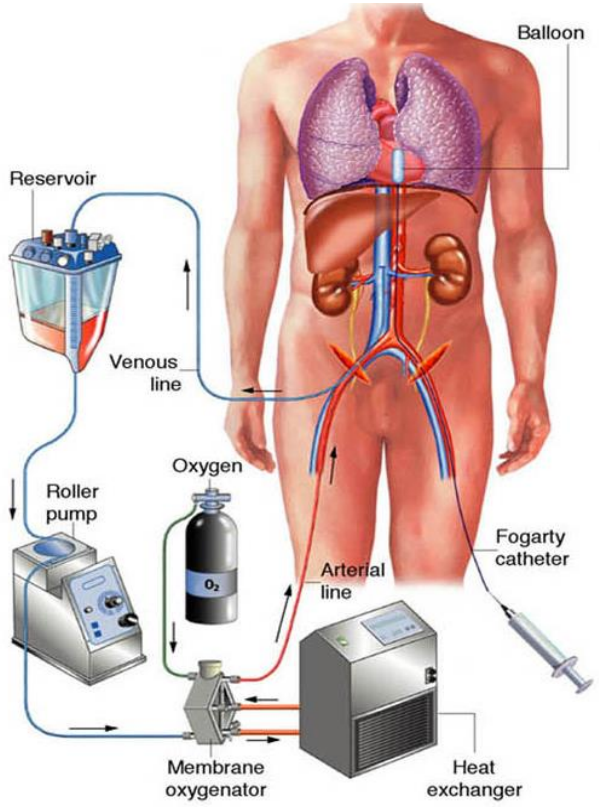
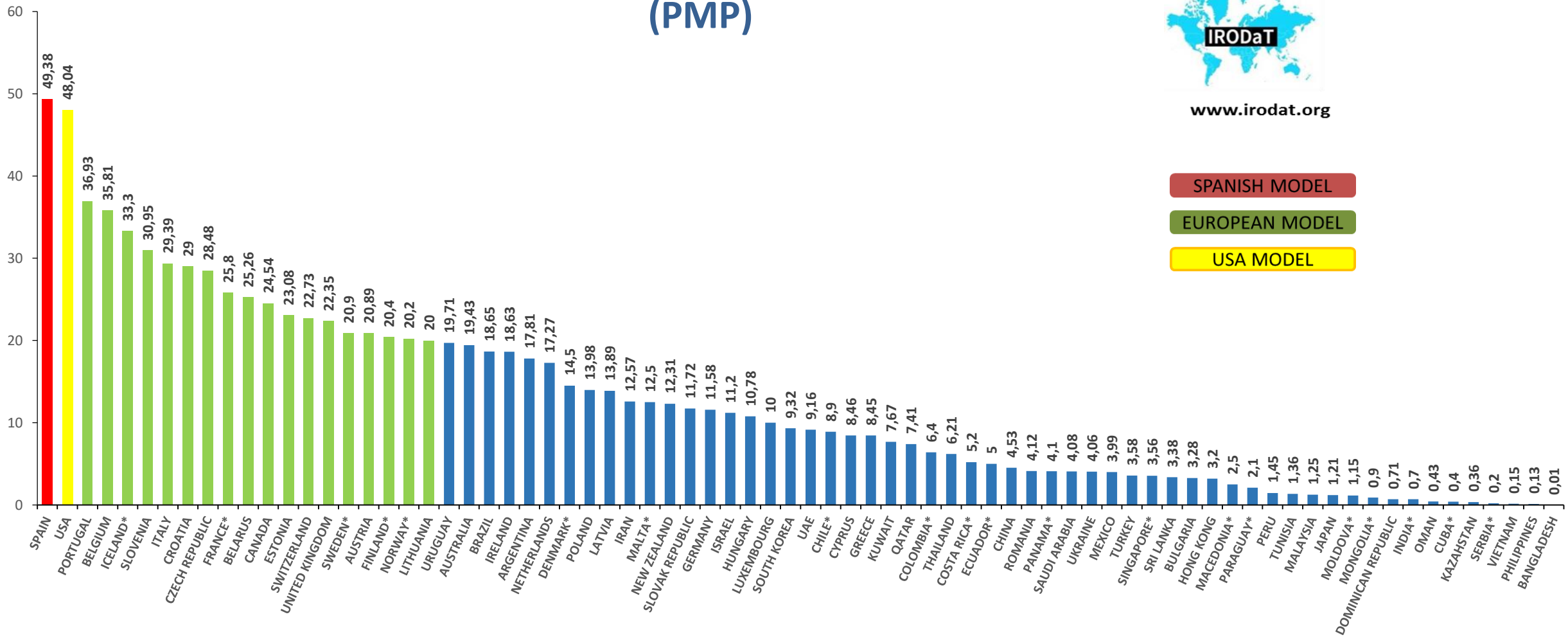
Le DDAC M2 en Europe et dans le monde, où en est-on ?



Dre Chloë Ballesté Delpierre, MD, MSc
Professeur associé Département de chirurgie, Université de Barcelone
Directrice Médicale, Fondation DTI
Conseil de l'ESOT

DONNEURS D'ORGANES DÉCÉDÉS DANS LE MONDE
2023
(PMP)



IRODaT

www.irodat.org

SPANISH MODEL

EUROPEAN MODEL

USA MODEL

* Data 2022

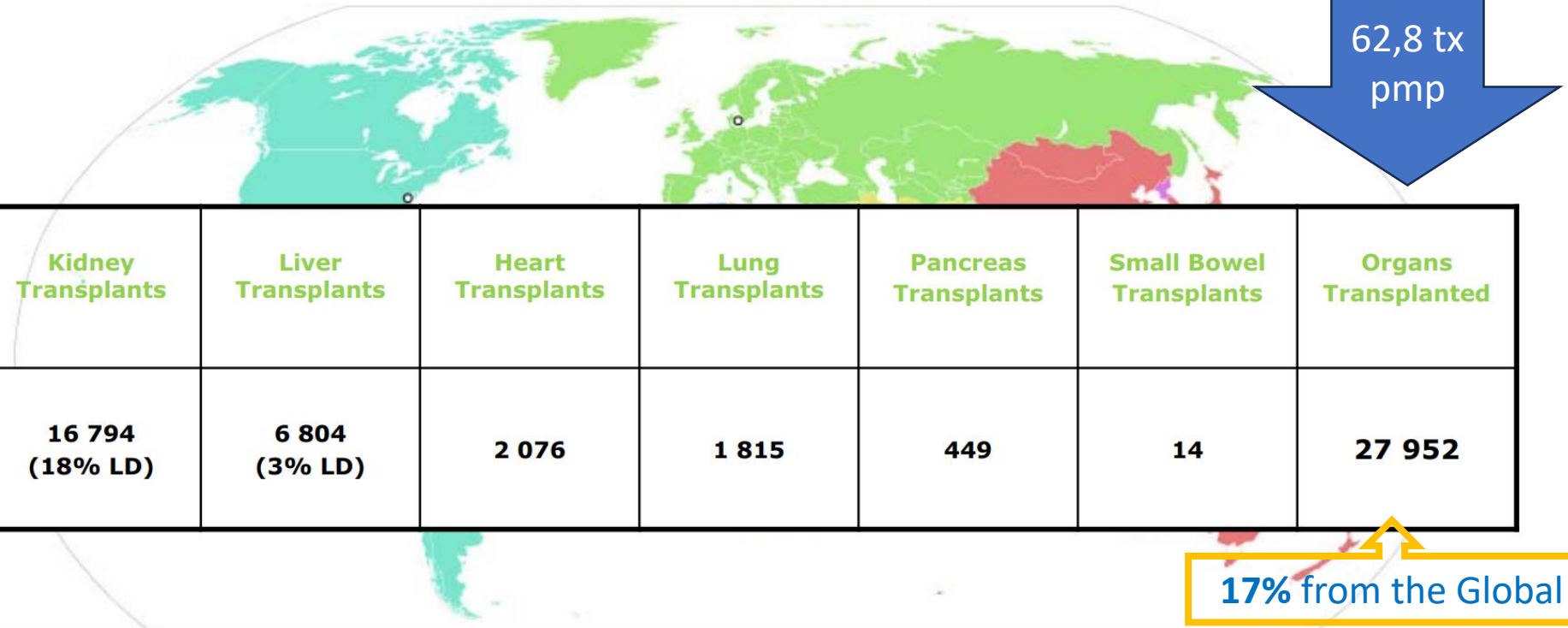
GODT
Global Observatory on Donation and Transplantation

WHO Collaborating Centre on Donation and Transplantation

GOBIERNO DE ESPAÑA · MINISTERIO DE SANIDAD · ONT ORGANIZACIÓN NACIONAL DE TRASPLANTES

TPM | DTI Donation & Transplantation Institute

EUROPEAN UNION DATA



62,8 tx pmp

Kidney Transplants	Liver Transplants	Heart Transplants	Lung Transplants	Pancreas Transplants	Small Bowel Transplants	Organs Transplanted
16 794 (18% LD)	6 804 (3% LD)	2 076	1 815	449	14	27 952

17% from the Global

9 305 ACTUAL DECEASED ORGAN DONORS *(7 551 DBD and 1 754 DCD)*

20,9 dx pmp

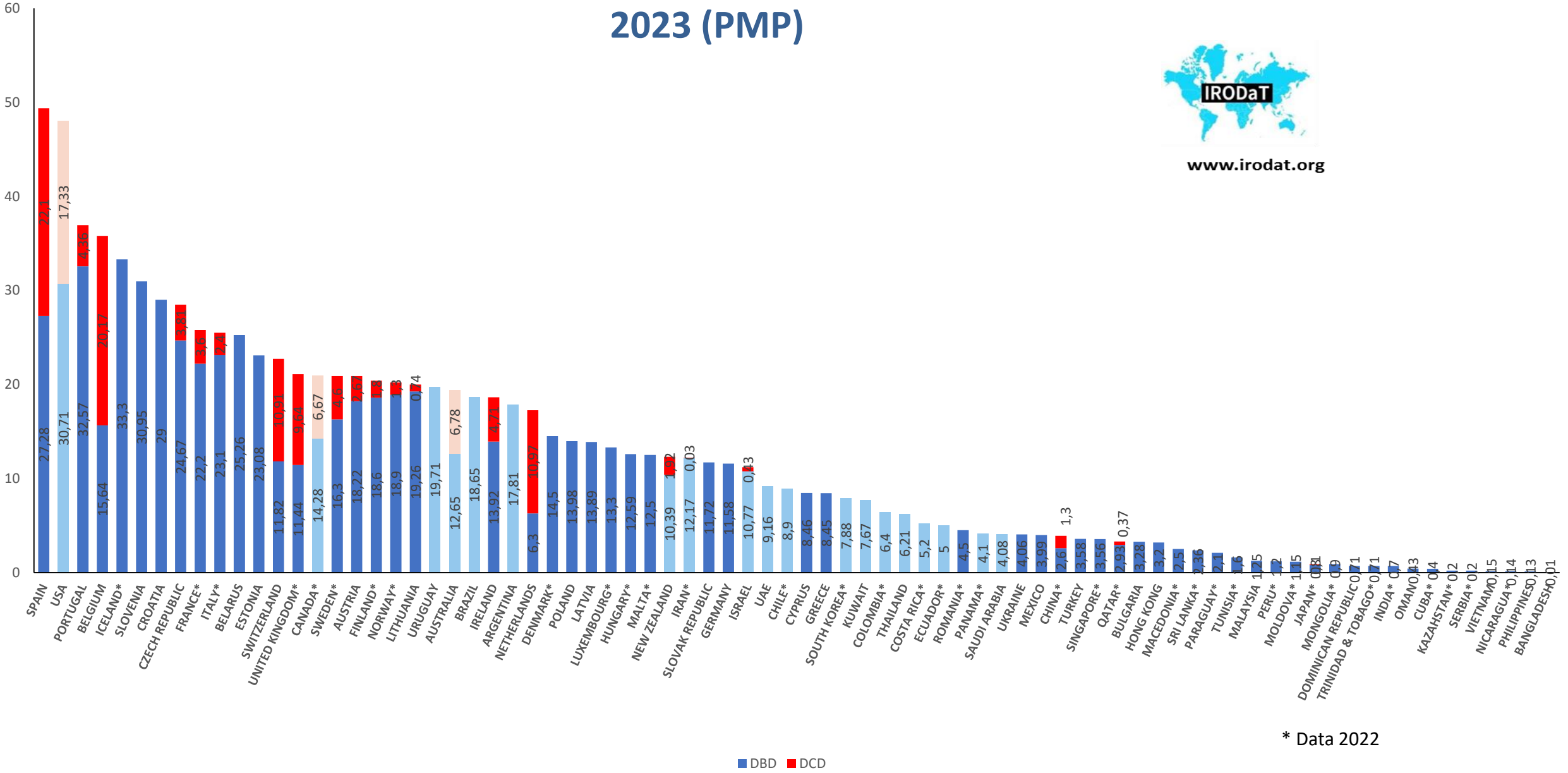
22% from the Global

18,8%

2022 data

N= 27 COUNTRIES (445.0 million inhabitants)

DONNEURS DÉCÉDÉS DBD ET DCD DANS LE MONDE ENTIER 2023 (PMP)

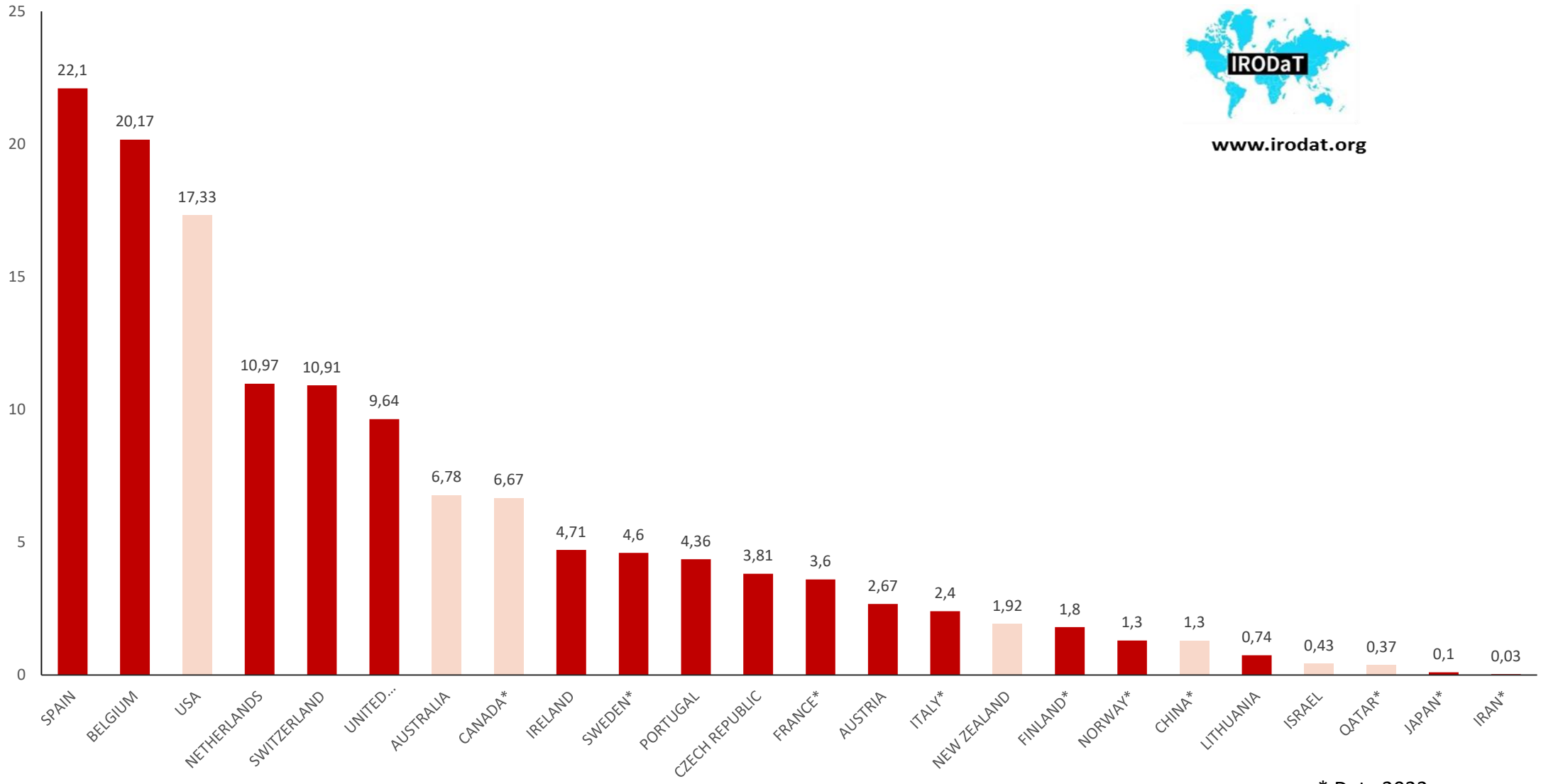


IRODaT

www.irodat.org

* Data 2022

DONNEURS MONDIAUX DE DCD 2023 (PMP)



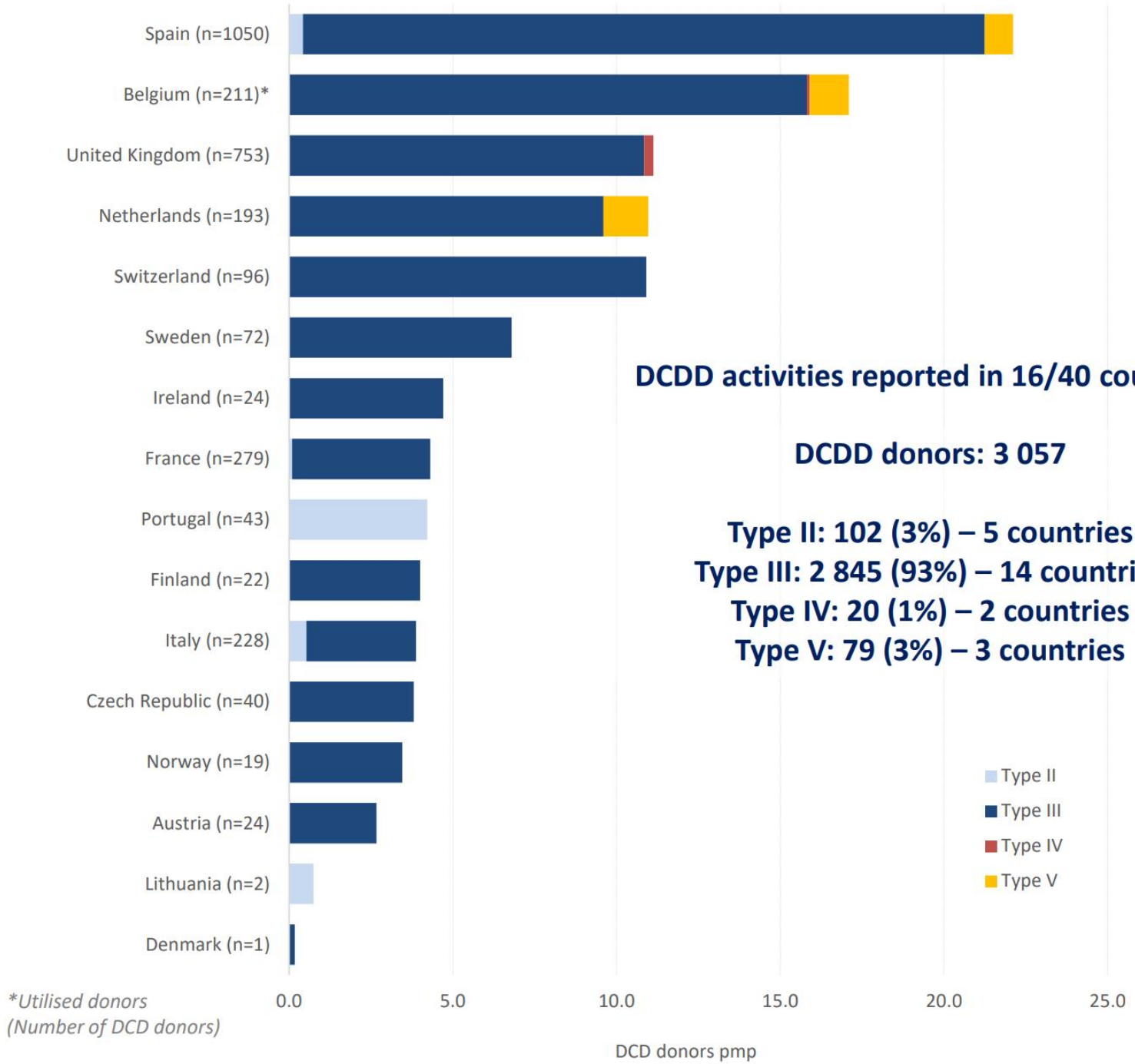
IRODaT

www.irodat.org

* Data 2022

DCD IN THE COUNCIL OF EUROPE BY DONOR TYPE

YEAR 2023



*Utilised donors (Number of DCD donors)

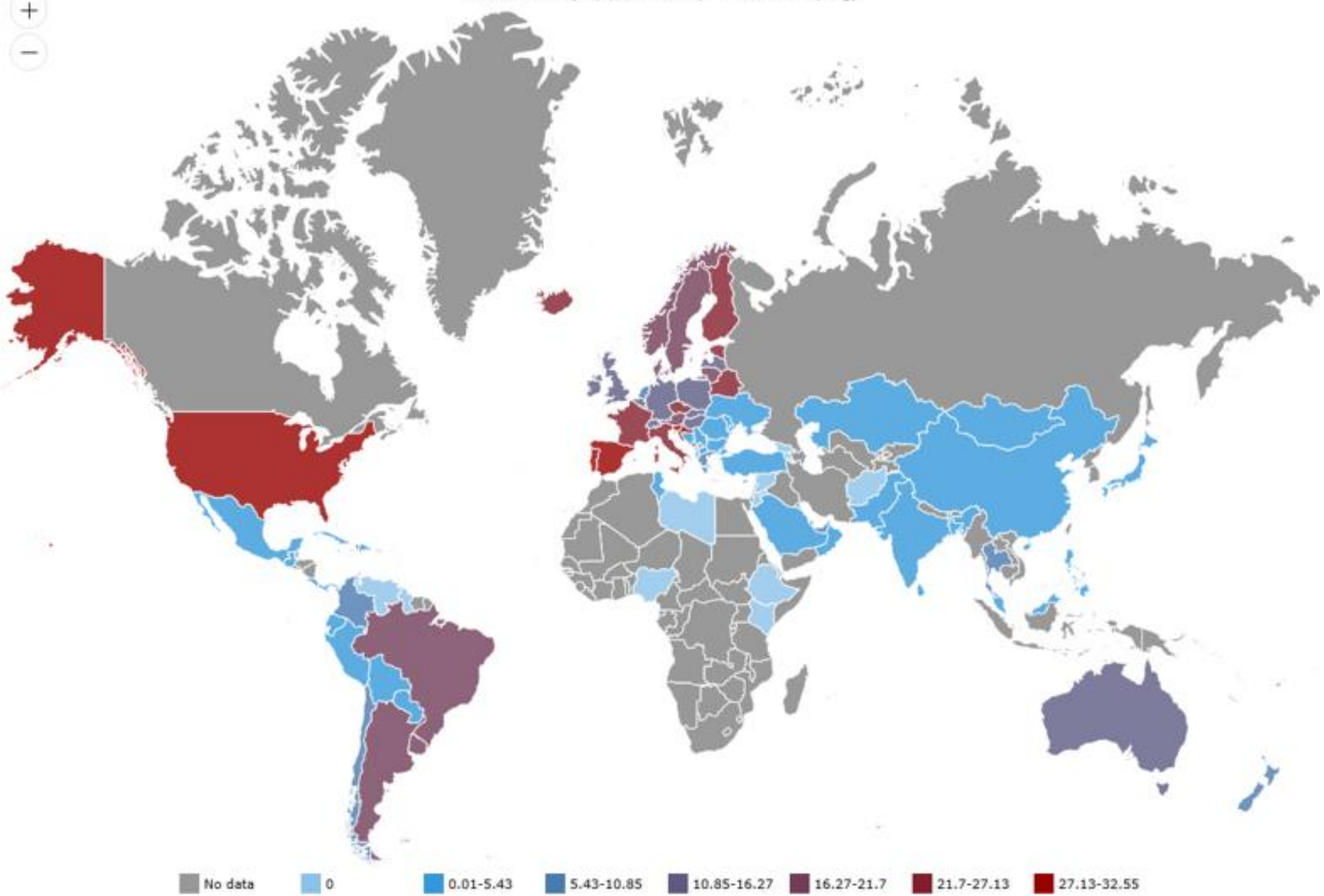
DCDD activities reported in 16/40 countries

DCDD donors: 3 057

Type II: 102 (3%) – 5 countries
Type III: 2 845 (93%) – 14 countries
Type IV: 20 (1%) – 2 countries
Type V: 79 (3%) – 3 countries

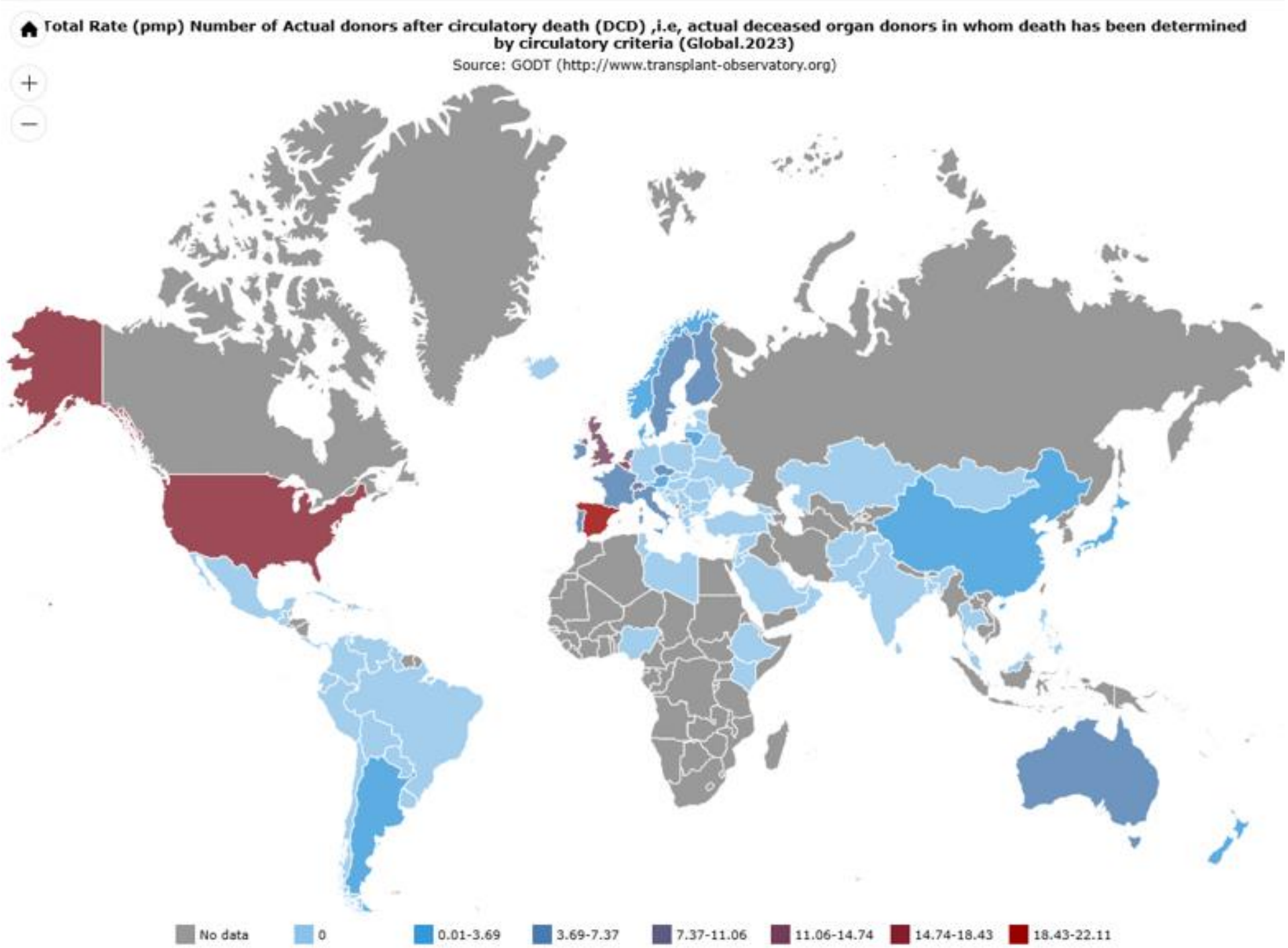
Total Rate (pmp) Number of Actual donors after brain death (DBD) ,i.e., actual deceased organ donors in whom death has been determined by neurological criteria (Global.2023)

Source: GODT (http://www.transplant-observatory.org)



TPM | DTI Donation & Transplantation Institute

GODT Global Observatory on Donation and Transplantation


Total Rate (pmp) Number of Actual donors after circulatory death (DCD) ,i.e, actual deceased organ donors in whom death has been determined by circulatory criteria (Global.2023)
Source: GODT (http://www.transplant-observatory.org)
No data
0
0.01-3.69
3.69-7.37
7.37-11.06
11.06-14.74
14.74-18.43
18.43-22.11

Categories of Non–Heart-Beating Donors

G. Kootstra, J.H.C. Daemen, and A.P.A. Oomen

Transplantation Proceedings, Vol 27, No 5 (October), 1995: pp 2893–2894

Table 1. The Maastricht Categories of NHB Donors

Category	Description
1	Dead on arrival
2	Unsuccessful resuscitation
3	Awaiting cardiac arrest
4	Cardiac arrest while brain dead

"1. The fact that NHBD organs have to be considered for transplantation is a direct result of the shortage of donor organs in view of the fact that the waiting list continues to increase. The use of NHBD organs can be valuable way to enlarge the number of organs for transplantation.
2. Only sparse data are available on the potential number of NHBDs and the cost of the procedure. More information should be collected to evaluate the efficiency of the procedure.
3. The concept of NHBD is evolving. Therefore, it is important to show that the results are good. Inclusion of NHBD data in registries is necessary.
4. For flush out and preservation methods, one should use solutions that are state of the art. Machine perfusion for kidneys should be considered.
5. No NHBD program should be started without a written protocol approved by the local medical ethical committee.
6. For better understanding and consistency, future reports on analysis concerning procurement and transplantation of NHBD organs should refer to the "Maastricht Categories".

I	*dead on arrival*
II	*unsuccessful resuscitation*
III	*awaiting cardiac arrest*
IV	*cardiac arrest in a brain-dead donor*

7. Category II and III NHBD procedure should only be started 10 minutes after cessation of cardiac massage and artificial ventilation to ensure the "dead-donor rule".
8. Warm ischemia time in NHBDs should be counted from the moment of cardiac arrest until the start of hypothermic flush out, irrespective of the period of cardiopulmonary resuscitation.
9. Better methods for viability testing of NHBD organs should be developed.
10. As in HBD procedures, the diagnosis of death in a NHBD has to me made by (a) physician (s) independent of the procurement team.
11. Public education and openness concerning NHBD are mandatory to keep public trust and to prevent backfiring on the HBD programs.
12. Opting-out or presumed consent systems allow placement of a preservation device before contact with the family. In countries with opting-in legislation, legal approval for placement of such devices should be sought."

Catégories Maastricht

CATEGORY	TYPE OF DCD	DESCRIPTION	
I	N/A	Found dead. -IA: out-of-hospital -IB: in-hospital	Unexpected cardiac arrest with no attempt at resuscitation Can donate tissues (not suitable as organ donor
II	UNCONTROLLED	Witnessed cardiac arrest. -IIA: out-of-hospital -IIB: in-hospital	Unexpected cardiac arrest with unsuccessful resuscitation
III	CONTROLLED	Withdrawal of life-sustaining therapy	Primary mode of DCD (only in some countries)
IV	UNCONTROLLED/CONTROLLED	Cardiac arrest after brain death determination	Unexpected cardiac arrest in a brain-dead patient scheduled for donation

Kootstra G. Transplant Proc 1995; 27: 2983

MAJOR CHALLENGES

AA1 What are the **main issues/challenges with the implementation/improvement of a DCD programme** in your country? Rate each category from 1 to 4 (1= no problem, 4 = major challenge)? (more than one option can be rated the same grade)

Country	Legislative issues	Capacity issues	Technical cl. issues	Financial issues	Ethical issues	Religious issues	Analysis not yet performed
Austria	2	3	1	1	2	2	1
Belgium	1	1	1	1	2	2	1
Croatia	4	3	3	3	4	2	3
Cyprus	4	1	4	4	4	4	4
Czechia	2	1	1	3	1	1	2
Estonia	2	4	3	4	2	1	1
Finland	2	4	2	4	2	2	2
Greece	3	2	4	3	2	1	4
Hungary	4	3	2	4	4	2	2
Italy	4	2	3	2	2	1	1
Netherlands	1	2	1	1	1	1	1
Poland	2	3	3	2	3	1	4
Moldova	3	4	4	4	3	2	1
Romania	4	2	2	2	3	3	4
Serbia	3	1	1	2	3	3	
Slovak Republ	4	2	1	1	4	4	1
Slovenia	3	3	2	2	3	1	2
Spain	1	2	2	2	2	2	1
Sweden	1	4	4	4	2	1	2

Legislative Issues 53%

Challenge	"3"	"4"	"3 + 4"
Legislative issues	4	6	10 / 53%
Capacity	5	4	9 / 47%
Financial	3	6	9 / 47%
Technical	4	4	8 / 42%
Ethical	4	4	8 / 42%
Religious	2	2	4 / 21%
Analysis not performed	1	4	5 / 26%

DAAC M2

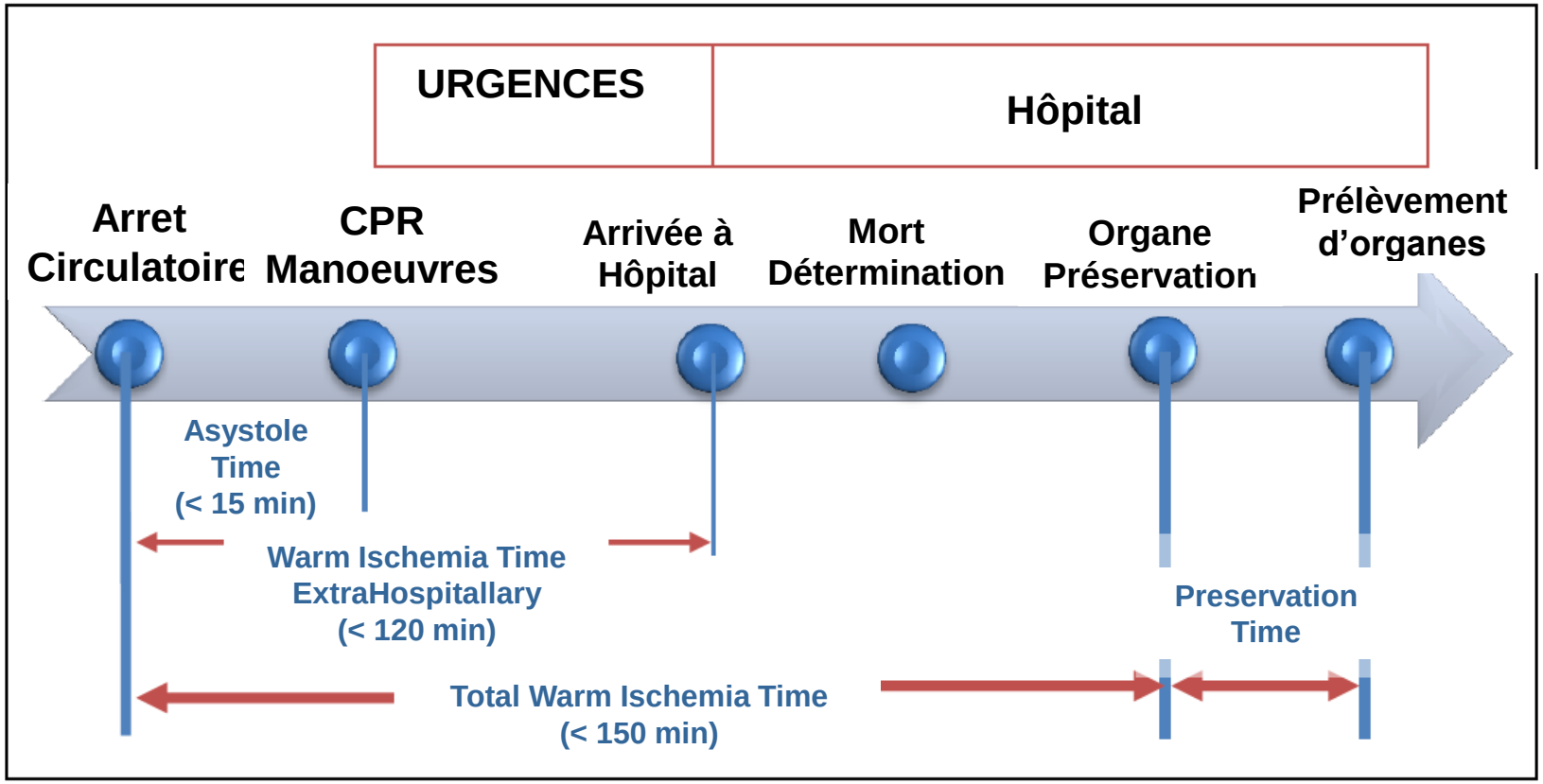
SEM — Possible Donneur

SEM — RCP prolongée

H — Déclaration de décès

H — Système de perfusion

DDAC M2



Chronology of the Uncontrolled DCD (uDCD) process

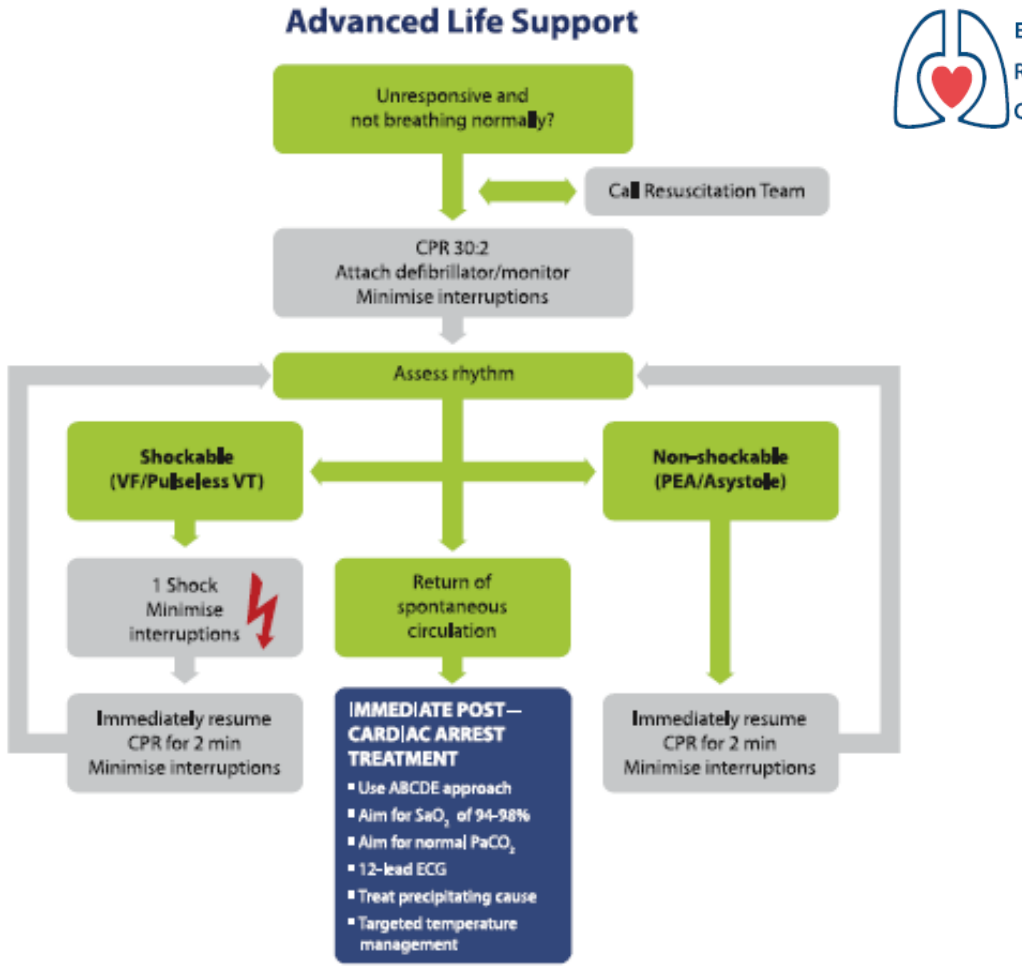


Fig. 3.2. Advanced life support algorithm. CPR – cardiopulmonary resuscitation; VF/Pulseless VT – ventricular fibrillation/pulseless ventricular tachycardia; PEA – pulseless electrical activity; ABCDE – Airway, Breathing Circulation, Disability, Exposure; SaO_2 – oxygen saturation; $PaCO_2$ – partial pressure carbon dioxide in arterial blood; ECG – electrocardiogram.

Resuscitation 95 (2015) 100–147

Contents lists available at ScienceDirect

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation

European Resuscitation Council Guidelines for Resuscitation 2015 Section 3. Adult advanced life support

Jasmeet Soar[a,*], Jerry P. Nolan[b,c], Bernd W. Böttiger[d], Gavin D. Perkins[e,f], Carsten Lott[g], Pierre Carli[h], Tommaso Pellis[i], Claudio Sandroni[j], Markus B. Skrifvars[k], Gary B. Smith[l], Kjetil Sunde[m,n], Charles D. Deakin[o], on behalf of the Adult advanced life support section Collaborators[1]

La DAAC M2 est considérée quand :
Asystole maintenue pendant plus de 20 min malgré la RCP, en l'absence de cause réversible

Research Article
Transplantation

JOURNAL
OF HEPATOLOGY

Normothermic regional perfusion *vs.* super-rapid recovery in controlled donation after circulatory death liver transplantation

Amelia J. Hessheimer, Elisabeth Coll, Ferrán Torres, ..., Beatriz Domínguez-Gil, Víctor Sánchez Turrión, Constantino Fondevila

Highlights

- In cDCD livers, postmortem NRP reduces biliary complications, in particular ITBL.
- Postmortem NRP helps improve cDCD liver graft survival.
- Use of postmortem NRP facilitates successful transplantation of older cDCD livers.

INCLUSION – CRITÈRES D'EXCLUSION

Âge : 14 (40kg) et 60 ans

Période ischémique chaude absoulte ≤ 15-30 minutes (AC – Début du SVA)

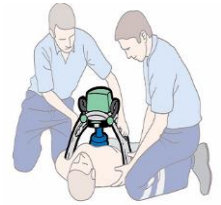
Période ischémique chaude totale < 150 minutes (AC – Perfusion organes)

Instabilité hémodynamique avant l'AC < 90 minutes (TAS < 60mmHg)

Absence de :

- **Criminalité ou mort violente non élucidée**
- **Impossibilité technique:**
  - Nécessité de l'équipe d'urgence
  - Inopérativité de l'hôpital d'accueil
  - Incapacité à assurer une ventilation et des manœuvres de massage adéquates
- **Durée de la SVA hors hôpital > 90 minutes**
- **Contre-indications absolues au don**
  - Antécédents réels ou passés de néoplasie (exceptions)
  - Positivité ou facteurs de risque pour le VIH (y compris VHC, VHB)
  - Infection systémique active non contrôlée ou non traitée

RÉANIMATION AVANCÉE HORS HÔPITAL ET DAAC M2



CODE 3.03

/Salut

- Coordination des greffes
- Urgence

ADVANCED LIFE SUPPORT

EUROPEAN RESUSCITATION COUNCIL GUIDELINES 2021

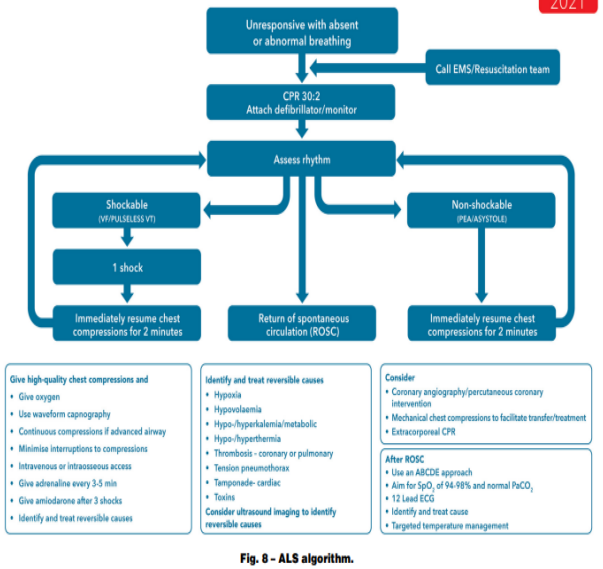
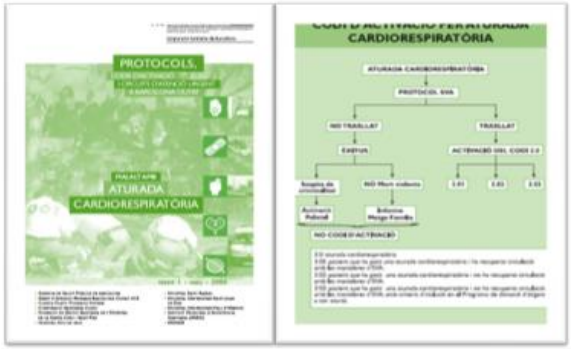


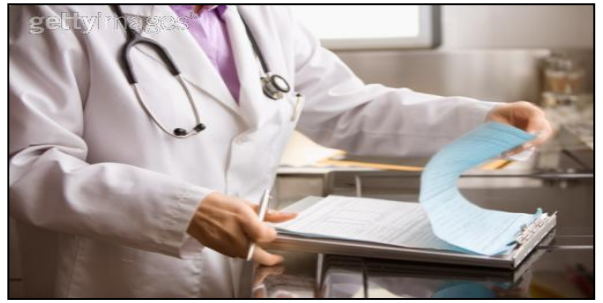
Fig. 8 – ALS algorithm.

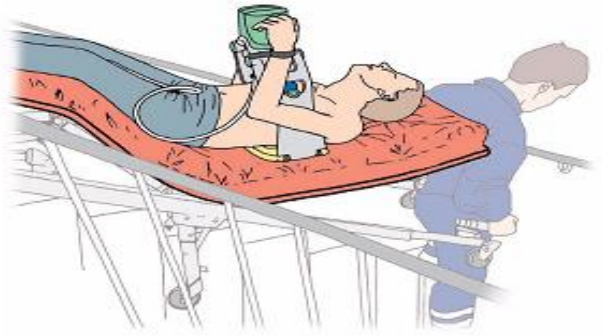
Le M2 est considéré comme :
Asystole maintenue >20 min malgré l'AVS, en l'absence de cause réversible



/Salut
Organització Catalana de Trasplantaments

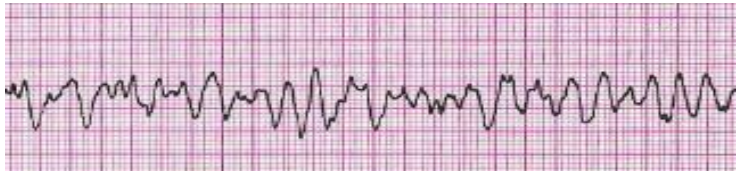
ÉVALUATION INITIALE DU POTENTIEL M2

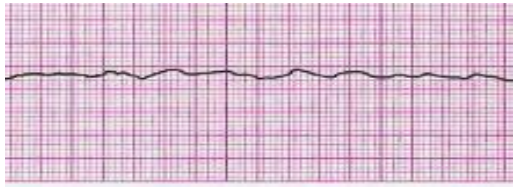




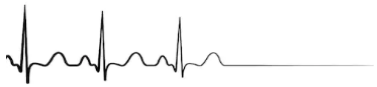
- **RCP adéquate** (oxygénation correcte)
- **2 Accès veineux**
- Aucun médicament n'a été identifié comme donneur possible, à l'**exception du pantoprazole**
- Pas de suppression des manœuvres de RCP **plus de 30 secondes** pendant le transport

SVA ET DIAGNOSTIC DE LA MORT

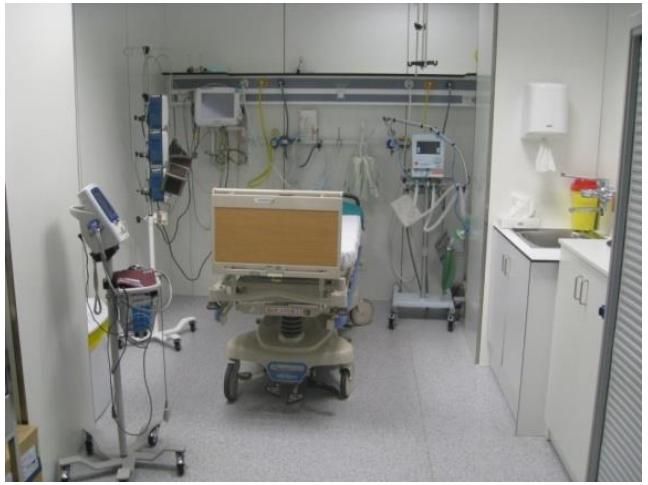


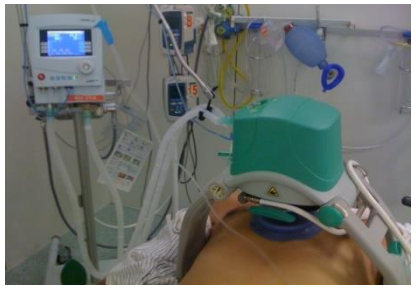


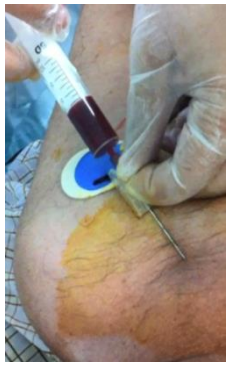
CA Phone
(TEAM Nº1)

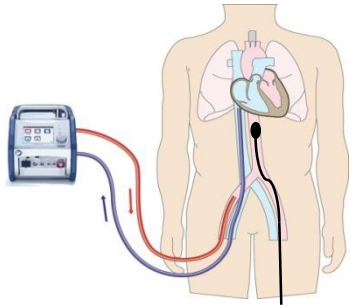


PRÉSERVATION DES ORGANES

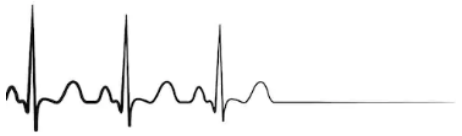








CERTIFICATION DU DÉCÈS SELON LES CRITÈRES CIRCULATOIRES



Détermination de la mort circulatoire (RD 1723/2012)

3. Diagnostic de la mort par des critères circulatoires et respiratoires.

1. Diagnostic

a) Le diagnostic de décès par des critères circulatoires et respiratoires sera basé sur la vérification sans équivoque de **l'absence de circulation et de respiration spontanées**, toutes deux pendant une période d'au moins **5 minutes**

…

c) L'absence de circulation sera démontrée par la présence d'au moins un des signes suivants :

- **Asystole sur un tracé électrocardiographique continu**
- **Absence de flux sanguin dans la surveillance invasive de la pression artérielle**
- **Absence de flux aortique sur un échocardiogramme**

Si les progrès scientifiques et techniques dans le domaine le permettent, tout autre test instrumental certifiant une garantie diagnostique absolue peut être utilisé.

NO TOUCH PERIOD

Table 1. Selected features of the regulatory framework and the procedures applied to donation after circulatory death in member states of the Council of Europe.

	Year the program started uDCD/cDCD	National legislation (legally binding)	National guidelines (non-legally binding)	No-touch period (min)	Options to assess the absence of circulation for the determination of death
Austria	1990s	No	Yes	10	EC, IBPM
Belgium	2006/2005	Yes	Yes	5	ECG, IBPM
Czech Republic	2002/2015	Yes	Yes	5	ECG, EC
France	2007/2015	Yes	Yes	5	ECG, IBPM
Ireland	–/2011	No	Yes	10	ECG, IBPM
Israel	2014/–	Yes	Yes	5	ECG
Italy	2007/2015	Yes	Yes	20	ECG
Latvia	1973/–	Yes	Yes	5	ECG
Lithuania	2016/–	Yes	No	5	ECG, EC, IBPM
The Netherlands	1980s	No	Yes	5	IBPM
Norway	–/2010	No	Yes	5	IBPM*
Poland	2015/–	Yes	No	5	ECG
Portugal	2016/–	Yes	Yes	10	ECG, IBPM
Russia	1967/–	Yes	Yes	30	ECG
Spain	1980s/2009	Yes	Yes	5	ECG, EC, IBPM
Sweden	–/2018†	No	Yes	5	IBMP
Switzerland	1985‡/1985‡	No	Yes	5§	EC
United Kingdom	2013–2016**/1985	Yes	Yes	5	ECG, IBPM

cDCD, controlled donation after circulatory death; EC, echocardiography; ECG, electrocardiogram; IBPM, invasive blood pressure monitoring; uDCD, uncontrolled donation after circulatory death.

*No national guidance. The responsible physician decides, but IBPM is normally used.

†Pilot program developed between February 2018 and January 2019, with 10 cDCD utilized donors. The program is currently under evaluation to become a national established program.

‡Stopped due to unclear legal situation in 2007 and re-launched in 2011.

§After the no-touch period, the permanent loss of cerebral function must be confirmed by two medical specialists.

**uDCD program ceased in 2016.

Transpl Int. 2020 Jan;33(1):76-88.

Transplant International

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ORIGINAL ARTICLE

Current situation of donation after circulatory death in European countries

Beatriz Domínguez-Gil,[1] Bernadette Haase-Kromwijk,[2] Hendrik Van Leiden,[2] James Neuberger,[3] Leen Coene,[4] Philippe Morel,[5] Antoine Corinne,[6] Ferdinand Muehlbacher,[7] Pavel Brezovsky,[8] Alessandro Nanni Costa,[9] Rafail Rozental[10] and Rafael Matesanz[1] on behalf of the European Committee (Partial Agreement) on Organ Transplantation. Council of Europe (CD-P-TO)

1 Organización Nacional de Trasplantes, Madrid, Spain
2 Dutch Transplantation Foundation, Leiden, The Netherlands
3 NHS Blood and Transplant, Bristol, UK
4 Coördinatie ''Organen, Embryo's, Bio-Ethiek'', Brussels, Belgium
5 Hopital Cantonal Universitaire, Geneve, Switzerland
6 Agence de la Biomédecine, Paris, France
7 Leiter der Klinischen abteilung für Transplantationschirurgie, Wien, Austria
8 Coordination Center for Transplantation, Prague, Czech Republic
9 National Transplant Centre, Rome, Italy
10 Latvian Transplantation Center of Paul Stradins Clinical Hospital, Riga, Latvia

Transplant International © 2011 European Society for Organ Transplantation **24** (2011) 676–686

Table 1. General characteristics of donation after circulatory death (DCD) programs existing in Member States of the Council of Europe.

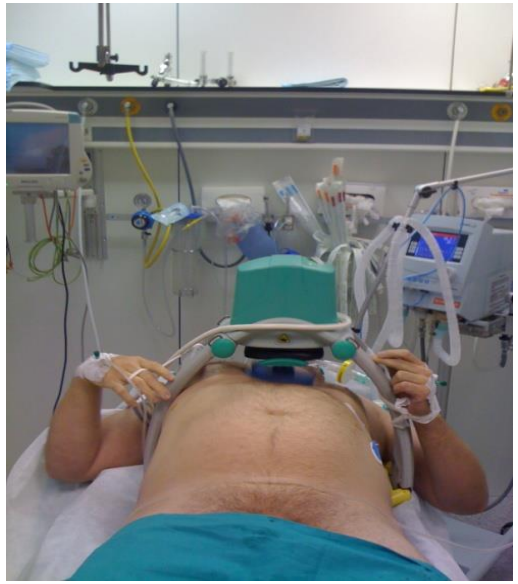
Donation after circulatory death in the council of Europe

	No touch period (min)	Procurement protocol	Donation program	Allocation DCD organs
Austria	10	–	1 center	Local
Belgium	5	Super-rapid laparotomy and sternotomy with direct arterial cannulation	National	National
Czech Republic	10	DB	Centers	Special
France	5	ECMO, DB	Centers	Local
Italy	20	NECMO	National	Local
Latvia	15	DB	National	National
The Netherlands	5	Super-rapid laparotomy and sternotomy with direct arterial cannulation	National	National
Spain	5	ECMO, NECMO, DB	Centers	Local/special
Switzerland	10	–	Centers	Local
United Kingdom	5	Super-rapid laparotomy and sternotomy with direct arterial cannulation	National	Local

ECMO, extra corporeal membrane oxygenation; DB, double balloon; NECMO, normothermic extra corporeal membrane oxygenation; DCD, donation after circulatory death.

MANŒUVRES DE CONSERVATION

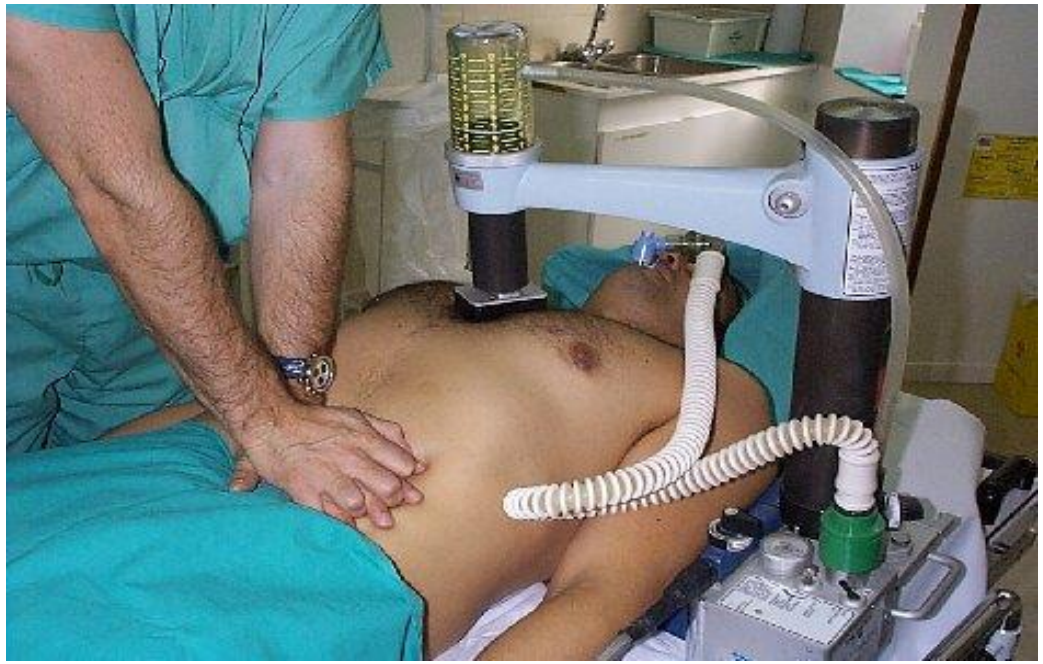
- **COMPRESION THORACIQUE**
- **VENTILATION MÉCANIQUE**
- **ACTIVATION DE L'ÉQUIPE DCD**

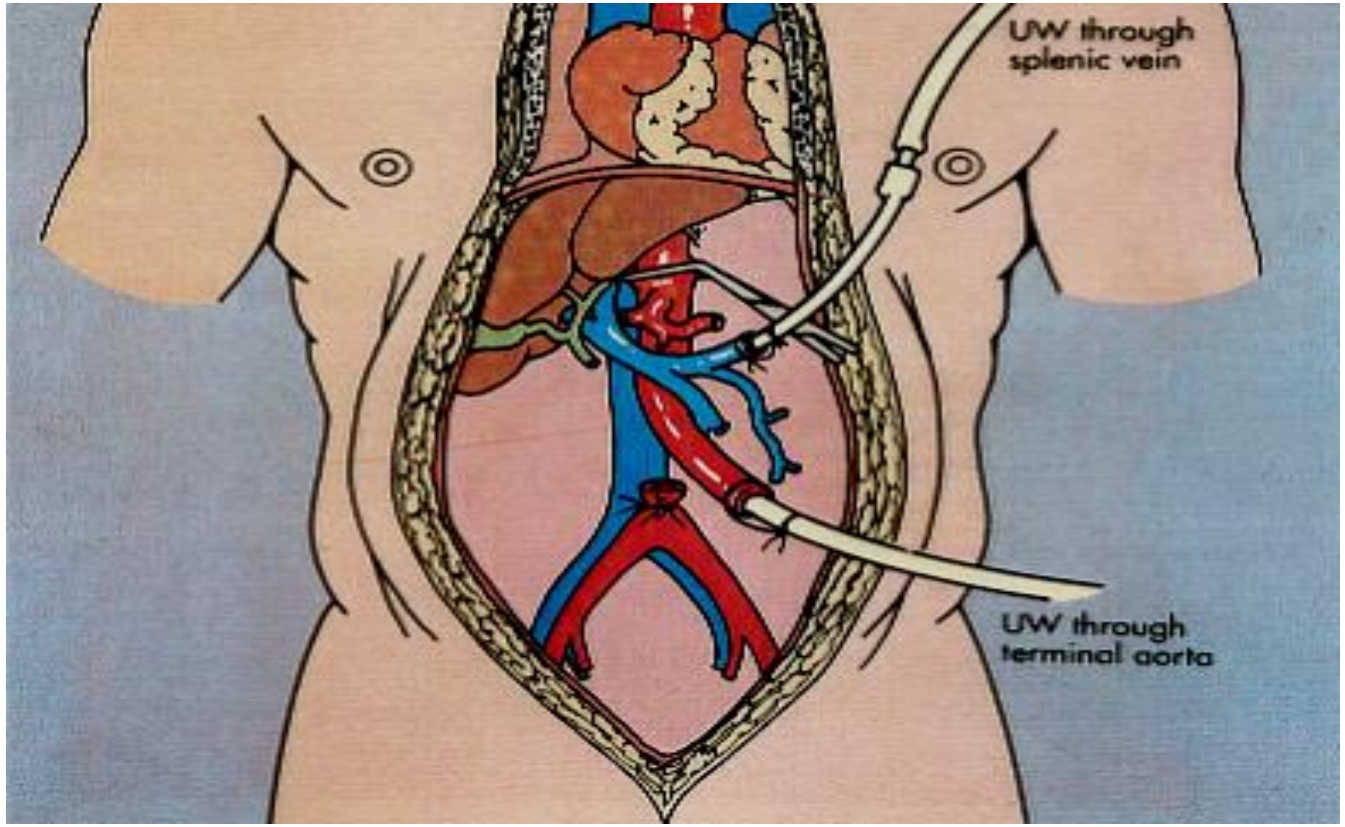


2 COORDINATEURS DE GREFFES (385748 / 385503)
1 PERFUSIONNISTE CARDIAQUE
2 CHIRURGIENS CARDIOVASCULAIRES
1 INFIRMIÈRE CHIR (382561)
1 INFIRMIÈRE AUX URGENCES
1 ANESTHÉSISTE (382562)

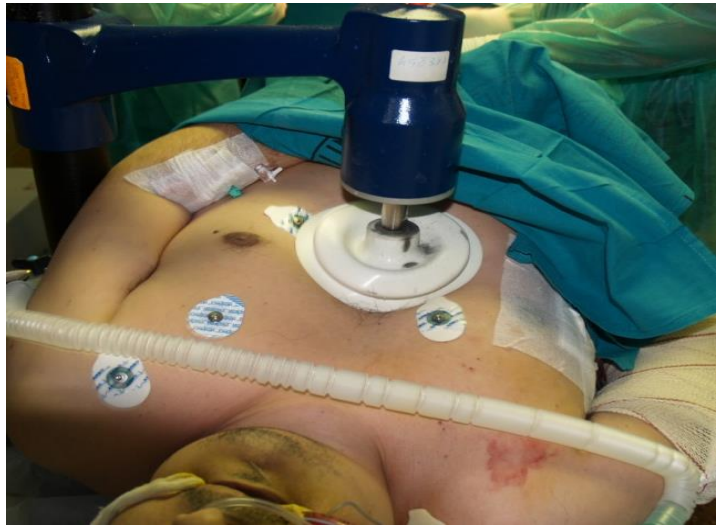
MÉTHODE DE CONSERVATION

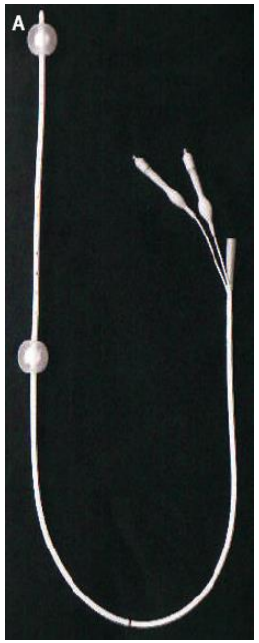
RÉCUPÉRATION ULTRA-RAPIDE
Avec perfusion directe in situ

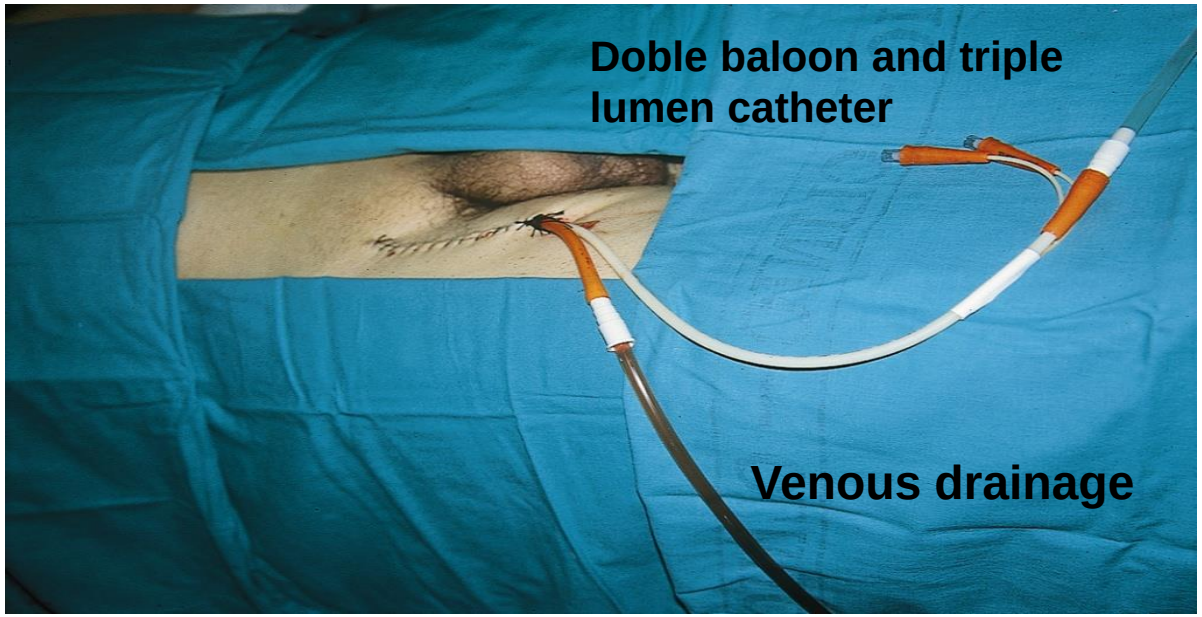


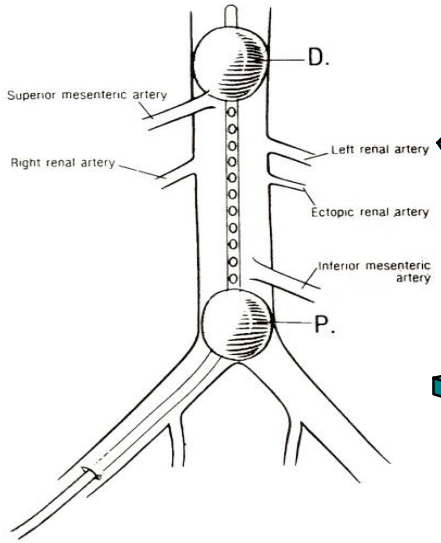


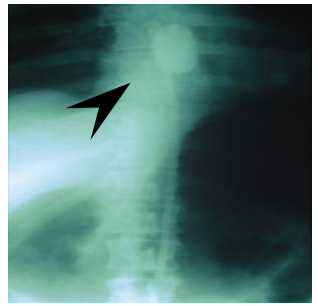
IN SITU PERFUSION
Avec ballon double et cathéter à triple lumière





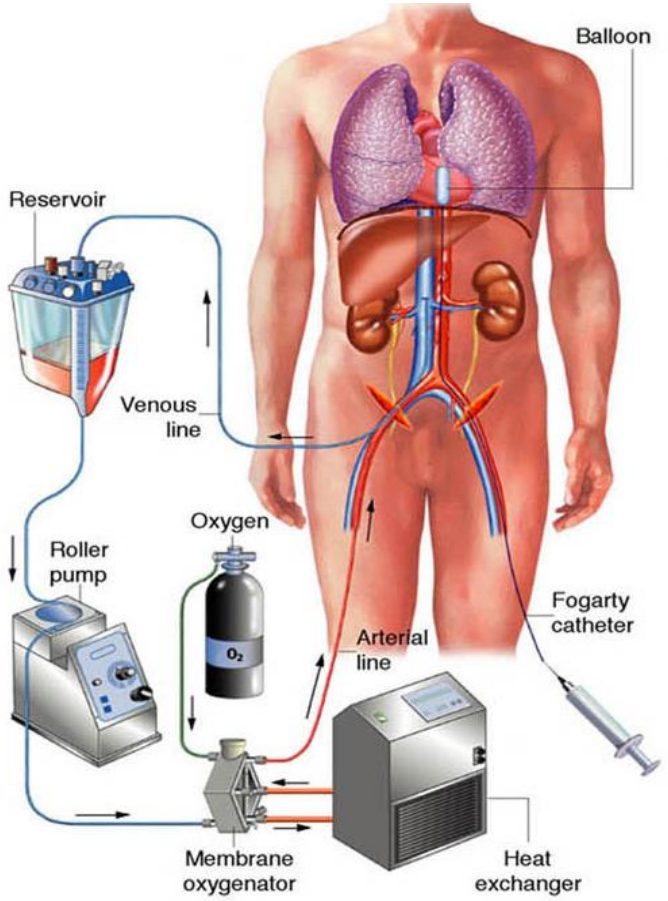


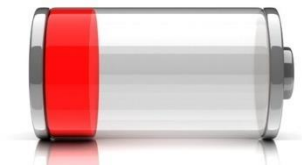


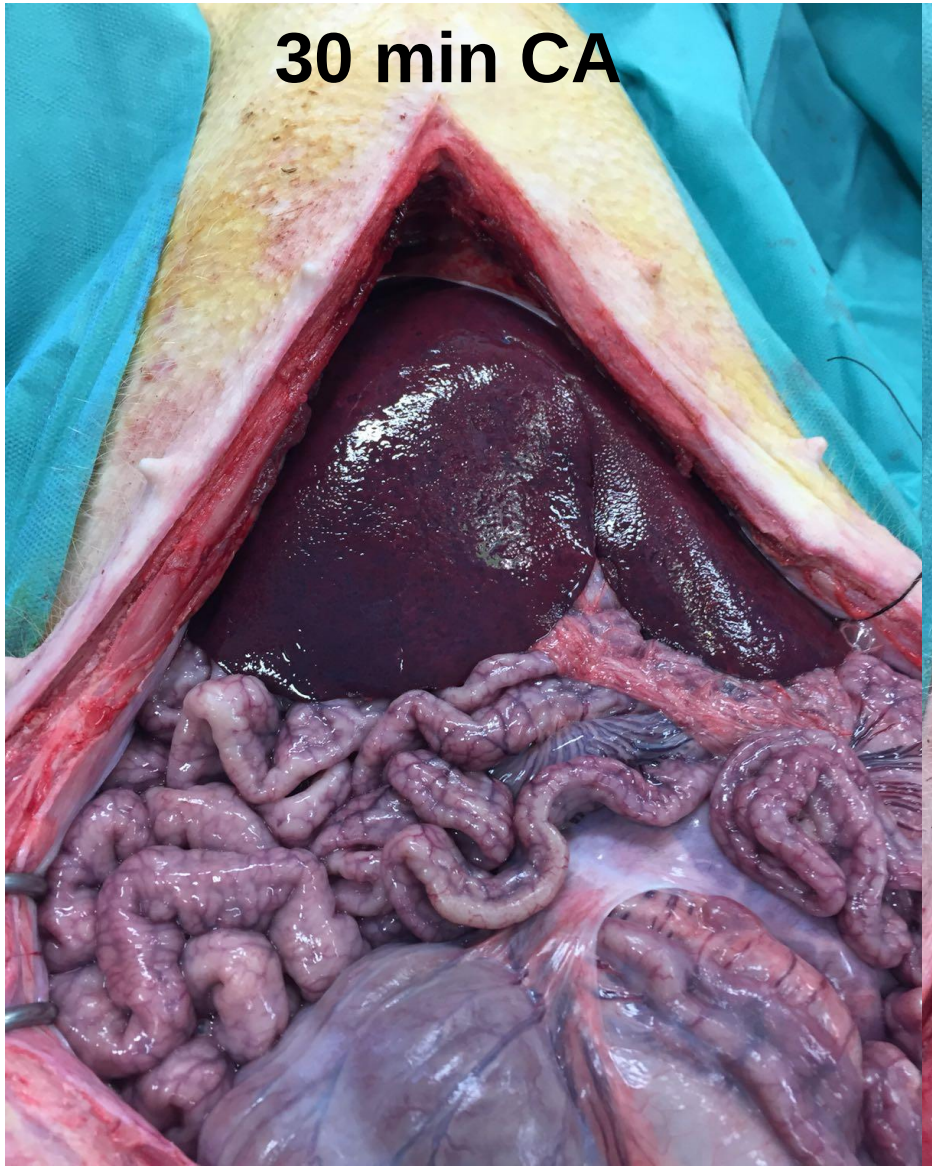


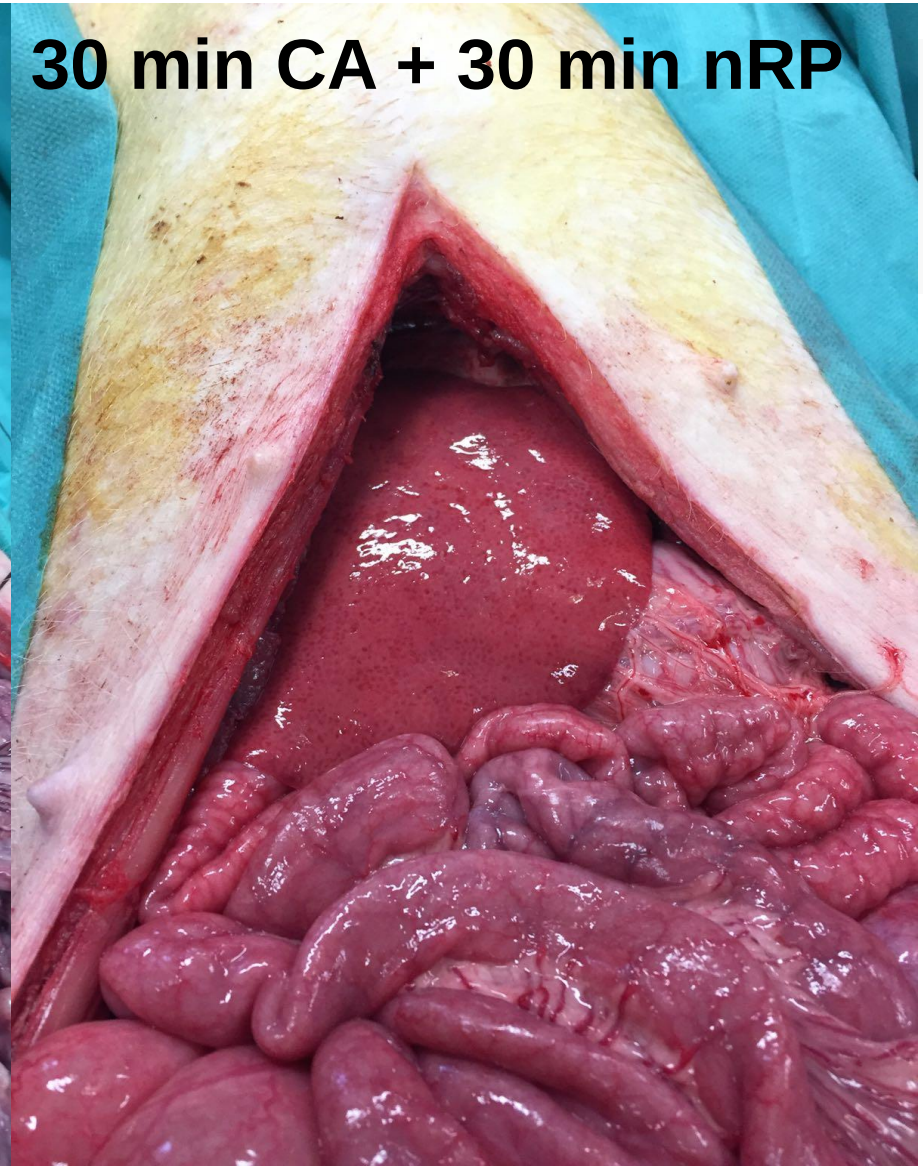
PRÉSERVATION RÉGIONALE NORMOTHERMIQUE OU HIPOTHERME (PRn oPRh)

- **Recirculation normothermique 1-4h (6h) avec entretien de la pompe > 1,2-1,7 L/m2**
- **Contrôle gazométrique et ionique continu (30 minutes)**
- **Contrôle biochimique hépatique et rénal**
- **Contrôle de l'hémogramme**
- **Réhéparinisation (1,5 mg/kg/90min)**

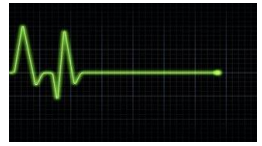




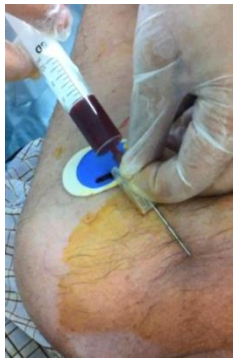

30 min CA

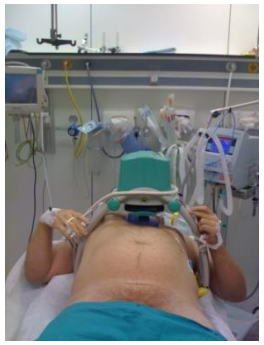

30 min CA + 30 min nRP

PROCÉDURE DAAC M2

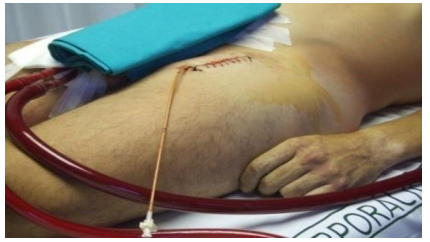


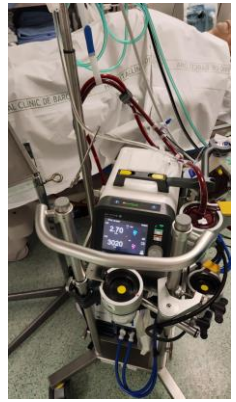
- **Diagnostic de décès par les médecins de médecine interne / anesthésistes**
- **COMPRESSION THORACIQUE ET VENTILATION MÉCANIQUE**
- **ACTIVATION DE L'ÉQUIPE DCD**
- **Obtention d'échantillons de sang**
  - Analyse biochimique
  - Échantillons judiciaires
  - Analyse immunologique

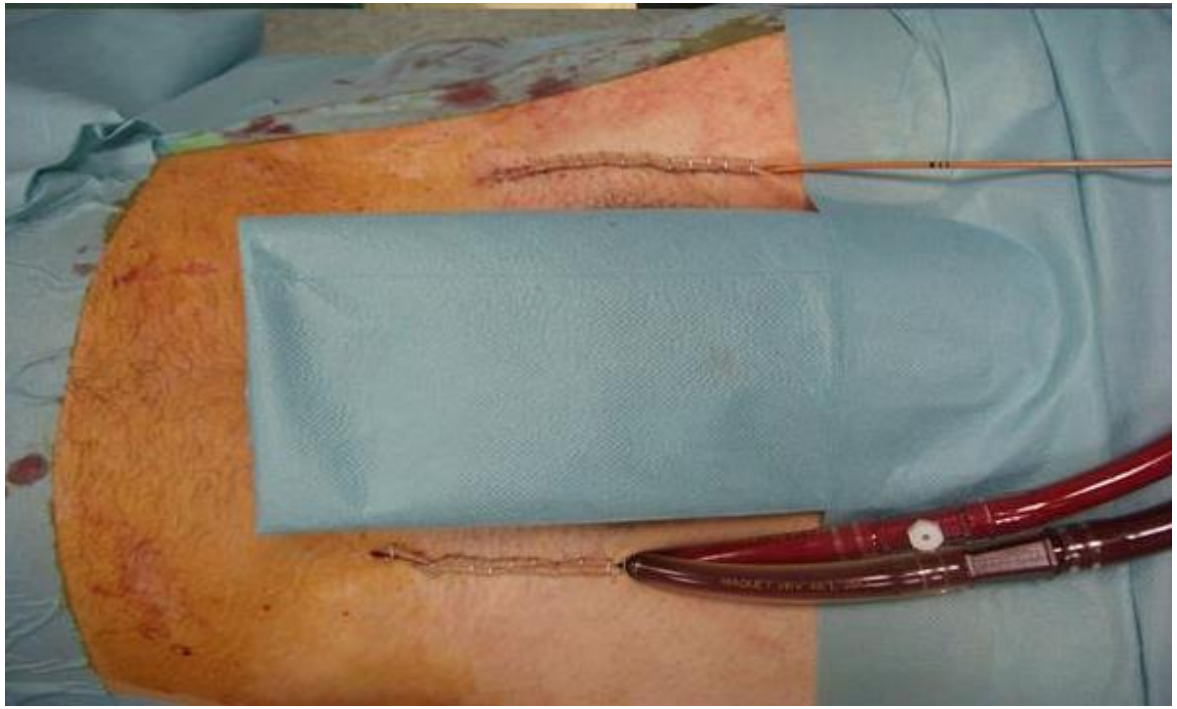


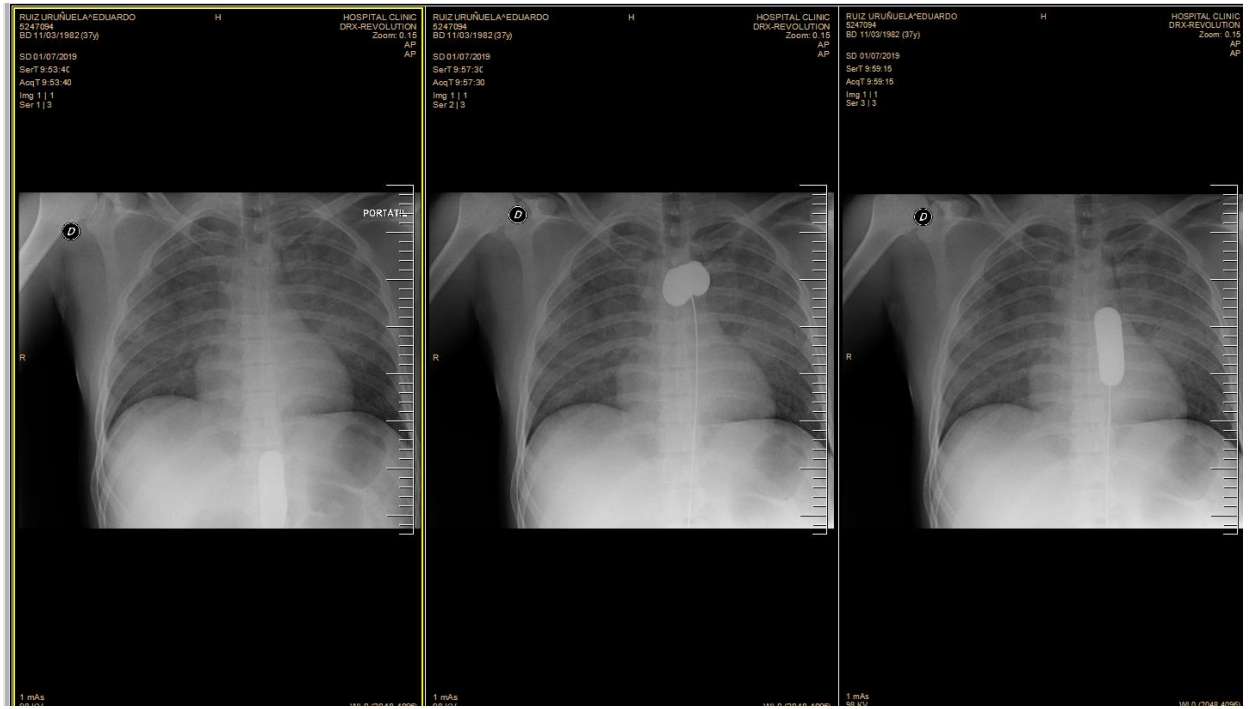


- **HÉPARINISATION (3 mg/kg)**
- **Préparation du donneur (enlever les vêtements, la sonde nasogastrique et urétrale, le rasage)**
- **Contact avec le tribunal (téléphone / fax)**
- **Canulation des vaisseaux fémoraux et connexion au circuit nRP (ECMO)**
- **Élimination de la compresion thoracique et de la ventilation M.**
- **Contrôle du ballon avec radiographie du thorax**








RUIZ URUÑUELA^EDUARDO
5247094
BD 11/03/1982 (37y)
HOSPITAL CLINIC
DRX-REVOLUTION
SD 01/07/2019
PORTATIL
RUIZ URUÑUELA^EDUARDO
5247094
BD 11/03/1982 (37y)
HOSPITAL CLINIC
DRX-REVOLUTION
SD 01/07/2019
RUIZ URUÑUELA^EDUARDO
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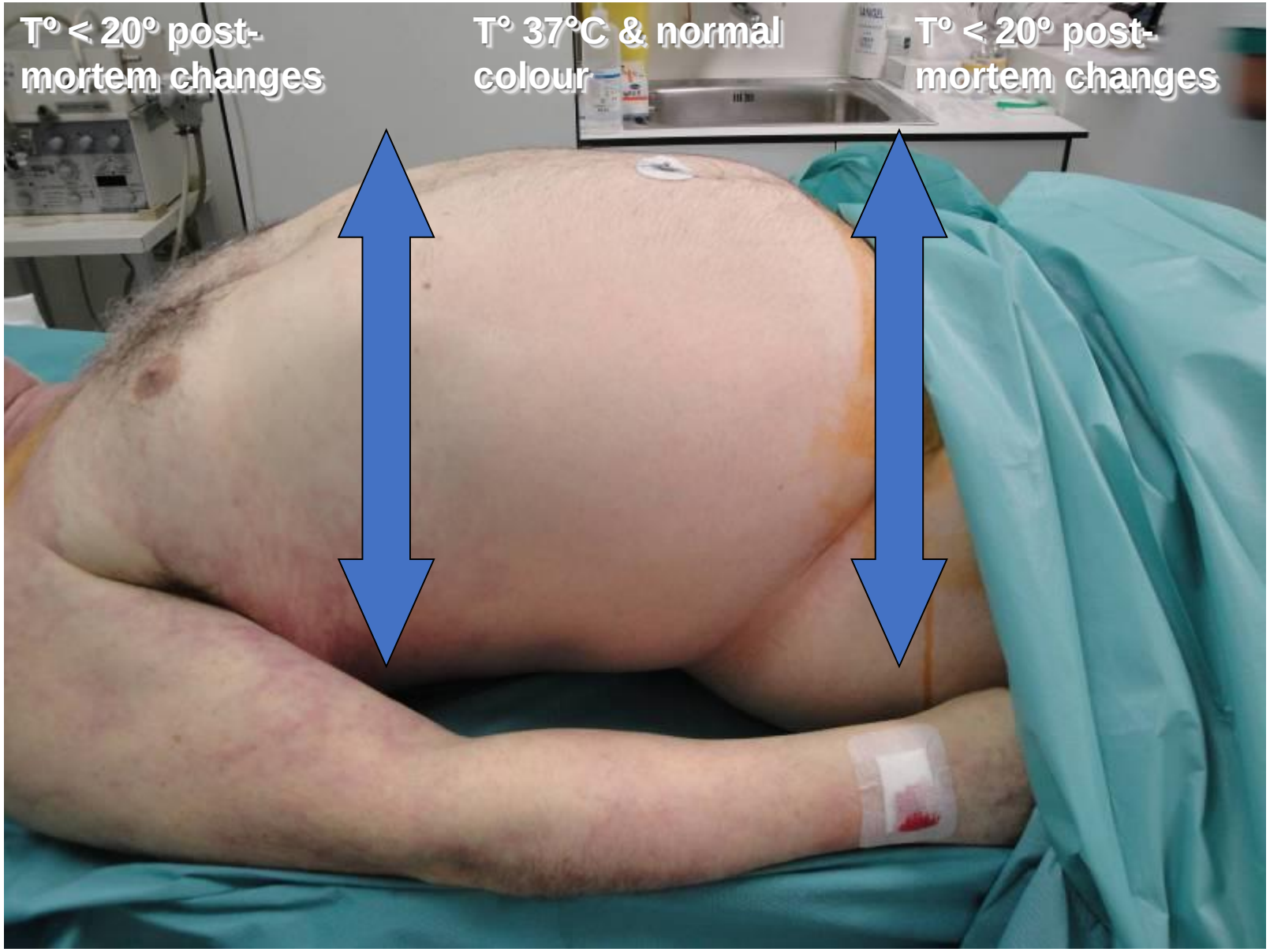
SD 01/07/2019

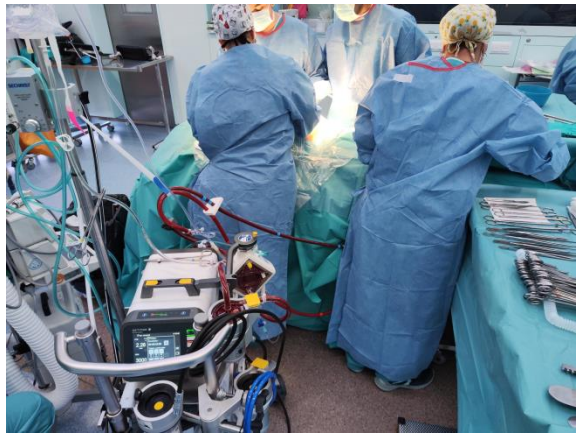

T° < 20° post-mortem changes
T° 37°C & normal colour
T° < 20° post-mortem changes

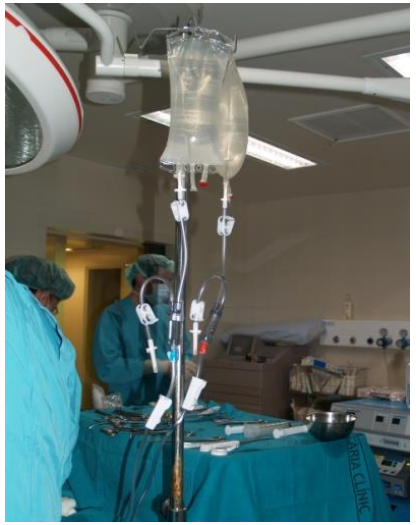
CONSENTEMENT & ORGANIZATION DU PRÉLÈVEMENT

- Consentement de la famille
- Consentement judiciaire

- Offre foie et rein aux équipes de transplantation
- Offre OCATT
- Équipe de rétablissement des soins infirmiers
- Immunologie
- Pathologie (autopsie, biopsie)

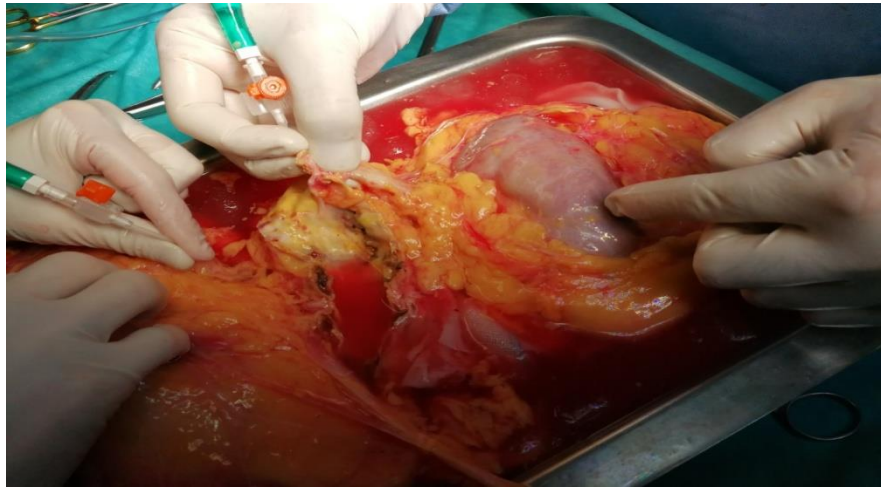
TRANSFERT AU BLOC OPÉRATOIRE ET PRÉLÈVEMENT

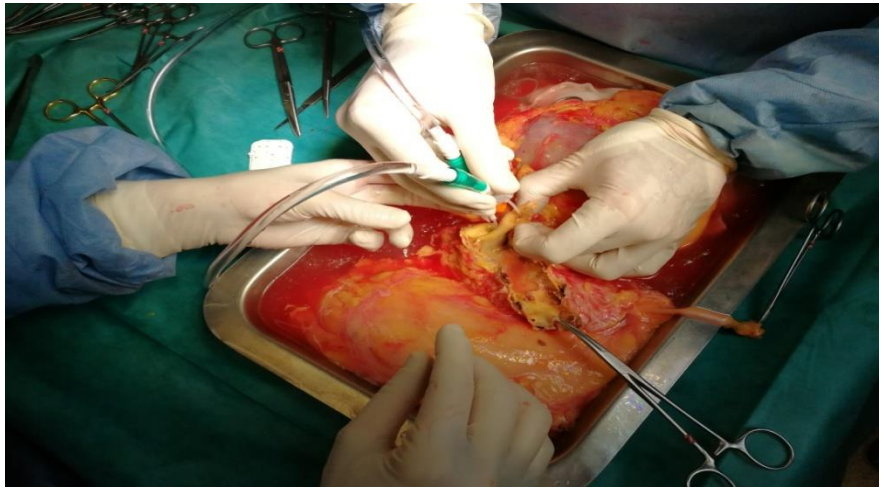


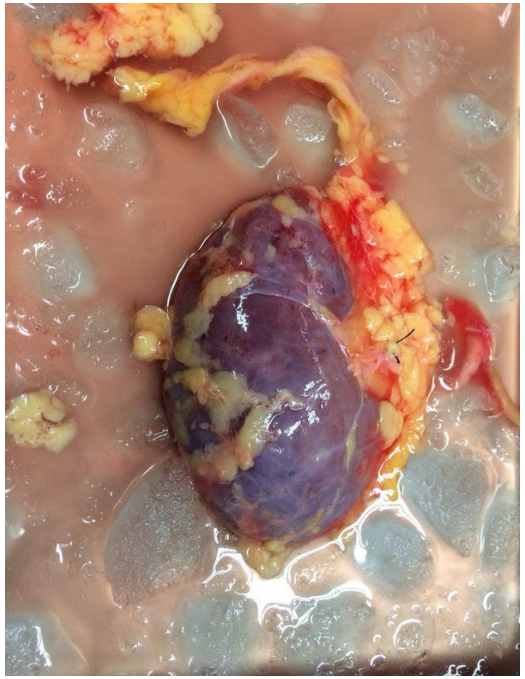


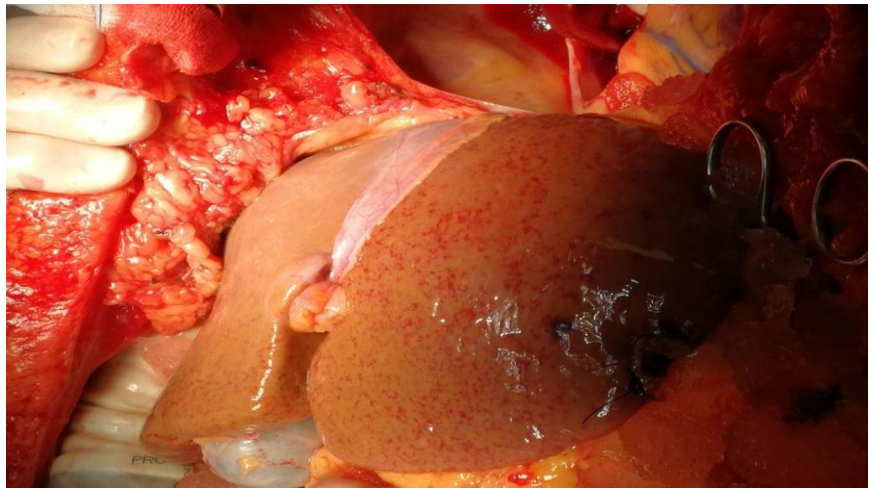
- Récupération : dès que possible
- Perfusion par canules fémorales
- Canulation du système de portique

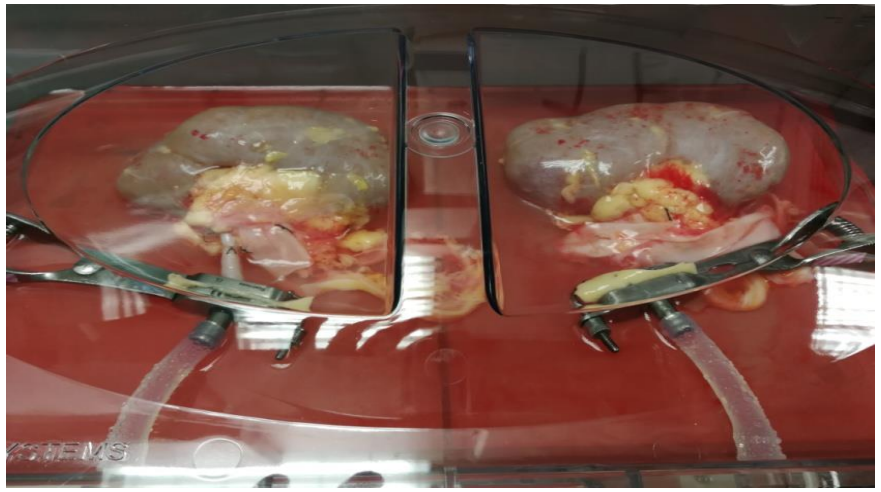
ÉVALUATION MACROSCOPIQUE DES ORGANES











CRITÈRES DE SÉLECTION DU DAAC M2

Liver Transplant Using Donors After Unexpected Cardiac Death: Novel Preservation Protocol and Acceptance Criteria

American Journal of Transplantation 2007; 7: 1849–1855

C. Fondevila[a,*], A. J. Hessheimer[a], A. Ruiz[b], D. Calatayud[a], J. Ferrer[a], R. Charco[a], J. Fuster[a], M. Navasa[c], A. Rimola[c], P. Taurá[d], P. Ginés[c], M. Manyalich[b] and J. C. García-Valdecasas[a]

[a]Departments of Surgery, [b]Transplant Coordination, [c]Gastroenterology and [d]Anesthesia, Institut de Malalties Digestives, Hospital Clínic, Institut d'Investigacions Biomèdiques August Pi I Sunyer (IDIBAPS), University of Barcelona, 08036 Barcelona, Spain
*Corresponding author: Constantino Fondevila, cfonde@clinic.ub.es

Table 4: Liver donor after cardiac death acceptance criteria

	Phase I: Cardiac arrest	Phase II: Advanced ventilatory support	Phase III: NECMO	Phase IV: Cold perfusion
Time	<15 min	<150 min	<4 h	Rapid
Donor	<65 years old No absolute contraindication to donate No criminality or violent death	Negative viral serologies No pathology or trauma affecting continuity of abdominal/femoral vasculature	Initial AST, ALT < 3 × ULN Final AST, ALT < 4 × ULN	Adequate irrigation of all abdominal organs Appropriate liver aspect both before and after perfusion
Method	Witnessed Attempts at resuscitation made and unsuccessful	Continuous CPR maneuvers until cardiocompressor Cardiocompressor during vessel cannulation	Pump flow >1.7 L/min, with fogarty in supraceliac aorta pH maintained 7.0–7.4	NECMO until entry of cold UW

Advanced ventilatory-support includes extra- and intrahospitalary CPR and the time needed to establish the NECMO circuit. Viral serologies include HIV, HCV, and HBV.
ALT = alanine aminotransferase; AST = aspartate aminotransferase; CPB = cardiopulmonary bypass; NECMO = normothermic extracorporeal membrane oxygenation; ULN = upper limit of normal.

PRÉSERVATION PULMONAIRE DANS DAAC M2

Transplantation of lungs from a non-heart-beating donor

Stig Steen, Trygve Sjöberg, Leif Pierre, Qiuming Liao, Leif Eriksson, Lars Algotsson

THE LANCET • Vol 357 • March 17, 2001

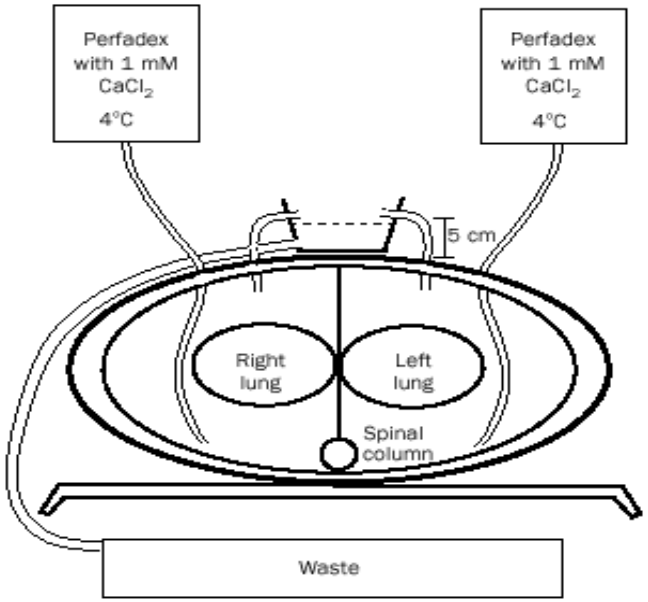
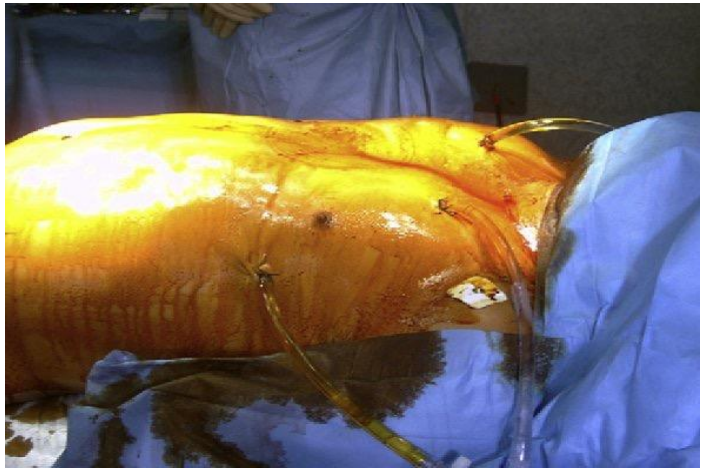


Figure 2: **Schematic drawing of topical cooling method**



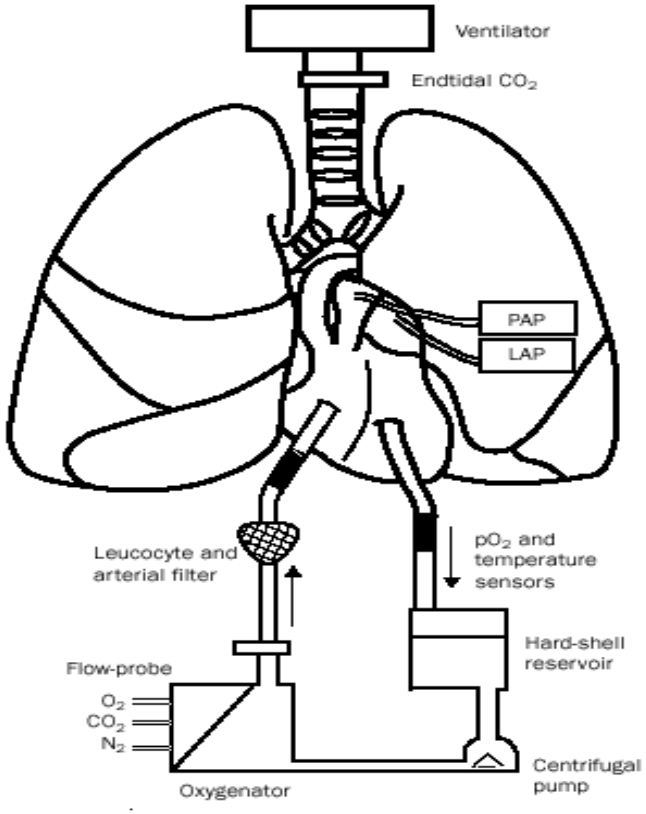


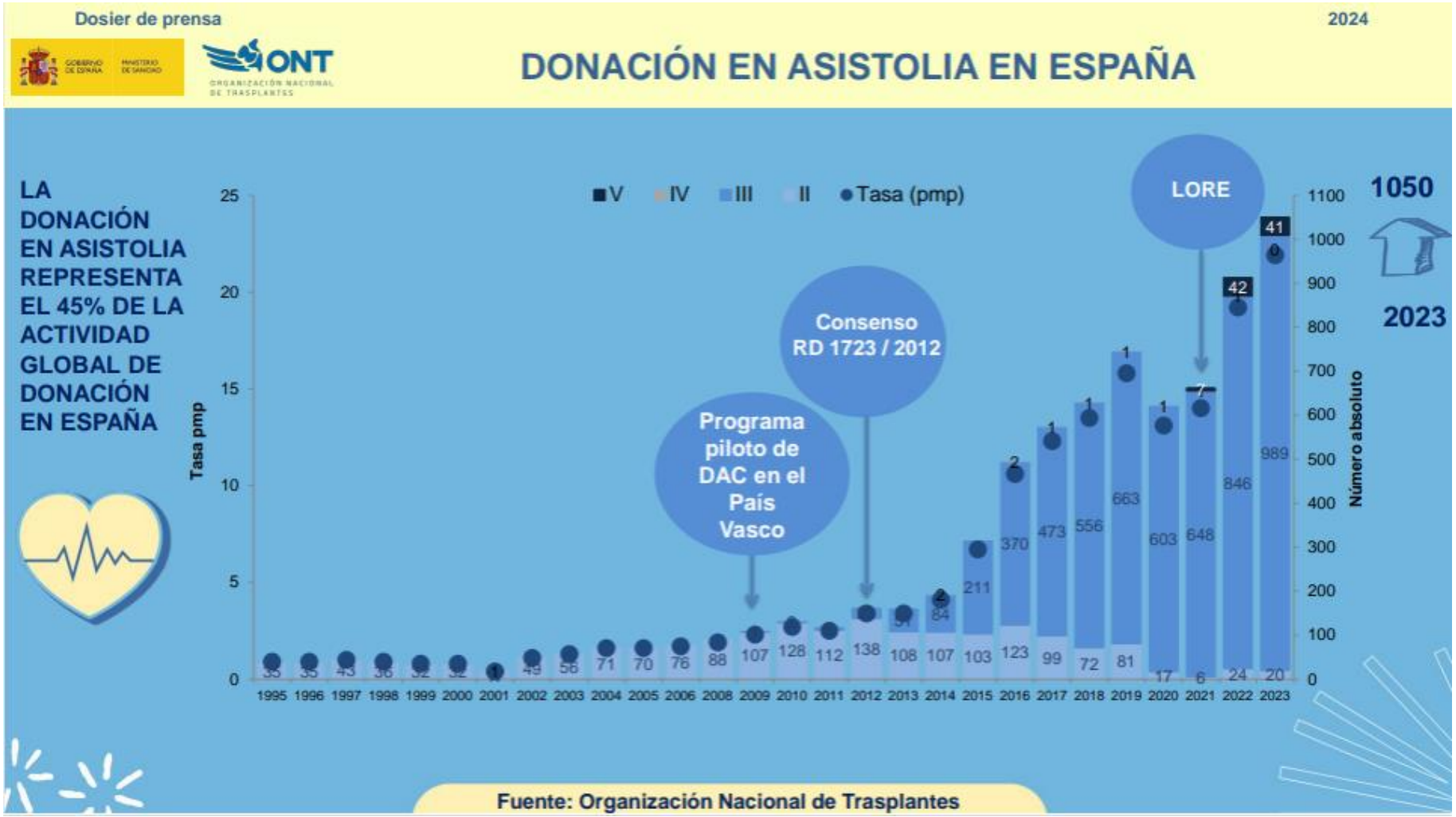
Figure 1: **Schematic drawing of lung assessment ex vivo**
PAP=pulmonary-arterial pressure; LAP=left-arterial pressure.

CONCLUSIONS

- Les services d’urgence extra-hospitaliers en tant qu’ACTEURS CLÉS
- Centres de référence couvrant de vastes zones
- Disponibilité immédiate des professionnels et des ressources
- Complexité logistique
- Taux élevé de DGF (et PNF) – Des critères stricts sont requis
- Les dispositifs de Perfusión ex situ sont essentiels

Organización Nacional de Trasplantes

DCD en ESPAGNE 1995-2023



Les DCD en ESPAGNE représentent 45% du don d'organes cadavériques dans le monde

ACTIVITÉ ET EFFICACITÉ DU DCD EN ESPAGNE

TYPE DE DONNEURS	EFFECTIVITÉ (% de donneurs ayant au moins 1 organe transplanté)	NOMBRE D'ORGANES PRÉLEVÉS/TRANSPLANTÉS (PAR DONNEUR)
MORT CÉRÉBRALE	88%	3,4 / 2,6
M3	86%	3,2 / 2,4
M2	56%	2,2 / 1,1

M3 EN ESPAGNE 2012-2019

	TAUX DE PRÉLÈVEMENT (%)	TAUX DE GREFFE(%)	SURVIE DU GREFFON À 1 AN (%)
KIDNEY	96	84 (n=3547)	91,6
LIVER	47	69 (n=806)	85,3
LUNG	11,4	72,5 (n=202)	85
PANCREAS	1,1	53,8 (n=26)*	85,7*
HEART	< 1	n = 15**	100**

* Period 2015-2019
** Period 2019-2021

M2 EN ESPAGNE 2012-2019

	PROCUREMENT RATE (%)	TRANSPLANT RATE (%)	GRAFT SURVIVAL AT 1 YEAR (%)
KIDNEY	98,1	63,7 (n=831)	85,7
LIVER	21,9	35,9 (n=65)	87,3
LUNG	9,1	58,7 (n=48)	90

TRANSPLANT INTERNATIONAL

Transplant International ISSN 0934-0874

ORIGINAL ARTICLE

An mTOR-inhibitor-based protocol and calcineurin inhibitor (CNI)-free treatment in kidney transplant recipients from donors after cardiac death: good renal function, but high incidence of conversion to CNI

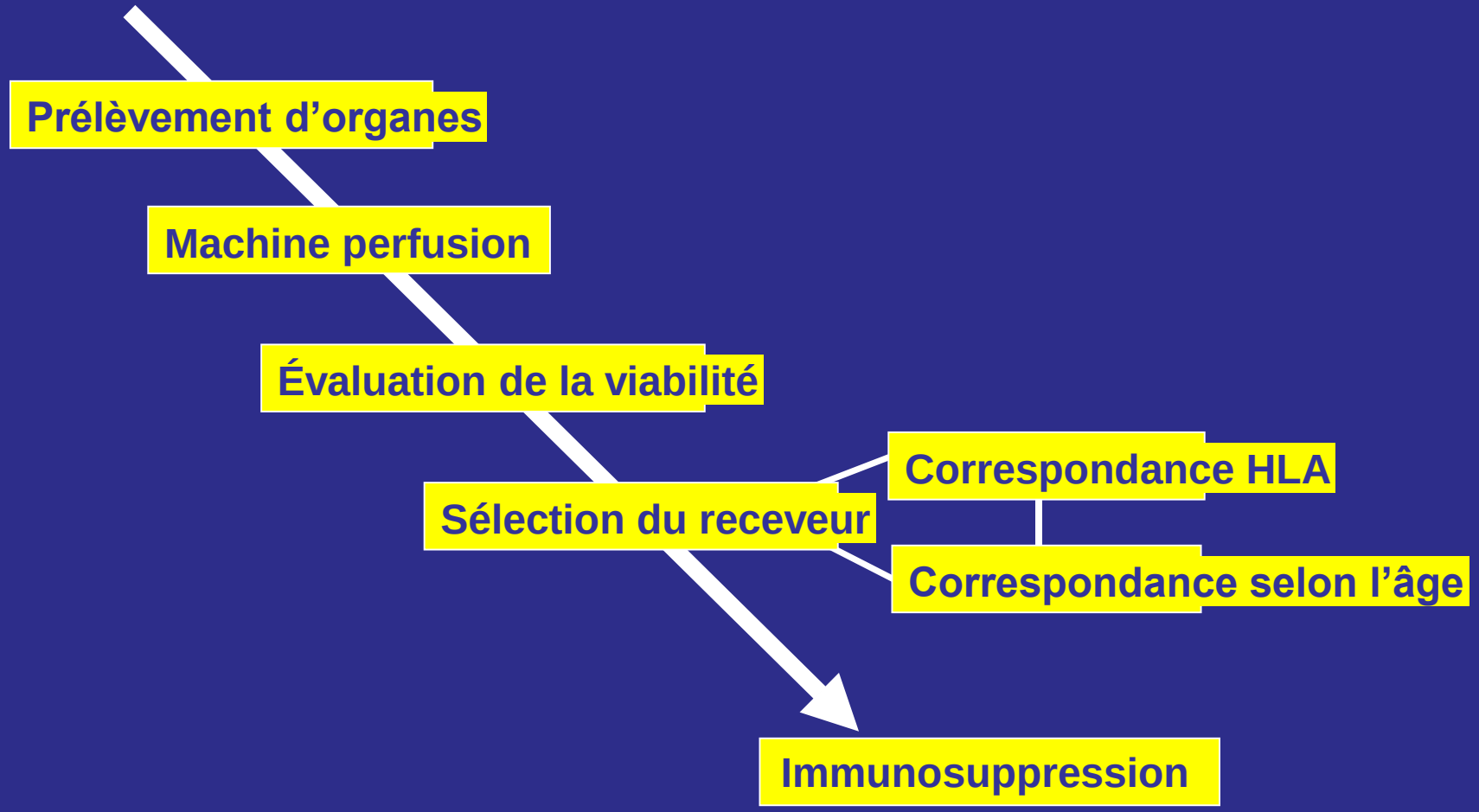
Ana Sánchez-Escuredo,[1] Fritz Diekmann,[1] Ignacio Revuelta,[1] Nuria Esforzado,[1] Maria Jose Ricart,[1] Frederic Cofán,[1] Jose-Vicente Torregrosa,[1] Lluis Peri,[2] Ángel Ruiz,[3] Josep Maria Campistol[1] and Federico Oppenheimer[1]

1 Nephrology and Renal Transplant Department, Hospital Clinic, Universitat de Barcelona, Barcelona, Spain
2 Urology Department, Hospital Clinic, Universitat de Barcelona, Barcelona, Spain
3 Donation and Transplant Coordination Unit, Hospital Clinic, Universitat de Barcelona, Barcelona, Spain

Différentes caractéristiques et évolution clinique de la transplantation rénale à partir de M2 et M3

- M2:
  - Donneurs plus jeunes et moins de facteurs de comorbidité
  - Dysfonction primaire 5-10%
  - Incidence élevée de retard de la fonction du greffon : 60-80%
  - Durée plus longue de DGF : 2-3 semanas
- M3:
  - Donneurs plus âgés et plus nombreux donneurs comorbides
  - Faible incidence de dysfonctionnement primaire
  - DGF de caractéristiques similaires à celles de DBD
  - Impact de l'âge du donneur sur l'évolution fonctionnelle de la fonction des organes

Optimiser l'utilisation des donneurs à critères élargis



Traitement immunosuppresseur (2001-2021)

	ATG	Basilix	No inducción	CsA	Tacro	No CNI	MPA	imTOR
DBD	35.6%	42.7%	21.7%	12.8%%	69.8%	27.3%	73.5%	37.2%
M-II	94.3%	5.7%	-	1.3%	45.2%	53.5%	76.3%	75,9%
M-III	81.05%	18.5%	-	0.4%	98.8%	0.8%	40.1%	59.9%

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Caractéristiques des greffes (2001 – 2021)

	DBD (1251)	M-II (228)	M-III (232)
Patient age	55.1 ± 13.4 13 - 83	63.4 ± 8.6 32 - 77	61.7 ± 10.9 27 - 81
Patient Gender (M/F)	60.1% / 39.9%	63.6% / 36.4%	67.7% / 32.3%
1er Tx 2º Tx 3º Tx 4º Tx	903 (72.2%) 256 (20.5%) 82 (6.5%) 10 (0.80%)	206 (90.4%) 19 (8.3%) 3 (1.3%)	174 (75.0%) 49 (21.1%) 6 (2.6%) 3 (1.3%)
Donor age	56.6 ± 15.7 9 - 89	47.2± 12.7 12 – 78	63.4± 11.5 21 – 84
Donor gender	66.7% / (46.7)	88.2% / 11.8%	64.6% / 35.3%

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Résultats:
Récupération de la fonction rénale (2001-2021)

		DBD (1251)	M-II (228)	M-III (232)
PNF		**38 (3.0%)**	**23 (10.1%)**	**9 (3.9%)**
incl. thrombosis		16 (1.3%)	6 (2.6%)	6 (2.6%)
excl. thrombosis		13 (1.1%)	17 (7.4%)	2 (0.9%)
other causes		9 (0.7%)		1 (0.4%)
DGF (%)		218/1213 (18.0%)	129/205 (62.9%)	66/223 (29.6%)
DGF (days)	media	9.7 ± 11.6	10.2 ± 8.9	11.7 ± 9.3
	std	1 - 149	1 - 40	1 - 55
	median	6	9	17

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Caractéristiques de la greffe

	uDCD	cDCD	p
Patient age	53.0 ± 10.1 22 – 75	61.6 ± 9.3 27 - 77	<0.0001
Patient gender (M/F)	60/22	190/102	NS
1st Tx 2nd Tx 3rd Tx 4th Tx	76 4 2	220 58 11 3	
Donor age	51.6 ± 9.9 12 - 78	63.6± 11.3 21 – 84	<0.0001
Donor gender	74/8	188/104	<0.0001

Récupération de la fonction rénale

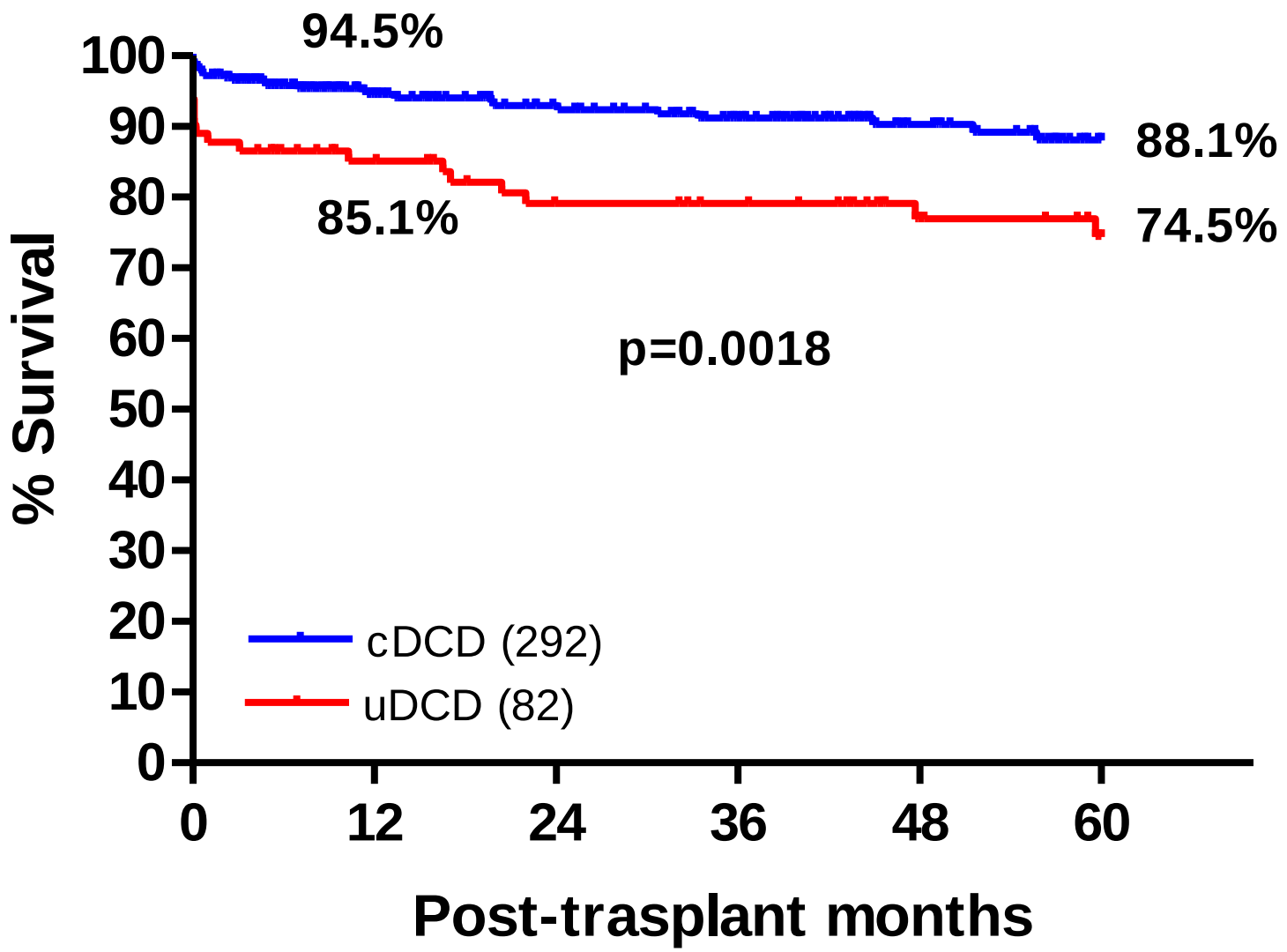
	uDCD	cDCD	p
PNF	6/82 (7.3%) 1 thrombosis	4/292 (1.4%) 3 thrombosis	0.0032
DGF (%)	54/76 (71.1%)	105/288 (36.5%)	<0.0001
DGF (days)	15.1 ± 9.9 (1 – 41)	9.9 ± 9.5 (1 – 42)	0.0017

Rejet aigu

	DBD	M-II	M-III
Acute rejection first year	167/ 1213 (16.7%)	22 / 205 (10.7%)	22 / 223 (9.9%)
borderline	49/1213 (4.0%)	15 / 205 (7.3)	20 /223 (9.0%)
Acute antibody-mediated rejection	40 / 1213 (3.3%)	8 / 205 (3.9%)	9 / 223 (4.0%)

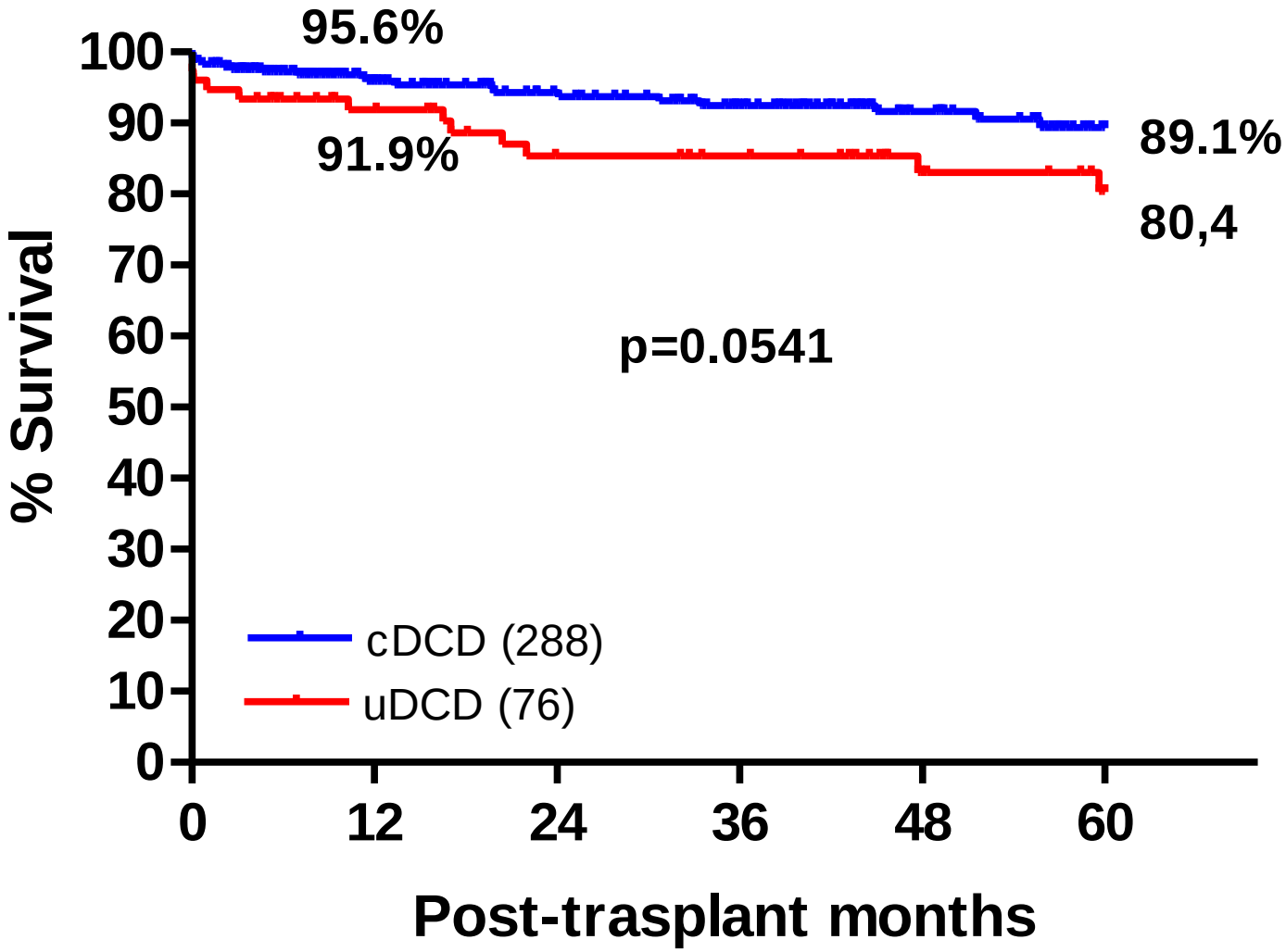
Kaplan-Meier Graft Survival

(June 2013 – June 2022)



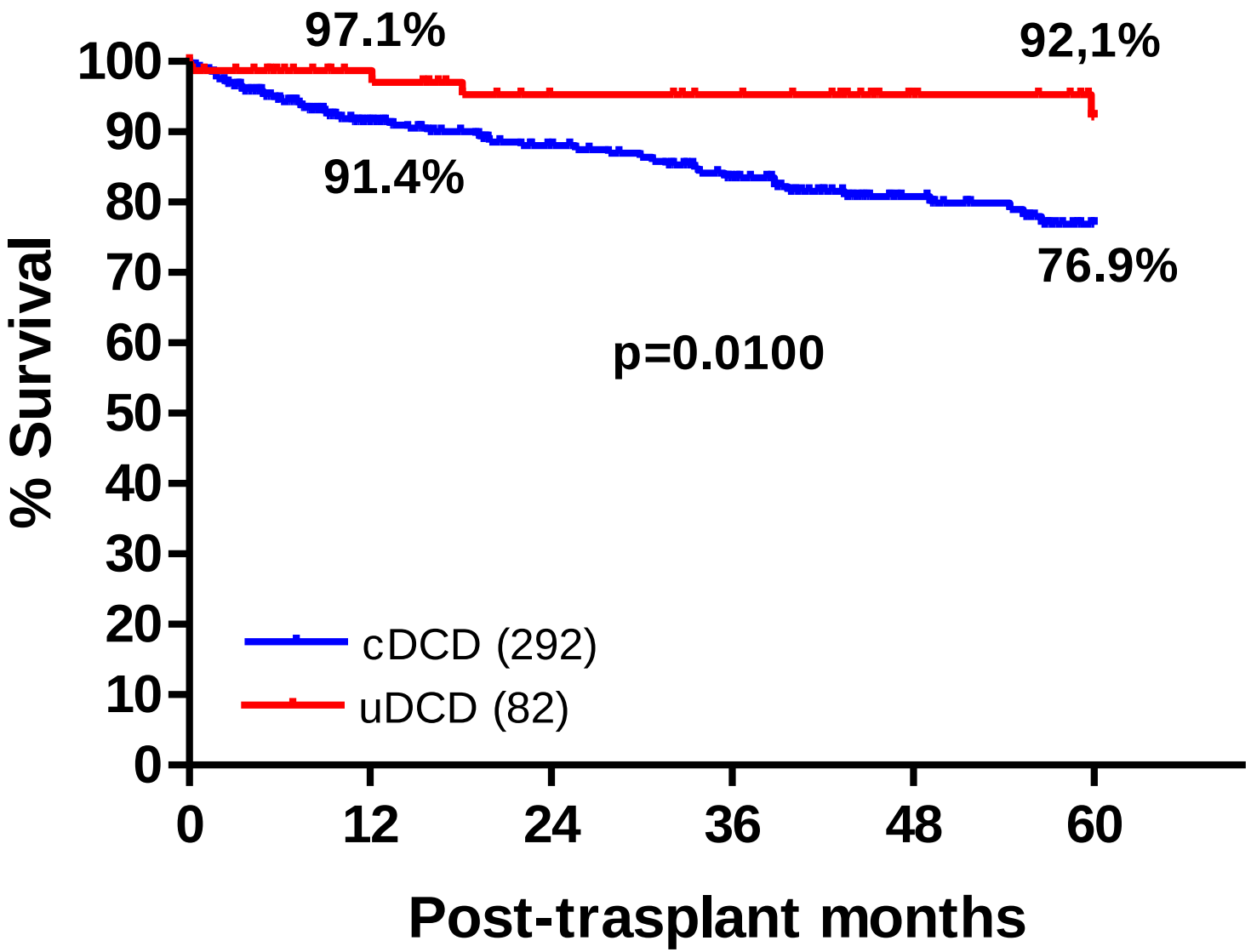
Kaplan-Meier Graft Survival (Excluding PNF)

(June 2013 – June 2022)



Kaplan-Meier Patient Survival

(June 2013 – June 2022)



Hospital Universitari

Conclusions

- Dans la M2, le DGF est un facteur limitatif majeur
- La DGF est plus fréquente et plus prolongée MII, mais n’affecte pas la survie à long terme du greffon.

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DONATION & TRANSPLANTATION INSTITUTE

Next Edition: 2026
Online & Face-To-Face

Professional training in the donation process from uncontrolled and controlled DCD donors is fundamental to expanduse of organs from this under-utilized resource.

Highlights

- DCD clinical and surgical procedures
- Animal lab and hands-on simulation
- NRP Management (ECMO)
- Machine ex-situ perfusion and preservation techniques

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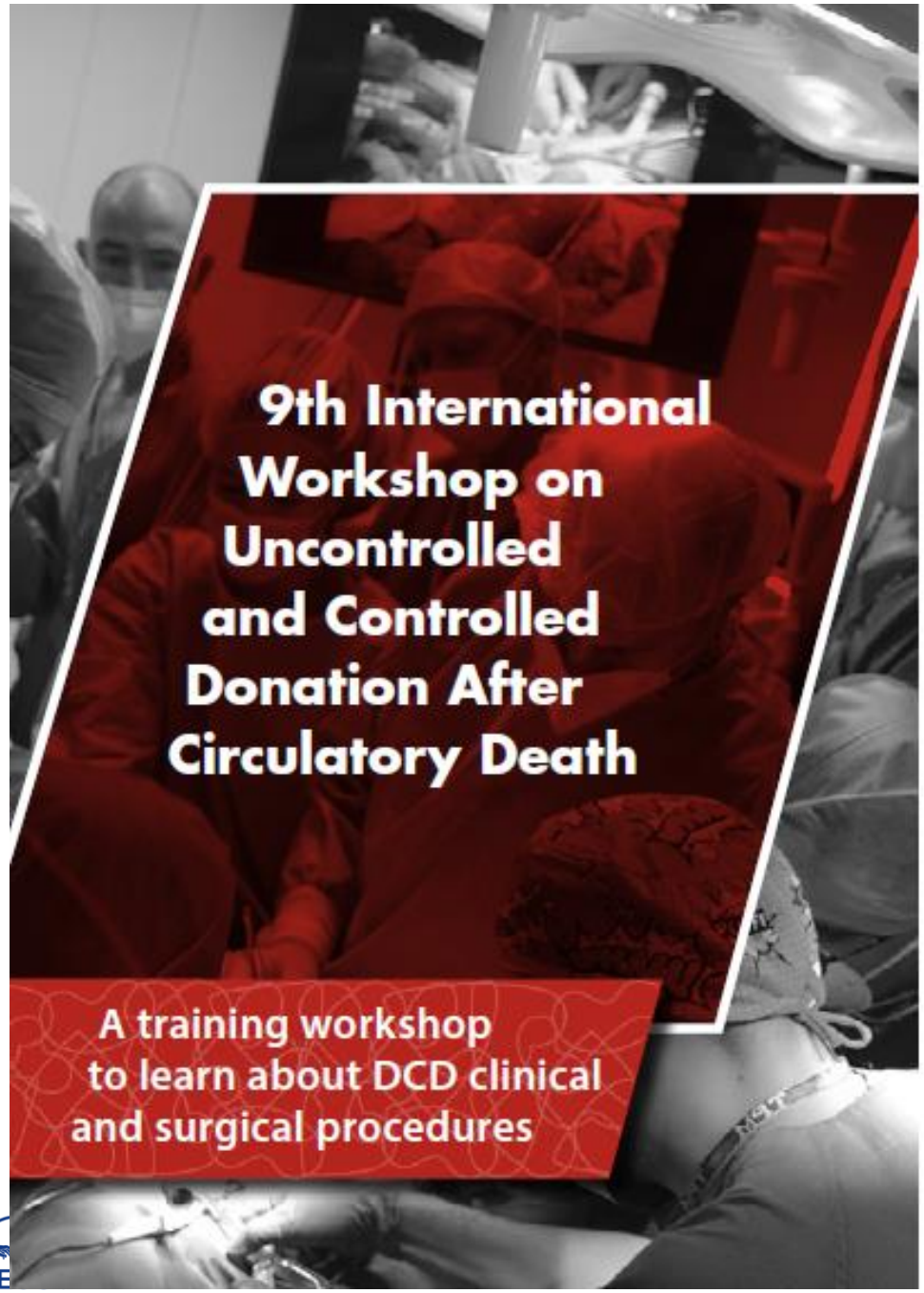

9th International Workshop on Uncontrolled and Controlled Donation After Circulatory Death

A training workshop to learn about DCD clinical and surgical procedures

In recent years, donation after circulatory death has been a focus of interest in the transplant community, based on the **high potentiality to increase the organ donors' pool**.

Training healthcare professionals in the donation process and preservation techniques necessary to obtain viable organs **from uncontrolled and controlled DCD** donors is fundamental to expanding the use of organs from this under-utilized resource.

This course is organized to provide deep knowledge and practical skills needed to achieve this goal.

ADDRESSED TO

- **Healthcare professionals**, including but not limited to emergency, intensive care and anesthesia specialists
- **Donor and transplant coordinators**
- **Transplant surgeons**
- **Physicians or managers** interested in implementing DCD programs

April 2026	Language English	Barcelona & A Coruña Spain	Modality Blended

THE 13TH CONGRESS OF ROMTRANSPLANT 08-09 October 2024

April 2026

Endorsed by ESOT Leading the way in transplantation

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MERCI BEAUCOUP POUR VOTRE ATTENTION

Thank you very much!

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