih bolnišnicah«

Pripravili in izdali smo novo publikacijo z naslovom *»Donorski program: postopki za izvajanje v donorskih bolnišnicah«*, ki je temeljni priročnik za delo bolnišničnih transplantacijskih koordinatorjev in ostalih vključenih v donorski del transplantacijske medicine. Publikacijo smo izdali v tiskani kot v elektronski obliki, predstavili pa smo jo vodstvu v vseh donorskih bolnišnicah in vodjem oddelkov intenzivnega zdravljenja.

6. Sodelovanje v EU projektu EUDONORGAN

Slovenija-transplant od leta 2016 sodeluje kot partner pri evropskem projektu EUDONORGAN *(Training and social awareness for increasing organ donation in the European Union and neighboring countries)*. S predstavniki s Hrvaške vodimo delovni sklop Ozaveščanje javnosti, v okviru katerega je predvidena organizacija in izvedba šestih celodnevnih dogodkov za ozaveščanje strokovne in splošne javnosti glede darovanja organov. V letu 2018 je bil pod vodstvom Slovenija-transplanta v Varšavi na Poljskem uspešno izveden prvi od šestih dogodkov. Na dogodku sta kot moderatorki sodelovali prim. Danica Avsec in dr. Jana Šimenc, kot člana organizacijskega odbora pa sta sodelovala Barbara Uštar in Boštjan Kušar.

7. Skrb za izobraževanje strokovne in splošne javnosti

Strukturirano in kontinuirano izobraževanje strokovne zdravstvene javnosti je ključnega pomena za uspešen razvoj in delovanje donorske in transplantacijske dejavnosti. Med drugim smo v letu 2018 več pozornosti namenili izobraževanju o biovigilanci, ki je ključna metoda za zagotavljanje kakovosti in varnosti transplantacijske dejavnosti. V decembru smo v sodelovanju s špansko organizacijo DTI, ki že več kot dve desetletji izvaja program TPM *(Transplant Procurement Management)*, sedmič zapored organizirali tridnevni intenzivni tečaj s področja pridobivanja in presaditve organov (tako imenovani *Intermediate Training Course in Transplant Coordination*). Izvedli smo tudi tri ponovitve izobraževanja Osnove donorskega programa za zdravstvene delavce v UKC Maribor in SB Novo mesto ter dve delavnici o sporočanju slabe novice in pogovoru s svojci.

Novost v letu 2018 je bila izvedba delavnice o pogovoru s svojci na naprednejši ravni. Vsebinske nadgradnje smo pripravili za centralne in bolnišnične transplantacijske koordinatorje, ki se pri svojem delu soočajo s čustveno zahtevnimi situacijami, predvsem ob sporočanju slabe novice (smrt bližnjega) in ob izvedbi pogovora o darovanju.

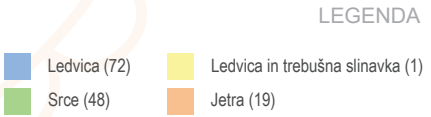
8. @SloTransplant na družabnih omrežjih

Že nekaj let nazaj smo prepoznali pomen prisotnosti v novih medijih, zato je komuniciranje prek družabnih omrežij najnovejši del komunikacijskega pristopa Slovenija-transplanta. Družabna omrežja namreč postajajo, predvsem za mlajšo populacijo, primarni vir informacij in močno prehitevajo tradicionalne medije, kot so televizija, radio in podobno. Na družabnih omrežjih smo prisotni zaradi možnosti neposrednega in hitrega posredovanja kredibilnih informacij o transplantacijski in donorski aktivnosti široki in drugim specializiranim javnostim, ter tudi zaradi omejevanja lažnih novic in zmotnih prepričanj, ki se lahko hitro razširjajo. Od leta 2011 upravljamo profil na Facebooku, od septembra letos pa smo prisotni tudi na Twitterju. Z objavo o možnosti elektronske opredelitve smo dosegli doslej največji doseg (skoraj 43.000 uporabnikov in 333 delitev na Facebooku). Twitter uporabljamo tudi za povezovanje z mednarodno strokovno skupnostjo.
Vabljeni, da nam sledite @SloTransplant.

Solidni organi

NACIONALNI ČAKALNI SEZNAM ZA PRESADITVE ORGANOV

Čakalni seznam je seznam bolnikov, ki čakajo na del človeškega telesa za presaditev z namenom zdravljenja. Indikacije za presaditev so za vsak organ/tkivo/celico specifične. Vsi bolniki v Republiki Sloveniji imajo enake možnosti za uvrstitev na čakalni seznam prejemnikov in zagotovljen enak dostop do presaditve delov človeškega telesa. Konec leta 2018 je na presaditev organa čakalo 140 bolnikov, kar je največ do sedaj, predvsem na račun zvišanja števila čakajočih na presaditev ledvice. Povprečna čakalna doba je za vse organe v primerjavi z ostalimi državami relativno kratka. Slovenski bolniki čakajo na presaditev srca, jeter ali ledvice v povprečju manj kot leto dni.

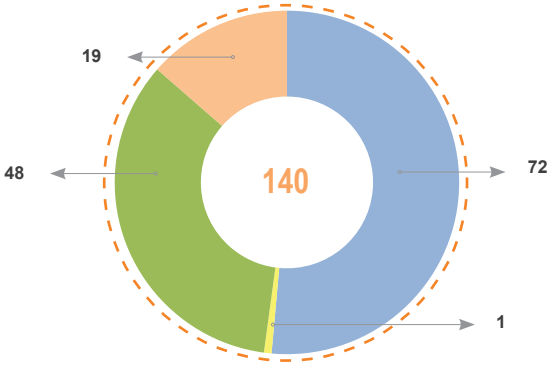


Stanje na nacionalnem čakalnem seznamu na dan 31. 12. 2018 (aktivni čakajoči)

Ledvica	Ledvica in trebušna slinavka	Ledvica in jetra	Srce
72	1	0	48
Srce in jetra	**Srce in ledvica**	**Jetra**	**Trebušna slinavka**
0	0	19	0
SKUPAJ			**140 bolnikov**

Vir: http://statistics.eurotransplant.org/

Delež bolnikov na nacionalnem čakalnem seznamu po posameznem organu oz. kombinaciji organov v letu 2018

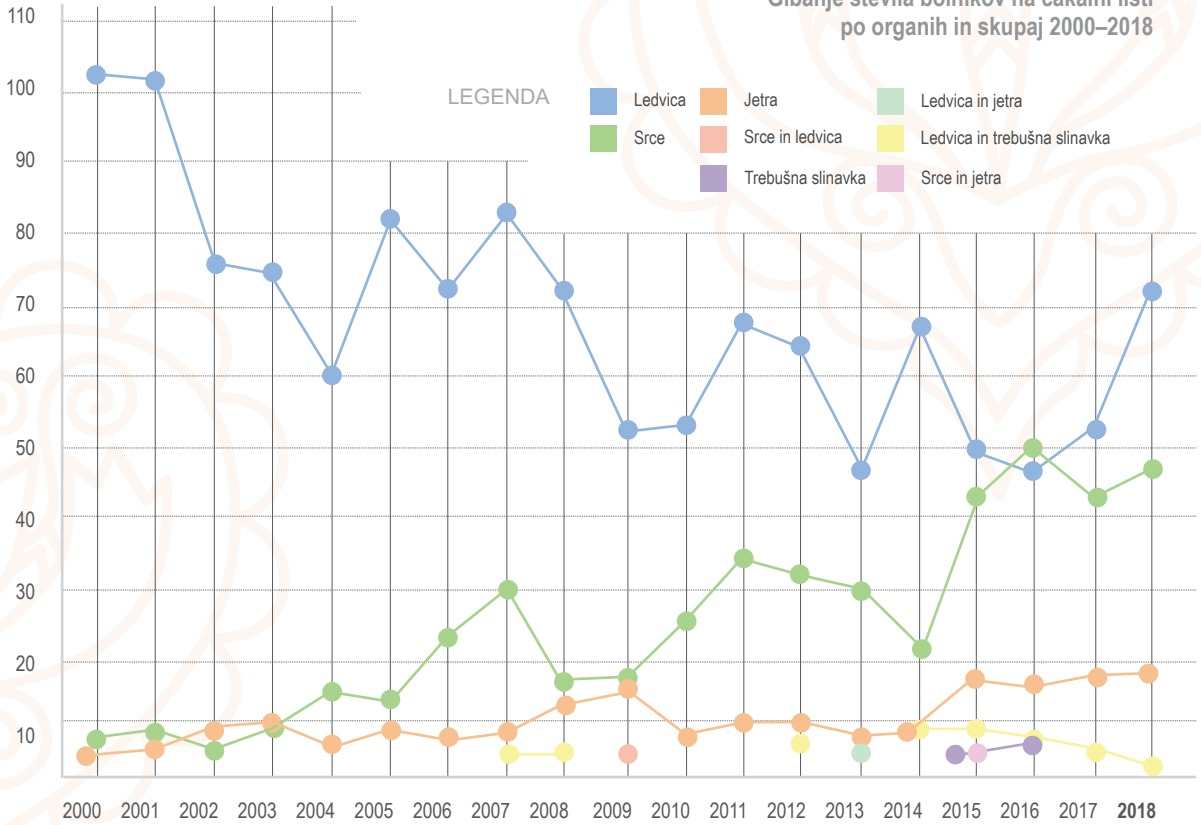


Nacionalni čakalni seznam v obdobju 2000–2018 (stanje na dan 31. 12., aktivni čakajoči)

Leto	Ledvica	Ledvica in trebušna slinavka	Ledvica in jetra	Srce	Srce in jetra	Srce in ledvica	Jetra	Trebušna slinavka	SKUPAJ
2000	102			7			2		**111**
2001	101			8			4		**113**
2002	76			2			7		**85**
2003	75			9			8		**92**
2004	60			15			4		**79**
2005	81			14			9		**104**
2006	72			24			6		**102**
2007	83	1		30			9		**123**
2008	71	1		17			13		**102**
2009	52			18		1	15		**86**
2010	53			26			8		**87**
2011	68			34			10		**112**
2012	65	2		32			10		**109**
2013	47		1	30			7		**85**
2014	69	8		21			9		**107**
2015	50	8		42	1		18	1	**120**
2016	47	3		50			17	2	**119**
2017	51	2		42			18		**113**
2018	72	1		48			19		**140**

Vir: http://statistics.eurotransplant.org/

Gibanje števila bolnikov na čakalni listi po organih in skupaj 2000–2018



ŠTEVILO UMRLIH DAROVALCEV

V letu 2018 smo v slovenskih donorskih bolnišnicah pridobili 51 aktivnih umrlih darovalcev*, ki so bili medicinsko ustrezni in za katere smo pridobili privolitev svojcev. Uvodoma so prikazani podatki o številu aktivnih umrlih darovalcev v Sloveniji v primerjavi z ostalimi državami sveta. V nadaljevanju so prikazani podatki o številu dejanskih umrlih darovalcev*, kar pomeni, da je bil od vsakega darovalca presajen vsaj en organ. V primerjavi z ostalimi državami članicami Eurotransplanta se Slovenija po številu dejanskih umrlih darovalcev na milijon prebivalcev v letu 2018 uvršča na četrto mesto.

Število aktivnih umrlih darovalcev (MD) na milijon prebivalcev (PMP) v Sloveniji v letu 2018 v primerjavi z ostalimi državami sveta

Država sveta	Število MD/PMP 2018
1. Španija	48
2. Hrvaška	41,2
3. Portugalska	33,63
4. Begija*	33,62
5. ZDA	33,32
6. Malta*	30
7. Francija*	29,74
8. Islandija	28,12
9. Italija	27,73
10. Avstrija	26

Država sveta	Število MD/PMP 2018
11. Estonija	25,77
12. Češka*	25,51
13. Belorusija	25,1
14. Slovenija	24,67
15. Zdr.kraljestvo*	23,05
16. Avstralija	22,17
17. Kanada*	21,91
18. Madžarska	21,89
19. Finska	21,19
20. Urugvaj*	20,43

Država sveta	Število MD/PMP 2018
21. Norveška	19,54
22. Švedska	17,72
23. Švica	17,2
24. Irska	17,08
25. Danska	16,91
26. Brazilija*	16,6
27. Litva	16,42
28. Luksemburg	15,8
29. Nova Zelandija*	15,23
30. Nizozemska*	15,18

*Podatki za leto 2017

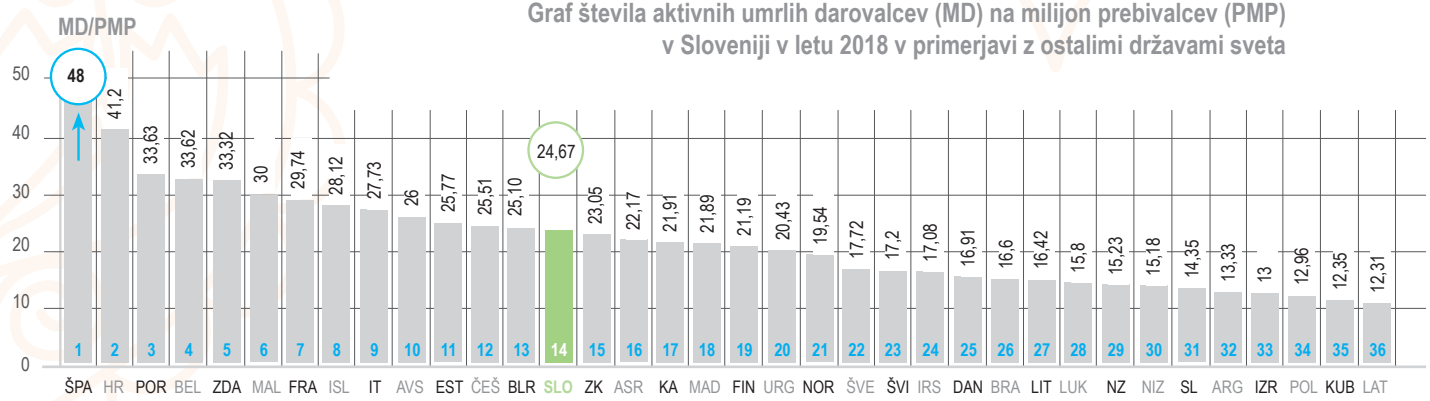
Država sveta	Število MD/PMP 2018
31. Slovaška	14,35
32. Argentina*	13,33
33. Izrael	13
34. Poljska	12,96
35. Kuba*	12,35
36. Latvija*	12,31
37. Ciper*	11,69

Država sveta	Število MD/PMP 2018
38. Nemčija	11,5
39. Iran*	11,43
40. Čile*	10
41. Južna Koreja*	9,95
42. Kolumbija*	8,9
43. Turčija	7,47
44. Jordanija*	6,91

Država sveta	Število MD/PMP 2018
45. Kostarika*	6,7
46. Hongkong*	6
47. Grčija*	5,98
48. Kuvajt*	5
49. Ekvador*	5
50. Moldavija*	4,5
51. Mehika*	4,5

*Podatki za leto 2017

Graf števila aktivnih umrlih darovalcev (MD) na milijon prebivalcev (PMP) v Sloveniji v letu 2018 v primerjavi z ostalimi državami sveta



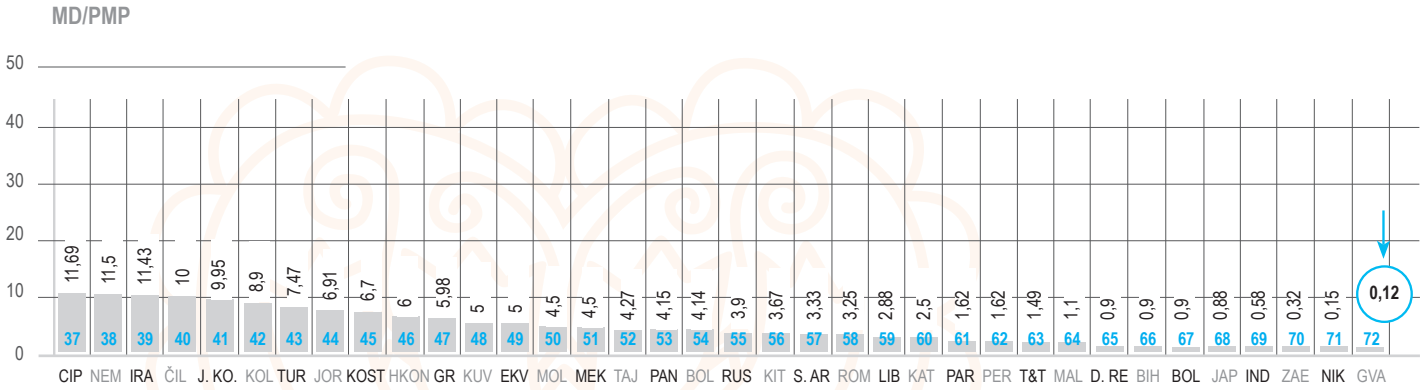
Država sveta	Število MD/PMP 2018
52. Tajska*	4,27
53. Panama*	4,15
54. Bolgarija	4,14
55. Rusija*	3,9
56. Kitajska*	3,67
57. Saudova Arabija*	3,33
58. Romunija*	3,25

Država sveta	Število MD/PMP 2018
59. Libanon*	2,88
60. Katar	2,5
61. Paragvaj*	1,62
62. Peru*	1,62
63. Trinidad in Tobago*	1,49
64. Malezija*	1,1
65. Dominik. republika	0,9

Država sveta	Število MD/PMP 2018
66. Bosna in Hercegovina	0,9
67. Bolivija*	0,9
68. Japonska*	0,88
69. Indija*	0,58
70. ZAE*	0,32
71. Nikaragva*	0,15
72. Gvatemala*	0,12

*Podatki za leto 2017

Vir: IRODaT (International Registry in Organ Donation and Transplantation)
www.irodat.org Preliminary numbers 2018

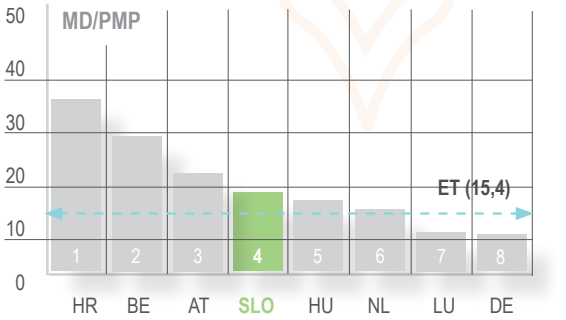


Število dejanskih umrlih darovalcev (MD) na milijon prebivalcev (PMP) v Sloveniji v letu 2018 in v primerjavi z vsemi državami Eurotransplanta.

Država	Slovenija (SLO)	Eurotransplant (ET)
Število MD	40	2.159
MD/PMP	19,4	15,4

Število dejanskih umrlih darovalcev na milijon prebivalcev (MD/PMP) ter primerjava z ostalimi državami članicami Eurotransplanta v letu 2018

Država ET	Število MD/PMP 2018
1. Hrvaška (HR)	36,8
2. Belgija (BE)	29,4
3. Avstrija (AT)	22,9
4. Slovenija (SLO)	19,4
5. Madžarska (HU)	17,1
6. Nizozemska (NL)	15,9
7. Luksemburg (LU)	11,6
8. Nemčija (DE)	11,3



Vir: http://statistics.eurotransplant.org/

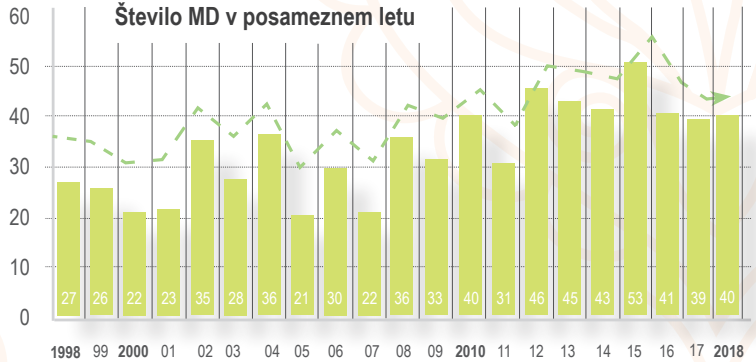
Število dejanskih umrlih darovalcev (MD) ter število umrlih darovalcev na milijon prebivalcev (MD/PMP) Sloveniji v letih od 1998 do 2018

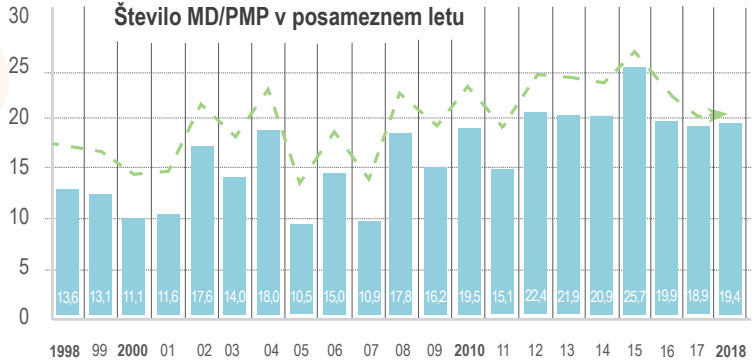
Leto	Število MD	Število MD/PMP
1998	27	13,6
1999	26	13,1
2000	22	11,1
2001	23	11,6
2002	35	17,6
2003	28	14
2004	36	18
2005	21	10,5
2006	30	15
2007	22	10,9
2008	36	17,8

Leto	Število MD	Število MD/PMP
2009	33	16,2
2010	40	19,5
2011	31	15,1
2012	46	22,4
2013	45	21,9
2014	43	20,9
2015	53	25,7
2016	41	19,9
2017	39	18,9
2018	40	19,4
SKUPAJ	717	16,8

Vir: http://statistics.eurotransplant.org/

Število dejanskih umrlih darovalcev (MD) in število dejanskih umrlih darovalcev na milijon prebivalcev (MD/PMP) v Sloveniji v letih od 1998 do 2018





* Klasifikacija umrlih darovalcev organov

MOREBITEN UMRLI DAROVALEC ORGANOV
Bolnik s hudo poškodbo možganov ALI bolnik z zaustavitvijo krvnega obtoka IN očitno medicinsko primeren za darovanje organov

Darovanje po smrti zaradi zaustavitve krvnega obtoka (DSK)	Lečeči zdravnik prepozna/opozori na možnega darovalca	Darovanje po možganski smrti (DMS)
MOŽEN DAROVALEC (DSK) **a.** Oseba, pri kateri se je zaustavilo delovanje krvnega obtoka in dihanje, postopki oživljanja se ne uporabijo oz. se ne nadaljujejo. ALI **b.** Oseba, pri kateri je mogoče predvideti, da se bo v določenem časovnem okviru zaustavilo delovanje krvnega obtoka in dihanje, kar bo omogočilo pridobitev organov.	**Razlogi, zakaj možen darovalec ne postane dejanski darovalec** **SISTEM DELA** - Zdravstveno osebje ni prepoznalo /opozorilo na možnega mrtvega darovalca ali primernega darovalca - Možganska smrt ni potrjena (npr. ne izpolnjuje meril) oz. postopek ugotavljanja MS ni zaključen (npr. ker ni na voljo ustreznih diagnostičnih naprav oz. osebja, ki bi opravilo potrditveni test) - Smrt zaradi zaustavitve krvnega obtoka ni pravočasno potrjena - Logistične težave (npr. ekipa za odvzem organov ni na voljo) - Ni ustreznega prejemnika (npr. pri otroku, krvna skupina, pozitivna serologija) **DAROVALEC/ORGAN** - Medicinsko neustrezen (npr. pozitivna serologija, tumor) - Hemodinamska nestabilnost /nepredvidena zaustavitev srca - anatomske, histološke in/ali funkcionalne nepravilnosti organov - Organi poškodovani med postopkom pridobivanja - Nezadostna perfuzija organov ali krvni strdek **PRIVOLITEV** - Umrli je za časa življenja izrazil voljo, da ne želi biti darovalec - Zavrnitev svojcev umrlega - Zavrnitev mrliškega oglednika ali preiskovalnega sodnika zaradi forenzičnih razlogov	MOŽEN DAROVALEC (DMS) Oseba, katere klinično stanje kaže na verjetnost, da izpolnjuje merila za možgansko smrt.
PRIMEREN DAROVALEC (DSK) Medicinsko ustrezna oseba, pri kateri je bila ugotovljena smrt na podlagi nepovratne prekinitve delovanja krvnega obtoka in dihanja, glede na relevantno zakonodajo, v časovnem okviru, ki omogoča pridobitev organov.		PRIMEREN DAROVALEC (DMS) Medicinsko ustrezna oseba, pri kateri je bila ugotovljena smrt na podlagi nevroloških meril, glede na relevantno zakonodajo.
AKTIVEN DAROVALEC (DSK) Primeren darovalec, za katerega imamo privolitev **a.** Narejen je bil operacijski rez z namenom pridobitve organov za namen presaditve. ALI **b.** Pridobljen je bil vsaj en organ za namen presaditve.		AKTIVEN DAROVALEC (DMS) Primeren darovalec, za katerega imamo privolitev **a.** Narejen je bil operacijski rez z namenom pridobitve organov za namen presaditve. ALI **b.** Pridobljen je bil vsaj en organ za namen presaditve.
DEJANSKI DAROVALEC (DSK) Aktiven darovalec, od katerega je bil presajen vsaj en organ.		DEJANSKI DAROVALEC (DMS) Aktiven darovalec, od katerega je bil presajen vsaj en organ.

Upoštevati je potrebno »pravilo umrlega darovalca«. Bolnik lahko postane darovalec šele po smrti, pridobitev organov ne sme povzročiti smrti darovalca.

Povzeto po Madridski resoluciji o darovanju organov in transplantaciji

REGISTER OPREDELJENIH OSEB GLEDE DAROVANJA ORGANOV IN TKIV PO SMRTI

Vsak slovenski državljan ima za časa življenja pravico in možnost, da se opredeli glede darovanja organov in tkiv. Odločitev formalno potrdimo z vpisom v nacionalni register opredeljenih oseb, ki je bil vzpostavljen leta 2004. Izjavo o opredelitvi glede darovanja lahko podpišemo na številnih pooblaščenih mestih v več krajih po Sloveniji.
Natančen seznam je objavljen na *www.slovenija-transplant.si*. Od junija 2017 je poleg opredelitve za darovanje mogoča tudi opredelitev proti darovanju.

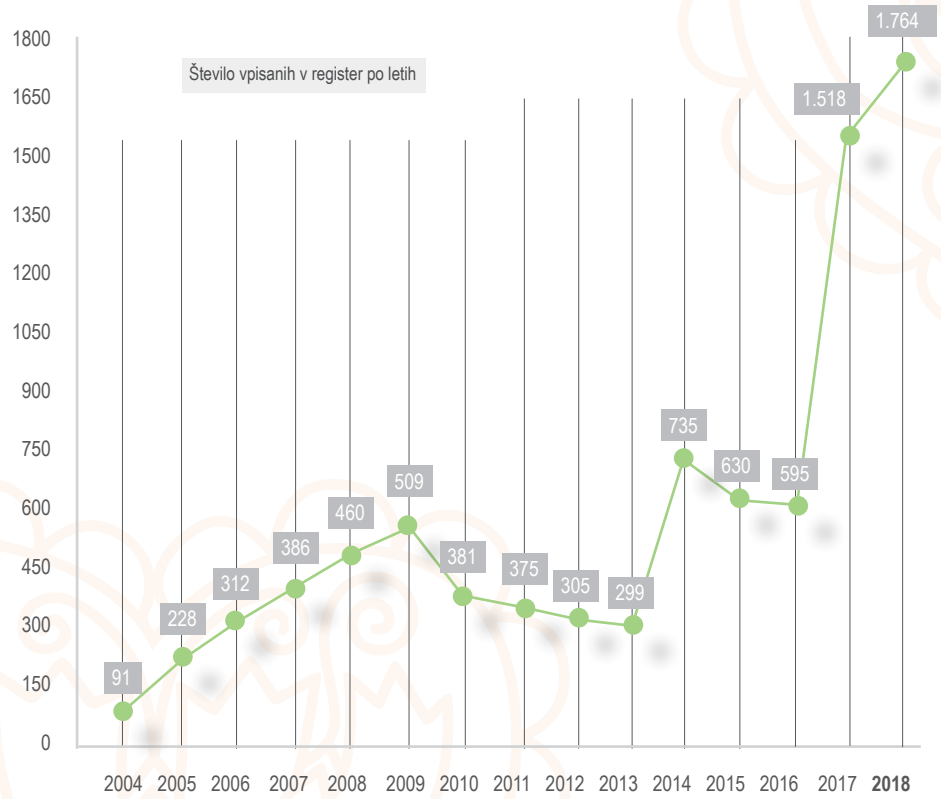
V letu 2018 smo zabeležili največje število opredelitev do sedaj, kar pripisujemo uvedbi možnosti elektronske opredelitve z digitalnim potrdilom, ki je zaživela v novembru. V celem letu 2018 smo zbrali skupaj 1.764 izjav (1.759 ZA in 5 PROTI), od tega 754 po elektronski poti. Pričakujemo, da bo prožnejša oblika vpisa v register prispevala k zvišanju števila opredeljenih posameznikov in posameznic. Do 31. 12. 2018 je bilo v register vpisanih skupaj 8.594 opredelitev (8.589 ZA in 5 PROTI), kar je relativno nizka številka.

Število vpisanih v registru opredeljenih posmrtnih darovalcev po letih v obdobju od 2004 do 2018

Leto	Št. vpisanih
2004	91
2005	228
2006	312
2007	386
2008	460
2009	509
2010	381
2011	375
2012	305
2013	299
2014	735
2015	630
2016	595
2017	1.518
2018	1.764*
SKUPAJ	**8.594**

* Od tega 1.759 ZA in
5 PROTI darovanju

Vir: arhiv Slovenija-transplanta



ODSTOTKI ODKLONITEV PRI POGOVORU S SVOJCI

Pogovor s svojci oz. bližnjimi osebami možnega mrtvega darovalca (MMD) glede darovanja se opravi v vseh primerih, ko je možno darovanje organov za presaditev. Transplantacijski koordinator šele po potrditvi smrti ter vpisu časa smrti preveri v registru, ali je bil umrli opredeljen kot darovalec po smrti. Kljub znani opredelitvi centralni koordinator za transplantacijo vedno opravi pogovor o darovanju s svojci umrlega. V pogovoru poskuša izvedeti, kakšno je bilo stališče umrlega glede posmrtnega darovanja. Če volja ni znana, se na koncu odločijo svojci.
Vsi postopki so izvedeni z visoko stopnjo tankočutnosti, razumevanja izjemno težkih čustvenih okoliščin ter v skladu z zakonodajnimi določbami in medicinsko doktrino. V letu 2018 je bil odstotek odklonitev dokaj visok in sicer je darovanje odklonilo 33 % svojcev. Vzroke za porast še natančno preučujemo.

Ker je smrt bližnjega za vsakogar izmed nas težka izkušnja, Slovenija-transplant svojcem darovalcev nudi možnost posvetovanja ob žalovanju s strokovno usposobljeno in izkušeno strokovnjakinjo.

Odstotki odklonitve darovanja v obdobju od 1998 do 2018

Vir: arhiv Slovenija-transplanta

Leto	%
1998	21
1999	30
2000	37
2001	36

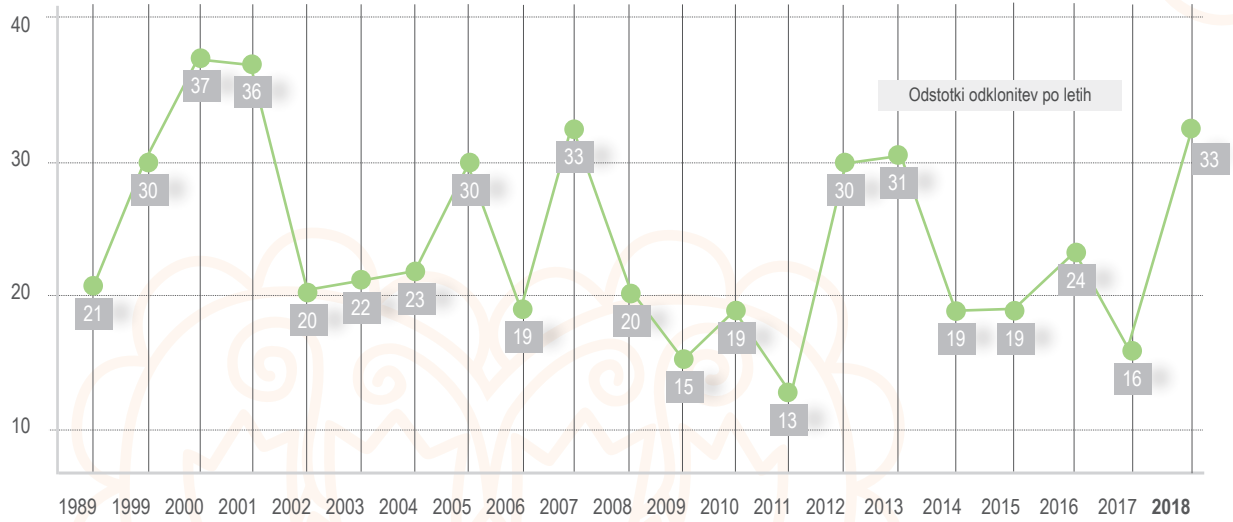
Leto	%
2002	22
2003	23
2004	30
2005	19

Leto	%
2006	20
2007	15
2008	19
2009	13

Leto	%
2010	31
2011	19
2012	19
2013	24

Leto	%
2014	31
2015	19
2016	19
2017	24

Leto	%
2018	33



DELOVANJE DONORSKIH CENTROV

V slovenski donorski program je vključenih enajst donorskih bolnišnic oz. centrov: UKC Ljubljana in UKC Maribor ter splošne bolnišnice v Celju, Murski Soboti, Novi Gorici, Izoli, na Ptuju, v Novem mestu, Slovenj Gradcu, na Jesenicah in v Brežicah.

V donorskem centru izvajajo naslednje dejavnosti:
- odkrivajo možne mrtve darovalce,
- izvajajo diagnostiko možganske smrti,
- ugotavljajo primernost organov in tkiv za odvzem in presaditev,
- seznanjajo pokojnikove bližnje z možnostjo darovanja in pridobijo soglasje svojcev,
- ohranjajo delovanje organov mrtvih darovalcev (v intenzivni terapiji in med odvzemom organov),
- sodelujejo pri odvzemih organov in tkiv, ki jih izvajajo slovenske in tuje kirurške ekipe.

Največ darovalcev v Sloveniji pridobijo v UKC Ljubljana, kjer imajo največje število postelj v enotah intenzivne terapije in so v letu 2018 pridobili 18 umrlih darovalcev.
Rezultati so se v primerjavi s preteklimi leti izrazito izboljšali v UKC Maribor, kjer so v letu 2018 pridobili kar 13 umrlih darovalcev.

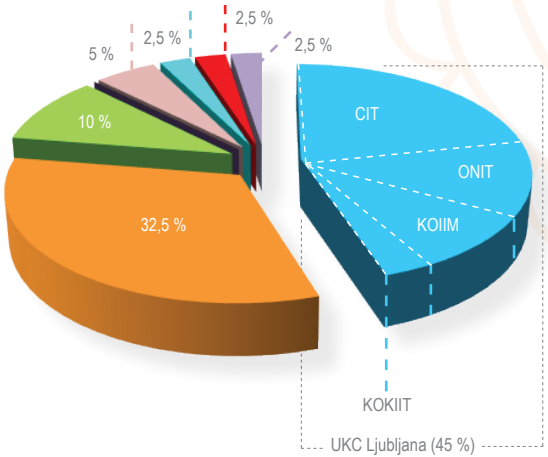
Od leta 2011 smo v nacionalnem donorskem programu vzpostavili program za zagotavljanje kakovosti v procesu darovanja organov in tkiv *(Quality Assurance Plan)*. Cilj je povečati učinkovitost vseh donorskih centrov v dejavnost pridobivanja organov in tkiv, predvsem na osnovi optimalnega zaznavanja možnih in primernih umrlih darovalcev.

V letu 2018 smo v program kot zadnji donorski center vključil tudi UKC Ljubljana.

Število in delež dejanskih umrlih darovalcev v posameznih donorskih centrih (DC) v letu 2018

Donorski center	Število MD	Delež v %
UKC Ljubljana skupaj	18	45
Od tega ONIT*	5	
Od tega CIT	9	
Od tega KOIIM	3	
Od tega KOKIIT	1	
UKC Maribor	13	32,5
SB Celje	4	10
SB Murska Sobota	2	5
SB Slovenj Gradec	1	2,5
SB Nova Gorica	1	2,5
SB Izola	1	2,5
SKUPAJ	40	100

*ONIT – oddelek nevrološke intenzivne terapije,
CIT – centralna intenzivna terapija,
KOIIM – klinični oddelek interne intenzivne medicine
KOKIIT – Klinični oddelek za otroško kirurgijo in intenzivno terapijo

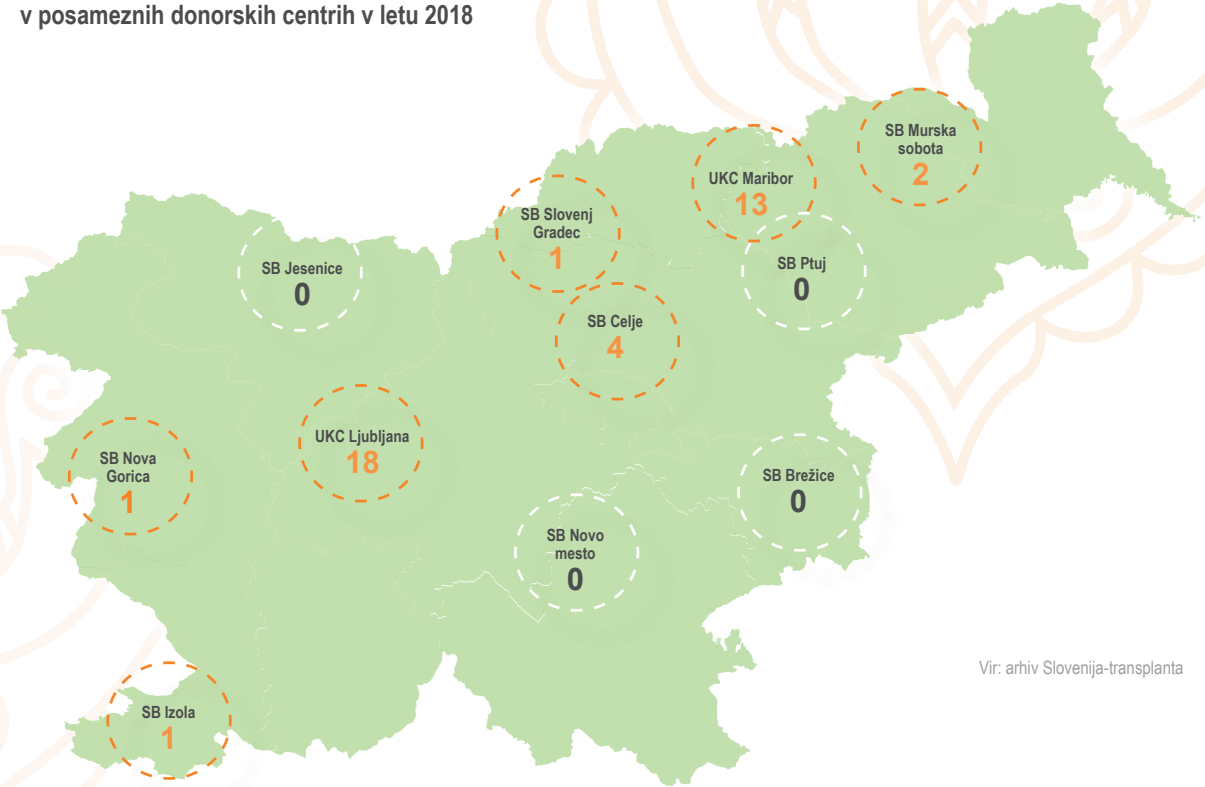


LEGENDA

UKC Ljubljana
UKC Maribor
SB Celje
SB Murska Sobota
SB Slovenj Gradec
SB Nova gorica
SB Izola

Vir: arhiv Slovenija-transplanta

Število dejanskih umrlih darovalcev v posameznih donorskih centrih v letu 2018



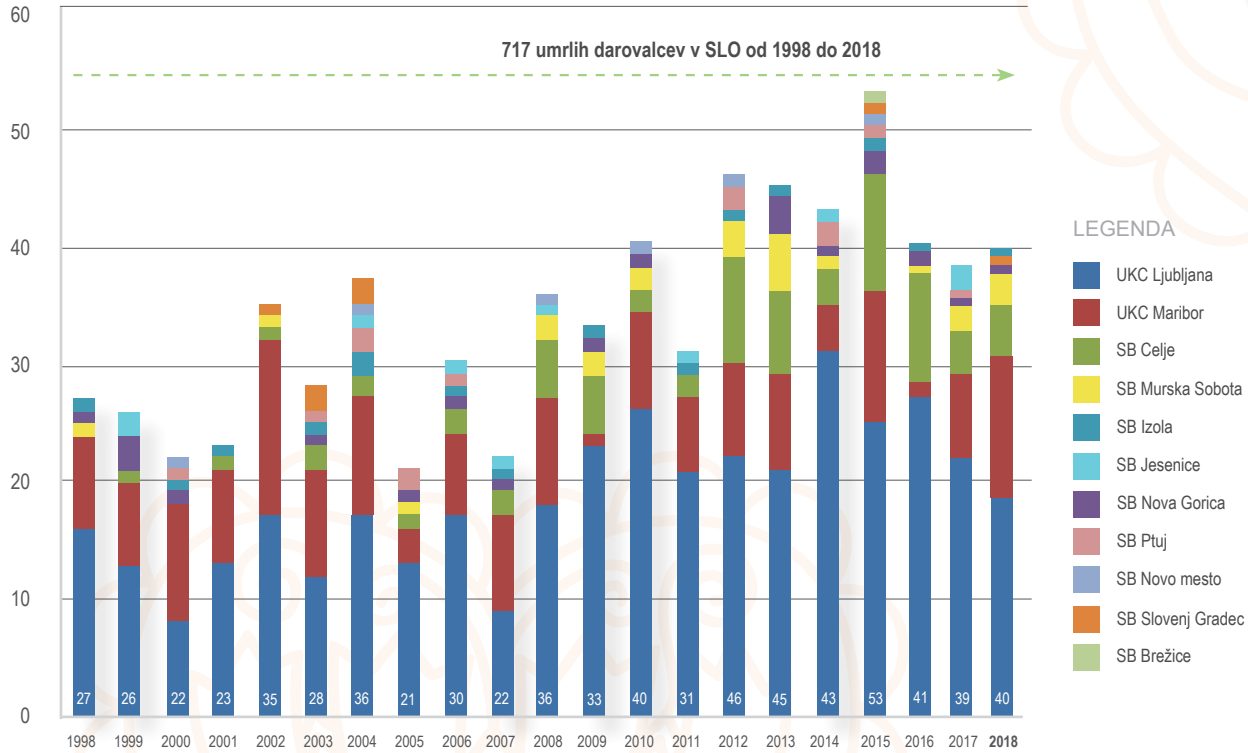
Vir: arhiv Slovenija-transplanta

Število dejanskih umrlih darovalcev po donorskih centrih od 1998 do 2018

Vir: arhiv Slovenija-transplanta

Leto	UKC LJ	UKC MB	SB CE	SB MS	SB NG	SB Izola	SB Ptuj	SB JE	SB NM	SB SG	SB Brežice
1998	16	8		1	1	1					
1999	13	7	1		3			2			
2000	8	10			1	1	1		1		
2001	13	8	1			1					
2002	17	15	1	1						1	
2003	12	9	2		1	1	1			2	
2004	17	10	2			2	2	1	1	1	
2005	13	3	1	1	1		2				
2006	17	7	2		1	1	1	1			
2007	9	8	2		1	1		1			
2008	18	9	5	2				1	1		
2009	23	1	5	2	1	1					
2010	26	8	2	2	1				1		
2011	21	6	2			1		1			
2012	22	8	9	3		1	2		1		
2013	21	8	7	5	3	1					
2014	31	4	3	1	1		2	1			
2015	25	11	10		2	1	1		1	1	1
2016	28	2	7	1	2	1					
2017	22	7	4	2	1		1	2			
2018	18	13	4	2	1	1				1	
SKUPAJ	**390**	**162**	**70**	**23**	**21**	**15**	**13**	**10**	**6**	**6**	**1**

Število dejanskih umrlih darovalcev po donorskih centrih od 1998 do 2018



Potencial in realizacija v donorskih bolnišnicah (zaključena analiza za leto 2017)

Potencial za darovanje za posamezno donorsko bolnišnico se izraža kot odstotek možgansko umrlih od vseh umrlih na oddelku za intenzivno zdravljenje (OIZ). Pove nam, pri koliko umrlih je bila do konca izpeljana diagnostika možganske smrti. Potencial je v direktni povezavi z odkrivanjem primernih darovalcev na OIZ.
Realizacija v procesu darovanja nam pove, koliko primernih darovalcev (dokazana možganska smrt) je postalo aktivnih darovalcev. Izraža se kot odstotek aktivnih darovalcev od vseh dokazanih možgansko umrlih na OIZ.

Vir: arhiv Slovenija-transplanta

Donorska bolnišnica	Vse smrti v OIZ	MD	PD	Potencial (%)	Dosegljivi (%)	AD	Realizacija (%)	Dosegljiva (%)
UKC Ljubljana*	400	60	36	9.0	13.7	25	69	65
UKC Maribor	257	37	20	7.8	13.7	7	35	65
SB Novo mesto	144	15	0	0.0	8.3	0	0	55
SB Celje	132	28	9	6.8	8.3	4	44	55
SB Nova Gorica	75	9	4	5.3	8.3	1	25	55
SB Ptuj	63	7	1	1.6	8.3	1	100	55
SB Murska sobota	65	8	3	4.6	8.3	2	67	55
SB Izola	62	10	0	0.0	8.3	0	0	55
SB Slovenj Gradec	54	7	2	3.7	8.3	0	0	55
SB Jesenice	62	11	5	8.1	8.3	3	60	55
SB Brežice	17	4	0	0.0	8.3	0	0	55

OIZ – oddelek za intenzivno zdravljenje, **MD** – možni darovalec, **PD** – primerni darovalec (dokazana možganska smrt), **AD** – aktivni darovalec (privolitev svojcev, odvzem organov), **Potencial** - % možgansko umrlih od vseh umrlih na OIZ = % PD/vse smrti na OIZ,
Realizacija - % aktivnih darovalcev od vsem možgansko umrlih = % AD/PD
***** Števila umrlih in možnih darovalcev za UKC Ljubljana za leto 2017 nimamo; približek izračunan iz dosegljivih podatkov za naslednje leto

Potencial za donorsko bolnišnico je pričakovano višji za bolnišnice, ki imajo svojo nevrokirurško enoto in lahko dosežejo potencial tudi do 13.7 %. Za bolnišnice brez lastne nevrokirurške enote je dosegljivi potencial za darovanje do 8.3 %. Tej številki se je leta 2017 najbolj približala SB Jesenice, blizu je bila tudi SB Celje. Oba UKC sta dosegla sorazmerno visok potencial, vendar še zaostajata za dosegljivimi vrednostmi, kar kaže na to, da lahko še dodatno izboljšamo odkrivanje primernih darovalcev.

Realizacija je odvisna predvsem od odstotka absolutnih medicinskih kontraindikacij in zavrnitev darovanja s strani svojcev v obravnavanem časovnem obdobju. Številka je lahko manjša tudi pri podaljšani diagnostiki možganske smrti in v primerih, ko možgansko umrli ni bil predstavljen koordinatorju za transplantacije (UKC Maribor). V letu 2017 so dosegljivo realizacijo presegli v UKC Ljubljana, SB Ptuj, SB Murska Sobota in v SB Jesenice. Pri nizkih vrednostih potenciala zasledimo tudi odstopanja, kot npr. v SB Ptuj, kjer so dosegli 100 % realizacijo pri edinem primeru, pri čimer ni bilo medicinskih kontraindikacij za darovanje in svojci so v darovanje privolili. Pri bolnišnicah, v katerih leta 2017 ni bilo dokazanih možganskih smrti, sta potencial in realizacija prav tako 0 %.

Seznam odgovornih oseb (t. i. bolnišničnih transplantacijskih koordinatorjev), ki skrbijo za razvoj, potek ter delovanje donorskega programa v posameznih donorskih centrih za leto 2018

Donorski center	Odgovorne osebe
UKC Maribor	prim. Zoran Zabavnik, dr. med. *(Kirurška kl.)* / Tanja Kuprivec, dr. med. *(v procesu imenovanja)* *Prof. dr.* Andreja Sinkovič, dr. med. *(Interna klinika) – do oktobra 2018*
SB Celje	Milena Kotnik, dr. med. *(do maja 2018)* ▮ Namestnica: Barbara Hudournik, dr. med. *(od junija 2018)*
SB Murska Sobota	prim. Daniel Grabar, dr. med. ▮ Namestnica: Sanja Andrejč, DMS
SB Nova gorica	Konrad Kuštrin, dr. med. ▮ Namestnica: Edyta Čerkini, dr. med.
SB Izola	Damjan Polh, dr. med.
SB Ptuj	prim. Majda Šarman, dr. med.
SB Jesenice	Andraž Nastran, dr. med. ▮ Namestnica: Branka Gruden Repe, dr. med.
SB Novo mesto	Matej Godnič, dr. med. ▮ Namestnik: Goran Kurnik, dr. med.
SB Slovenj Gradec	asist. dr. Jasna Uranjek, dr. med. ▮ Namestnik: Rok Popič, dr. med.
SB Brežice	Marina Lačan, dr. med. ▮ Namestnik: Marko Hauptfeld, dr. med.
UKC Ljubljana	prim. asist. mag. Rade Stanić, dr. med.

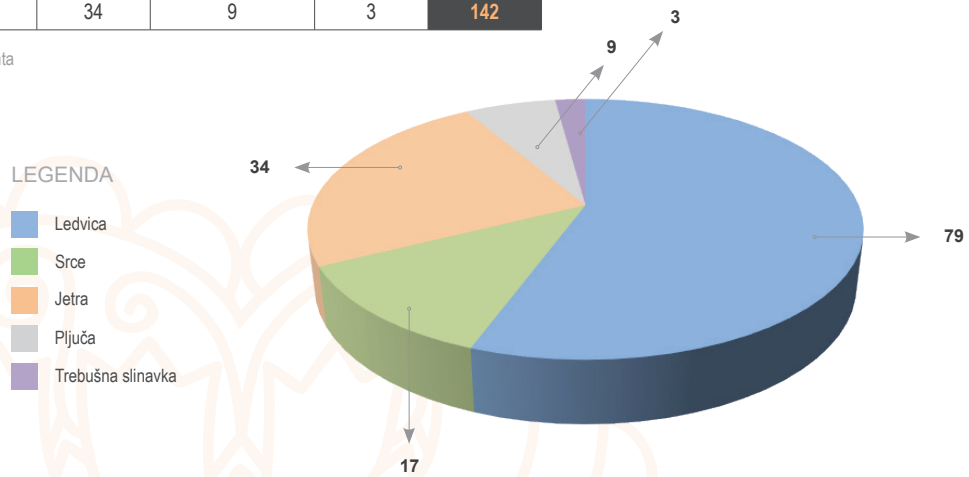
PRIDOBLJENI SOLIDNI ORGANI ZA NAMEN ZDRAVLJENJA

Število pridobljenih organov je odvisno od števila pridobljenih umrlih darovalcev, pa tudi od starosti in medicinskih kontraindikacij. V letu 2018 je bilo število pridobljenih organov umrlih darovalcev iz navedenih razlogov nekoliko nižje od preteklega leta. V nadaljevanju so prikazani podatki za leto 2018 in primerjava s preteklimi leti.

Število pridobljenih organov slovenskih umrlih darovalcev v letu 2018

Ledvica	Srce	Jetra	Pljuča (obe pljučni krili)	Trebušna slinavka	SKUPAJ
79	17	34	9	3	142

Vir: arhiv Slovenija-transplanta

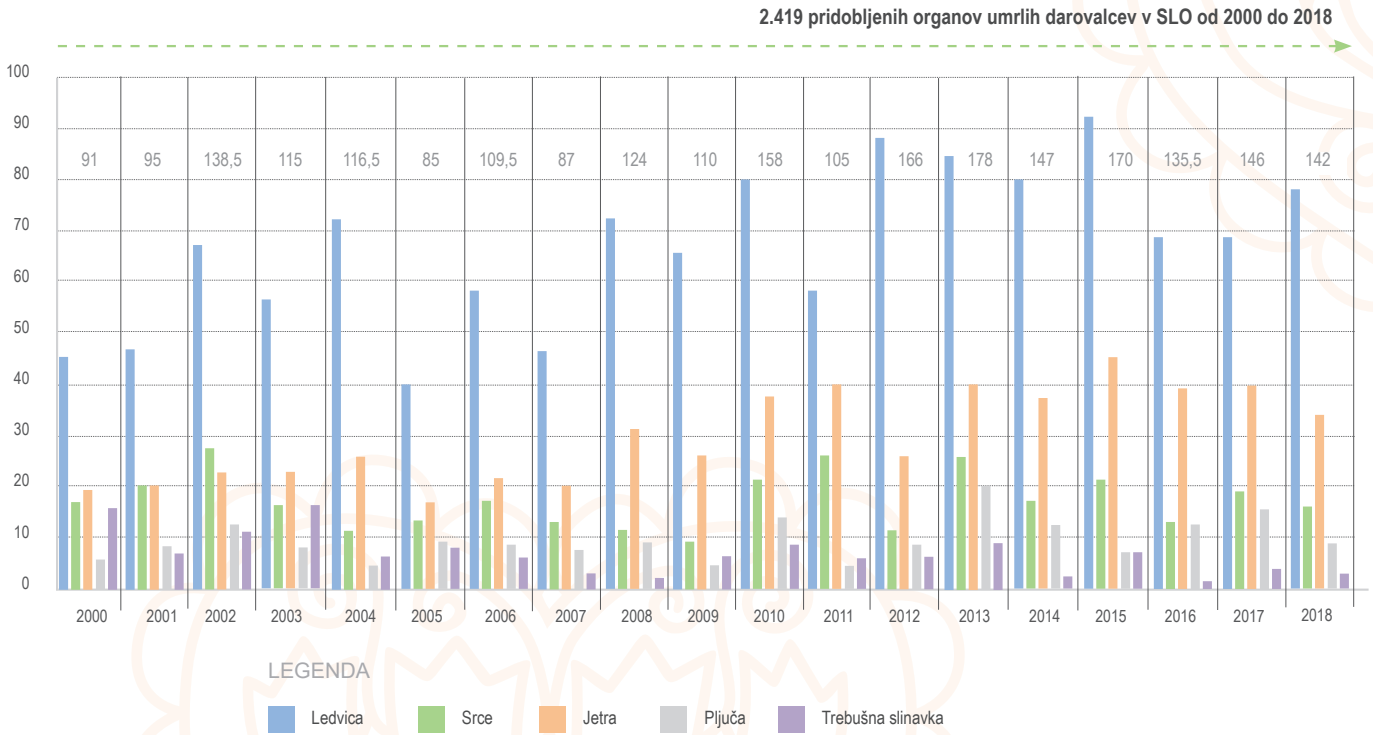


Pridobljeni organi slovenskih umrlih darovalcev od leta 2000 do 2018

Vir: arhiv Slovenija-transplanta

Leto	Ledvica	Srce	Jetra	Pljuča (obe pljučni krili)	Trebušna slinavka	SKUPAJ
2000	43	14	17	4	13	91
2001	44	19	19	7	6	95
2002	66	28	22	11,5	11	138,5
2003	56	15	21	8	15	115
2004	70	12	25	3,5	6	116,5
2005	39	13	16	9	8	85
2006	59	16	21	7,5	6	109,5
2007	46	12	19	7	3	87
2008	71	11	31	9	2	124
2009	65	9	26	4	6	110
2010	80	20	37	13	8	158
2011	58	14	24	4	5	105
2012	89	25	39	8	5	166
2013	86	26	39	19	8	178
2014	80	16	38	11	2	147
2015	92	20	46	6	6	170
2016	68	13	39	13,5	2	135,5
2017	68	19	40	15	4	146
2018	79	17	34	9	3	142
SKUPAJ	1.259	319	553	169	119	2.419

Pridobljeni organi slovenskih umrlih darovalcev od leta 2000 do 2018



PRESAJENI SOLIDNI ORGANI

V Sloveniji imamo en transplantacijski center, to je Univerzitetni klinični center v Ljubljani, kjer se izvajajo programi za presaditve solidnih organov. Sistem razporejanja organov zagotavlja enako dostopnost do terapije s presajanjem organov vsem državljanom Slovenije.
Naloge transplantacijskega centra so:

- priprava prejemnikov za uvrstitev na čakalni seznam,
- presaditev organov,
- vodenje bolnikov po presaditvi.

Transplantacijski center od leta 2014 vodi kardiovaskularni kirurg dr. Ivan Kneževič, dr. med.

V letu 2018 je bilo opravljenih 109 presaditev organov. Največ je presajenih ledvic, po številu vseh presajenih organov od umrlih darovalcev na milijon prebivalcev smo nekoliko nad povprečjem držav Eurotransplanta. Pomembno višje pa je število presaditev src na milijon prebivalcev, kjer smo zadnjih nekaj let v samem svetovnem vrhu.
V letu 2018 so v UKC Ljubljana opravili prvo presaditev obeh pljučnih kril, sicer so doslej presaditve pljuč za slovenske prejemnike opravljali v AKH na Dunaju, kjer imajo s tovrstnimi posegi ogromno izkušenj. Pediatrične transplantacije delno opravljajo v UKC Ljubljana, delno pa v bližnjih evropskih transplantacijskih centrih (ledvice v LKH v Gradcu, jetra v Bergamu). Za obravnavo in pripravo pred presaditvijo in zdravljenje ter sledenje bolnika po presaditvi organa poskrbijo na pristojnih oddelkih v UKC Ljubljana.

Presajeni solidni organi umrlih darovalcev v UKC Ljubljana v letu 2018 in primerjava z Eurotransplantom - absolutno število in število na milijon prebivalcev (PMP)

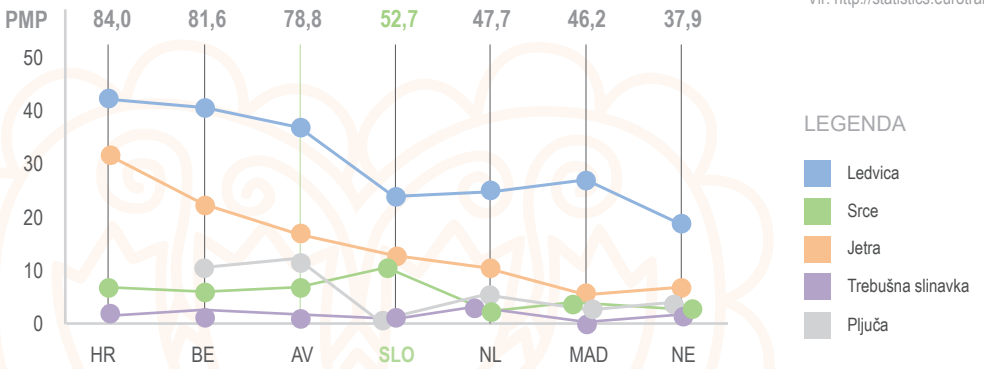
Vir: http://statistics.eurotransplant.org/

	Ledvica MD		Srce		Jetra		Trebušna slinavka		Pljuča		SKUPAJ	
	Št.	PMP	Št.	PMP	Št.	PMP	Št.	PMP	Št.	PMP	Št.	PMP
SLO	54	26,1	23	11,1	27	13,1	3	1,5	2	0,97	109	52,7
ET	3.517	25,4	619	4,5	1.597	12,4	181	1,5	1.364	5,3	7.278	47,6

Število presajenih solidnih organov mrtvih darovalcev na milijon prebivalcev (PMP) v Sloveniji leta 2018 in primerjava z državami Eurotransplanta

Država ET	Ledvica	Jetra	Srce	Trebušna slinavka	Pljuča	Število presaditev/ PMP 2018
1. Hrvaška (HR)	43,4	32,2	9,0	0,7		84,0
2. Belgija (BE)	41,5	24,1	6,7	2,5	10,2	81,6
3. Avstrija (AV)	39,0	19,8	7,4	2,3	13,3	78,8
4. Slovenija (SLO)	26,1	13,1	11,1	1,5	0,97	52,7
5. Nizozemska (NL)	28,4	10,7	2,2	2,7	5,2	47,7
6. Madžarska (MAD)	29,6	8,2	6,3	0,5	2,2	46,2
7. Nemčija (NE)	20,0	9,9	3,8	1,1	4,5	37,9

Vir: http://statistics.eurotransplant.org/



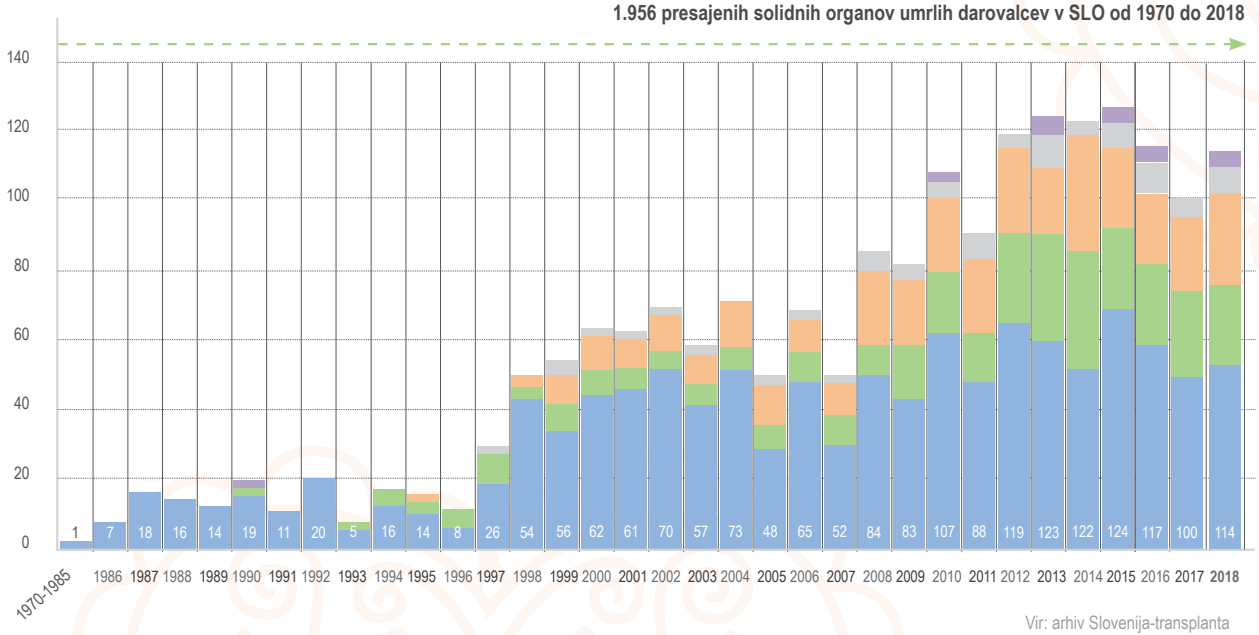
Število presajenih solidnih organov umrlih darovalcev v Sloveniji od leta 1970 do 2018

Leto	Ledvica	Srce	Jetra	Pljuča*	Trebušna slinavka	SKUPAJ
Od 1970 do 1985	1					1
1986	7					7
1987	18					18
1988	16					16
1989	14					14
1990	17	1			1	19
1991	11					11
1992	20					20
1993	4	1				5
1994	14	2				16
1995	10	3	1			14
1996	6	2				8
1997	19	6		1		26
1998	46	4	4			54
1999	37	7	9	3		56
2000	44	7	10	1		62
2001	47	4	9	1		61
2002	55	3	11	1		70
2003	43	3	9	2**		57
2004	55	3	15			73
2005	28	5	13	2		48
2006	48	*8	8	2		65
2007	30	11	10	1		52
2008	52	6	22	4		84
2009	43	18	18	2	2	83
2010	61	19	23	3	1	107
2011	46	14	20	7	1	88
2012	62	29***	27	2		119
2013	60	30	21	8	4	123
2014	55	33	31	3		122
2015	64	24	24	7	5	124
2016	44****	31	27	10	5	117
2017	46****	24	23	8		100
2018	54****	23	27	7	3	114
SKUPAJ	1.177	321	362	74	22	1.956

*Vse presaditve pljuč pri slovenskih prejemnikih so bile opravljene v AKH na Dunaju, z izjemo 2003 (1 presaditev v UKC LJ) in 2018 (2 presaditvi v UKC LJ).
** Eno srce slovenskega darovalca je bilo presajeno slovenskemu bolniku v Gradcu
***eno srce je bilo skupaj s pljuči presajeno slovenskemu bolniku na Dunaju
****V letu 2016, 2017 in 2018 sta bili opravljeni tudi po dve presaditvi ledvice živega sorodnega darovalca. Skupno število presajenih ledvic v letu 2016 je torej 46, v letu 2017 48 in v letu 2018 56 ledvic.

Vir: arhiv Slovenija-transplanta

Število presajenih solidnih organov umrlih darovalcev v Sloveniji od leta 1970 do 2018



Vir: arhiv Slovenija-transplanta

USPEŠNOST SLOVENSKIH PROGRAMOV ZA PRESADITVE ORGANOV

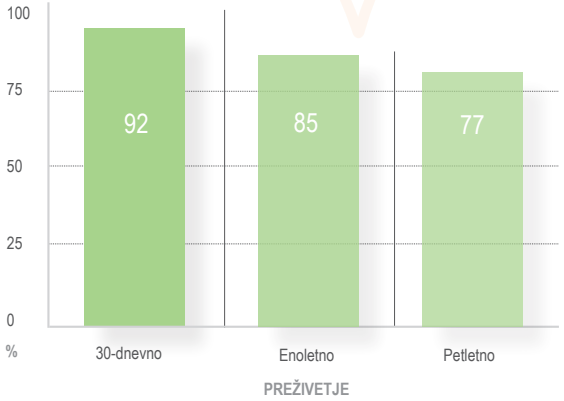
Preživetje bolnikov po presaditvi srca

V Sloveniji je konec leta 2018 živelo 231 bolnikov s presajenim srcem. Od leta 1990 do konca 2018 je bilo opravljenih 321 presaditev srca. Rezultati preživetja so primerljivi z rezultati iz mednarodnega referenčnega registra ISHLT *(The International Society for Heart & Lung Transplantation)*.
Najpogostejša vzroka za presaditev srca sta v letu 2019 predstavljali dilatativna kardiomiopatija (35 %) in ishemična bolezen srca (26 %), ostali vzroki pa so bili valvularna bolezen srca (9 %), nekompakcijska kardiomiopatija (9 %), amiloidoza srca (9 %), kongenitalne hibe (8 %) in restriktivna kardiomiopatija (4 %).
Večletno povprečje (2009-2018) čakalne dobe za elektivno presaditev srca znaša približno 247 dni (mediana 117 dni), za urgentno presaditev srca pa približno 50 dni (mediana 50 dni).

Preživetje odraslih bolnikov po presaditvi srca v % (za obdobje 1990-2018, n=321)

30-dnevno preživetje	Enoletno preživetje	Petletno preživetje
92 %	85 %	77 %

Vir: Poročilo o delovanju programa za napredovalo srčno popuščanje in presaditev srca za leto 2018 (KO za kardiologijo, UKC Ljubljana)



Preživetje bolnikov po presaditvi ledvice

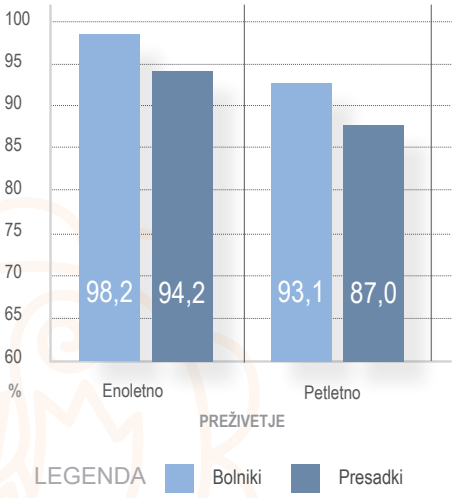
V Sloveniji je bilo v obdobju po priključitvi Eurotransplantu (1.1.2000 – 31.12.2018) presajenih 945 ledvic živih in umrlih darovalcev. V prvem letu po presaditvi so pri 13,6 % vseh bolnikov s presajenim organom zaznali klinično, z biopsijo dokazano akutno zavrnitev presadka.
Nekaterim prejemnikom so ledvico presadili v kombinaciji z drugimi organi (trebušna slinavka, jetra, srce).

Mediani čas od uvrstitve na čakalno listo do presaditve je približno 300 dni za obdobje od 2013 do 2016.

Preživetje bolnikov in presadkov po presaditvi ledvice v % (za obdobje 2000-2018, n=945)

Enoletno preživetje	Petletno preživetje
Bolniki	
98,2 %	93,1 %
Presadki	
94,2%	87,0 %

Vir: kazalci kakovosti Centra za transplantacijo ledvic (KO za nefrologijo, UKC Ljubljana)



Preživetje bolnikov po presaditvi jeter

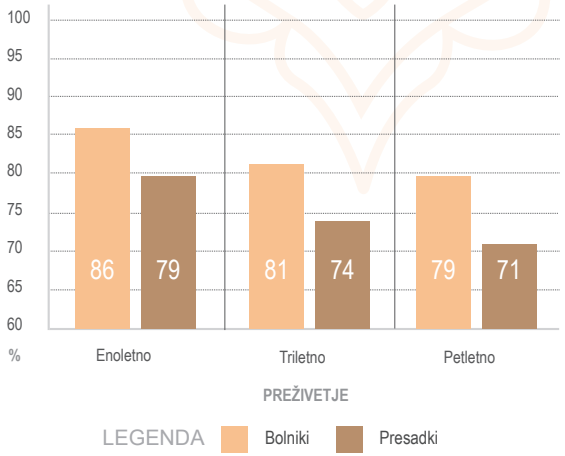
V obdobju od 1995 do junija 2018 je bilo v UKC Ljubljana opravljenih 362 presaditev jeter. Od tega je 63 % bolnikov potrebovalo presaditev zaradi ciroze jeter, 10 % zaradi akutne odpovedi jeter, 9,7 % zaradi raka na jetrih, 9,3 % zaradi holestatske/kongenitalne bolezni in 2,1 % zaradi presnovne bolezni jeter. Med ostale vzroke za presaditev (5,9 %) sodijo še benigni jetrni tumorji ali policistična bolezen jeter in Budd-Chiarijev sindrom.

Povprečna čakalna doba za presaditev jeter za leto 2018 je približno 155 dni, mediana znaša 98 dni.

Preživetje bolnikov in presadkov po presaditvi jeter v % (za obdobje 1988- junij 2018, n=291 (bolniki) in n= 323 (presadki)

Enoletno preživetje	Triletno preživetje	Petletno preživetje
Bolniki		
86 %	81 %	79 %
Presadki		
79 %	74 %	71 %

Vir: ELTR (European Liver Transplant Registry, SLLUBL: Specific Analyses June 2018)



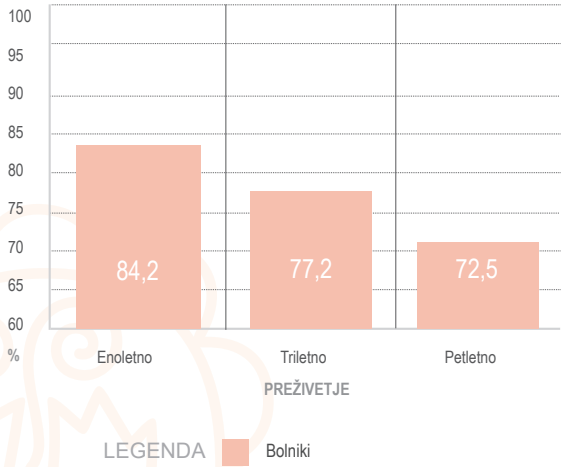
Preživetje bolnikov po presaditvi pljuč

V obdobju 1997 – 2018 je bilo pri slovenskih bolnikih opravljenih 74 presaditev pljuč, od tega je bila pri enem bolniku opravljena ponovna presaditev. V letu 2018 so v UKC Ljubljana ponovno pričeli z lastnim programom presaditve pljuč in opravili 2 transplantaciji obeh pljučnih kril.

Prva transplantacija enega pljučnega krila je bila v UKC Ljubljana opravljena leta 2003. V letu 2018 je bilo pri slovenskih bolnikih skupaj opravljenih 7 presaditev pljuč, od tega 5 v univerzitetni bolnišnici (AKH) na Dunaju.

Preživetje bolnikov po presaditvi pljuč v % (za obdobje 1997-2018, n=74)

Enoletno preživetje	Triletno preživetje	Petletno preživetje
Bolniki		
84,2 %	77,2 %	72,5 %



Preživetje bolnikov po presaditvi trebušne slinavke

V obdobju od februarja 2009 do 31. 12. 2018 je bilo presajenih 21 trebušnih slinavk, vse so bile presajene sočasno z ledvico. Po 1 letu je bilo delujočih 14 trebušnih slinavk, 4 slinavke pa so bile odstranjene v zgodnjem potransplantacijskem obdobju. Enoletno preživetje trebušnih slinavk je 78 % (n=18).

Enoletno, triletno in petletno preživetje bolnikov s presajeno trebušno slinavko in ledvico je bilo 100 %.

Vsi bolniki (n=17), ki so imeli po 1 letu delujočo trebušno slinavko, so bili na dan 31. 12. 2018 inzulinsko neodvisni. En bolnik je umrl 6 let po presaditvi z delujočo trebušno slinavko in ledvico.

Vir: Poročilo - Izr. prof. dr. Damjan Kovač, dr. med.
(KO za nefrologijo, UKC Ljubljana)

Tkiva in celice

PRESADITVE KRVOTVORNIH MATIČNIH CELIC

Presaditev krvotvornih matičnih celic (KMC) je najbolj razširjena oblika celičnega zdravljenja, saj se na ta način zdravi več kot 70 malignih in nemalignih bolezni, pri določenih hematoloških obolenjih pa je glavna terapevtska in tudi edina možnost za ozdravitev. Sodoben način zdravljenja s KMC v optimalnih pogojih dosega več kot 90 % uspešnost *(http://www.ztm.si)*. Za takšen uspeh pa je potrebno dobro imunsko (HLA) ujemanje darovalca in prejemnika. Sistem HLA je pri vsakem človeku zelo raznolik in zato je najti ustrezen par zelo zahtevno delo. V mednarodni skupnosti so se zdravniki odločili za ustanovitev večjih registrov tipiziranih prostovoljnih darovalcev KMC, ki bi omogočali bistveno večjo možnost za ujemanje HLA in s tem uspešnost presaditve.

Poznamo več vrst ujemanja med darovalcem in prejemnikom. V kolikor je možno uporabiti lastne KMC, to imenujemo avtologno darovanje. V kolikor to ni možno, iščemo drugega darovalca, ki je s prejemnikom v sorodu ali pa ne. Darovanje drugega darovalca imenujemo tudi alogenično, pri čemer iščemo darovalca v Sloveniji in nato v tujini.

Register Slovenija-donor

V Sloveniji je bil leta 1991 ustanovljen register nesorodnih darovalcev Slovenija Donor, ki je naslednje leto postal polnopravni član svetovnega registra *Bone Marrow Donors Worldwide* (BMDW).

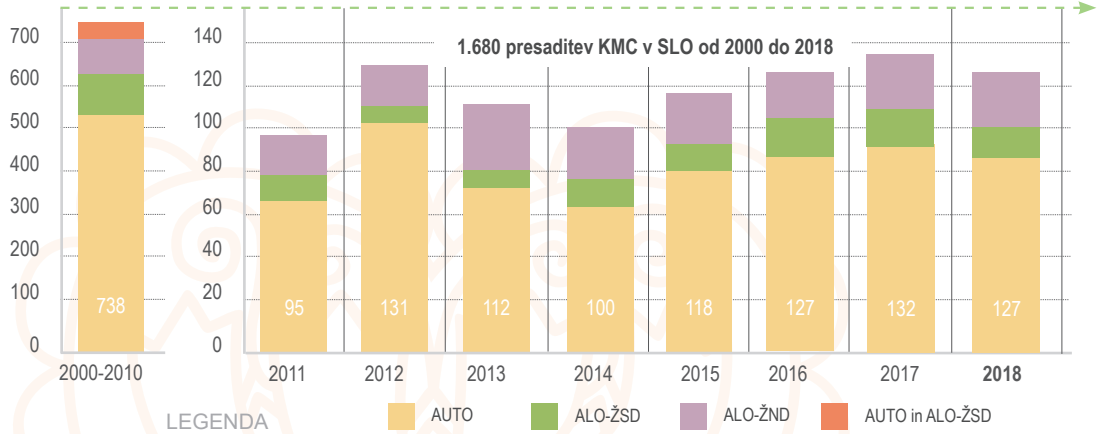
Na dan 31.12.2018 je bilo v register Slovenija-donor vpisanih 20.533 oseb, od tega jih je bilo v svetovni register BMDW vpisanih 18.498.

Presaditve KMC v Sloveniji od leta 2000 do 2018

Tip presaditve	2000–2010	2011	2012	2013	2014	2015	2016	2017	2018
AUTO	531	68	101	74	63	84	86	92	88
ALO-ŽSD	102	9	8	7	11	10	15	12	13
ALO-ŽND	84	18	22	31	26	24	26	28	26
AUTO in ALO-ŽSD	21								
SKUPAJ	738	95	131	112	100	118	127	132	127

AUTO – avtologne presaditve, **ALO** – alogenske presaditve, **ŽSD** – živi sorodni darovalec, **ŽND** – živi nesorodni darovalec

Vir: Letno poročilo ZTM – Slovenija donor, podatke mesečno zbiramo za arhiv Slovenija-transplanta.

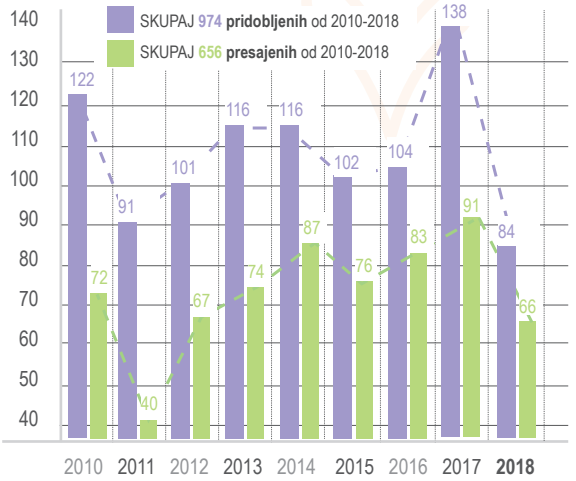


PROGRAM PRIDOBIVANJA IN PRESADITVE ROŽENIC

Zdravljenje s presaditvijo roženic je ena najpogostejših in tudi najuspešnejših presaditev tkiv na svetu. Takšen način zdravljenja pogosto predstavlja edini način, s katerim izboljšamo vid zaradi predhodnega obolenja oz. poškodb. V Sloveniji imamo organizirano nacionalno mrežo donorskih centrov, v katerih se pridobivajo roženice mrtvih darovalcev po dokončni zaustavitvi srca ali po dokazani možganski smrti. Odvzem roženic je možen po predhodni privolitvi umrle osebe za časa življenja oz. ob nenasprotovanju bližnjih. Dokončno odločitev o primernosti roženice za presaditev vselej sprejme prejemnikov odgovorni zdravnik. Roženice presajamo v dveh transplantacijskih centrih: na Očesni kliniki v UKC Ljubljana ter na Oddelku za očesne bolezni v UKC Maribor.

Pridobljene in presajene roženice od leta 2010 do 2018

Leto	Št. pridobljenih roženic	*Št. presajenih roženic
2010	122	72
2011	91	40
2012	101	67
2013	116	74
2014	116	87
2015	102	76
2016	104	83
2017	138	91
2018	84	66

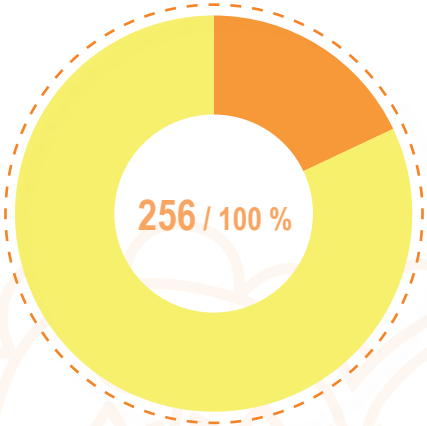


* 2010-2017 podatki o presaditvah na Očesni kliniki UKC Ljubljana, v 2018 pa so vključene tudi presaditve na Odd. za očesne bolezni UKC Maribor

Vir: arhiv Slovenija-transplanta

Čakalni seznam bolnikov za presaditev roženice na Očesni kliniki v UKC Ljubljana (na dan 1. 4. 2019)

Diagnoza	Število bolnikov
Keratokonus	46
Ostale diagnoze	210
SKUPAJ	**256**



LEGENDA

- Keratokonus: **46 bolnikov (18 %)**
- Ostale diagnoze: **210 bolnikov (82 %)** (poškodbe, degeneracija, retransplantacija, makule roženice, distrofija Fuchs, endotelna distrofija, cornea guttata, afaka in psevdofaka, keratopatija bullosa, vnetja, drugo)

Vir: Očesna klinika Ljubljana

OSTALA TKIVA IN CELICE

Na nacionalni ravni preskrbe s tkivi in celicami je vključenih 25 ustanov. Slovenija-transplant in Agencija za zdravila in medicinske pripomočke zagotavljata delovanje sistema in sproti ugotavljata in obravnavata vse odklone, ki lahko vplivajo na kakovost in varnost tkiv in celic darovalcev, prejemnikov in osebja, ki je vključeno v posamezne procese.

V letu 2015 je začela veljati sprememba Pravilnika o sledljivosti, s katero ukinjamo uporabo klasičnih obrazcev za sprotno poročanje in uvajamo sodobno elektronsko poročanje prek svetovnega spleta. Takšno poročanje je hitrejše in enostavnejše za uporabnike. Poleg tega omogoča dostopnost podatkov po načelu »enkrat vnesen podatek, vedno dostopen«, tako da jih lahko uporabniki programa uporabljajo tudi pri svojem strokovnem in raziskovalnem delu.
Vnos podatkov je možen tudi za nazaj.

Število pridobljenih tkiv in celic od 2009 do 2018

Leto	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Koža*	28	45	22	36	85	89	52	57	32	22
Kosti*	38	123	108	67	93	82	147	74	80	78
Mehkokostni presadki*	22	39	/	3	11	3	9	/	12	/
Hrustanec*	37	21	4	12	11	11	12	/	/	/
Reproduktivne celice (št. celic)	15.854	43.472	8.640	27.479	41.929	37.542	39.769	26.191	36.338	13.778

*Enota: število odvzetih vzorcev

Število uporabljenih tkiv in celic od 2009 do 2018

Leto	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Koža*	36	10	14	34	67	23	31	28	/	20
Kosti*	23	47	57	97	59	62	92	82	72	71
Mehkokostni presadki*	12	/	2	2	3	4	3	5	2	3
Hrustanec*	15	/	3	7	4	9	5	1	/	/
Reproduktivne celice*	1.450	2.018	29.651	23.330	23.506	27.271	31.127	26.620	31.817	12.110

*Enota: število uporabljenih vzorcev

Vir: arhiv Slovenija-transplanta

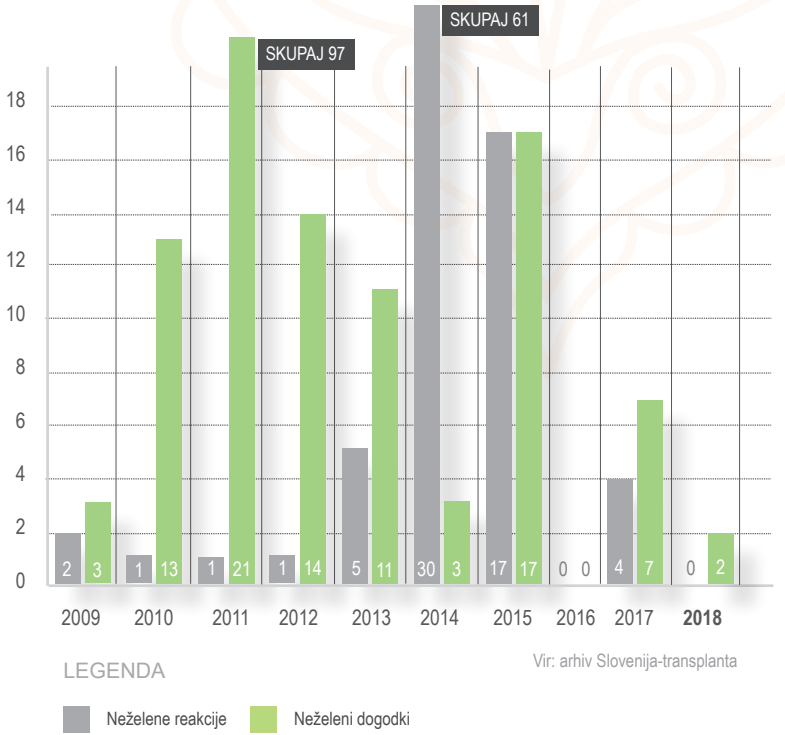
NEŽELENI DOGODKI IN REAKCIJE

Slovenija-transplant je odgovoren za obravnavo neželenih dogodkov in reakcij ter odklonov na področju preskrbe s tkivi in celicami zaradi presaditve.

V letu 2018 je Slovenija-transplant prejel dve poročili o neželenih dogodkih, ki sta nastala v verigi preskrbe s tkivi in celicami. Pripravili smo analizo in korektivne ukrepe. V obeh primerih ni bilo hujših posledic in tveganje za ponovitev je bilo ocenjeno kot nizko.

Ugotavljamo, da je potrebno organizirati dodatno izobraževanje na to temo.

Število neželenih dogodkov in reakcij od 2009 do 2018



Vir: arhiv Slovenija-transplanta

VIRI

1. Spletna stran Slovenija-transplanta: http://www.slovenija-transplant.si/.
2. Spletna stran Zavoda RS za transfuzijsko medicino: http://www.ztm.si/register-darovalcev/slovenija-donor/.
3. Zakon o pridobivanju in presaditvi delov človeškega telesa zaradi zdravljenja (ZPPDČT), Ur. l. RS, št. 56/2015
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Donor and transplantation activity in Slovenia in 2018

Editorial

Donor and transplantation activity in Slovenia is managed, co-ordinated, promoted and supervised by the public, non-profit Institute of the Republic of Slovenia for the Transplantation of Organs and Tissues Slovenija-transplant, under the auspices of the Ministry of the Republic of Slovenia for Health. Since its establishment (in 2000) the Institute has been constantly developing in accordance with the recommended international guidelines, striving to form a cohesive professional public and consistently increasing the trust of the general public. Thanks to its memberships in international committees and participation in several European project consortiums, it has gained an equal footing in the international arena and become an active co-creator of relevant strategies and activities. In its management and leadership of the activities of procuring and using parts of the human body for the purpose of medical treatment, Slovenija-transplant adheres to the following principles:

self-sufficiency ❙ equal treatment of patients ❙ optimal efficiency ❙ applicable legislation ❙ medical ethics and deontology ❙ professionalism ❙ a non-commercial orientation ❙ transparency ❙ voluntariness.

Slovenija-transplant is the central connecting institution and main co-ordination office of the national transplantation network established in 1998. The national network consists of eleven donor centres, the transplantation centre in the Ljubljana University Medical Centre and the Tissue Typing Centre within the Blood Transfusion Centre of Slovenia. This network facilitates the donor and recipient programme, while it also ensures all Slovenian citizens have access and the right to medical treatment with transplantation.

The network operates continuously and expert teams are in a state of readiness 24 hours a day, every day of the year (for more, see: *www.slovenija-transplant.si*).

Due to the smallness of the Slovenian population, it is not always possible to find a donor who is suitable for a sick person in terms of tissue compatibility and other factors as well as a suitable recipient for all procured organs. For these reasons, Slovenia fulfilled a number of requirements and in January 2000 joined the international organisation Eurotransplant. Eurotransplant is a non-profit organisation and an international transplantation network dedicated to the co-ordination and organisation of organ exchange between transplantation centres in Belgium, the Netherlands, Luxembourg, Germany, Austria, Croatia, Hungary and Slovenia. It operates in an area with about 135 million inhabitants. The organisation is based in Leiden, the Netherlands. The allocation and exchange algorithms are defined precisely. Participation in the network is exceptionally important and ensures better possibilities for the survival of patients with sudden (acute) liver or heart failure when urgent medical treatment with transplantation is required, and it also enables treatment of hypersensitised patients (for more about the organisation, see: *www.eurotransplant.org*).

This brochure is intended for all interested publics. It presents important events and outstanding achievements in the past year and provides a structured review of selected results of the donor programme after the confirmation of death as well as the recipient programmes in 2018. The events and achievements are presented with the relevant international context and a broader time frame to facilitate understanding of the results and successes in individual years.

The brochure highlights the quantified aspect of our activity, but behind every ‘number’ there are concrete personal stories and experience lived by all involved, both experts and patients. Behind every successful transplantation, there are a dedicated and co-ordinated multidisciplinary team of experts, a volunteer donor and a patient.

We would like to express our gratitude to all the visible and not-so-visible people from the professional and lay publics who have participated or are still participating in the donor and recipient programme, thus enabling the successful functioning of transplantation medicine in Slovenia.

Achievements and highlights in 2018

1. Declaration to donate now also online

In November, in cooperation with the Ministry of Public Administration of the RS and the Health Insurance Institute of Slovenia, we enabled the option for the inhabitants and residents of the Republic of Slovenia to decide to donate via the *eUprava* (eAdministration) web platform. This was our response to many initiatives from the public, while we are also following the achievements of the modern digital and/or information era and introducing them into our daily practice so as to enable a user-friendly and practical possibility to decide to donate during their lifetime. As expected, this flexible method of registration will help increase the number of designated persons. In 2018 we gathered the highest annual number of declarations regarding donation (see Chapter: Register of declarations regarding donation).

2. First transplantation of both lung lobes performed in the Ljubljana UMC

In the second half of 2018 the multidisciplinary team of Slovenian experts recommenced lung transplantations in the Transplantation Centre of the Ljubljana UMC. Before, lung transplantations for Slovenian recipients were performed in the University Hospital in Vienna. The competent departments in the Ljubljana UMC have been in charge of the treatment and preparation of the patient before transplantation as well as of postoperative monitoring.

In 2018 two transplantations of both lung lobes were performed and the Slovenian thoracic surgeons will now perform most such organ transplantations in the Ljubljana UMC. The Slovenijatransplant team met all of the requirements of the coordination in new circumstances and adjusted its protocols accordingly.

3. Successful donor programme in Maribor

The number of procured deceased donors in the donor hospital Maribor UMC increased to 13 utilized deceased donors, which is the highest figure in the last 15 years. Organisational changes made in the second half of 2017 also contributed to the good results. Improved staffing of teams contributed to better identification and maintenance of potential deceased donors. Instead of one hospital transplantation coordinator, a team is now composed of 5 physicians anaesthetists- intensivists who can equally complement and substitute one another, whereas Tanja Kuprivec, MD, became the head of the team. We would like to thank all involved for their commitment and congratulate them for high-quality work.

4. Cooperation with donor hospitals

In 2018 we cooperated more closely with all donor hospitals (DH). The teams of coordinators were established anew and are composed of one hospital transplantation coordinator (HTC) and at least one team member discharging the function of HTC assistant and/or deputy. We drew up new cooperation agreements and defined in detail the tasks and the persons performing them. When making decisions about donor suitability, we introduced consultations according to the so-called decision-making pyramid, based on which we want to reduce pre-assessment of donor eligibility by treating physicians as the latter does not comply with the latest guidelines. On the other hand, with this type of decision-making and assessment of donation eligibility we aim to reduce the burden on the physicians in the intensive care units. Moreover, in 2018 for the first time, we effectively conducted external audits in all 10 DHs, with the exception of the Ljubljana UMC. However, in 2018 we succeeded in setting up a team of HTCs with assistants in all six departments of intensive care in the Ljubljana UMC, with highly committed cooperation of the HTC Dr. Stanič and the management. The new equipment will help improve identification of potential deceased donors and maintenance until organ removal.

5. The »Donor programme: implementation procedures in donor hospitals« publication

We prepared and published a new publication entitled »Donor programme: implementation procedures in donor hospitals«, which is a basic manual for the work of hospital transplantation coordinators and other people involved in the donor segment of transplantation medicine. The publication was issued in printed and electronic forms and was presented to the managements of all donor hospitals and heads of intensive care units.

6. Participation in the EUDONORGAN EU project

Since 2016 Slovenija-transplant has participated as a partner in the European EUDONORGAN project (Training and social awareness for increasing organ donation in the European Union and neighbouring countries). Together with the representatives of Croatia, we have been implementing the »*Social Awareness*« work package which envisages organisation of six whole-day events for raising awareness among the general and professional publics about organ donation. In 2018, under the leadership of Slovenija-transplant, the first of the six events was organised successfully in Warsaw, Poland. The moderators of the event were Chief Phys. Danica Avsec and Dr. Jana Šimenc, whereas Barbara Uštar and Boštjan Kušar participated as members of the Organisation Committee.

7. Taking care of the education of the professional and general publics

Structured and continuous education of the professional medical public is vital to the successful development and functioning of the donor and transplantation activities. Among other activities in 2018, we focused more attention on training on biovigilance which is of key importance for ensuring quality and safety of transplantation activity. In December, in co-operation with the Spanish organisation DTI which has been implementing the Transplant Procurement Management (TPM) programme for more than two decades, for the seventh consecutive time we organised a three-

day intensive course on organ procurement and transplantation (the so-called *Intermediate Training Course in Transplant Coordination*). We also repeated three times the »Donor Programme Basics for Healthcare Professionals« training in the Maribor UMC and Novo mesto General Hospital as well as two workshops on giving bad news and conducting a conversation with relatives. A novelty in 2018 was organisation of a workshop on conducting a conversation with relatives – advanced level. We upgraded the content for the central and hospital transplantation coordinators who cope with emotionally demanding situations in their work, especially when giving bad news (death of a family member) and conducting a conversation about donation.

8. @SloTransplant on social media

A few years ago we recognised the importance of our presence in the new media, therefore social media communications are the most recent segment of Slovenija-transplant's communication strategy. Namely, social media have become, particularly for the younger generations, the primary source of information and have strongly superseded the traditional media such as TV, radio and similar. We are communicating through social media because they enable fast and direct posting of credible information about the transplantation and donor activities to the public at large and other specialised publics as well as enable curbing of false news and wrong beliefs that can spread very quickly.

We have been managing our Facebook profile since 2011 and since September 2018 we are also present on Twitter. When we posted the information about the possibility of electronic declaration our reach was the largest so far (nearly 43,000 users and 333 Facebook shares). We use Twitter to connect with the international professional community. Follow us on *@SloTransplant*.

Solid organs

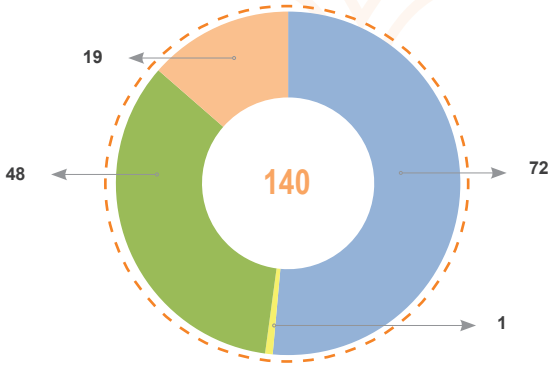
NATIONAL WAITING LIST FOR ORGAN TRANSPLANTATION

The waiting list is a list of patients waiting for part of a human body for transplantation for medical purposes. The indications for transplantation are specific for each organ/tissue/cell. All patients in the Republic of Slovenia have the same possibility to be included on the list of recipients and have equal access to the transplantation of human body parts. By the end of 2018 there were 140 patients waiting for organ transplant which the highest number so far, mostly due to increased number of patients waiting for kidney transplant. The average waiting period for all organs is relatively short compared to other countries. On average, Slovenian patients wait for a heart, liver or kidney transplant for less than a year.

Status of the national waiting list as at 31.12.2018 (patients with active status)

Kidney	Kidney and pancreas	Kidney and liver	Heart
72	1	0	48
Heart and liver	**Heart and kidney**	**Liver**	**Pancreas**
0	0	19	0
TOTAL			**140 patients**

Source: http://statistics.eurotransplant.org/

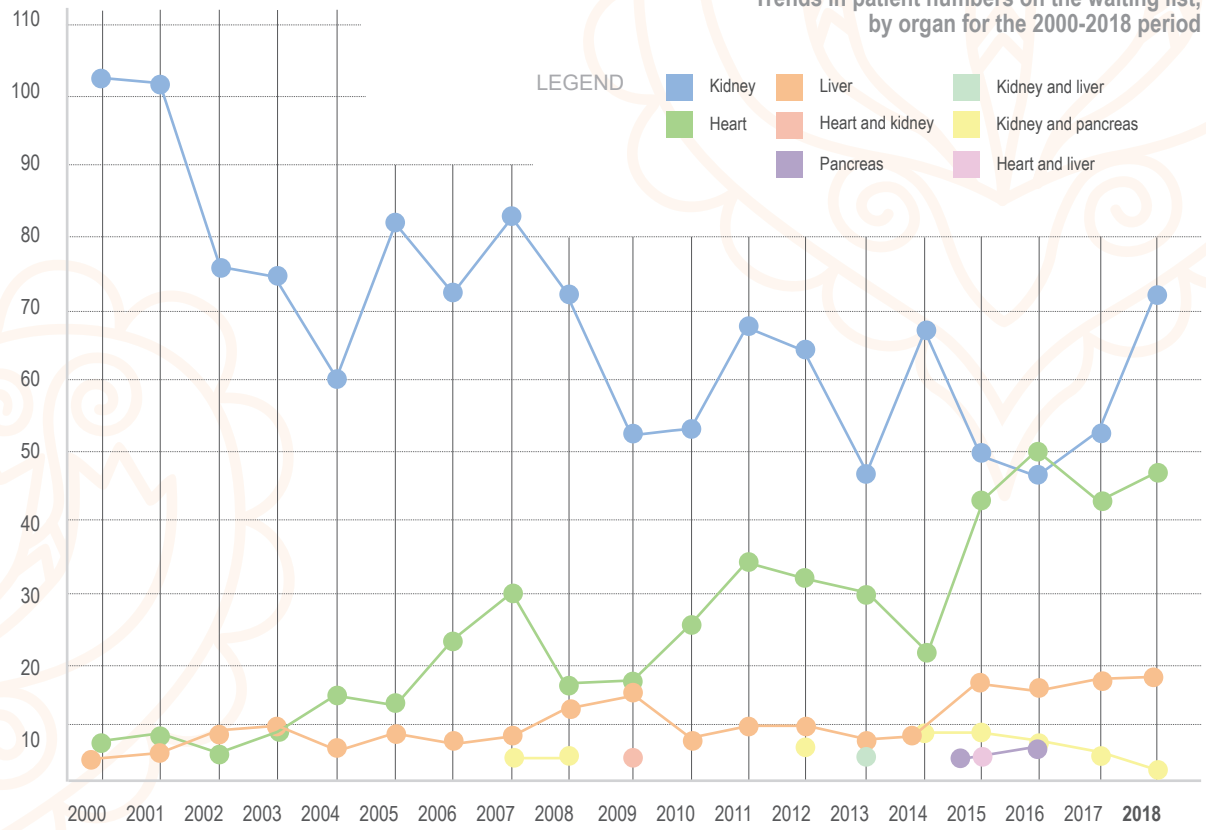


Status of the national waiting list in the 2000 - 2018 period (as at 31.12.)

Year	Kidney	Kidney and pancreas	Kidney and liver	Heart	Heart and liver	Heart and kidney	Liver	Pancreas	TOTAL
2000	102			7			2		111
2001	101			8			4		113
2002	76			2			7		85
2003	75			9			8		92
2004	60			15			4		79
2005	81			14			9		104
2006	72			24			6		102
2007	83	1		30			9		123
2008	71	1		17			13		102
2009	52			18		1	15		86
2010	53			26			8		87
2011	68			34			10		112
2012	65	2		32			10		109
2013	47		1	30			7		85
2014	69	8		21			9		107
2015	50	8		42	1		18	1	120
2016	47	3		50			17	2	119
2017	51	2		42			18		113
2018	72	1		48			19		140

Source: http://statistics.eurotransplant.org/

Trends in patient numbers on the waiting list, by organ for the 2000-2018 period



NUMBER OF DECEASED DONORS

In 2018 the Slovenian donor hospitals acquired 51 actual deceased donors*, who were medically suitable and for whom consent was obtained from the relatives. Data at the beginning show the number of actual deceased donors in Slovenia compared to other countries in the world. Below are details on the number of utilized deceased donors*, which means that at least one organ was transplanted from each donor. Compared to other Eurotransplant members, in 2018 Slovenia ranked fourth in terms of the number of utilized deceased donors per million people.

Number of actual deceased donors (DD) per million people (PMP) in Slovenia in 2018 and a comparison with world countries

Country	No. of DD/PMP 2018
1. Spain	48
2. Croatia	41,2
3. Portugal	33,63
4. Begium	33,62
5. USA	33,32
6. Malta*	30
7. France*	29,74
8. Iceland	28,12
9. Italy	27,73
10. Austria	26

Country	No. of DD/PMP 2018
11. Estonia	25,77
12. Czech Republic*	25,51
13. Belrus	25,1
14. Slovenia	24,67
15. United Kingdom*	23,05
16. Australia	22,17
17. Canada*	21,91
18. Hungary	21,89
19. Finland	21,19
20. Urugvay*	20,43

Country	No. of DD/PMP 2018
21. Norway	19,54
22. Sweden	17,72
23. Switzerland	17,2
24. Ireland	17,08
25. Denmark	16,91
26. Brazil*	16,6
27. Lithuania	16,42
28. Luxembourg*	15,8
29. New Zealand*	15,23
30. Netherlands*	15,18

* Data for 2017

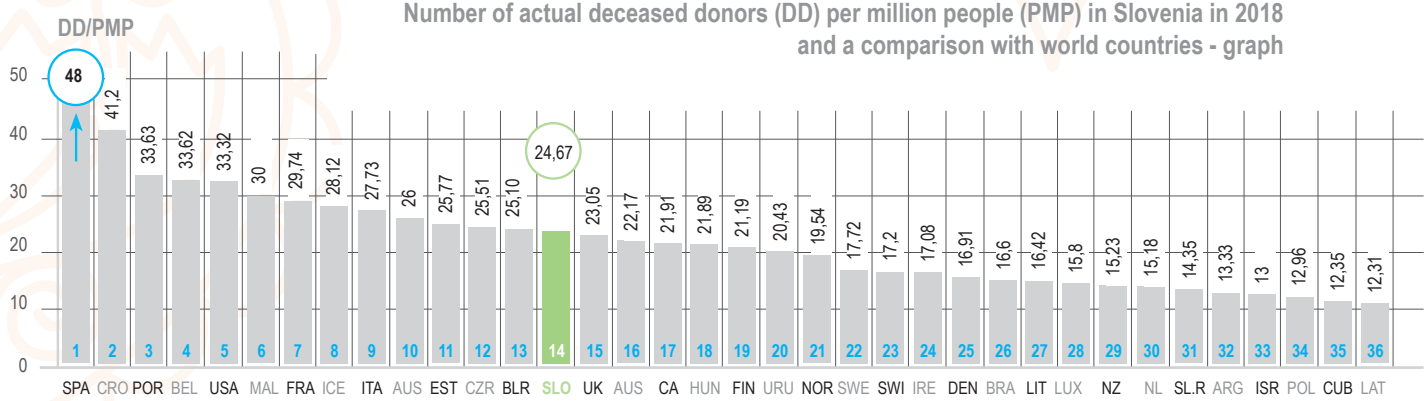
Country	No. of DD/PMP 2018
31. Slovak Republic	14,35
32. Argentina*	13,33
33. Israel	13
34. Poland	12,96
35. Cuba*	12,35
36. Latvia*	12,31
37. Cyprus*	11,69

Country	No. of DD/PMP 2018
38. Germany	11,5
39. Iran*	11,43
40. Chile*	10
41. South Korea*	9,95
42. Columbia*	8,9
43. Turkey	7,47
44. Jordan*	6,91

Country	No. of DD/PMP 2018
45. Costa Rica*	6,7
46. Hong Kong*	6
47. Greece*	5,98
48. Kuwait*	5
49. Ecuador*	5
50. Moldova*	4,5
51. Mexico*	4,5

* Data for 2017

Number of actual deceased donors (DD) per million people (PMP) in Slovenia in 2018 and a comparison with world countries - graph



Country	No. of DD/PMP 2018
52. Thailand*	4,27
53. Panama*	4,15
54. Bulgaria	4,14
55. Russia*	3,9
56. China*	3,67
57. Saudi Arabia*	3,33
58. Romania*	3,25

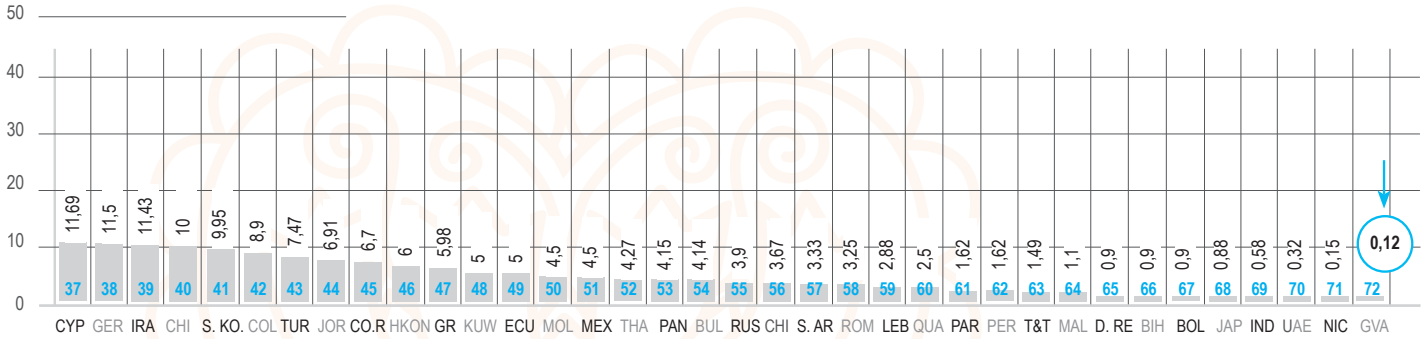
Country	No. of DD/PMP 2018
59. Lebanon*	2,88
60. Quatar	2,5
61. Paraguay*	1,62
62. Peru*	1,62
63. Trinidad & Tobago*	1,49
64. Malaysia*	1,1
65. Dominic. Republic	0,9

Country	No. of DD/PMP 2018
66. Bosnia and Hercegovina	0,9
67. Bolivia*	0,9
68. Japan*	0,88
69. India*	0,58
70. UAE*	0,32
71. Nicaragua*	0,15
72. Guatemala*	0,12

* Data for 2017

Source: IRODaT (International Registry in Organ Donation and Transplantation) www.irodat.org Preliminary numbers 2018

DD/PMP

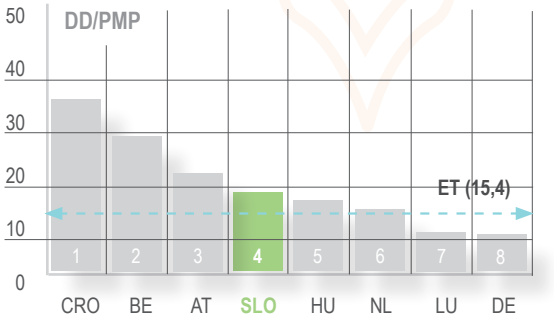


Number of utilized deceased donors (DD) per million people (PMP) in Slovenia in 2018 and a comparison with all Eurotransplant countries

Country	Slovenia (SLO)	Eurotransplant (ET)
Number of DD	40	2.159
DD/PMP	19,4	15,4

Number of utilized deceased donors per million people (DD/PMP) and a comparison with other Eurotransplant countries in 2018

ET Country	Number of DD/PMP in 2018
1. Croatia (CRO)	36,8
2. Belgium (BE)	29,4
3. Austria (AT)	22,9
4. Slovenia (SLO)	19,4
5. Hungary (HU)	17,1
6. Netherlands (NL)	15,9
7. Luxembourg (LU)	11,6
8. Germany (DE)	11,3



Source: http://statistics.eurotransplant.org/

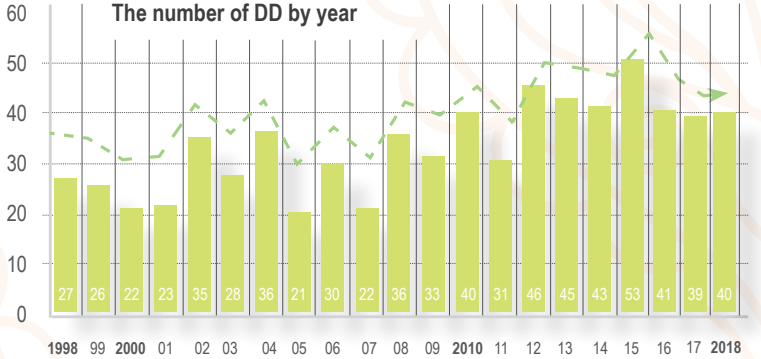
Number of utilized deceased donors (DD) and number of utilized deceased donors per million people (DD/PMP) in Slovenia in the 1998 - 2018 period

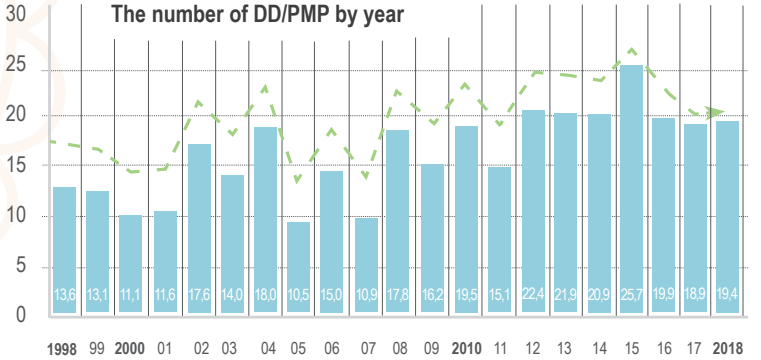
Year	Number of DD	Number of DD/PMP
1998	27	13,6
1999	26	13,1
2000	22	11,1
2001	23	11,6
2002	35	17,6
2003	28	14
2004	36	18
2005	21	10,5
2006	30	15
2007	22	10,9
2008	36	17,8

Year	Number of DD	Number of DD/PMP
2009	33	16,2
2010	40	19,5
2011	31	15,1
2012	46	22,4
2013	45	21,9
2014	43	20,9
2015	53	25,7
2016	41	19,9
2017	39	18,9
2018	40	19,4
TOTAL	717	16,8

Source: http://statistics.eurotransplant.org/

Number of utilized deceased donors (DD) and number of utilized deceased donors per million people (DD/PMP) in Slovenia in the 1998 - 2018 period





* The critical Pathway for Organ Donation

POSSIBLE DECEASED ORGAN DONOR
A patient with a devastating brain injury or lesion OR a patient with circulatory failure AND apparently medically suitable for organ donation

Donation after Circulatory Death (DCD)	Treating physician to Identify/refer a potential donor	Donation after BrainDeath (DBD)
POTENTIAL DCD DONOR **a.** A person whose circulatory and respiratory functions have ceased and resuscitative measures are not to be attempted or continued. OR **b.** A person in whom the cessation of circulatory and respiratory functions is anticipated to occur within a time frame that will enable organ recovery.	**Reasons why a potential donor does not become a utilized donor** **SYSTEM** - Failure to identify/refer a potential or eligible donor - Brain death diagnosis not confirmed (e.g. does not fulfil criteria) or completed (e.g. lack of tehnical resources or clinician to make diagnosis or perform confirmatory tests) - Circulatory death not declared within the appropriate time frame. - Logistical problems (e.g. no recovery team) - Lack of appropriate recipient (e.g. child, blood type, serology positive) **DONOR/ORGAN** - Medical unsuitability (e.g. serology positive, neoplasia) - Haemodynamic instability/unanticipated cardiac arrest - Anatomical, histological and/or functional abnormalities of organs - Organs damaged during recovery - Inadequate perfusion of organs or thrombosis **PERMISSION** - Expressed intent of deceased not to be donor - Relative's refusal of permission for organ donation - Refusal by coroner or other judical officer to allow donation for forensic reasons	POTENTIAL DBD DONOR A person whose clinical condition is suspected to fulfill brain death criteria.
ELIGIBLE DCD DONOR A medicaly suitable person who has been declared dead based on the irreversible absence of circulatory and respiratory functions as stipulated by the law of the relevant jurisdiction within a time frame that enables organ recovery.		ELIGIBLE DBD DONOR A medicaly suitable person who has been declared dead based on neurologic criteria as stipulated by the law of the relevant jurisdiction.
ACTUAL DCD DONOR A consented eligible donor: **a.** In whom an operative incision was made with the intent of organ recovery for the purpose of transplantation. OR **b.** From whom at least one organ was recovered for the purpose of transplantation.		ACTUAL DBD DONOR A consented eligible donor: **a.**In whom an operative incision was made with the intent of organ recovery for the prupose of transplantation. OR **b.** From whom at least one organ was recovered for the purpose of transplantation.
UTILIZED DCD DONOR An actual donor from whom at least one organ was transplanted.		UTILIZED DBD DONOR An actual donor from whom at least one organ was transplanted.

The »dead donor rule« must be respected. That is, patients may only become donors after death, and the recovery of organs must not couse a donor´s death.

Source: The Madrid Resolution on Organ Donation and Transplantation

REGISTER OF DECLARATIONS REGARDING DONATION

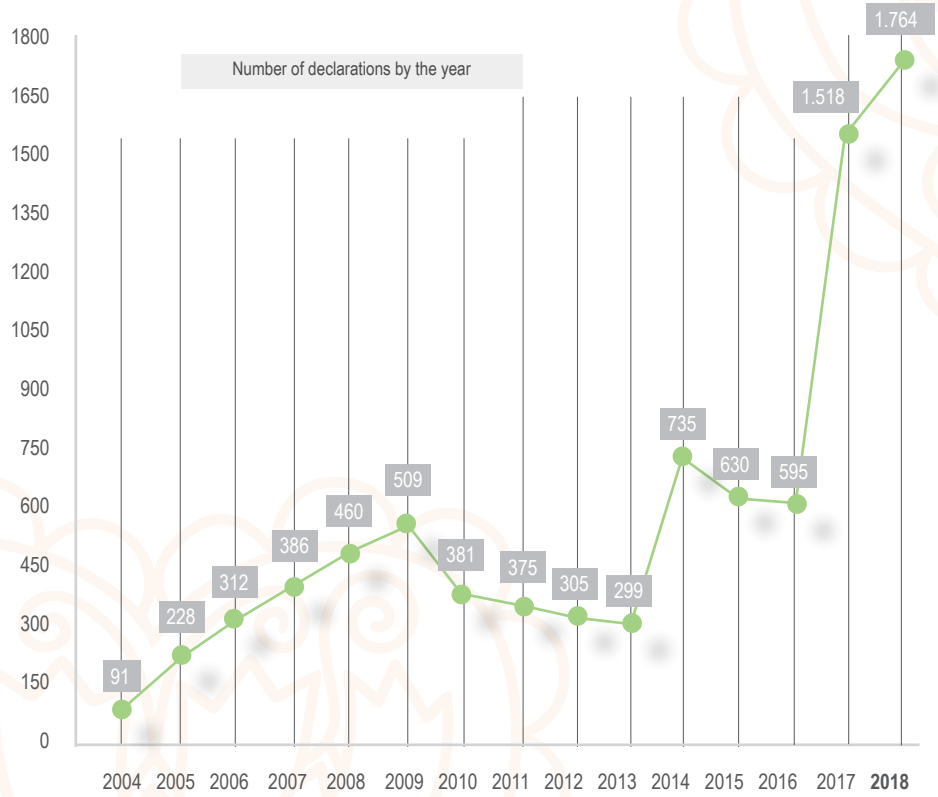
Every Slovenian citizen has the right and possibility during their lifetime to decide to donate their organs and tissues. This decision is formally confirmed by an entry in the national register of designated persons which was set up already in 2004. The persons statement can be signed at many authorised donor registration points in Slovenia (a detailed list is published at *www.slovenija-transplant.si*). Since June 2017 a declaration against organ donation is also possible.

In 2018 we recorded the highest number of declarations regarding donation so far, which is a consequence of the possibility of electronic declaration using a digital certificate, which was launched in November. In 2018 we gathered a total of 1.764 declarations (1.759 FOR and 5 AGAINST), of which 754 were submitted electronically. We expect this flexible method of registration will help increase the number of designated persons. As at 31.12.2018, there were 8.594 declarations entered in the register (8.589 FOR and 5 AGAINST), which is a relatively small number.

Number of declarations regarding donation in the register, by year, in the 2004 - 2018 period

Year	No. of declarations
2004	91
2005	228
2006	312
2007	386
2008	460
2009	509
2010	381
2011	375
2012	305
2013	299
2014	735
2015	630
2016	595
2017	1.518
2018	1.764*
TOTAL	8.594

* 1.759 declarations for donation
and 5 declarations against donation



Source: archive of Slovenija-transplant

PERCENTAGE OF DONATION REFUSALS

A conversation with close relatives of a potential deceased donor (PDD) about donation is carried out in all cases when the donation of organs for transplantation is feasible. Only after the confirmation of death and the registration of the time of death does the transplantation co-ordinator check the register to see whether the deceased was a designated after-death donor. Despite the known designation, the central transplantation co-ordinator always holds a conversation with the deceased person's close relatives about donation. During this conversation, they try to find out what the deceased person's position was on after-death organ donation. If their intention is unknown, the close relatives take the decision. All procedures are carried out with a high level of sensitivity, understanding of the extremely difficult emotional circumstances and in line with the legislative provisions and the medical doctrine. In Slovenia, compared to other countries, the rate of family refusal is low, although it is even lower in some of the most successful countries. In 2018 the rate of family refusal was relatively high. Donation was refused by 33 % of relatives. The causes for refusals are being carefully researched.

As the death of a close relative is a difficult experience for anyone, Slovenija-transplant offers the donor's relatives the possibility to receive counselling on grieving from a professionally trained and experienced expert.

Percentage of donation refusals in the 1998 - 2018 period

Source: archive of Slovenija-transplant

Year	%
1998	21
1999	30
2000	37
2001	36

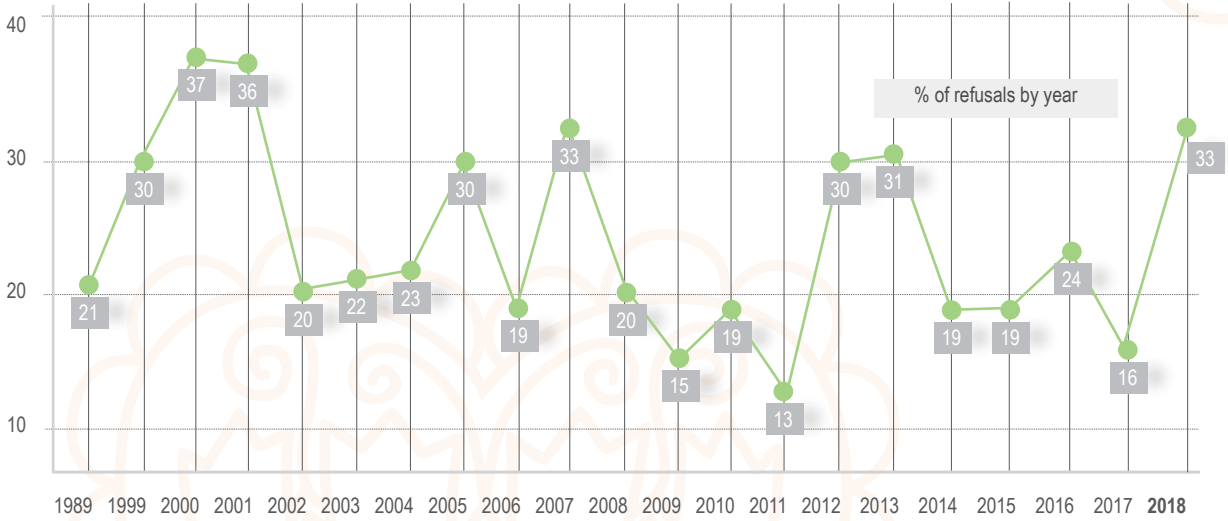
Year	%
2002	22
2003	23
2004	30
2005	19

Year	%
2006	20
2007	15
2008	19
2009	13

Year	%
2010	31
2011	19
2012	19
2013	24

Year	%
2014	31
2015	19
2016	19
2017	24

Year	%
2018	33



OPERATIONS OF THE DONOR CENTRES

Eleven donor hospitals or centres are included in the Slovenian donor programme: the Ljubljana UMC and Maribor UMC and the general hospitals in Celje, Murska Sobota, Nova Gorica, Izola, Ptuj, Novo mesto, Slovenj Gradec, Jesenice and Brežice.

The following activities are performed in a donor centre:

- identification of potential deceased donors,
- diagnostics of brain death,
- establishing the suitability of organs and tissues for removal and transplantation,
- informing the deceased person's close relatives about the possibility of organ donation and obtaining their consent,
- preserving the functioning of deceased donors' organs – in intensive care and during organ removal, and
- participating in organ and tissue removal procedures performed by Slovenian and foreign teams of surgeons.

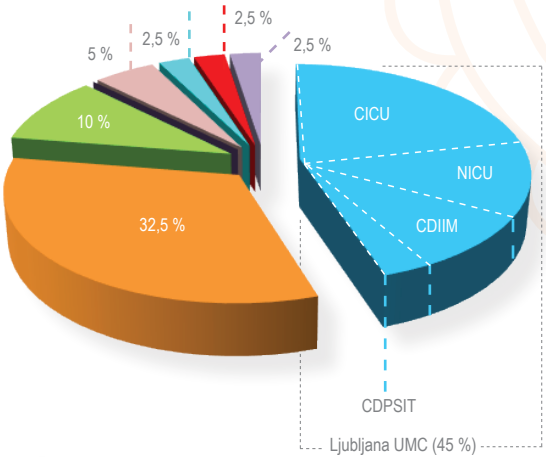
The highest number of donors is provided by the Ljubljana UMC with the greatest number of beds in intensive care units. In 2018 18 deceased donors were procured there. Excellent results were also achieved by the UMC Maribor where in 2018 they procured 13 deceased donors.

In 2011 we introduced the Quality Assurance Plan into the national donor programme and applied it intensively, thus promoting the operations and co-operation of all participants. The goal is to increase the effectiveness of all donor centres in the activity of procuring organs and tissues, mainly based on an optimal identification of possible deceased organ donors. In 2018 UMC Ljubljana was included in the programme.

Number and share of utilized deceased donors in individual donor centres (DC) in 2018

Donor centre	Number of DD	Share in %
Ljubljana UMC total	18	45
of which NICU*	5	
of which CICU	9	
of which CDIIM	3	
of which CDPSIT	1	
Maribor UMC	13	32,5
Celje GH	4	10
Murska Sobota GH	2	5
Slovenj Gradec GH	1	2,5
Nova Gorica GH	1	2,5
Izola GH	1	2,5
TOTAL	40	100

*NICU – Neurological Intensive Care Unit,
CICU – Central Intensive Care Unit,
CDIIM – Clinical Department of Internal Intensive Medicine,
CDPSIT – Clinical Department of Paediatric Surgery and Intensive Therapy

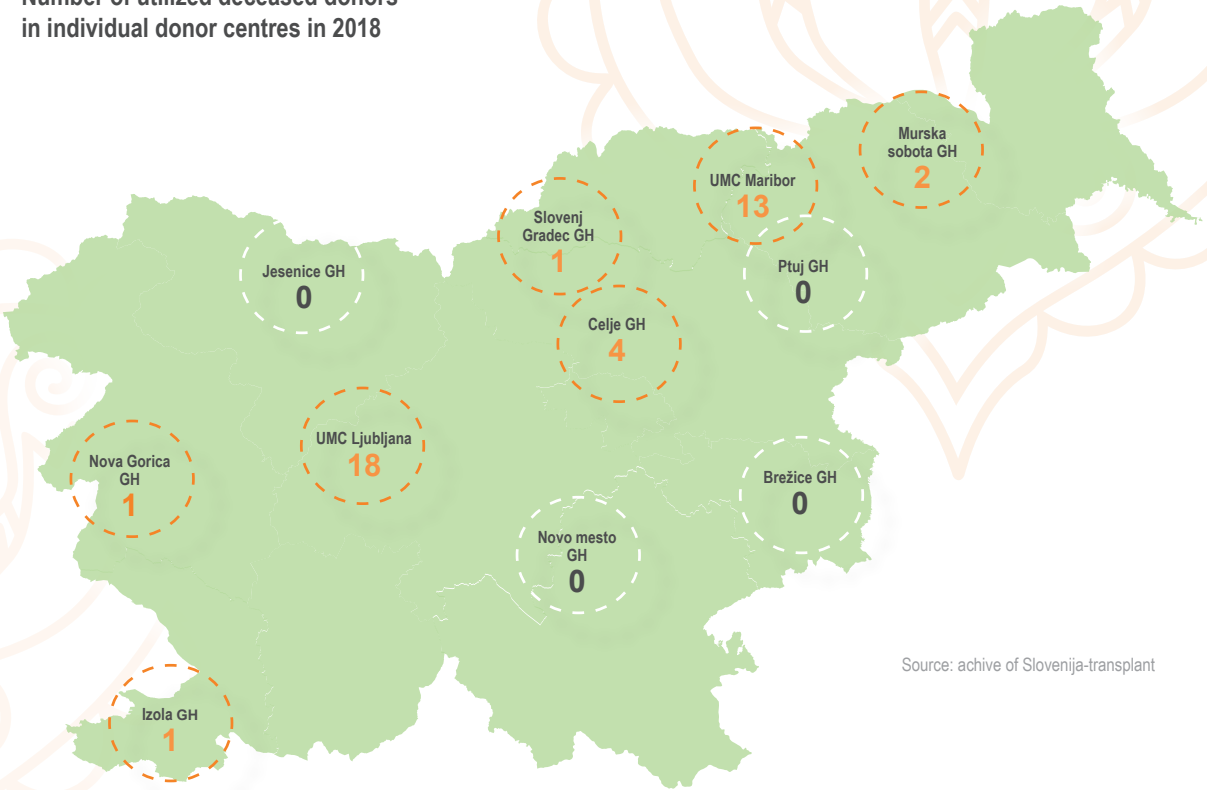


LEGEND

- UMC Ljubljana
- UMC Maribor
- Celje GH
- Murska Sobota GH
- Slovenj Gradec GH
- Nova gorica GH
- Izola GH

Source: archive of Slovenija-transplant

Number of utilized deceased donors in individual donor centres in 2018



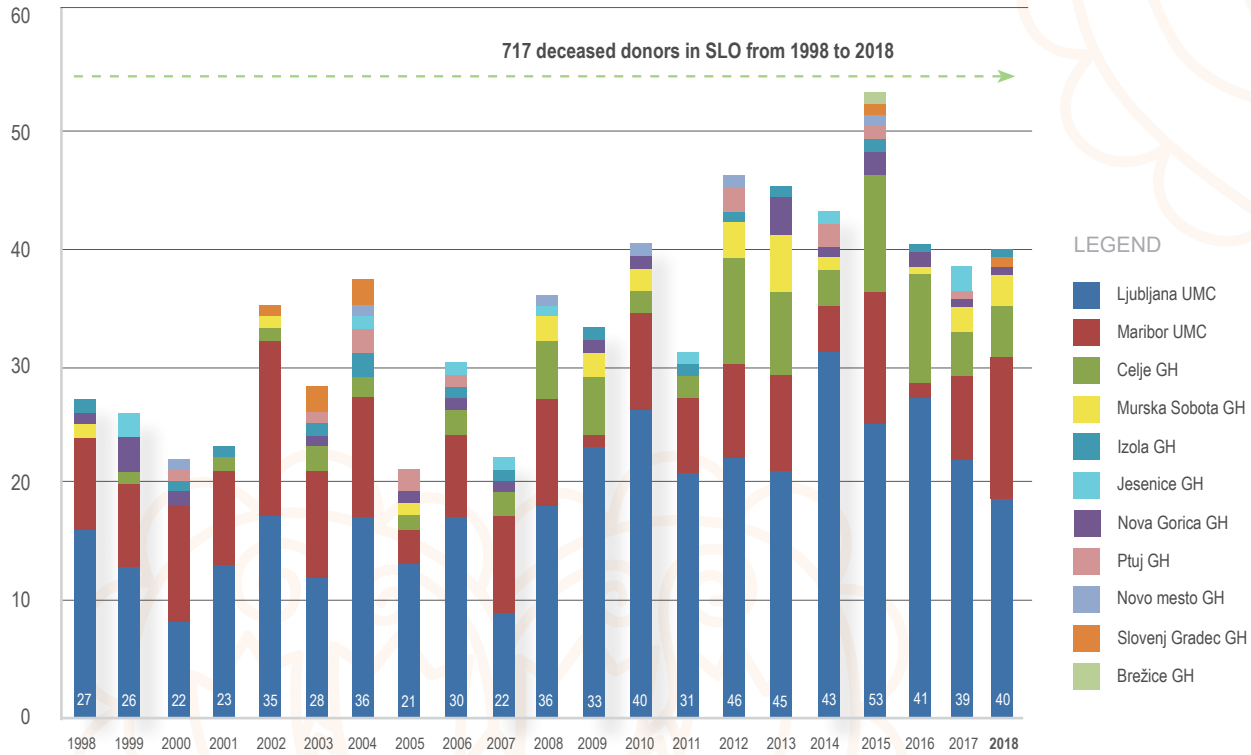
Source: achive of Slovenija-transplant

Number of utilized deceased donors in donor centres in the 1998 - 2018 period

Source: archive of Slovenija-transplant

Year	LJ UMC	MB UMC	CE GH	MS GH	NG GH	Izola GH	Ptuj GH	Jesenice GH	NM GH	SG GH	Brežice GH
1998	16	8		1	1	1					
1999	13	7	1		3			2			
2000	8	10			1	1	1		1		
2001	13	8	1			1					
2002	17	15	1	1						1	
2003	12	9	2		1	1	1			2	
2004	17	10	2			2	2	1	1	1	
2005	13	3	1	1	1		2				
2006	17	7	2		1	1	1	1			
2007	9	8	2		1	1		1			
2008	18	9	5	2				1	1		
2009	23	1	5	2	1	1					
2010	26	8	2	2	1				1		
2011	21	6	2			1		1			
2012	22	8	9	3		1	2		1		
2013	21	8	7	5	3	1					
2014	31	4	3	1	1		2	1			
2015	25	11	10		2	1	1		1	1	1
2016	28	2	7	1	2	1					
2017	22	7	4	2	1		1	2			
2018	18	13	4	2	1	1				1	
TOTAL	**390**	**162**	**70**	**23**	**21**	**15**	**13**	**10**	**6**	**6**	**1**

Number of utilized deceased donors in donor centres in the 1998 - 2018 period



Potential and realisation in donor hospitals (completed analysis for 2017)

Donation potential for individual donor hospital is expressed as a percentage of brain-dead donors of the total number of deceased persons in the intensive care unit (ICU). It indicates the number of deaths where the diagnostic of brain death was completed. The potential is directly associated with identification of eligible donors in ICUs.

Realisation in the donation process indicates the number of eligible donors (proven brain death) who became actual donors. It is expressed as a percentage of actual donors of the total number of deaths due to brain death in the ICUs.

Source: Slovenija-transplant archive

Donor hospital	All deaths in the ICU	PD	ED	Potential (%)	Available (%)	AD	Realisation (%)	Available (%)
Ljubljana UMC*	400	60	36	9.0	13.7	25	69	65
Maribor UMC	257	37	20	7.8	13.7	7	35	65
Novo mesto GH	144	15	0	0.0	8.3	0	0	55
Celje GH	132	28	9	6.8	8.3	4	44	55
Nova Gorica GH	75	9	4	5.3	8.3	1	25	55
Ptuj GH	63	7	1	1.6	8.3	1	100	55
Murska Sobota GH	65	8	3	4.6	8.3	2	67	55
Izola GH	62	10	0	0.0	8.3	0	0	55
Slovenj Gradec GH	54	7	2	3.7	8.3	0	0	55
Jesenice GH	62	11	5	8.1	8.3	3	60	55
Brežice GH	17	4	0	0.0	8.3	0	0	55

ICA – intensive care unit, **PD** – potential donor, **ED** – eligible donor (proven brain death), **AD** – actual donor (relatives' consent, organ removal),
Potential – % of brain-dead patients in total number of deceased persons in the ICU = % ED/total deaths in the ICU,
Realisation – % of actual donors in total number of brain-dead patients = % AD/ED
* The number of deceased and potential donors for the Ljubljana UMC for 2017 is unavailable; a rough calculation was made based on available data for 2018.

As expected, the potential for the donor hospital is higher for hospitals which have their own neurosurgical unit and can even reach a potential of up to 13.7 %. In hospitals without their own neurosurgical unit the available donation potential reaches up to 8.3 %. Jesenice GH came the closest to this figure in 2017, followed by Celje GH. Both university medical centres achieved a relatively high potential but still lagged behind the available values, which indicates that we can additionally improve identification of eligible donors.

Realisation mainly depends on the percentage of absolute medical contraindications and rejected donation by relatives in the period under scrutiny. The figure can be lower also in prolonged diagnostics of brain death and in cases when the brain-dead patient was not presented to the transplantation coordinator (Maribor UMC). In 2017 the available realisation was exceeded in the Ljubljana UMC, Ptuj GH, Murska Sobota GH and Jesenice GH. Some deviations were found in low values of the potential, e.g. in Ptuj GH where 100 % realisation was achieved in one case – there were no medical contraindications for donation and the relatives gave their consent. In hospitals where there were no proven brain deaths in 2017, the potential and the realisation were both 0 %.

List of authorised persons (i.e. hospital transplantation co-ordinators) in charge of development, implementation and functioning of the donor programme in individual donor centres - 2018

Donor centre	Transplantation co-ordinators
Maribor UMC	Chief Phys. Zoran Zabavnik, MD Tanja Kuprivec, MD (in the process of nomination) / Prof. Dr. Andreja Sinkovič, MD (until October 2018)
Celje GH	Milena Kotnik, MD (until May 2018); Deputy: Barbara Hudournik, MD (from June 2018)
Murska Sobota GH	Chief Phys. Daniel Grabar, MD ▮ Deputy: Sanja Andrejč, RN
Nova Gorica GH	Konrad Kuštrin, MD ▮ Deputy: Edyta Čerkini, MD
Izola GH	Damjan Polh, MD
Ptuj GH	Chief Phys. Majda Šarman, MD
Jesenice GH	Andraž Nastran, MD ▮ Deputy: Branka Repe Gruden, MD
Novo mesto GH	Matej Godnič, MD / Deputy: Goran Kurnik, dr. med.
Slovenj Gradec GH	assist. Dr.Jasna Uranjek, MD ▮ Deputy: Rok Popič, MD
Brežice GH	Marina Lačan, MD ▮ Deputy: Marko Hauptfeld, MD
Ljubljana UMC	Chief Phys. Rade Stanić, MD

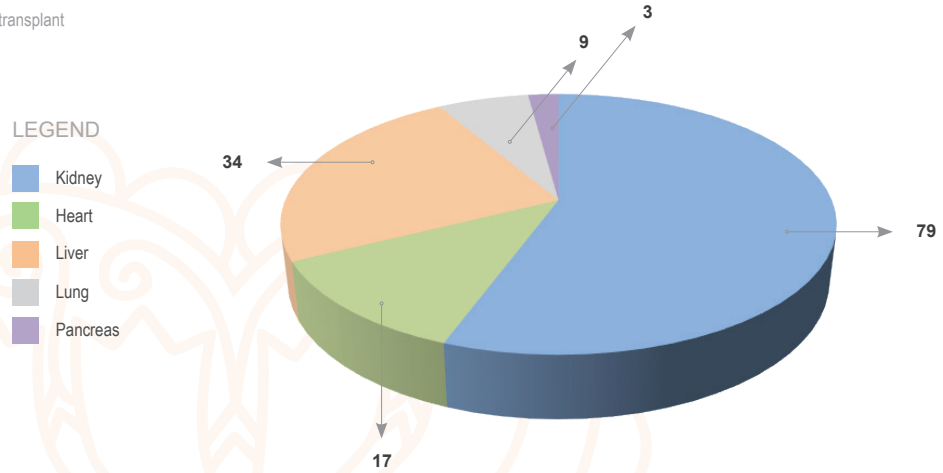
PROCURED SOLID ORGANS FOR THE PURPOSE OF MEDICAL TREATMENT

The number of procured organs depends on the number of procured deceased donors, along with the age and medical contraindications. In 2018 the number of procured organs of deceased donors was slightly lower than the year before, for the reasons stated above. In the continuation is data for 2018 and a comparison with previous years.

Number of procured organs of Slovenian deceased donors in 2018

Kidney	Heart	Liver	Lung	Pancreas	TOTAL
79	17	34	9	3	142

Source: archive of Slovenija-transplant



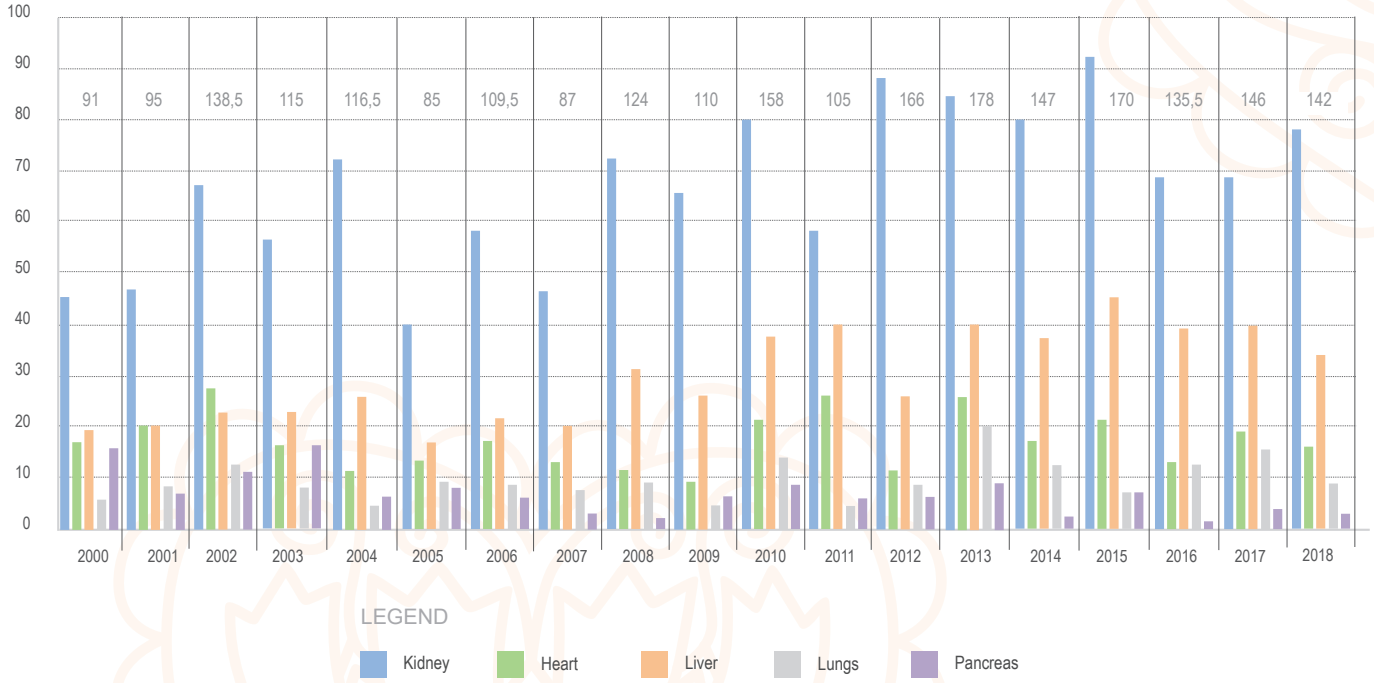
Procured organs of Slovenian deceased donors in the 2000 - 2018 period

Source: archive of Slovenija-transplant

Year	Kidney	Heart	Liver	Lungs (both lobes)	Pancreas	TOTAL
2000	43	14	17	4	13	91
2001	44	19	19	7	6	95
2002	66	28	22	11,5	11	138,5
2003	56	15	21	8	15	115
2004	70	12	25	3,5	6	116,5
2005	39	13	16	9	8	85
2006	59	16	21	7,5	6	109,5
2007	46	12	19	7	3	87
2008	71	11	31	9	2	124
2009	65	9	26	4	6	110
2010	80	20	37	13	8	158
2011	58	14	24	4	5	105
2012	89	25	39	8	5	166
2013	86	26	39	19	8	178
2014	80	16	38	11	2	147
2015	92	20	46	6	6	170
2016	68	13	39	13,5	2	135,5
2017	68	19	40	15	4	146
2018	79	17	34	9	3	142
SKUPAJ	1.259	319	553	169	119	2.419

Procured organs of Slovenian deceased donors in the 2000-2018 period

2.419 procured organs of Slovenian deceased donors in the 2000-2018 period



TRANSPLANTED SOLID ORGANS

There is one transplantation centre in Slovenia, the Ljubljana University Medical Centre, where programmes for organ transplantations are carried out. The organ distribution system ensures equal access to medical treatment with organ transplantation for all Slovenian citizens. The tasks of the transplantation centre include:

- preparation of recipients for inclusion on the waiting list,
- organ transplantation, and
- guiding patients after transplantation.

Since 2014, the transplantation centre has been managed by the cardiovascular surgeon Dr. Ivan Kneževič, MD.

In 2018 109 organ transplantations were performed. The highest number of transplanted organs is that of kidneys and we slightly exceed the average of the Eurotransplant countries in terms of the number of all transplants from deceased donors per million people. Considerably higher is the number of transplanted hearts per million people, where we have been one of the world leaders in the past few years.
In 2018 the Ljubljana UMC performed for the first time a transplantation of both lung lobes. Until then lung transplantations for Slovenian recipients were performed in the University Hospital in Vienna (AKH), with extensive experience in this field. Paediatric transplantations are partly performed in the Ljubljana UMC and partly in the nearby European transplantation centres (kidneys in the University Hospital Graz, Austria, and liver in Bergamo, Italy). The competent departments in the Ljubljana UMC are in charge of treatment and preparation before organ transplantation as well as medical treatment and monitoring of the patient after transplantation.

Transplanted solid organs from deceased donors in the Ljubljana UMC in 2018 and a comparison with Eurotransplant – absolute number and per million people (PMP)

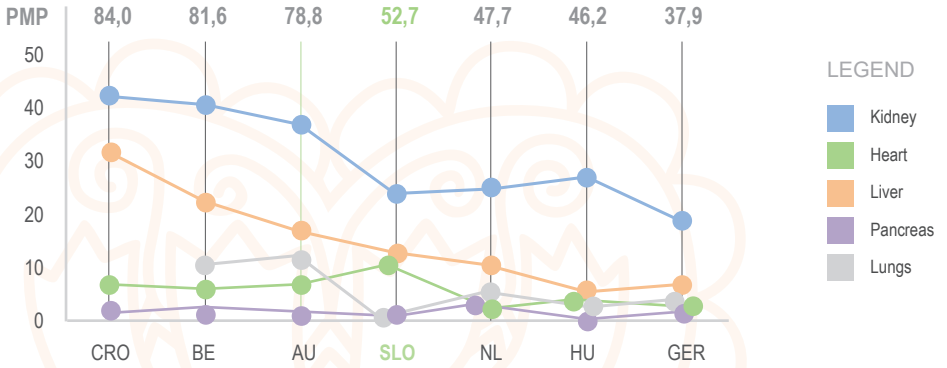
Source: http://statistics.eurotransplant.org/

	Kidney DD		Heart		Liver		Pancreas		Lung		TOTAL	
	No.	PMP	No.	PMP	No.	PMP	No.	PMP	No.	PMP	No.	PMP
SLO	54	26,1	23	11,1	27	13,1	3	1,5	2	0,97	109	52,7
ET	3.517	25,4	619	4,5	1.597	12,4	181	1,5	1.364	5,3	7.278	47,6

Number of transplanted solid organs from deceased donors per million people (PMP) in Slovenia in 2018 and a comparison with the Eurotransplant countries

ET country	Kidney	Liver	Heart	Pancreas	Lung	Number of transplantations/ PMP in 2018
1. Croatia (CRO)	43,4	32,2	9,0	0,7		84,0
2. Belgium (BE)	41,5	24,1	6,7	2,5	10,2	81,6
3. Austria (AU)	39,0	19,8	7,4	2,3	13,3	78,8
4. Slovenia (SLO)	26,1	13,1	11,1	1,5	0,97	52,7
5. Netherlands (NL)	28,4	10,7	2,2	2,7	5,2	47,7
6. Hungary (HU)	29,6	8,2	6,3	0,5	2,2	46,2
7. Germany (GER))	20,0	9,9	3,8	1,1	4,5	37,9

Source: http://statistics.eurotransplant.org/



Number of transplanted solid organs of deceased donors in Slovenia in the 1970-2018 period

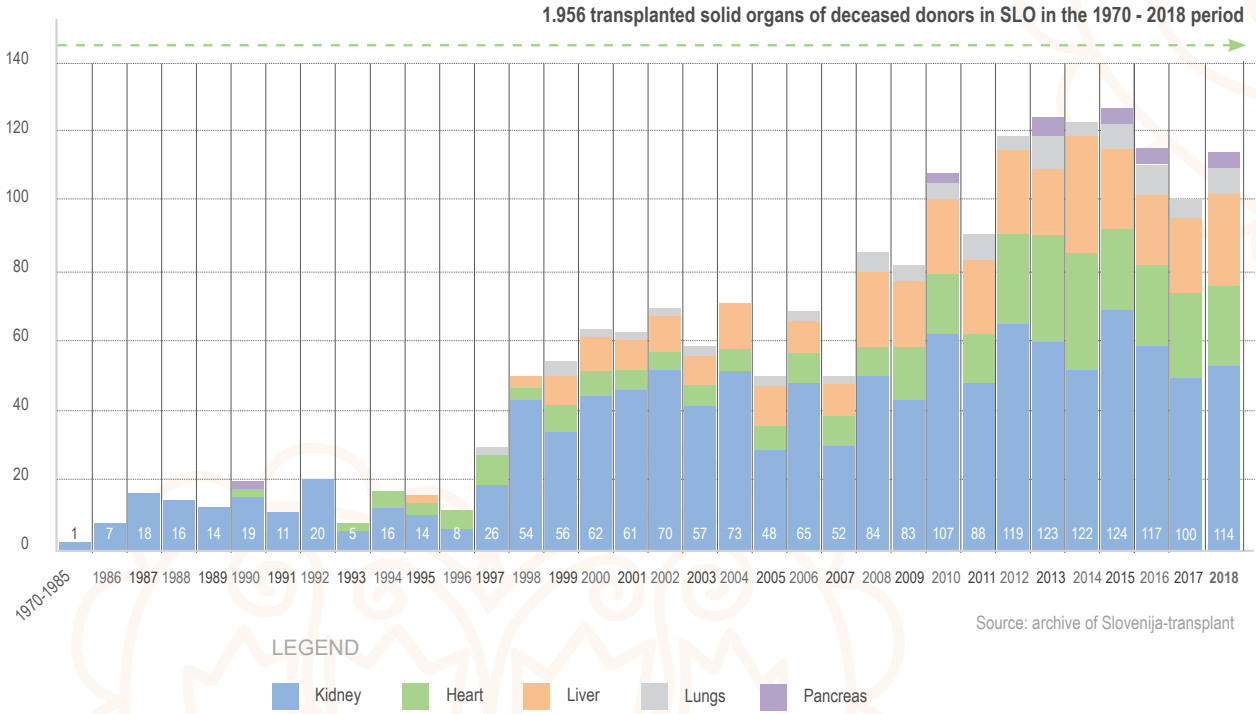
Year	Kidney	Heart	Liver	Lungs*	Pancreas	TOTAL
Od 1970 do 1985	1					1
1986	7					7
1987	18					18
1988	16					16
1989	14					14
1990	17	1			1	19
1991	11					11
1992	20					20
1993	4	1				5
1994	14	2				16
1995	10	3	1			14
1996	6	2				8
1997	19	6		1		26
1998	46	4	4			54
1999	37	7	9	3		56
2000	44	7	10	1		62
2001	47	4	9	1		61

Year	Kidney	Heart	Liver	Lungs	Pancreas	TOTAL
2002	55	3	11			69
2003	43	3	9	2		57
2004	55	3	15			73
2005	28	5	13	2		48
2006	48	8**	8	2		66
2007	30	11	10	1		52
2008	52	6	22	4		84
2009	43	18	18	2	2	83
2010	61	19	23	3	1	107
2011	46	14	20	7	1	88
2012	62	29***	27	2		120
2013	60	30	21	8	4	123
2014	55	33	31	3		122
2015	64	24	24	7	5	124
2016	44****	31	27	10	5	117
2017	46****	24	23	8		101
2018	54****	23	27	7	3	114
TOTAL	1.177	321	362	74	22	1.956

* All lung transplants to Slovenian patients were performed in AKH Vienna with the exception of 2003 (1 transplant performed in Ljubljana UMC) and 2018 (2 transplants performed in Ljubljana UMC)
** One heart from Slovene donor was transplanted to Slovene patient in Graz
*** one heart was transplanted, together with lungs, to a Slovenian patient in Vienna
**** In 2016, 2017 and 2018 two kidneys from the living donor have been transplanted. The total number of transplanted kidneys in 2016 is therefore 46, in 2017 48 and in 2018 56.

Source: archive of Slovenija-transplant

Number of transplanted solid organs of deceased donors in Slovenia in the 1970 - 2018 period



Source: archive of Slovenija-transplant

THE SUCCESSFULNESS OF SLOVENIAN ORGAN TRANSPLANT PROGRAMMES

Patient survival after heart transplantation

At the end of 2018, there were 231 patients in Slovenia living with a transplanted heart. 321 heart transplants were performed in the period from 1990 to 2018. The survival rates are comparable to those from the international reference register kept by the International Society for Heart & Lung Transplantation (ISHLT).

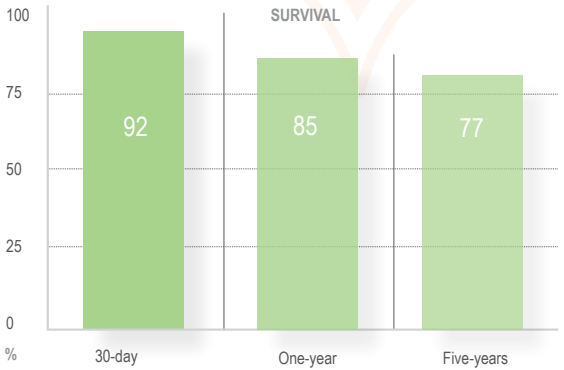
The most frequent reasons for heart transplantation in 2018 were dilated cardiomyopathy (35 %) and ischemic heart disease (26 %), while other reasons include valvular heart disease (9 %), non-compaction cardiomyopathy (9 %), cardiac amyloidosis (9 %), congenital heart defects (8 %) and restrictive cardiomyopathy (5 %).

The many-year average (2009–2018) of the waiting period for elective heart transplantation is about 247 days (median: 117 days) and for urgent heart transplantation about 50 days (median: 50 days).

Survival of adult cardiac transplant recipients in % (1990–2018, n = 321)

30-day survival	One-year survival	Five-year survival
92 %	85 %	77 %

Source: Report on implementation of the programme for advanced heart failure and cardiac transplantation for 2018 (Cardiology Department, Ljubljana University Medical Centre)



Patient survival after kidney transplantation

In the period after Slovenija-transplant joined Eurotransplant (1 January 2000–31 December 2018), 945 kidneys of living and deceased donors were transplanted. In the first post-transplantation year clinical, biopsy-proven acute rejection of transplant was reported in 13.6 % of all patients.

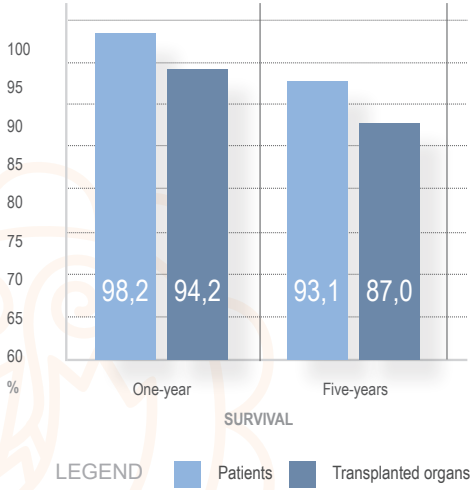
Some recipients were transplanted a kidney in combination with other organs (pancreas, liver, heart).

In the 2013–2016 period, the median time until transplantation was 300 days.

Survival of renal transplant recipients and transplanted organs in % (2000–2018, n = 889)

One-year survival	Five-year survival
Patients	
98,2 %	93,1 %
Transplanted organs	
94,2 %	87,0 %

Source: Quality indicators of the Kidney Transplantation Centre (Department of Nephrology, University Medical Centre Ljubljana)



Patient survival after liver transplantation

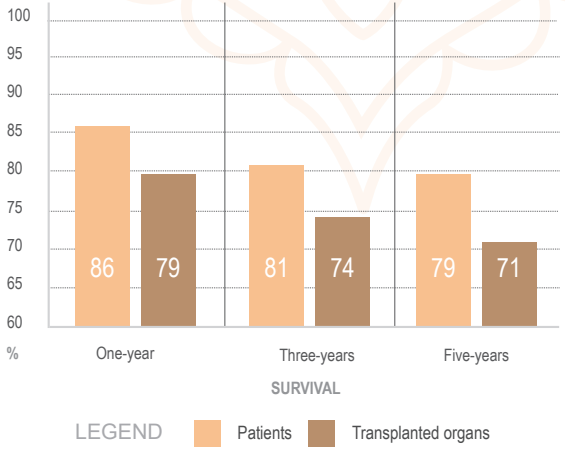
In the 1988–2018 period, the University Medical Centre Ljubljana carried out 362 liver transplantations. Of all patients with liver transplantation, 63 % needed the procedure due to liver cirrhosis, 10 % acute liver failure, 9.7 % liver cancer, 9.1 % cholestatic/congenital diseases, and 2.1 % because of metabolic liver disease. Other reasons for transplantation (5,9 %) include benign liver tumour or polycystic liver disease and Budd-Chiari syndrome.

The average waiting period for liver transplantation in 2018 is about 155 days (median: 98 days).

Survival of liver transplant recipients and transplanted organs in % (1988–June 2018, n = 291 (patients) and n = 323 (transplants))

One-year survival	Three-year survival	Five-year survival
Patients		
86 %	81 %	79 %
Transplanted organs		
79 %	74 %	71 %

Source: ELTR (European Liver Transplant Registry, SLLUBL: Specific Analyses June 2018)



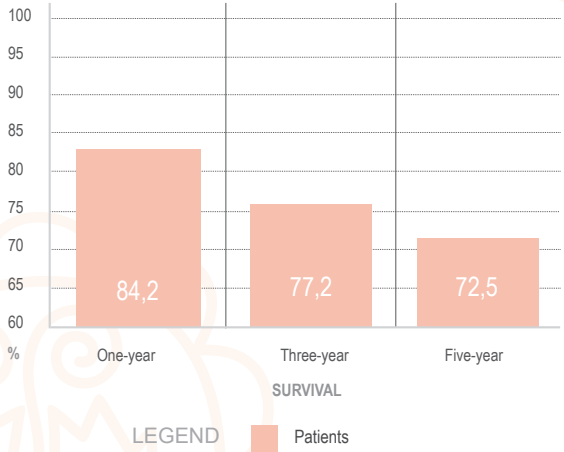
Patient survival after lung transplantation

In the 1997–2018 period, 74 lung transplantations were performed on Slovenian patients, one of whom had to undergo another transplantation. In 2018 the Ljubljana UMC relaunched its own lung transplantation programme and performed 2 transplantations of both lung lobes. The first transplantation of one lung lobe was performed in the Ljubljana UMC in 2003.

In 2018 a total of 7 lung transplantations were performed on Slovenian patients, 5 of them in the University Hospital in Vienna.

Survival of lung transplant recipients in % (1997-2018, n=74)

One-year survival	Three-year survival	Five-year survival
Patients		
84,2 %	77,2 %	72,5 %



Patient survival after pancreas transplantation

In the period from February 2009 to 31 December 2018, 21 pancreas transplants were carried out, all concurrently with kidney. After one year, 14 pancreases functioned, whereas 4 were removed in the early post-transplant period. One-year survival of pancreas graft was 78 %.

After one year, three years and five years after transplant all pancreas-transplant recipients were alive, leading to a one-year, three-year and five-year survival rate of 100 %.

All patients whose pancreas functioned after one year had a functioning pancreas also on 31 December 2018, which means they are insulin-independent. One patient died 6 years after the transplantation due to a cardiogenic shock; his pancreas and kidney were still functioning.

Source: Associate Professor Dr. Damjan Kovač, MD
(Department of Nephrology, UMC Ljubljana)

Tissues and cells

TRANSPLANTATION OF HAEMATOPOIETIC STEM CELLS

The transplantation of haematopoietic stem cells (HSCs) is the predominant type of cell treatment as more than 70 malignant and non-malignant diseases can be treated in this way, whereas for specific haematological diseases this is the main and the only therapeutic possibility for a patient to recover. The modern method of medical treatment using HSCs is more than 90% successful in optimal conditions (http://www.ztm.si). For such success, good donor-recipient immunological (HLA) matching is required. The HLA system differs in every person and it is a very demanding task to find a suitable match. In the international community, doctors decided to establish large registers of typified volunteer donors of HSCs to increase the possibility of HLA matching and thus also the outcomes of transplantations. In Slovenia a register of non-related donors, Slovenia Donor, was established in 1991 and the next year it became a full member of the world register Bone Marrow Donors Worldwide (BMDW). All data are appropriately protected against unauthorised use.

There are several types of donor-recipient matching. If it is possible to use a patient's own HSCs, this is called an autologous donation. If this is impossible, we look for another donor who may or may not be related to the recipient. Donation by another donor is called allogeneic and a donor is sought in Slovenia and abroad.

The Slovenija-donor register

In Slovenia a register of non-related donors, Slovenia Donor, was established in 1991 and the following year it became a full member of the world register Bone Marrow Donors Worldwide (BMDW).

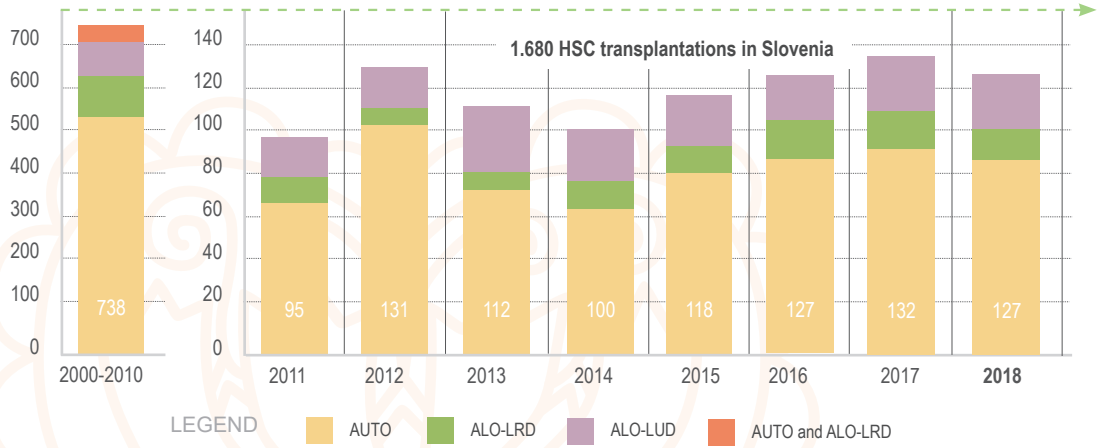
As at 31.12.2018 the Slovenia Donor register featured 20,533 people, of whom 18,498 were entered in the BMDW world register.

HSC transplantations in Slovenia in the 2000-2018 period

Tip presaditve	2000–2010	2011	2012	2013	2014	2015	2016	2017	2018
AUTO	531	68	101	74	63	84	86	92	88
ALO-ŽSD	102	9	8	7	11	10	15	12	13
ALO-ŽND	84	18	22	31	26	24	26	28	26
AUTO in ALO-ŽSD	21								
SKUPAJ	738	95	131	112	100	118	127	132	127

AUTO – autologous transplantations, **ALO** – allogeneic transplantations, **LRD** – living related donor, **LUD** – living unrelated donor

Source: Yearly report of ZTM - Slovenija donor, data collected monthly for Slovenija-transplant archive



CORNEA PROCUREMENT AND TRANSPLANTATION PROGRAMME

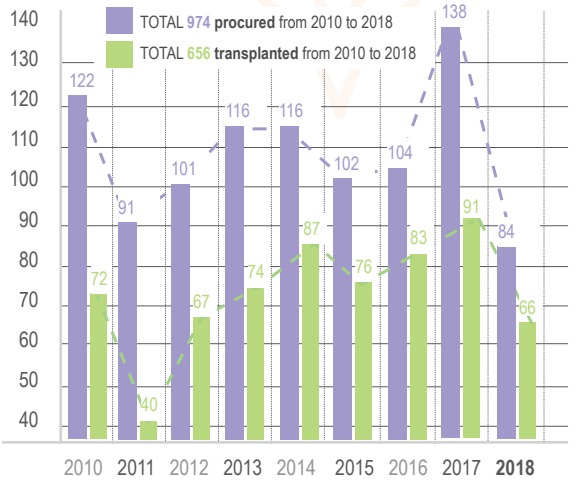
Cornea transplantation is one of the most frequent and most successful tissue transplantations in the world. This medical treatment is often the only method that can improve sight after a disease or injury. Slovenia has a national network of donor centres where the corneas of deceased donors are removed after a cardiac arrest or proven brain death. The removal of corneas is possible based on a consent given by the deceased person before their death or if their close relatives do not object. The final decision on the suitability of corneas for transplantation is always taken by the recipient's responsible doctor. Corneas are transplanted in two transplantation centres: the Department of Ophthalmology in the Ljubljana UMC and the Department of Ophthalmology in the Maribor UMC.

Procured and transplanted corneas in the 2010-2018 period

Year	No. of procured corneas	*No. of transplanted corneas
2010	122	72
2011	91	40
2012	101	67
2013	116	74
2014	116	87
2015	102	76
2016	104	83
2017	138	91
2018	84	66

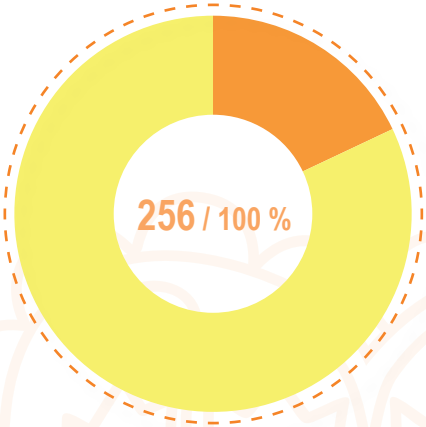
* 2010-2017 – cornea transplants performed in Ljubljana UMC only,
2018 - cornea transplants performed in Ljubljana UMC and Maribor UMC.

Source: archive of Slovenija-transplant



Waiting list of patients waiting for cornea transplantation at the Department of Ophthalmology in the Ljubljana UMC (as at 1 April 2019, as a percentage)

Diagnosis	Number of patients
Keratoconus	46
Other diagnoses	210
TOTAL	256



LEGEND

Diagnosis of keratoconus: **49 patients (18 %)**

Other diagnoses: **210 patients (82 %)**
(injuries, degeneration, retransplantation, corneal macula, Fuchs dystrophy, endothelial dystrophy, cornea guttata, aphakia and pseudophakia, bullous keratopathy, infections, other)

Source: archive of Slovenija-transplant

OTHER TISSUES AND CELLS

Twenty-five institutions are included in tissue and cell procurement at the national level. Slovenija-transplant and the Agency of the Republic of Slovenia for Medicines and Medical Devices ensure the functioning of the system and promptly detect and discuss any deviations that could affect the quality and safety of tissues and cells of donors, recipients as well as the staff involved in the processes.

The amended Rules on the traceability of human tissues and cells entered into force in 2015, abolishing the use of classical forms for prompt reporting and introducing modern online electronic reporting. Such reporting is faster and simpler for users. Moreover, it facilitates data accessibility according to the principle ‘the entered data are always accessible, so that programme users may use them in their professional and research work. Data can also be entered subsequently.

Number of procured tissues and cells in the 2009-2018 period

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Skin*	28	45	22	36	85	89	52	57	32	22
Bones*	38	123	108	67	93	82	147	74	80	78
Soft bone grafts*	22	39	/	3	11	3	9	/	12	/
Cartilage*	37	21	4	12	11	11	12	/	/	/
Reproductive cells*	15.854	43.472	8.640	27.479	41.929	37.542	39.769	26.191	36.338	13.778

*Unit: number of procured samples

Number of tissues and cells used in the 2009-2018 period

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Skin*	36	10	14	34	67	23	31	28	/	20
Bones*	23	47	57	97	59	62	92	82	72	71
Soft bone grafts*	12	/	2	2	3	4	3	5	2	3
Cartilage*	15	/	3	7	4	9	5	1	/	/
Reproductive cells*	1.450	2.018	29.651	23.330	23.506	27.271	31.127	26.620	31.817	12.110

*Unit: number of samples used

Source: archive of Slovenija-transplant

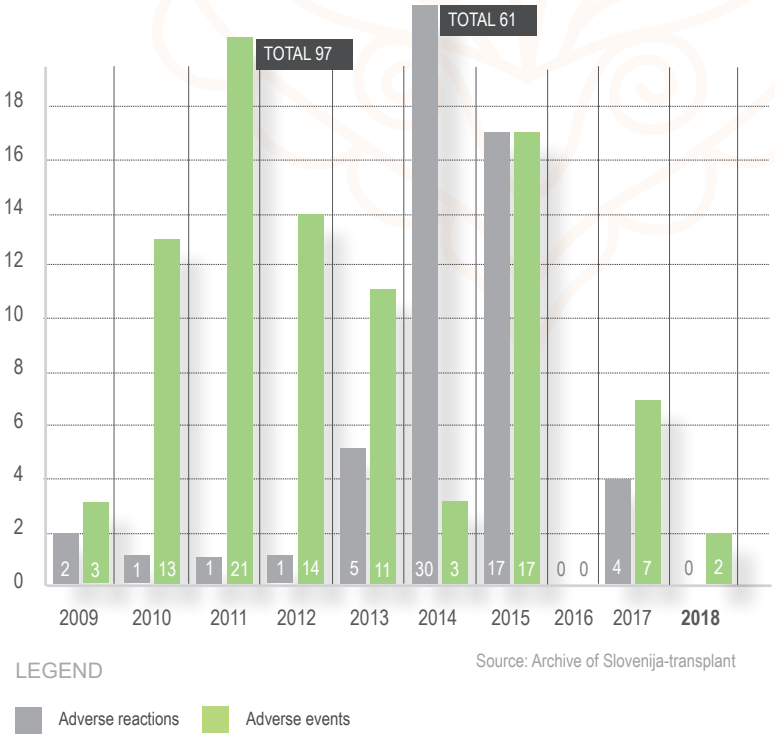
ADVERSE EVENTS AND REACTIONS

Slovenija-transplant is responsible for monitoring of adverse events and reactions as well as deviations in the area of procurement of tissues and cells for transplantation.

In 2018 Slovenija-transplant received two reports on adverse events – these occurred in the tissue and cell procurement chain. We prepared an analysis and applied corrective measures. There were no serious consequences in both cases and the risk of reoccurrence was assessed as low.

We have established that additional training on the subject should be organised.

Number of adverse events and reactions in the 2009-2018 period



Source: Archive of Slovenija-transplant

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