NEDERLANDSE **TRANSPLANTATIE** VERENIGING

BTS Belgian Transplantation Society

Joint NTV-BTS Transplantation Congress 2018

Scientific Spring Meeting

Nederlandse Transplantatie Vereniging

Belgian Transplantation Society

March 15th-16th, 2018

De Doelen, Rotterdam

organized in collaboration with

Erasmus MC
Universitair Medisch Centrum Rotterdam

Content

Welcome to Rotterdam

Rotterdam is home to the largest harbor of Europe and a bustling city with a lot of modern architecture.

Welcome to the first combined Annual Congress of the Belgium and Dutch Transplantation Societies. For the first time in history both societies jointly organized a meeting with the theme "Crossing boarders" which challenge the limits of existing knowledge and to venture into unchartered territory for which collaboration and cooperation of individuals from a wide range of professional backgrounds is essential.

With many invited speakers, concurrent and posters sessions the meeting will be a fantastic opportunity to cross existing boarders. Central to the program are the interactions with colleagues from both countries as well as hearing the latest cutting edge developments in transplantation science. Highlights include lectures about breakthroughs and current challenges, lectures on organ donation, transplantation immunology and patient perspective. We end the meeting with presentations from winners of the Jon van Rood Award of the Dutch society and the PhD Award of the Belgium Society.

Do not miss our social event at the boat *ss Rotterdam*. The steamship *ss Rotterdam* is the largest ocean-going steamer ever built in the Netherlands. We promise you a spectacular evening with good food, and opportunities to get in touch with colleagues and catch up with old friends.

Enjoy your time in our great city of Rotterdam!

Prof. dr. Herold Metselaar
Department of Hepatology

Prof. dr. Carla Baan
Department of Internal Medicine

Erasmus MC
The Rotterdam Transplant Group

Organising Committee 2018

Erasmus MC
Carla Baan
Herold Metselaar
Martin Hoogduijn
Marian Clahsen-van Groningen
Karlien Cransberg
Teun van Gelder
Hanneke Hagenaars
Rogier Hoek
Jeroen de Jonge
Luc van der Laan
Louise Maasdam
Jacqueline van de Wetering
Olivier Manintveld

Bestuursleden Belgium Transplant Society
Olivier Detry
Geert Roeyen
Olivier Van Caenegem
Nicolas Meurisse

Bestuursleden Nederlandse Transplantatie Vereniging
Marlies Reinders
Martin Hoogduijn
Jeroen de Jonge
Henri Leuvenink
Henny Otten
Coby Annema-de Jong
Ed van de Graaff

Vanuit het secretariaat NTV te Haarlem
Tineke Flietstra
Marie José van Gijtenbeek
Melanie IJzelenberg
Lokke Stevens

Participerende patiëntenverenigingen
Harten Twee
Nederlandse Leverpatiënten Vereniging
Nierpatiënten Vereniging Nederland
Nederlandse Cystic Fibrosis Stichting

Accreditation points - NTV

Nederlandse Vereniging voor Cardiologie *(aangevraagd)*	
Nederlandse Vereniging voor Heelkunde	11
Nederlandse Vereniging voor Immunologie	11
Nederlandse Internisten Vereniging	11
Nederlandse Vereniging voor Kindergeneeskunde *(aangevraagd)*	
Nederlandse Vereniging van Artsen voor Longziekten en Tuberculose	11
Nederlandse Vereniging van Maag-Darm-Leverartsen	11
Nederlandse Vereniging voor Thoraxchirurgie	11
Nederlandse Vereniging voor Immunologie	12
V&VN, kwaliteitsregister algemeen	11
V&VN, kwaliteitsregister, deskundigheidsgebied Dialyse	11
V&VN, verpleegkundig specialisten register	11

CME points - BTS

to be announced

De Doelen, Rotterdam

Kruisplein 40
entrance: Willem Burgerzaal
3012 CL Rotterdam
Tel: (+31) 010 – 2171717
Website:
http://www.dedoeleniccrotterdam.nl/

Public transport

De Doelen is located at 1 min walking distance from Rotterdam Central Station. Buses, trains, metros and trams all stop at the Central Station.

Walking route from Central Station

Here you find the walking route from the Central Station to De Doelen, entrance Willem Burger Complex.

Parking

There are several secure car parks in the direct vicinity of the venue.
For Parking De Doelen sells tickets with a reduced price for the parking garage at Schouwburgplein 1 and 2. Parking Kruisplein/Schouwburgplein (follow sign P Centraal Station). 6-hrs à € 8,50; 8-hrs à € 12,50; 12-hrs à € 15,00 incl. VAT

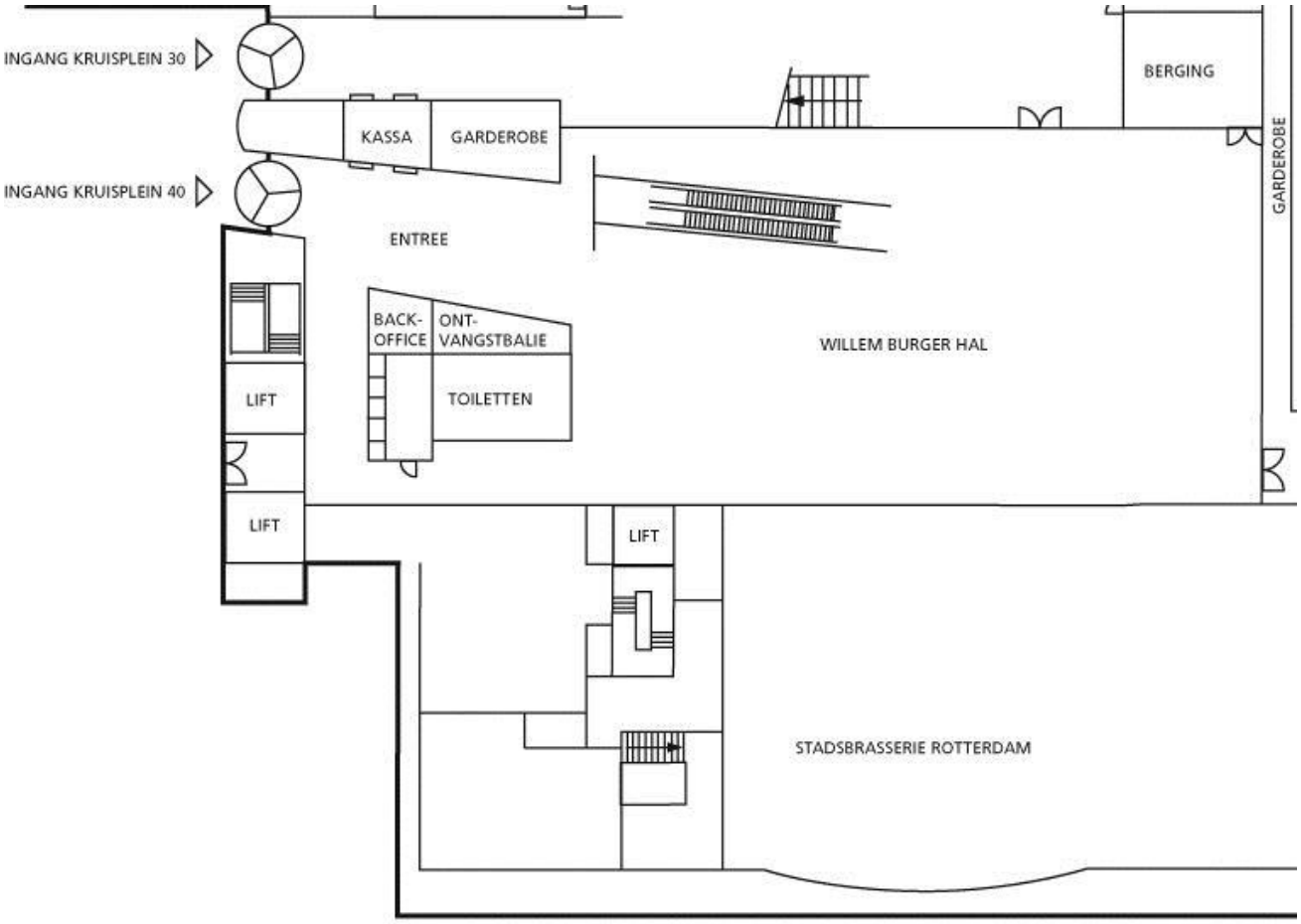
WiFi De Doelen

Transplantation
pass word: Rotterdam

Floor plan De Doelen

Ground floor

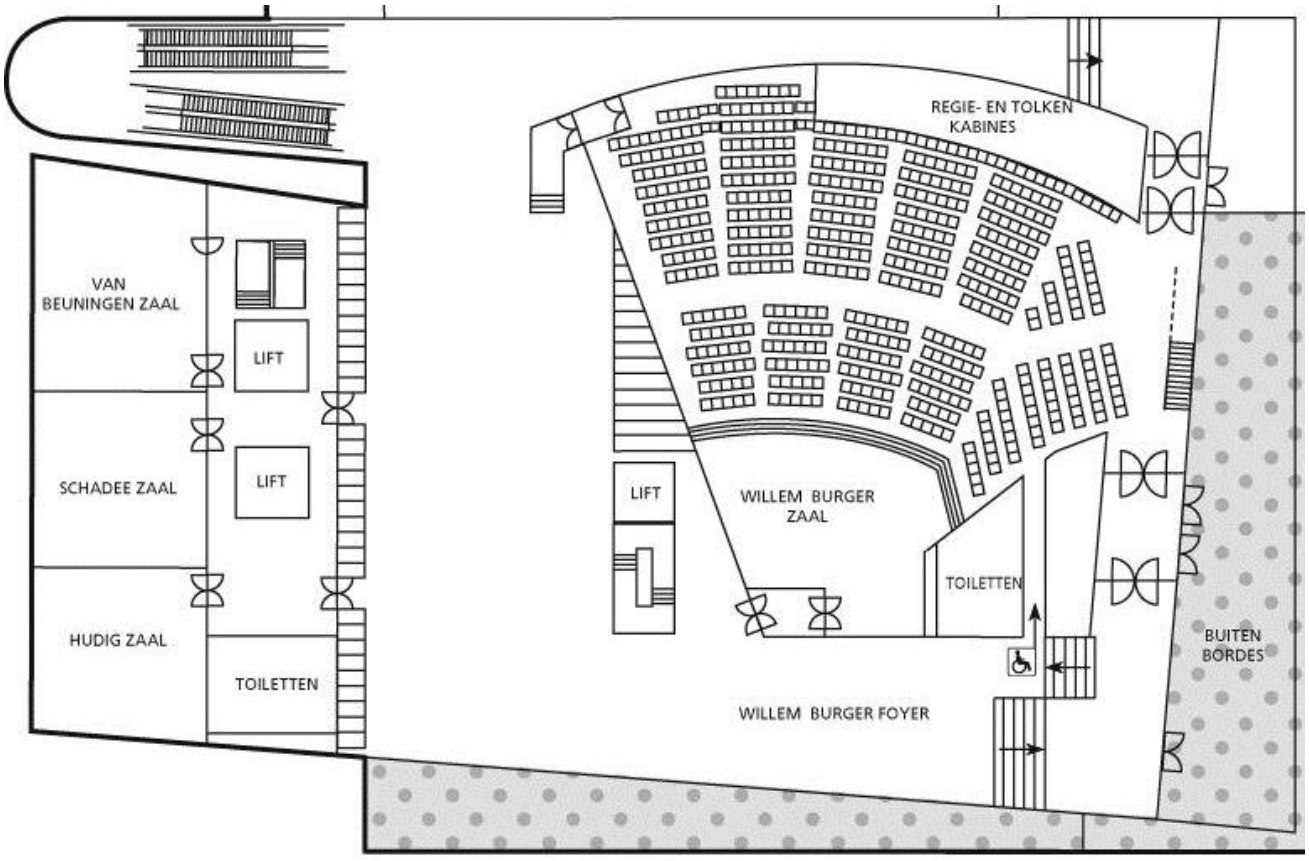
Entrance Kruisplein 40
Willem Burger Hal
Registration desk



Floor plan De Doelen

Third floor

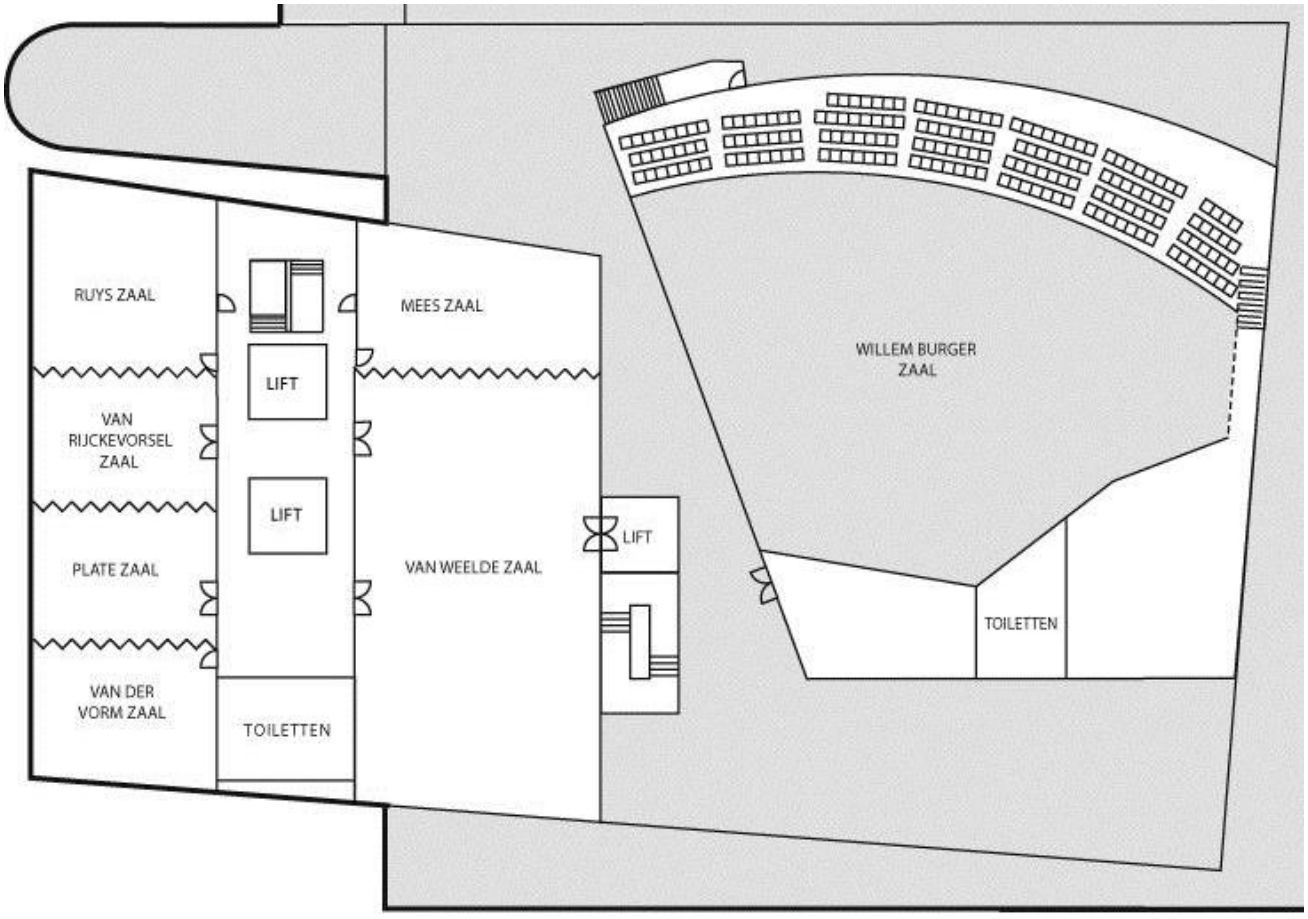
Hudig Zaal
Willem Burger Zaal
Willem Burger Foyer



Floor plan De Doelen

Fourth floor

Van Rijckevorsel Zaal / Ruys Zaal
Van der Vorm Zaal / Plate Zaal
Van Weelde Zaal



Presentations

Presenters of ORAL presentations are requested to hand in their slides in time at the day of their presentation in the Hudig Zaal on the third floor (accessible by elevator from the Willem Burger Hal).

Poster session

The posters are grouped by subject. Posters should be mounted on the poster boards with the corresponding numbers on Thursday no later than 11.30h and removed at the end of the meeting (Friday afternoon). Apart from the official poster session on Thursday and Friday, we envision informal discussions around posters during coffee and tea-breaks in between the oral sessions.

Time and locations of lunches and dinner

Thursday

Lunch: 13.00 – 14.00h Willem Burger Foyer
(there are lunch boxes for participants of the education session at the entrance of the Van Weelde Zaal)

Dinner and transfer
Transfer from De Doelen to ss Rotterdam: 19.00h
Dinner ss Rotterdam: 20.00 – 22.00h
Social Event ss Rotterdam*: 22.00 – 01.00h
Transfer every half hour from ss Rotterdam to De Doelen from 22.00h

*Address ss Rotterdam: 3e Katendrechtse Hoofd 25, Rotterdam

Friday
Lunch: 12.00 – 13.00h Willem Burger Foyer

Assemblies

Thursday March 15, 2018

Assembly Nederlandse Transplantatie Vereniging 17.30
Locatie: Willem Burgerzaal

Assembly Belgium Transplantation Society 17.30
Location: Van Weelde Zaal

Program schedule
Thursday morning March 15th 2018

Thursday	**Willem Burger Zaal**			
9.45 – 9.55	Welcome: Carla Baan, Chair of the Local Organising Committee			
9.55 – 11.00	*Plenary session I: Borders crossed* Introduction of the Belgium and Dutch Transplantation Societies *Marlies Reinders (Leiden, The Netherlands) and Olivier Detry (Liège, Belgium)* Organ transplantation from a historical perspective: breakthroughs and current challenges *Liver: Jean Bernard Otte, (Louvain, Belgium); Kidney: Willem Weimar (Rotterdam, The Netherlands)* Immunosuppression – meeting unmet needs *Teun van Gelder (Rotterdam, The Netherlands)*			
11.00 – 11.30	Coffee break			
	Van Weelde Zaal	**Willem Burger Zaal**	**Van de Vorm/Plate Zaal**	**Van Rijck/Ruys Zaal**
11.30 – 13.00	*Parallel session 2:* Basic / translational research	*Parallel session 3:* Clinical	*Parallel session 4:* Nursing	*Parallel session 5:* Clinical
13.00 – 14.00	Lunch break			
	Van Weelde Zaal			
13.00 – 14.00	*Teaching session:* 'Recent advances in Xenotransplantation' *Heiner Niemann, Friedrich-Loeffler-Institut, Neustadt* 'Autophagy in Transplantation – Cleaning up the Cellular Mess in Organ Grafts' *Jean-Paul Decuypere, KUL Leuven*			

Program schedule
Thursday afternoon March 15th 2018

Thursday	**Willem Burger Zaal**				
14.00 – 15.15	*Plenary session 6*: New and different borders Improving deceased organ donation - present and future: *Henri Leuvenink (Groningen, The Netherlands)* Organ donation after euthanasia: *Dirk Ysebaert (Antwerp, Belgium)* Non heart beating donor heart transplantation: Challenges and opportunities: *Olivier Manintveld (Rotterdam, The Netherlands)* Ethical dilemmas in transplantation: *Eline Bunnik (Rotterdam, The Netherlands)*				
	Willem Burger Foyer				
15.15 – 15.45	*Poster session 1:* Nursing	*Poster session 2:* Clinical	*Poster session 3:* Clinical	*Poster session 4:* Basic/translational research	*Poster session 5:* Donation
15.45 – 16.15	Coffee break				
	Van Weelde Zaal	**Willem Burger Zaal**	**Van der Vorm/Plate Zaal**	**Van Rijck/Ruys Zaal**	
16.15 – 17.15	*Parallel session 7:* Basic / translational research	*Parallel session 8:* Clinical	*Parallel session 9:* Nursing	*Parallel session 10:* Transplant coordination	
	Willem Burger Zaal		**Van Weelde Zaal**		
17.30 – 18.30	General Assembly NTV, followed by Award Session		General Assembly BTS		
19.00	Transfer with buses from De Doelen to the ss Rotterdam				
20.00 – 01.00	Social evening at the ss Rotterdam				

Program schedule
Friday morning March 16th 2018

Friday	**Willem Burger Zaal**			
09.00 – 10.00	*Plenary 11: Crossing borders in basic & translational science* The Emerging Role of DNA Methylation in Kidney Transplantation: A Perspective: *Line Heylen (Leuven, Belgium)* Implementation of miRNAs as predictors of rejection into daily practice: *Abraham Shaked (Philadelphia, USA)* iBOX a next step to predicting long-term allograft failure: *Alexander Loupy (Paris, France)*			
10.00 – 10.30	Coffee break and poster session II			
	Willem Burger Foyer			
10.00 – 10.30	*Poster session 6:* Clinical	*Poster session 7:* Clinical	*Poster session 8:* Basic	*Poster session 9:* Donation
	Van Weelde Zaal	**Willem Burger Zaal**	**Van der Vorm/Plate Zaal**	**V Rijck/Ruys Zaal**
10.30 – 12.00	*Parallel session 12:* Basic/translational research	*Parallel session 13:* Clinical	*Parallel session 14:* Transplant coordination casus session	*Parallel session 15:* Clinical
12.00 – 13.00	Lunch break			

Program schedule
Friday afternoon March 16th 2018

Friday	**Willem Burger Zaal**		
13.00 – 14.00	*Plenary session 16: "Same borders for doctors and patients?" (patiënten zijn welkom bij deze sessie)*		
	V Rijck/Ruys Zaal	**Willem Burger Zaal**	**Van Weelde Zaal**
14.00 – 15.15	*Parallel session 17:* Young Professionals in Transplantation	*Parallel session 18:* Clinical	*Parallel session 19* Nierteam aan huis Patiënten zijn welkom bij deze sessie
15.15 – 15.45	Coffee break		
	Willem Burger Zaal		
15.45 – 16.30	Award session – Jon van Rood award NTV and Belgium best PhD award		
16.30 – 16.45	Closing by Carla Baan, Chair of the Local Organizing Committee		

Plenary Session 1 — Willem Burger Zaal

Chairs: *Prof. dr. Marlies E.J. Reinders, President NTV, nephrologist, LUMC*
Prof. dr. Olivier Detry, President BTS, Transplant Surgeon, ULG

Topic: Borders crossed

Language: *English*

09.45 Welcome
Prof. dr. Carla C. Baan, Erasmus MC, Rotterdam, The Netherlands

09.55 Introduction of the Belgium and Dutch Transplantation Societies
Prof. dr. Marlies Reinders, LUMC, Leiden,The Netherlands
Prof. dr. Olivier Detry, ULG, Liège, Belgium

10.15 Organ transplantation from a historical perspective: Breakthroughs and current challenges
Liver: Prof. dr. Jean Bernard Otte, UCL, Louvain-en-Woluwe, Belgium
Kidney: Prof. dr. Willem Weimar, Erasmus MC, Rotterdam, The Netherlands

10.45 Immunosuppression – meeting unmet needs
Prof. dr. Teun van Gelder, Erasmus MC, Rotterdam, The Netherlands

11.00 Coffee break

Parallel session 2 - Basic / translational research Van Weelde Zaal

Chairs: *Dr. Luc J.W. van der Laan, scientist, Erasmus MC, Rotterdam*
Prof. dr. Xavier Rogiers, Surgical Director of the Transplantcenter, UZ Gent, België and vice-president of the ET-Board.

Language: *English, presentation time 7 min., discussion 3 min.*

11.30 Bile duct regeneration: Characterization of human bile duct derived organoids (p. 64)
K. Burka[1], M.M.A. Verstegen[1], H.P. Roest[1], M. de Wolf[1], M.J.C. Bijvelds[2], H. Gehart[3], J. de Jonge[1], H.R. de Jonge[2], J.N.M. IJzermans[1], L.J.W. van der Laan[1]. [1]Dept. of Surgery, Erasmus Medical Center, Rotterdam. [2]Dept. of Gastroenterology, Erasmus Medical Center, Rotterdam. [3]Hubrecht Institute, Utrecht, The Netherlands.

11.40 Mitochondrial Damage-Associated Molecular Patterns (MTDs) Released from Hepatic Ischemia and Reperfusion Induce Inflammatory Responses (p. 65)
Q. Hu[1], L. Westhaver[1], J. Marshall[2], I.P.J. Alwayn[3]. [1]Dept. of Pathology, Dalhousie University, Halifax, Canada. [2]Dept. of Microbiology & Immunology, Dalhousie University, Halifax, Canada. [3]Dept. of Transplant Surgery, LUMC, Leiden, The Netherlands.

11.50 Urinary C5b-9 is an Independent Predictor of Graft Failure in Renal Transplant Recipients (p. 66)
R.G.M. Lammerts, M.F. Eisenga, M. Alyami, M.A.J. Seelen, M.R. Daha, J. van den Born, S.J.L. Bakker, S.P. Berger, on behalf of the COMBAT Consortium. Dept. of Nephrology, University Medical Center Groningen, Groningen, The Netherlands.

12.00 Immunomodulation by therapeutic mesenchymal stromal cells (MSC) is triggered through phagocytosis of MSC by monocytic cells (p. 67)
J.M. Sierra Parraga[1], S.F.H. de Witte[1], F. Luk[1], M. Gargesha[2], A. Merino[3], S.S. Korevaar[4], A.S. Shankar[1], L. O'Flynn[5], S.J. Elliman[5], D. Roy[2], M.G.H. Betjes[3], P.N. Newsome[6], C.C. Baan[3], M.J. Hoogduijn[3]. [1]Dept. of Internal Medicine, Erasmus Medical Center, Rotterdam, The Netherlands. [2]Bio-InVision Inc, Mayfield village, Ohio, United States of America. [3]Dept. of internal Medicine, Erasmus Medical Center, Rotterdam, The Netherlands.

[4]Dept. of Nephrology and Transplantation, Erasmus Medical Center, Rotterdam, The Netherlands. [5]Orbsen Therapeutics Ltd, Galway, Ireland. [6]Liver Biomedical Research Unit at University Hospitals Birmingham, Birmingham, The Netherlands.

12.10 Impact of different dynamic preservation strategies on early renal function and physical machine perfusion parameters in a porcine DCD auto-transplant model (p. 68)

T. Darius[1], P. Gianello[2], A. Buemi[1], M. de Meyer[1], M. Mourad[1]. [1]Dept. of Surgery and Abdominal Transplant Unit, University Clinics Saint Luc, Brussels, Belgium. [2]Pôle de Chirurgie Expérimentale et Transplantation, Université catholique de Louvain, Brussels, Belgium.

12.20 Towards graft engineering using decellularized porcine liver scaffolds and recellularization with human liver organoids (p. 69)

J. Willemse, M.M.A. Verstegen, L.J.W. van der Laan, J. de Jonge. Dept. of Surgery, Erasmus Medical Center, Rotterdam, The Netherlands

12.30 Tranilast pre-treatment attenuates intestinal ischemia reperfusion Injury (p. 70)

E. Canovai[1], L. Ceulemans[1], T. Vanuytsel[2], G. de Hertogh[1], R. Farré[3], T. Vanuytsel[1]. [1]Leuven Intestinal Failure and Transplantation Center, UZ Leuven, Leuven. [2]Leuven Intestinal Failure and Transplantation Center, Leuven. [3]Translationeel Onderzoek van Gastro-enterologische Aandoeningen, KU Leuven, Leuven, Belgium.

12.40 MicroRNA-126 measurements in right ventricular endomyocardial biopsies of heart transplant recipients with and without cardiac allograft vasculopathy (p. 71)

W.A. Heggermont, L. Delrue, K. Dierickx, J. Bartunek, M. Vanderheyden. Cardiovascular Research Center, OLV Hospital Aalst, Aalst, Belgium.

12.50 Renal allograft transcription analysis with NanoString® nCounter® analysis system reveals similar signature of acute T cell mediated rejection in patients treated with tacrolimus or belatacept (p. 72)

M. van der Zwan[1], C.C. Baan[1], R.B. Colvin[2], R.N. Smith[2], R.A. White[2], D. Ndishibandi[2], G.N. de Graav[1], M.C. Clahsen-van Groningen[3], D.A. Hesselink[1]. [1]Dept. of internal medicine, Erasmus Medical Center, Rotterdam, The Netherlands. [2]Dept. of pathology, Massachusetts General Hospital/-Harvard Medical School, Massachusetts, United States of America. [3]Dept. of pathology, Erasmus Medical Center, Rotterdam, The Netherlands.

13.00 Lunch break and teaching session

Parallel session 3 – Clinical — Willem Burger Zaal

Chairs: *Prof. dr. Frederike J. Bemelman, nephrologist, AMC, Amsterdam*
Prof. dr. Karl Martin Wissing, nephrologist, VUB, Brussels

Language: *English, presentation time 7 min., discussion 3 min.*

11.30 New ways of reporting on Dutch kidney transplantations (p. 73)
M.B.A. Heemskerk[1], A.J. Hoitsma[1], F.J. van Ittersum[2], A.P.J. de Vries[3], A.D. van Zuilen[4], S.P. Berger[5]. [1]Dutch Transplant Foundation, Leiden. [2]Dept. of nephrology, VU Medical Center, Amsterdam. [3]Leiden Transplant Center, Leiden University Medical Center, Leiden. [4]Dept. of nephrology, University Medical Center Utrecht, Utrecht. [5]Dept. of nephrology, University Medical Center Groningen, Groningen, The Netherlands.

11.45 Shifting paradigms in Intestinal Transplantation: from rescue therapy to standard treatment? (p. 74)
E. Canovai[1], L. Ceulemans[1], I. Hoffman[2], G. de Hertogh[1], M. Hiele[1], M. Sainz-Bariga[1], D. Monbaliu[1], I. Jochmans[1], T. Vanuytsel[1], J. Pirenne[1]. [1]Leuven Intestinal Failure and Transplantation Center, UZ Leuven, Leuven, Belgium. [2]Pediatric Dept., UZ Leuven, Leuven, Belgium.

11.55 Time needed for removal of the liver after in situ cold perfusion in donation after circulatory death donors is an independent risk factor for the development of biliary strictures and early graft loss after transplantation (p. 75)
O.B. van Leeuwen[1], M. van Reeven[2], M. Fujiyoshi[1], V.E. de Meijer[1], R.H.J. de Kleine[1], M.T. de Boer[1], J. de Jonge[2], J.N.M. IJzermans[2], W.G. Polak[2], R.J. Porte[1]. [1]Dept. of Surgery, University Medical Center Groningen, Groningen. [2]Dept. of Surgery, Erasmus Medical Center, Rotterdam, The Netherlands.

12.05 Combined Calorie and Protein Restriction in Live Kidney Donors Improves Kidney Function in Both Donors and Transplant Recipients (p. 76)
F. Jongbloed[1], R.W.F. de Bruin[1], P. Beekhof[2], P. Wackers[2], D.A. Hesselink[3],

H. van Steeg[2], J.H.J. Hoeijmakers[4], M.E.T. Dollé[5], J.N.M. IJzermans[1]. [1]Dept. of Surgery, Erasmus Medical Center, Rotterdam. [2]National Institute for Public Health and the Environment, Bilthoven. [3]Dept. of Internal Medicine, Erasmus Medical Center, Rotterdam. [4]Dept. of Genetics, Erasmus Medical Center, Rotterdam. [5]National Institute for Public Health and the Environment, Bilthoven, The Netherlands.

12.15 The impact of cold ischemia time on outcomes of deceased donor kidney transplantation: does every hour count? (p. 77)

H. Peters-Sengers[1], J.H.E. Houtzager[2], M.M. Idu[2], M.B.A. Heemskerk[3], L.W.E. van Heurn.[4], J.J. Homan van der Heide[5], S.P. Berger[6], J. Kers[7], T.M. van Gulik[2], F.J. Bemelman[5]. [1]Dept. of Nephrolpgy, Academic Medical Center, Amsterdam. [2]Dept. of Surgery, Academic Medical Center, Amsterdam. [3]Dutch Transplant Foundation (NTS), Leiden. [4]Dept. of Paediatric Surgery, Academic Medical Center, Amsterdam. [5]Dept. of Nephrology, Academic Medical Center, Amsterdam. [6]Dept. of Nephrology, University Medical Center Groningen, Groningen. [7]Dept. of Pathology, Academic Medical Center, Amsterdam, The Netherlands.

12.25 Improved risk stratification of pretransplant donor specific Antibodies with epitope analyses (p. 78)

E.G. Kamburova[1], B.W. Wisse[1], A. van der Meer[2], W.A. Allebes[2], I. Joosten[2], L.B. Hilbrands[3], M.C. Baas[3], E. Spierings[1], C.E. Hack[1], F.E. van Reekum[4], A.D. van Zuilen[4], M.C. Verhaar[4], M.L. Bots[5], A.C.A.D. Drop[1], L. Plaisier[1], M.A.J. Seelen[6], J.S.F. Sanders[6], B.G. Hepkema[7], A.J. Lambeck[7], L.B. Bungener[7], C. Roozendaal[7], M.G.J. Tilanus[8], C.E. Voorter[8], L. Wieten[8], E.M. van Duijnhoven[9], M. Gelens[9], M.H.L. Christiaans[9], F.J. van Ittersum[10], A. Nurmohamed[10], N.M. Lardy[11], W. Swelsen[11], K.A. van der Pant[12], N.C. van der Weerd[12], I.J.M. ten Berge[12], F.J. Bemelman[12], A. Hoitsma[13], P.J.M. van der Boog[14], J.W. de Fijter[14], M.G.H. Betjes[15], S. Heidt[16], D.L. Roelen[16], F.H. Claas[16], H.G. Otten[1]. [1]Laboratory of Translational Immunology, University Medical Center Utrecht, Utrecht. [2]Laboratory Medicine, Lab. Medical Immunology, Radboud University Medical Center, Nijmegen. [3]Dept. of Nephrology, Radboud University Medical Center, Nijmegen. [4]Dept. of Nephrology, University Medical Center Utrecht, Utrecht. [5]Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht. [6]Dept. of Nephrology, University of Groningen, UMC Groningen, Groningen. [7]Dept. of Laboratory Medicine, University of Groningen, UMCG, Groningen. [8]Dept. of Transplantation Immunology, Tissue Typing Laboratory, Maastricht UMC, Maastricht. [9]Dept. of Internal Medicine, Division of Nephrology, Maastricht UMC, Maastricht. [10]Dept. of Nephrology, VU

Medical Center, Amsterdam. [11]Dept. of Immunogenetics, Sanquin, Amsterdam. [12]Renal Transplant Unit, Dept. of Internal Medicine, Academic Medical Center, Amsterdam. [13]Dutch Organ Transplant Registry (NOTR), Dutch Transplant Foundation (NTS), Leiden. [14]Dept. of Nephrology, Leiden University Medical Center, Leiden. [15]Dept. of Internal Medicine, Nephrology, Erasmus Medical Center, Rotterdam. [16]Dept. of Immunohematology and Blood Transfusion, Leiden University Medical Center, Leiden, The Netherlands.

12.35 Double J is superior to externally draining ureteric stent in enhancing recovery after living donor kidney transplantation (p. 79)

M.H.D. Bruintjes[1], F.C.H. d' Ancona[2], J.C.M. Kusters[2], L.B. Hilbrands[3], M.C. Warlé[1]. [1]Dept. of Surgery, Radboud University Medical Center, Nijmegen. [2]Dept. of Urology, Radboud University Medical Center, Nijmegen.[3]Dept. of Nephrology, Radboud University Medical Center, Nijmegen, The Netherlands.

12.45 The rise in serum creatinine shortly after kidney donation is correlated with skeletal muscle mass as measured by CT image analysis. (p. 80)

L.C. van Laar[1], S.A. Nurmohamed[1], A. van der Werf[2], T. Hoekstra[1], J.W. van der Heijden[1]. [1]Dept. of Nephrology, VU Medical Center, Amsterdam. [2]Dept. of nutrition and dietetics, VU Medical Center, Amsterdam.

13.00 Lunch break and teaching session

Parallel session 4 – Nursing Van der Vorm/Plate Zaal

Chairs: *Louise Maasdam, verpleegkundig specialist, Erasmus MC, Rotterdam*
Lara van Elshove, verpleegkundig specialist, Erasmus MC, Rotterdam

Spreektaal: *Nederlands.*

11.30 Opening

11.35 Presentatie Winnaar Innovatie Kwaliteitsprijs 2017:
Marleen van Buren, verpleegkundig specialist, Erasmus MC, Rotterdam, NL

11.50 Keynote presentatie I:
Ziekenhuis infectiepreventie in België
Carine Breunig, verpleegkundige UZ Leuven, België
Mathilde Dehairs, verpleegkundige UZ Leuven, België

Keynote presentatie II:
Ziekenhuis infectiepreventie in Nederland
Femke Mollema, internist-infectioloog, Haaglanden MC, Den Haag, NL

12.50 Samenvatting

13.00 Lunch break and teaching session

Parallel session 5 - Clinical — Van Rijck/Ruys Zaal

Chairs: *Prof. dr. Anja Geerts, hepatologist, UG, Gent*
Dr. J. de Jonge, transplant surgeon, Erasmus MC, Rotterdam

Language: *English, presentation time 7 min., discussion 3 min.*

11.30 Resuscitation and viability testing of initially declined livers using sequential hypo- and normothermic machine perfusion with an acellular fluid: First results of the DHOPE-COR-NMP Trial (p. 81)
Y. de Vries[1], A.P.M. Matton[1], S.A. Karangwa[1], O.B. van Leeuwen[1], M.W.N. Nijsten[2], H.J. de Kleine[1], A.P. van den Berg[3], H. Blokzijl[3], F. van der Heide[3], V.E. de Meijer[1], T.C.M.A. Schreuder[3], P. Meyer[4], M. Fujiyoshi[1], M.T. de Boer[1], R.J. Porte[1]. [1]Dept. of Surgery, University Medical Center Groningen, Groningen. [2]Dept. of Clinical Care, University Medical Center Groningen, Groningen. [3]Dept. of Gastroenterology and Hepatology, University Medical Center Groningen, Groningen. [4]Dept. of Anesthesiology, University Medical Center Groningen, Groningen, The Netherlands.

11.40 Immunosuppressive drug withdrawal late after liver transplantation leads to an improvement of lipid metabolism and liver function (p. 82)
A.A. Duizendstra[1], R.J. de Knegt[1], M.G.H. Betjes[2], S. Coenen[1], S. Darwish Murad[1], R.A. de Man[1], H.J. Metselaar[3], N.H.R. Litjens[4], J. Kwekkeboom[1]. [1]Dept. Gastroenterology and Hepatology, Erasmus Medical Center, Rotterdam. [2]Dept. Internal Medicine div Nefrology and Transplantation, Erasmus Medical Center, Rotterdam. [3]Dept. of Gastroenterology and Hepatology, Erasmus Medical Center, Rotterdam. [4]Dept. Internal Medicine div Nefrology and Transplantation, Erasmus Medical Center, Rotterdam, The Netherlands.

11.50 Production of Physiologically Relevant Quantities of Hemostatic Proteins During Normothermic Machine Perfusion of Human Livers. (p. 83)
S.A. Karangwa[1], J. Adelmeijer[2], A.P.M. Matton[1], V.E. de Meijer[1], J.A. Lisman[1], R.J. Porte[1]. [1]Section of HPB Surgery and Liver Transplantation, Dept. of Surgery, UMCG, Groningen. [2]Surgical Research Laboratory, Dept. of Surgery UMCG, Groningen, The Netherlands.

12.00 Phenotype and long-term outcome of the patients with histology of ABMR but without detectable donor-specific HLA antibodies (p. 84)
A. Senev[1], V. van Sandt[1], L. Daniëls[1], E. Lerut[2], D. Kuypers[3], M. Coemans[4], M.P. Emonds[1], M. Naesens[3]. [1]Histocompatibility and Immunogenetics Laboratory, Belgian Red Cross-Flanders, Mechelen. [2]Dept. of Pathology, University Hospitals Leuven, Leuven. [3]Dept. of Nephrology and Renal Transplantation, University Hospitals Leuven, Leuven. [4]Dept. of Microbiology and Immunology, KU Leuven, Leuven, Belgium.

12.10 Predictors for Adverse Pregnancy Outcomes in the Dutch Renal Transplant Population (p. 85)
M.E. Gosselink[1], M. van Buren[2], T.K.J. Groenhof[3], H. van Hamersvelt[4], J. van de Wetering[5], A.T. Lely[1]. [1]Dept. of Obstetrics and Gynaecology, University Medical Center Utrecht, Utrecht. [2]Dept. of Internal medicine, Erasmus Medical Center, Rotterdam. [3]Dept. of Epidemiology Julius Center, University Medical Center Utrecht, Utrecht. [4]Dept. of Nephrology, Radboud University Medical Center, Nijmegen. [5]Dept. of Nephrology, Erasmus Medical Center, Rotterdam, The Netherlands.

12.20 Favorable outcomes after heart transplantation in children: 18 years' experience of the national Dutch program at Erasmus MC (p. 86)
S. Roest[1], M.H. van der Meulen[2], U.S. Kraemer[3], M. van Osch-Gevers[2], P.C. van de Woestijne[4], A.J.J.C. Bogers[4], M. Dalinghaus[2]. [1]Dept. of Cardiology, Erasmus Medical Center, Rotterdam. [2]Dept. of Pediatric Cardiology, Erasmus MC-Sophia's Children's Hospital, Rotterdam. [3]Dept. of Pediatric Intensive Care, Erasmus MC-Sophia's Children's Hospital, Rotterdam. [4]Dept. of Cardio-thoracic Surgery, Erasmus Medical Center, Rotterdam, The Netherlands.

12.30 Successful clinical experience with extended normothermic ex-vivo lung perfusion (> 8 hours) (p. 87)
L.J. Ceulemans[1], A. Neyrinck[2], R. Vos[3], A. Stanzi[1], M. Boada[1], A. Martens[2], S. Ordies[2], K. Degezelle[4], G. Verleden[3], D. van Raemdonck[1]. [1]Thoracic Surgery, University Hospitals Leuven, Leuven. [2]Anesthesiology, University Hospitals Leuven, Leuven. [3]Pneumology, University Hospitals Leuven, Leuven. [4]Perfusion, University Hospitals Leuven, Leuven, Belgium.

12.40 The evolution of pediatric liver transplantation in the Netherlands over the past two decades (p. 88)
M.J.M. Werner[1], R.H.J. de Kleine[1], F.A.J.A. Bodewes[2], M.T. de Boer[1], K.P. de Jong[1], V.E. de Meijer[1], R. Scheenstra[2], E. Sieders[1], H.J. Verkade[2], R.J.

Porte[1]. [1]Dept. of Hepatobiliary Surgery and Liver Transplantation, UMC Groningen, Groningen. [2]Dept. of Pediatric Gastroenterology and Hepatology, UMC Groningen, Groningen, The Netherlands.

12.50 Predictive Value of Right Heart Hemodynamics for Acute Kidney Injury After Heart Transplantation (p. 89)
G. Guven[1], M. Brankovic[1], A. Constantinescu[1], J. Brugts[1], D. Hesselink[2], S. Akin[1], A. Struijs[3], O. Birim[4], C. Ince[3], O. Manintveld[1], K. Caliskan[1]. [1]Dept. of Cardiology, Erasmus Medical Center, Rotterdam. [2]Dept. of Internal Medicine, Erasmus Medical Center, Rotterdam. [3]Dept. of Intensive Care, Erasmus Medical Center, Rotterdam. [4]Dept. of Cardiothoracic Surgery, Erasmus Medical Center, Rotterdam, The Netherlands.

13.00 Lunchbreak and teaching session

Teaching session — Van Weelde Zaal

Chairs: *Prof. dr. Henri Leuvenink, scientist, UMC Groningen*
Dr. Coby H. Annema-de Jong, senior reseacher, UMC Groningen

Language: *English*

13.00 'Recent advances in Xenotransplantation'
Prof. dr. Heiner Niemann, Friedrich-Loeffler-Institut, Neustadt, Germany

'Autophagy in Transplantation – Cleaning up the Cellular Mess in Organ Grafts'
Prof. dr. Jean-Paul Decuypere, KUL Leuven, Belgium

14.00 End of teaching session

Plenary session 6 — Willem Burger Zaal

Chairs: *Prof. dr. Robert J. Porte, transplant surgeon, UMC Groningen*
Prof. dr. O. Van Caenegem, cardiologist, UCL, Louvain-en Woluwe

Thema: New and different Borders

Language: *English*

14.00 Improving deceased organ donation – present and future
Prof. dr. Henri Leuvenink, UMC Groningen

14.15 Organ Donation after Euthanasia
Prof. dr. Dirk Ysebaert, Antwerp University Hospital, Antwerp

14.30 Non heart beating donor heart transplantation:
Challenges and opportunities
Dr. Olivier Manintveld, Erasmus MC, Rotterdam

14.45 Ethical dilemmas in transplantation
Dr. Eline Bunnik, Erasmus MC, Rotterdam

15.00 End of program

15.15 Moderated poster sessions in Willem Burger Foyer

15.45 Coffee break

Poster session I - Nursing — Willem Burger Foyer

Moderator: *Dr. Coby H. Annema, verpleegkundig onderzoeker, UMC Groningen*

Spreektaal: *Nederlands, spreektijd 3 minuten, discussietijd 2 minuten.*

15.15 - 15.35

1. Promoting Medication AdheRence and Self-management among kidney transplant recipients (MARS-trial): the development of an intervention protocol
D.K. Beck[1], M. Tielen[1], S. Ismail[2], J. van de Wetering[1], T. van Gelder[1], C. Boonstra[2], J. Versteegh[3], K. Cransberg[3], W. Weimar[1], J.J. van Busschbach[2], J.L.C.M. van Saase[1], E.K. Massey[1]. [1]Dept. of Internal Medicine, Erasmus Medical Center, Rotterdam. [2]Dept. of Medical Psychology & Psychotherapy, Erasmus Medical Center, Rotterdam. [3]Dept. of Pediatric Nephrology, Erasmus Medical Center - Sophia Childrens Hospital, Rotterdam, The Netherlands.

2. Familieparticipatie bij levertransplantatie patiënten
D.M. Gosker-Epskamp[1], L.M.N. de With[1]. [1]Dept of HPB Surgery and livertransplant, UMCG, Groningen, The Netherlands.

3. Levende nierdonatie: hoe tevreden zijn de donoren?
H.J. Kloke[1], C. van de Weerd[1], D.B. Pilzecker[1], C.W. Hooghof[1], F.C.H. D'Ancona[2], J.F. Langenhuijsen[2], J.C.M. Kusters[2], E.M. Ommen[1], P.H.M.M. Dooper[1]. [1]Dept. of Nephrology, Radboud University Medical Center, Nijmegen. [2]Dept. of Urology, Radboud University Medical Center, Nijmegen, The Netherlands.

4. The ELPAT living organ donor Psychosocial Assessment Tool (EPAT): from 'what' to 'how' of psychosocial screening
E.K. Massey[1], L. Timmerman[1], S.Y. Ismail[2], N. Duerinckx[3], A. Lopes[4], H. Maple[5], I. Mega[6], C. Papachristou[7], F. Dobbels[3]. [1]Dept. of Internal Medicine, Erasmus MC, Rotterdam, The Netherlands. [2]Dept. of Psychiatry, Erasmus MC, Rotterdam, The Netherlands. [3] Dept. of Public Health and Primary Care, KU Leuven, Leuven, Belgium. [4]Centro Hospitalar do Porto, Porto, Portugal. [5]Guy's and St. Thomas NHS, London, United Kingdom. [6]Hospital Curry Cabral, Lisbon, Portugal. [7]Dept. of Psychosomatic Medicine, Charité-Universitätsmedizin, Berlin, Germany.

Poster session 2 - Clinical **Willem Burger Foyer**

Moderator: Dr. Robert A. Pol, transplant surgeon, UMC Groningen

Language: English, presentation time 3 min., discussion 2 min.

15.15 - 15.45

5. Urological complications following renal transplantation: a cohort study
M.H.D. Bruintjes[1], F.C.H. d' Ancona[2], R.A.R.T. Donders[3], A.J. Hoitsma[4], M.C. Warlé[1]. [1]Dept. of Surgery, Radboud University Medical Center, Nijmegen. [2]Dept. of Urology, Radboud University Medical Center, Nijmegen. [3]Dept. for Health Evidence, Radboud University Medical Center, Nijmegen. [4]Dept. of Nephrology, Radboud University Medical Center, Nijmegen, The Netherlands.

6. The changing epidemiology of deceased liver donors in adult liver transplantation
L.M. Nieuwenhuis[1], M. van Londen[2], M.T. de Boer[1], R.H.J. de Kleine[1], A.P. van den Berg[3], H. Blokzijl[3], R.J. Porte[4], V.E. de Meijer[1]. [1]Dept. of HPB Surgery and Liver Transplantation, UMC Groningen, Groningen. [2]Dept. of Internal Medicine, University Medical Center Groningen, Groningen. [3]Dept. of Gastroenterology and Hepatology, UMC Groningen, Groningen. [4]Dept. of HPB and Liver Transplantation, UMC Groningen, Groningen, The Netherlands.

7. The changing epidemiology of liver donors in pediatric liver transplantation
L.M. Nieuwenhuis[1], M. van Londen[2], M.J.M. Werner[1], R.H.J. de Kleine[1], M.T. de Boer[1], F.A.J.A. Bodewes[3], R.J. Porte[1], V.E. de Meijer[1]. [1]Dept. of HPB Surgery and Liver Transplantation, UMC Groningen, Groningen. [2]Dept. of Internal Medicine, University Medical Center Groningen. [3]Dept. of Pediatric Gastroenterology and Hepatology, University Medical Center Groningen, Groningen, The Netherlands.

8. Single Antigen Bead Cut-offs and their relationship with kidney graft survival

E.G. Kamburova[1], B.W. Wisse[1], A. van der Meer[2], I. Joosten[2], W.A. Allebes[2], L.B. Hilbrands[3], M.C. Baas[3], E. Spierings[1], C.E. Hack[1], F.E. van Reekum[4], A.D. van Zuilen[4], M.C. Verhaar[4], M.L. Bots[5], A.C.A.D. Drop[1], L. Plaisier[1], M.A.J. Seelen[6], J.S.F. Sanders[6], B.G. Hepkema[7], A.J. Lambeck[7], L.B. Bungener[7], C. Roozendaal[7], M.G.J. Tilanus[8], C.E. Voorter[8], L. Wieten[8], E.M. van Duijnhoven[9], M. Gelens[9], M.H.L. Christiaans[9], F.J. van Ittersum[10], A. Nurmohamed[10], N.M. Lardy[11], W. Swelsen[11], K.A. van der Pant[12], N.C. van der Weerd[12], I.J.M. ten Berge[12], F.J. Bemelman[12], A. Hoitsma[13], P.J.M. van der Boog[14], J.W. de Fijter[14], M.G.H. Betjes[15], S. Heidt[16], D.L. Roelen[16], F.H. Claas[16], H.G. Otten[1]. [1]Laboratory of Translational Immunology, University Medical Center Utrecht, Utrecht. [2]Laboratory Medicine, Lab. Medical Immunology, Radboud University Medical Center, Nijmegen. [3]Dept. of Nephrology, Radboud University Medical Center, Nijmegen. [4]Dept. of Nephrology, University Medical Center Utrecht, Utrecht. [5]Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht. [6]Dept. of Nephrology, University of Groningen, UMC Groningen, Groningen. [7]Dept. of Laboratory Medicine, University of Groningen, UMC Groningen, Groningen. [8]Dept. of Transplantation Immunology, Tissue Typing Laboratory, Maastricht UMC, Maastricht. [9]Dept. of Internal Medicine, Division of Nephrology, Maastricht UMC, Maastricht. [10]Dept. of Nephrology, VU Medical Center, Amsterdam. [11]Dept. of Immunogenetics, Sanquin, Amsterdam. [12]Renal Transplant Unit, Dept. of Internal Medicine, Academic Medical Center, Amsterdam. [13]Dutch Organ Transplant Registry (NOTR), Dutch Transplant Foundation (NTS), Leiden. [14]Dept. of Nephrology, Leiden University Medical Center, Leiden. [15]Dept. of Internal Medicine, Nephrology, Erasmus Medical Center, Rotterdam. [16]Dept. of Immunohematology and Blood Transfusion, Leiden University Medical Center, Leiden, The Netherlands.

9. Endogenous Glucocorticoid Metabolites and Mortality in Prednisolone-Treated Renal Transplant Recipients

L.V. de Vries[1], A.C. Timmermans[1], I. Minovic[1], M. van Faassen[2], A.W. Gomes Neto[1], D.J. Touw[3], M.F.C. de Jong[1], A.P. van Beek[4], R.P.F. Dullaart[4], G.J. Navis[1], I.P. Kema[2], S.J.L. Bakker[1]. [1]Dept. of Nephrology, University Medical Center Groningen, Groningen. [2]Dept. of Clinical Chemistry, University Medical Center Groningen, Groningen. [3]Dept. of Clinical Pharmacy, University Medical Center Groningen, Groningen. [4]Dept. of Endocrinology, University Medical Center Groningen, Groningen, The Netherlands.

10. Optimizing kidney preservation with machine perfusion - A comparison between warm and hypothermic machine perfusion of donor kidneys: A systematic review and meta-analysis
Ö. Eryigit[1], J. de Jonge[1], M.J. Hoogduijn[2], M.W.F. van den Hoogen[2], R.W.F. de Bruin[1], J.N.M. IJzermans[1], R.C. Minnee[1]. [1]Dept. of Surgery, Erasmus Medical Center, Rotterdam. [2]Dept. of Nephrology and Transplantation, Erasmus Medical Center, Rotterdam, The Netherlands.

15.45 Coffee break

Poster session 3 - Clinical — Willem Burger Foyer

Moderator: Marije C. Baas, nephrologist, Radboudumc, Nijmegen

Language: English, presentation time 3 min., discussion 2 min.

15.15 - 15.45

11. Combined low vitamin D and vitamin K status is associated with greater risk of premature mortality and transplant failure in stable kidney transplant recipients
A.J. van Ballegooijen[1], J.W.J. Beulens[2], C.A. Keyzer[3], G.J. Navis[3], S.P. Berger[3], M.H. de Borst[3], M.G. Vervloet[1], S.J.L. Bakker[3]. [1]Dept. of Nephrology, VU Medical Center, Amsterdam. [2]Epidemiology and Biostatistics, VU Medical Center, Amsterdam. [3]Dept. of Internal Medicine, UMCG, Groninningen, The Netherlands.

12. Low Vegetable Intake is Associated with High Risk of New-Onset Diabetes After Renal Transplantation
A.W. Gomes Neto[1], M.C.J. Osté[1], E. van den Berg[1], R.O.B. Gans[1], J.M. Geleijnse[2], S.J.L. Bakker[1], G.J. Navis[1]. [1]Dept. of Internal Medicine, University Medical Center Groningen, Groningen. [2]Division of Human Nutrition. Wageningen University & Research., Wageningen, The Netherlands.

13. Dietary Approach to Stop Hypertension (DASH) diet and risk of renal function decline and all-cause mortality in renal transplant recipients
M.C.J. Osté[1], A.W. Gomes-Neto[1], E. Corpeleijn[2], R.O.B. Gans[1], M.H. de

Borst[1], E. van den Berg[1], S.S. Soedamah-Muthu[3], D. Kromhout[2], G.J. Navis[1], S.J.L. Bakker[1]. [1]Dept. of Internal Medicine, University Medical Center Groningen, Groningen. [2]Dept. of Epidemiology, University Medical Center Groningen, Groningen. [3]Dept. of Medical and Clinical Psychology, CoRPS, Tilburg University, Tilburg, The Netherlands.

14. Higher Adherence to the Mediterranean diet is Associated with Lower Risk of Graft Failure in Renal Transplant Recipients

A.W. Gomes Neto, M.C.J. Osté, C.G. Sotomayor, E. van den Berg, R.O.B. Gans, S.J.L. Bakker, G.J. Navis. Dept. of Internal Medicine, University Medical Center Groningen, Groningen, The Netherlands

15. Decreased graft survival of retransplants can largely be explained by increased HLA-immunization

E.G. Kamburova[1], B.W. Wisse[1], I. Joosten[2], W.A. Allebes[2], A. van der Meer[2], L.B. Hilbrands[3], M.C. Baas[3], E. Spierings[1], C.E. Hack[1], F.E. van Reekum[4], A.D. van Zuilen[4], M.C. Verhaar[4], M.L. Bots[5], A.C.A.D. Drop[1], L. Plaisier[1], M.A.J. Seelen[6], J.S.F. Sanders[6], B.G. Hepkema[7], A.J. Lambeck[7], L.B. Bungener[7], C. Roozendaal[7], M.G.J. Tilanus[8], C.E. Voorter[8], L. Wieten[8], E.M. van Duijnhoven[9], M. Gelens[9], M.H.L. Christiaans[9], F.J. van Ittersum[10], A. Nurmohamed[10], N.M. Lardy[11], W. Swelsen[11], K.A. van der Pant[12], N.C. van der Weerd[12], I.J.M. ten Berge[12], F.J. Bemelman[12], A. Hoitsma[13], P.J.M. van der Boog[14], J.W. de Fijter[14], M.G.H. Betjes[15], S. Heidt[16], D.L. Roelen[16], F.H. Claas[16], H.G. Otten[1]. [1]Laboratory of Translational Immunology, University Medical Center Utrecht, Utrecht. [2]Laboratory Medicine, Lab. Medical Immunology, Radboud University Medical Center, Nijmegen. [3]Dept. of Nephrology, Radboud University Medical Center, Nijmegen. [4]Dept. of Nephrology, University Medical Center Utrecht, Utrecht. [5]Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht. [6]Dept. of Nephrology, University of Groningen, UMC Groningen, Groningen. [7]Dept. of Laboratory Medicine, University of Groningen, UMC Groningen, Groningen. [8]Dept. of Transplantation Immunology, Tissue Typing Laboratory, Maastricht UMC, Maastricht. [9]Dept. of Internal Medicine, Division of Nephrology, Maastricht UMC, Maastricht. [10]Dept. of Nephrology, VU Medical Center, Amsterdam. [11]Dept. of Immunogenetics, Sanquin, Amsterdam. [12]Renal Transplant Unit, Dept. of Internal Medicine, Academic Medical Center, Amsterdam. [13]Dutch Organ Transplant Registry (NOTR), Dutch Transplant Foundation (NTS), Leiden. [14]Dept. of Nephrology, Leiden University Medical Center, Leiden. [15]Dept. of Internal Medicine, Nephrology, Erasmus Medical Center, Rotterdam. [16]Dept. of Immunohematology and Blood Transfusion, Leiden University Medical Center, Leiden, The Netherlands.

16. Innovations in transplant education: 3D virtual reality of live kidney donation and transplantation
V.A.L. Huurman[1], A.D. Pieterse[2], F. Luk[2], M.E.J. Reinders[2]. [1]Division of Transplantation, Dept. of Surgery, Leiden University Medical Center, Leiden. [2]Dept. of Internal Medicine/Nephrology, Leiden University Medical Center, Leiden, The Netherlands.

15.45 Coffee break

Poster session 4 - Basic translational research Willem Burger Zaal

Moderator: Manon M.H. Huibers, Clinical Scientist in Molecular Pathology, UMC Utrecht

Language: English, presentation time 3 min., discussion 2 min.

15.15 - 15.40

17. Normothermic machine perfusion of ischaemically damaged porcine kidneys with autologous, allogeneic and human red blood cells
M.B.F. Pool, L. Hartveld, H.G.D. Leuvenink, C. Moers. Dept. of Surgery, Organ Donation & Transplantation, University Medical Center Groningen, Groningen, The Netherlands.

18. High intragenic methylation of SERPINB9, a regulator of cytotoxicity, in T cells as a marker for skin cancer after kidney transplantation
F.S. Peters, A.M.A. Peeters, J. van de Wetering, M.G.H. Betjes, C.C. Baan, K. Boer. Nephrology and Transplantation, Erasmus Medical Center, Rotterdam, The Netherlands

19. Addition of different oxygen concentrations during long-term hypothermic machine perfusion in a clinically relevant porcine donation after circulatory death model.
L.H. Venema[1], A. Brat[1], C. Moers[2], R.J. Ploeg[3], P. Hannaert[4], T. Minor[5], H.G.D. Leuvenink[6]. [1]Faculty of Medical Sciences, Universitary Medical Center Groningen, Groningen, The Netherlands. [2]Organ Donation and Transplantation, University Medical Center Groningen, Groningen, The Netherlands. [3]Nuffield Dept. of Surgical Sciences, University of Oxford, Oxford, United Kingdom. [4]Faculté de Médecine et de

Pharmacie, Université de Poitiers, France. [5]Dept. of Surgical Research/-General Surgery, University Hospital Essen, Germany. [6]Dept. of Surgery, University Medical Center Groningen, Groningen, The Netherlands.

20. Membrane particles generated from mesenchymal stromal cell modulate immune responses by selective targeting of proinflammatory monocytes

A. Merino[1], F. Goncalves[2], F. Luk[1], S.S. Korevaar[1], A. Paz[2], C. Lopez-Iglesias[3], C. Baan[1], M.J. Hoogduijn[1]. [1]Dept. of Internal Medicine, Erasmus Medical Center, Rotterdam, The Netherlands. [2]Experimental Research Center, Hospital de Clínicas de Porto Alegre, Porto alegre, Brazil. [3]Maastricht Multimodal Molecular Imaging Institute M4I, Maastricht, The Netherlands.

21. Targeting the CD40-costimulation pathway by CFZ533 prevents the cross-talk between follicular T helper cells and B cells

R. Kraaijeveld, C.C. Baan, M.W.F. van den Hoogen. Dept. of Internal Medicine, Erasmus Medical Center, Rotterdam, The Netherlands.

15.45 Coffee Break

Poster session 5 – Donation — Willem Burger Zaal

Moderator: Janneke Vervelde, transplantation coordinator, LUMC, Leiden

Language: English, presentation time 3 min., discussion 2 min.

15.15 - 15.35

22. Chronic Inguinal Pain after Living Kidney Donation.

M. Zorgdrager[1], M. van Londen[2], L.B. Westenberg[3], G.J. Nieuwenhuijs[4], S.H. Hofker[3], M.H. de Borst[2], J.F.M. Lange[3], S.J.L. Bakker[2], H.G.D. Leuvenink[3], R.A. Pol[3]. [1]Dept. of Radiology, University Medical Center Groningen, [2]Dept. of Internal Medicine, University Medical Center Groningen, [3]Dept. of Surgery, University Medical Center Groningen, [4]Dept. of Anasthesiology, University Medical Center Groningen, The Netherlands.

23. Additional findings with CT when assessing suitability for living kidney donation

M. Marcel[1], R.C. Minnee[2], J.I. Roodnat[3], T. van den Berg[2], H.G.D. Leuvenink[4], R.A. Pol[5]. [1]Dept. of Radiology, University Medical Center Groningen, Groningen. [2]Dept. of Surgery, Erasmus Medical Center, Rotterdam. [3]Dept. of Nephrology, Erasmus Medical Center, Rotterdam. [4]Division of Transplantation, University Medical Center Groningen, Groningen. [5]Dept. of Surgery, University Medical Center Groningen, Groningen, The Netherlands.

24. Na transplantatie bergen verzetten.

L. Bruinenberg, B.G. Hepkema, S.P. Berger. Groningen Transplantatie Centrum, Universitair Medisch Centrum Groningen, Groningen, The Netherlands.

25. Normothermic regional perfusion in a DCD-III scenario: first experience

I.J. Schurink[1], J. de Haan[2], J. Erdmann[3], V.A.L. Huurman[3], J.N.M. IJzermans[4], J. de Jonge[4], W.G. Polak[4]. [1]Dept. of surgery, Erasmus Medical Center, Rotterdam. [2]Dept. of Intensive Care Medicine, Erasmus Medical Center, Rotterdam. [3]Dept. of Surgery, Leiden University, Leiden. [4]Dept. of Surgery, Erasmus Medical Center, Rotterdam, The Netherlands.

15.45 Coffee break

Parallel session 7 - Basic/Translational research Van Weelde Zaal

Chairs: *Dr. Arnold v.d. Meer, immunologist, Radboudumc, Nijmegen*
Dr. Daniel Jacobs-Tulleneers-Thevissen, VUB, Brussels

Language: *English, presentation time 7 min., discussion 3 min.*

16.15 A novel endothelial cell based complement dependent cytotoxicity test in kidney transplantation (p. 90)
R.G.M. Lammerts, J. van den Born, W.A. Dam, M.A.J. Seelen, B.G. Hepkema, B.J. Kroesen, M.R. Daha, R.A. Pol, S.P. Berger, on behalf of the COMBAT Consortium. Dept. of Nephrology, University Medical Centre Groningen, University of Groningen, The Netherlands.

16.25 Tacrolimus exposure in human proximal tubule cells results in differentially increased CTGF expression in relation to pharmacogenetic variants of CYP3A5 and ABCB1 (p. 91)
N. Knops[1], Y. Ramazani[2], L. van den Heuvel[3], R. Goldschmeding[4], T. Nguyen[4], E. Levtchenko[1], D. Kuypers[5]. [1]Dept. of Pediatric Nephrology, UZ Leuven, Leuven, Belgium. [2]Laboratory for Pediatrics, KU Leuven, Leuven, Belgium. [3]Laboratory for Pediatrics, UZ Leuven, Leuven, Belgium. [4]Dept. of Pathology, University Medical Center Utrecht, Utrecht, The Netherlands. [5]Dept. of Nephrology, UZ Leuven, Leuven, Belgium

16.35 High oxygen pressure during continuous hypothermic machine perfusion is associated with a better ex vivo renal blood flow and early graft function in a porcine DCD auto-transplant model (p. 92)
T. Darius[1], P. Gianello[2], A. Buemi[1], M. de Meyer[1], M. Mourad[1]. [1]Dept. Of Surgery and Abdominal Transplant Unit, University Clinics Saint Luc, Brussels. [2]Pôle de Chirurgie Expérimentale et Transplantation, Université catholique de Lou, Brussels, Belgium.

16.45 High numbers of donor-specific il-21 producing cells predict rejection after kidney transplantation: a cross validation study (p. 93)
N.M. van Besouw[1], L. Yan[1], P. de Kuiper[1], M. Klepper[1], D. Reijerkerk[1], D.L. Roelen[2], F.H.J. Claas[2], M.C. Clahsen-van Groningen[3], D.A. Hesselink[1], C.C. Baan[1]. [1]Dept. of Internal Medicine, Nephrology & Transplantation, Erasmus Medical Center, Rotterdam. [2]Dept. of Immunohematology and Blood Transfusion, Leiden University Medical Center, Leiden. [3]Dept. of Pathology, Erasmus Medical Center, Rotterdam, The Netherlands.

16.55 Tissue-resident memory T cells of donor origin are short-lived in renal allografts after transplantation (p. 94)

K. de Leur[1], M. Dieterich[1], O.B.J. Corneth[2], G.N. de Graav[1], A. Mulder[3], F.J.M.F. Dor[4], H.J.A.N. Kimenai[4], F.H.J. Claas[3], D.A. Hesselink[1], M.C. Clahsen-van Groningen[5], L.J.W. van der Laan[4], R.W. Hendriks[2], C.C. Baan[1]. [1]Dept. of Internal Medicine, Erasmus University Medical Center, Rotterdam. [2]Dept. of Pulmonary Medicine, Erasmus University Medical Center, Rotterdam. [3]Dept. of Immunohematology and Blood Transfusion, Leiden University Medical Center, Leiden. [4]Dept. of Surgery, Erasmus University Medical Center, Rotterdam. [5]Dept. of Pathology, Erasmus University Medical Center, Rotterdam, The Netherlands.

17.05 Differentiation of human induced pluripotent stem cells (ipsc) into kidney organoids for use in kidney regeneration (p. 95)

A.S. Shankar[1], S.S. Korevaar[1], M.C. Clahsen-van Groningen[2], M. Ghazvini[3], J. Gribnau[3], C.C. Baan[1], E.J. Hoorn[1], M.J. Hoogduijn[1]. [1]Dept. of Internal Medicine, Erasmus Medical Center, Rotterdam. [2]Dept. of Pathology, Erasmus Medical Center, Rotterdam. [3]Dept. of Developmental Biology, Erasmus Medical Center, Rotterdam, The Netherlands.

17.15 End of session 7

Parallel session 8 - Clinical — Willem Burger Zaal

Chairs: *Dr. Sarwa Darwish-Murad, hepatologist, Erasmus MC, Rotterdam*
Prof. dr. Caren Randon, thoracic and vasculair surgeon, UG, Gent

Language: *English, presentation time 7 min., discussion 3 min.*

16.15 Post-transplant Muscle Mass measured by Urinary Creatinine Excretion Rate predicts Long-term Outcomes after Liver Transplantation (p. 96)
S.P. Stam[1], M.C.J. Osté[1], M.F. Eisenga[1], H. Blokzijl[2], A.P. van den Berg[2], S.J.L. Bakker[1], V.E. de Meijer[3]. [1]Dept. of Internal Medicine, University Medical Center Groningen, Groningen. [2]Dept. of Hepatology, University Medical Center Groning, Groningen. [3]Dept. of Surgery, University Medical Center Groningen, Groningen, The Netherlands

16.25 The clinical significance of epitope mismatch load in kidney transplantation (p. 97)
L. Daniëls[1], J.L. Bosmans[2], D. Abramowicz[2], E. Nagler[3], S. van Laecke[3], P. Peeters[3], D. Kuypers[4], M. Naesens[4], M.P. Emonds[5]. [1]Histocompatibility and Immunogenetics Laboratory (HILA), Red Cross-Flanders, Mechelen. [2]Dept. of Nephrology, Antwerp University Hospital, [3]Dept. of Nephro-logy, Ghent University Hospital, [4]Dept. of Nephrology and Renal Transplantation, University Hospitals Leuven, Leuven. [5]Histocompatibility and Immunogenetics Laboratory (HILA), Red-Cross Flanders, Mechelen, Belgium.

16.35 Risks and benefits of colonoscopy in pre-liver transplantation screening. (p. 98)
R.C. Oey[1], L. van Tilburg[1], N.S. Erler[2], H.J. Metselaar[1], H.R. van Buuren[1], R.A. de Man[1]. [1]Dept. Gastroenterology and Hepatology, Erasmus Medical Center, Rotterdam. [2]Dept of Epidemiology, Erasmus Medical Center, Rotterdam, The Netherlands.

16.45 Liver transplantation in jehovah's witnesses: a single center experience (p. 99)
M. Vandermeulen[2], N. Meurisse[2], M.F. Hans[2], J. Monard[2], M.H. Delbouille[2], P. Damas[3], A. Kaba[3], J. Joris[3], P. Honore[2], O. Detry[1]. [1]Dept. of transplantation, CHU Liege, Liège. [2]Dept. of Surgery & Transplantation, CHU Liège, Liege. [3]Dept. of Anesthesiology and Intensive Care, CHU Liège, Liège, Belgium.

16.55 New population pharmacokinetic model that predicts the individual starting dose of tacrolimus following pediatric renal transplantation (p. 100)
L.M. Andrews[1], D.A. Hesselink[2], T. van Gelder[2], E.A. Cornelissen[3], S.N. de Wildt[4], B.C.P. Koch[1], K. Cransberg[5], B.C.M. de Winter[1]. [1]Dept. of Hospital Pharmacy, Erasmus Medical Center, Rotterdam. [2]Dept. of Internal Medicine, Erasmus Medical Center, Rotterdam. [3]Dept. of Pediatric Nephrology, Radboudumc Amalia Children's Hospital, Nijmegen. [4]Dept. of Pharmacology and Toxicology, Radboud University, Nijmegen. [5]Dept. of Pediatric Nephrology, Erasmus MC-Sophia Children's Hospital, Rotterdam, The Netherlands.

17.05 Gut Microbiome in Kidney Transplant Recipients (p. 101)
J.C. Swarte[1], H.J.M. Harmsen[2], S.J.L. Bakker[1]. [1]Dept. of Internal Medicine and Nephrology, University Medical Center of Groningen, Groningen. [2]Dept. of Microbiology, Infectious Disease, University Medical Center Groningen, Groningen, The Netherlands.

17.15 End of session 8

Parallel session 9 - Nursing — Van der Vorm/Plate Zaal

Chairs: *José den Ouden, nursing specialist, Erasmus MC, Rotterdam*
Carine Breunig, research nurse, KUL, Leuven, Belgium

Language *Nederlands, spreektijd 8 min., discussietijd 2 min.*

16.15 Naar een eenduidige psychosociale screening van longtransplantatie-patiënten. (p. 102)
S.H. Smit, T. Norder. Dept. of Lung Deseases and Tuberculosis, University Medical Center Groningen, Groningen, The Netherlands

16.25 Evaluatie en ervaringen voorlichting niertransplantatie nieuwe stijl: 'U vraagt, wij draaien' (p. 103)
S. Middel, C.A.J. Oudmaijer, I. de Koning, L. Wiekamp, W. van der Bent, J. van de Wetering. Dept. of Internal Medicine, Erasmus Medical Center, Rotterdam, The Netherlands.

16.35 Introduction of routine monitoring of smoking resumption after lung transplantation (p. 104)
R.A.S. Hoek[1], J. den Ouden[1], L. Seghers[1], E. Mahtab[2], J.A. Bekkers[2], H.C. Hoogsteden[1], M.E. Hellemons[1]. [1]Dept. of Pulmonary Medicine, Erasmus Medical Center, Rotterdam. [2]Dept. of Cardiothoracic Surgery, Erasmus Medical Center, Rotterdam, The Netherlands.

16.45 Valuating the effects of a nurse-led self-management intervention for kidney transplant patients: mixed-method design (p. 105)
J.M.J. Been-Dahmen[1], D. Beck[2], M.A.C. Peeters[1], H. van der Stege[1], J. Grijpma[2], M. Tielen[2], M. van Buren[2], W. Weimar[2], E. Ista[3], A. van Staa[1], E. Massey[2]. [1]Research Center Innovations in Care, Rotterdam University of Applied Science, Rotterdam. [2]Dept. of Internal Medicine, Erasmus Medical Center, Rotterdam. [3]Dept. of Intensive care, Erasmus Medical Center-Sophia children's hospital, Rotterdam, The Netherlands.

16.55 Psychosociaal screenen van kandidaten voor niertransplantatie. (p. 106)
M.J.M. van Helden, P.A.J. Weide, G. van den Bosch, L.B. Hilbrands. Dept. of Nephrology, Radboudumc, Nijmegen, The Netherlands.

17.05 Current nursing insights on forearm to trachea transplantation. (p. 107)
M. Schoonis. Dept. of Pneumology, University Hospital Leuven, Leuven, Belgium.

17.15 End of session 9

Parallel session 10 - Transplant Coordination Van Rijck/Ruys Zaal

Chairs: *Hanneke A.M. Hagenaars, Transplant coordinator, Erasmus MC*
Prof. dr. Dirk Ysebaert, hepato-biliairy, transplant and endocrine surgery, UA, Antwerp

Language: *English, presentation time 7 min., discussion 3 min.*

16.15 A multidisciplinary approach on the emergency Dept. to admit potential organ donors for end-of-life care to the intensive care unit (p. 108)
M. Witjes[1], A. Kotsopoulos[2], L. Otterspoor[3], I.H.F. Herold[4], K.S. Simons[5], K. Woittiez[6], J.J.A. Eijkenboom[7], J.G. van der Hoeven[8], W.F. Abdo[8]. [1]Intensive Care, Nijmegen. [2]Care, Elisabeth Tweesteden hospital, Tilburg. [3]Dept. of Intensive Care, Catharina hospital, Eindhoven. [4]Dept. of Intensive Care, Catharina hospital, Eindhoven. [5]Dept. of Intensive Care, Jeroen Bosch hospital, 's-Hertogenbosch. [6]Dept. of Intensive Care, VieCuri hospital, Venlo. [7]Dept. of Intensive Care, Maxima Medical Center, Veldhoven. [8]Dept. of Intensive Care, Radboudumc, Nijmegen, The Netherlands

16.25 What lessons can be learned from the UK experience of (relinquishing) anonymity? (p. 109)
E.K. Massey[1], M.C. Pronk[1], D. Slaats[1], L. Burnapp[2]. [1]Erasmus Medical Center, Internal Medicine, Rotterdam, The Netherlands. [2]NHS Blood & Transplant, London, United Kingdom.

16.35 Pre-donation recruitment of Renal functional Reserve is associated with early renal adaptation after living kidney donation. (p. 110)
N.R. Hessels, M. van Londen, N. Kasper, A.L. Messchendorp, J. van der Weijden, J.S.F. Sanders, S.P. Berger, S.J.L. Bakker, M.H. de Borst, G. Navis. Dept. of Internal Medicine, University Medical Center Groningen, Groningen, The Netherlands

16.45 Additional value of smartphone video recordings for the assessment of organ quality for livertransplantation. (p. 111)
J.I. Erdmann[1], W.N. Nijboer[1], M.T. de Boer[3], W.G. Polak[4]. [1]Dept. of Surgery, Leiden University Medical Center, Leiden. [3]Dept. of Surgery, University Medical Center Groningen, Groningen. [4]Dept. of Surgery, Erasmus Medical Center, Rotterdam, The Netherlands.

16.55 Estimated GFR at Donor Screening to Predict mGFR after Living Kidney Donation. (p. 112)

J. van der Weijden, M. van Londen, S.J.L. Bakker, S.P. Berger, G.J. Navis, M.H. de Borst. Dept. of Internal Medicine, University Medical Center Groningen, Groningen, The Netherlands.

17.05 Donor Knowledge of Provided Information - A Prospective Nation-wide Inventory Study (p. 113)

K. Kortram[1], E.Q.W. Spoon[1], S.Y. Ismail[2], D. Nieboer[3], F.C.H. D'Ancona[4], M.H.L. Christiaans[5], R.E. Dam[6], H.S. Hofker[7], A.W.J. Hoskbergen[8], K.A.M.I. van der Pant[9], R.J. Toorop[10], J. van de Wetering[11], J.N.M. IJzermans[1], F.J.M.F. Dor[1]. [1]Dept. of Surgery, Erasmus Medical Center, Rotterdam. [2]Dept. of Psychiatry, Erasmus Medical Center, Rotterdam. [3]Dept. of Public Health, Erasmus Medical Center, Rotterdam. [4]Dept. of Urology, Radboud University Medical Center, Nijmegen. [5]Dept. of Nephrology, Maastricht University Medical Center, Maastricht. [6]Dept. of Surgery, Leiden University Medical Center, Leiden. [7]Dept. of Surgery, University Medical Center Groningen, Groningen. [8]Dept. of Surgery, VU Medical Center, Amsterdam. [9]Dept. of Nephrology, Academic Medical Center, Amsterdam. [10]Dept. of Surgery, University Medical Center Utrecht, Utrecht. [11]Dept. of Nephrology, Erasmus Medical Center, Rotterdam, The Netherlands.

17.15 End of session 10

Assembly NTV — Willem Burger Zaal

17.30 Assembly Nederlandse Transplantatie Vereniging

Aansluitend prijsuitreikingen:

Astellas Trans(p)la(n)t(at)ionele Research Prijs 2018
uitgereikt door afgevaardigde Astellas

Novartis Transplantation Awards 2018
Uitgereikt door dr. Arjan D. van Zuilen, internist-nefroloog UMC Utrecht voorzitter Novartis Transplant Advisory Board (NTAB)

LWTV Innovatie-Kwaliteitsprijs 2018
Uitgereikt door Louise Maasdam, voorzitter LWTV

Onderwijs innovatie prijs 2018
Uitgereikt door dr. Martin J. Hoogduijn, secretaris NTV

Distinguished Research Award 2018
Uitgereikt door Prof. dr. Marlies Reinders, voorzitter NTV

Assembly BTS — Van Weelde Zaal

17.30 Assembly Belgium Transplantation Society

19.00 Transfer to the ss Rotterdam

20.00 Social evening on board of the ss Rotterdam

Plenary session II — Willem Burger Zaal

Chairs: *Dr. Marian Clahsen-van Groningen, pathologist, Erasmus MC, Rotterdam*
Prof. dr. Alain le Moine, nephrologist, ULB, Brussels

Topic: Crossing borders in basic & translational science

Language: *English*

09.00 The Emerging Role of DNA Methylation in Kidney Transplantation: A Perspective
Dr. Line Heylen (KUL, Leuven, Belgium)

09.20 Implementation of miRNAs as predictors of rejection into daily practice
Prof. dr. Abraham Shaked (Philadelphia, USA)

09.40 iBOX a next step to predicting long-term allograft failure
Prof. dr. Alexander Loupy (Paris, France)

10.00 Coffee break and moderated poster session II

Poster session 6 – Clinical — Willem Burger Foyer

Moderator: *Dr. Cyril Moers, transplant surgeon, UMC Groningen*

Language: *English, presentation time 3 min., discussion 2 min.*

10.00 – 10.30

26. Safety and efficacy of third kidney transplantation in ipsilateral iliac fossa (p.)
P.J. Domagala[1], T. van den Berg[2], K. Tran[1], T. Terkivatan[1], H. Kimenai[1], J. IJzermans[1], R. Pol[2], R. Minnee[1]. [1]Dept. of Surgery, Division of HPB & Transplant Surgery, Erasmus MC, Rotterdam. [2]Dept. of Surgery and Transplantation, University of Medical Center Groningen, Groningen, The Netherlands.

27. SLC30A8 polymorphism and BMI complement HLA-A*24 as risk factors for poor graft function in islet allograft recipients (p.)
E.M. Balke[1], S. Demeester[1], D. Lee[1], P. Gillard[1], R. Hilbrands[1], U. van de Velde[1], B.J. van der Auwera[1], Z. Ling[1], B.O. Roep[2], D.G. Pipeleers[1], B. Keymeulen[1], F.K. Gorus[1]. [1]Diabetes Research Center, Vrije Universiteit Brussel, Belgium. [2]Dept. of Immunohaematology and Blood Transfusion, Leiden University Medica, Leiden, The Netherlands.

28. How safe is crossing the ABO blood group barrier? A meta-analysis to determine the additive risk of ABO-incompatible kidney transplantation. (p.)
A.E. de Weerd, M.G.H. Betjes. Dept. of Internal Medicine, Erasmus Medical Center, Rotterdam, The Netherlands.

29. A predictive pharmacokinetic model of ribavirin plasma concentration in lung transplant recipients treated for a paramyxovirus or chronic Hepatitis E virus infection. (p.)
A.E.S. de Zwart[1], E. Milliken[2], S. Reuter Lange[3], A. Riezebos-Brilman[4], F. Burrows[2], J.W.C. Alffenaar[5], A. Glanville[6], E.A.M. Verschuuren[7]. [1]Dept. of Pulmonary diseases and tuberculosis, University Medical Center Groningen, Groningen, The Netherlands. [2]Faculty of Medicine, The University of Notre Dame, Sydney, Australia. [3]St Vincent's Hospital, Sydney, Australia. [4]Dept of Medical microbiology, University Medical Center Utrecht, Utrecht, The Netherlands. [5]Dept. of clinical pharmacy and Pharmacology, University Medical Center Groningen, Groningen, The Netherlands. [6]Faculty of Medicine, The University of Notre Dame, Sydney, Australia. [7]Dept. of Pulmonary Diseases and tuberculosis, University Medical Center Groningen, Groningen, The Netherlands.

30. Pre-Transplant Duration of Dialysis, N-terminal Pro-Brain Natriuretic Peptide and Post-Transplant Mortality in Renal Transplant Recipients (p.)
M.H. Yeung[1], M. van Londen[1], U. Nakshbandi[1], Y.M. Said[1], M.F. Eisenga[1], B. Hepkema[2], I.M. Nolte[3], S.P. Berger[1], M.H. de Borst[1], S.J.L. Bakker[1]. [1]Dept. of Internal Medicine, div of Nephrology, University Medical Center Groningen, Groningen. [2]Transplantation Immunology EA51, University Medical Center Groningen, Groningen. [3]Dept. of Epidemiology, University Medical Center Groningen, Groningen, The Netherlands.

31. Urinary Excretion of the Main Metabolite of Melatonin Relates to All-Cause and Cardiovascular Mortality in Renal Transplant Recipients (p.)
A. van der Veen[1], I. Minovic[2], H.J.R. van Faassen[1], I.P. Kema[1], S.J.L. Bakker[2]. [1]Dept. of Laboratory Medicine, University Medical Center Groningen, Groningen. [2]Dept. of Nephrology, University Medical Center Groningen, Groningen, The Netherlands.

Poster session 7 - Clinical — Willem Burger Foyer

Moderator: J. Roodnat, nephrologist, Erasmus MC, Rotterdam

Language: English, presentation time 3 min., discussion 2 min.

10.00 – 10.30

32. sCD59 as a novel biomarker for acute rejection in kidney transplantation (p. 111)
L.A. Michielsen[1], A.D. van Zuilen[1], T. Kardol-Hoefnagel[2], M.C. Verhaar[1], H.G. Otten[2]. [1]Dept. of Nephrology and Hypertension, University Medical Center Utrecht, Utrecht. [2]Laboratory of Translational Immunology, University Medical Center Utrecht, Utrecht, The Netherlands

33. Computerised Integration of Alternative kidney Transplantation (CIAT) programs: a simulation
M. de Klerk[1], J.A. Kal[1], S. Middel[1], J. van de Wetering[1], M.M.L. Kho[1], M.G.H. Betjes[1], W.C. Zuidema[1], D.L. Roelen[2], K.M. Glorie[3], J.I. Roodnat[1]. [1]Dept. of Internal Medicine, Erasmus Medical Center, Rotterdam. [2]Dept. of Immunohematology, Leiden University Medical Center, Leiden. [3]Erasmus Q-Intelligence, Erasmus University, Rotterdam, The Netherlands.

34. IGL-1 preservation solution and liver graft function, a retrospective study
N. Gilbo[1], J. Achtergaele[2], J. van den Eynde[2], I. Jochmans[1], M. Sainz-Barriga[1], D. Monbaliu[1], J. Pirenne[1]. [1]Abdominal Transplantation Surgery - University Hospitals of Leuven, Leuven. [2]Abdominal Transplantation Research Lab - KU Leuven, Leuven, Belgium.

35. Peritubular capillary loss in the first month after kidney transplantation is more pronounced in patients with rejection compared to delayed graft function.
A.A. Keijbeck[1], F.M.E.G. Steegh[1], M.A.C.J. Gelens[2], L.W.E. van Heurn[3], M.H.L. Christiaans[2], C.J. Peutz-Kootstra[1]. [1]Dept. of Pathology, Maastricht University Medical Center, Maastricht. [2]Dept. of Internal Medicine, Maastricht University Medical Center, Maastricht. [3]Dept. of Surgery, Academic Medical Center, Amsterdam, The Netherlands

36. Relevance of EBV load monitoring in renal transplant recipients; a retrospective cohort study
L. Gard[1], C. Oliveira dos Santos[1], W. van Doesum[2], H.G.M. Niesters[1], W.J. van Son[2], A. Diepstra[3], C.A. Stegeman[2], H. Groen[4], J.S. Sanders[2], A. Riezebos-Brilman[5]. [1]Dept. of Medical Microbiology, University Medical Center Groningen, Groningen. [2]Dept. of Internal Medicine, University Medical Center Groningen, Groningen. [3]Dept. of Pathology, University Medical Center Groningen, Groningen. [4]Dept. of Epidemiology, University Medical Center Groningen, Groningen. [5]Dept. of Medical Microbiology, University Medical Center Utrecht, Utrecht, The Netherlands.

37. Pre-operative serum potassium as a risk factor for early complications after renal transplantation: a cohort study
B.C.S. de Vries, S.P. Berger, S.J.L. Bakker, M.H. Borst, M.F.C. de Jong. Dept. of Nephrology, Universitair Medisch Centrum Groningen, Groningen, The Netherlands.

Poster session 8 - Basic translational research Willem Burger Foyer

Moderator: Dr. Henk P. Roest, scientist, Erasmus MC, Rotterdam,

Language: English, presentation time 3 min., discussion 2 min.

10.00 – 10.30

38. Impact of rapamycin and tacrolimus on the differentiation and maturation of monocyte-derived dendritic cells and their interactions with T cells
G.D. Dahlqvist[1], F.C. Conti[2], Y.H. Horsmans[3]. [1]Dept. of Hepato-gastroenterology, Cliniques Universitaires Saint-Luc, Brussels, Belgium. [2]Dept. of

Hepatologie, Hôpital de la Pitié Salepetrière, Paris, France. [3]Dept. of Internal Medicine, Cliniques Universitaires Saint-Luc, Brussels, Belgium.

39. GM-CSF strongly enhances TLR9-induced phagocytic capacity and activation of human plasmacytoid dendritic cells
J.M. Ruben[1], G. Garcia-Romo[1], E. Breman[1], S. van der Kooij[1], A. Redeker[2], R. Arens[2], C. van Kooten[1]. [1]Dept. of Nephrology, Leiden University Medical Center, Leiden. [2]Dept. of Immunohematology and Blood Transfusion, Leiden University Medical, Leiden, The Netherlands.

40. Targeted elimination of senescent cells to protect kidneys against ischemia reperfusion injury
H. van Willigenburg[1,2], R.W.F. de Bruin[1], P.L.J. de Keizer[2]. [1]Dept. of Surgery, Erasmus Medical Center, Rotterdam. [2]Dept. of Molecular Genetics, Rotterdam, The Netherlands.

41. HLA-B*15 allele SNPs predict the serologically defined HLA-B15 split antigens
B. Duygu, B.M. Matern, C.M.H. Meertens, C.E.M. Voorter, M.G.J. Tilanus. Dept. of Transplantation Immunology, Maastricht University Medical Center, Maastricht, The Netherlands.

42. Single-cell Analysis of NFATc1 Amplification in T Cells for Pharmacodynamic Monitoring of Tacrolimus
N.M. Kannegieter, D.A. Hesselink, M. Dieterich, G.N. de Graav, R. Kraaijeveld, C.C. Baan. Dept. of Internal Medicine, Erasmus Medical Center, Rotterdam, The Netherlands.

43. Complement activation in antibody-mediated renal allograft rejection
J.J. Karijosemito[1], R.G.M. Lammerts[1], M.A.J. Seelen[1], M.R. Daha[3], A. Diepstra[2], J. van den Born[1], S.P. Berger[1], on behalf of the COMBAT Consortium. [1]Dept. of Nephrology, University Medical Center Groningen, Groningen. [2]Dept. of Pathology, University Medical Center Groningen, Groningen. [3]Dept. of Nephrology, Leiden University Medical Center, Leiden, The Netherlands.

10.30 Coffee break

Poster session 9 - Donation — Willem Burger Foyer

Moderator: *Willy Rensen, transplantation coordinator, AMC, Amsterdam*

Language: *English, presentation time 3 min., discussion 2 min.*

10.00 – 10.25

44. What is the risk of cancer transmission with heart transplantation?
L. Stiennon[1], V. Tchana-Sato[2], V. Dorio[3], A. Ancion[3], J.O. Defraigne[2], O. Detry[1]. [1]Dept. of Transplantation, CHU Liège, Liège. [2]Dept. of Cardiovascular Surgery, CHU Liège, Liège. [3]Dept. of Cardiology, CHU Liège Liège, Belgium.

45. Comparison of Kidney Exchange Programs in Europe (COST-ENCKEP)
B.J.J.M. Haase-Kromwijk[1], A.C. Hemke[1], J. van de Klundert[2]. [1]Dutch Transplant Foundation, Leiden. [2]Erasmus School of Health Policy & Management, Rotterdam, The Netherlands.

46. eHealth psychosocial care for living kidney donors: an implementation study
L. Wirken[1], H. van Middendorp[1], C.W. Hooghof[2], L.B. Hilbrands[2], A.W.M. Evers[1]. [1]Health, Medical and Neuropsychology Unit, Leiden University, Leiden. [2]Dept. of Nephrology, Radboudumc Nijmegen, Nijmegen, The Netherlands.

47. Serious Adverse Events or Reactions in organ transplantation; raising awareness in the Netherlands
K.G. Sparidaens[1], P.R.J. de Rooij[2]. [1]Beleids- & Orgaancentrum, Dutch Transplant Foundation (NTS), Leiden. [2]Bedrijfsvoering, Dutch Transplant Foundation (NTS), Leiden, The Netherlands.

48. Needs for a paediatric organ and tissue donation protocol; an overview of the literature
A. Vileito[1], M.J. Siebelink[2], A.A.E. Verhagen[1]. [1]Dept. of Pediatrics, Beatrix Children's Hospital, University Medical Center, Groningen. [2]Transplant Center, University Medical Center, Groningen, The Netherlands.

Parallel session 12 - Basic/Translational research Van Weelde Zaal

Chairs: *Dr. Martin Hoogduijn, scientist, Erasmus MC, Rotterdam*
Line Heylen, KUL, scientist, KU Leuven

Language: *English, presentation time 7 min., discussion 3 min.*

10.30 Assessing kidney and liver viability during machine perfusion
I.J. Jochmans. Dept. of Microbiology and Immunology, KU Leuven, Leuven.

10.50 Donor-derived cell-free DNA as minimally invasive tool to diagnose acute rejection after kidney transplantation (p. 114)
K. Boer[1], C.C. Baan[1], N. van Donk[2], E. de Jonge[2], M.C. Clahsen-van Groningen[3], D.A. Hesselink[1], R.H.N. van Schaik[2]. [1]Dept. of Internal Medicine - Nephrology and Transplantation, Erasmus Medical Center, Rotterdam. [2]Dept. of Clinical Chemistry, Erasmus Medical Center, Rotterdam. [3]Dept. of Pathology, Erasmus Medical Center, Rotterdam, The Netherlands.

11.00 Mesenchymal stromal cells infused via the renal artery are retained and survive in ischemic porcine kidney (p. 115)
J.M. Sierra Parraga[1], M. Eijken[2], C. Andersen[2], C. Moers[3], R. Ploeg[4], B. Møller[5], C.C. Baan[1], M.J. Hoogduijn[1], B. Jespersen[6]. [1]Dept. of Internal Medicine, Erasmus Medical Center, Rotterdam, The Netherlands. [2]Institute of Clinical Medicine, Aarhus University, Aarhus, Denmark. [3]Organ Donation and Transplantation, University Medical Center Groningen, Groningen, The Netherlands. [4]Nuffield Dept. Surgical Sciences Biomedical Research Center, University of Oxford, Oxford, United Kingdom. [5]Dept. of Clinical Immunology, Aarhus University Hospital, Aarhus, Denmark. [6]Dept. of Renal Medicine, Aarhus University Hospital, Aarhus, Denmark.

11.10 Autophagy in renal ischemia-reperfusion injury: effect of ischemic duration and modulation with trehalose (p. 116)
J.P.D. Decuypere[1], T.W. Wylin[1], V.H. Heedfeld[1], D.M. Monbaliu[1], W.M. Martinet[2], J.P. Pirenne[1], I.J. Jochmans[1]. [1]Dept. of Microbiology and Immunology, KU Leuven, Leuven. [2]Dept. of Pharmaceutical Sciences, University of Antwerp, Antwerp, Belgium.

11.20 Hibernating mitochondria as organ preservation: hibernator versus non-hibernator kidney mitochondria (p. 117)
K.D.W. Hendriks, R.H. Henning. Dept. of Clinical Pharmacy and Pharmacology, University Medical Center Groningen, Groningen, The Netherlands.

11.30 Cell-free microRNAs in kidney graft preservation fluid as novel biomarker for delayed graft function. (p. 118)
H.P. Roest[1], L.S.S. Ooms[1], A.J.M. Gillis[2], J.N.M. IJzermans[1], L.H.J. Looijenga[2], F.J.M.F. Dor[1], L.J.W. van der Laan[1]. [1]Dept. of Surgery, Erasmus Medical Center, Rotterdam. [2]Dept. of Pathology, Erasmus Medical Center, Rotterdam, The Netherlands.

11.40 Genetic inactivation of DUSP3/VHR attenuates kidney damage and inflammation following ischemia/reperfusion in mouse (p. 119)
P. Rowart[1], L. Poma[1], S. Rahmouni[1], J.M. Krzesinski[2], F. Jouret[2]. [1]University of Liège, Liège. [2]CHU de liège, Liège, Belgium.

11.50 A novel tool to define the immunogenicity of HLA mismatches (p. 120)
C.S.M. Kramer, J. Koster, G.W. Haasnoot, D.L. Roelen, F.H.J. Claas, S. Heidt. Dept. of Immunohematology and Blood Transfusion, Leiden University Medical Center, Leiden, The Netherlands.

12.00 Lunch break

Parallel session 13 - Clinical — Willem Burger Zaal

Chairs: *Dr. Dennis A. Hesselink, Erasmus MC, Rotterdam*
Prof. dr. Jacques Pirenne, KUL, Leuven

Language: *English, presentation time 7 min., discussion 3 min.*

10.30 Pregnancy after thoracic organ transplantation: the Belgian experience. (p. 121)
V.A.N. Cleemput[1], O.V.C. Van Caenegem[2], A. Roussoulières[3], C. Knoop[4], R. Vos[5], P. Evrard[6], A. Vorlat[7], A. Ancion[8], S. Verstreken[9], V. Verplancke[10], M. de Pauw[11]. [1]Dept. of Cardiology, UZ Leuven, Leuven [2]Heart Transplant Unit, Cliniques Universitaires Saint-Luc, Brussels. [3]Dept. of Cardiology, ULB, Brussels. [4]Dept. of Pneumology, ULB, Brussels. [5]Dept. of Pneumology, UZ Leuven, Leuven. [6]Dept. of Pneumology, CHU Godinne, Namur. [7]Dept. of

Cardiology, UZA, Antwerpen. [8]Dept. of Cardiology, CHU ULG, Liège. [9]Dept. of Cardiology, Hartcentrum OLV, Aalst. [10]Dept. of Pneumology, UZA, Antwerpen. [11]Dept. of Cardiology, UZ Gent, Gent, Belgium.

10.40 The effect of perioperative antiplatelet / anticoagulant therapy on the incidence of early postoperative thromboembolic complications and bleeding in kidney transplantation. - A dual center retrospective cohort study of 2000 kidney transplant recipients. (p. 122)
T.A.J. van den Berg[1], R.C. Minnee[2], G.J. Nieuwenhuijs-Moeke[3], S.J.L. Bakker[4], R.A. Pol[1]. [1]Dept. of Surgery, University Medical Center Groningen, Groningen. [2]Dept. of Surgery, Erasmus Medical Center, Rotterdam. [3]Dept. of Anesthesiology, University Medical Center Groningen, Groningen. [4]Dept. of Internal Medicine - Nephrology, University Medical Center Groningen, Groningen, The Netherlands.

10.50 Biliary pH, Bicarbonate and Glucose are Suitable Biomarkers of Bile Duct Viability During Normothermic Machine Perfusion of Donor Livers (p. 123)
A.P.M.M. Matton[1], Y.D.V. de Vries[1], L.C.B. Burlage[1], R.V.R. van Rijn[1], A.S.H.G. Gouw[2], V.E.D.M. de Meijer[1], T.L. Lisman[3], R.J.P. Porte[1]. [1]Dept. of Surgery, University Medical Center Groningen, Groningen. [2]Dept. of Pathology, University Medical Center Groningen, Groningen. [3]Surgical Research Laboratory, University Medical Center Groningen, Groningen, The Netherlands.

11.00 Excellent one year graft and patient survival with comparable rejection and infection rates in ABO-incompatible kidney transplants with alemtuzumab induction compared to ABO-compatible recipients with basiliximab induction (p. 124)
H. Bouwsma, E.E. Nijgh, R.E. Dam, A.T.M. Bisschop - van Leijden, M.J.K. Mallat, M.E.J. Reinders, J.W. de Fijter, A.P.J. de Vries. Transplantation Center, Leiden University Medical Center, Leiden, The Netherlands.

11.10 Livers from donation after circulatory death donors can be safely used for retransplantation (p. 125)
O.B. van Leeuwen[1], M. van Reeven[2], J.I. Erdmann[3], H.J. Metselaar[4], A.P. van den Berg[5], W.G. Polak[2], B. van Hoek[6], R.J. Porte[1]. [1]Dept. of Surgery, University Medical Center Groningen, Groningen. [2]Dept. of Surgery, Erasmus Medical Center, Rotterdam. [3]Dept. of Surgery, Leiden University Medical Center, Leiden. [4]Dept. of Gastro-Enterology and Hepatology,

Erasmus Medical Center, Rotterdam. [5]Dept. of Gastro-enterology and Hepatology, University Medical Center Groningen, Groningen. [6]Dept. of Gastro-enterology and Hepatology, Leiden University Medical Center, Leiden, The Netherlands.

11.20 Lung Transplantation from ICU does not affect long-term patient and allograft survival (p. 126)

R.A.S. Hoek[1], L. Seghers[1], E. Mahtab[2], J.A. Bekkers[2], R.J. van Thiel[3], D. Dos Reis Miranda[3], H.C. Hoogsteden[1], M.E. Hellemons[1]. [1]Dept. of Pulmonary Medicine, Erasmus Medical Center, Rotterdam. [2]Dept. of Cardiothoracic Surgery, Erasmus Medical Center, Rotterdam. [3]Dept. of Intensive Care, Erasmus MC, Rotterdam, The Netherlands.

11.30 Single lung transplantation remains a viable treatment option in selected patients (p. 127)

R.A.S. Hoek[1], L. Seghers[1], E. Mahtab[2], J.A. Bekkers[2], H.C. Hoogsteden[1], M.E. Hellemons[1]. [1]Dept. of Pulmonary Medicine, Erasmus MC, Rotterdam. [2]Dept. of Cardiothoracic Surgery, Erasmus MC, Rotterdam, The Netherlands.

11.40 Prevalence and impact of chronic postsurgical pain following laparoscopic donor nephrectomy: a cross-sectional cohort study (p. 128)

M.H.D. Bruintjes[1], E.V. van Helden[1], M. de A.P.J.[1], L.B. Hilbrands[2], F.C.H. d' Ancona[3], M.A.H. Steegers[4], M.C. Warlé[1]. [1]Dept. of Surgery, Radboud University Medical Center, Nijmegen. [2]Dept. of Nephrology, Radboud University Medical Center, Nijmegen. [3]Dept. of Urology, Radboud University Medical Center, Nijmegen. [4]Dept. of Anaesthesiology, Radboud University Medical Center, Nijmegen, The Netherlands

11.50 Investigation of donor-derived cell-free DNA kinetics in stable renal transplant recipients (p. 129)

E.M. Gielis[1], K. Ledeganck[1], A. Dendooven[2], P. Meysman[3], K. Laukens[3], J. de Schrijver[4], S. van Laecke[5], M.P. Emonds[6], M. Vinckx[1], P. Aerts[1], B. de Winter[1], J.L. Bosmans[7], J. Del Favero[4], D. Abramowicz[7]. [1]Laboratory of Experimental Medicine and Pediatrics, Univ. of Antwerp, Wilrijk. [2]Dept. of Pathology, Univ. hospital of Antwerp, Edegem. [3]Biomedical informatics research center Antwerpen(Biomina), University of Antwerp, Wilrijk. [4]Multiplicom N.V., part of Agilent Technologies, Niel. [5]Renal Division, Univ. Hospital Ghent, Ghent. [6]Histocompatibility and Immunogenetic Laboratory, Belgian Red Cross Flanders, Mechelen. [7]Dept. of Nephrology and Hypertension, Univ. Hospital of Antwerp, Edegem, Belgium.

12.00 Lunch break

Parallel session 14 – Transplant Coordination Van Rijck/Ruys Zaal

Chairs: *Janneke Vervelde, transplantatie coördinator, LUMC, Leiden*
to be announced

Thema: Orgaandonatie in de praktijk
België vs Nederland

10.30 Donation after Circulatory Death:
Johan Gyssens, Hospital Erasme, Brussel
Tineke Wind, MUMC, Maastricht

Orgaandonatie na Euthanasie:
Bruno Desschans, UZ Leuven
Hanneke Hagenaars, Erasmus MC, Rotterdam

Casuïstiek, interactieve sessie
Annelies de Grauwe, UZ Brussel
Robert Klaasen, AMC, Amsterdam

Alle sprekers zijn transplantatie coördinatoren

12.00 Lunch

Parallel session 15 - Clinical — Van Rijck/Ruys Zaal

Chairs: *Dr. Robert Minnee, transplant surgeon, Erasmus MC, Rotterdam*
Prof. dr. Luuk Hilbrands, nephrologist, Radboudumc, Nijmegen

Language: *English, presentation time 7 min., discussion 3 min.*

10.30 Impact after live donor nephrectomy: a comparative follow-up study (p. 130)

S. Janki[1], A. Dehghan[2], J. van de Wetering[3], E. Steyerberg[4], K.W.J. Klop[1], H.J.A.N. Kimenai[1], D. Rizopoulos[5], E.J. Hoorn[6], S. Stracke[7], W. Weimar[3], H. Völzke[7], A. Hofman[2], J.N.M. IJzermans[1]. [1]Dept. of Surgery, Subdivision of HPB and Transplant Surgery, Erasmus MC, Rotterdam, The Netherlands. [2]Dept. of Epidemiology, Erasmus MC, Rotterdam, The Netherlands. [3]Dept. of Internal Medicine, Erasmus MC, Rotterdam, The Netherlands. [4]Dept. of Public Health, Erasmus MC, Rotterdam, The Netherlands. [5]Dept. of Biostatistics, Erasmus MC, Rotterdam, The Netherlands. [6]Dept. of Nephrology and Transplantation, Erasmus MC, Rotterdam, The Netherlands. [7]Ernst Moritz Arndt University Greifswald, Institute for Community Medicine, Greifswald, Germany

10.40 Chronic Use of Proton-Pump Inhibitors is Associated with Lower Magnesium and Iron Status and Excess Mortality in Renal Transplant Recipients (p. 131)

R.M. Douwes[1], A.W. Gomes Neto[1], M.F. Eisenga[1], R.O.B. Gans[1], E. van de Berg[1], G. Navis[1], H. Blokzijl[2], S.J.L. Bakker[1]. [1]Dept. of Internal Medicine, University Medical Center Groningen, Groningen. [2]Dept. of Gastroenterology and Hepatology, University Medical Center Groningen, Groningen, The Netherlands.

10.50 Ribavirin efficacy in upper and lower respiratory tract paramyxovirus infection in lung transplant recipients. (p. 132)

A.E. de Zwart[1], A. Riezebos-Brilman[2], J.C. Alffenaar[3], W. van der Bij[1], M.E. Erasmus[4], E.A. Verschuuren[1]. [1]Dept. of Pulmonary diseases and Tuberculosis, University Medical Center Groningen, Groningen. [2]Dept. of Medical Microbiology, University Medical Center Utrecht, Utrecht. [3]Dept. of Pharmacy and clinical Pharmacology, University Medical Center Groningen, Groningen. [4]Dept. of Cardiothoracic Surgery, University Medical Center Groningen, Groningen, The Netherlands.

11.00 Effect Of Different Treatment Modalities For End-Stage Renal Disease After Heart Transplantation (p. 133)

S. Roest[1], D.A. Hesselink[2], I. Kardys[1], K. Caliskan[1], J.J. Brugts[1], A.P.W.M. Maat[3], A.A. Constantinescu[1], O.C. Manintveld[1]. [1]Dept. of Cardiology, Erasmus Medical Center, Rotterdam. [2]Dept. of Internal Medicine, Div of Nephrology and Transplantation, Erasmus Medical Center, Rotterdam. [3]Dept. of Cardiothoracic Surgery, Erasmus Medical Center, Rotterdam, The Netherlands.

11.10 No benefit from 3-month valguanciclovir prophylaxis vs preemptive treatment in heart transplantation: should we extend the prophylaxis to 200 days or beyond? (p. 134)

G. Le Fevere de Ten Hove, O. Van Caenegem, T.H. Timmermans, A. Poncelet. Heart Transplant Unit, Cliniques Universitaires Saint-Luc, Brussels, Belgium.

11.20 Donor specific anti-HLA antibodies are not associated with non-anastomotic biliary strictures but both are independent risk factors for graft loss after liver transplantation (p. 135)

A.C. den Dulk[1], X. Shi[2], C. Verhoeven[3], J. Dubbeld[4], F.H.J. Claas[5], R. Wolterbeek[6], S. Brand-Schaaf[5], H.W. Verspaget[1], L. van der Laan[3], H.J. Metselaar[2], B. van Hoek[1], J. Kwekkeboom[2], D.L. Roelen[5]. [1]Dept. of Gastroenterology and Hepatology, Leiden University Medical Center, Leiden. [2]Dept. of Gastroenterology and Hepatology, Erasmus Medical Center, Rotterdam. [3]Dept. of Surgery, Erasmus Medical Center, Rotterdam, Rotterdam. [4]Dept. of Surgery, Leiden University Medical Center, Leiden. [5]Dept. of Immunohematology and Blood Bank, Leiden University Medical Center, Leiden. [6]Dept. of Medical Statistics, Leiden University Medical Center, Leiden, The Netherlands.

11.30 Endovascular treatment of iliac artery stenosis proximal to the transplanted kidney (p. 136)

D. Molenaar[2], R.C. van Wissen[1], M.E.J. Reinders[3], C.S.P. van Rijswijk[4], A.F.M. Schaapherder[2], J.F. Hamming[1], I.P.J. Alwayn[2], D.K. de Vries[2]. [1]Dept. of Surgery, Leiden University Medical Center, Leiden. [2]Transplant Center, Leiden University Medical Center, Leiden. [3]Dept. of Nephrology, Leiden University Medical Center, Transplant Center, Leiden. [4]Dept. op Radiology. Leiden University Medical Center, Leiden, The Netherlands.

11.40 Kidney transplantation from living donor: Does pre-implantation biopsy predicts outcome? (p. 137)
H. Nassereddine[1], S. Aydin[1], L. Elens[2], V. Haufroid[3], M. de Meyer[4], N. Kanaan[5], A. Jouret-Mourin[1], M. Mourad[6]. [1]Dept. of Pathology - Cliniques Universitaires Saint-Luc, Brussels. [2]Louvain Drug Research institute-Université Catholique de Louvain, Brussels. [3]Louvain Center for Toxicology and Applied Pharmacology, Brussels. [4]Dept. of Surgery and Abdominal Transplantation Division, Brussels. [5]Dept. of Nephrology Dept. - Cliniques Universitaires Saint-Luc, Brussels. [6]Dept. of Surgery and Abdominal Transplantation - Cliniques Saint-Luc, Brussels, Belgium.

11.50 Time trends in liver transplantation for primary biliary cholangitis in Europe over the past three decades (p. 138)
Q.P. Janssen[1], M.H. Harms[1], R. Adam[2], C. Duvoux[3], H.R. van Buuren[1], B.E. Hansen[1], H.J. Metselaar[1]. [1]Dept. of Gastroenterology and Hepatology, Erasmus Medical Center, Rotterdam, The Netherlands. [2]Hepato-Biliary Center, AP-HP Paul-Brousse Hospital, Paris Sud University, Paris, France. [3]Dept. of Gastroenterology and Hepatology, Marne-la-Vallée University Hospital, Paris, France.

12.00 Lunch break

Plenary session 16 — Willem Burger Zaal

Chairs: *Prof. Fabienne Dobbels, Psychologist, Academic Centre for Nursing and Midwifery, KU Leuven*
Dr. Jacqueline van de Wetering, nephrologist, Erasmus MC, Rotterdam

Topic: ***Same borders for doctors and patients*?**

(Voordrachten en dia's tijdens dit symposium zijn in het Nederlands)

13.00 Introduction
Prof. dr. Herold Metselaar, Erasmus MC, Rotterdam, The Netherlands

13.05 Crossing the border of PROM implementation
Marc Hemmelder, bestuurslid Nefrovisie

13.20 Crossing emotional borders
Evi van Kempen, Beleidsmedewerker Eigen Regie & Ervaringskennis delen Nierpatiënten Vereniging Nederland

13.35 Crossing physical borders
Peter van Maurik, auteur van het boek 'Weg van mijn hart'

13.50 Discussion / Q and A

14.00 End of program

Parallel session 17 – Young Professionals Van Rijck/Ruys Zaal

Chairs: *Dr. Dorottya de Vries, surgeon, LUMC, Leiden*
Nathalie Duerinckx, PhD student heart transplantation, Leuven

Topic: Young Professionals in Transplantation

Spreektaal: *Nederlands*

14.00 Vertoning documentaire over niertransplantatie
met interactieve discussie

15.15 Koffiepauze

Parallel session 18 - Clinical — Willem Burger Zaal

Chairs: *Prof. dr. Stefan Berger, internist-nephrologist, UMC Groningen*
Dr. Nicolas Meurisse, transplant surgeon, ULG, Liège

Language: *English, presentation time 7 min., discussion 3 min.*

14.00 3D Endoscopic Donor Nephrectomy Versus Robot-Assisted Donor Nephrectomy: a Detailed Comparison of Two Prospective Cohorts
E.E.A.P. Mulder, S. Janki, T. Terkivatan, K.W.J. Klop, J.N.M. IJzermans, T.C.K. Tran. Dept. of Surgery, Division of HPB and Transplant Surgery, Erasmus Medical Center, Rotterdam, The Netherlands.

14.10 Impact of extraction time during organ procurement on kidney function after transplantation.
E. Rademaker - van Straalen[1], P.M. Rebers[1], J.A.M. Hagenaars[1], J. van de Wetering[2], J.N.M. IJzermans[1], R.C. Minnee[1]. [1]Dept. of Surgery, division of HPB & Transplant Surgery, Erasmus Medical Center, Rotterdam. [2]Dept. of Nephrology, Erasmus Medical Center, Rotterdam, The Netherlands.

14.20 Impact of parathyroidectomy timing on graft function after kidney transplantation.
W.Y. van der Plas[1], P. von Forstner[1], M. El Moumni[1], E.Y. Koh[2], D.D. Dulfer[1], T.M. van Ginhoven[3], J.I. Rotmans[4], N.M. Appelman-Dijkstra[5], A. Schepers[6], E.J. Hoorn[7], J.T.H.M. Plukker[1], L. Vogt[8], A.F. Engelsman[2], E. Nieveen van Dijkum[2], S. Kruijff[1], R.A. Pol[1], M.H. de Borst[9]. [1]Dept. of Surgery, University Medical Center Groningen, Groningen. [2]Dept. of Surgery, Academic Medical Center, Amserdam. [3]Dept. of Surgery, Erasmus Medical Center, Rotterdam. [4]Dept. of Internal Medicine, Leiden Medical Center, Leiden. [5]Dept. of Endocrinology, Leiden University Medical Center, Leiden. [6]Dept. of Surgery, Leiden Medical Center, Leiden. [7]Dept. of Nephrology, Erasmus Medical Center, Rotterdam. [8]Dept. of Nephrology, Academic Medical Center, Amserdam. [9]Dept. of Nephrology, University Medical Center Groningen, Groningen, The Netherlands.

14.30 The impact of aorto-iliac calcifications on patient and graft survival in renal transplant recipients using the TASCII classification.
A.A. Rijkse[1], H.J.A.N. Kimenai[1], M.A. van der Zijden[2], J.I. Roodnat[2], S. ten Raa[3], D.C. Bijdevaate[4], J.N.M. IJzermans[1], R.C. Minnee[1]. [1]Dept. of Transplantation Surgery, Erasmus Medical Center, Rotterdam. [2]Dept. of Internal Medicine, Erasmus Medical Center, Rotterdam. [3]Dept. of Vascular Surgery, Erasmus Medical Center, Rotterdam. [4]Dept. of Radiology, Erasmus Medical Center, Rotterdam, The Netherlands.

14.40 Possible improvement of tissue donor potential by better definition and diagnosis of active systemic infection or sepsis
J.W. van der Veer[1], E.M.W. Jager[1], B. Knaake[1], A. Broeks[1], R. Bannink[1], R. Brohet[2], J.J. Haringman[1]. [1]Intensive Care Unit, Isala, Zwolle. [2]Innovation & Science, Isala, Zwolle, The Netherlands.

14.50 Long-term cognitive effects of kidney transplantation
A.L. Ziengs[1], S.J.L. Bakker[2], A.M. Buunk[1], M.F. Eisenga[2], A.W. Gomes-Neto[2], J.H. Annema - de Jong[2], J.M. Spikman[1]. [1]Dept. of Neuropsychology, University Medical Center Groningen, Groningen. [2]Dept. of Nephrology, University Medical Center Groningen, Groningen, The Netherlands.

15.00 Severity of postoperative acute kidney injury predicts development of chronic kidney disease after DCD liver transplantation
M. Kalisvaart[1], A. Schlegel[2], I. Umbro[3], J.E. de Haan[4], I. Scalera[2], W.G. Polak[1], J.N.M. IJzermans[1], D.F.M. Mirza[2], M.T.P.R. Perera[2], J. Isaac[2], A.P. Mitterhofer[5], P. Muiesan[6], J. de Jonge[1]. [1]Dept. of Surgery, Erasmus Medical Center, Rotterdam, The Netherlands. [2]Liver Unit, Queen Elizabeth Hospital, Birmingham, United Kingdom. [3]Renal Medicine, Sapienza University, Rome, Italy. [4]Intensive Care, Erasmus Medical Center, Rotterdam, The Netherlands. [5]Internal Medicine, Sapienza University, Rome, Italy. [6]Queen Elizabeth Hospital, Birmingham, United Kingdom.

15.10 End of session

15.15 Coffee break

Parallel session 19 – Nierteam aan huis — Van Weelde Zaal

Chairs: *Dr. Emma K. Massey, universitair docent, Erasmus MC, Rotterdam*
Prof. dr. Willem Weimar, nephrologist, Erasmus MC, Rotterdam

Spreektaal: *Nederlands*

14.00 Introductie
Prof. dr. Willem Weimar, nephrologist, Erasmus MC, Rotterdam

Uitdagingen rondom inclusie
Merel Kisteman, UMCG, Groningen
Jannet Waijer, UMCG, Groningen

Van intake naar voorlichting
Eline Wisse, OLVG, Amsterdam
Lobbetje Zwiers, OLVG, Amsterdam

De dynamiek in de huiskamer
Karin Wageveld, Erasmus MC, Rotterdam

Het patiënten perspectief
Dr. Sohal Ismail, Erasmus MC, Rotterdam

Overzicht resultaten
Steef Redeker, Erasmus MC, Rotterdam

15.15 Coffee break

Award session - plenary — Willem Burger Zaal

Chairs: *Prof. dr. Marlies E.J. Reinders, President NTV, internist-nephrologist, LUMC*
Prof. dr. Olivier Detry, President BTS, Transplant Surgeon, ULG

Language: *English*

15.45 Jon J. van Rood Award NTV 2018
Handed out by Prof. dr. Frans Claas, Leiden,
Lecture award winner

16.00 Belgium best PhD

Closing — Willem Burger Zaal

16.30 Closing by Carla Baan
Chair of the Local Organizing Committee

ORAL PRESENTATIONS

Bile duct regeneration: Characterization of human bile duct derived organoids

K. Burka[1], M.M.A. Verstegen[2], H.P. Roest[1], M. de Wolf[1], M.J.C. Bijvelds[3], H. Gehart[4], J. de Jonge[2], H.R. de Jonge[5], J.N.M. IJzermans[1], L.J.W. van der Laan[1]. [1]Dept. of Surgery, Erasmus Medical Center, Rotterdam, The Netherlands. [2]Dept. of Surgery, Erasmus Medical Center, Rotterdam, The Netherlands. [3]Dept. Gastroenterology, Erasmus Medical Center, Rotterdam, The Netherlands. [4]Hubrecht Institute, Utrecht, The Netherlands. [5]Dept. of Gastroenterology, Erasmus Medical Center, Rotterdam, The Netherlands.

Integrity of the biliary tree is imperative for liver function. During and after liver transplantation the biliary tree is often damaged by ischemia and may result in graft loss. Evidence suggests that the biliary tree harbors stem cells which contribute to bile duct homeostasis and repair during disease and after transplantation. The aim of this study is to expand and characterize biliary stem cells using 3-dimensional cultures of human bile duct organoids.
Human extra-hepatic bile ducts (n=32) were collected from donor liver grafts or explant patient livers at time of liver transplantation. Biliary organoid cultures were initiated using similar conditions as described for human liver biopsies (Huch *et al*., 2015, Cell) and propagated by weekly passaging for over 6 months. RNA expression analysis (gene array and q-PCR) and immunohistochemistry was performed. Transporter channel function was measured using Ussing chamber technology and Forskolin Induced Swelling assays. In addition, the hepatocyte differentiation potential of biliary stem cells was studied.
Organoids were efficiently grown from the common bile duct for many passages (>6 months) and compared to liver parenchyma-derived organoids. As expected, bile duct organoids stain positive for biliary cell markers CK19, EpCAM and MUC1. gene expression analysis showed that bile duct organoids are positive for adult stem cell markers LGR5 and Sox9 but also have some district gene expression profile compared to conventional liver organoids. Bile duct organoids are able to differentiate towards cholangiocyte cell phenotype. However, bile duct organoids showed less hepatic differentiation capacity compared to liver organoids. Further results suggest the presence of functional transport channels in the biliary organoids, including CFTR, as they were responsive to forskolin, vasoactive intestinal peptide and bicarbonate.
This study demonstrates the presence of LGR5-positive stem/progenitor cells in human extrahepatic bile duct which can be expanded long-term as organoids in cultures. In the future, these biliary organoids can potentially be used for bile duct regeneration in damaged grafts prior to liver transplantation.

Mitochondrial Damage-Associated Molecular Patterns (MTDs) Released from Hepatic Ischemia and Reperfusion Induce Inflammatory Responses

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Background: During liver transplantation ischemia and reperfusion injury (IRI), an immune driven inflammatory response provoked by cellular oxygen deprivation, is unavoidable. The inflammatory responses, resulting from acute oxidative stress and consequent hepatocellular death during the early reperfusion phase, cause the release of damage-associated molecular patterns. Recent studies show that the release of MTDs is directly linked with functionally important immune consequences and injury. We investigated the roles of MTDs in liver IRI.

Methods: Rat and human hepatocytes were used in the *in vitro* models, mice were used in an *in vivo* model of hepatic IR. Liver perfusate samples were obtained from porcine and human normothermic *ex vivo* liver perfusion (NMP) transplants from our collaborators and correlated to outcomes. MTDs were extracted and quantified by qPCR and PicoGreen assay. Liver biopsies were assayed by transmission electron microscopy (TEM) to assess for damaged mitochondria. MitoTracker was used to test the mitochondrial homeostasis by flow cytometry. The hepatocytes or macrophages were co-cultured with different concentrations of MTDs, and cell viability was demonstrated by apoptosis detection kit; the inflammatory cytokines (TNF-α, IL-6, and IL-1β) were tested by ELISA.

Results: The MTDs levels were significantly higher in IRI *in vitro*, and marked mitochondria damage was detected by TEM and flow cytometry. Co-culture of MTDs with hepatocytes significantly increased the cell death in a dose-dependent manner. Co-culture MTDs with macrophages significantly increased proinflammatory cytokine release via TLRs/MyD88 NF-κB pathway. The release of MTDs detected *in vivo* was associated with inflammatory cytokine secretion and more severe liver injury compared to the control. MTDs acted as an alarmin after hepatic IRI, which might contribute to the initiation of systemic inflammatory response. MTDs levels from pig DCD perfusate were higher than DBD perfusate samples in the pig NMP model, and higher level of MTDs were associated with worse clinical outcome in both the pig and human liver transplants following NMP.

Conclusion: Our results indicate that IRI can elicit a significant increase of MTDs both *in vitro* and *in vivo*, and that MTDs in *ex vivo* perfusates can be used as potential biomarkers of hepatic IRI and may predict outcomes after liver transplantation.

Urinary C5b-9 is an Independent Predictor of Graft Failure in Renal Transplant Recipients

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Introduction: Chronic antibody-mediated rejection is thought to be the main cause of late kidney-allograft loss, involving donor-specific antibody–mediated activation of the complement system. Activation of filtered or locally produced complement may contribute to the progression of renal failure via tubular formation of the terminal C5b-9 complement complex. The aim of this study was to determine the urinary C5b-9 excretion and to assess its association with long-term outcome in renal transplant recipients (RTRs).

Methods: We measured urinary C5b-9 in a well-defined cross-sectional cohort of RTRs. Urinary specimens were taken from the morning urine portion and terminal complement component C5b-9 was measured using an enzyme-linked-immunosorbent assay (ELISA). Cox regression analyses were used to investigate prospective associations with death censored graft failure.

Results: We included 639 RTRs (age 53±13 years; 58% males at 5.3 (1.8-12.2) years after transplantation). Mean eGFR was 52.2±20.1 ml/min/1.73m^2, urinary C5b-9 excretion was detectable in 102 (16%) RTRs with median [interquartile range] C5b-9 levels of 5.1 (2.8-12.8) ng/mL. During follow-up of 4.9±1.6 years, 75 RTRs developed death censored graft failure. In univariable analysis, detectable C5b-9 was associated with increased risk of graft failure (HR 4.17 [95%CI 2.63-6.63], P<0.001) compared to undetectable C5b-9. The association of detectable C5b-9 with graft failure remained (HR 4.19 [95%CI 2.62-6.70], P<0.001) independent of adjustment for age, sex, eGFR, and hs-CRP. Further adjustment for proteinuria>0.5 g/24h, did not materially alter the association of detectable C5b-9 with graft failure (HR 2.31 [95%CI 1.41-3.78], P=0.001).

Conclusion: Our results indicate that urinary C5b-9 is associated with graft failure, independently of potential confounders, including proteinuria. The results also suggest that urinary C5b-9 might be a useful biomarker for ongoing immunological injury and chronic kidney allograft deterioration. Our findings point towards a potential role for urinary complement activation in the pathogenesis of chronic allograft failure.

Immunomodulation by therapeutic mesenchymal stromal cells (MSC) is triggered through phagocytosis of MSC by monocytic cells

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Introduction: Mesenchymal stem or stromal cells (MSC) are under investigation as a potential immunotherapy. MSC are usually administered via intravenous infusion, after which they are trapped in the lungs and die and disappear within a day. The fate of MSC after their disappearance from the lungs is unknown and it is unclear how MSC realize their immunomodulatory effects in their short lifespan.

Matherials, methods and results: We examined immunological mechanisms determining the fate of infused MSC and the immunomodulatory response associated with it. Tracking viable and dead human umbilical cord MSC (ucMSC) in mice using Qtracker beads (contained in viable cells) and Hoechst33342 (staining all cells) revealed that viable ucMSC were present in the lungs immediately after infusion. Twenty-four hours later, the majority of ucMSC were dead and found in the lungs and liver where they were contained in monocytic cells of predominantly non-classical $Ly6C^{low}$ phenotype. Monocytes containing ucMSC were also detected systemically.
In vitro experiments confirmed that human $CD14^{++}/CD16^{-}$ classical monocytes polarized towards a non-classical $CD14^{++}CD16^{+}CD206^{+}$ phenotype after phagocytosis of ucMSC and expressed programmed death ligand-1 and IL-10, while TNF-a was reduced. ucMSC-primed monocytes induced $Foxp3^{+}$ regulatory T cell formation in mixed lymphocyte reactions.

Conclusion: These results demonstrate that infused MSC are rapidly phagocytosed by monocytes, which subsequently migrate from the lungs to other body sites. Phagocytosis of ucMSC induces phenotypical and functional changes in monocytes, which subsequently modulate cells of the adaptive immune system. It can be concluded that monocytes play a crucial role in mediating, distributing and transferring the immunomodulatory effect of MSC.

Impact of different dynamic preservation strategies on early renal function and physical machine perfusion parameters in a porcine DCD auto-transplant model

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Introduction: Continuous and end ischemic preservation strategies (hypothermic machine perfusion (HMP) and normothermic perfusion (NP)) have demonstrated improved early graft function compared to static cold storage (SCS) alone. The aim of this study was to evaluate the impact of several machine perfusion variables (oxygen, temperature as well as timing to start perfusion) on early graft function in a porcine auto-transplant model.

Materials and methods: The left kidney of a ±40 kg female Landrace pig was exposed to 30 minutes of warm ischemia by vascular clamping and randomized after standard procurement and ex vivo donor blood flush out to one of 6 studied preservation strategies: 1) 22hrs SCS, 2) 22hrs HMP, 3) 22hrs oxygenated HMP, 4) 20hrs HMP + 2hrs NP, 5) 20hrs SCS + 2hrs oxygenated HMP, and 6) 20hrs SCS + 2hrs NP. The LifePort Kidney Transporter® (Organ Recovery Systems) was used for all machine perfusion strategies. The left kidney was auto-transplanted in a right orthotopic position. The primary and secondary endpoints were kidney function and physical parameters during machine perfusion, respectively.

Results: Thirty-seven auto-transplants were performed with a minimum of 6 pigs per study group. Serum creatinine at day 3 after transplantation was significantly lower both in the 22hrs oxygenated ($p=0.0011$) and non-oxygenated HMP ($p=0.0116$) group compared to 22hrs of SCS but no treatment effect could be demonstrated between these 2 HMP groups ($p=0.3622$) at day 3. End ischemic strategies could not be demonstrated a statistical significant treatment benefice on early graft function compared to SCS. From 8 to 19 hours on machine perfusion the renal blood flow (RBF) was significantly higher in the continuous oxygenated compared to the non-oxygenated HMP group. However RBF at the end of machine perfusion was comparable between these 2 groups ($p=0.0812$). NP results in the highest RBF when performed after HMP ($p<0.0001$) but no difference in RBF was observed between oxygenated HMPO2/NP after SCS ($p=0.31$).

Conclusions: In this study, hypothermic perfusion strategies only when applied from time of kidney procurement until transplantation and irrespective of supplemental oxygenation, led to a positive effect on early graft function. Continuous oxygenated HMP preservation demonstrated a faster increase of RBF compared to non-oxygenated HMP but without any effect on graft recovery. Further studies are needed to evaluate the effect of oxygen pressure during HMP.

Towards graft engineering using decellularized porcine liver scaffolds and recellularization with human liver organoids

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Liver transplantation is the only effective treatment for end-stage liver disease, but donor shortage remains a limiting factor. Recent advances in tissue engineering focus on generation of native extracellular matrix (ECM) scaffold material by decellularizing complete livers. Decellularizing liver tissue is feasible, however, in order to create transplantable liver grafts, these scaffolds need to be recellularized with functional cells such as hepatocytes, cholangiocytes and endothelial cells. Aim of this study is to optimize the recellularization in segments of decellularized porcine liver using hepatic cell lines and human liver-derived LGR5+ organoids.
Porcine livers were obtained from deceased pigs (average weight: 32kg, n = 4) and stored at . Livers were thawed and perfused via the portal vein (average pressure of 90mm Hg), eight hours with 4% triton-x-100 and 1% ammonium solution. Afterwards the liver was washed with demineralized water for 4 hours and DNase-1 (400u/mg) for 2 hours. Histological analysis and DNA quantification confirmed decellularization.
Small liver segments were prepared (average size) and they were cannulated via the arteriole. Segments were incubated () with cell culture medium prior to infusion of cells. Segments are recellularized with HepG2 or human liver organoids. Per segment, 10 million cells are infused in a staged manner. Small volumes 0,5mL, containing 2 million cells, are infused the cannula every 30 minutes, which was repeated for five times. Four hours after the last injection, the segment was connected to a perfusion setup. The segments were perfused for 5 to 7 days with a pulsatile flow of 11mL/min. After the culture period, segments were fixed in 4% paraformaldehyde, processed for paraffin embedding, sectioned and histologically analyzed.
The infused HepG2 and human liver-derived organoids were well capable of infiltrating small pieces of porcine liver scaffold. Cells were found in the parenchymal areas of the liver segments. Small islands could be found in throughout the segments. The organoids self-organized into folded single layered structures with cuboidal cells.
In conclusion, this proof-of-concept study show that recellularization of porcine liver scaffold with human liver- organoids is feasible. These initial results encourage further detailed analysis of the use of decellularized liver ECM as a scaffold material for engineering functional liver tissue.

Tranilast pre-treatment attenuates intestinal ischemia reperfusion injury

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Introduction: Intestinal ischemia reperfusion injury (IIRI) is unavoidable during intestinal transplantation and contributes to poor outcomes. Tranilast (TL) is a medication used for the treatment of rheumatoid arthritis, Crohn's disease and severe atopic dermatitis. Given its anti-inflammatory and anti-oxidant properties, we hypothesized that TL may reduce IIRI in a rat model.

Methods/Materials: In a validated rat model of IIRI (isolated clamping of the superior mesenteric artery), 3 groups were tested: 1/Sham (laparotomy only); 2/ TL + 60' Ischemia + 60' reperfusion; 3/Vehicle + 60' Ischemia + 60' reperfusion (6/group). At the end of this period, the animals were sacrificed by exsanguination under anesthesia. To measure survival, 10 additional animals per group underwent the same procedure and 7-day survival was recorded. TL (650 gk/g) was administered by oral gavage 24 and 3 hours before IIRI. The endpoints were: histology (Park/Chiu score), plasma biomarkers for enterocyte damage (L-lactate, I-FABP), intestinal permeability (Ussing chamber), tissue pro- and anti-inflammatory cytokines (RT-PCR), endotoxin translocation (Limulus Amebocyte Lysate Pyrogent kit), HO-1 protein (Western blot) and 7-day survival.

Results: IIRI led to severe damage of the intestinal wall, both structurally and functionally. These alterations were linked with increased endotoxin plasma levels and upregulation of pro-inflammatory cytokine in tissue. TL pre-treatment attenuated these parameters and improved 7-day survival (see Table) and upregulated HO-1 expression. Blocking HO-1 expression nullified the protective effect of Tranilast.

Conclusion: Tranilast pre-treatment improves intestinal permeability, reduces inflammation, lowers endotoxin translocation and improves survival probably *via* HO-1 upregulation.

MicroRNA-126 measurements in right ventricular endomyocardial biopsies of heart transplant recipients with and without cardiac allograft vasculopathy

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Background: Endothelium-enriched microRNAs (miRs) appear to be involved in the development of CAV. Recently, serum miR-126-3p and -5p, known endothelial microRNAs with a crucial function in angiogenesis and re-endothelialization, seem to provide additional evidence for cardiac allograft vasculopathy in addition to clinical predictors. However, their myocardial expression in and relationship with CAV is unknown. Our study aim was to investigate the expression of endomyocardial microRNA-126-3p and microRNA-126-5p levels in heart transplant recipients and their relationship with allograft vasculopathy.

Methods: We studied 39 heart transplant recipients, 21 with proven allograft vasculopathy (CAV+) and 18 without allograft vasculopathy (CAV-) with serial coronary angiograms. Eight patients with end-stage native coronary artery disease were added to the study in order to investigate disease specificity. The mRNA levels of miR-126-3p and miR-126-5p, and few of their targets, were determined by qRT-PCR in right ventricular endomyocardial biopsies obtained at baseline and during routine follow-up.

Results: No significant difference in myocardial microRNA-126-3p or -5p levels was noted between CAV+ and CAV- patients at baseline. At baseline, the ratio in miR-126-3p/-5p levels was similar in both groups. In contrast, the miR-126-3p/-5p levels were significantly lower in the CAV+ group compared to the CAV- group at follow-up; a difference primarily driven by lower miR-126a-3p levels. This was in contrast to native CAD patients in which miR-126-3p and -5p levels and the ratio were significantly higher.

Conclusions: Our data provide evidence for a distinct microRNA signature in patients with allograft vasculopathy. In contrast to CAD patients, the lower ratio of miR-126-3p/-5p clearly coincides with the development of cardiac allograft vasculopathy. Further studies are warranted to determine if serial measurement of myocardial microRNA-126 products could help in risk assessment and early detection of CAV.

Renal allograft transcription analysis with NanoString® nCounter® analysis system reveals similar signature of acute T cell mediated rejection in patients treated with tacrolimus or belatacept

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Introduction: Identification of biomarkers of acute kidney allograft rejection (AR) can potentially lead to improved diagnostics. Here, we analyzed the expression of 209 genes in biopsies of kidney transplant patients with AR with the NanoString® nCounter® analysis system. With this novel technique, only low quantities of RNA from formalin fixed paraffin embedded (FFPE) biopsies are required and no amplification is needed. Therefore, residual material used for histopathological diagnosis can be analyzed. The objectives of this study were: i) to examine the gene expression profile in biopsies of patients with acute T cell-mediated rejection (aTCMR) versus patients without aTCMR and ii) to compare the gene expression profiles in patients with aTCMR treated with tacrolimus versus patients treated with belatacept.

Materials and Methods: Biopsies from 21 kidney transplant were studied. Seven biopsies from patients with aTCMR (Banff 1b-3, without C4d) treated with tacrolimus as maintenance immunosuppressive therapy, 9 biopsies from patients with aTCMR treated with belatacept, and 5 negative controls (for-cause biopsies without histomorphological changes) were included. Patients were matched for age, days after transplantation and Banff 2015 category. RNA was extracted from FFPE biopsies and gene expression was analyzed using the NanoString® nCounter® analysis system. Gene expression was identified by scaled estimates (JMP, Fit Model). P values were corrected for false discovery (JMP, addin)

Results and Discussion: A distinct pattern was seen in biopsies with aTCMR compared to biopsies without rejection. Comparison of aTCMR and controls identified 60 genes with higher expression (FDRPV <0.05 to 2E-6). The most significant were T cell associated genes, CD3, CD8, and CD4 ($p < 10E-5$), and interferon ($p = 2x10E-3$) inducible genes (CXCL9, CCL5, TBX21 $p< 10E-3$), plus effector genes (GNLY, ITGAX $p<10E-3$). This overall pattern is that of aTCMR. Interestingly, pairwise estimates showed no significant differences between belatacept or tacrolimus treated subjects with aTCMR.

Conclusion: Gene expression analysis on FFPE biopsies with the novel technique NanoString® nCounter® analysis system can distinguish kidney transplant biopsies showing aTCMR from those of without aTCMR. Interestingly, we found no differences in gene expression profiles in renal allograft biopsies showing aTCMR in subjects receiving tacrolimus or belatacept-based immunosuppressive regimens.

New ways of reporting on Dutch kidney transplantations

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Renal transplant Centers differ in policies concerning patient wait list registration, donor kidney acceptance, HLA matching, etc. Insight in these differences was only available after special and time consuming requests. To have more accurate and extensive information on the outcome of these policies the Dutch Transplant Foundation and the national kidney transplantation advisory committee (LONT) developed a new annual kidney wait list, transplant and outcome report.
This report includes both an overview on national and Center level. Information on wait list, and transplantation is portrayed in (cross) tables. Long-term graft failure and patient mortality on national level per donor type are shown with Kaplan Meier curves and log rank tests, as well as short-term outcome in more recent cohorts. Comparison per Center is performed with funnelplots on incidence of graft failure and patient mortality; both crude and recipient case mix corrected.
The reports show for instance that the active wait list (T) is around 650 patients and that the median waiting time from start dialysis has declined to 2.6 years (25^{th} and 75^{th} percentile: 1.7 – 4.2 years) in 2016; Blood group O patients have an evident disadvantage with 3.6 waiting years ($25^{th}$and 75^{th} percentile: 2.2 – 5.0 years) in normal ETKAS allocation. Trends like an increase of elderly wait list patients (26% in 2016), non transplantable (NT) patients (75% of total list), and preemptive post-mortem donor transplantation (10%) are easily visible. The Kaplan Meier curves show less difference in early graft loss between DBD and DCD kidney transplants in more recent cohorts. A joint publication with Nefrovisie on national dialysis and transplant data gives a total picture on Dutch renal replacement therapy practice. The report also shows striking differences between kidney transplant Centers for the proportions of NT wait list (range 52% - 84%), post-mortem donor transplants (range 31% - 51%) and preemptive post-mortem transplants (range 5% - 19%), and median dialysis waiting time (range 2.1 - 3.9 year). Funnel plots with or without recipient case mix correction show that mortality and graft survival incidence per Center is within range.
This annual report uncovers trends in Dutch transplant practice and can be useful for Centers to evaluate their policies. Furthermore, the cooperation with Nefrovisie can lead to a more inclusive overview on the national renal replacement therapy practice.

Shifting paradigms in Intestinal Transplantation: from rescue therapy to standard treatment?

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Introduction: Intestinal Transplantation (ITx) is the treatment of choice for patients with complicated intestinal failure. Furthermore, there is a growing indication in patients whose underlying disease is life-threatening, such as diffuse portomesenteric thrombosis. Traditionally, ITx has had inferior long-term survival compared to other solid-organ transplants. This often leads to late referral when malnourishment and vascular access problems increase perioperative risks.

Aim: To study the results from our single center cohort of ITx patients and discuss future directions in the field

Methods: We performed a retrospective analysis of our prospectively maintained database of our cohort of ITx patients transplanted from 2000-2017. All relevant data such as demographics, indication, graft type, rejection episodes, survival, costs and quality of life were recorded.

Results: In this period, 17 patients (13 adults (median age 43 years) and 4 children (median age 6 years) were transplanted. The majority of indications were short bowel syndrome (59%) and diffuse portomesenteric thrombosis (24%). There were 7 isolated ITx, 5 combined Liver-ITx and 4 multivisceral grafts. All patients received basiliximab induction therapy followed by tacrolimus, azathioprine and corticosteroids as maintenance therapy. 10-year all-cause survival was 87%. TPN could be stopped before discharge in all surviving patients. Median Karnofsky score amongst survivors was 90-100%. There were 10 acute rejection episodes in 6 patients which all resolved with medical treatment. 1 patient developed sclerosing mesenteritis which was treated with everolimus. 2 patients died in the first year after ITx due to invasive aspergillosis infections. The first year cost of ITx was more expensive than HPN (€185.662 vs €59.524). However, in the subsequent year ITx patients became far cheaper compared to HPN (Y1:€44.893, Y2: €18.976).

Conclusions: ITx has evolved from an experimental procedure to an established therapy for complicated intestinal failure patients. Diffuse splanchnic thrombosis is an increasing indication for multivisceral transplantation. Integrating intestinal failure and ITx care into a single care pathway allows for correct patient selection and timely listing. Excellent results matching HPN in addition to lower costs than HPN and good quality, suggest that indications for ITx should be cautiously expanded to more intestinal failure patients.

Time needed for removal of the liver after in situ cold perfusion in donation after circulatory death donors is an independent risk factor for the development of biliary strictures and early graft loss after transplantation

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Introduction: Liver transplantation (LT) from donors after circulatory death (DCD) is associated with an increased risk of non-anastomotic biliary strictures (NAS) and early graft loss (EGL). The time between withdrawal of life support and start of *in situ* cold flush in the donor is an important risk factor for NAS after DCD LT due to warm ischemic injury of the biliary tree. However, even after *in situ* cold flush, donor livers continue to suffer warm ischemia as the liver temperature stays between 15-20°C until stored in a box with ice. The aim of this study was to determine whether duration of donor hepatectomy time is associated with an increased risk of NAS and/or EGL after DCD LT.

Methods: A multicenter retrospective study was performed including all adult patients who underwent DCD LT's between 2004-2017. Baseline donor and recipient characteristics and data on post-transplant outcomes were collected and analyzed. Donor hepatectomy time was defined as time from *in situ* cold flush until end of hepatectomy, NAS as bile duct stenosis within two years after LT at any location in the biliary tree other than the anastomosis, EGL as graft loss within 3 months, donor warm ischemia time (WIT) as time from cardiac arrest until start of cold flush. Continuous data are expressed as median (IQR).

Results: Of 270 DCD LT's, 32 patients were excluded because of incomplete donor data. Baseline characteristics in the remaining 238 procedures were as follows: donor age 47 (36-54) years, donor BMI 24 (22-26) kg/m^2, recipient MELD-score 20 (15-24) and recipient age 55 (48-62) years. Donor WIT was 16 (13-19) min, cold ischemia time 416 (358-461) min. Median donor hepatectomy time was 62 (49-76) min with significant differences among procurement teams. Overall rate of NAS was 22.7% and EGL occurred in 13.4%. Using univariate analysis, donor WIT, donor hepatectomy time and donor age were identified as significant risk factors for NAS and EGL. After multivariate logistic regression analysis donor hepatectomy time (OR 3,17; 95% CI, 1,37-7,33; p=0.007) and donor age (OR 2,24; 95% CI, 1,17-4,29; p=0.015) were identified as significant independent risk factors for the development of NAS and/or EGL.

Conclusion: Donor hepatectomy time is an independent risk factor for the development of NAS and/or EGL after DCD LT. Livers continue to suffer relatively warm ischemic injury during donor hepatectomy and this time period should be kept as short as possible, especially in DCD donors.

Combined Calorie and Protein Restriction in Live Kidney Donors Improves Kidney Function in Both Donors and Transplant Recipients

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Introduction. Ischemia-reperfusion injury (IRI) negatively impacts on transplant outcome. Short-term dietary and protein restriction protects against IRI in mice. Previously, we showed that preoperative combined calorie and protein restriction (CCPR) is save in kidney donors and adherence to the diet was shown by compliance markers. Here, we investigated the effects of CCPR on outcome in live kidney donors and their recipients.

Methods. Thirty-five live kidney donors were randomized into either the CCPR (n=15) or control (n=20) group. The CCPR diet contained 30% fewer calories and 80% less protein for five days prior to donation; the control group had no restrictions. Effects of CCPR were assessed via metabolic parameters and postoperative kidney function of donors and recipients using percentage of serum creatinine compared to values preoperatively and percentage of acute tubular necrosis (ATN) determined by a MAG3 scan. Gene expression analysis was performed on biopsies taken before and after IRI.

Results. All patients complied to the CCPR, while no changes in metabolic parameters occurred due to the diet. From postoperative day (POD) 2 (P=0.011) up until 1 month postoperatively (P=0.036) kidney function of the donors was significantly better in the CCPR group. Kidney function of their recipients improved significantly from POD 4 (P=0.020) up until POD 14 (P=0.019). Partial ATN on POD 1 occurred in 1/15 of the CCPR donors and 6/20 in the control group (P=0.06). CCPR inhibited immune regulation pathways and anti-inflammatory regulator NFKB1A.

Conclusions. Five days of a preoperative calorie- and protein restriction diet in live kidney donors reduces the incidence of ATN, ameliorates kidney function in both donors and their recipients, and suppresses the immune response in the kidney on a transcriptional level. These results are the first to successfully translate the beneficial effects of short-term dietary restriction on postoperative outcome into the clinic.

The impact of cold ischemia time on outcomes of deceased donor kidney transplantation: does every hour count?

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Aim: Cold Ischemic Time (CIT) is a well-known risk factor among the renal transplant community, however its precise limits to define high-risk donor kidneys for transplantation are not yet clear. Evidence suggests that kidneys from circulatory-death donors are particularly affected by cold ischaemic injury. We aimed to compare impact of cold ischaemic time in circulatory-death versus brain-death donor kidneys on graft failure and mortality, and relate these limits to donor age.

Methods: We used the prospective Dutch Organ Transplantation Registry to include 2153 adult recipients of first brain-death (n=1266) and circulatory-death (n=887) donor kidneys after static cold storage, transplanted from 2005 to 2012. Final follow-up date was May 1, 2015. CIT was non-linearly modelled with splines. Analyses were adjusted for 21 confounders, considered by literature search and clinical experience. Associations and interactions between CIT, donor type, donor age and five-year (death-censored) graft survival, and mortality were evaluated.

Results: Median cold ischaemia time was 16.2 hours (IQR 12.8-20.0), ranging from 3.4 to 44.7 hours for brain-death, and 4.7 to 46.6 hours for circulatory-death donor kidneys. At 22 hours of cold ischaemia time or more, five-year graft failure risk was significantly higher for kidneys donated after circulatory-death versus brain-death (adjusted HR 1.45, 95%CI 1.01-2.49, p=0.043). This risk was significantly higher at 19 hours of cold ischaemia time if kidneys were from 60-year-old circulatory-death donors compared to brain-death donors of same age (adjusted HR 1.33, 95%CI 1.00-1.78, p=0.045). The additional insult of increased cold ischaemia in kidneys from circulatory-death donors was also found for death-censored graft failure, but did not show significant differences on the outcome of mortality. Within the Eurotransplant Senior Program, where donors aged ≥65 years are allocated to recipients aged ≥65 years, also an increased five-year risk of graft failure was observed if donors were from DCD.

Conclusions: Circulatory-death as compared to brain-death kidneys are less resilient to ischemia-mediated damaged with a significant higher risk for graft failure after 22 hours of CIT. Our data can help to optimize the scheduling of the surgery, and future studies can implicate whether there may be different limits for CIT using machine perfusion.

Improved risk stratification of pretransplant donor specific Antibodies with epitope analyses

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The presence of (cytotoxic) antibodies against donor human leukocyte antigens (DSA) prior to transplantation is considered a contraindication for transplantation. Detection of these antibodies is widely used for donor exclusion. HLA antibody detection by single antigen bead assay (SAB) is much more sensitive than by complement-dependent crossmatches (CDC-XM). In the Dutch PROCARE Consortium study the impact of SAB detected DSA on graft survival was determined for all (CDC-XM negative) kidney transplantations performed between 1995 and 2006 for which pretransplant serum was available. The impact was most pronounced in the 3237 deceased-donor transplantations: transplantations positive for SAB detected DSA (N=430) had a 16% worse 10-year graft survival than those without DSA. Due to the lack of a second field HLA typing of the donor, donor specificity of the SAB detected antibodies was initially determined at serological (split) level.
The SAB assay however allows for a second field definition of antibody specificity. On basis of the data present in the HLA epitope registry (http://www.epregistry.com.br) the most likely epitope specificity of the detected antibodies was defined. NMDP HLA-haplotype frequencies were used to determine the most likely second field HLA types of all recipients and donors in our cohort. Combination of these tools enabled the determination of donor anti-HLA-*epitope* specific antibodies (DESA) in the pretransplant serum. Pretransplant DESA positive deceased-donor transplantations (N=312) had a 20% poorer 10-year graft survival than those without DESA. A higher number of DESA led to an even worse graft survival i.e. transplantations with more than 2 DESA (N=236) had a 25% poorer graft survival compared to transplantations without DESA. We conclude that even without the exact knowledge of both the HLA-epitope specificity of the SAB detected antibodies and the mismatched donor HLA-epitopes, the number of pretransplant DESA might be a better parameter to stratify risk than the presence of serologically defined DSA.

Double J is superior to externally draining ureteric stent in enhancing recovery after

living donor kidney transplantation

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Introduction: Prophylactic ureteral stenting in kidney transplantation has been proven to reduce urological complications, such as urine leakage and ureteral obstruction. However, there is no consensus on the optimal stent design. We aimed to compare the influence of Double J (JJ) catheters and externally draining ureteric stents on the early recovery after living donor kidney transplantation.

Methods: Between April 2016 and October 2017 a prospective cohort study was performed on 80 recipients of living donor kidney transplants. The patients were divided in two cohorts, the first cohort received a externally draining ureteric stent (splint) in accordance with our standard protocol. The second cohort received a JJ catheter to stent the ureterovesical anastomosis. The splint was removed after 5 days, the JJ catheter after 2-3 weeks at the outpatient clinic by cystoscopy. Early recovery after surgery was daily monitored until patients were discharged. The primary outcome measure was the Quality of Recovery-40 (QoR-40) score. The Quality of Recovery-40 is a validated patient-rated questionnaire with a maximum score of 200, measuring 5 dimensions of recovery after surgery including comfort, emotions, physical independence, pain, and patient support. Secondary outcomes were components of pain scores, achievement of discharge criteria, length of hospital stay, and complications.

Results: The mean QoR-40 scores on postoperative day 5 of the recipients with JJ catheter and splint were 190.3 (SD 8.0) and 185.0 (SD 13.9) respectively, p 0.02. In accordance to the validated QoR-40 questionnaire, the difference of 6.3 score points on postoperative day 5 is a clinically relevant improvement in postoperative recovery, as result of the JJ catheter. Furthermore, when compared to patients with a splint, patients with a JJ catheter reached the discharge criteria earlier, and consequently their length of hospital stay was significantly shortened with 1 or 2 days. Daily pain scores were comparable between both groups, except for slightly raised pain scores in the double J group on postoperative days 1 and 2, which can be explained by earlier mobilization. Early urological complications were similar between the two groups.

Conclusion: Double J stenting improves the early postoperative recovery after living donor kidney transplantation, when compared to externally draining ureteric stents.

The rise in serum creatinine shortly after kidney donation is correlated with skeletal muscle mass as measured by CT image analysis.

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Background: Sometimes serum creatinine rises to unexpected high levels shortly after donor nephrectomy, despite of a good preoperative renal function (estimated GFR and calculation in the 24 hour urine collection). Stabilization of renal function is expected to be attained 1 month after nephrectomy. The question arises whether this rise in serum creatinine is associated with a reduced renal reserve capacity, or that it is just a reflection of muscle mass. The goal of the current research is to investigate the correlation between skeletal muscle mass and the difference of serum creatinine before- and after kidney donation(Δcreatinine).

Methods: All potential donors of both VU University Medical Center and Academic Medical Center in Amsterdam underwent a non-contrast CT scan between 2006 and 2014. A single CT slice of the third lumbar vertebra(L3) was used to assess skeletal muscle area(SMA cm^2) which is correlated with total skeletal muscle mass. Serum creatinine(µmol/L) levels were measured before-, 1 day- and 3 months after kidney donation.

Results: Due to missing data three subgroups were made for analysis. Of the 689 donors, 399 were included for the subgroup analyses of eGFR equations *before* donation, 119 were included for the subgroup analyses with serum creatinine levels *1 day* after donation and 275 were included for the subgroup analysis of serum creatinine *3 months* after donation. Mean rise of serum creatinine 1 day after donation was 45.1±19.9 µmol/L. After correction for age, sex and baseline creatinine levels, the increase of creatinine(Δcreatinine) 1 day after donation was positively correlated with SMA(P-value=0.024). Moreover, donors with high SMA had a higher rise in serum creatinine 1 day after donation in comparison to low- and intermediate SMA. The mean rise of serum creatinine 3 months after donation was 38.0±11.1 µmol/L. After correction for age, sex and baseline creatinine levels, Δcreatinine 3 months after donation was no longer correlated with SMA(p-value=0.089).

Conclusions: A bigger rise in serum creatinine 1 day after donation is associated with more skeletal muscle mass. This association disappears after 3 months, which suggests that an unexpected high rise of serum creatinine shortly after donation is likely to be a reflection of large skeletal muscle mass and not of a decreased renal reserve capacity.

Resuscitation and viability testing of initially declined livers using sequential hypo- and normothermic machine perfusion with an acellular fluid: First results of the DHOPE-COR-NMP Trial

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Introduction: End-ischemic dual hypothermic oxygenated machine perfusion (DHOPE) and normothermic machine perfusion (NMP) of donor livers serve different goals. While a short period of end-ischemic HOPE resuscitates mitochondria and reduces ischemia-reperfusion injury, NMP allows for *ex-situ* functional testing of donor livers. We established a combined protocol of one hour DHOPE, followed by controlled oxygenated rewarming (COR), and NMP for resuscitation and viability assessment of high risk donor livers that were initially declined for transplantation by all Dutch liver transplant centers (DHOPE-COR-NMP trial).

Methods: The DHOPE-COR-NMP trial (NTR5972) was initiated in July 2017 and three livers were included until October 2017. To facilitate machine perfusion at different temperatures an acellular perfusion fluid containing an hemoglobin-based oxygen carrier (HBOC) was developed. Livers were deemed transplantable if bile production was ≥ 10 g, biliary pH >7.45, and perfusate pH and lactate levels normalized within the first 150 minutes of the NMP phase.

Results: All three livers produced sufficient amounts of bile (median cumulative bile production 57 g at 150 minutes of NMP). Liver 1 reached normal perfusate pH and lactate levels, as well as a biliary pH of 7.55 within 150 min of NMP. Peak ALT in perfusate was 540 IU/L. This liver was successfully transplanted, with the recipient in excellent condition at 3 months of follow-up. Liver 2 reached normal perfusate pH and lactate levels within 150 min of NMP, but biliary pH was 7.39. Peak ALT in perfusate was 4215 IU/L. Liver 3 did not reach normal perfusate pH and lactate levels during viability assessment. Moreover, biliary pH was 7.32. Peak ALT in perfusate was 8460 IU/L. Both livers 2 and 3 did not meet the viability criteria and were therefore discarded.

Conclusion: Sequential DHOPE, COR and NMP, using an acellular fluid containing an HBOC, is feasible and enables both resuscitation and viability testing of high risk donor livers prior to transplantation. This protocol provides a tool to expand the donor pool by selecting donor livers that can be transplanted safely despite initial decline based on a high-risk donor profile.

Immunosuppressive drug withdrawal late after liver transplantation leads to an improvement of lipid metabolism and liver function

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Background: Lifelong treatment with immunosuppressive drugs (IS) to prevent graft rejection in transplant recipients is accompanied by adverse effects, such as nephrotoxicity, recurrent infections, cardiovascular complications, and malignancies. Occasionally, liver transplant (LTx) recipients discontinue IS for medical reasons, without developing a rejection. These rejection and IS free LTx recipients have developed tolerance to their graft.
Objective: To assess the clinical effects of IS withdrawal late after LTx.

Methods: The study cohort consisted of tolerant LTx recipients (n=11), who had been withdrawn from IS for medical reasons on average 12 (range: 6-20) years after transplantation. The control group were LTx patients on IS (n=20; CNI n=17, IMPDH inhibitor n=3) matched with the study cohort for time after LTx, age, gender and primary disease. Liver and kidney function and lipid metabolism parameters at 1 year before, just before and 2 and 4 years after complete IS withdrawal for the tolerant group or matching time points after LTx for the control group were retrieved from electronic patient records.

Results: Liver function parameters bilirubin, aspartate transaminase (AST) and alanine transaminase (ALT) levels significantly improved (p=0.028, p=0.046, p=0.049, respectively) in the tolerant group 4 years after IS withdrawal compared to 1 year before withdrawal (averages 13.5 vs 11.3 µmol/L, 34.9 vs 27.9 U/L, 36.6 vs 33.5 U/L respectively). In the control group only ALT levels improved. Kidney function parameters (glomerular filtration rate (GFR), urea, and creatinine), did not improve after IS withdrawal in the tolerant group. Low-density lipoproteins (LDL) levels significantly decreased (p=0.027) in the tolerant group 4 years after IS withdrawal (average 3.0 vs 2.6 mmol/L), and high-density lipoproteins (HDL) levels remained stable. While HDL levels and HDL/LDL ratios were lower in the tolerant group before IS withdrawal compared to the control group, these differences disappeared after IS withdrawal in the tolerant group.

Conclusion: In tolerant LTx patients, lipid metabolism and liver functions improve after late IS withdrawal, but kidney function does not. It is likely that kidney damage is irreversible after long-term IS therapy. These results demonstrate the need for an accurate tolerance identification profile enabling identification of LTx patients eligible for safe IS weaning early after transplantation.

Production of Physiologically Relevant Quantities of Hemostatic Proteins During Normothermic Machine Perfusion of Human Livers.

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Background: Ex situ normothermic machine perfusion provides the opportunity to assess graft function and viability, particularly of sub-optimally functioning donor livers, prior to transplantation. During ex-situ NMP, donor livers usually resume normal metabolic and synthetic functions; such as hemostatic protein production. However, the quantities of these proteins produced are currently unknown.

Methods: Six donor livers declined for transplantation underwent 6 hours of end-ischemic NMP using a heparinized plasma-free perfusion fluid. Concentrations of key pro-hemostatic (Factors II, V, VII and X, fibrinogen and VWF), anti-coagulant (protein C and antithrombin III) and fibrinolytic (plasminogen and tissue-plasminogen activator) proteins were measured in perfusion fluid at regular intervals during NMP and compared with a plasma-based reference solution.

Results: Pro-coagulants showed an increase of 9-57% of the levels measured in the plasma reference solution whereas anticoagulant and fibrinolytic protein levels amounted to 41-71% and 18-116%, respectively.

Conclusion: This study demonstrates the capability of donor livers perfused with a plasma-free perfusion fluid to produce substantial amounts of pro-coagulant, anti-coagulant and fibrinolytic proteins during a relatively short period of NMP. These results are influential in determining appropriate anticoagulation protocols to avoid activation of hemostasis throughout NMP.

Phenotype and long-term outcome of the patients with histology of ABMR but without detectable donor-specific HLA antibodies

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Over the last two decades significant progress has been made in the diagnosis of antibody mediated rejection (ABMR), resulting in continuous adjustments of the Banff criteria. However, the Banff classification from 2015 defines ABMR as well as a separate category "suspicious for ABMR", with an incomplete phenotype.So far, a direct comparison of how these two groups differ in terms of graft injury and clinical outcome is lacking.
The aim of this study was to investigate the histological lesions in allograft biopsies in relation to allograft survival in patients who met the first two Banff histopathology criteria for ABMR (antibody-negative ABMR), in patients with definite ABMR (with circulating DSA), and in patients without ABMR. This study included 947 single kidney transplant recipients transplanted in one Center between 2004 and 2014. All 4390 post-transplant renal biopsies were rescored according to the current 2015 Banff criteria. The HLA antibodies in the recipient sera were determined for donor specificity (DSA) at Single Antigen Bead resolution using Luminex technology.
A total of 210 patients (22.2%) met the first 2 histological criteria for ABMR during the follow-up period. Of those, 80 patients had DSA (DSA_{pos}ABMR group), while in 130 patients DSA were not detected (DSA_{neg}ABMR). The DSA_{pos}ABMR group had a higher frequency of females and of repeat transplants ($p=0.03$ and $p<0.0001$, respectively). Patients in the DSA_{neg}ABMR group were more likely to have received an older kidney (mean: 51.1±14 vs. 45.8±14.5 years; $p=0.02$). The DSA_{neg}ABMR group had a significantly better graft outcome than the ABMR group in 10-year death-censored graft survival analysis (73.6% vs. 55.7%; $p=0.003$ by log-rank analysis). Compared to controls (ABMR negative group), the Cox model, adjusted for donor age, showed almost a fivefold increased risk for transplant failure in the DSA_{pos}ABMR group (HR=4.7; $p<0.0001$), but not for the DSA_{neg}ABMR group (HR=1.7, $p=0.086$). The only difference found in the histology profile between the two groups was that the C4d positivity was more common in DSA_{pos}ABMR group (mean Banff grade 1.44±1.4 vs. 0.83±1.2; $p=0.001$).
According to our results, patients with histological lesions of ABMR but without detectable DSA represent a different phenotype with superior graft survival compared to those having DSA and fully developed ABMR by the Banff criteria.Further work is necessary to elucidate the pathophysiology of histology of ABMR in absence of DSA.

Predictors for Adverse Pregnancy Outcomes in the Dutch Renal Transplant Population

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Introduction: Pregnancy in renal transplants (RT) is increasing during the last decades. Generally, there are good pregnancy outcomes in RT. However, there is a high risk for maternal hypertension and fetal complications including pre- and dysmaturity. Higher level of preconceptional serum creatinine, proteinuria and hypertension are associated with adverse pregnancy outcomes (APO). A recent publication shows that mid-term eGFR shows a U-shaped relationship between eGFR and APO. The prognostic value of midterm serum creatinine (Scr) and blood pressure (BP) drop in RT patients is unknown. Therefore, all Dutch university medical centers collaborated in a new data network named 'PARTOUT' (Pregnancy After Renal Transplantation OUTcomes) and investigated the predictive factors for APO in RT patients.

Method: A retrospective nationwide multi-center cohort study was carried out in women with a first pregnancy (>20 weeks) after RT in the Netherlands from 1960 to 2017. Data on transplantation, pregnancy and pregnancy outcomes were collected from (electronic) health records. Midterm Scr was defined as the lowest Scr in 8-20 weeks of pregnancy. The relationship between midterm Scr, BP and APO was assessed using multivariate regression. A combined adverse outcome was defined as low birthweight (<2500 g), preterm birth (<37 weeks), severe hypertension in 3rd trimester (>170 systolic BP, >110 diastolic BP), 3rd trimester Scr > preconceptional Scr.

Results: A total of 130 RT patients were included in the analysis. In 96 patients (76%) an APO occurred. Birthweight <2500g: 64 patients (55%); preterm birth <37 weeks 69 (57%); severe hypertension 15 (19%); high 3rd trimester Scr 42 (45%). In preliminary analysis higher levels of midterm Scr were associated with a higher risk of APO (98(28) vs 77(20) mmol/l p=0.001). On average, women with APO had no physiological BP drop in first trimester (p=0.002).

Conclusion: Besides known predictors for APO as preconceptional Scr our analysis shows a relationship between midterm Scr and blood pressure drop and adverse pregnancy outcomes. Both factors could be related to absence of renal vascular capacity to adapt to pregnancy. Future analysis of the PARTOUT and other RT dataset could investigate which other clinical parameters are the most useful in predicting adverse pregnancy and long-term RT function after pregnancy.

Favorable outcomes after heart transplantation in children: 18 years' experience of the national Dutch program at Erasmus MC.

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Aim: To evaluate the outcome of our national program for pediatric heart transplantation (HTx).

Methods: In this retrospective, single-center, descriptive study we report the outcomes of all children listed for HTx at our center between 1999 and 2017.

Results: In total, 67 patients with end-stage heart disease were listed for HTx, 29 boys and 38 girls. The majority of the patients were diagnosed with a form of cardiomyopathy (CM) (43 dilated CM, 8 non-compaction CM, 6 restrictive CM, 3 hypertrophic CM, 2 after chemotherapy) and congenital heart disease in 5 patients. Forty-six (69%) children were transplanted at a mean age of 10.5 years, of whom 11 were on mechanical circulatory support (MCS). Forty-three children survived with a mean follow-up of 6.7 years, 3 died after a mean of 3.9 years. Twenty-one (31%) children were not transplanted: 17 died on the waiting list 8 of whom on MCS, 1 was delisted after improvement of cardiac function on MCS, and 3 were still listed.
Outcomes after HTx were overall favorable: all returning to school, leading relatively normal lives and participating in age-appropriate physical activities. In the majority of the recipients, graft function has been good at long-term follow-up. One child has residual neurological sequelae after a stroke on MCS. Post-transplantation complications include increased EBV loads, or (early) PTLD resulting in lowering of immunosuppression (n=2), treatment with Rituximab (n=5) or chemotherapy (n=1). We did not encounter major graft vascular disease. Compliance to the immunosuppressive treatment however has been a serious problem, leading to severe rejection and graft dysfunction in some young adolescents.

Conclusion: HTx in children has a low overall morbidity and mortality rate. Currently, donor availability and mortality on the waiting list is the major limiting factor for a successful HTx.

Successful clinical experience with extended normothermic ex-vivo lung perfusion (> 8 hours)

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Aim: Ex-vivo lung perfusion (EVLP) has become a clinical reality with most reported cases for short-term (<4h) assessment of questionable lungs. To fully explore the EVLP potential, this time window should be safely extended. However, the graft function during longer EVLP largely remains unknown. We studied EVLP graft parameters and recipient outcome in clinical lung transplantation (LuTx) with EVLP time >8h.

Methods: Retrospective study (2013-2017) of 4 cases with normothermic portable EVLP (OCS™Lung) >8h. All patients underwent combined liver-LuTx with the liver first (cold storage) while the lungs were preserved on EVLP. Median age 43y (17-63); M/F ratio 1/3; indications: cystic fibrosis with cirrhosis (2); acute liver failure with COPD (1); hepatic epithelioid hemangio-endothelioma with lung metastases (1). EVLP time, cold/warm ischemic time (CIT/WIT), cross clamp time, Pulmonary Vascular Resistance (PVR), Peak Airway Pressure (PawP) and final oxygenation (PO2/FiO2) during EVLP, primary graft dysfunction at 72h (PGD72), ventilation days, rejection and patient/graft survival were analyzed. Results are presented as median (range).
Results: EVLP time was 625min (492-675), CIT 276min (80-497), WIT 66min(57-99), cross clamp time 923min (712-1232). PVR and PawP evolution remained stable (Image) and final PO2/FiO2 ratio was >300 for all cases (Image). No lungs were declined after EVLP. PGD72 grade was 2, 1, 0, 0 for each case respectively. Ventilation period was 6d (3-8). No rejections occurred. Actuarial patient/graft survival is 100% with a follow-up of 3y (2mo-4.2y).

Conclusions: In this unique series, pulmonary graft function remained stable during extended normothermic EVLP >8h, resulting in an excellent final EVLP oxygenation capacity with PO2/FiO2 >300 and excellent post-transplant outcome. Longer preservation periods may offer opportunities for long-distance travel, organ repair and immunomodulation prior to LuTx.

The evolution of pediatric liver transplantation in the Netherlands over the past two decades

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Introduction: Since 1982, pediatric liver transplantation has been increasingly performed in the Netherlands, with currently op to 25 pediatric liver transplantations each year. Donor availability is the main limiting factor in liver transplantation, especially in children, who need a perfect size appropriate graft. To expand the donorpool for children, living donor liver transplantation (LDLT) was introduced in the Netherlands in 2004, and its use has dramatically increased nowadays.

Aim: Evaluation of pediatric liver transplantations in the Netherlands over the past two decades.

Methods: A retrospective cohort study was performed of all pediatric patients who underwent primary liver transplantation in the Netherlands from 1995-2016. The outcomes of children after liver transplantation during 1995-2005 (cohort A; n=126) were compared to children transplanted during 2006-2016 (cohort B; n=169). A sub-analysis was performed in cohort B between liver transplantations with deceased donor livers (n=132) and LDLT (n=37).

Results: Almost all transplants in cohort A were derived from deceased donors (99%), whereas in cohort B 37 LDLTs (22%) were performed. In 2016, 50% of the pediatric primary liver transplantations were LDLT. The median age was significantly higher in cohort A, when compared to cohort B (4.4 vs. 2.5 years; p=0.015). Postoperative complications were comparable for both cohorts. Retransplantations within a year after liver transplantation were more often performed in cohort A, when compared to cohort B (25% vs. 12%; p=0.004). Only 2 patients (5.4%) after LDLT underwent retransplantation. Five-year survival in cohort B was significantly better, compared to cohort A (83% vs. 71%; p=0.014). LDLT was associated with a significantly better 5-year survival, when compared to deceased donor liver transplantation (95% vs. 81%; p=0.025).

Conclusion: Outcomes after pediatric liver transplantation in the Netherlands have improved over the last two decennia. With an actuarial 5-year survival of 83%, and even 95% for LDLT, we present a successful national pediatric liver transplant program.

Predictive Value of Right Heart Hemodynamics for Acute Kidney Injury After Heart Transplantation

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Background: Acute kidney injury (AKI) is a serious complication after heart transplantation (HTx), but its relation with preoperative right heart hemodynamics (RHH) remains unknown. The aim of the study is to determine whether listing RHH predict severity of AKI early after HTx, and to investigate the effect of AKI stages on 1-year survival.

Methods: In 595 HTx adult recipients, we evaluated preoperative RHH and the occurrence of AKI stages during the first postoperative. Pulmonary artery pulsatility index (PAPi), trans-pulmonary gradient (TPG), and diastolic pulmonary gradient (DPG) were calculated as composite parameters.

Results: AKI was developed in 430 (72%), including 278 (47%) stage-1, 11% (n=66) stage-2, and 14% (n=86) stage-3. Renal replacement therapy (RRT) was needed in 41 patients (7%), with high risk for chronic RRT-dependency at 1-year (odds ratio: 3.3 [95% CI: 1.6–6.6], p=0.001). Patients with higher AKI stages had higher baseline RAP (median: 7, 7, 8, 11 mmHg, p-trend=0.021), RAP/PCWP ratio (0.37, 0.36, 0.40, 0.47 p-trend=0.009), and lower PAPi values (2.83, 3.17, 2.54, 2.31 p-trend=0.012).When RAP ≥6mmHg, RAP and PAPi were associated with severity of AKI independently of preoperative creatinine levels, urgency status, preoperative hemodynamic support, postoperative complications and induction therapy (per doubling, RAP: 1.47 [1.04–2.09] p=0.031, PAPi: 0.77 [0.62–0.97] p=0.026). Patients with higher AKI stages had significantly lower survival at 1-year (5, 7, 15, 14%, log-rank, p-trend=0.021) with worst outcome for RRT patients (1-year mortality RRT: 22% vs. no-RRT: 8%, log-rank, p=0.001).

Conclusions: AKI is a highly frequent after HTx and is inversely associated with 1-year patient survival. The routinely collected preoperative PAPi and RAP predict the severity of AKI early after HTx and can be used as early AKI predictors.

A novel endothelial cell based complement dependent cytotoxicity test in kidney transplantation

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Introduction: Relevant alloantibodies in kidney transplantation comprise anti-HLA antibodies, blood group antibodies (ABO incompatible) and anti-endothelial cell antibodies (AECA) and can initiate antibody-mediated rejection (ABMR). ABMR is characterized by complement activation products, such as C4d, on the endothelium of the microvasculature in the kidneys at the time of rejection. However, endothelium directed cytotoxicity of the various antibodies and the role of complement (regulation) are not fully elucidated.

Methods: In this study, we set up a flow cytometry method and an endothelial complement dependent cytotoxicity test (EC-CDC) to evaluate the involvement of various transplant related antibodies in the process of complement mediated endothelial damage. We used primary endothelial cells (EC) cultured from donor kidney perfusate after machine perfusion, circulating human EC progenitors or conditionally immortalized human glomerular EC. Antibody binding and complement activation was evaluated by FACS analysis and compared to classical donor lymphocyte CDC (L-CDC) and EC-CDC.

Results: First, ABO incompatible serum caused complement mediated cell cytotoxicity in the EC-CDC. Second, sera containing high titer HLA-DSA that tested negative in the L-CDC, caused complement dependent cytotoxicity in the EC-CDC. This correlated with increased IgG binding and activation of C3 by flow cytometry. Serum, suspected to contain AECA, caused abundant cell death in the EC-CDC whereas no cytotoxicity was seen in the L-CDC.

Conclusion: We successfully developed an EC-CDC and flow cytometry method to assess complement dependent endothelial cell damage and thereby show DSA mediated cytotoxicity and cytotoxicity of allo-antibodies that were undetectable by the classical L-CDC method, confirming the potential value of endothelial cell based cross-matching in transplantation.

Tacrolimus exposure in human proximal tubule cells results in differentially increased CTGF expression in relation to pharmacogenetic variants of CYP3A5 and ABCB1

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Background & aim: Clinical studies have demonstrated the importance of genetic variation in *CYP3A5* and *ABCB1* for tacrolimus disposition and suggested a role in the development of renal fibrosis associated with long-term tacrolimus treatment. Our aim was to explore the implications of tacrolimus exposure in a model of human proximal tubule cells incorporating genetic variation in *CYP3A5* and *ABCB1* on the expression of the key profibrotic cytokine: CTGF and correlate these findings with CTGF expression in kidney allograft biopsies.

Methods: We selected 8 clones of human conditional immortalized PTC (ciPTC) with 4 different combinations of *CYP3A5 (rs776746)* and *ABCB1 (rs1045642)* Cells were incubated with vehicle, 50 ng/ml and 300 ng/ml tacrolimus (=tissue concentration range in allografts). Quantitative RT-PCR and western blot were performed to study CTGF expression. In addition, CTGF staining was performed on protocol biopsies with a known pharmacogenetic background derived from 17 allograft recipients over a period of 2 years.

Results: *CTGF* mRNA and protein expression increased with tacrolimus concentration (CTGF vs. β-actin vs. vehicle at 50ng/ml: + 34.1% (95% CI: 22.3 - 45.9) and at 300 ng/ml: +45.0% (95% CI: 35.2 - 54.8); p<0.001). Subgroup analysis demonstrated 46% higher CTGF protein expression in *CYP3A5 *3/*3* allele carriers vs. **1* allele carriers (p=0.047) and more than 2-fold higher CTGF expression in *ABCB1 3435 TTs,* while in the genetic *CC/CT* counterparts CTGF expression decreased (p=0.01). Immunohistochemical studies of protocol biopsies demonstrated a 38.3% increase in tubular cell CTGF staining between 3 to 24 months in kidneys from *3435 TT* genotype donors, while in *CC/CT* donor grafts the percentage of CTGF positive tubuli remained stable (p=0.046).

Conclusions: Tacrolimus exposure in human PTCs results in a concentration-dependent increase in CTGF expression. Tacrolimus exposure for 72 hours resulted in increased CTGF expression in PTC derived from *CYP3A5 *3/*3* allele carriers, and in particular with the *ABCB1 3435TT* genotype. Immunohistochemical studies on protocol biopsies confirm increasing CTGF expression over time in donor kidneys with the *ABCB1 3435TT* genotype.

High oxygen pressure during continuous hypothermic machine perfusion is associated with a better ex vivo renal blood flow and early graft function in a porcine DCD auto-transplant model

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Introduction: Continuous hypothermic machine perfusion (HMP) demonstrated improved early graft function compared to static cold storage (SCS) alone. The aim of this study was to evaluate the impact of different perfusate oxygen pressures during continuous hypothermic machine perfusion on physical machine perfusion parameters and early graft function in a porcine auto-transplant model.

Materials and methods: The left kidney of a ±40 kg female Landrace pig was exposed to 30 minutes of warm ischemia by vascular clamping and randomized after standard procurement and ex vivo donor blood flush out to one of 4 studied preservation strategies: 1) 22hrs SCS, 2) 22hrs (no active oxygen supply) HMP, 3) 22hrs oxygenated HMP ($HMPO_2$low)(pO_2=220-240mmHg), and 4) 22hrs oxygenated HMP ($HMPO_2$high)(pO_2=700-800mmHg). The LifePort Kidney Transporter® (Organ Recovery Systems) was used for all machine perfusion strategies. The left kidney was auto-transplanted in a right orthotopic position.

Results: Twenty-four auto-transplants were performed with 6 pigs per study group. Renal blood flow (RBF) was significantly higher in both $HMPO_2$high and $HMPO_2$low groups compared to non oxygenated HMP. The RBF increase was faster in the $HMPO_2$high group (significant from 3 to 20hrs compared to the HMP group) compared to the $HMPO_2$low group (significant from 8 to 19hrs compared to HMP group). At the end of the HMP no difference was observed in RBF between the machine perfusion groups. No significant difference in RBF was observed between the $HMPO_2$low and the $HMPO_2$high group during the whole period of machine perfusion. Serum creatinine at day 1, 2, and 3 was significantly lower in the $HMPO_2$high group compared to non-oxygenated HMP ($p=0.0126$; $p=0.0013$ and $p=0.0236$, respectively) and SCS ($p=0.0001$; $p<0.0001$; $p<0.0001$, respectively). We observed a tendency toward better renal function during the first 3 days after transplantation in favor of the $HMPO_2$high group compared to the $HMPO_2$ low group, but the difference was not statistically significant. No difference in serum creatinine was observed between all the study groups at 7 and 13 days of follow-up.

Conclusions: The administration of high levels of perfusate oxygen concentration during HMP positively influence ex vivo renal blood flow and early graft function compared to low or no oxygen supply during HMP.

High numbers of donor-specific il-21 producing cells predict rejection after kidney transplantation: a cross validation study

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Introduction: Both IFN-γ and IL-21 support induction and expansion of highly-reactive cytotoxic $CD8^+$ T-cells. In addition, IL-21 is a key cytokine for differentiation of alloantigen activated naïve and memory B-cells into antibody producing plasma cells. We questioned whether the frequency of donor-specific IFN-γ and IL-21 producing cells (pc) can predict kidney transplant rejection, and evaluated these cytokines in a cross-validation study.

Methods: The training group consisted of PBMC samples from 47 patients obtained at 6 months after living-donor kidney transplantation of whom 14 patients developed a late rejection (>6 months). The independent validation group included pre-transplantation samples of 38 patients of whom 17 patients had an early rejection (<3 months). The frequency of donor-reactive circulating IFN-γ and IL-21 pc was determined by Elispot assay.

Results: Remarkably, no relation was found between donor-specific IFN-γ pc frequency and rejection in both groups. However, significantly higher donor-specific IL-21 pc numbers were found in patients who developed rejection compared to those without rejection in both the training (p=0.020) and validation (p=0.024) group. ROC-curve analysis of donor-specific IL-21 pc frequencies distinguished the development of rejection from non-rejection with a specificity of 88% and 80% in the training and validation group, and a sensitivity of 50% and 73%, respectively. Patients with low IL-21 pc frequencies had a significantly increased rejection free survival rate in both the training (p=0.0008) and validation group (p=0.0005) compared to those with high frequencies. In addition, a positive correlation was found between donor-specific IL-21 pc numbers and serum creatinine concentrations at 12 months (training cohort: r_s=0.35, p=0.015) and at 1 and 2 months (validation cohort: r_s=0.41, p=0.013 and r_s=0.34, p=0.047) post-transplantation. Moreover, patients with pre-transplant anti-HLA antibodies had significantly higher numbers of pre-transplant circulating donor-reactive IL-21 pc than patients without antibodies (r_s=0.388, p=0.031).

Conclusion: The frequency of donor-specific IL-21 producing cells is linked to an increased risk of rejection, giving it the potential to be a new biomarker in predicting rejection in different phases of transplantation.

Tissue-resident memory T cells of donor origin are short-lived in renal allografts after transplantation

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Introduction: Tissue-resident memory T (T_{RM}) cells provide protective immunity by rapidly responding to antigen in non-lymphoid tissues. These non-migrating memory T cells are characterized by surface expression of CD69 and CD103. In transplanted kidneys the existence and properties of T_{RM} cells are unclear. In this study, we used the unique tissue resource of transplant nephrectomies to determine whether T_{RM} cells reside in rejected kidney allografts and whether these cells are of donor or recipient origin.

Materials and methods: Thirteen transplant nephrectomy specimens were studied. These grafts failed because of acute (*n*=4) or chronic (*n*=9) rejection and were removed after a mean time of 6.7 years (range: 8 days – 26 years). Half of the renal allograft was processed into a single cell suspension and analyzed by flow cytometry. The origin of the cells was measured by mAb directed against HLA epitopes of the donor or acceptor.

Results: Functional CD3+ T cells were isolated from all explanted kidney allografts as 57.8±16.5% (mean ± SD) of the cells had the capacity to produce IFNγ; 16.1±6.8% produced IL-2; 1.8±1.2% IL-17, and 4.6±5.2% IL-4 after re-stimulation. The isolated T cells consisted of 43.2±19.1% CD4+ T cells and 45.3±20.6% CD8+ T cells.
Of the CD8+ T cells, 27.9±15.5% expressed CD69 and CD103, reflecting CD8+ T_{RM} cells. The majority of these T_{RM} cells did not express CD28 (61.6±18.2%), indicating a phenotype associated with highly-reactive effector functions. The isolated CD4+ T cells included a relatively small population of T_{RM} cells (1.9±2.2%). We confirmed that T_{RM} cells were exclusively present in the renal allografts and not in the circulation of healthy controls (p=0.002). No differences in proportions of T_{RM} cells were found between acute and chronically rejecting kidney allografts.
High proportions of donor T cells were present in the renal allografts removed within the first month after transplantation (6.8±5.7% CD4+; 9.8±9.2% CD8+ T cells) compared to low proportions in the renal allografts removed after one month (0.4±0.3% CD4+; 0.3±0.3% CD8+ T cells). Remarkably, within the CD8+ T_{RM} cells the ratio between donor versus recipient cells was 3.6 times higher compared to this ratio within the total CD8+ T cells.

Conclusion: Our results demonstrate that both donor and patient CD4+ and CD8+ T_{RM} cells reside in the rejecting transplanted kidney. Over time, the donor T_{RM} cells disappear from the allograft.

Differentiation of human induced pluripotent stem cells (ipsc) into kidney organoids for use in kidney regeneration

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Introduction: The available treatments for end-stage kidney disease patients are not sufficient. Therefore there is an interest in iPSC-based therapies for kidney regeneration. In this study, we generated iPSC-derived kidney organoids and performed in-Dept.h analysis of the differentiation status of the organoids. We also evaluated the risk of teratoma formation of iPSC and iPSC-derived kidney organoids in an immune-deficient mouse model.

Materials and methods: Two human iPSC lines were grown on Mouse Embryonic Fibroblasts (MEFs). The iPSC were pre-treated with CHIR99201, a glycogen synthase kinase inhibitor, for four days and fibroblast growth factor 9 (FGF9) for three days after which cell pellets were formed and placed on a Transwell membrane. The organoids were harvested at day 7, 14 and 18 for analysis by RT-PCR and immunohistochemistry. For the teratoma assays, ~0,5x10e6 iPSC or cells of iPSC-derived organoids were subcutaneously injected into four locations in four immune-deficient mice. Five weeks later the mice were sacrificed for histopathological analysis of teratoma formation.

Results: Compared to iPSC, there was a 40-fold increase of renal markers WT1 and HOXD11, while a 10-fold increase of GDNF could be observed. Moreover, there was a 10-fold increase in the expression of the kidney transporters OAT1 and OAT3 in the organoids at day 18. In contrast, iPSC marker NANOG decreased 15-fold compared to iPSC, while other iPSC markers cMYC, REX-1 and Klf4 remained around initial levels. Immunostaining revealed that organoids contained proximal and distal tubuli, glomerular and endothelial cells. A high expression of cMYC was present diffusely in a low number of cells in the organoids. In two mice that received iPSC there was tumor growth in seven out of eight locations. Histopathology confirmed the presence of teratoma formation. On the other hand, none of the injected kidney organoids resulted in visible tumor growth and histopathology indicated the presence of only small diffused tubular structures.

Conclusion: These findings demonstrate that iPSC can successfully be differentiated into kidney organoids. Even though there is an indication of residual presence of iPSC in the kidney organoids, this does not result in teratoma formation in an immune-deficient mouse model. This implies that iPSC-derived kidney organoids do not carry the same tumorigenic risk compared to iPSC and that future application in a transplantation model may be safe.

Post-transplant Muscle Mass measured by Urinary Creatinine Excretion Rate predicts Long-term Outcomes after Liver Transplantation

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Background: Long-term survival in orthotopic liver transplant (OLT) recipients remains impaired due to a multitude of factors, including low pre-transplant muscle mass (or sarcopenia). However, influence of post-transplant muscle mass on survival is currently unknown. We hypothesized that post-transplant urinary creatinine excretion rate (CER), an established non-invasive marker of total body muscle mass, is associated with long-term survival after OLT.

Methods: We conducted a single-center retrospective cohort study including OLT recipients ≥18 years who underwent OLT between 1993 and 2010. Baseline was set at 1-year post-transplantation. Cox-proportional hazards regression analyses were used to investigate whether CER was associated with all-cause mortality and graft failure independent of potential confounders. The cohort on which this study was based is registered at the Dutch Trial Register (NTR6650).

Results: In 382 OLT recipients (58.9% men, mean±SD age 48.5±12.5 years), mean CER at 1 year after transplantation was 13.3±3.7 mmol/24h in men and 9.4±2.6 mmol/24h in women. During median follow-up for 9.8 (interquartile range 6.4-15.0) years, 104 (27.2%) OLT recipients died and 44 (11.5%) developed graft failure. In Cox analyses, as continuous variable, low CER was associated with increased risk for all-cause mortality (HR=0.43, 95%CI: 0.26-0.71, *P*=0.001) and graft failure (HR=0.42, 95%CI: 0.20-0.89, *P*=0.02), independent of age, sex, and body surface area. Similarly, OLT recipients in the lowest tertile had an increased risk for all-cause mortality (HR=2.75; 95%CI: 1.50-5.02, *P*=0.001) and graft failure (HR=2.79, 95%CI: 1.04-7.45, *P*=0.04), compared to OLT recipients in the highest tertile.

Conclusion: Low post-transplant total body muscle mass, as measured by urinary CER, was inversely associated with an increased long-term risk of all-cause mortality and graft failure in OLT recipients. These results underline the importance of an adequate post-transplant total body muscle mass on long term survival post-OLT and may provide a rationale for future intervention studies.

The clinical significance of epitope mismatch load in kidney transplantation

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Aim: Since the beginning of kidney transplantation a key strategy to maximize graft survival by avoiding allorecognition is to minimize HLA mismatching between donor and recipient. As HLA antibodies are now recognized as being specific for epitopes and donor-recipient HLA mismatch at the amino acid level can now be determined, epitope-based permissible mismatching could be a new strategy.

Methods: In our multicenter study, we retrospectively collected data on 216 patients who underwent kidney transplantation in 2012 to evaluate graft failure after a 5-year follow-up in function of HLA antigen mismatch and epitope mismatch load. Two algorithms HLAMatchmaker and PIRCHE-II were used to determine differences between donor and recipient in their epitope load. Each HLA antigen mismatch has a B-cell epitope load that is primarily determined by the recipient's HLA type representing a repertoire of self-epitopes to which no antibodies can be made. HLAMatchmaker (www.epitopes.net) can be used as a quantitative tool to determine the degree of a mismatch, i.e. the number of mismatched epitopes. On the other hand HLA-derived T-helper epitopes can also be used to estimate the risk of graft failure. These T-helper epitopes, designated as PIRCHE-II (Predicted Indirectly ReCognizable HLA Epitopes presented by HLA-DRB1), are involved in the production of HLA specific IgG antibodies, as T-helper epitopes are required for B-cell activation and IgM-to-IgG isotype switching. (www.pirche.org)

Results: Our preliminary data showed that an epitope mismatch load provides a more accurate analysis of HLA relatedness between donor-recipient pairs than conventional HLA antigen mismatch assessment in relation to graft failure. Although, a high epitope load was not always correlated with bad outcome which may be attributed to the immunodominance of epitopes.

Conclusions: We confirm that epitope-based permissible mismatching helps in identifying suitable donors with minimal risks for graft failure. However, epitope specificity studies with larger sample sizes are required to determine which epitope mismatches are truly immunodominant and if immunodominance is more commonly linked to graft loss.

Results will be presented (analysis pending).

Risks and benefits of colonoscopy in pre-liver transplantation screening.

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Objective: To assess the benefits and risks of colonoscopy in a large cohort of patients evaluated for liver transplantation.

Methods: Retrospective study of all consecutive patients undergoing colonoscopy during pre-liver transplantation screening between 2004-2016 with registration of all clinical events during the 30 days after the procedure and during a 30-days control time frame.

Results: The study included 808 patients (65% male; median age 53 years (18-71); median MELD score 15 (6-40)) undergoing 858 colonoscopies. Ascites was present in 41% of the patients at time of colonoscopy (24% diuretic responsive; 17% refractory) and patients did not receive standard periprocedural antibiotic prophylaxis.
The cecal intubation success rate was 92.7%. 267 patients had ≥1 polypectomy during colonoscopy. Colorectal cancer was found in 2 patients (0.2%) and advanced adenomas in 44 patients (5.4%). The only independent risk factor for a (pre)malignant lesion was age (RR 1.07 per year; 95%CI 1.03-1.12). Additionally, in 36.4% of patients other colon abnormalities were diagnosed, such as colitis, rectal varices, angiodysplasia, portal enteropathy, and diverticulosis.
During the 30 days after the 858 performed colonoscopies, 119 patients had a clinical event (13.9%) compared to 70 patients with an event (8.4%) in the control time frames (p<0.001). After colonoscopy, there was a significant increased risk for renal failure (33 vs 10; p=0.001) and gastro-intestinal bleeding (25 vs 11; p=0.023).
Ascites (diuretic responsive ascites RR 1.20; 95%CI 0.36-4.04; refractory ascites RR 5.38; 95%CI 1.94-14.94) and MELD score (RR 1.27 per point; 95%CI 1.18-1.36) were independent risk factors for post-colonoscopy renal failure. Only MELD score (RR 1.13 per point; 95%CI 1.06-1.20) was an independent risk factor for post-colonoscopy gastro-intestinal bleeding.

Conclusions: In this largest reported assessment of risks and benefits of pre-liver transplantation screening with colonoscopy, colorectal cancer was detected in 0.2% of the population. Our results suggest colonoscopy with standard bowel preparation is associated with a small, yet significantly increased risk for renal failure and gastro-intestinal bleeding after the procedure, especially in patients with severely advanced disease. A reconsideration of guidelines regarding the necessity of colonoscopy in unselected patients and the timing of the routine colonoscopy before liver transplantation seems appropriate.

Liver transplantation in jehovah's witnesses: a single center experience

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Background: For religious reasons, Jehovah's witnesses (JW) usually refuse infusions of any blood product, including autologous or homologous pre-donated blood, platelets, fresh frozen plasma, coagulation factor concentrates, or human albumin. However, they may accept solid organ transplantation. The authors report their experience of liver transplantation (LT) in JW over a 20-year period.

Patients and Methods: 22 LT (16 DBD, 2DCD, and 4 LRLT with JW living donors) were performed in 21 JW patients (10 males, 11 females), mean age: 48 years (ranges: 6-70). Indications for LT were HCV with (3) or without (1) HCC, PBC (2), PSC (1), HBV (2), autoimmune hepatitis (1), antitrypsin deficiency (1), sarcoidosis (2), amyloidosis (3), polycystic liver disease (1), alcoholic cirrhosis with HCC (1), cryptogenic (3), hepatic artery thrombosis (1). All patients received perioperative iron supplementation and erythropoietin. Two patients had percutaneous spleen embolization to increase platelet level. At transplant, mean pre-operative hematocrit was 41% (ranges: 22-50), mean platelet level was $140x10^3/mm^3$ (ranges: 33-355), and mean INR was 1.25 (ranges: 0.84-2.18). Anti-fibrinolytic (aprotinin or tranexamic acid) was administrated during LT and meticulous surgical hemostasis was achieved, helped by argon beam coagulation. Continuous circuit cell salvage and reinfusion whereby scavenged blood was maintained in continuity with the patient's circulation, was used in all patients. Veno-venous bypass was avoided during LT to minimize the coagulation disorders.

Results: One LRLT recipient died at day 11 from aspergillosis and anemia, and another DBD recipient at day 28 due to complications after hepatic artery thrombosis. One patient finally accepted to be transfused for severe anemia. The mean hospital stay was 31 days (10-137). Kaplan-Maier patient survival was 85%, 85%, 72%, 72% at 1, 5, 10 and 15 years, respectively.

Conclusion: LT may be successful in selected and prepared JW patients who should not be a priori excluded from this life saving procedure. The experience with this particular group of patients helped the team to reduce transfusion needs in the non-JW patients.

New population pharmacokinetic model that predicts the individual starting dose of tacrolimus following pediatric renal transplantation

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Background: Multiple clinical, demographic and genetic factors affect the pharmacokinetics (PK) of tacrolimus in children, yet in daily practice the starting dose is based solely on bodyweight. TDM limits the time a patient is exposed to concentrations outside the target range, but it can take two weeks to reach the target tacrolimus concentration. The aim of this study was to improve the starting dose of tacrolimus after pediatric renal transplantation.

Methods: Clinical, demographic, PK and genetic data were collected for the first six weeks after renal transplantation. All children were treated with basiliximab, tacrolimus, mycophenolic acid and glucocorticoids. Every child had at least one tacrolimus PK profile performed over 4h. A population PK analysis was conducted using NONMEM. Demographic, clinical and genetic parameters were evaluated as covariates for all PK parameters containing interpatient variability. The final model was internally and externally validated using visual predictive checks (VPC). Simulations were performed to determine the ideal starting dose.

Results: 46 children with a median age of 9.1 years (range 2.4-17.9) were included. Population PK was best described by a two-compartment model with allometric scaling for bodyweight. Clearance (50.5 L/h) increased in CYP3A5 expressers, patients with an increase in eGFR, decrease in hematocrit and recipients of a kidney from a deceased donor. Together these covariates explained 41% of the variability in CL. The model was externally validated using an independent dataset of 23 patients. From the significant covariates, CYP3A5, bodyweight and donor type were useful to adjust the starting dose to reach the target predose level. For each combination of these covariates a new starting dose was calculated to reach a target level of 12.5 ug/L.

Conclusion: During the first 6 weeks after transplantation, the tacrolimus weight-normalized starting dose should be higher in patients with a lower bodyweight, who express CYP3A5 and those who receive a kidney from a deceased donor. Using these parameters an individualized guideline for the initial dosage was developed.

Gut Microbiome in Kidney Transplant Recipients

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Background & Aim: All transplantation patients are in need of immunosuppressive drugs to prevent allograft rejection. Chronic immunosuppression leads to an increased occurrence of bacterial infections, in turn leading to an increased use of antibiotics. Both immunosuppression and antibiotic use may change the intestinal flora. Transplantation patients are therefore likely to suffer from intestinal dysbiosis. As an effect of intestinal dysbiosis, post-transplantation patients might suffer from an increased risk of malnutrition and diarrhoea. Consequently, the microbiome of kidney transplant recipients (KTR) has to be explored.

Methods: We analysed the microbiome by polymerase chain reaction amplification of the 16S rRNA V4-V5 region of microbiota and sequencing using the Illumina MiSeq platform. We compared the microbiome of KTR on taxonomic genus and species level to that of healthy controls, using the Mann Whitney U-test.

Results: Faecal samples of 110 KTR (38.3% female) and 79 healthy donors (34.0% female, P=0.42) were collected. The mean age was 54.6 ± 12.0 years for KTR and 59.6 ± 11.0 years for donors. The median time after transplantation was 1.08 years, with a range of 1 to 26.4 year (P<0.00). The level of *Bifidobacterium* (2.2 ± 4.3% for KTR and 4.5 ± 5.5% for donors), *Coprococcus* (3.3 ± 2.4%, 4.7 ± 2.2%), *Dorea* (1.6 ± 1.6%, 2.2 ± 1%), *Ruminococcus* (3.2 ± 3.3%, 2.7 ± 1.5%) and *Oscillospira* (1.0 ± 1.5%, 1.9 ± 2.4%) were significantly lower (P<0.05) in KTR. Significantly higher (P<0.05) levels of *Streptococcus* (8.5 ± 12.0%, 1.6 ± 3.7%) and *Lactobacillus* (2.8 ± 11.0%, 0.0 ± 0.2) were found in KTR compared to donors. In total 19 KTR suffered from diarrhoea and 0 donors suffered from diarrhoea (P<0.00). KTR with diarrhoea had significantly lower (P<0.05) levels of *Bifidobacterium* (1.4 ± 2.2%, 4.5 ± 5.4%) but higher levels (P<0.05) of *Streptococcus* (6.31 ± 6.6%, 1.0 ± 3.0%) and *Lactobacillus* (3.0 ± 7.8%, 0.0 ± 0.2). *Escherichia coli* (1.9 ± 4.2%, 0.3 ± 0.8) was significantly higher (P<0.05) in recipients with diarrhoea.

Conclusion: We found significant differences in the microbiome of KTR compared to healthy donors. Diarrhoea could be the effect of changes in the microbiome due to a loss of commensal microbiota. Further research is needed to explore the changes and effects of the microbiome in KTR.

Naar een eenduidige psychosociale screening van longtransplantatiepatiënten.

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Inleiding: Uit wetenschappelijke studies en patiëntervaringen blijkt een psychosociale kwetsbaarheid van transplantatiepatiënten. Tijdens de screening voor longtransplantatie werd hier wel aandacht aan besteed, maar psychosociale problematiek werd niet met een gestandaardiseerd screeningsinstrument geïnventariseerd. Om tot een eenduidige psychosociale screening te komen is een psychosociaal screeningsinstrument geïntroduceerd. Het doel van deze presentatie is het delen van onze ervaringen met de psychosociale screening van transplantatiekandidaten.

Methodes: Voor de psychosociale screening werd gebruikt gemaakt van de Stanford Integrated Assessment for Transplantation (SIPAT). Na scholing in het afnemen hiervan en het beoordelen van psychopathologie, werd de SIPAT afgenomen door de verpleegkundig specialist longtransplantatie (VS Tx) of de medisch maatschappelijk werker (MMW).

Resultaten: Van oktober 2016 tot juni 2017 werden 21 longtransplantatiekandidaten gescreend. De meeste screeningen (n=13) werden door een MMW uitgevoerd, zeven door een VS Tx en één door VS psychiatrie. De gemiddelde leeftijd van de patiënten was 57 jaar en 45% was vrouw. De gemiddelde SIPAT score was 10 (range 1- 21). Bij 75% was sprake van een goede kandidaat voor transplantatie. Vier patiënten scoorden minimaal tot hoog risico. Geïdentificeerde problemen waren met name psychologische instabiliteit, een beperkt sociale netwerk, middelengebruik en niet gereed zijn voor transplantatie. Door gebruik van de SIPAT is sprake van een objectievere screening en worden psychosociale aandachtspunten beter onderbouwd. Wel bleek het moeilijk om ernstige psychopathologie goed te doorgronden. Om hierover tot een goede beoordeling te komen, kon de hulp ingeroepen worden van de afdeling Psychiatrie.
Het afnemen, invullen en verwerken van de gegevens kostte gemiddeld 130 minuten. Het werken met de SIPAT kostte daarmee meer tijd dan de eerdere screening. Door het ontstaan van routine is de huidige praktijk echter al minder tijdrovend.

Conclusies: Het screenen van longtransplantatiekandidaten met een gestandaardiseerd instrument heeft een meerwaarde voor het in kaart brengen van psychosociale problematiek en kan bijdragen aan een betere voorbereiding op de transplantatie. Wel moet goed gekeken worden naar borging van de gegevens en de ingezette actiepunten vanuit de SIPAT. Tevens is in de toekomst onderzoek nodig naar de effecten van psychosociale screening op uitkomsten na transplantatie.

Evaluatie en ervaringen voorlichting niertransplantatie nieuwe stijl: 'U vraagt, wij draaien'

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Introductie: Voorlichting aan niertransplantatiekandidaten en hun naasten om meer kennis te creëren over en voor te bereiden op niertransplantatie (NTr) en –donatie is essentieel. Dit leidt o.a. tot bewustwording van de mogelijkheid tot pre-emptieve NTr en motivatie tot -donatie bij leven. Deze voorlichting wordt i.h.a. zowel in de spreekkamer als klassikaal in de ziekenhuizen gegeven. Klassikale voorlichting geeft vaak een drempel voor het stellen van vragen. In dit onderzoek tonen wij de evaluatie van onze voorlichting nieuwe stijl; u vraagt, wij draaien.

Methoden: Na een korte algemene introductie over NTr en donatie, nemen alle aanwezigen plaats aan een tafel. Aan iedere tafel zit een gespreksleider (nefroloog, chirurg, verpleegkundig specialist (VS) heelkunde, VS nefrologie, transplantatiecoördinator (TC), maatschappelijk werker en een ervaringsdeskundige). Zij leggen "vraagkaartjes" op de tafel om het gesprek op gang te brengen en het stimuleren tot het stellen van vragen. Na 10 minuten rouleert de gespreksleider. Na afloop werd aan alle aanwezigen gevraagd een evaluatieformulier in te vullen en de diverse rondes te beoordelen (Schaal 1-5; 1 = helemaal niet nuttig, 5= zeer nuttig)

Resultaten: Tussen nov. 2015 en okt.2017 hebben er 11 voorlichtingsbijeenkomsten plaatsgevonden in diverse centra in regio Rotterdam. Daarbij zijn 311 formulieren ingevuld door 106 patiënten en 135 naasten. Op 70 formulieren werd niet aangegeven door wie ingevuld. De algemene waardering was gemiddeld een 8,5 van patiënten en een 8,3 van hun naasten. De beoordeling over de professionals was (mean ,SD, aantal ingevulde formulieren): chirurg 4,6 (SD 0,53, n=306), nefroloog 4,5 (SD 0,57,n=305), VS heelkunde 4,4 (SD 0,6, n=161), VS nefrologie 4,4 (SD 0,56, n=302), TC 4,5 (SD0,58, n=305), maatschappelijk werker 4,3 (SD 0,67, n=292) en ervaringsdeskundigen (patiëntenpanel)#_ftn1 4,5 (SD 0,56, n=164). Een aantal algemene opmerkingen waren: rumoerig, overlapping, niet van toepassing op fase van persoonlijke voorbereiding (bv al volledig afgeronde voorbereiding). De algemene ervaring bij de professionals is dat deze manier van voorlichting leidt tot beduidend meer dialoog.

Conclusie: Gerichte voorlichting in kleine groepen verlaagt de drempel voor het stellen van vragen en leidt tot hoge tevredenheid bij de aanwezigen.
Niet bij alle bijeenkomsten is een patiëntenpanel aanwezig geweest, waardoor de weging van deze resultaten anders is.

Introduction of routine monitoring of smoking resumption after lung transplantation

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Introduction: Active nicotine consumption is a contra-indication for lung transplantation (LuTx) in practically all centers worldwide. Resumption of smoking after lung transplantation can affect outcome in liver, heart, renal and lung transplantation and is associated with increase of oncologic events after solid organ transplantation. Active and second hand smoking can reliably tested with urine cotinine levels (UC). Because of negative outcome effect in LuTx, we introduced routine measurement of UC after LuTx to provide early intervention on smoking cessation and aimed to assess outcome in LuTx patients that resumed smoking.

Methods: We retrospectively assessed routine UC levels collected during outpatient visits in all patients transplanted between 2002 and 2016 and alive in 2016. We collected patient characteristics, smoking history (PY), UC levels and prevalence of obstructive chronic lung allograft dysfunction (oCLAD).

Results: Cotinine measurements were available for 123 of 130 patients at on average 4.6 years post-transplantation [range 0.4-14.8 years]. 3 patients had follow-up elsewhere, 2 patients died prior to measurement at outpatient visit in 2016, 2 patients were anuric. Of all screened patients 64% were former smokers, with a mean of 22±13 PY. The median cessation interval prior to transplantation was 9 years [IQR 4-15 years].
Of the 123 patients that underwent UC, 9 patients (7.3%) were found to have relapsed into active smoking (6 COPD, 2 IPF, 1 cystic fibrosis). Median UC value was 650 ng/mL [IQR 400-850]. Average number of PY in patients that relapsed was higher than in former smokers that did not relapse (32 vs. 20, P=0.02) and the smoking cessation interval in patients that relapsed was shorter (5 versus 12.5 years, P=0.05).
Remarkably; 1 and 5 year prevalence of oCLAD was significantly higher in patients that had relapsed smoking (17 versus 3% at 1 year and 17 versus 66% at 5 years respectively, P<0.004).

Conclusion: Routine monitoring of UC is an effective tool to detect smoking resumption after LuTx and offers opportunity for early intervention. When present, prevalence of oCLAD is high, although direct relationship cannot be established due to the late and cross-sectional screening for smoking.

Valuating the effects of a nurse-led self-management intervention for kidney transplant patients: mixed-method design

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Aim: In order to support patients to take an active role in their post-transplant care in the form of self-management, a holistic nurse-led intervention was developed with the Intervention Mapping Protocol1. This intervention consists of four 15-minute sessions with a nurse practitioner. During the sessions the nurse encourages patients to assess self-management challenges with a conversational tool called the Self-Management Web. Once the challenges have been identified, using a solution-focused communication style, patients are encouraged to set goals, make action plans, monitor progress and apply problem-solving skills to other challenges. This study aimed to evaluate the feasibility of this intervention for kidney transplant patients and professionals.

Method: A mixed-method pilot study was conducted in 2016-2017. To select patients who visited the outpatient post-transplantation clinic of a Dutch University Hospital, a total sampling approach was used. Qualitative methods (observations and interviews) were used to get insight in the fidelity, feasibility, and acceptability. Quantitative methods (pre-post surveys within-group comparison; and intervention versus a historic control between-group comparison) were used to examine the fidelity and to evaluate effects on self-efficacy and quality of life.

Results: Thirty-one patients were invited to participate in the intervention group. Twenty-three completed the intervention and 16 filled in the pre- and post surveys. The control group consisted of 43 patients. Most patients characterized the holistic focus of this intervention as a welcome addition to traditional care. It helped them to build a relationship of trust with their nurse, which was conditional for discussing self-management challenges. Patients also described that they became more competent in problem-solving skills. The quantitative analysis indicated a significant increase in quality of life after receiving the intervention. Also, after implementation of the intervention quality of care improved significant.

Conclusion: This holistic self-management support intervention seems a promising tool to help kidney transplant patients deal with daily life challenges. More research is needed with a larger sample to increase insight into the working mechanisms and effects of using this Self-Management support intervention in chronic patients

Psychosociaal screenen van kandidaten voor niertransplantatie.

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Inleiding: Niertransplantatie heeft als doel de levensverwachting te verlengen en de kwaliteit van leven te verbeteren. Het is echter ook een ingrijpende behandeling die, zeker als de patiënt tevoren met dialyse behandeld werd, de wereld op zijn kop kan zetten. Van een vertrouwde en veilige omgeving op de dialyse afdeling wordt in een nieuwe situatie een grote zelfstandigheid verwacht. Niet iedere patiënt blijkt in staat om informatie goed te verwerken en adequaat te reageren op signalen van ziek zijn. Vaak is er in het transplantatiecentrum onvoldoende informatie over sociale achtergrond, mentale en cognitieve status en coping gedrag van de transplantatiepatiënt. De vraag die steeds weer opduikt is: hoe kunnen wij de patiënt niet alleen medisch optimaal voorbereiden op een transplantatie, maar ook op psychosociaal en maatschappelijk gebied beter begeleiden?

Methoden: Door de afdeling nierziekten is een vragenlijst ontwikkeld, deels gebaseerd op de Stanford Integrated Psychosocial Assessment for Transplantation. Deze vragenlijst is gericht op kennis en inzicht, coping, zelfstandigheid, lichamelijk, cognitief en psychisch functioneren en de woonsituatie van de transplantatiekandidaat. De vragenlijst kan door verschillende professionals ingevuld worden en wordt opgestuurd naar het transplantatiecentrum. Het is mogelijk om in de vragenlijst aan te geven welke items extra aandacht verdienen bij opname en bezoek aan de polikliniek;voor items die een belemmering voor transplantatie vormen kan een plan van aanpak gemaakt worden.

Resultaten: Na enkele pilots is de vragenlijst in november 2016 geïntroduceerd in de gehele transplantatieregio en inmiddels meer dan 125 keer gebruikt. De betrokken zorgverleners zijn verrast door de grote hoeveelheid informatie die de vragenlijst oplevert. Patiënten zijn eveneens positief; zij ervaren dit als goede zorg. In enkele gecompliceerde casussen heeft de vragenlijst er aan bijgedragen dat de transplantatie en de periode erna probleemloos verlopen zijn. In één geval is besloten dat de patiënt voorlopig niet in aanmerking komt voor transplantatie. 70% van de verpleegkundigen van de verpleegafdeling reageerden op de tevredenheidenquête. 66% van hen gaf aan snel een helder overzicht te hebben van de psychosociale omstandigheden en het verpleegplan hierop aan te passen.

Conclusie: De ingevulde vragenlijst levert zinvolle, aanvullende informatie op die bijdraagt aan adequate voorbereiding op niertransplantatie en optimale nazorg.

Current nursing insights on forearm to trachea transplantation.

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Aim: The purpose is to familiarize nurses with the care of patients who undergo forearm-to-trachea transplantation.

Description:
1.The indications for forearm-to trachea transplantation.
2. Surgical procedure (video).
3. Protective isolation during implantation faze. Patient education during the pre-implantation period The importance of good hygienic measures needs to be reported to the patient in this stadium where the trachea will be implanted in the fore-arm. The role of the care giving nurse cannot be overseen in this aspect of the care.
4. Tapering off the immunosuppressive medication.
A section of the donor trachea is first implanted in the forearm of the recipient and stays in place for a total period of three months. During this faze immunosuppressive drugs are an elementary matter.
Therefore protective isolation was seen as a necessity.
5. Post-transplant follow-up ; rejection monitoring from 7 patients.

Conclusion: The trachea is the first transplanted tissue for which immunosuppressive drugs can be stopped. The rol of the care giving nurse is important during hospitalization and post-implantation follow-up.

A multidisciplinary approach on the emergency Dept. to admit potential organ donors for end-of-life care to the intensive care unit

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Background: In 2014, we performed a cohort study (Witjes, et al. 2017) in which we found that initiation of end-of-life care in acute settings outside Intensive Care Units (ICUs) results in under-recognition of potential organ donors, particularly in patients with an acute devastating brain injury admitted to the emergency Dept. (ED).

Methods: In a multicenter prospective intervention study, we implemented a novel multidisciplinary approach for organ donation in the ED of six hospitals in the Netherlands. This approach was used in patients admitted to the ED with a devastating brain injury. When the decision to withdraw life sustaining treatment was made in the ED in patients without contra indications for organ donation, an ICU admission for end-of-life care was considered. This was communicated accordingly with the family. Every ICU admission for end-of-life care was evaluated. Interviews were conducted with emergency physicians, neurologists and ICU physicians according to a standardized questionnaire. This standardized interview focused on medical decisions that were made and difficulties arising during hospitalization.

Results: From 1 January 2016 to November 2017 data were collected on the number of patients admitted to the ED with acute brain injury in six hospitals. In total, 50 potential organ donors were admitted to the ICU for end-of-life care. Donation was either requested in the ED (12%), ICU (78%), neurology Dept. (4%), or donation was not requested (6%). Out of 48 donation requests, 26 families (51%) consented to donation. This led to 21 successful organ transplantations. In four of these 21 patients family consent was obtained to intubate them solely for the purpose of organ donation. The most important points raised during the interviews with professionals were: explaining the non-therapeutic ICU admission to the family, the location where donation should be requested (ED/ICU), suitability for organ donation and utility of ICU resources.

Conclusion: A close collaboration between the ED, neurology Dept. and ICU is necessary and achievable in order not to miss potential organ donors in patients with acute brain injury with a futile prognosis on the ED.

What lessons can be learned from the UK experience of (relinquishing) anonymity?

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Introduction: Anonymous living kidney donation is carried out in a limited number of European countries such as the UK, the Netherlands and Sweden. The UK differs from other countries in that the donor and recipient may meet one another after the operation. In Sweden and the Netherlands anonymity is absolute. A recent study in the Netherlands and Sweden indicated that donors and recipients feel they should be allowed to choose whether or not to relinquish anonymity. To date there is little exploration of how contact/meetings after 'anonymous' donation in the UK are experienced. These experiences could help inform Dutch policy.

Methods: A self-report questionnaire with return envelope was sent to anonymous donors and recipients via post. Potential participants had given/received a kidney via the national exchange programme or in a domino-paired procedure in the UK. Questions were specifically developed for this survey. Satisfaction with (relinquished) anonymity was rated on a scale of 1-7. As data were not normally distributed, the median and range is presented and non-parametric tests were conducted.

Results: 211 recipients and 355 donors returned the questionnaire. Anonymity had been relinquished among 25 (1%) of recipients and 29 (8%) of donors after surgery. Five recipients had met their donor. Among the non-anonymous group, recipients were content that they were not anonymous (mdn=7, range 1-7), and the experience of contact/meetings was positive (mdn=7, range 6-7). Similarly, donors were content that they were not anonymous (mdn=7, range 3-7) and experienced contact/meetings positively although experiences were more mixed (mdn=7, range 3-7). Recipients who remained anonymous were generally content with anonymity after surgery (mdn=7, range 1-7), however, 70 (39%) report that they would have liked to have had some kind of contact with the donor to express their gratitude. Similarly, donors who remained anonymous were generally also content (mdn=7, range 1-7), however, 116 (36%) would have liked to have had some kind of contact out of curiosity regarding the outcome.

Discussion: The few donors and recipients who had contact/meeting experienced this positively. Findings support the option of voluntary contact and the potential to meet after anonymous living donor transplantation.

Pre-donation recruitment of Renal functional Reserve is associated with early renal adaptation after living kidney donation.

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Background: Early renal adaptation after kidney donation commonly results in a post-donation GFR above 50% of the pre-donation value. This is likely due to early hemodynamic changes, whereas long-term renal adaptation, which may further increase GFR in the months thereafter is likely more structural in nature. Renal Functional Reserve assessed by the renal response to dopamine infusion (RFR) is considered to reflect functional reserve capacity, but it is unknown whether it predicts either short- or long-term renal adaptation or both.

Aim: In this study we investigated the association between pre-donation RFR and GFR changes after donation.

Methods: In 750 living kidney donors between 1984 and 2017, we prospectively measured mGFR (^{125}-Iothalamate clearance) and RFR. We performed multivariable linear regression analyses with short-term post-donation mGFR as dependent variable. In donors with 5 year follow-up after donation we assessed the association with long-term mGFR.

Results: Donor age was 52±11 years and 48% were male. Pre-donation mGFR and $mGFR_{Dopamine}$ were 107±28 ml/min and 115±30 ml/min respectively, resulting in a RFR of 9±10 ml/min. Three months post-donation mGFR and $mGFR_{Dopamine}$ were 73±15 ml/min and 76±15 ml/min respectively, indicating that donors still had RFR (2.7±5.8 ml/min, $p<0.001$). Pre-donation RFR was associated with post-donation mGFR, independent of age, pre-donation mGFR, blood pressure and BMI (st. $\beta=0.12$ for pre-donation RFR, $p<0.001$, final model $R^2=0.63$). In the subgroup of donors of whom 5-year follow-up data was available (n=349), pre-donation RFR was neither associated with absolute mGFR at 5 years post-donation (st. $\beta=0.02$, $p=0.78$), nor with change in mGFR between 3 months and 5 year after donation (st. $\beta=0.03$, $p=0.67$).

Conclusions: Dopamine-recruited Renal Functional Reserve is independently associated with mGFR early after donation, but not with long-term mGFR. This indicates that $RFR_{Dopamine}$ is a marker of early, hemodynamic adaptation to kidney donation, rather than long-term mGFR changes. More long-term follow-up data are needed to provide conclusive results about the use of dopamine in living kidney donors.

Additional value of smartphone video recordings for the assessment of organ quality for livertransplantation.

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Assessment of organ quality of a donor liver for transplantation remains a challenge. Currently assessment is based on a detailed history, additional radiologic imaging and laboratory results of the donor and eventually macroscopic evaluation of the organ. Although macroscopy is primarily evaluated by the donor surgeon, most surgeons are reluctant to start the recipient operation based on this evaluation. Due to logistics and travel distance this may prolong cold ischaemia end possibly the outcome of the transplantation. In the advent of modern smartphones it has become very easy to make and share high-quality images and video. In current practice this is not standardized, nevertheless it is increasingly being used. Aim of this study was to determine the pitfalls in the use of smartphone video recordings, and formulate a standard for the use of this emerging technology.

Methods: Surgeons and transplant coordinators from the three liver transplant Centers in The Netherlands were asked to send videos used in the screening of donor organs. All videos were evaluated by an expert panel.

Results: A total of 41 smartphone video recordings were collected. Image quality was generally good (40/41). Most videos showed only segments 2 (n=29) 3 (n=40) 4 (n=37) and 5 (n=28), but were nonetheless always scored as sufficient. In 6 videos the liver was demonstrated on the backtable, showing all segments, and anatomy. Most videos were made after cold perfusion (25 vs 16). Consistency of the parenchyma and signs of chronic liver disease were reliably visible. In most cases color of the parenchyma and estimation of steatosis remained difficult. A clear difference was noted when the surgical lighthead was turned on or off and post- and pre-cold perfusion. Vascular anatomy was demonstrated in 9 cases, although only in two cases anatomic evaluation was complete. Evaluation by the expert panel, led to upfront rejection based on the video of 11 organs.

Conclusions: Smartphone video recordings are used clinically, but the number of segments shown and lighting is very variable. Backtable videos appear to be most informative. Structural changes, fibrosis, cirrhosis are generally adequately visible, even in short and limited videos. Most difficult remains the estimation of steatosis, most importantly caused by variable lighting conditions and non-calibrated cameras and screens. Development of a color standard may improve consistency and make interpretation more reliable.

Estimated GFR at Donor Screening to Predict mGFR after Living Kidney Donation.

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Introduction: Accurate pre-donation renal function estimation is important to minimize the risk of future severe renal function impairment in living kidney donors. Recent studies focused on pre-donation estimated GFR (eGFR) as predictor of measured GFR (mGFR), but did not account for the effect of nephrectomy.

Aim: In this study, we aimed to identify the predictive value of pre-donation eGFR for post-donation mGFR.

Methods: In 873 living kidney donors, eGFR (CKD-EPI formula) and mGFR (125I-iothalamate) were measured before and 3 months after donation. Bayesian statistics were used to calculate for different pre-donation eGFR categories the probability of having a post-donation mGFR above the thresholds 40, 45, 50, 55 and 60 mL/min/1.73m^2.

Results: Mean donor age was 52±1 and 48% were male. Mean pre-donation eGFR was 88±14 mL/min/1.73m^2 and mean pre-donation mGFR/BSA was 102±16 ml/min/1.73m^2 respectively. Mean post-donation mGFR/BSA was 65±12 ml/min/1.73m^2. Pre-donation eGFR was associated with post-donation mGFR (st. β. 0.48 $p < 0.001$). In order to achieve a post-donation mGFR > 40ml/min/1.73m2 with a probability of 95%, a pre-donation eGFR > 69 ml/min/1.73m2 was necessary. This was present in 91% of donors. A pre-donation eGFR > 94 mL/min/1.73m^2 was needed to reach a post-donation mGFR > 50 mL/min/1.73m^2 with a probability of 95%. This was present in 33% of the donors.

Conclusions: This study shows that pre-donation eGFR can be used to predict post-donation mGFR and provides pre-donation eGFR cut-off values with 95% predictive value for post-donation mGFR.

Donor Knowledge of Provided Information - A Prospective Nationwide Inventory Study

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Aim: To assess the current procedures regarding informed consent for live donor nephrectomy, donor knowledge of the donation procedure and postoperative course, and their satisfaction with the informed consent procedure.

Methods: Donor knowledge of the procedure and postoperative course was prospectively evaluated by means of pop quizzes in a multicenter national study. All potential donors who were seen for the first time at the transplant nephrology outpatient clinic (Cohort A) completed a pop-quiz about the details of the donation procedure, prior to receiving any information. A second group of donors completed the same pop-quiz on the day of admission for donor nephrectomy (Cohort B). The primary endpoint was donor knowledge. Secondary endpoints were donor satisfaction, and current informed consent practices in the different centers.

Results: A total of 604 pop-quizzes were completed; 378 in Cohort A and 226 in Cohort B. Average donor score was 6.9 out of 25 (±3.9, range 0-18) in Cohort A and 10.4 (±2.8, range 0-17.5) in Cohort B. Donors generally scored best on duration of admission and convalescence, and worst on long-term complications. Younger donors, donors with a higher educational level and those who were registered as deceased donors scored higher in Cohort A, only donors who were registered as deceased donors scored higher in Cohort B. Donors felt relatively well prepared for surgery after receiving all information: 8.3 (±1.3) out of 10, and average postoperative satisfaction with the informed consent procedure was 8.1 out of 10 (±1.6, range 0.6-10)).

Conclusion: Donor knowledge of the procedure and postoperative course improves during the informed consent process but is still low. Long-term complications deserve more attention during the preoperative educational process of living kidney donors. Incentives to standardize the informed consent procedure will further improve donor knowledge and satisfaction, and will benefit consult efficiency at the outpatient clinic.

Donor-derived cell-free DNA as minimally invasive tool to diagnose acute rejection after kidney transplantation

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Introduction: Acute rejection after kidney transplantation, which occurs in 15-20% of recipients, is diagnosed by means of a kidney biopsy which is an invasive procedure. Here we evaluated a novel, minimally invasive approach to diagnose acute rejection by measuring donor-derived cell free DNA (dd-cfDNA) in plasma of kidney transplant recipients.

Methods: In total, 18 kidney transplant recipients were studied. Ten recipients experienced a decline in kidney function and underwent a 'for cause' biopsy. Of these ten, seven recipients had a biopsy proven acute rejection (BPAR) within the first 4 months after transplantation, while the other three recipients had an urinary tract infection (UTI). Plasma was collected before transplantation, at 3, 6 and 12 months after transplantation and at moment of biopsy. DNA of all 18 donor-recipient pairs was genotyped for 10 highly variable single nucleotide polymorphism (SNP)s. Digital droplet PCR for at least 2 discriminative SNPs between donor and recipient was performed to quantify the level of dd-cfDNA at the different time points.

Results: Two recipients with a severe rejection resulting in graft loss, demonstrated a clear dd-cfDNA signal at the moment of rejection with a ratio of dd-cfDNA to total cfDNA of 14.5% and 4% respectively. The ratio of dd-cfDNA in the other 5 recipients with BPAR was lower with a median of 0.3% (range 0.09 -1.7%), though these percentages corresponded to a significant number of positive dd-cfDNA droplets (median number of droplets: 17; range 9-31). There was a positive correlation between the number of positive dd-cfDNA droplets and serum creatinine concentrations of the recipients with BPAR ($r=0.86$, $p=0.02$). The number of positive dd-cfDNA droplets in recipients without BPAR or UTI was low (1; range 0-12) at all time points (n=29 samples). Two recipients with an UTI demonstrated a ratio of 0.4% and 0.04% dd-cfDNA corresponding with 12 and 6 positive dd-cfDNA droplets, while the third patient who experienced a recurring UTI had high levels of dd-cfDNA with a ratio of 11% dd-cfDNA representing 168 dd-cfDNA droplets.

Conclusion: Our first data show that dd-cfDNA is a potential minimally invasive marker for acute rejection after kidney transplantation. Nevertheless, the discriminative capacity of dd-cfDNA as marker for rejection from other causes of graft damage or clinical problems as urinary tract infection needs to be elucidated.

Mesenchymal stromal cells infused via the renal artery are retained and survive in ischemic porcine kidney

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Introduction: Donor organ shortage is one of the main problems in kidney transplantation. The increase in donor kidney pool comes with the use of expanded criteria donor organs. Therefore, a number of techniques are arising to improve organ quality, such as machine perfusion in combination with cell therapy. Mesenchymal stem cells (MSC) have tissue regenerative capacities exerted by paracrine secretion of different cytokines and physical interaction with surrounding cells.

Materials and methods: Porcine MSC from adipose tissue were isolated to carry out the experiments. A model of unilateral ischemia-reperfusion injury by clamping the renal artery for 1 hour was established. 10 million fluorescently labelled MSC with Qtracker beads were infused directly through the renal artery during 10 minutes. Fluorescent MSC were detected using flow cytometry. Before, during and after the infusion, blood samples were taken from the renal vein to assess if MSC were leaving the kidney. After 30 minutes or 8 hours both kidneys were retrieved and biopsies were collected from multiple sites. These biopsies were mechanically disrupted and enzymatically digested to a single cell suspension and analyzed by flow cytometry. Slices from paraffin-embedded biopsies were stained by H&E and analyzed by microscopy to identify the exact localization of the MSC.

Results: MSC left the kidney (up to 2000 MSC/ml blood) during the infusion procedure, after which very low fluorescent cells were detected in renal venous blood (300 MSC/ml). No MSC were found in arterial blood. Dissociated renal cortex and medulla revealed that most MSC were present in renal cortex (8000-20000 MSC/gram) but a number of individual MSC were detected in the medulla (1000-3000 MSC/gram). From these MSC inside renal tissue, 80% were alive. A small population of MSC was found in lung (200-400 MSC/ gram). MSC were detected by microscopy in renal cortex, mainly at glomeruli, but individual MSC were found also in tubuli, vessels and medulla .

Conclusions: Infusion of MSC through the renal artery can successfully deliver MSC throughout the kidney. MSC were retained particularly in glomeruli for at least 8 hours. We were able to estimate the relative retainment and localization of MSC in the kidney. These studies will pave the way for survival studies in this large animal model aiming for future clinical studies with targeted delivery of MSC in renal disease, eg. in transplantation of high risk donor organs.

Autophagy in renal ischemia-reperfusion injury: effect of ischemic duration and modulation with trehalose

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The role of autophagy in renal ischemia-reperfusion (IR) injury is still unclear: both protective as well as detrimental functions have been described. Additionally, whether autophagy is actually enhanced or suppressed during IR likely depends on both ischemia and reperfusion time. We therefore analyzed several autophagy markers in a female rat renal IR injury model subjected to varying durations of ischemia (45-60 min) and reperfusion (0, 1, 3, 6, 24, 48 h and 7 days). Sixty min ischemia led to less survival (33%) compared to 45 min (100%) and was characterized by more renal injury as evidenced by plasma creatinine, AST and h-FABP levels together with positive TUNEL staining. Expression of stress markers ICAM-1 and Hsp70 were markedly increased after 60 min ischemia compared to 45 min. Interestingly, compared to Sham-operated rats, autophagosome marker LC3-II was significantly lower after 0 and 3 h reperfusion, regardless of ischemic duration (45 or 60 min ischemia). After 24 h of reperfusion however, LC3-II levels were significantly higher after 60 min compared to 45 min of ischemia, associated with increased mRNA expression of LC3. As expected, these effects were associated with lower levels of autophagy degradation substrate Sqstm1/p62 after 60 min compared to 45 min of ischemia.
As autophagy seemed to decrease during reperfusion, we analyzed the effect of trehalose, an mTOR-independent autophagy stimulator and natural disaccharide, in the rat IR model subjected to 60 min ischemia. Rats were administered PBS (vehicle) or trehalose (2 g/kg bw) daily 2 days prior to IR experiments. Trehalose increased LC3-I and LC3-II levels 24 h post-reperfusion. Interestingly, trehalose treatment did not reduce expression of inflammatory markers nor reduce renal injury 24 h post-reperfusion, but resulted in markedly less positive TUNEL-staining 7 days post-reperfusion and increased survival (83%) compared to vehicle treatment (50%).

In conclusion, autophagy levels are reduced at several time points after reperfusion. One day following IR, autophagy is higher with increased ischemic stress. Autophagy inducer trehalose did not attenuate the initial IR injury, but nonetheless resulted in less injury and better survival in the long run, suggesting that autophagy enhancement via trehalose is not involved in reducing injury, but in repair and recovery of kidneys after IR.

Hibernating mitochondria as organ preservation: hibernator versus non-hibernator kidney mitochondria

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Hibernators are well known for their ability to initiate safe metabolic suppression and to resist ischemia and hypothermia, even outside the hibernation season. Therefore, hibernation is a promising strategy to mitigate cellular damage in a variety of conditions, such as organ transplantation. We explored the role of mitochondria herein, by analysing mitochondrial function during cold preservation and rewarming in epithelial cell lines from a hibernator (hamster kidney cells, HaK) and a non-hibernator (human embryonic kidney cells, HEK293).
Cells were subjected to cooling at 4°C up to 16h, followed by rewarming. In addition to cell survival (Neutral Red assay), mitochondrial function was determined by adenosine triphosphate (ATP) levels (Luciferase assay), mitochondrial membrane potential (JC1 fluorescent dye) and mitochondrial morphology (MitoTracker fluorescent dye).
In HEK293, cooling induced dispersion of the tubular mitochondrial network, a loss of mitochondrial membrane potential and decreased ATP levels. In contrast, HaK maintained both mitochondrial membrane potential and ATP production during cooling and rewarming, resulting in superior cell survival compared to HEK293. Interestingly, HaK showed a dispersed mitochondrial network in both warm and cold conditions, whereas HEK293 cells showed a fused network in 37°C.
To rule out cytosolic effects, ATP production was also measured in isolated mitochondria from HaK cells subjected to cooling. Remarkably, isolated HaK mitochondria incubated for 3h in 4°C maintained their production of ATP.

Thus, we have showed that hibernation derived mitochondria are able to maintain their function during cold, whereas non-hibernating derived mitochondria fail. Disclosing the mechanisms that hibernators use to maintain mitochondrial function, resulting in attenuation of cell death, in hypothermic and ischemic circumstances may help to eventually improve organ preservation in organ transplantation.

Cell-free microRNAs in kidney graft preservation fluid as novel biomarker for delayed graft function.

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Background: Delayed graft function is a common complication after deceased donor kidney transplantation (KTx), which affects both short and long-term outcome. Currently available biomarkers in graft preservation fluid lack sensitivity in predicting outcome after transplantation. The aim of this study is to identify microRNAs in preservation fluid predictive of delayed graft function (DGF) after transplantation.

Methods: In this study, preservation samples were collected during kidney transplantations from deceased donors. The graft outcome was defined as DGF or immediate graft function (IF). As a discovery cohort 4 IF samples and 4 DGF samples were analysed using Taqman Array MicroRNA cards with 2 grafts from both DCD (donation after cardiac death) and DBD (donation after brain death) in each group. As validation cohort, we analysed 40 IF and DGF samples.

Results: On average, 222 miRNAs (range 192-246) were detected per sample with 223 miRNAs fulfilling the pre-set parameters (Ct<40 in 3 or more samples). PCR array expression analysis returned 7 miRNAs with P<0.010. After correcting for multiple testing only miR-505 remained significantly different between the groups in the discovery set (p=0.020). We confirmed this in an independent validation cohort using regular miRNA qPCR assays (p=0.007). If samples were stratified for donor type, miR-505 remained significantly different between IF and DGF in DCD kidneys (p=0.009), but not in DBD kidneys (p=0.339).

Discussion: MiRNAs in graft preservation fluids are well detectable and can be a promising source for biomarkers of graft quality and for predicting outcome prior to kidney transplantation. In the era of extended criteria donor organs, miR-505 guided graft reconditioning strategies may help to improve transplant outcome.

Genetic inactivation of DUSP3/VHR attenuates kidney damage and inflammation following ischemia/reperfusion in mouse

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Background: Renal ischemia-reperfusion (I/R) injury represents an unavoidable event in kidney transplantation. Dual Specificity Phosphatase 3 (DUSP3, also called Vaccinia-H1 Related (VHR)) is highly expressed in endothelial cells, as well as in monocytes and macrophages. Since DUSP3 is a positive regulator of the innate immune response, DUSP3 inactivation may attenuate kidney inflammation and damage caused by I/R.

Methods: Ten-week-old C57BL/6 DUSP3 wild-type (WT, n=10) *versus* systemic knock-out (KO, n=10) mice underwent unilateral left renal ischemia for 30 minutes. Right nephrectomy was simultaneously performed. The left kidney was excised and blood sample was collected from *inferior vena cava* at 48h *post* reperfusion. Renal function was assessed upon Blood Urea Nitrogen (BUN) levels. Expressions of inflammatory and immune markers were comparatively quantified at both mRNA (real-time qPCR) and protein (immune-blotting and –staining) levels in ischemic *vs.* non-ischemic kidneys in DUSP3 WT *vs.* KO mice.

Results: BUN reached 259±51 *vs* 78±11mg/dL in DUSP3 WT and KO, respectively ($p<0.01$). DUSP3 KO ischemic kidneys showed a reduced number of PCNA- (3-fold, $p<0.001$), CD11b- (3.5-fold, $p<0.001$) and F4-80-positive cells (1.7-fold, $p<0.001$) in comparison to WT. The expression levels of CD11b (2.2-fold, $p<0.01$), HSP70 (2.7-fold, $p<0.01$) and PCNA (10-fold, $p<0.001$) was significantly decreased in DUSP3 KO vs. WT in ischemic kidneys. By contrast, a 1.5-fold increase of anti-inflammatory M2 CD206-positive macrophages was observed in DUSP3 KO ischemic kidneys. At mRNA levels, DUSP3 WT *vs.* KO ischemic kidneys (normalized to WT sham-operated right kidneys) showed the upregulation of 6.5-fold ($p<0.05$) *vs.* 10.5-fold ($p<0.01$) of M2-type macrophage (*Arginase*), 4.6-fold ($p<0.001$) *vs.* 2.2-fold ($p<0.05$) of *CD11b*, 4.5-fold ($p<0.001$) *vs.* 0.7-fold ($p>0.05$) of *TNF* and 111-fold ($p<0.001$) *vs.* 4.5-fold ($p>0.05$) of *KIM-1*, respectively.

Conclusions: Genetic inactivation of DUSP3 attenuates renal I/R-associated damage and inflammation.

A novel tool to define the immunogenicity of HLA mismatches

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In kidney transplantation, it is pivotal to prevent HLA donor specific antibody (DSA) formation, which is triggered by immunogenic epitopes present on mismatched HLA. The optimal donor can theoretically be selected by avoiding these epitope mismatches. To implement epitope matching, it is essential to define the relevant epitope mismatches between recipient and donor. Therefore, we aimed at developing and validating a tool to define amino acid mismatches on donor HLA. This tool can be used to define the immunogenicity of HLA mismatches for a large number of recipient-donor pairs.
We developed a computer algorithm containing all HLA amino acid (AA) sequences from the IPD-IMGT/HLA database and all theoretical and antibody-verified eplet AA (position and type) from the HLA Epitope Registry. The HLA input is preferably second field typing, as the HLA sequences of the recipient are compared to each mismatched HLA allele of the donor to define the number of AA mismatches. In addition, the physical properties of the AA mismatches are defined, which can be correlated to Luminex single antigen DSA formation after transplantation to define the immunogenic epitopes.
This tool and other approaches (EpVix, Cambridge AA mm score) were used to analyse 233 first kidney transplant recipient-donor pairs as part of the 17th IHIWS epitope component. Comparing the results of all approaches similar number of mismatches were observed.
For both HLA class I and class II, we found that increasing numbers of AA mismatches resulted in a higher probability of DSA formation.
This newly developed computer algorithm can be used to define HLA AA mismatches for a large number of recipient-donor pairs from all kind of populations and to select optimal donors in kidney transplantation. An advantage of this tool is that all HLA alleles, including rare alleles, can be analysed.

Pregnancy after thoracic organ transplantation: the Belgian experience.

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Aim: to summarize the Belgian experience with pregnancy after heart (HTx), lung (LTx) and heart-lung (HLTx) transplantation

Results: Twenty female recipients of thoracic organs delivered 24 children: 17 after HTx, 2 after LTx and 1 after HLTx. Their age at transplantation was 23 ± 6 years (range 12→35) and the deliveries took place 6 ± 5 yrs (1→17) after transplantation.
The reason for HTx was congenital heart disease (n=7), dilated cardiomyopathy (DCM, n=9) and ARVC (n=1). In 5 women with DCM there was a family history of DCM (fDCM) and in 3 the underlying pathogenic mutation was found. Both women that underwent LTx had cystic fibrosis (CF) and the HLTx was performed because of idiopathic pulmonary artery fibrosis (iPAH).
Children were followed for 9 ± 8 years (0→21) and all are alive. One was born with an agenesis of the nose and 1 received an HTx because of end-stage heart disease secondary to fDCM at 7 years. Three children (3, 13 and 19 years) are asymptomatic carriers of a pathogenic mutation.
The HLTx recipient unfortunately died of bronchiolitis obliterans syndrome (BOS) 2,5 years after delivery (AD). One woman with LTx had a re-LTx because of BOS 2 years AD, a renal transplantation (RTx) 9 years AD and is, 13 years AD, again BOS. The other patient with LTx is oxygen dependent because of BOS 13 years AD. All heart recipients are alive, but 1 received a re-HTx 9 years AD because of transplant vasculopathy (TXCAD), 1 is on the WL for re-HTX because of TXCAD 3 years AD. Two have symptomatic TXCAD and 3 HTx recipients received a RTx respectively 6, 8 and 11 years AD.

Conclusion: Successful pregnancy after HTx, LTx and HLTx is possible, yet experience is limited. Only one child had a serious birth defect and although all are alive, there is a serious risk of disease transmission in women with DCM, even in the absence of a family history at the moment of HTx. Not unexpectedly, transplanted mothers are prone to serious morbidity and even mortality, especially after LTx and HLTx.
These findings should be clearly discussed with the couple desiring to have children, before women with an HTx, LTX or HLTx try to become pregnant.

The effect of perioperative antiplatelet / anticoagulant therapy on the incidence of early postoperative thromboembolic complications and bleeding in kidney transplantation. - A dual center retrospective cohort study of 2000 kidney transplant recipients.

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Thromboembolic complications (TECs) are dreaded complications after kidney transplantation (KTx). Although incidence is low, consequences are severe and can result in delayed function or even graft loss. The perioperative use of anticoagulation may play a role in this, but a national protocol is missing due to lack of consensus on postoperative bleeding risks. Our objective was to determine the incidence of TECs and bleeding in relation to the use of pre- and intraoperative antiplatelet/anticoagulation therapy in KTx and to identify risk factors. All patients >18 years, who underwent a living or deceased KTx between 2011-2016 in 2 centers, were included and retrospectively analyzed. Exclusion criteria were combined transplantations or missing data on antiplatelet/-coagulative therapy. Data from electronical databases and patient registries were merged. Events were scored in case of occurrence ≤7 days post-transplantation. TECs were defined as an arterial/venous renal thrombosis, deep venous thrombosis or pulmonary embolism. Bleeding complications were scored after confirmation with imaging. Primary outcome parameters were the incidence of TECs and bleeding in relation to the use of pre-/intraoperative anticoagulation. Secondary outcome parameters were risk factors correlated to TECs and postoperative bleeding. Statistical analyses were performed with SPSS Statistics 23.0. Two thousand patients were included and stratified for TEC or bleeding. Of all patients 59% was male, mean age was 55±14 years and 60% received a living donor kidney, 20% a DBD kidney and 20% a DCD kidney.TEC≤7 days occurred in 21 (1.1%) patients. Bleeding≤7 days occurred in 87 (4.4%) patients. Univariate regression analysis for TEC identified ($P<0.05$) multiple donor arteries (odds ratio (OR) 2.79) and recipient obesity (BMI≥30 kg/m^2, OR 2.85) as potential risk factors. Multivariate regression analysis for postoperative bleeding identified (Bonferroni adjusted $P<0.004$) cardiovascular disease (OR 2.30) and preemptive transplantation (OR 2.35) as potential risk factors. Use of intraoperative heparin, vitamin K antagonists or antiplatelet therapy showed no increased risk for bleeding ($P>0.05$)

Conclusion: Our results show that TECs occur in 1.1% and bleeding in 4.4% of kidney transplantations. Intraoperative heparin and continued use of platelet aggregation inhibitors does not lead to an increased risk of bleeding. Therefore, administration of these regimens to prevent TECs appears to be safe.

Biliary pH, Bicarbonate and Glucose are Suitable Biomarkers of Bile Duct Viability During Normothermic Machine Perfusion of Donor Livers

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Background: Normothermic machine perfusion (NMP) is rapidly making its way into the clinic and can be used for viability assessment of human donor livers prior to transplantation. Thus far, however, selection criteria have only been based on hepatocyte function and injury, and no criteria have been established to assess bile duct injury.

Methods: Twenty-three human donor livers that were discarded for transplantation underwent a period of static cold storage and 6 hours of NMP upon arrival at our center. Biopsies of the extrahepatic bile duct were taken before and after NMP and subsequently semi-quantitatively scored using a modified scoring system. The median injury score between the two biopsies was used to divide livers into high and low biliary injury. Bile was collected during NMP for analyses.

Results: Biliary pH and biliary bicarbonate concentration were significantly higher in livers with low biliary injury compared to livers with high biliary injury, and biliary glucose and biliary LDH concentration were significantly lower in livers with low biliary injury. A biliary pH above 7.4, biliary bicarbonate concentration above 25 mmol/L and biliary glucose concentration below 20 mmol/L at 2.5 hours of NMP, as well as a biliary LDH concentration below 5000 mmol/L already at 30 min of NMP, strongly predict low histological bile duct injury. Furthermore, livers with low biliary injury had relatively low glucose concentration in bile in relation to perfusate, whereas livers with high biliary injury showed approximately a 1:1 ratio between glucose concentration in bile and perfusate.

Conclusions: This study provides hands-on parameters to assess bile duct injury during NMP, allowing researchers and surgeons to make better informed decisions in selecting donor livers that are suitable for transplantation.

Excellent one year graft and patient survival with comparable rejection and infection rates in ABO-incompatible kidney transplants with alemtuzumab induction compared to ABO-compatible recipients with basiliximab induction

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Introduction: ABO-incompatible kidney transplantation (ABO-i) is a good option for kidney transplantation with documented one-year graft survival above 95%. A number of induction regimes are used worldwide, most notably with rituximab as primary agent. At our center we have used alemtuzumab as induction for ABO-i since 2011. We compared our patient survival, graft survival, rejection rate and incidence of CMV, EBV, and BK viremia with our ABO-compatible kidney transplantation (ABO-c) patients with basiliximab induction.

Methods: We compared patient survival, graft survival (death censored), rejection (biopsy proven or rejection treatment without biopsy) and CMV, EBV and BK viremia at one year follow-up for all ABO-i with alemtuzumab induction to all living ABO-c with basiliximab induction transplanted at our center from January 1, 2011 to November 17, 2016.
ABO-i preconditioning was as follows: alemtuzumab 30 mg s.c. was administered 30-40 days prior to transplantation. Recipients with high pre-transplant titers (≥ 128 and later 250) also underwent 1 cycle of bortezomib 1.3 mg/m^2 (i.v. or s.c.) followed by plasmapheresis to facilitate titer reduction. Two weeks before transplantation triple immunosuppression was started (CNI, mycophenolic acid, steroids). Pre-operatively antigen-specific adsorption or plasmapheresis was performed to achieve a pre-transplant titer ≤ 8. One day before surgery additional alemtuzumab (15 mg s.c.) and IVIG 0.5 g/kg was administrated. Post-transplantation one antigen-specific adsorption was performed. If titers increased by more than two titer steps in the first two weeks post-transplantation antigen-specific adsorption was repeated.
Our ABO-c patients received basiliximab 20 mg i.v. on the day of transplantation and on day 4 post-transplantation in combination with similar immunosuppression.

Results: A total 55 ABO-i's and 273 ABO-c's were performed in this period. Death censored graft survival was 98.1% in the ABO-i and 98.5% (p=ns) in the ABO-c group. Patient survival was 96.3% vs 98.9% (p=ns). Rejection rate in the first 6 weeks was 14.5% vs 13.9%, in the first year 18.1% vs 18.3%. CMV viremia (log>2) occurred more often in the ABO-i group than in the ABO-c group (21.8% vs 8.7%), BK viremia was similar (21.8% vs 18.3%), EBV viremia (log>2) was low in both groups: 0 vs 1.8%.

Conclusion: Excellent one-year results are achieved with alemtuzumab induction in ABO-i and are comparable to low-risk ABO-c with basiliximab induction.

Livers from donation after circulatory death donors can be safely used for retransplantation

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Introduction: As a result of shortage of suitable donor organs, donation after circulatory death (DCD) livers are increasingly used for orthotopic liver transplantation (OLT). In 2016, 31% of liver transplants in the Netherlands were performed with DCD grafts. However, after DCD OLT biliary complications and early allograft dysfunction (EAD) are more frequently observed than after donation after brain death (DBD) OLT. The outcomes after retransplantation with a DCD liver are not known. In many countries, retransplantation is a contraindication for the use of DCD livers. Therefore, we aimed to assess the results of patients undergoing retransplantation using a DCD liver graft.

Methods: In this multicenter retrospective study, all DCD reOLTs in the Netherlands between 2003 and 2017 were included. For each DCD reOLT, two DBD reOLTs livers were selected as a matched control group. Matching was performed based on number of successive reOLT, BAR-score (which includes MELD-score, donor age, recipient age, use of life support prior to OLT and reOLT yes/no), early (<3months) or late(≥3months) reOLT and year of retransplantation, respectively. Baseline characteristics of both donor and recipient and outcomes parameters were collected and analysed. Early allograft dysfunction (EAD) was defined according to the Olthoff criteria, NAS as bile duct strictures within two years after OLT at any location in the biliary tree other than the anastomosis. Continuous data are shown as median (IQR).

Results: Nineteen DCD reOLTs were performed up to 1-1-2017. For the matched control group, 38 DBD reOLTs were selected. Comparison of recipient age, cold ischemia time, MELD score and BAR score showed no difference between the DBD and DCD group, only the DBD donors had a higher age than the DCD donors (54 [39-59] vs. 38 [20-45] years, p<0.001). No difference was observed between DBD and DCD reOLTs in post-transplant peak serum ALT values (1185 [628-2493] vs. 1238 [528-2522] u/L, p=0,729), prevalence of non-anastomotic biliary strictures (10,5% vs. 26,3%, p=0,143) and EAD (35,1% vs. 47,4%, p=0,375). One year graft survival after reOLT was similar for DBD and DCD livers (73,7% vs. 78,9%, p=0,754).

Conclusion: Retransplantation of the liver using a DCD liver graft does not result in inferior results compared to DBD livers. DCD liver grafts should not routinely be declined for patients requiring retransplantation.

Lung Transplantation from ICU does not affect long-term patient and allograft survival

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Introduction: Lung transplantation (LuTx) is the last remaining therapy for selected patients with end-stage pulmonary disease. ICU treatment and ventilatory support before LuTx increases the risk of death within 1 year after LuTx by 58%. Due to donor organ shortage as well as the introduction of the Lung Allocation Score (LAS) LuTx from ICU (ICLT) is increasing, up to 14% in 2016 in the US. As in our center the number of ICLT is likewise increasing, we aimed to see if outcomes are sufficient to justify this practice, and secondly if differences exist between ICLT from mechanical ventilation (MV) and extra corporal life support (ECLS).

Methods: We retrospectively assessed all lung transplantations performed from ICU at our center from 2002-2017. We collected patients characteristics, MV or ECLS support and compared outcome to our non-ICU cohort regarding ICU and hospital stay, number of surgical complications as well as patient and graft survival using survival analyses.

Results: We performed 171 non ICU LuTx and 21 ICLT: 10 from MV (5 patients with CF, 3 with COPD and 2 with ILD) and 11 on ECLS (1 with CF, 2 with COPD and 8 with ILD). Mean duration of ICU admission prior to ICLT was 42±26 days, all patients were awake and ambulated and underwent active rehabilitation prior to LuTx. Mean age of the patients that underwent ICLT was similar to non ICU LuTx.
Post-ICLT ICU admission duration as well as total hospital admission duration was significantly longer in ICLT versus non ICU LuTx (median 32 [IQR 14-58] versus 7 [4-27] days, P=0.01 and 61 [35-110] versus 35 [25-60] days, P=0.01 respectively). Number of re-thoracotomies was also significantly higher in ICLT versus non ICU LuTX (69 versus 24%,P<0.01), especially in patients on ECLS (89%) compared to MV (43%).
Patient survival in the ICLT group was similar at 1 and 5 years (90,5% vs 83,7 and 90,5% vs 71,9% respectively, P=0.61). In the ECLS group, survival at 1 and 5 year was 80%. In the MV group, survival at 1 and 5 year was 100%. Also the development of chronic lung allograft dysfunction was comparable in both groups (P=0.33).

Conclusion: Despite increased number of complications early post-LuTx, especially in ECLS, and extended ICU and hospital admission duration, outcomes regarding long-term patient and graft survival are similar to our non-ICU cohort. Our centers opinion therefore is that ICLT in carefully selected, awake patients is feasible.

Single lung transplantation remains a viable treatment option in selected patients

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Introduction: Lung transplantation is an accepted therapy for end-stage pulmonary disease. Over the last decades the proportion of single lung transplantation (SLT) as opposed to double lung transplantation (DLT) has decreased considerably worldwide for all indications, as median survival rates are generally lower in SLT than DLT (4.6 versus 7.4 years; International heart and lung transplantation registry data). Despite this, SLT may have important advantages: more patients can be helped with fewer organs, size-match can be more easily achieved and surgery is less extensive which may benefit especially older patients with pulmonary fibrosis. In our cohort we see these important benefits of SLT in selected groups of patients and aimed to assess the outcomes of SLT in our center.

Methods: We retrospectively assessed all SLT en DLT performed at our center from 2002-2017. We collected patient characteristics and assessed outcomes, such as waitinglist time, hospital and ICU stay, survival and development of obstructive chronic lung allograft dysfunction (oCLAD) and compared these between SLT en DLT using descriptive statistics and survival analyses.

Results: We performed 40 SLT and 152 DLT. Indications for SLT were most commonly pulmonary fibrosis (in 30% of cases) or COPD (in 27%), whereas all patients with cystic fibrosis and pulmonary hypertension underwent DLT. SLT recipients were older (57 vs 50 years, P=0.007). Donor characteristics were similar between recipients of SLT and DLT.
Waitinglist time was shorter in the SLT group (0.9 vs 1.2 years, P=0.01) and patients less frequently had to be transplanted from high-urgency status or high LAS status (25% versus 44%, P=0.03). Postoperative ICU (4 vs 11 days, P<0.001) and hospital stay (29 vs 39 days, P=0.003) were shorter in SLT than DLT. Survival at 1 and 5 years was not statistically different (95% and 72% in] SLT and 82% and 74% in] DLT; P-logrank NS). Freedom from oCLAD at 1 and 5 year was also comparable (97% and 77% in SLT and 98% and 78% in DLT, P-logrank=NS).

Conclusion: Whereas worldwide SLT is increasingly less used as it is associated with poorer survival, our centers experience is that SLT remains a viable treatment option for selected patients that is associated with shorter waiting time, shorted ICU and hospital stay and comparable short and long term patients and allograft survival.

Prevalence and impact of chronic postsurgical pain following laparoscopic donor nephrectomy: a cross-sectional cohort study

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Introduction: Laparoscopic donor nephrectomy (LDN) is associated with less postoperative pain, faster recovery, shorter length of hospital stay, and a quicker return to normal daily activities, when compared to open donor nephrectomy. Yet, there is a lack of knowledge about long-term outcomes following LDN, such as chronic postsurgical pain (CPSP). One study on CPSP after open donor nephrectomy reported an incidence of 21%. There are no data on the development of CPSP after LDN. We aimed to explore the prevalence of CPSP following LDN and its impact on the health-related quality of life (HRQOL).

Methods: A cross-sectional cohort study was performed among all living kidney donors who underwent a LDN at our center. Patients were asked if they experienced chronic pain related to their laparoscopic donor nephrectomy, and if applicable to fill in the Mc Gill Pain Questionnaire (MPQ). All donors were requested to complete the Short Form-36 Questionnaire on their HRQOL. Additionally, patients' medical records were reviewed to obtain demographic data, relevant medical history, specifications of their surgery *(e.g.* side of nephrectomy, duration of surgery, complications) and early postoperative outcomes, such as severe postoperative pain, postoperative complications, and length of hospital stay. Univariate and multivariate regression analyses were performed to identify possible predictive factors in developing CPSP following LDN.

Results: total of 862 patients, who underwent a LDN in the period from January 2003 through December 2016, were approached for participation. Five hundred twelve patients signed informed consent and completed the questionnaires. The mean time of follow-up was 75 months. Twenty-nine patients (5.7%) reported chronic pain related to their donor-nephrectomy. The HRQOL of living kidney donors with CPSP was impaired when compared to donors without pain. Donors with CPSP reported a reduced general health perception with major differences in limitations due to physical functioning and their level of energy. Severe early postoperative pain, previous abdominal surgery and preexisting backache were identified as predictive factors for the development of CPSP following LDN.

Conclusion: CPSP following LDN is a highly relevant issue, with a prevalence of 5.7%. Furthermore, the presence of CPSP is associated with an impaired HRQOL. Prospective future studies should pursue risk factors and strategies to reduce the incidence of CPSP after LDN.

Investigation of donor-derived cell-free DNA kinetics in stable renal transplant recipients

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Background: After kidney transplantation, cell-free DNA derived from the donor organ (ddcfDNA) can be detected in the recipient's circulation. In the context of an investigation looking at the value of ddcfDNA as an early marker of cell injury and rejection, we first aimed to determine the kinetics of plasma ddcfDNA in a group of stable transplant recipients thereby investigating a model to predict the ddcfDNA fraction from day 1 after transplantation.

Methods: Stable renal transplant recipients were selected from a cohort of 107 recipients within a multicenter longitudinal study based on the following criteria: absence of acute kidney injury, no need of indication biopsies or dialysis and the presence of a normal protocol biopsy if available. Plasma was collected from day 1 until 3 months after transplantation and ddcfDNA was quantified by NGS as a fraction of total cell-free DNA by using a targeted, multiplex PCR based method for the analysis of donor specific SNPs. Clinical parameters of the recipient, donor and transplantation together with histological parameters of the time zero biopsy were included in a biostatistical elastic net regression analysis to create a prediction model for the ddcfDNA% on day 1. For each follow-up time point, median ddcfDNA fractions were calculated.

Results: 40 renal transplant recipients were identified as 'stable graft recipients' according to the predetermined criteria. On the first day after transplantation, median ddcfDNA fractions were 10.57% ranging from 1.71% to 38.99%. Median fractions then decreased to 2.39% and 0.66% respectively on day 3 and 7 after transplantation. Four parameters were determined as independent predictors for the ddcfDNA% on day 1: we found a positive correlation with 1. the administration of an IL-2R antagonist induction therapy (vs ATG); 2. higher residual diuresis of the recipient before transplantation and 3. the presence of chronic interstitial damage on the time zero biopsy. The time interval after transplantation correlated negatively with the ddcfDNA% on day 1.

Conclusion: After transplantation, ddcfDNA fractions reach a low baseline level within the first week after transplantation in stable transplant recipients. Four parameters were identified as independent predictors for the ddcfDNA% on the first day after transplantation.

Impact after live donor nephrectomy: a comparative follow-up study

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Introduction: Worldwide, tens of thousands of healthy individuals participate in living kidney donation programs to help patients with end-stage renal disease.Potential living donors are exhaustively screened by transplant professionals, who select only those whose health will not be compromised by donation. The past years, single-center and national registry studies on long-term follow-up outcomes comparing donors to non-donors have reported unfavourable results.

Methods: We conducted a follow-up study of 761 living kidney donors from The Netherlands using individual level donor data who were propensity-score matched with 1522 non-donors from two Western population-based cohort studies on age, gender, BMI, ethnicity, kidney function, blood pressure, pre-existing co-morbidity, smoking, alcohol use and highest education degree. Live kidney donations occurred between 1981 through 2010 with follow-up until April 20th, 2016. The median follow-up time after donation was 8.0 years. The primary outcome was kidney function as defined by creatinine level and eGFR (as measured by CKD-Epi formula) at follow-up.

Results: One-year median eGFR was 59.0 ml/min/1.73 m^2 (IQR 50.5-68.6 ml/min/1.73 m^2) and eGFR at follow-up was 59.9 ml/min/1.73 m^2 (IQR 51.4-70.7 ml/min/1.73 m^2). Donors were found to have an increased serum creatinine of 26.03 µmol/l (95%CI 24.17; 27.89), a decreased eGFR of 27.23 ml/min/1.73m^2 (95%CI -28.61; -25.85), and eGFR decline of 31.70% (95%CI 29.94-33.46) as compared to non-donors at follow-up. There was no difference in outcome between donors and non-donors for ESRD, microalbuminuria, BMI, incidence of diabetes or cardiovascular events, and cardiovascular mortality. A lower risk of new-onset hypertension (OR 0.45, 95%CI 0.33; 0.62) was found among donors. The EQ-5D health-related quality of life was higher among donors, while the SF-12 physical and mental component scores were lower.

Conclusion: In conclusion, one year after donation live donors have a reduced renal function, remaining stable without any kidney-related morbidity or mortality to at least eight years of follow-up. However, the decline in renal function may be further compromised when unforeseen conditions would develop that additionally affect renal function. Having knowledge of this risk, albeit small, donors should be well-informed by the medical team and offered lifelong follow-up to monitor the remnant renal function.

Chronic Use of Proton-Pump Inhibitors is Associated with Lower Magnesium and Iron Status and Excess Mortality in Renal Transplant Recipients

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Background and objectives: Chronic use of proton-pump inhibitors (PPI) is very common in renal transplant recipients (RTR). However, chronic PPI use may induce magnesium and iron deficiencies and increase the risk of mortality. We investigated the association of PPI use with mortality and magnesium and iron status in a large single-center cohort of stable RTR.

Methods: We included 707 RTR with a functioning graft ≥ 1 year. RTR with missing data on PPI dosage (n=4) were excluded, leaving 703 RTR eligible for analysis. Plasma magnesium, serum ferritin, and 24-h urinary magnesium excretion were measured with standard methods. Associations of PPI use with magnesium and iron status were analyzed by linear regression. The association of PPI use with all-cause and cardiovascular mortality were analyzed by Cox regression.

Results: At baseline, RTR were at a median of 5.4 [1.9-12.0] years after transplantation, mean age was 53±13 years, 57% were male and 53% used PPI. Plasma magnesium was 0.95 ± 0.12 mmol/L, serum ferritin 118 [55-222] mmol/L and magnesium excretion was 3.4 ± 1.6 mmol/24h. PPI use was inversely associated with plasma magnesium (β:-0.02, *P*=0.04), serum ferritin (β:-70.6, *P*<0.001) and magnesium excretion (β:-0.62, *P*<0.001), all independent of potential confounders, including age, gender, BMI, eGFR, proteinuria, hs-CRP, leukocytes, physical activity score, smoking behavior, alcohol use, 24-h urinary sodium and potassium excretion and immunosuppressive medication use. During median follow-up of 5.4 [4.8-6.1] years, 151 RTR died, of which 61 due to cardiovascular disease. PPI use was associated with higher risk of all-cause mortality (HR 2.01; 95%CI 1.43-2.83, *P*<0.001) and cardiovascular mortality (HR 2.28; 95%CI 1.32-3.95, *P*=0.003). Adjustment for potential confounders did not materially alter the association (all-cause mortality: HR 1.81; 95%CI 1.26-2.61, *P*=0.001, cardiovascular mortality: HR 1.96; 95%CI 1.09-3.51, *P*=0.02).

Conclusions: PPI use is associated with lower magnesium and iron status, together indicating impaired gastro-intestinal absorption, potentially related to the reduced gastric acid secretion. Moreover, PPI use is associated with increased risk of all-cause mortality and cardiovascular mortality in RTR, suggesting PPI use is not without danger in RTR and treatment indication may need to be revisited.

Ribavirin efficacy in upper and lower respiratory tract paramyxovirus infection in lung transplant recipients.

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Aim: Paramyxovirus infections (PMVI) in lung transplant recipients (LTR) are associated with chronic lung allograft dysfunction (CLAD). The precise effect is still unclear, as is the role of upper and lower respiratory tract infection (URTI and LRTI). We retrospectively studied progression of CLAD after URTI and LRTI in a large cohort of PMVI in LTR.

Methods: All PMVI's presented at our institution between 2009-2016 were included. FEV1 at presentation and 6 months post infection were analyzed and expressed as percentage of pre-infection FEV1. Patients were divided in URTI (FEV1 decrease < 10%) and LRTI (FEV1 decrease > 10%). Effect of ribavirin plus supportive care vs. supportive care only was then analyzed by comparing FEV1 postinfection between the groups. Patients presenting to the hospital within 14 days of symptom onset were included.

Results: In total 96 patients were included. 29 (30%) had an URTI (< 10% decrease in FEV1 at presentation) and 67 (70%) had a LRTI (> 10% decrease). Mean FEV1 at presentation in the URTI group was 94.7% (SD± 3.0%), in the LRTI it was 77.8% (SD± 15.0%). No significant differences in BOS grade pre-infection, type of transplant, virus type or gender were found between the URTI and LRTI groups in an univariate analysis. The mean FEV1 at 6 months post infection differed significantly between the groups: 100.5% (SD±9,3%) for the URTI group and 92.4% (SD±14.1%) for the LRTI group (p= 0.03). In patients with LRTI, FEV1 almost normalized with ribavirin six months post infection (97.8%) but was significantly worse in the untreated group (89.5%)(p= 0.02). In patients with URTI, FEV1 was unchanged 6 months after PMVI, irrespectively of ribavirin treatment.

Conclusion: Ribavirin treatment significantly improves FEV1 in LTR presenting with a LRTI defined as a FEV1 decline > 10% at presentation. Yet, LTR with a PMVI causing an URTI, defined as a FEV1 decline < 10% at presentation, recovered at 6 months regardless of ribavirin treatment. These results support the indication for ribavirin treatment of PMVI in LTR with LRTI.

Effect Of Different Treatment Modalities For End-Stage Renal Disease After Heart Transplantation

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Aim: End-Stage Renal Disease (ESRD) is a frequent complication of heart transplantation (HTx). The aim of this study was to determine the long-term incidence of ESRD and to investigate what subsequent therapy showed the best survival.

Methods: A retrospective, single-center, descriptive study was performed of 685 HTx recipients to investigate the incidence of ESRD, its effect on patient survival, and the optimal mode of renal replacement therapy (RRT). Of the 685 HTx recipients 133 patients were excluded. 64 patients were under 18 years of age, 62 patients did not survive the first three months after HTx and 7 patients were retransplantations.

Results: During a median follow-up of 9.7 years, n = 121 (21.9%) of the patients developed ESRD. Of these, 22 received no RRT, 80 were treated with dialysis (46 with hemodialysis and 34 with peritoneal dialysis) and 19 underwent a kidney transplantation (KT). The ESRD-free survival at 1, 5 and 10 years follow-up was 96%, 84% and 58%, respectively. Patients with ESRD had a significantly worse overall survival compared to patients without (14.6 *versus* 12.1 years, p = 0.0001). KT was associated with the best median survival compared with patients treated with dialysis alone or those who received no RRT: 16.4 *versus* 10.4 *versus* 9.5 years, respectively.

Conclusion: ESRD is a frequent complication after HTx and is associated with statistically significant and clinically relevant worse overall survival. In our population, KT is the best therapeutic option for HTx patients who develop ESRD.

No benefit from 3-month valguanciclovir prophylaxis vs preemptive treatment in heart transplantation: should we extend the prophylaxis to 200 days or beyond?

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Aim: Cytomegalovirus (CMV) is the main opportunistic pathogen in solid organ transplantation and has a major impact on outcome both by its direct and indirect effects. Both prophylactic and preemptive strategies have been described. We reviewed our 20-year experience both in term of CMV infection and in term of its potential influence of long-term complications such as acute cellular rejection and coronary artery disease.

Methods: Retrospective single-center study of heart transplants recipients from 1995 to 2015. Out of 305 patients (310 Tx), 231 met our inclusion's criteria. All CMV seropositive recipients benefited from the preemptive strategy, as did the high-risk group (seronegative recipient/seropositive donor) from 1995 to 2004. From 2005 to 2015, the later group received 3 months anti-CMV prophylaxis. End-points of this study were CMV infection, acute rejection, cardiac allograft vasculopathy (CAV) and patient survival.

Results: 32% of our patients developed CMV infection during the follow-up, the majority within the first 6 months after transplantation. Overall, 11.2% of our patients developed CMV disease (10.4% in seropositive patients vs 32.4% in high-risk patients, p=0.001). The 3-month prophylaxis significantly delayed the occurrence of CMV infection but had no beneficial effect on its incidence. CMV infection did not influence the rate of acute cellular rejection within the first year (3A or higher: 10.4%), nor on the occurrence of CAV (24 % at 10yr). The median survival time of our cohort was 15 years. CMV infection had no impact on survival, though patients with CMV disease had a non-significant decrease in survival time (9.9yrs, p=0.15).

Conclusion: Anti-CMV prophylaxis for 3 months delayed CMV infection but with a tendency to increase the incidence of CMV disease. This study could not demonstrate any pejorative effect of CMV on rejection nor on chronic allograft vasculopathy. Additional studies should be done with longer prophylaxis in heart transplant recipients since favorable data were demonstrated in other solid organ transplantation.

Donor specific anti-HLA antibodies are not associated with non-anastomotic biliary strictures but both are independent risk factors for graft loss after liver transplantation

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Donor-specific alloantibodies (DSA) have been associated with rejection and shorter graft survival after orthotopic liver transplantation (OLT). Aim: We examined the role of DSA in non-anastomotic biliary strictures (NAS) after OLT. Patients receiving first OLT who developed NAS (*n*=68) and a control group without NAS (*n*=83), with pre-OLT and 12 months post-OLT serum samples were included. DSA were specified using the Luminex single antigen test. Risk factors for NAS and graft survival were analysed. The presence of preformed DSA was not significantly different between patients with NAS and controls (p=0.89). After 12 months, 26.5% of NAS patients and 16.9% of controls had generated de novo DSA (p=0.15). Neither de novo class I DSA nor de novo class II DSA were associated with NAS. De novo DSA generally developed after the diagnosis of NAS. Time-dependent regression analysis identified both NAS (aHR 8.05, CI 3.28 – 19.77, p<0.01) and de novo class II DSA (aHR 2.84, CI 1.38 – 5.82, p<0.01) as independent risk factors for graft loss.
Preformed or de novo DSA were not associated with the development of NAS. However, NAS as well as de novo class II DSA were independent risk factors for graft loss after OLT.

Possible improvement of tissue donor potential by better definition and diagnosis of active systemic infection or sepsis

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Aim: This study aims to determine how often patients are excluded from tissue donation due to inaccurately supposed systemic infection or sepsis, to see to what extent the existing donation potential might be improved.

Methods: Retrospective review of medical records of all adults under 86 who were excluded from tissue donation in 2015 in our institution (N=96) due to supposed active systemic infection/sepsis. Patients who met other exclusion criteria for tissue donation were excluded (N=23). Primary outcome was the presence of an active systemic infection or sepsis treated <24 hours or without beneficial response at time of death defined in accordance with the model protocol for tissue donation of the Dutch Transplantation Foundation (NTS). To validate the agreement on the primary outcome, primary review was done by two independent researchers. In case of doubt or no agreement, the review was also done by a third or even fourth researcher till majority without doubt of last researcher was reached. Remaining cases were openly discussed to reach consensus.

Results: In total, 73 patients were included in the study. Cohen's kappa between the two initial raters was high (κ=0.68, N=57). Cohen's kappa between the two initial raters and the third rater, on cases with one rating of the two initial raters, was also high (κ=1.00, N=5; K=1.00, N=7). In twenty patients (27%) there was no systemic infection at date of death. Univariate analysis showed that absence of systemic infection was associated with a last measurement of CRP≤100mg/L ($p<0.001$), no antibiotics prescribed at last day of non-palliative treatment ($p<0.001$), and absence of systemic inflammatory response syndrome (SIRS) two days before death ($p=0.02$) defined conform the model protocol of the NTS. In a multivariate analysis, only absence of SIRS two days before death presented as an independent negative predictor of systemic infection (OR=0.07 [95%CI:0.07-0.71]; $p=0.02$) with an AUC of 0.79 [95%CI:0.59-0.99].

Conclusion: Among patients excluded from tissue donation, there is a substantial proportion without a systemic infection that make them in retrospect suitable for tissue donation. This may be due to the ambiguity of the used definitions for systemic infection and beneficial response to antibiotic treatment.

Kidney transplantation from living donor: Does pre-implantation biopsy predicts outcome?

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Introduction: Pre-implantation biopsy is considered a valuable decision-making tool for renal transplantation but majority of studies concerned deceased donors. Data available from studies ofpre-implantation kidney biopsy from living donor are rare.

Objectives: The aim of this study was to identify clinical variables and subclinical pathological findings on pre-implantation biopsies from living donor and to correlate these findings with graft outcome.

Methods: We evaluated 152 living donor biopsies performed at our center between October 2005 and March 2016. Time-zero biopsies were evaluated using the Remuzzi score and the Banff histopathological consensus criteria for preimplantation kidney biopsies. To estimate the overall effect of covariates on the renal function (as assessed by serum creatinine levels), mixed-model analysis for longitudinal data were performed based on the maximum likelihood ratio with the covariate(s) set as fixed factor and the time of follow-up as repeated measurement.

Results: According to Remuzzi score, global glomerulosclerosis, tubular atrophy, interstitial fibrosis and vascular fibrous intimal thickening were mostly absent or of mild degree. Using the Banff score, interstitial fibrosis, tubular atrophy, interstitial inflammation, arterial intimal fibrosis, and arteriolar hyalinosis were also mostly absent or of mild degree. Glomerular thrombi, focal segmental glomerulosclerosis, nodular glomerulosclerosis and tumor were absent. Acute tubular injury/necrosis of mild degree was observed in 86% (131/152) of time-zero biopsies. Global glomerulosclerosis (GS) was observed in 74% (112/152) of cases. Mean percentage of global GS was 8.75% (median: 4.76%; range: 0 –90.91%). Mesangial IgA nephritis was incidentally discovered in 8% (12/152) of biopsies. In univariate analysis, using mixed model for repeated-measures, kidneys from female donors, presence of acute tubular injury/necrosis (ATI/N) and donor age > 55 years were associated with higher recipient serum creatinine values (*$p<0.0001$*). Analyzing the effect of these covariates jointly in multivariate analysis revealed that acute tubular injury/necrosis, donor age and donor gender were independently related to graft function during the whole follow-up period covering up to 10-years post-graft (*$p <,0001$; $p = 0,0241$; $p = 0,0018$, respectively*).

Conclusions: The results of this study demonstrate the impact of donor age, donor gender and of ATI/N on early and late graft function.

Time trends in liver transplantation for primary biliary cholangitis in Europe over the past three decades

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Introduction: Primary biliary cholangitis (PBC) has long been a leading indication for liver transplantation (LT). Changes in selection criteria for LT and in the epidemiology of PBC, as well as the introduction of ursodeoxycholic acid as an effective treatment may be important factors that have changed the relative importance and actual performance of LT for PBC over time. The aims of this study were to assess trends in LT for PBC over the past 30 years in Europe, including potential changes in the relevant patient population.

Methods: Patients receiving LT between 1986-2015 in Centers reporting to the European Liver Transplantation Registry (ELTR) were included. We excluded patients in case of combined organ transplantation or when aged <18 years. For PBC, annual absolute and proportional numbers of LTs, and patient characteristics were assessed over time using linear regression models and chi-square tests. Secondly, detailed subgroup analyses were performed on all PBC patients listed for LT in the Netherlands from 1986-2015.

Results: During our 30-year study period, 112,874 patients underwent LT. In 6029 patients (5.3%) PBC was the primary indication. After an initial annual increase of 21.5 patients from 1986-1995, the absolute number of LTs for PBC reached a relatively steady state from 2006 onwards at approximately 200 LTs annually. The percentage of LT for PBC as compared to other aetiologies fell gradually from 20.3% in 1986 to 3.6% in 2015. PBC was the only indication showing a constant proportional decrease over three decades. In patients with PBC, median age at LT increased from 53.9 years (IQR47.3-59.4) in the first decade to 56.1 (IQR48.4-62.4) after 2006 ($p<0.001$). The proportion of males increased from 11.0% in the first to 15.1% in the third decade ($p<0.001$). Median MELD scores increased from 15.3 (IQR12.2-19.2) in 1996-2005 to 16.8 (IQR12.8-21.6) in 2006-2015 ($p<0.001$). In the Netherlands, 88.8% (71/80 evaluable patients) listed for LT could be classified as incomplete responders after one year of UDCA treatment according to the Paris-I criteria.

Conclusion: In our European-wide study on patterns in LT for PBC over 30 years, we show that despite a relative decrease, the absolute number of LTs for PBC patients has now reached a steady state. Still, more than 200 European patients with PBC undergo LT annually. Today, these patients are significantly older, have higher MELD scores, and are more likely to be males than 30 years ago.

3D Endoscopic Donor Nephrectomy Versus Robot-Assisted Donor Nephrectomy: a Detailed Comparison of Two Prospective Cohorts

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Background**:** Visual misperception during endoscopic surgery could be overcome by restoring three-dimensional (3D) view. Both the 3D endoscopy and da Vinci® surgical system implement this 3D vision. Compared to the robot, 3D endoscopy has several advantages, such as the presence of tactile feedback. We aimed to assess whether 3D endoscopy could be an alternative to the robot during living donor nephrectomy (LDN).

Methods: We prospectively collected data on patients undergoing 3D endoscopic LDNs in one center between April 2015 and April 2016. Pre-, intra- and post-operative data until three months after surgery, as well as information on recipient and graft survival were acquired. These data were compared to robot-assisted donor nephrectomies (RADNs) performed in the same center.

Results: Forty 3D endoscopic procedures were compared to 40 RADNs, all performed by two identical surgeons. Baseline characteristics were comparable. Intraoperative results showed a significantly shorter median skin-to-skin time (STS-time) of 138.5 min. (125.8-163.8) versus 169.0 (141.5-209.8) min., warm ischemia time ([WIT], P=0.003), and hilar phase for both single- and multiple anatomies (P=0.002 and P=0.010, respectively) in favour of the 3D group. Hospital stay for donors in this group was significantly shorter (P<.001). Three-month post-operative outcomes demonstrated no significant differences for donors, recipients and graft survival.

Conclusions: 3D endoscopy for LDN seems to be a good alternative; it is safe for the donor and easy to adapt for surgeons, with a significantly shorter STS-time. Both the hilar phase and WIT were also significantly reduced, without differences in recipient or transplant outcomes.

Impact of extraction time during organ procurement on kidney function after transplantation.

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Background: In the Netherlands, 50% of deceased donor kidney offers are after circulatory death (DCD). Several criteria such as cold ischemia time and warm ischemia time are known to impact delayed graft function (DGF) rates and allograft survival. Extraction time of organs during multivisceral procurements is a relatively new ischemia time. This time begins with aortic cross-clamp and perfusion/cooling of the kidneys, and ending with removal of the kidneys and placement on ice on the back table. During this period cooling of the kidneys are suboptimal with ongoing ischemia. However, evidence is lacking whether extraction time has a negative effect on the primary kidney function.

Methods: Between 2014 and 2016, 575 DCD kidneys were procured and transplanted in the Netherlands. Donor and recipient characteristics with intraoperative procurement information and transplant outcomes were obtained from the database of the Dutch Transplant Foundation (NTS). Primary outcome parameters were the incidence of Delayed Graft Function (DGF) and graft survival. Linear regression analysis with receiver operating characteristic (ROC) curves was performed to evaluate associations between extraction times and primary outcomes parameters.

Results: Extraction time ranged from 14 to 198 min, with a mean of 61.7min. In 191 procedures only kidneys were retrieved with significantly shorter extraction times (43 min vs. 71 min) ($r = 0.187$, $p < 0.001$). Occurrence of DGF between kidney only and multi organ procurements was not significant (43.2% vs. 46.6%) ($p = 0.497$). Extraction time was not associated with DGF ($r = 0.536$, $p = 0.183$), graft survival ($r = 0.541$, $p = 0.363$) and Primary Non Function ($r = 0.608$, $p = 0.292$).

Conclusion:Extraction time did not influence initial kidney function and graft survival. Shorter extraction times in kidney only procurements did not lower DGF percentages compared to multi organ procurements.

Impact of parathyroidectomy timing on graft function after kidney transplantation.

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Background: Hyperparathyroidism (HPT) is common in end-stage renal disease (ESRD). Parathyroidectomy (PTx) is the treatment of choice for ESRD patients with severe medical therapy-resistant HPT. However, whether the timing of PTx (before or after kidney transplantation, KTx) influences graft function is subject of debate, and studies addressing this subject have been underpowered. We aimed to assess the impact of PTx timing (before or after KTx) on graft function in a large multicenter cohort study.

Methods: Patients with ESRD-related HPT who underwent both PTx and KTx between 1994 – 2015 were included in a retrospective multicenter cohort study in four Dutch university medical centers. Two groups were formed and compared according to treatment sequence: PTx before KTx (PTxKTx) and PTx after KTx (KTxPTx). Primary endpoint was estimated glomerular filtration rate (eGFR, CKD-EPI) measured at 3 and 6 months and 1, 3 and 5 years after KTx in ml/min/1.73m². The correlation between the timing of PTx and KTx and the course of renal function was assessed using generalized estimating equations (GEE).

Results: The PTxKTx group consisted of 102 (55.1%) and the KTxPTx group of 83 (44.9%) patients. Recipient age, donor type (living vs. postmortal), PTx type (total vs. subtotal), and pre-KTx PTH level were significantly different between groups. Patients in the PTxKTx group received a kidney transplant after a median of 23 (interquartile range [IQR], 11 to 38) months. In the KTxPTx group, PTx followed after 30 (IQR, 15 to 74) months after KTx. An unadjusted GEE model showed that the timing of PTx was not correlated with graft function over time (mean difference -1.2 ml/min/1.73m², 95% confidence interval [CI] -8.6 to 6.2, p=0.75). The sequence of PTx in relation to KTx also did not influence the post-transplant course of eGFR over time after adjustment for center, donor and recipient age and sex, cold ischemia time, number of HLA mismatches, donor type and PTx type, pre-emptive vs. post-dialysis KTx, and PTH prior to KTx (mean difference -0.18 ml/min/1.73m², 95% CI: -16.9 to 16.6, p=0.98).

Conclusions: In this relatively large multicenter cohort study, timing of PTx, before or after KTx, does not independently impact graft function over time. Our findings support the approach to postpone PTx in patients with mildly elevated PTH levels until after KTx, given the spontaneous regression of HPT in more than half of patients after successful KTx.

The impact of aorto-iliac calcifications on patient and graft survival in renal transplant recipients using the TASCII classification.

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Introduction: Kidney transplantation is the therapy of choice in patients with end-stage renal disease. Aorto-iliac calcifications are a relative contra-indication for renal transplantation, even though the influence on patient and graft survival remains poorly explored. Aorto-iliac calcifications can be classified using the Trans Atlantic Inter-Society Consensus (TASC) II classification, which is based on the presence and extent of aorto-iliac stenotic lesions. The aim of this study is to assess the impact of aorto-iliac calcifications on patient and graft survival using the TASC II classification.

Methods: This retrospective single-center study included all kidney transplant recipients from 2000-2016 who had imaging-proven pre-transplantation aorto-iliac stenotic lesions. Patients were classified according to the TASC II classification if aorto-iliac stenotic lesions were present. All patients transplanted between 2007-2011 without aorto-iliac stenotic lesions were used as a control group. Primary endpoints were patient and graft survival. Cox regression analysis was used to evaluate risk factors for mortality and graft loss.

Results: Aorto-iliac stenotic lesions were observed in 78 patients before kidney transplantation. Seven hundred seventy-three patients were included as a control group. Overall patient survival was decreased for every TASC II class (TASC II A: p=0.001; B: p=0.004, C: p<0.001, D: p<0.001). No significant difference was found for 90-day mortality (TASC II A p=0.165; B p=1.000; C p=1.000) and 1-year mortality (TASC II A p=0.143; B p=1.000; C p=1.000) in patients with TASC II A, B or C lesions. Patients with TASC II D lesions had significantly higher 90-day (p=0.006) and 1-year (p <0.001) mortality. Death-censored graft survival was not significantly decreased for TASC II A, B and C compared to the control group (TASC II A p=0.792; B p=0.950; C p=0.160). Multivariate Cox model showed that any TASC II lesion was not a predictor of overall mortality (hazard ratio (HR) 1.52 confidence interval (CI) 0.94-2.46 p=0.091) or graft loss (HR 1.72; CI 0.94-3.17; p=0.080).

Conclusion: Kidney transplantation is a safe procedure in patients with TASC II A, B and C lesions. Graft survival is unaffected by aorto-iliac stenotic lesions. Therefore, aorto-iliac calcifications should not be a contra-indication for kidney transplantation.

Endovascular treatment of iliac artery stenosis proximal to the transplanted kidney

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Background: Proximal Iliac artery stenosis can occur years after kidney transplantation. With the increasing recipient age it may well reflect the natural course of atherosclerotic iliac disease. However, even without clinical manifestations, it may ultimately result in kidney allograft dysfunction. In patients with peripheral artery disease (PAD), percutaneous transluminal angioplasty (PTA) of iliac stenosis has become common practice in the last decades. This study aims to display the treatment options of transplanted patients who develop stenosis of the iliac segment proximal to the transplanted kidney (Prox-TRAS).

Methods: All patients presenting with Prox-TRAS from 1996 to 2017 were included in this retrospective cohort study. Kidney function (eGFR), blood pressure, clinical complaints, treatment, patency and complications were recorded.

Results: 15 patients that developed Prox-TRAS were identified. Mean time from transplantation to symptomatic iliac stenosis was 77 months (SEM 13,9). Presenting symptoms were therapy refractory hypertension, decreased kidney function and claudication or distal ischemia. Iliac stenosis was diagnosed on duplex. All patients were primarily treated with angiography, PTA and stenting of the stenosed iliac trajectory, all with satisfying angiographic result. Mean eGFR increased from 40 (SD 12) to 50 (SD 15) ml/min at 6 months after treatment. Mean systolic BP decreased from 157 (SD 27) to 130 mmHg (SD 13) at 6 months after PTA. Mean diastolic BP decreased from 80 (SD 12) to 72 mmHg (SD 10). In all but one patient presenting with therapy refractory hypertension blood pressure decreased after PTA. There were no irreversible complications of angiography and PTA. Two patients developed groin hematoma, one patient developed a false aneurysm treated by trombin injections. One patient had a rupture of the common iliac artery during PTA which was immediately treated by covered stent placement. Within the mean follow up period of 51 months, 4 out of 15 patients developed recurrent stenosis requiring re-PTA. One patient developed severe in-stent stenosis and was ultimately treated by aortoiliac bypass graft.

Conclusion: In patients presenting with unexplained hypertension, loss of kidney function or claudication after kidney transplantation, proximal iliac stenosis should be considered. Iliac PTA with stenting is safe and despite use of contrast agents, kidney function improved and blood pressure decreased.

Long-term cognitive effects of kidney transplantation

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Objective: Patients with end-stage renal disease (ESRD) depend on kidney transplantation to increase survival chance. Although patients' health condition often improves after transplantation, many renal recipients still experience cognitive impairments such as memory-loss and deficits in attention and concentration. However, it is yet unknown whether cognitive impairments in renal recipients remain chronic over time and to what extent they affect daily life functioning. Therefore, the aim of the present study is to investigate cognitive functioning in renal transplant recipients (RTR) and their impact on participation several years after transplantation.

Method: This study was conducted in the TransplantLines Biobank & Cohort Study. We included 115 RTR, as well as 55 matched healthy controls. RTR and controls were assessed with neuropsychological tests measuring executive functioning (Trail Making Test B, Dutch version of the Controlled Word Association Test, Semantic Fluency), attention (Symbol Digit Modalities Test, Trail Making Test A) and memory (Wechsler Adult Intelligence Scale subtest Digit Span, Rey Auditory Verbal Learning Test), and a questionnaire examining daily life participation (Utrecht Scale for Evaluation of Rehabilitation – Participation).

Results: Mean time after transplantation was 10.7±8.5 years. Our results show that RTR performed significantly worse on tasks for executive functioning, attention, processing speed, verbal fluency & memory, compared to controls. Time after transplantation was significantly correlated to poor performance on the test for processing speed (Trail Making Test A; $r = .20$, $p < .03$) and to poor performance on the test for mental flexibility (Trail Making Test B; $r = .23$, $p < .02$). Also, participation was significantly inversely correlated to poor performance on the test for processing speed (Trail Making Test A; $r = -.336$, $p < .002$) and poor performance on the test for mental flexibility (Trail Making Test B; $r = -.236$, $p < .034$).

Conclusion: This study shows cognitive deficits in multiple domains in RTR several years after transplantation, in particular regarding executive functioning. Based on correlations with time after transplantation we conclude that cognitive deficits post-transplant are persistent and there is limited recovery over time. Consequently, neuropsychological tests should be used in clinical practice to improve the detection and treatment of cognitive deficits after kidney transplantation.

Severity of postoperative acute kidney injury predicts development of chronic kidney disease after DCD liver transplantation

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Background: About 50% of the patients who receive a donation after circulatory death (DCD) graft develop acute kidney injury (AKI) after liver transplantation. However, the incidence and aetiology of chronic kidney disease (CKD) with the use of these high risk grafts remains less well defined. Our aim was to analyse the development of CKD in relation with postoperative AKI after DCD liver transplantation.

Methods: Two-center retrospective cohort study of all DCD liver transplantations (2001-2015). eGFR was calculated using the MDRD-4 formula and kidney function was divided into 3 groups: no CKD (eGFR ≥60), mild CKD (eGFR 30-59) and severe CKD (eGFR <30). Recipients who died or underwent retransplantation in the first 3 months after transplant were excluded. Postoperative AKI was defined according to KDIGO criteria.

Results: A total of 381 patients were included. The median pre-transplant eGFR was 100 (IQR 77-123) ml/min/1.73m^2. 61% of the recipients had acute kidney dysfunction in the first week after transplantation, but in most of these recipients (59%) kidney function recovered in the first month. Afterwards, a slow decrease in kidney function was observed. Overall, 153 (40%) recipients developed CKD, but only 17 (5%) developed severe CKD. Four recipients required long-term renal replacement therapy (RRT) and 1 recipient underwent kidney transplantation. Multivariable cox-regression identified severity of AKI as an independent risk factor for the development of CKD: hazard ratio 1.51 (95% CI 1.01-2.28) for patients with AKI without RRT and hazard ratio 2.0 (95% CI 1.29-3.20) for recipients with AKI requiring RRT. Other independent predictors were recipient age, pre-transplant kidney function and female gender.

Conclusion: The majority of early kidney dysfunction after DCD liver transplantation resolves in the first months and the incidence of severe CKD after DCD liver transplantation is relatively low. However, the severity of postoperative AKI is an independent predictor of chronic renal impairment.

POSTER PRESENTATIONS

Promoting Medication AdheRence and Self-management among kidney transplant recipients (MARS-trial): the development of an intervention protocol

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Introduction: After kidney transplantation patients must adhere to a lifelong immunosuppressive medication regime in combination with other lifestyle recommendations. Nonadherence to this regimen has been demonstrated to be substantial in all age groups, undermining optimal health outcomes. Current interventions to improve adherence have a few limitations and effective interventions are scarce. An important limitation of current interventions is addressing the patient in isolation in a hospital setting. We aimed to develop an intervention for enhancing adherence among nonadherent kidney transplant recipients anticipating shortcomings of current interventions.

Method: In order to develop an improved intervention, literature was reviewed to outline shortcomings of current interventions and assess known determinants for nonadherence. Based on these findings, evidence-based theories and methods were selected and translated to the population of nonadherent adolescent and adult kidney transplant recipients (ages > 12 yrs). Interventions based on principles of multisystemic / family therapy, which focus not solely on the patient but also involve the social network, and which are provided outside the hospital have been shown to be effective in enhancing adherence in other patient groups. Therefore, these principles in combination with behavior change techniques will be integrated in the current intervention.

Results: The developed intervention is outreaching (home-based) and multisystemic (involves social network of the transplant recipient). During the intervention sessions, determinants of nonadherence on various ecological levels will be assessed with the patient in dialogue with the social network and treatment goals will be formulated. Based on the intervention protocol, which specifies psychotherapeutic techniques per determinant, the patient works towards achieving treatment goals. Duration and frequency of the intervention are not determined a priori, but will be determined by the achievement of goals.

Conclusion: The intervention is designed to improve adherence to immunosuppressive medication and lifestyle recommendations based on the principles of multisystemic therapy and behavior change techniques derived from health behavior change theories. The intervention is unique in that it is outreaching, tailored to the needs and situation of each individual and addresses multiple ecological levels.

Familieparticipatie bij levertransplantatie patiënten

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Introductie: Om de zorg voor en het welbevinden van de getransplanteerde patient te optimaliseren is het betrekken van de familie van de patient bij de zorgverlening mogelijk een goede interventie. Om dit te kunnen realiseren is een protocol nodig waarin afspraken staan voor zowel de verpleegkundigen als de betrokken familie. Doel van dit onderzoek was inzicht te verkrijgen in de wensen en ideeen over familieparticipatie bij familie van patienten en afdelingsverpleegkundigen.

Methode: Op basis van de literatuurstudie is een interviewschema opgesteld. Om informatie te verkrijgen vanuit de afdeling zijn interviews gehouden met afdelingsverpleegkundigen. Daarnaast zijn contactpersonen van getransplanteerde patienten schriftelijk benaderd om deel te nemen aan een telefonisch interview. In beide interviews werd gevraagd naar de beleving van de huidige zorgverlening en mogelijkheden voor familieparticipatie.

Resultaten: Uit de interviews met de afdelingsverpleegkundigen(n=7) kwam naar voren dat zij allemaal open staan voor het meer betrekken van de familie bij de zorg. Tevens gaf men aan behoefte te hebben aan een protocol/checklist met betrekking tot familieparticipatie.Echter, familieparticipatie is voor de afdelingsverpleegkundige (nog) een breed begrip en het is voor hen onduidelijk wie of wat daar precies onder valt.
Uit de interviews met de contactpersonen van getransplanteerde patienten(n=7) kwam naar voren dat iedereen het prettig zou vinden om bij de patient te kunnen slapen. Ook wil men graag de artsenvisite bijwonen omdat dit rust en duidelijkheid geeft.Bijna driekwart gaf aan het meehelpen in de zorg prettig te vinden. De helft van de contactpersonen gaf aan dat op de dag van de transplantatie voor hen nog veel onduidlijk was, zoals over het blijven slapen en bij wie ze terecht kunnen met vragen. Ook ervoer men weinig terugkoppeling van de afdelingsverpleegkundige. Alle geinterviewden gaven aan dat de dag van het ontslag goed verliep.

Conclusie: Zowel de verpleegkundige als de familie van de getransplanteerde patienten verwachten dat familieparticipatie als interventie een positief effect zal hebben op het optimaliseren van zorg en het welbevinden van de patient. Alvorens tot een protocol ‘familieparticipatie’ opgesteld kan worden is het van belang de kennis over familieparticipatie onder verpleegkundigen te vergroten en te concretiseren welke activiteiten hieronder vallen.

Levende nierdonatie: hoe tevreden zijn de donoren?

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Introductie: levende nierdonoren doorlopen net als hun ontvangers een voorbereidingstraject voordat zij een nier af kunnen staan. Dit traject bestaat uit voorlichting, maatschappelijk werk, medisch onderzoek, beoordeling door uroloog en anesthesist, planning, opname, operatie en controle nadien. Wij onderzochten met een vragenlijst hoe tevreden onze donoren over dit traject zijn.

Methode: nierdonoren krijgen bij ontslag uit ons ziekenhuis een vragenlijst die zij thuis in kunnen vullen en 6-8 weken later bij de poliklinische controle inleveren. Zij mogen kiezen of zij hun naam op het formulier vermelden. Ze worden gevraagd om het jaar van donatie, geslacht, leeftijdscategorie (opgedeeld in decennia) en wijze van donatie (direct, cross-over, domino, altruïstische donatie) te vermelden. Er zijn 23 vragen over het team levende nierdonatie (voortraject, donorprocedure, controle nadien) en 19 over de afdeling urologie (opname, communicatie, ontslag). De vragen kunnen gewaardeerd worden van 1 tot 10 (zeer ontevreden tot zeer tevreden). Er kunnen ook opmerkingen en suggesties genoteerd worden.

Resultaten: 254 donoren werden in de jaren 2014 t/m 2016 gevraagd om de vragenlijst in te vullen, waarna 138 (54%) deze inleverden. Niet elke donor vulde de vragenlijst geheel in. De gemiddelde score van het team levende nierdonatie was 8,6 (uiteenlopend van 4 tot 10) en van de afdeling urologie 8,3 (uiteenlopend van 1 tot 10). Daarbij was er geen wezenlijk verschil tussen directe, cross-over, domino of altruïstische donatie, tussen mannen en vrouwen of tussen leeftijdsgroepen. Donoren die hun naam niet op de vragenlijst vermeldden, gaven geen lagere scores. De volgende scores waren het laagst: de tijdsduur van de gehele procedure kreeg een gemiddelde waardering van 7,2 en de wachttijd voor het opnamegesprek op de afdeling urologie kreeg een gemiddelde waardering van 7,8. Over deze aspecten werden veel commentaren geplaatst.

Conclusie: De gemiddelde waardering van onze nierdonoren was goed. Het laagst scoorden de tijdsduur van de procedure en de wachttijd bij opname, op deze vlakken valt dus de meeste winst te behalen. Naar aanleiding van de lagere scores voor de wachttijd opnamegesprek is het opnamebeleid al aangepast, waarna de waardering steeg van 7,5 naar 8,3. Het aantal ingevulde vragenlijsten was relatief laag, daarom denken wij erover om de vragenlijst aan te passen.

The ELPAT living organ donor Psychosocial Assessment Tool (EPAT): from 'what' to 'how' of psychosocial screening

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Thorough psychosocial screening of donor candidates is required in order to minimize potential negative consequences and to strive for optimal safety within living donation programmes. We aimed to develop an evidence-based tool to standardize the psychosocial screening process. Key concepts of psychosocial screening were used to structure our tool: motivation and decision-making, personal resources, psychopathology, social resources, ethical and legal factors and information and risk processing. We (i) discussed how each item per concept could be measured, (ii) reviewed and rated available validated tools, (iii) where necessary developed new items, (iv) assessed content validity and (v) pilot-tested the new items. The resulting ELPAT living organ donor Psychosocial Assessment Tool (EPAT) consists of a selection of validated questionnaires (28 items in total), a semi-structured interview (43 questions) and a Red Flag Checklist. We outline optimal procedures and conditions for implementing this tool by transplant professionals. Use of this tool will standardize the psychosocial screening procedure ensuring that no psychosocial issues are overlooked and ensure that comparable selection criteria are used and facilitate generation of comparable psychosocial data on living donor candidates.

Urological complications following renal transplantation: a cohort study

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Introduction: Postoperative outcomes following renal transplantation are influenced by urological complications, including urinary leakage and ureteral obstruction. The reported incidence of urological complications following renal transplantation ranges from 2.9% to 20%. However, most of these data are based on small, single-center studies. We aimed to perform a nationwide survey on the occurrence of urinary leakage or ureteral obstruction after renal transplantation and to identify factors which are possibly associated with the development of these complications.

Methods: Data on all recipients of kidney transplants between January 2005 and December 2015 in the Netherlands were retrieved from the Dutch Organ Transplant Registry Database. The main analysis focused on the outcomes urinary leakage and ureteral obstruction within a year after surgery. Other data retrieved from the database were recipient characteristics, donor characteristics, graft characteristics and follow-up data on graft function, graft survival and patient survival.

Results: A total of 8976 kidney transplant recipients were registered between 2005 and 2015. However, in 66% of these patients, no registration of urological complications was performed. Therefore, 3023 recipients could be included in this study, due to missing data on the primary outcome. There were no significant differences in age, gender and body mass index between the excluded and included patients. The incidence of urinary leakage and ureteral obstruction was 2.5% and 5.8%, respectively. Outcomes were comparable between grafts from living and deceased donors. Regression analyses showed that recipients and donors of higher age and early urinary leakage (odds ratio, 5.490; 95% CI, 3.140-9.599; p=0.000) are possibly associated with ureteral obstruction, the latter can probably be explained by disturbed healing of the ureterovesical anastomosis. Although urological complications are associated with an increased patient morbidity, Kaplan-Meier and log-rank analyses revealed no relationship between early urological complications and long-term graft or patient survival.

Conclusion: Urological complications following renal transplantation are of clinical relevance, as they influence recipients' morbidity. Well designed future prospective studies should identify risk factors to provide insight in possible solutions reducing the incidence of urological complications following renal transplantation.

The changing epidemiology of deceased liver donors in adult liver transplantation

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Background : The discrepancy between organ availability and demand has forced an increasing use of marginal donor liver grafts, such as livers from older donors and grafts from donation after circulatory death (DCD) donors. Donor graft quality is highly predictive for liver transplant outcome.

Aim: Evaluation of the characteristics of deceased liver donors for adult recipients over time.

Methods: A single-center retrospective cohort study of all deceased liver donors for adult recipients (age 18+ years) from March 1979 to November 2017. Data were derived from the prospectively maintained Eurotransplant database. Donor, organ, and center characteristics were collected. Cause of death was manually cross-checked and categorized according to the ICD10 classification. Differences between transplant eras were tested using a one-way ANOVA.

Results: Between 1979-2017, 1087 adult liver transplantations were performed, divided in the era's 1979-1999 (409), 2000-2009 (376), and 2010-2017 (302). From 1979-1999, 227 (56%) liver grafts originated from Dutch centers (NL), 103 (26%) from German centers (GE), and 39 (10%) from Belgian centers (BE). Mean±SD donor age was 34±13 years, 228 (56%) were male, and mean BMI was 24±16 kg/m^2. All grafts except one were from donation after brain death (DBD) donors. Main causes of death were cerebrovascular disease (53%), traumatic brain injury (39%), and diseases of the nervous system (3%). Mean recipient age was 42±12 years. In contrast, from 2010-2017, 209 (69%) liver grafts originated from NL, 62 (21%) from GE, and 18 (6%) from BE (P=0.02). Mean donor age was 52±15 years (P<0.001), 175 (58%) were female, and mean BMI was 26±4 kg/m^2 (P=0.136). 215 (71%) of grafts were from DBD donors, whereas 84 (28%) grafts were from DCD donors (P<0.001). Main causes of death were cerebrovascular disease (66%), traumatic brain injury (12%) and ischemic heart disease (8%), (P=0.001). Mean recipient age was 51±13 years (P<0.001).

Conclusion: Over the past decennia, the epidemiology of deceased liver donors has significantly shifted towards use of older donors, increased use of DCD donors, increased use of donors from NL, and a change in main cause of death towards more cerebrovascular disease and ischemic heart disease. These data provide insight into the changing epidemiology of deceased liver donors, which should be taken into account when performing outcomes-based research in liver transplantation.

The changing epidemiology of liver donors in pediatric liver transplantation

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Background: Because pediatric deceased donors are scarce, adult livers are often used in pediatric liver transplantation. The graft size mismatch of adult livers necessitates split or reduction, or use of living donors. Donor graft quality is important for using partial grafts, and highly predictive for liver transplant outcome.

Aim: Evaluation of accepted liver donor characteristics for pediatric recipients over time.

Methods: A single-center study of all liver donors for pediatric recipients (<18 years) from 1982-2017. Data were derived from Eurotransplant. Donor, organ, and center characteristics were collected. Cause of death was cross-checked and categorized according to ICD10 classification. Differences between transplant eras were tested using one-way ANOVA.

Results: Between 1982-2017, 495 pediatric liver transplantations were analyzed, divided in the era's 1979-1999 (182), 2000-2009 (151), and 2010-2017 (162). From 1979-1999, 68 (38%) liver grafts originated from Dutch centers (NL), 61 (34%) from German centers (GE), and 17 (9%) from Belgian centers (BE). Mean±SD donor age was 16±14 years, 80 (44%) were female, and mean BMI was 19±4 kg/m^2. All grafts were from donation after brain death (DBD) donors. Main causes of death were traumatic brain injury (60%) and cerebrovascular disease (30%). The majority of liver grafts were full-size (89%). Mean recipient age was 6±5 years. In contrast, from 2010-2017, 98 (61%) liver grafts originated from NL, 34 (21%) from GE, and 16 (10%) from BE (P<0.001). Mean donor age was 37±19 years (P<0.001), 103 (64%) were female (P<0.001), and mean BMI was 23±4 kg/m^2 (P<0.001). 114 (70%) of grafts were from DBD donors, whereas 9 (6%) grafts were from DCD donors, and 39 (24%) grafts from living donors (P<0.001). Main causes of death were cerebrovascular disease (48%) and traumatic brain injury (14%); (P<0.001). Mean recipient age was 6±5 years (P=0.75). There were 93 (58%) full-size and 68 (42%) partial liver transplantations, (P<0.001).

Conclusion: Over the past decennia, the epidemiology of liver donors for pediatric recipients has significantly shifted towards increased use of living donors, use of donors from NL, use of older donors, and a change towards more cerebrovascular disease as main cause of death, but less traumatic brain injury. These data provide insight into the changing characteristics of liver donors for pediatric recipients, and should be taken into account when performing outcomes-based research.

Single Antigen Bead Cut-offs and their relationship with kidney graft survival

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Detection of HLA antibodies is commonly assessed by complement-dependent crossmatch testing and the much more sensitive Luminex technology. The presence of complement-fixing cytotoxic donor-specific HLA antibodies (DSA) prior to transplantation is considered a contraindication for transplantation. In the Dutch PROCARE Consortium study the impact of Luminex detected DSA on graft survival was determined for all crossmatch negative kidney transplantations performed between 1995 and 2006 for which pretransplant serum was available. The impact was most pronounced in the 3237 deceased-donor transplantations: transplantations positive for SAB detected DSA (N=430) had a 16% worse 10-year graft survival than those without DSA. In the assessment of bead positivity initially manufacturer instructions were followed.

There is no consensus however on the interpretation of single antigen bead measurements, on when to regard a bead positive for a specific antibody. To inform the debate, we studied the relationship between various beads positivity algorithms and the impact of resulting DSA positivity on graft survival. In a small three center comparison we first showed that the interassay variability can be greatly reduced and stabilised to an average absolute relative difference between 20% and 30%, when working with signal-to-background ratios instead of absolute fluorescence values. Next we compared the impact of a range of cut-off values for absolute MFI measurements, various signal-to-background ratios and combinations thereof on graft survival difference. We did not see a very strong impact of cut-off level on graft survival: DSA positive transplantations had a 14% poorer 10-year graft survival at an MFI cut-off of 500 (with 16% of transplants positive for DSA), increasing to 23% for a cut-off of 10,000 (with only 2% positive for DSA at that level). We only found a clear relationship between a cut-off level and deteriorating 1-year graft survival for DSA positive transplantations for the signal-to-background ratios, most pronounced with the lowest ranked antigen (LRA) taken as background. The signal-to-background ratios also resulted in the best 10-year graft survival discriminators, with highest graft survival difference of 25% for the DSA positive group, with 6% of the transplantations considered positive for DSA. With respect to risk stratification of graft survival, we therefore propose a signal-to-background ratio based on LRA with a cut-off level of 20.

Endogenous Glucocorticoid Metabolites and Mortality in Prednisolone-Treated Renal Transplant Recipients

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Background: The majority of renal transplant recipients (RTR) are still treated with corticosteroids, but there is currently no way to guide intensity of treatment. Chronic corticosteroid treatment suppresses the hypothalamus-pituitary-adrenal (HPA)-axis and might alter activity of 11-beta hydroxysteroid dehydrogenases (11β-HSD). We aimed to investigate whether HPA-axis and 11β-HSD activities are altered in prednisolone-treated RTR compared to healthy controls and whether this has implications for long-term survival in RTR.

Methods: In a longitudinal cohort of 693 stable prednisolone-treated RTR (aged 53±13 years, 57% male, median [IQR] follow-up 5.3 [4.7-6.1] years) and 275 age-matched healthy controls (aged 53±11 years, 48% male), baseline total urinary cortisol, cortisone, tetrahydrocortisol (THF), allo-tetrahydrocortisol (alloTHF), and tetrahydrocortisone (THE) were measured using LC-MS/MS. Twenty-four hour total urinary cortisol excretion and summated cortisol and metabolite (=cortisol+cortisone+THF+alloTHF+THE) excretion were used as measures of HPA-axis activity; (THF+alloTHF)/THE and cortisol/cortisone ratios were used as estimates of 11β-HSD activity.

Results: Total urinary cortisol excretion and summated cortisol and metabolite excretion were significantly lower in RTR compared with healthy controls (P<0.001 for both), whereas (THF+alloTHF)/THE and cortisol/cortisone ratios were significantly higher (P<0.001 and P=0.002, respectively). However, there was considerable variation in all these four parameters in RTR, even within those treated with the same daily prednisolone dose. Lower urinary summated cortisol and metabolite excretion (HR 0.70 [95% CI, 0.55-0.88] P=0.003) and higher urinary (THF+alloTHF)/THE ratio were associated with increased risk of mortality (HR 1.34 [95% CI, 1.16-1.55] P<0.001), independent of potential confounders, such as age, sex, eGFR, high-sensitivity C-reactive protein, body surface area, and daily prednisolone dose.

Conclusions: HPA-axis and 11β-HSD activities are altered in prednisolone-treated RTR, compared to healthy controls. Decreased urinary summated cortisol and metabolite excretion and increased urinary (THF+alloTHF)/THE ratio are independently associated with increased risk of mortality after kidney transplantation. Measuring endogenous glucocorticoid metabolites might prove to be a future tool to guide personalized corticosteroid therapy.

Optimizing kidney preservation with machine perfusion - A comparison between warm and hypothermic machine perfusion of donor kidneys: A systematic review and meta-analysis

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Background: In the Netherlands, 50% of deceased donor kidney offers are after circulatory death (DCD). Since 2015, all donor kidneys are preserved on hypothermic machine perfusion. However, these deceased donors are becoming older and are transplanted in older recipients with more comorbidity. To keep suboptimal donor kidneys on an equal quality level, new preservation methods are necessary. Normothermic machine perfusion is a new alternative for kidney preservation. A systematic review and meta-analysis was conducted to compare warm machine perfusion to hypothermic machine perfusion of donor kidneys.

Methods: We conducted a literature search on Embase, Medline Epub (Ovid), Cochrane Central, Web of Science, and Google scholar for studies comparing warm machine perfusion (WMP = normothermic (NMP) and subnormothermic machine perfusion (SNMP)) to hypothermic machine perfusion (HMP) of donor kidneys. Two independent reviewers assessed the eligibility of each study. Meta-analyses were performed to calculate the overall effect size of peak creatinine clearance, peak serum creatinine, and recipient survival.

Results: Of 938 records found, 11 animal studies were eligible for qualitative synthesis of which 8 studies had appropriate data for the meta-analyses. Peak serum creatinine was significantly lower in kidneys preserved with WMP (standardized mean difference (SMD): -2.56 (95% CI, -4.22 to -0.89) and WMP was protective on recipient survival with significantly less graft losses in animals which received donor kidneys (RR: 0.33 (95% CI, 0.15 to 0.71) using the random-effects model. There was no difference in peak creatinine clearance between both groups (SMD: 1.64 (95% CI, -0.72 to 4.00).

Conclusions: WMP may lead to better short-term post-transplant graft outcomes than HMP. The advantages of normothermic machine perfusion in the long term need to be assessed in future clinical trials.

Combined low vitamin D and vitamin K status is associated with greater risk of premature mortality and transplant failure in stable kidney transplant recipients

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Introduction: Renal transplant recipients (RTR) often have nutrient deficiencies, including vitamin D and K. Both vitamin D and K deficiency play a major role in vascular disease, however, the long-term implications of combined vitamin D and K deficiency in RTR is unknown. We prospectively investigated the joint association of low vitamin D and K status with premature mortality and transplant failure in stable RTR.

Methods: We studied 429 RTR, aged 21-80 years, from a single-center with a median of 6.1 years after kidney transplantation. At baseline (2001-2003), vitamin D and functional K status were measured by LC-MS (25-hydroxyvitamin D [25(OH)D]) and immunoassay (dephosphorylated uncarboxylated matrix gla protein [dp-ucMGP]). High dp-ucMGP is indicative for low vitamin K status. Vitamin D and vitamin K were categorized by 25-hydroxyvitamin D <50/≥50 mmol/L and median dp-ucMGP <996/≥996 pmol/L. Vitamin K antagonist users were excluded. We used survival curves and Cox regression analysis until April 1st 2012 to estimate hazard ratios (HR) and 95% confidence intervals adjusting for potential confounders (demographics, lifestyle, risk factors).

Results: Mean age was 52±12 years at baseline, and 226 RTR (53%) were male. Mean 25(OH)D and median dp-ucMGP concentrations were 52.6±23.1 nmol/L and 996 (interquartile range 732-1473) pmol/L, respectively. Combined low vitamin D and K status was present in 127 RTR (30%). During median 9.8 years follow-up, 113 patients (26%) died and 46 patients (11%) developed transplant failure. Survival curves by vitamin D and K categories differed for premature mortality and graft failure P<0.001 and P=0.023, respectively. The combination of low vitamin D and K status was associated with a 2.46 greater risk of all premature mortality (1.30-4.63) (P for interaction=0.050) after adjusting for potential confounders including kidney function compared to the high vitamin D and K status group. For the categories low in vitamin D or vitamin K only no significant association was present for premature mortality. The low vitamin D and K category was associated with a 2.93 greater risk of transplant failure (1.05-8.13).

Conclusions: Vitamin D and K insufficiency are highly prevalent in stable RTR. Combined low vitamin D and K status is associated with a greater risk of mortality and transplant failure. Future studies should address whether combined vitamin D and K supplementation may lead to improved outcomes after kidney transplantation.

Low Vegetable Intake is Associated with High Risk of New-Onset Diabetes After Renal Transplantation

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Background & Objectives: New-Onset Diabetes After Transplantation (NODAT) occurs in 4-25% of renal transplant recipients (RTR) and increases risk of cardiovascular disease, graft failure and mortality in this population. NODAT is generally attributed to adverse effects of immune-suppressants (i.e. steroids and tacrolimus), however little is known about whether the risk of NODAT is modifiable by dietary factors, such as fruit and vegetable intake. Therefore we investigated whether fruit and vegetable intake is associated with risk of NODAT in RTR.

Methods: This study was conducted in the Transplantlines Food and Nutrition Biobank Cohort Study of 707 adult RTR with a functioning graft for ≥ 1 year. Dietary intake was assessed using a validated Food Frequency Questionnaire consisting of 177 food items. RTR with a medical history of diabetes or RTR missing dietary data were excluded, leaving 473 RTR eligible for analyses. RTR were considered to have NODAT when ≥ 1 of the following criteria was met: repeated fasting plasma glucose ≥ 7.0 mmol/l, HbA1c ≥ 6.5%, or anti-diabetic drug use. Cox regression analysis was used to study whether fruit and vegetable intake were associated with risk of NODAT.

Results: Mean ± SD age was 51.3±13.2 years, 57% were male. Median [IQR] fruit and vegetable intake was 99 [44-192] g/d and 108 [72-154] g/d, respectively. Only 22% met the recommended intake for fruit (200g/d), and only 11% met the recommended intake for vegetables (200g/d). During median follow-up of 5.3 years, 52 RTR (7%) developed NODAT. Fruit intake was not associated with risk of NODAT (HR 0.91 [95%CI 0.80-1.04] per ^{2}log g/d, P = 0.013; P*trend*=0.32 when analyzed in tertiles). Vegetable intake was inversely associated with NODAT (HR 0.77; 95%CI 0.63-0.94 per ^{2}log g/d, P = 0.009; P_{trend}=0.02). RTR in the lowest tertile of vegetable intake (median intake: 54 [34-72] g/d) had more than 2 times higher risk of NODAT compared to RTR in the highest tertile of vegetable intake (median intake: 175 [153-216] g/d), independent after adjustment for age, sex, time after transplantation, total energy intake, and physical activity (HR 2.23; 95%CI 1.11-4.52).

Conclusion: The majority of RTR do not meet the recommended intake of vegetable and fruit. Low vegetable intake is associated with higher risk of NODAT. Stimulating vegetable intake may reduce risk for NODAT in RTR. This study shows that even in the context of allegedly iatrogenic diabetes, dietary factors are important.

Dietary Approach to Stop Hypertension (DASH) diet and risk of renal function decline and all-cause mortality in renal transplant recipients

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Aim: Renal transplant recipients (RTR) are at risk of progressive decline of graft function and premature mortality, with high blood pressure as an important risk factor for both. The aim of this study is to investigate whether a dietary pattern resembling the Dietary Approach to Stop Hypertension (DASH) diet is associated with these adverse events in RTR.

Methods: In this prospective cohort study, we included adult RTR with a functioning graft for > 1 year. Dietary data was collected using a validated 177-item food frequency questionnaire. For each of the 8 dietary components of the DASH diet, a score was attributed to each subject according to sex-specific quintiles of dietary intake. The 8 component scores were summed up to calculate the overall DASH-score. Cox regression models were used to study associations of the DASH-score in tertiles with renal function loss, defined as death-censored graft failure and/or doubling of serum creatinine, and all-cause mortality.

Results: We included 632 stable RTR (mean ± SD age: 53.0 ± 12.7 y, 57% men). Mean DASH score was 23.8±4.7. During median follow-up of 5.3 (IQR, 4.1-6.0) y, 119 (18.8%) RTR had renal function decline and 128 (20.3%) died. In Cox-regression analyses, RTR in the highest tertile of the DASH score had a lower risk of both renal function decline (HR: 0.57; 95% CI: 0.33-0.96, p = 0.03) and all-cause mortality (HR: 0.52; 95% CI: 0.32-0.83, p = 0.006) when compared to the lowest tertile, independent of potential confounders including age, sex, kidney function parameters (eGFR, urinary protein excretion, time between transplantation and baseline, primary renal disease), and transplant characteristics (acute rejection, pre-emptive transplantation, donor type).

Conclusions: High adherence to a DASH-style diet is associated with a lower risk of both renal function decline and all-cause mortality. This study suggests the necessity of a healthful diet in renal transplant recipients, however, randomized controlled trials are required.

Higher Adherence to the Mediterranean diet is Associated with Lower Risk of Graft Failure in Renal Transplant Recipients

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Background & Objectives: Despite improved short-term graft survival over recent years, long-term graft survival after renal transplantation has not significantly improved. Research in this field is traditionally dominated by immunological evaluation and treatment, however non-immunological causes including diet and lifestyle are often overlooked. In the general population the Mediterranean Diet is associated with better cardiovascular and renal outcomes. We investigated whether adherence to the Mediterranean Diet is associated with renal graft outcome in renal transplant recipients (RTR).

Methods: This prospective observational study was conducted in the Transplantlines Food and Nutrition Biobank Cohort Study of 707 stable adult RTR with a functioning graft for ≥ 1 year. Dietary intake was assessed using a validated Food Frequency Questionnaire of 177 food items. RTR missing dietary data were excluded, leaving 632 RTR eligible for analyses. Adherence to the Mediterranean Diet was calculated using the nine-point Mediterranean Diet Score (MDS) by Trichopoulou based on intake of legumes, nuts, soy products, cereals, fruit, vegetables, meat, dairy, fish, alcohol and fat. The association of MDS on graft failure, graft loss (graft failure *or* death) and renal function decline (doubling of serum creatinine *or* graft failure) was analyzed by Cox regression.

Results: During follow-up of 5.2 [2.0-12.2] years, 105 (17%) RTR developed graft failure, 181 (29%) RTR developed graft loss and 119 (19%) RTR experienced renal function decline. MDS was inversely associated with all renal endpoints (graft failure: HR 0.70; 95%CI 0.52-0.94, graft loss: HR 0.76; 95%CI 0.64-0.90, renal function decline: HR 0.71; 95%CI 0.56-0.89 per 2-points increase in MDS), independent of adjustment for potential confounders including age, sex, BSA, primary renal disease, eGFR, 24-hr protein excretion, time after transplantation, HLA-mismatch, donor status and pre-emptive transplantation. Interaction analyses showed that the association of MDS with risk of graft failure (P=0.02), graft loss (P=0.006) and renal function decline (P=0.009) was affected by protein excretion, with greater benefit of MDS observed in RTR with higher protein excretion.

Conclusion: Adherence to the Mediterranean Diet is associated with better renal outcome in RTR. Our study suggests adopting a Mediterranean style diet may help preserve renal function, in particular in RTR with higher protein excretion.

Decreased graft survival of retransplants can largely be explained by increased HLA-immunization

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Many kidney recipients will need more than one kidney transplant during a lifetime. Patients often develop anti-HLA antibodies after losing their graft. We investigated the effect of (donor-specific) HLA antibodies (DSA) in retransplanted patients (re-Tx) versus patients transplanted for the first time (first-Tx) in the Dutch PROCARE Consortium study. The 10-year graft survival of 3127 first-Tx and 142 re-Tx patients without HLA antibodies is comparable (80% vs 81%). If patients have HLA antibodies that are not donor-specific (NDSA) the 10-year graft survival was lower for the 311 re-Tx compared to 577 first-Tx (first-Tx 76% vs re-Tx 71%). This was also the case for patients with DSA: graft survival pf 69% for first-Tx (n=297) vs 57% for re-Tx (n=270). This effect might be HLA antibody independent, but may also be caused by previous transplants inducing more different HLA antibodies. To investigate whether a higher level of immunization might be driving the graft survival differences in the NDSA and DSA groups we analyzed differences in the percentage panel reactive antibodies (%PRA) at time of transplant (current %PRA) and the historically highest level before transplant (high %PRA) between first-Tx and re-Tx. We found that both %PRA to be considerably higher in re-Tx if (donor specific) HLA antibodies were detected by single antigen bead (SAB) assays in the pretransplant serum. Especially the relative number of transplantations with a current %PRA equal to 0% (these are transplants for which all of the CDC crossmatches against a panel of donors were negative, yet for which SAB assays did pick up HLA antibodies) is considerably higher in first-Tx. After excluding all transplantations with a current %PRA of 0% we reduced the difference in immunization level between first-Tx and re-Tx and found no remaining difference between graft survival of first-Tx and re-Tx for NDSA positive transplantations, and a greatly reduced difference for DSA positive transplantations. In conclusion, in the investigated cohort the relation between retransplantation and graft survival seems to be predominantly dependent on the presence of pretransplant HLA antibodies (NDSA and DSA). Therefore, one should consider not including the variable retransplantation in a multivariable model to study the effect of HLA antibodies on long term graft survival, as that will likely mask part of the studied effect.

Innovations in transplant education: 3D virtual reality of live kidney donation and transplantation

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Virtual Reality (VR) is a recently developed digital technology being introduced in healthcare education with a potential to fundamentally change teaching. With the use of a 360° camera, videos can be recorded and viewed in all directions. Watching the videos gives the viewer the impression of standing in a 3D space.
Currently, there is interest in the feasibility of applying 3D VR in teaching medical students. This allows large groups of medical students to be involved in procedures in special and less accessible environments. The VR experience gives students the opportunity to engage in actual clinical situations before entering them in real life. They can be trained in behavioural skills, and may improve knowledge through questionnaires during the learning experience. To our knowledge. our center is the first in the to implement the use of VR in renal transplantation in the medical curriculum.
For this purpose, two 360° videos of a live kidney donation and transplantation procedure were recorded. Both the 360° view of the operating room and the actual direct surgical view were shown. A clear relation between the two was visible throughout the video, adding to the realistic experience. After editing and adding audio voice-over, the video was shown in a pilot study to fourth year medical students using 3D goggles.
The students experienced the 360° video as life like and stated unanimously that they had a better view of what actual participation in operative procedures would be like, and which role every professional had. This preparation was found to be superior to immediate unprepared exposure during internships. Students indicated VR can be an inspiring addition to traditional course materials, helping them to feel better prepared and less stressed when first experiencing dynamic situations such as the operating room.
Future studies will include knowledge assessment of surgical residents (including surgical questionnaires), analysis during Crew Resource Management (CRM) training sessions, and transplant education and public relations. More 360° VR videos of transplantation-related procedures that require pre-exposition training will be developed. Introducing VR in transplant education will hopefully provide students with more adequate preparation before their exposure in live situations, leading to better prepared students and doctors and better patient care.

Normothermic machine perfusion of ischaemically damaged porcine kidneys with autologous, allogeneic and human red blood cells

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An increasing amount of research is being done to investigate normothermic machine perfusion (NMP) as a preservation method to bridge the period between organ retrieval and transplantation. In porcine kidney auto-transplant models red blood cells (RBCs) are required for ex-vivo NMP. As large quantities of RBCs are needed, utilising autologous RBCs would imply lethal exsanguination of the pig that is donor and recipient-to-be in the same experiment. The purpose of this study was to determine if an isolated porcine kidney can also be perfused with allogeneic or human RBCs instead.

Porcine kidneys, autologous and allogeneic blood were obtained from a local slaughterhouse. Human RBCs (Opos), were provided by our transfusion laboratory. Warm ischaemia time was standardised at 20 min and subsequent hypothermic machine perfusion with UW-MP lasted 1,5-2,5 hrs. Next, kidneys underwent NMP at 37°C during 7 hrs in a recirculating circuit with either washed, leukocyte depleted autologous, allogeneic, or human RBCs (n=5 per group). Other components of the perfusate were Williams' Medium E, albumin, creatinine and Augmentin. During perfusion kidneys were functional and produced urine.

No macroscopic adverse reactions were observed). ASAT was significantly higher in the xeno group ($p=0.01$). LDH release, peripheral renal resistance and fractional excretion of sodium did not differ significantly between groups. Creatinine clearance was significantly higher in the xeno group in comparison with the other groups ($p= 0.02$), but not in comparison with the autologous group alone. The concentration of albumin in the urine was significantly and substantially higher in the xeno group ($p<0.005$). Renal histology revealed acute tubular necrosis in all groups. There were signs of glomerular hyperfiltration in the xeno group.
In conclusion, perfusion of porcine kidneys with RBCs of different origin proved feasible. However, laboratory analysis and histology revealed more damage in the xeno group compared to the other two groups. These results indicate that the use of allogeneic RBCs is preferable to human RBCs in a situation where autologous RBCs cannot be used for NMP

High intragenic methylation of SERPINB9, a regulator of cytotoxicity, in T cells as a marker for skin cancer after kidney transplantation

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Background: Cutaneous squamous cell carcinoma (cSCC) occurs 65-200 times more in organ transplant recipients than in the general population. T cells, which are targeted by immunosuppressive drugs, are involved in anti-tumor immune surveillance and their function is regulated by DNA methylation. Our previous study demonstrated higher DNA methylation of an intragenic region of *SERPINB9* when comparing T cells from kidney transplant recipients before the occurrence of cSCC with T cells from recipients without cSCC. *SERPINB9* codes for a serine protease inhibitor that inhibits Granzyme B and is actively transcribed in T cells. We hypothesized that high methylation of *SERPINB9* is a stable trait and may affect the cytotoxic activity of T cells towards cSCC cells, thereby facilitating the development of cSCC.

Methods: A cohort of kidney transplant recipients was included containing recipients with a recurrent cSCC matched to recipients without cSCC. The recipients were included 13 years (±9 years) after transplantation and the cSCC patients developed their first cSCC 7 years (±6 years) after transplantation. PBMCs were collected and T cells were isolated from 30 recipients with cSCC and 26 recipients without cSCC. DNA methylation of 12 CpG sites within *SERPINB9*, including 5 sites that were analyzed in the previous study, were measured using pyrosequencing analysis with two sequence primers.

Results: Patient characteristics were not significantly different between the two groups, neither was T cell phenotype after cell sorting. DNA methylation was pooled per pyrosequencing reaction. Average DNA methylation of the first region within *SERPINB9* containing 6 CpG sites, was 59%(±14%) for the cSCC patients and 51%(±13%) for the non-cSCC patients (p=0.03). The second region containing also 6 CpG sites showed an average DNA methylation of 55%(±14%) for the cSCC patients and 48%(±13%) for the non-cSCC patients (p=0.03).

Conclusion: Our results demonstrate that high intragenic methylation of *SERPINB9* in T cells, previously found before the clinical onset of cSCC, can be validated in a different cohort of kidney transplant recipients during recurrent cSCC. This suggests a functional role for *SERPINB9* methylation in cSCC development, possibly impairing T cells in exerting their cytotoxic activity towards cSCC cells. We conclude that high *SERPINB9* methylation is stable throughout cSCC development which is a novel insight in the pathogenesis of cSCC in kidney transplant recipients.

Addition of different oxygen concentrations during long-term hypothermic machine perfusion in a clinically relevant porcine donation after circulatory death model.

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Background: To date, hypothermic machine perfusion (HMP) has become standard care in many Centers preserving deceased donor kidneys. Despite a significant reduction of metabolism at low temperatures, remaining cellular activity in the organ still requires oxygen. However, oxygen supply during HMP is not standard yet, as its role and safety has not been fully clarified yet. This study investigates the effect of administering oxygen during HMP on renal function in a clinically relevant porcine donation after circulatory death (DCD) model.

Methods: After 30 minutes of warm ischemia, porcine slaughterhouse kidneys were preserved for 24 hours by means of static cold storage (CS), or HMP with Belzer Machine Perfusion Solution (UW- MPS) with the addition of 0%, 21% or 100% oxygen. Next, kidneys were reperfused for 4 hours in a normothermic autologous leukocyte depleted blood machine perfusion (NMP) setup. Kidneys were assessed on their renal function, oxidative stress and injury markers.

Results: HMP resulted in significantly better kidney function during NMP in terms of creatinine clearance, fractional sodium excretion and proteinuria. The addition of 100% oxygen showed the highest creatinine clearance, but did not reach statistical significance. TBARS, markers of oxidative stress, were negligibly low in all preservation modalities. Urinary TBARS at the end of NMP were highest in the CS group with a mean of 11.2 µM compared to 7.7 µM in the 100% oxygen group (NS). HMP preserved kidneys showed significantly lower injury markers compared with those preserved by CS. No such differences were found between the HMP groups with different oxygen concentrations.

Conclusion: This study demonstrated that kidney preservation with HMP is superior to CS. Although the addition of oxygen to HMP did not result in significantly improved renal function during NMP, beneficial effects were found in terms of reduced oxidative stress. Oxygen addition during HMP did not result in detrimental effects in this model.

Membrane particles generated from mesenchymal stromal cell modulate immune responses by selective targeting of proinflammatory monocytes

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Background: Multiple clinical trials in kidney transplantation have been conducted with Mesenchymal Stromal Cells (MSC) due to their immunomodulatory capacity. However, culture expanded MSC are large and get trapped in the capillary networks of the lungs after intravenous infusion, where they have a short survival time. Hypothetically, living cells are a risk for tumor formation. To reduce risks associated with MSC infusion and improve the distribution in the body, we propose to generate nano-membrane particles (MP) from MSC and MSC stimulated with IFN-γ (MPγ).

Aim: To generate and characterize Membrane Particles derived from MSC cultured with and without IFN-γ, analyze their immunomodulatory properties, and their interaction with the immune system.

Methods: Adipose tissue mesenchymal stromal cells were treated with and without IFN-γ (50ng/ml-72h). Membrane Particles from both type of cells (with/without IFN-γ) were generated by hypotonic shock and extrusion. The characterization of the Membrane Particles was performed by nanosight, and electron microscopy. Peripheral blood mononuclear cells were treated with various concentrations of Membrane Particles, and expression of immune markers was analysed by PCR. Lymphocyte proliferation and monocyte apoptosis were performed by flow cytometry, and the interaction of membrane particles with the immune cells by confocal microscopy.

Results: Tracking analysis and electron microscopy indicated that the average size of Membrane Particles was 120 nm, and they showed a round shape. Membrane Particles exhibited ATPase, and nucleotidase activity, indicating they are enzymatically active. Membrane Particles from both type of cells (with/without IFN-γ) did not physically interact with T cells and had no effect on $CD4^+$ and $CD8^+$ T cells proliferation. However, both Membrane Particles selectively bound to monocytes and decreased the frequency of pro-inflammatory $CD14^+CD16^+$ monocytes by induction of selective apoptosis. Membrane Particles from IFN treated MSC but not from control MSC increased the percentage of anti-inflammatory PD-L1 monocytes. The confocal microscopy analysis showed that Membrane Particles were bounded to the plasma membrane of the monocytes but they were not internalized.

Conclusion: These data demonstrate that Membrane Particles have immunomodulatory properties and have potential as a novel cell-free therapy for treatment of immunological disorders.

Targeting the CD40-costimulation pathway by CFZ533 prevents the cross-talk between follicular T helper cells and B cells

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Aim: Blockade of the costimulatory molecule CD40 by the novel Fc-silent, IgG1 antibody CFZ533 (Novartis Pharma) has shown to inhibit acute alloreactivity in non-human primates and is currently being investigated for prevention of rejection in a CNI-free regimen in kidney transplant patients. CD40 on B cells interacts with its ligand on T cells and serves as a necessary co-stimulatory factor for B cell activation, which promotes B cell proliferation, immunoglobulin class switching and differentiation.

Methods: We examined the effect of CFZ533 on humoral immunity by studying the cross-talk of follicular T helper cells (Tfh) with B cells and subsequent B cell activation parameters. By flow cytometry we determined the blockade of CD40 by CFZ533 on peripheral B cells, and its ability to inhibit their proliferation and differentiation after allogeneic stimulation.

Results: Cell surface expression of CD40 on B cells was blocked by CFZ533 in a dose dependent manner. At a concentration of 1 ug/ml a maximal saturation of >95% was measured. While completely blocked by CFZ533, the presence of CD40 on B cells was confirmed by another antibody (clone HB14) directed against another epitope. Our T and B cell function assays revealed that blockade of CD40 by CFZ533 (100 ng/ml) inhibited alloantigen driven B cell proliferation (up to 70% inhibition). Next, we determined the impact of blockade of CD40 by CFZ533 on the T-B cell cross-talk. In the absence of Tfh cells, plasma blast (PB) differentiation was inhibited when stimulated with polyclonal antigen SEB or alloantigen, while in the presence of these Tfh cells, these stimuli led to B cells differentiation into Ig producing PB's and exhibition of memory B cell class switching (loss of IgD-expression), confirming T cell dependency of PB formation. CFZ533 inhibited PB differentiation by 80% (mean) and partly inhibited class switching of B cells, SEB vs SEB+CFZ: mean 17% vs 9%, p= 0.02, respectively). Additionally, CFZ533 diminished the expression of other B cell costimulatory markers such as OX40-L (member of the TNFR/TNF superfamily) and CD86 (CD28 superfamily) which both are necessary for T cell activation and survival, was diminished/lower by 42% and 59%, p = 0.05 and p<0.01, respectively, suggesting an inhibition of T-B cell interaction.

Conclusion: Our data show that blockade of CD40 by CFZ533 effectively inhibits the functional Tfh-B cell interaction required for T cell dependent B cell activation and differentiation.

Chronic Inguinal Pain after Living Kidney Donation.

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Background: To study the etiology of chronic pain after living kidney donation, assessment of chronic pain after laparoscopic donor nephrectomy with validated scoring systems is necessary. Up to this date, a validated approach and studies on chronic pain are lacking.

Aim: The purpose of this study is to assess the incidence of chronic pain after hand-assisted laparoscopic donor nephrectomy using a validated questionnaire.

Methods: We included 333 living kidney donors who donated their kidney between 2011-2017 in a Dutch transplant center. We used the Carolinas Comfort Scale (CCS) and the Visual Analogue Scale (VAS) to assess post-donation chronic pain and movement disabilities. We report the prevalence and severity of pain and the need for analgesics. Normally distributed variables are reported as mean±standard deviation and non-normally distributed are reported as median [25th;75th percentile]. Mann-Whitney U tests and Chi-square tests were used to test differences in donors with or without pain.

Results: The median age of the included donors was 57 years old, 162 (48.6%) were male and the median follow-up duration was 19 [10-33] months. Eighty-two (24.6%) donors had a CCS >0, of which 57 (17.2%) also reported movement limitations. One-hundred-and-ten (33.1%) had a VAS score >0. In 230 donors with follow-up >1 year post-donation, 47 (20.4%) had a CCS >0, 34 (14.8%) had movement limitations and 67 (29.3%) had a VAS score >0. Donors with pain had most complaints with bending over (12.3%) and exercising (12.0%). Thirty-two (9.7%) donors required analgesics during follow-up. Compared with donors without pain, donors with pain were younger (54 vs. 58 years old, p=0.009). Of donors with a CCS >0, 6% specifically reported chronic inguinal pain.

Conclusions: In this study, we show that 20% of donors experience chronic post-donation pain, of which 6% report inguinal complaints. Complaints occur during bending over and exercising and required analgesic in a minority of cases. These data can be used to raise awareness and develop individualized interventions for pain reduction in living kidney donors.

Additional findings with CT when assessing suitability for living kidney donation

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Background: Potential live renal donors are thoroughly screened before they are accepted. Due to new innovations and imaging methods the radiological resolution has significantly improved, resulting in an increased incidence of additional findings. This may lead to unnecessary additional tests, overdiagnosing, negative psychological effect on the donor and higher costs.

Aim: To assess the incidence of additional findings with computed tomography (CT) and chest X-ray when assessing suitability for living renal donation. Secondary outcomes were location, aspects and consequences of these findings.

Methods: From the period 2010 - 2015 a total of 1562 consecutive potential living renal donors were retrospective analyzed in two centers on additional findings, including patients who were rejected for donation. Categorical variables were analyzed by means of χ^2 test or Fisher's exact. Two-tailed P were used and significance was set on $p<0.05$.

Results: Additional findings were found in 50% with a median of 1 additional finding (IQR 1). The most common additional findings in accepted donors were benign cysts (65%) and hemangioma (5%), most frequently located in the kidney and liver(45% and 30% respectively). About 30% of patients who showed additional findings required further medical examination, for further characterization, of which 11% eventually were declined for donation. In accepted patients with renal incidental findings, the contralateral kidney was donated in 24%. In total 17% of patients were declined for donation after complete screening of which 31% were rejected solely based on incidental findings. Rejected patient showed significantly more incidental findings (mean 1.03 vs 1.86, $p<0.01$), especially due to atherosclerosis and aneurysmal disease.

Conclusions: Additional findings in potential living renal donors are very common and are often located in the kidney and liver. A third of these patient undergo additional tests which may lead to overdiagnosing. Since the impact of incidental findings is rather low on the decline rate, some reservation to perform additional tests preoperatively should be advocated.

Na transplantatie bergen verzetten.

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De Transplantoux is een sportevenement voor getransplanteerden en levende donoren waarbij de Mont Ventoux op de fiets wordt beklommen. Dit initiatief van het Universitair Ziekenhuis Leuven (UZ Leuven) vond voor het eerst plaats in 2008 en keert 2-jaarlijks terug. Het aantal deelnemers is van 28 naar meer dan 200 gegroeid.
De doelen van de Transplantoux zijn om patiënten na transplantatie bewust te maken van de voordelen van een gezonde leefstijl, revalidatie in groepsverband met lotgenoten en als eerbetoon aan de donor en naasten. Een van de kenmerken is dat elke deelnemer samen met een buddy als medisch begeleider de berg op fietst. Voor de getransplanteerden is het tevens een goede manier om onder begeleiding weer of meer vertrouwen in de mogelijkheden van het eigen lichaam te krijgen. Een extra motief is om aandacht voor orgaandonatie in de media te generen.
In 2017 heeft een groep van 21 deelnemers vanuit het Groningen Transplantatie Centrum (GTC) deelgenomen aan dit evenement. In 2016 zijn wij begonnen met het vormen van de groep, werven van sponsoren en er is een medische keuring geweest van de deelnemers. De groep bestond uit long-, lever-, pancreas-, nier- en stamcelgetransplanteerden, levende donoren en vrienden en familie. De begeleiders werden uit verschillende bij de transplantatie betrokken beroepsgroepen gerekruteerd. Er werd een trainingsschema opgesteld om conditie op te bouwen, hoogte meters te maken en elkaar te leren kennen. In 2017 zijn er 4 gezamenlijke trainingen geweest, onder andere in Tecklenburg en de Belgische Ardennen. Uiteindelijk heeft de groep in juni 2017 deelgenomen aan de Transplantoux en heeft iedereen de top gehaald.
Met de Transplantoux heeft het UZ Leuven een uiterst succesvol sportevent voor getransplanteerde patiënten opgezet met een grote symbolische waarde voor de deelnemers. Gemeenschappelijke sportbeoefening kan een belangrijk onderdeel van de revalidatie voor patiënten en familie vormen. In 2019 willen we vanuit het GTC weer deelnemen aan de Transplantoux. Wij willen graag het voortraject professionaliseren door betere sportgeneeskundige begeleiding en vroegtijdig starten van de voorbereiding. Daarnaast willen we mogelijkheden verkennen wetenschappelijk onderzoek te koppelen aan het gehele traject. Ook gaat er komende tijd een inventarisatie plaatsvinden of er behoefte is aan een initiatief dat minder hoge eisen stelt aan deelnemers. Dit kan in de jaren tussen de Transplantoux plaatsvinden.

Normothermic regional perfusion in a DCD-III scenario: first experience

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Due to the tremendous organ shortage, marginal grafts like grafts of donors after circulatory death (DCD) are used for liver transplantation. DCD grafts have higher complication rates, in particularly biliary complications. One of the most important factors of this higher complication rate is the donor warm ischemia time (DWIT). Normothermic regional perfusion (NRP) is a novel technique to abolish donor warm ischemia as soon as possible, by restoring the circulation with oxygenated blood in the isolated abdominal compartment *in the donor*. In this study we describe our first experiences with NRP.
In a pig DCD model, 2 hours of NRP was performed after a DWIT of 15, 30 or 45 min. To evaluate the quality of the liver, bile and blood was collected every 30 min in order to determine ALAT, bilirubin, lactate and biliary pH. Furthermore, the blood flow in the hepatic artery and portal vein was measured during NRP.
So far, 3 of 7 experiments have been done, including 15, 30 and 45 min of DWIT. Typical pump flow was 0.9-1.2 L/min, generating a physiological blood pressure of 120 mmHg. NRP restored hepatic arterial blood flow from 78 to 166 and portal blood flow from 460 to 600 ml/min. In all livers ALAT levels improved during NRP, with the biggest decrease in the 15 min DWIT pig. During NRP, the total bile production showed an inverse relation with the DWIT, ranging from 13.5 ml bile in the 15 minutes DWIT pig to 2 ml in 45 min DWIT. During the NRP, the acidity of bile initially increased, showing HCO3 excretion failure of cholangiocytes, but after 60-90 minutes biliary pH was restored for livers with 15 and 30 min DWIT. In 45 min of DWIT, pH was however further decreased. Interestingly, we did not find lactate clearance, as described in literature in the 15 and 30 minutes DWIT, Starting arterial lactate of 9.5mmol/l remained stable during NRP with limited extraction over the liver. In the 45 min DWIT, lactate increased to 180% of starting value. Histology of the liver and viability of the bile duct will be shown at congress.

In conclusion, the first experience with the NRP technique was successful, with no technical difficulties during establishment of the NRP circuit. Liver quality was assessable with transaminase levels and monitoring of bile production and acidity. NRP is a promising strategy to recover DCD donor livers from damage inflicted during DWIT. An human implementation strategy for DCD-III cases is being prepared by the stand-alone retrieval team West.

Safety and efficacy of third kidney transplantation in ipsilateral iliac fossa

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Kidney retransplantation is an option for patients after graft loss returning to dialysis. However, evidence is lacking whether a third kidney transplant (KTx) in ipsilateral iliac fossa is safe and effective. The aim of this study is to review surgical outcome of third kidney transplantation in ipsilateral iliac fossa in comparison to first and second kidney transplants.
Between 2010 and 2016 year, 2074 kidneys were transplanted in the Erasmus Medical Center, Rotterdam and in University of Medical Center Groningen. The databases were screened for adult third kidney transplantation in ipsilateral iliac fossa. The donor, recipient and surgical data were collected and analysed. The cohort was divided into three groups: first kidney transplantation (I KTx) (n=1744), second kidney transplantation in ipsilateral iliac fossa (II KTx) (n=44) and third kidney transplantation in the ipsilateral iliac fossa (III KTx) (n=7). We used one-way multivariate analysis of variance (MANOVA) to compare groups.
There was significantly higher cold ischemia time in the III KTx group in comparison to I and II KTx group (543 min vs 167 min and 240 min respectively; $p<0.001$). Median operation time was significantly longer in II and III KTx group in comparison to I KTx group (205 min and 202 min vs 135 min respectively; $p<0.001$). Postoperative vascular and urological complications did not differ between groups. Median three months glomerular filtration rate was similar between groups. One- and five year graft survival did not differ between groups 96%, 89% (group I) 91%, 82% (group II) and group (III) 85%, 85% ($p = 0.214$) and ($p = 0.116$). One- and five year patient survival did not differ between groups 97%, 91% (group I) 100%, 90% (group II) and group (III) 100%, 100% ($p = 0.796$) and ($p = 0.856$).
Third kidney transplantation in ipsilateral iliac fossa is feasible and viable with similar short and long-term results compared to first or second ipsilateral kidney transplantation.

SLC30A8 polymorphism and BMI complement HLA-A*24 as risk factors for poor graft function in islet allograft recipients

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Aims/hypothesis: *HLA-A*24* carriership hampers achievement of insulin independence in recipients of an islet allograft. However, less than half of those who failed to achieve insulin independence carry the allele. We investigated whether genetic polymorphism at the recipients' zinc transporter 8-encoding *SLC30A8* gene (rs13266634) could complement their *HLA-A*24* status in predicting functional graft outcome.

Methods: Retrospective analysis of a hospital-based patient cohort followed for 18 months post-transplantation. Forty C-peptide-negative type 1 diabetes patients received >2 million beta cells/kg body weight in one or two intraportal implantations under similar immunosuppression. Main outcome measurements included achievement and maintenance of acceptable graft function defined as <25% coefficient of variation of fasting glycaemia in presence of >1ng/mL (331pmol/L) C-peptide, in addition to achievement of insulin independence and maintenance of C-peptide positivity.

Results: In multivariate analysis *HLA-A*24* positivity, presence of *SLC30A8* CT or TT genotypes, and also BMI≥ group median (23.9 kg/m^2) were independently associated with failure to achieve insulin independence (*P*=0.015-0.046). The risk increased with the number of factors present (*P*<0.001). High BMI interacted with *SLC30A8* T-allele carriership to independently predict difficulty to achieve acceptable graft function (*P*=0.015). Maintenance of C-peptide positivity was mainly associated with older age at time of implantation. Only *HLA-A*24* carriership independently predicted failure to maintain satisfactory graft function once achieved (*P*=0.017).

Conclusions/interpretation: *HLA-A*24*, the *SLC30A8* T-allele, and high BMI associate with poor graft outcome. They should be considered in the interpretation of future transplantation trials.

How safe is crossing the ABO blood group barrier? A meta-analysis to determine the additive risk of ABO-incompatible kidney transplantation.

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Background: ABO blood group-incompatible (ABOi) kidney transplantation is considered a safe procedure, with non-inferior outcomes in large cohort studies. Its contribution to living kidney transplantation programs is substantial and growing. The objective of this meta-analysis was to systematically investigate outcomes in ABO-incompatible kidney transplant recipients compared to center-matched ABO blood group-compatible (ABOc) control patients.

Methods: Comprehensive searches were conducted in Embase, Medline, Cochrane, Web-of-Science and Google Scholar. MOOSE study guidelines for observational studies and Newcastle Ottawa bias scale were implemented to assess studies. Meta-analysis was performed using Review Manager 5.3 with the Mantel-Haenszel analysis method. A subgroup analysis on antibody removal technique was performed.

Results: After identifying 2728 studies addressing ABOi kidney transplantation, 26 studies were included, describing 1346 unique ABOi patients and 4943 ABOc controls. Risk of bias was low (all studies ≥ 7/9 stars). Baseline patient characteristics revealed no significant differences in immunological risk parameters. Statistical heterogeneity of studies was very low (I^2 0% for graft and patient survival). ABOi patients had excellent one-year patient (97·93%) and uncensored graft survival (95·82%). However, compared to ABOc controls a significant increased risk for one-year graft loss (relative risk [RR] 1·69, p=0.002) and mortality (1·65, p=0.03) was present. Infection was the cause of death in 49% of deceased ABOi patients versus only 13% in deceased ABOc patients (p=0.02). The higher risk of graft loss was irrespective of the apheresis technique applied, the year of publication or the country of origin. ABMR (4·04; 95% CI 2·94-5·54, p<0.00001), severe non-viral infection (RR 1·4; 1·11-1·78, p=0.005) and bleeding (1·9; 1·36-2·72, p<0.0005) were also more common after ABOi kidney transplantation.

Conclusion: ABOi kidney transplant recipients have very good outcomes albeit inferior to center-matched ABOc control patients. Lack of individual patient makes it impossible to decipher if ABMR and patient death coincided. The low clinical heterogeneity of included studies and similar baseline strengthens our findings. Kidney exchange programs should be stimulated whilst future research should aim to identify modifiable risk factors for graft loss after ABOi kidney transplantation.

A predictive pharmacokinetic model of ribavirin plasma concentration in lung transplant recipients treated for a paramyxovirus or chronic Hepatitis E virus infection.

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Background: Ribavirin (RBV) is a guanosine analogue used for treatment of paramyxovirus (PMV) infections and Hepatitis E in the lung transplant recipients (LTR). The pharmacokinetic profile of RBV in the transplant population is unknown and is likely to be altered due to renal and hepatic impairment and cystic fibrosis in these immunocompomised individuals. The treatment protocol of 2 University hospitals (Netherlands,Sydney) for RBV consists of a loading dose (11mg/kg thrice daily, Groningen: orally, Sydney: IV) followed by oral maintenance dose (10mg/kg bidaily). However, whilst the treatment protocols have demonstrated efficacy, the RBV exposure has not been established. A pharmacokinetic model using observational data and pharmacokinetic modelling was constructed to predict exposure and design an optimal dosing regimen for RBV in the LTR population.

Methods: Twenty-four LTR with PCR-confirmed PMV or chronic HEV were recruited (13 Dutch protocol/ 11 Australian protocol; 12 male/12 female; Age: 45.3 ± 13.9 yrs; BMI: 23.8 ± 4.82 kg/m2; CrCL: 69.2 ± 26.7mL/min).Plasma RBV concentrations were quantified using a validated HPLC-UV analytical method. Patient concentration-time data, combined with previously published RBV pharmacokinetic data, were used to develop a population pharmacokinetic model, using NONMEM® VII software, incorporating inter-individual and residual unexplained variability. Patient factors contributing to parameter variability (such as creatinin clearance, body weight, CF or not) were modelled using standard forward-inclusion/backward-deletion methods. Model selection was based on the objective function value and standard diagnostic plots. The developed model was then used to conduct Monte Carlo simulations examining alternate dosing regimens.

Results and conclusion: Comparable drug exposure can be achieved using oral loading dose of 11mg/kg thrice daily as opposed to IV. In addition, a maintenance dose of 4 mg/kg bd was optimal to maintain target concentrations between 1.5-3.0 mg/L. This protocol reaches target concentration within 24 hrs and the escalation of plasma concentrations above toxic range during maintenance treatment was avoided. The oral administration reduces patient bed days, costs and increasing convenience.Additional research is needed to establish effective plasma RBV concentrations; however, it is anticipated that the developed pharmacokinetic model will allow predictions of optimal dosing regimens.

Pre-Transplant Duration of Dialysis, N-terminal Pro-Brain Natriuretic Peptide and Post-Transplant Mortality in Renal Transplant Recipients

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Background and objective: Pre-transplant dialysis duration is associated with increased mortality in renal transplant recipients (RTRs) due to accelerated atherosclerosis, intradialytic volume overload and subsequent progression of left ventricular hypertrophy. As a result, the cardiovascular system could deteriorate into a worse state in potential renal recipients. N-terminal pro brain natriuretic peptide (NT-proBNP), a protein released by ventricular cells in response of ventricular wall stress caused by volume overload, is a prognostic predictor of mortality in end-stage renal disease patients. The aim is to assess whether dialysis duration is independently associated with mortality in RTRs and if NT-proBNP explains the association between dialysis duration with mortality in RTRs.

Material and methods: 648 patients, transplanted between January 1995 and December 2005 in the University Medical Center Groningen, were prospectively analysed after exclusion of 225 patients without sera NT-proBNP and 39 patients with graft failure within 1 year after transplantation. Multivariable Cox regression models were used to study the associations of dialysis duration and NT-proBNP with all-cause mortality. Mediation analysis was performed to evaluate whether the associations between dialysis duration and mortality were mediated by NT-proBNP.

Results: In multivariable Cox regression dialysis duration was associated with increased risk for post-transplant mortality, independent of potential confounders including age, gender, creatinine, diastolic blood pressure, diabetic nephropathy, donor type, delayed graft function, pre-emptive transplantation and CMV seropositivity (Hazard ratio [HR]: 1.39; 95% confidence interval [CI]: 1.11-1.75; *P*=0.004). This association weakened after adjustment for NT-proBNP (Hazard ratio [HR]: 1.25; 95% CI: 0.99-1.58; *P*=0.06). In this model NT-proBNP was independently associated with all-cause mortality in RTRs (HR: 1.46; 95% CI: 1.23-1.74; *P*=<0.001). In mediation analyses NT-proBNP was found to explain 47.3% of the effect of dialysis duration on all-cause mortality in RTRs.

Conclusion: Dialysis duration is a predictor of mortality in RTRs and variation in NT-proBNP at the time of transplantation to a large extent captures and mediates the effect of dialysis duration on mortality risk in RTRs. Future studies are needed to evaluate the potential value of NT-proBNP as check of cardiac patency of patients on the transplantation waiting list.

Urinary Excretion of the Main Metabolite of Melatonin Relates to All-Cause and Cardiovascular Mortality in Renal Transplant Recipients

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Objective: 6-sulfatoxymelatonin (6-SM) is the major metabolite of melatonin, a multifaceted hormone that rises during the onset of darkness. Melatonin is rapidly hydroxylated in the liver and conjugated to 6-SM prior to excretion in urine. 24-hour urinary 6-SM (U6-SM) excretion is an integrated measurement of total melatonin production over a day.
In patients with chronic kidney disease sleep is often disturbed. This could represent a risk factor for poor long-term outcome. In line with this, we hypothesized that low U6-SM is associated with excess mortality in renal transplant recipients (RTR).

Methods: U6-SM was measured using a newly developed isotope dilution liquid chromatography tandem mass spectrometry (LC-MS/MS) method. The study population consisted of 702 RTR with a functioning graft for at least one year, who visited the outpatient clinic between 2008 and 2010. All participants collected a 24-hour urine sample prior to their visit to the clinic. Baseline associations were explored by linear regression analyses. Kaplan-Meier and Cox regression analyses were employed to investigate the associations of U6-SM with all-cause mortality, cardiovascular mortality and graft-failure.

Results: Mean (±SD) age of the RTR was 53 (±13) years, with 57% males, a mean (±SD) eGFR of 45 (±19) ml/min/1.73m^2 and the median [IQR] of U6-SM was 13.2 [3.5 – 31.2] nmol/24h. U6-SM was associated among others with age, waist-circumference, eGFR and the use of antihypertensives (standardized ß respectively -0.35, -0.13, 0.17 and -0.20, all p<0.001). After median 5.4 [4.8-6.1] years follow-up 130 RTR died (19%), of whom 48 (37%) due to a cardiovascular cause, and 75 (11%) developed graft failure. U6-SM was significantly associated with all-cause mortality (HR [95%CI]=0.60 [0.44-0.81], p=<0.001) and cardiovascular mortality (HR [95%CI]=0.49 [0.29-0.84], p=0.009), independent of conventional risk factors and kidney function. There was no significant independent association with graft failure (HR [95%CI]= 1.16 [0.79-1.72], p=0.45).

Conclusion: In this study, we found that U6-SM, as a measure of total melatonin production, is inversely associated with all-cause mortality and cardiovascular mortality in RTR. Based on these results, evaluation and management of melatonin metabolism could be considered for improvement of long-term outcomes in RTR.

sCD59 as a novel biomarker for acute rejection in kidney transplantation

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The membrane bound complement regulatory protein CD59 protects cells against formation of the membrane attack complex. Upon cell activation and damage, membrane bound proteins including CD59 can be shed from the cell surface. The soluble form of CD59 (sCD59) can be detected amongst others in serum, plasma and urine, though it is unknown whether these levels are related to each other. We hypothesized that sCD59 levels are increased during kidney injury and as such may be used as a novel biomarker for acute rejection in kidney transplant patients. We have included 10 kidney transplant patients with acute rejection during the first year and 10 matched patients without. Patients were matched on donor type and recipient age and sex. sCD59 concentrations were measured by ELISA in urine and serum samples that were collected prior to transplantation, posttransplantation at month 1, 3, 6 and 12 and if applicable at time of rejection. Urinary sCD59 concentrations were normalized for urinary creatinine levels.
Serum sCD59 concentrations at month 1 posttransplantation were markedly lower compared to pretransplantation in all patients (average -56%, $p<0.0001$). In urine samples, a smaller average drop was observed (-19%, $p=0.03$) and not in all patients. The overall correlation between sCD59 levels in urine and serum was poor ($R^2=0.20$, $p<0.0001$). Patients with a rejection episode, showed increased sCD59 levels in serum and urine (median 19.1ng/ml and 113.9ngml) at time of rejection compared to the average posttransplant concentration in patients without rejection (median 12.4ng/ml and 83.6ng/ml; $p<0.0001$ and $p=0.01$). At month 1 posttransplantation, serum sCD59 levels were higher in the rejection group compared to the control group (median 19.0 vs. 12.6ng/ml, $p=0.01$) regardless of the moment of rejection (less or more than 1 month after transplantation).

In conclusion, this data shows that serum and urinary sCD59 levels decline posttransplantation and are increased in patients with acute rejection. Therefore, sCD59 levels might be alone or in combination with other markers a novel biomarker for acute rejection in kidney transplantation.

Computerised Integration of Alternative kidney Transplantation (CIAT) programs: a simulation

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Introduction: Though kidney-exchange is intertwined with alternative transplant procedures such as unspecified donation, domino-paired donation and desensitisation, these alternative procedures are still coordinated by hand and on a local level. Desensitisation results are better for transplants with current negative but historically positive CDC cross matches (CDC-XM) compared to current positive CDC-XM. An anti HLA Luminex®SA MFI<8000 is generally associated with negative CDC-XM. A computerised integration of alternative transplantation programs (CIAT) was developed to increase efficiency and find matches with negative current CDC-XM for highly immunised (HI) patients.

Methods: An algorithm was developed to maximize the number of HI patients transplanted. For selected highly immunised (SHI) patients (PRA>85%) AB0i and MFI<8000 matching was allowed. A historical simulation was carried out including all local waitlisted patients, unspecified donors and HLA- or AB0-incompatible pairs that participated in our programs in 2015. Donors deemed unacceptable for the National kidney exchange program were included but matching was restricted to waitlist patients. Exchange pairs with blood type AB donors were also included. Multiple donors were allowed for SHI patients. Four CIAT matching runs were simulated with 3 months intervals.

Results: In reality in 2015, there were 3 National kidney-exchange transplants. 23 unspecified donors donated: 9 donors initiated chains, 14 donated to the waitlist. In total 44 transplantations were carried out: 37 AB0 and HLA compatible and 7 AB0i transplantations. None of the HI patients were matched. In the CIAT simulations 10 unspecified donors were matched to the waitlist and 13 donors initiated chains. In total 48 matches were found: 44 AB0- and HLA-compatible matches, 3 HLAi matches for SHI patients (anti donor MFI<8000,1 also AB0i) and 1 AB0i match. For these 3 SHI patients, desensitisation is still indispensable.

Conclusion: Computer allocation to integrate transplant programs could lead to 20% more AB0 and HLA compatible matches. Besides, for 3 HLA incompatible pairs we found a match with a better chance for successful desensitisation. Success rate of an integrated program depends on the number of couples and unspecified donors included, and on the time of their inclusion. Expansion of the pool through national cooperation and inclusion of compatible kidney exchange pairs may increase the yield of the integrated program.

IGL-1 preservation solution and liver graft function, a retrospective study

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Background:High risk organs are increasingly used for Liver Transplantation (LT), due to the shortage of pristine donors, but they are more sensitive to ischemia-reperfusion injury and carry increased rate of complications post-LT. Adequate preservation during cold storage is pivotal for the success of LT. We aim at investigating the effects of the recently introduced Institute George Lopez 1 preservation solution (IGL-1) on short-term outcomes compared to University of Wisconsin (UW) and Histidine-Tryptophan-Ketoglutarate (HTK) solutions.

Methods: After propensity score matching, 246 LT performed between 1/2000 – 1/2016 were considered. Donor, recipient demographic, transplant data, and short-term outcomes were compared between LT performed with IGL-1 (n=82), UW (n=82), or HTK (n=82) as preservation solutions. Bonferroni post-hoc correction for multiple testing was applied. A multivariable logistic regression assessed the effect of preservation solutions on Early Allograft Dysfunction (EAD), and was adjusted for the era effect. Data are expressed as median (IQR).

Results: Donor demographics was similar; however, donors after circulatory death were more frequently used in IGL-1 (47.6%) than in both UW (18.3%, p=0,02) and HTK (23.2%, p=0,04); and donor hepatectomy time was shorter in IGL-1 than in HTK [32min (23.5-41) *vs.* 39min (28.5-52), p=0.01]. Recipient demographics did not differ; however, none of the patients underwent LT due to acute liver failure in IGL-1, in contrast to both UW (2.4%, p<0.0001) and HTK (7.3%, p<0.0001). The duration of LT was longer for IGL-1 [6.57h (5.49-8.27)] than HTK [6h (4.49-6.74), p=0.0003] and UW [5.53h (4.43-6.92), p<0.0001]. Cold ischemia was shorter in IGL-1 [5.51h (4.51-8.17)] than in HTK [7.28h (5.83-8.55), p<0.001]. A peak AST>2000 IU/L within 7d post-LT occurred less frequently in IGL-1 (9.8%) than both UW (13.6%, p<0.0001) and HTK (24.4%, p<0.0001), but the incidence of Early Allograft Dysfunction (EAD) did not differ among groups. The rate of biliary strictures within 1y post-LT was similar. IGL-1 was the only solution protecting against EAD at univariate regression [OR:0.36, 95%CI:0.17-0.74, p=0.01], but this finding was not confirmed by multivariate analysis.

Conclusion: IGL-1 might better preserve liver grafts when compared to UW and HTK, but further investigations are needed.

Peritubular capillary loss in the first month after kidney transplantation is more pronounced in patients with rejection compared to delayed graft function.

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Background: Loss of peritubular capillaries (PTC) in patients with chronic transplant dysfunction is associated with worse outcome. We have shown previously that PTC loss occurs in the first three months after transplantation is associated with ischemic injury and immunological events and precedes renal function decline. PTC density in the first weeks after transplantation has not yet been studied.

Methods: A Dutch single Center cohort of 205 patients, who had a kidney transplantation between August 2003 and December 2009 and of whom representative protocol biopsies were taken at transplantation, and 3 and 12 months posttransplant, was analysed. In 102 of these patients an indication biopsy was taken in the first month after transplantation because of delayed graft function (DGF) or rise of creatinine. PTC numbers were quantified, by analysing 10 high power field pictures per biopsy, using an image processing and analysis system (Leica Qwin).

Results: Recipients who underwent an indication biopsy more often received a DCD graft. Consequently the ischemia times were higher than in the recipients who did not have an indication biopsy. Furthermore, patients with an indication biopsy developed more interstitial fibrosis and tubular atrophy (IF/TA) 1 year after transplantation ($p=0.04$). In patients with indication biopsies, a significant loss of PTC density occurs already in the first month after transplantation ($p<0.01$). This PTC loss is more pronounced in patients suffering from rejection than patients with DGF (rejection, 1.53 PTC/tub vs. DGF, 1.66 PTC/tub $p<0.01$). However, in the rejection group there is a stabilisation of the PTC loss between 1 and three months, while in the DGF group there is further loss of PTCs between the first month and three months after transplantation (1.66 vs. 1.53 PTC/tub, respectively, $p<0.01$).

Conclusion: We found that PTC loss occurs already in the first month after transplantation. The pattern of PTC loss in the first 3 months after transplantation differs between patients with rejection and DGF. Prevention of microvascular damage during and early after transplantation may be crucial to prevent chronic transplant dysfunction.

Relevance of EBV load monitoring in renal transplant recipients; a retrospective cohort study

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Background: Currently, EBV load monitoring after transplantation is used to predict post-transplant lymphoproliferative disorder (PTLD) development in high risk populations. The incidence of PTLD in renal transplant recipients is relatively low compared to other solid organ transplantations, whereby the implications of EBV viremia after renal transplantation are not clear.
We studied in a retrospective single center cohort the additive value of EBV monitoring on outcome parameters in renal transplant recipients (RTR).

Methods: In total 373 RTR were included who received a kidney transplant between 2010 and 2012. The incidence of EBV viremia in whole blood and the outcome in eGFR, BPAR, graft loss and patient survival was studied.

Results: Of the 373 RTR, 121 recipients were EBV DNA negative (32.4%), whereas EBV DNA was detectable at least once in 252 recipients (67.5%). In this cohort one EBV seronegative patient developed histological proven PTLD (0.4%). Incidence of graft failure was not significantly different between the EBV viremia group (n=25/247,10.1%) and the EBV viremia negative group (n=7/121, 5.8%) (RR= 1.75, 95% CI 0.8-3.9, p=0.17). The longitudinal course of eGFR was significantly lower in the group with EBV viremia, after 48 months (p= 0.037). Biopsy proven acute rejection (BPAR) and mortality rate did not differ between the groups with or without EBV viremia.

Conclusion: In conclusion, this study demonstrated that EBV viremia is common in RTR, patients with EBV viremia had a significantly lower eGFR, however, no association with BPAR, graft loss, and patient survival was found.

Pre-operative serum potassium as a risk factor for early complications after renal transplantation: a cohort study

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Introduction: In current practice, no guidelines exist how to handle pre-transplantation serum potassium (K^+) in renal transplant recipients (RTR). Since serum K^+ abnormalities are common among patients with chronic kidney disease and are associated with higher rates of death, major adverse cardiac events and hospitalisation in this population, pre-transplantation K^+ seems an important parameter for evaluation in RTR. The aim of this study is to examine the relation between pre-operative serum K^+ and complications within 48 hours after renal transplantation, comprising interventions to resolve hyperkalaemia. The secondary objective is to determine a cut-off level for pre-operative serum K^+.

Methods: This cohort study included all RTR in our Center in 2014. Primary endpoint was the prevalence of dialysis or use of K^+ lowering medication (defined as K^+ interventions) to resolve hyperkalaemia within 48 hours post renal transplantation in relation to pre-operative serum K^+ concentrations, using binary multivariate logistic regression. The optimal cut-off level for pre-operative serum K^+ with respect to K^+ interventions was determined using receiver operating curves. Clinical, biochemical and demographic parameters were recorded on admission and until 48 hours after surgery.

Results: 151 recipients were included, of whom 51 (33,8%) patients received one or more intervention to resolve hyperkalaemia within 48 hours after transplantation. Pre-operative serum K^+ was nominally higher in patients with post-operative K^+ interventions (4.6 +/- 1.10 mmol/L) than in patients with no post-operative K^+ interventions (4.4 +/- 0.9 mmol/L, p=NS). Multivariate analysis showed a significant positive relationship between pre-operative serum K^+ and K^+ interventions for both the total cohort (Odds Ratio (OR)=2.2, 95% Confidence Interval (CI)=1.1-4.2, p=0.023) and the subgroup with a living donor graft (OR=8.0, 95% CI=1.1-56.4, p=0.038), but not for patients with a post-mortal donor. A cut-off value of $K^+ > 4.9$ mmol/L for patients with a living donor resulted in a sensitivity and specificity of 62.5% and 81.3%, respectively.

Conclusion: This study shows a positive correlation between pre-operative serum K^+ and interventions to resolve hyperkalaemia within 48 hours post renal transplantation. Pre-operative serum $K^+ > 4.9$ predicts a higher prevalence of interventions to resolve hyperkalaemia in patients with a living donor. Further research is recommended to confirm these results.

Impact of rapamycin and tacrolimus on the differentiation and maturation of monocyte-derived dendritic cells and their interactions with T cells

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Background: Immunosuppressive drugs are needed after solid organ transplantation. However the patients have to face severe side effects such as kidney failure, metabolic syndrome, elevated risk of infections and cancers. Understanding the alloimmune response is a critical step to develop possibilities of modulating it to achieve graft operational tolerance.
Dendritic cells (DCs), as professional antigen presenting cells play a critical role in the initiation and regulation of the alloimmune response.
The aim of this study was to better understand the effect of tacrolimus, a calcineurin inhibitor, and rapamycin, an m-tor inhibitor, on the differenciation, maturation and function of monocyte derived DCs in vitro.

Material and methods: DCs were cultured from monocytes of healthy donors with GM-CSF and IL-4 with rapamycin (Rapa-DC) or tacrolimus (Tac-DC). The phenotype and functional properties were then evaluated using FACS analysis of surface markers, ELISA of IL-10 and IL-12 in the supernatants and leukocyte mixed reactions.

Results: Rapa-DC were characterised by a lower expression in co-stimulatory molecules CD80 and CD86 than control-DCs (CTR-DC) ($p< 0.05$). The expression of CD83, a dendritic cell maturation marker was also reduced in Rapa-DC. Tacrolimus had no effect on the expression of surface markers CD80, CD83 and CD86 compared to CTR-DCs. Rapamycin reduced both IL-12 and IL-10 secretions ($p<0.05$) while tacrolimus reduced IL-12 secretion ($p<0,05$) compared to controls. CTR-DCs increased IL-12 secretion after LPS stimulation. Rapa-DCs had a reduced capacity to secrete IL-12 confirming the lower capacity of dendritic cells to respond to LPS stimulation. Rapa-DCs have a suppressive activity on $CD4^+$ allogeneic T compared to CTR-DCs ($p<0.05$) Rapamycin or tacrolimus-treated DCs did not favour the emergence of a $CD4^+CD25^{high}Foxp3^+$ population compared to CTR-DCs.

Conclusion: The immature phenotype and the reduction of IL-10 and IL-12 secretion in Rapa-DC lead to allogeneic T-cell hyporesponsiveness and can lead to a tolerogenic pattern in vitro in contrast to Tac-DC.

GM-CSF strongly enhances TLR9-induced phagocytic capacity and activation of human plasmacytoid dendritic cells

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We have previously demonstrated that plasmacytoid dendritic cells (pDC) infiltrate the kidney in close proximity of tubular epithelial cells during rejection, and that conditioned medium (CM) of renal epithelial cells strongly enhanced TLR9-induced pDC activation. Here, we further evaluated the functional consequences of CM on pDC activation and set out to identify the responsible factor(s).
Activation of negatively selected human pDC by CMV or low dose CpG (0.5 μg/mL) in the presence of CM resulted in a strong increased capacity to ingest apoptotic cells, compared to non-primed pDC (59% vs 11%). Moreover, primed pDC produced 10-fold higher amounts of IFNα, showed a superior phenotypic maturation (CD40/80/83/86/CCR7), and induced vigorous allogeneic T cell proliferation, as compared to their non-primed counterparts (60% vs 4%). Following Luminex analysis, we identified GM-CSF as one of the candidate factors present in CM. Supplementation of pDC cultures with GM-CSF mimicked this functional activity. Neutralizing anti-GM-CSF antibodies showed full inhibition of recombinant GM-CSF, whereas they showed a significant, but partial inhibition of CM, suggesting the presence of additional factors in CM.
In conclusion, we show that GM-CSF is one of the factors important for priming of pDC, lowering their TLR9 activation-threshold and enhancing their function as APC.

Targeted elimination of senescent cells to protect kidneys against ischemia reperfusion injury

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Transplantation induced damage, which is mainly caused by ischemia reperfusion injury (IRI), reduces graft function and survival and is therefore an important subject of research.
Accumulation of damage in an organ, and the inability to effectively cope with this can result in subsets of cells entering a state called senescence. Senescence is characterized by a permanent cell cycle arrest and development of a chronic pro-inflammatory state; the so called senescence associated secretory phenotype (SASP), which negatively affects the surrounding tissue. Due to their permanent cell cycle arrest senescent cells reduce the regenerative capacity of the tissue. These cell types are of high interest in anti-aging research, as these cells accumulate with age, but we argue these cells are of interest in transplantation associated damage as well.
We have shown that two months after renal IRI, induced by bilateral kidney clamping, there is an increased expression of several validated senescence markers, such as $p16^{Ink4a}$, Interleukin-6 and chemokine (C-C motif) ligand 2 (CCL2), whilst downregulated expression of LaminB1 which is lost in senescent cells. The increase in senescent cell levels 2 months after IRI is accompanied by poor kidney function, compared to SHAM operated mice.
As senescent cells are known to negatively influence surround tissue through SASP, we aim to remove these senescent cells and improve kidney transplant outcome by the targeted eradication of senescent cells. For the first time, we have a therapeutic compound (Proxofim) to target senescence in vivo and improve kidney function in mouse models for kidney aging (Baar et al, 2017). Proxofim was shown to reduce improve kidney function of aged mice and reduce inflammation levels as a result of the targeted elimination of senescent cells. Therefore we are using Proxofim to overcome transplantation associated injury and improve kidney function.

HLA-B*15 allele SNPs predict the serologically defined HLA-B15 split antigens

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Human leukocyte antigens (HLA) allow the immune system to discriminate self from non-self. Identification of HLA types of patients and donors is important for successful transplantation since HLA mismatches can trigger immune responses and antibody production. For a long time, HLA typing has been performed by serological typing methods, which measure cell reactivity against HLA antigens using a panel of sera containing well-characterized anti-HLA antibodies. This method enabled identification of the different serological HLA antigens including HLA-B15, which is a broad antigen group for B62, B63, B70 (B71 and B72), B75, B76, B77 split antigens (B15 subtypes). However, the scarcity of sera with specific anti-HLA antibodies makes the method inefficient to discriminate a high variety of HLA antigens. The advancements in DNA based technologies has led to a switch from serologic typing to high resolution DNA typing methods, but these DNA sequencing techniques assign all B15 antigens to the HLA-B*15 allele group. However, the presence of antibodies in the patient against split B15 antigens urges the identification of HLA-B*15 allele subtypes of the donor since the presence of Donor Specific Antibodies is an important contra-indication for kidney transplantation. Hence, we aimed to identify specific nucleotide motifs for each B15 subtype based on single nucleotide polymorphisms (SNP). We aligned the available full-length DNA sequences of B*15 alleles with assigned serological subtypes as defined in the HLA dictionary. This alignment leads to the identification of specific nucleotide motifs of each B15 split antigens at 10 different regions in exons 2 and 3 of B*15 alleles. A dataset of 107 B*15 alleles was used to verify that the nucleotide patterns were able to predict correct subtypes according to the expert assignment (HLA dictionary) and 97 were concordant. Moreover, the serological subtypes of two new B*15 alleles are identified and confirmed by serological typing. Next, we predicted for 110 B*15 alleles the serologic equivalents out of 128 B*15 alleles with unknown serological specificities (IPD-IMGT/HLA), only 18 alleles revealed inconclusive nucleotide patterns at the identified positions. Thus, this fast and reliable method enables prediction of B15 serological equivalents, of importance in case Donor Specific Antibodies are present, to prevent kidney transplant rejection.

Single-cell Analysis of NFATc1 Amplification in T Cells for Pharmacodynamic Monitoring of Tacrolimus

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Aim: Therapeutic drug monitoring (TDM) of the calcineurin inhibitor tacrolimus (TAC) is based on blood concentrations that show an imperfect correlation with the occurrence of acute rejection. A pharmacodynamic method that reflects the direct inhibitory effects of TAC may therefore be preferable over traditional pharmacokinetic TDM. Here, we tested whether measuring the amplification of NFATc1, a member of the calcineurin pathway, is suitable for TDM of TAC.

Methods: NFATc1 amplification was monitored in T cells of kidney transplant recipients who received either TAC- (n = 11) or a belatacept (BELA)-based (n = 10) immunosuppressive therapy. Heparinized blood samples were collected at days 0 (pre-transplantation), 4, 30, 90, 180 and 360 after transplantation and stimulated with PMA/ionomycin. In addition, individual drug effects on NFATc1 amplification were studied *in vitro,* after spiking blood samples of healthy volunteers with either TAC, BELA or mycophenolate mofetil.

Results: In TAC- treated patients, at day 30 after transplantation, NFATc1 amplification was significantly inhibited in $CD4^+$ T cells expressing the co-stimulation receptor CD28 (mean inhibition 37%; p = 0.01) and in $CD8^+CD28^+$ T cells (mean inhibition 29%; p = 0.02), while this was not observed in $CD8^+CD28^-$ T cells or in BELA-treated patients. The TAC pre-dose concentrations of these patients correlated inversely with NFATc1 amplification in $CD28^+$ T cells (r_s = -0.46; p < 0.01). The *in vitro* study revealed a dose dependent effect of TAC on NFATc1 amplification in all three tested T cell subsets (mean inhibition 58% at 50 ng/ml TAC; p = 0.02), while belatacept and mycophenolate mofetil did not show an effect.
Only one patient under TAC-based therapy suffered from a rejection and, as a consequence, no conclusions could be drawn on the association between NFATc1 amplification and rejection risk.

Conclusion: In conclusion, measuring NFATc1 amplification is a promising tool for monitoring the biological effects of TAC on T cell subsets directly, which might be useful for further transplantation diagnostics.

Complement activation in antibody-mediated renal allograft rejection

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Introduction: Antibody-mediated rejection (AMR) is an important barrier to improve long-term outcome in kidney transplantation. Diagnosis of AMR is based on detection of donor-specific antibodies (DSA's) in the circulation, deposition of complement component C4d in peritubular capillaries and microvascular endothelial damage. Because of the involvement of the complement system, its components could be reliable biomarkers for the diagnosis of AMR. Therefore, the aim of this study was to find systemic evidence of complement system activation and urinary complement excretion in renal transplant recipients diagnosed with AMR.

Methods: For this study, 14 patients with AMR and 81 patients without AMR in an indication renal transplant biopsy were included. Plasma levels of complement component C3 were determined using radial-immunodiffusion assay (RID) and properdin, C3d and terminal component C5b-9 using enzyme-linked-immunosorbent assay (ELISA). Urinary excretion of properdin and C5b-9 was examined using ELISA.

Results: Plasma C3 was significantly lower ($p<0.001$) and plasma C3d was significantly higher ($p=0.04$) in AMR patients compared to non-AMR patients. C3d/C3 ratio was significantly higher in AMR compared to non-AMR ($p=0.01$). No differences were found for plasma properdin ($p=0.14$) and C5b-9 levels ($p=0.13$) between both groups. After correcting for 24h urinary creatinine excretion, urinary excretion of properdin ($p=0.22$) and C5b-9 ($p=0.12$) was similar between AMR and non-AMR patients.

Conclusion: Complement activation in AMR appears to be detectable in blood at the level of C3 and, surprisingly, without altered terminal complement activation. Assessment of C3 consumption may be advantageous in the diagnosis and follow up of AMR.

What is the risk of cancer transmission with heart transplantation?

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The organ donor shortage is particularly severe for heart grafts. Donor history of malignancy is a contra-indication for organ donation, but as the heart is an organ at lower risk of metastasis compared to the liver or the lungs, the authors aimed to better determine this risk with heart transplantation (HTx) through an extensive review of the literature.

Results: 7 cases (melanoma, glioblastoma (2), renal carcinoma, choriocarcinoma, hypernephroma, prostate) of transmission of cancer with HTx were reported. All recipients died from transmitted cancer. Interestingly, in 9 other cases, HTx did not induce cancer transmission at long term, despite the evidence of active cancer in the donor proven by autopsy or by cancer transmission in recipients of other organs from the same donor. Reports of UNOS described 274 heart donors with history of various cancers, without transmission to the recipients. In another report, UNOS reported 212 HTx from donor with brain cancer without cancer transmission to the recipients.

Conclusion: HTx is not protected from the risk of donor cancer transmission, but very few cases were reported so far. This fact might indicate that donors with past history of cancer might be considered for heart donation in selected cases, considering the actual organ donor shortage.

Comparison of Kidney Exchange Programs in Europe (COST-ENCKEP)

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Introduction: The study was performed by the European Network for Collaboration on Kidney Exchange Programs (ENCKEP)[1], that started in 2016 and which brings together policy makers, clinicians and optimization experts in Europe to stimulate an European dialogue on this topic. The COST ENCKEP platform is supported by the EU, and is open for participation to all EU countries and beyond. In this first part of the project participating countries exchanged current practices with respect to national KEPs.

Methods: The information on current practices was collected by using a pre structured questionnaire, which was sent to all 23 European countries participating in ENCKEP. The required information was collected by the contributing representatives. The results of these questionnaires were discussed in two workshops in January and March 2017, with the representatives of the participating countries.

Results: Of the 23 participating countries 14 confirmed to have a kidney exchange program. Further classification according the level of development resulted in 3 large, advanced programs, 7 smaller operating programs, 4 programs in preparation and 3 countries which had no program yet, but intended to start one. The contribution of the KEPs ranged from 0 till 25 % of the total number of living donor kidney transplants. Differences on the patient and donor inclusion, organizational and clinical aspects, matching process and other specificities of the program have been described in a handbook[2].

Conclusion, future steps: The results of a questionnaire among 23 countries have been used to write a Handbook on current practices[2], criteria for success and identification of possible risks and opportunities associated with KEPs. Next step of the project is to compare the different allocation algorithms. Other COST-ENCKEP working groups proceed from this with the aim to develop a jointly used common framework for data optimization and to develop and test a prototype for transnational KEPs.

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[1] www.cost.eu/COST_Action/ca/CA15210

[2] www.enckep-cost.eu/news/news-first-handbook-of-the-cost-action-ca15210-57

eHealth psychosocial care for living kidney donors: an implementation study

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Previous research indicates that most living kidney donors do not experience longer-term problems after donation. However, small subgroups of donors do experience problems in physical or psychosocial functioning after donation, such as depressed mood, fatigue, or pain. Currently, evidence-based psychosocial interventions for kidney donors with high distress levels are scarce. eHealth cognitive-behavioral interventions have been found to be effective for a broad range of adjustment problems, including dealing with pain or fatigue, negative mood, and difficulties in social relationships. In the current study, an eHealth psychosocial care path consisting of screening and intervention tools for living kidney donors is implemented in different transplantation centers in the Netherlands.

All donor candidates who register at the transplantation center complete a short screening questionnaire on physical and psychosocial functioning, to identify donors at risk for adjustment problems after donation. Results of this screening are presented in a Donor Profile Chart, which is accessible for all transplant professionals involved in donor care (nephrologists, medical social workers, donor nurses).

Donors at risk are offered guided eHealth cognitive behavioral therapy in which they work on specific treatment modules that are tailored to their personal treatment goals, such as specific donation-related problems, temporary physical limitations, dealing with fatigue, social-relational problems, or negative mood. Donors receive weekly tailored psycho-educational texts or assignments and online support.

This eHealth care path will be implemented in psychosocial donor care, using the RE-AIM model for translation from research into clinical practice. In the different transplantation centers, the new eHealth care path will be gradually implemented into the current psychosocial care of donors. The usability and value of the care path will be evaluated in donors and transplant professionals on multiple time points during the implementation study.

Serious Adverse Events or Reactions in organ transplantation; raising awareness in the Netherlands

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In 2016, the Dutch Transplant Foundation (NTS) received only 15 possible serious adverse event or reaction (SAE/R) reports about a Dutch organ donor or recipient. This number seems low. It may suggest that the knowledge about these reports and the European guidelines is suboptimal in European hospitals. With this article we want to increase the awareness in the Netherlands about SAE/R and raise the number of reports.

Introduction: In 2012, the EU implemented a directive to ensure the quality and safety of organs for transplantation. The directive describes who is responsible for taking certain steps in case of a SAE/R, which can occur in het process from donor reporting up to transplantation and follow-up. If an organ is transplanted across the border within Europe, the national competent authority (NCA) is responsible to report and investigate the incident. In the Netherlands this is the NTS. The countries within Eurotransplant (ET) have made agreements with ET about the procedure.

Notification procedure: If a possible SAE/R is detected, the doctor fills out a special form provided by ET. Thereafter, ET investigates which hospitals are involved and sends an initial report to these hospitals and the NCA. If it concerns a Dutch donor, the NTS receives the report and starts analyzing the SAE/R. Main focus of the investigation is to determine the odds that the cause of the SAE/R is found in the donor and if it may affect the other recipients. The hospitals can use this information to determine if they should monitor their patients more carefully.

European cooperation: In recent years, the ET countries have been looking for a reliable working method for both national and international handling of SAE/R reports. In addition to guarantee quality and safety of donor organs, the ET countries also want to improve and learn from each other. Therefore joint meetings were organized in 2017. As a result of these meetings, the NTS has evaluated and improved its working method. In 2018, the ET countries hope to have a complete list of all SAE/R reports of recent years.

Future: In 2018, the NTS will increase the collaboration with the Dutch hospitals. The expertise of the hospitals and medical professionals is essential for detecting the possible SAE/Rs and patient safety. Therefore the NTS wants to use their knowledge in assessing reports. The NTS expects to receive more reports in 2018 and to collectively increase the quality and safety of organ transplants.

Needs for a paediatric organ and tissue donation protocol; an overview of the literature

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Introduction: Paediatric donation is a unique and extremely sensitive process that requires specific knowledge and competencies. Most countries make use of a specific donation protocols for organ and tissue donation to ensure optimal care for the donor and the family during and after the donation process. The Netherlands has a donation protocol, mainly focusing on the adult situation. However, for children differs from adults in many ways. A paediatric donation protocol could improve the management of paediatric donation procedures.

Aim: The aim of this research was to gain insight into the literature on paediatric donation protocols, to analyse their similarities and differences and identify important themes.

Methods: We searched for publications on organ and tissue donation protocols, specific to children and neonates. Screening was performed on data such as protocol, policy description or recommendations for a protocol.

Results: A total of 13 publications were included in literature overview. Most articles were from North America and only a few were from Europe. Most of the articles discussed only Donation after Cardiac Death protocols. The recurring themes in the literature : Identification of potential donors; parental approach; collaboration with the organ procurement organization; palliative care, informed consent; declaration of death and staff education. 7 of 13 publications call for standardisation of paediatric donation policies.

Conclusions: Publications on paediatric donation protocols are very scarce. Despite the call for standardisation of paediatric donation policies by international experts, no national paediatric donation protocol was found. We identified several recurring themes in the literature that can be used for the development of such a protocol.

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