Achieving Comprehensive Coordination in Organ Donation

A national surgical training in abdominal multiorgan retrieval

Sándor Mihály, Orsolya Deme, Ágnes Nemeskéri

Final results of the ACCORD Project
2nd June 2015, Madrid, Spain

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Achieving Comprehensive Coordination in Organ Donation

Introduction of Hungary

EU MS
since 1st of May, 2004

Location: Eastern Central Europe

Total area: 93.030 km2

Population: 10 197 119

Population density: 108 people/km^2, 63% live in urban areas

Capital: Budapest, 525 km^2 (population: 1 775 203)

Monetary unit: Hungarian forint (HUF)

Time: GMT+1

Official language: Hungarian

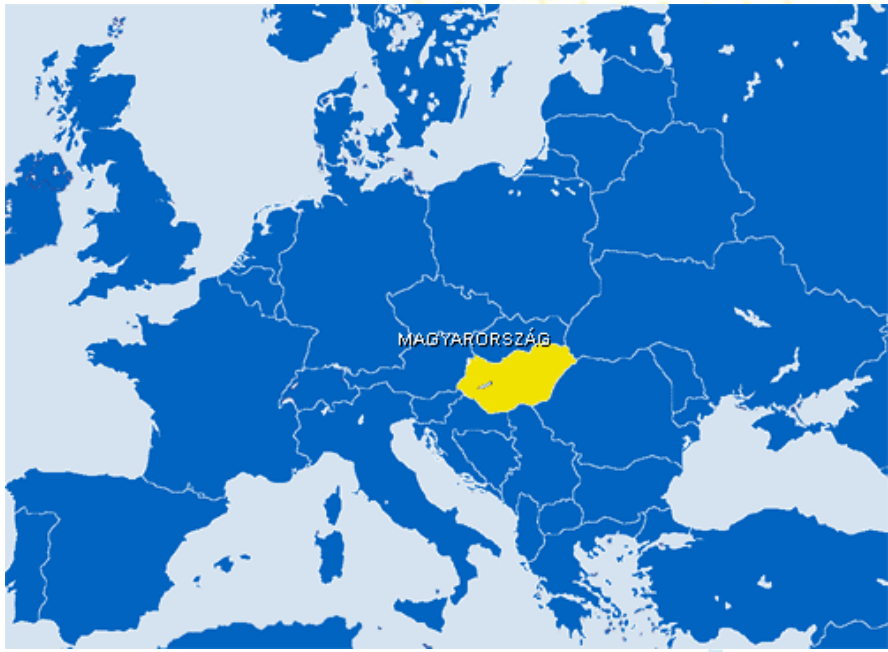
Type of administration: 19 counties

Lenght of borders: 2246 km

Neighbouring countries: 7 (Austria, Slovakia, Ukrain, Romania, Serbia, Croatia, Slovenia)

Religion: Roman catholic (majority), Calvinist, Lutheran

Highest mountain: Kékes, 1015 m



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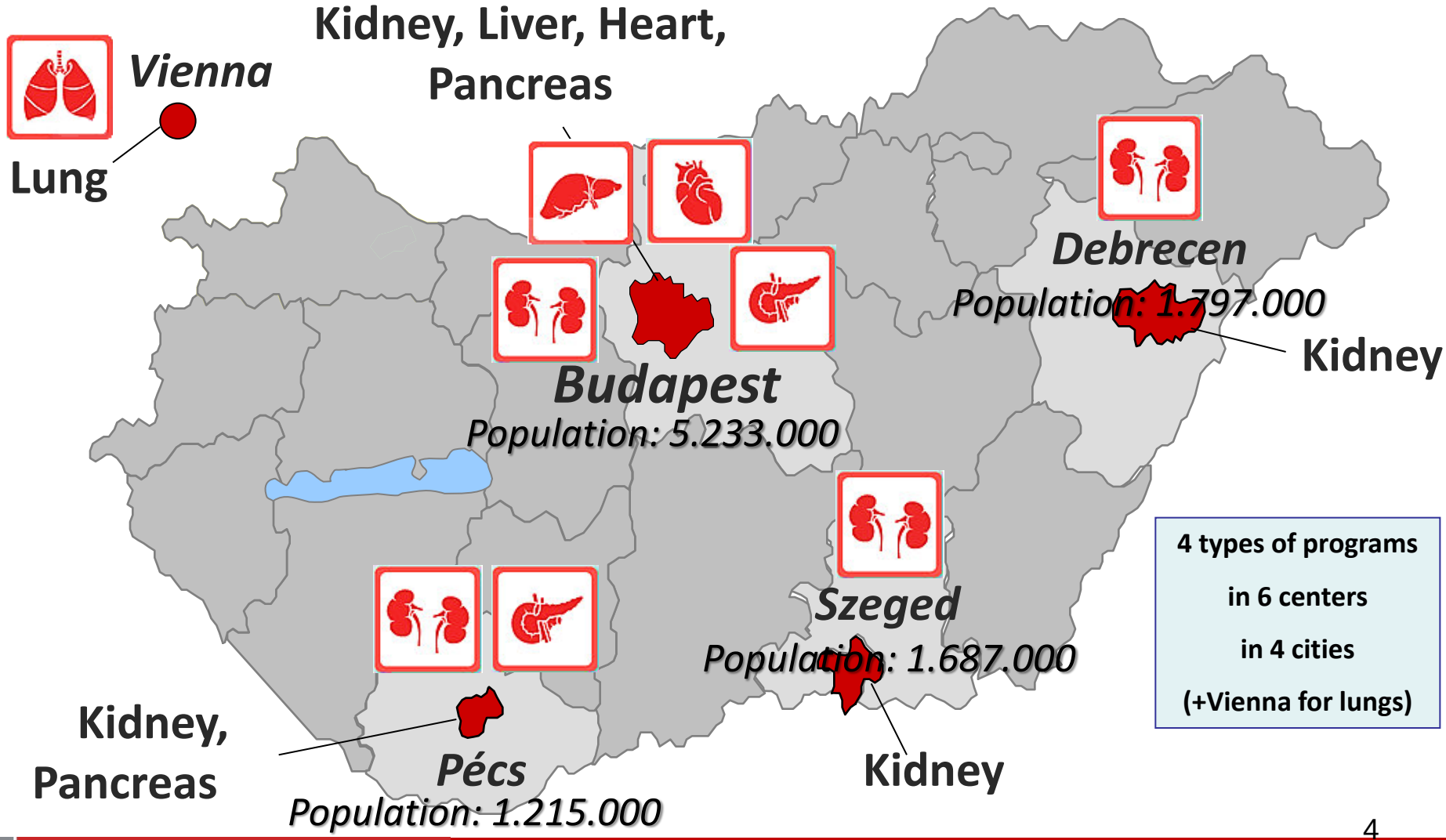
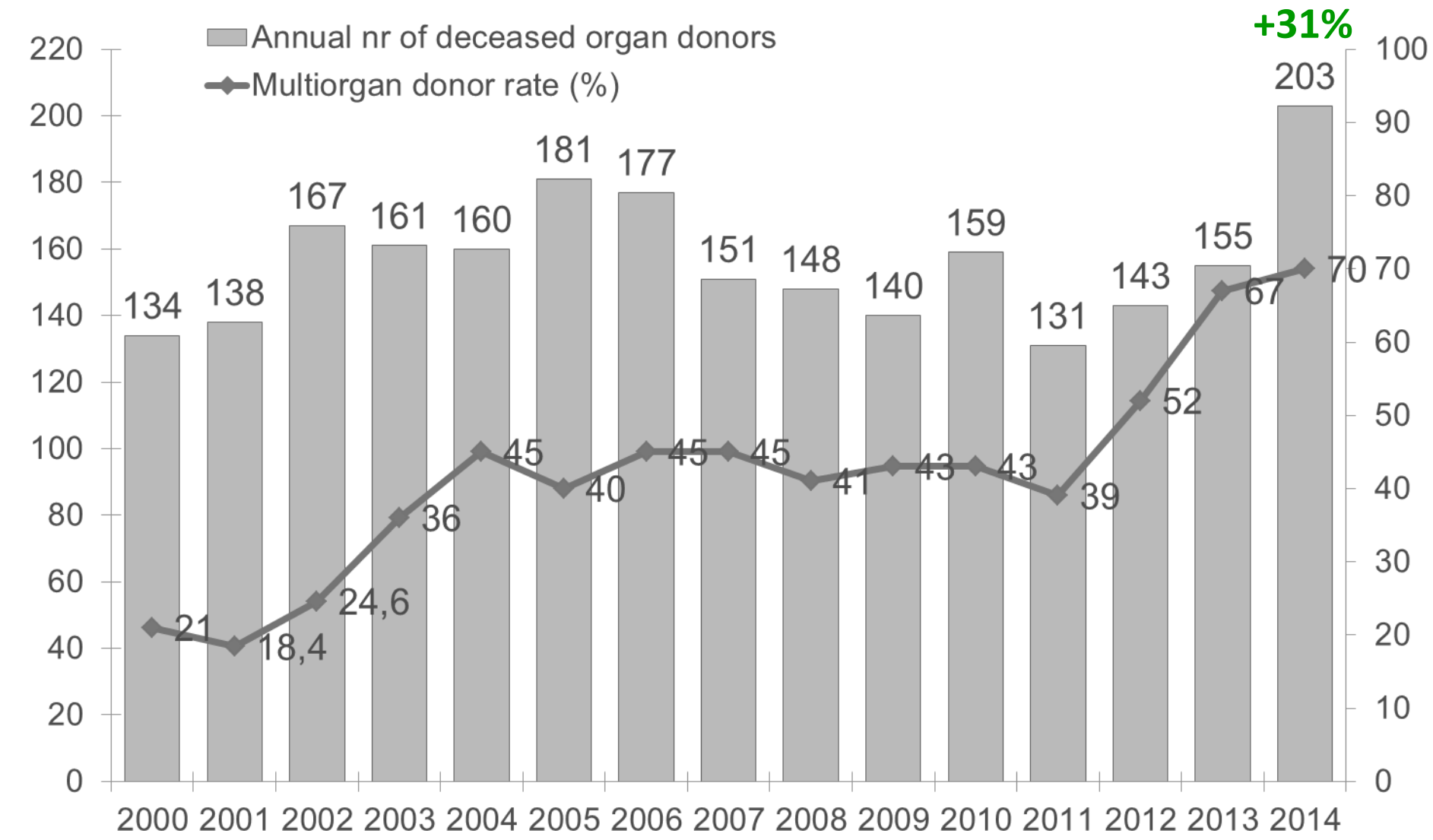
History

- 1962: 1st kidney tx in Hungary
- 1973: 1st kidney tx program in Hungary
- 1992: heart tx program
- 1995: liver tx program
- 1998: SPK tx program
- 2001: Hungarotransplant
- 2007: HNBTS-OCO
- 2012: ET preliminary cooperation, EODD
- 2013: ET full membership, NODR application, hospital coordination

Procurement regions of transplant centers



Annual number of DBD in Hungary 2000-2014.



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Twinning to enhance quality and safety in organ retrieval

2012: 50th Anniversary of Hungarian transplantation

NEDERLANDSE TRANSPLANTATIE STICHTING

HUNGARIAN NATIONAL BLOOD TRANSFUSION SERVICE
ORGAN COORDINATION OFFICE

The Netherlands
Dutch Transplant Foundation

Hungary
NHBTS - Organ Coordination Office

Twinning partners

- **Dutch Transplant Foundation**
- University Medical Center Leiden
- University Medical Center Groningen
- European Society for Organ Transplantation (ESOT)

- **Hungarian National Blood Transfusion Service (HNBTS)**

  Organ Coordination Office (OCO)
- The Semmelweis University

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Twinning to enhance quality and safety in organ retrieval

This twinning project focuses on two functions of the frameworks mentioned in the Directive 2010/53/EU to **improve quality and safety of organ donation and transplantation**:

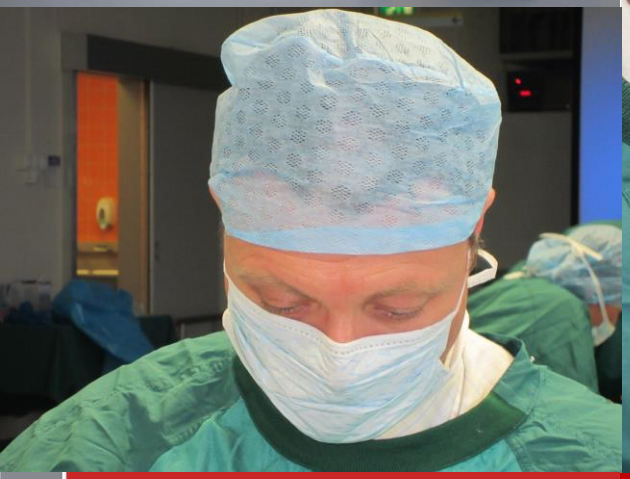
1) **standard operating procedures** and
2) **qualifications of personnel**.

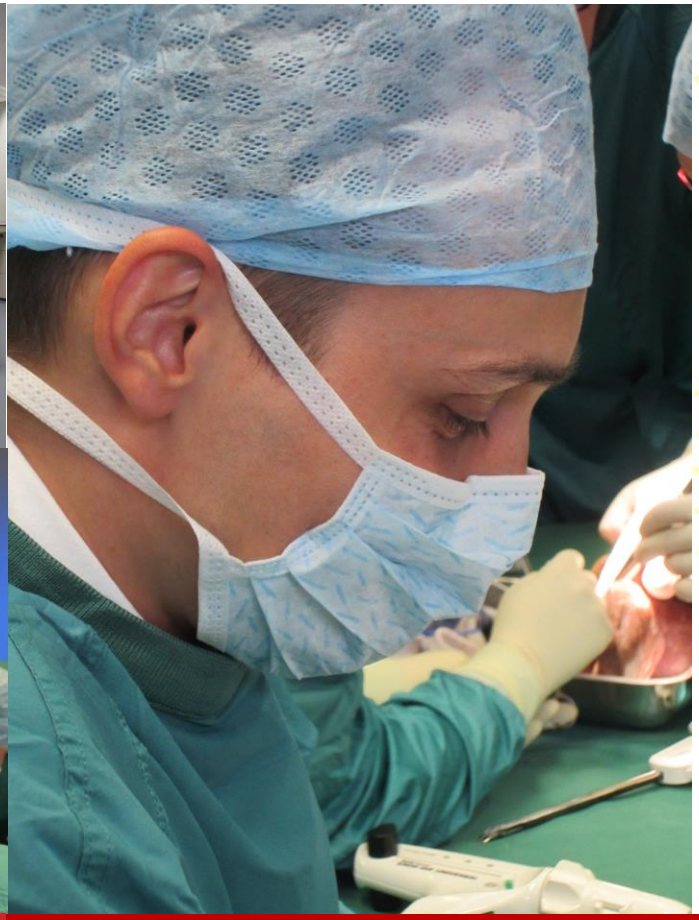
Furthermore, it shall contribute and link to the creation of a European Quality Certification System for professionals in donation, as expressed in this Directive. In addition to already existing certificates for transplant surgery and medicine provided by the collaboration of ESOT and the "Union Européenne des Médecins Spécialistes" (UEMS) the content and training qualification modules for the donor surgery will be **supervised by ESOT** while the certification process will be **authorized by UEMS**.

Action steps

M2, M14, M26: Mastercourse NL:

2, 3+1 observer, 1 participant surgeons (3 senior, 3 junior)





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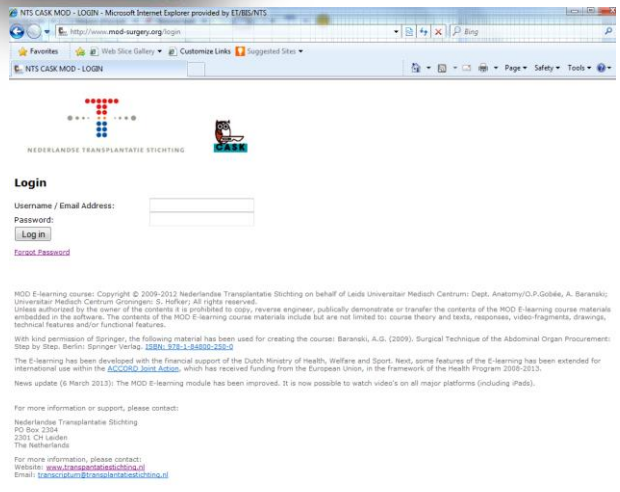
Action steps



- **E-learning:** www.mod-surgery.org
  - Ready for international use
  - Suitable for all modern browsers
  - Suitable for tablets
- **Research - survey**
  - 6 Hungarian surgeons
  - 46 UK surgeons through ESOT
- **Accreditation UEMS-EACCME**
- **E-learning:** available nationwide, accredited in the continous education programme for medical doctors by Semmelweis University (8 credits)
- **Masterclass:** accredited in the continous education programme for medical doctors by Semmelweis University (20 credits)

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Action steps

M6: Workvisit in Hungary

Action steps

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M14: Scientific Committee was established
M14-M22: Preparation phase




HNBTS and Semmelweis University formed strong cooperation via establishing the Scientific committee:

- Eligibility Criteria for candidates
- Syllabus
- „Practical preparations" of the course
  - Programme
  - Speakers
  - Identification of technical requirements
- Accreditation application

1st Hungarian Donor Procurement Surgery Masterclass

30-31 of January, 2014, Budapest

8 trainees, 2 from each of the 4 regions, National selection.

http://www.youtube.com/watch?v=B3dpl5mKnkM&feature=youtu.be

The first National practical (hands-on) session organized in Budapest, 8 participating Hungarian surgeons as trainees (Courtesy OCO and participants). Two trainees per bench and one to two tutor(s) for their evaluation.

NL-HU TWINNING

Results

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HU

E-learning + Masterclass (practicals)

- 7/8 trainees qualified for kidney, pancreas and liver retrievals and 1/8 trainee qualified for kidney retrievals.
  - HNBTS-OCO applied credits for completion of this E-learning (8 credits) and for the Masterclass attendance (20 credits)

This optional training is now available within the continuous education programme for medical doctors in Hungary.

A fully operational e-learning platform to train surgeons in organ retrieval surgery, available Nationwide
Continuity in this activity by applying a train the trainers methods
Effective training and a possible certification module available

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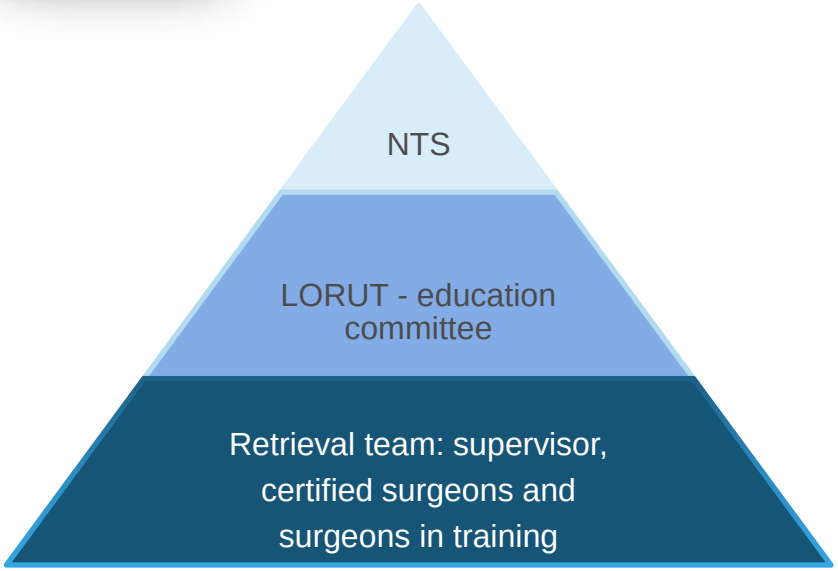
Main challenges

Organizational model in the Netherlands



Each retrieval team harvests all abdominal organs
Per region, retrieval teams rotate on a weekly basis

Regionalised organ retrieval

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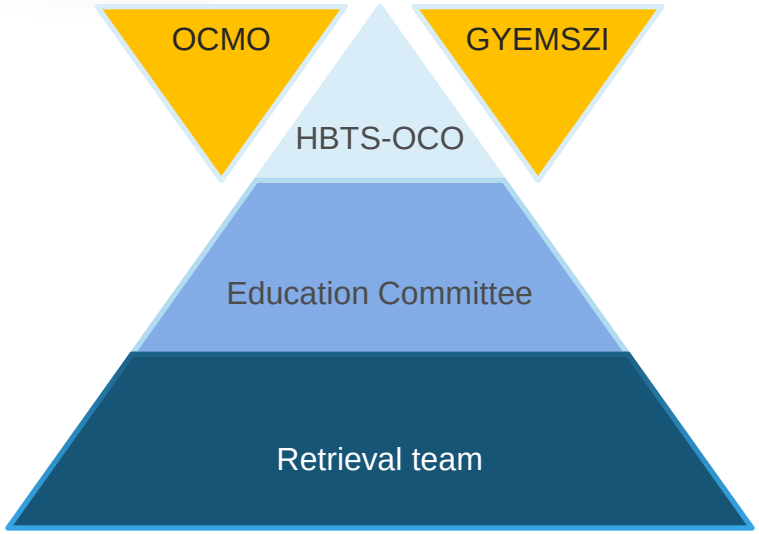
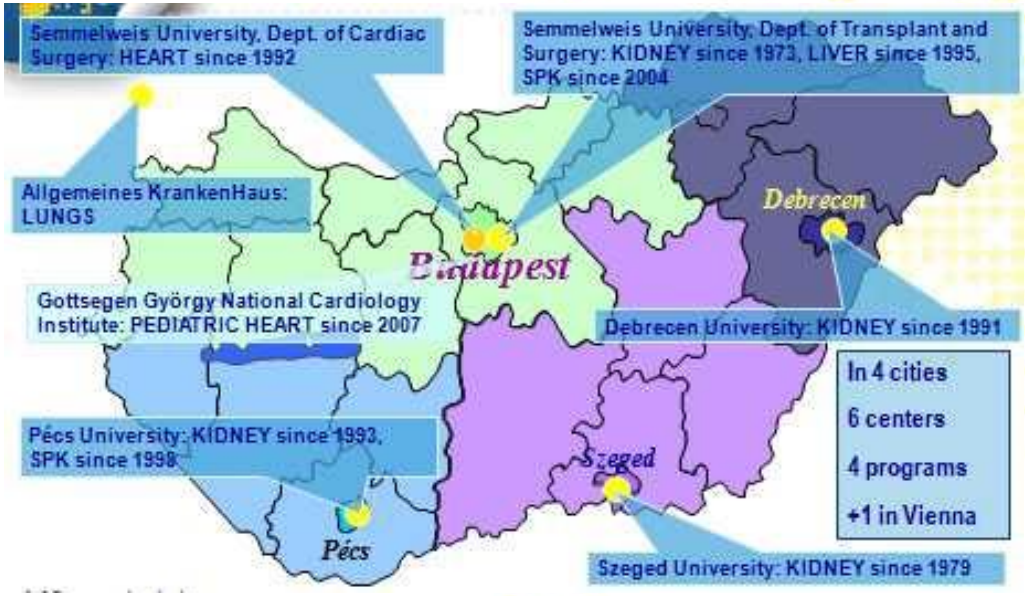
Main challenges

Organizational model in Hungary

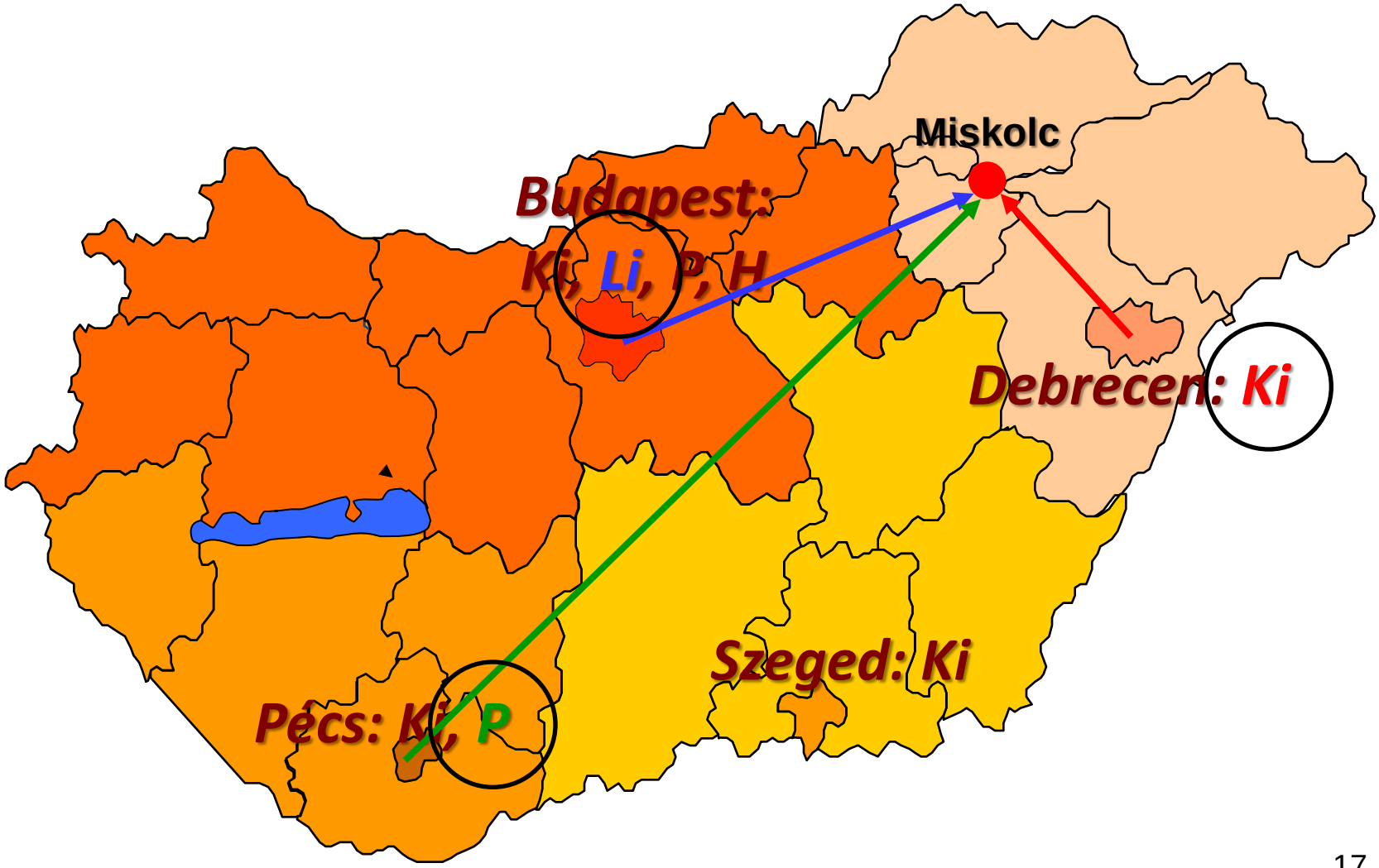




Abdominal retrieval surgery takes place within the local area.

Organ transplant centers can only harvest the type of organ which is allowed to be transplanted.
+ involvement of non Semmelweis participants → nationwide course:
Hungarian Transplant Society as a collaborating partner, invitation of center leaders

Abdominal MOD



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Implementation and sustainability plan

Action Steps (How will you get to where you want to be?)	Responsibility (Who will make it happen?)	Timeframe (When will it happen?)
Develop the structure: establish the Scientific Committee of the Hungarian Donor Procurement Surgery Training Program	HNBTS, OCO; Semmelweis University, Univesity of Debrecen, University of Pécs, University of Szeged	30th June 2015
Finalization and adaptation of the program curriculum and syllabus into the Hungarian local needs.	Scientific committee	31th January 2015
Identification of needs: assessment the potential number of candidates	Scientific committee	31th January 2015
Common consensus between professionals or legislation about the eligibility criteria of surgeons who perform organ procurement (obligatory participation in the Donor Surgery Masterclass or Honorary Diploma is essential)	Scientific committee	31th January 2015

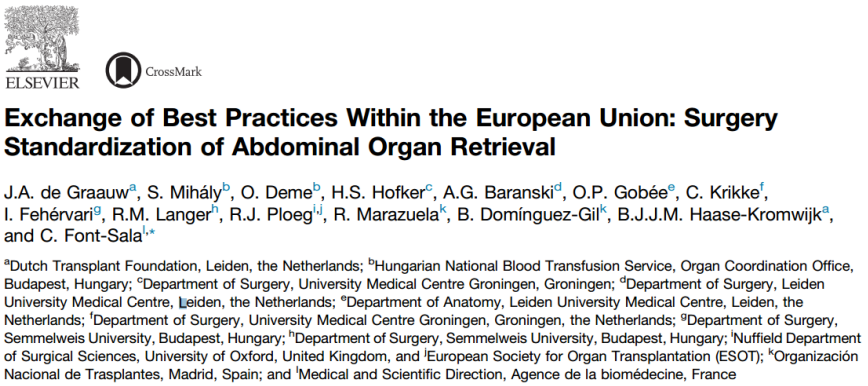
Hungary:

Conclusion & next steps

Two years after the beginning of this twinning, all actions have been successfully completed. At that stage, the perennial implementation of a curriculum is under discussion in Hungary for the organisation, administration, nomination of training professors, conditions for candidates' admission etc.

Since the broader potential of this twinning is to have a new international training tool available at EU level for other Member States, it is noteworthy that some other Member States already showed interest for this training tool.

Transplantation proceedings article on the HU-NL twinning is on line:
http://authors.elsevier.com/sd/article/S0041134514004564



ELSEVIER CrossMark

Exchange of Best Practices Within the European Union: Surgery Standardization of Abdominal Organ Retrieval

J.A. de Graauw[a], S. Mihály[b], O. Deme[b], H.S. Hofker[c], A.G. Baranski[d], O.P. Gobée[e], C. Krikke[f], I. Fehérvari[g], R.M. Langer[h], R.J. Ploeg[i,j], R. Marazuela[k], B. Domínguez-Gil[k], B.J.J.M. Haase-Kromwijk[a], and C. Font-Sala[l,*]

[a]Dutch Transplant Foundation, Leiden, the Netherlands; [b]Hungarian National Blood Transfusion Service, Organ Coordination Office, Budapest, Hungary; [c]Department of Surgery, University Medical Centre Groningen, Groningen; [d]Department of Surgery, Leiden University Medical Centre, Leiden, the Netherlands; [e]Department of Anatomy, Leiden University Medical Centre, Leiden, the Netherlands; [f]Department of Surgery, University Medical Centre Groningen, Groningen, the Netherlands; [g]Department of Surgery, Semmelweis University, Budapest, Hungary; [h]Department of Surgery, Semmelweis University, Budapest, Hungary; [i]Nuffield Department of Surgical Sciences, University of Oxford, United Kingdom, and [j]European Society for Organ Transplantation (ESOT); [k]Organización Nacional de Trasplantes, Madrid, Spain; and [l]Medical and Scientific Direction, Agence de la biomédecine, France

Experiences & Message

1st Hungarian Donor Procurement Surgery Masterclass Practical Session (2014)

Agnes Nemeskeri MD, PhD

Semmelweis University Budapest Hungary
Department of Human Morphology and Developmental Biology
Clinical Anatomy Research Laboratory

Accord Project – Twinning activities
Organ Procurement Masterclass – Budapest - January 2014

Organizers

Clinical Anatomy Research Laboratory
and
Hungarian National Blood Transfusion Service, Organ Coordination Office

Ágnes Nemeskéri MD, PhD

S. Mihály, OCO director

O. Deme, national coodinator

M. Kiss MD, PhD St

A. Szuák MD, PhD St.

Clinical collaboration

Cs. Korom MD

K. Karlinger MD, PhD

Dept. Radiology and Oncotherapy

Vascular anomalies have important impact on

- **the time of retrieval**
- **the time of implantation**
- **the immediate outcome of the transplant surgery**
- **the post-transplantation complications**

*„During the retroperitoneum inspection, **special attention has to be paid to the quality of the abdominal aorta and any vascular abnormality**."*
*„Here, **special attention must be paid to the presence of the left aberrant hepatic artery**, which has to be saved."*
A. Baranski in *Surgical Technique of the Abdominal Organ Procurement* (2009)

*„There must be particular concern about the **possibility of aberrant arterial vasculature** …"*
D. J. Reich et al. American Journal of Transplantation 2009; 9: 2004–2011

*„Mobilise the left liver lobe by cutting the triangular ligament (**CAVE: left aberrant hepatic artery**) …"*
H. Wunderlich et al. Transplant International 2011 European Society for Organ Transplantation 24 (2011) 733–757

*„A quarter of all livers have an **anomalous hepatic arterial supply**…."*
R.W. Busuttil and J.P. Duffy
*„ **Aberrant portal venous anatomy** is present in up to a third of all livers…"*
G.T. Schnickel and R.W. Busuttil
In: Transplantation of the liver 2015

*„Especially in the **presence of arterial anomalies**, **en bloc procurement of liver and pancreas** with back-table dissection can avoid in situ manipulation and assist in the **identification of aberrant anatomy to preserve the arterial blood supply of all transplanted organs**" R.C. Hatland in: Surgery 2012 Springer*

Therefore we have designed a practical mastercourse that simulates the circumstances of surgical organ procurement as much as possible

Cadaver for organ procurement surgery simulation

Requirements: realistic consistence of tissues, realistic color, biosafety

– if possible to use Pre-procurement data on donor's vascularity – CT-angiogram-3D CT

1. Non-embalmed fresh cadavers

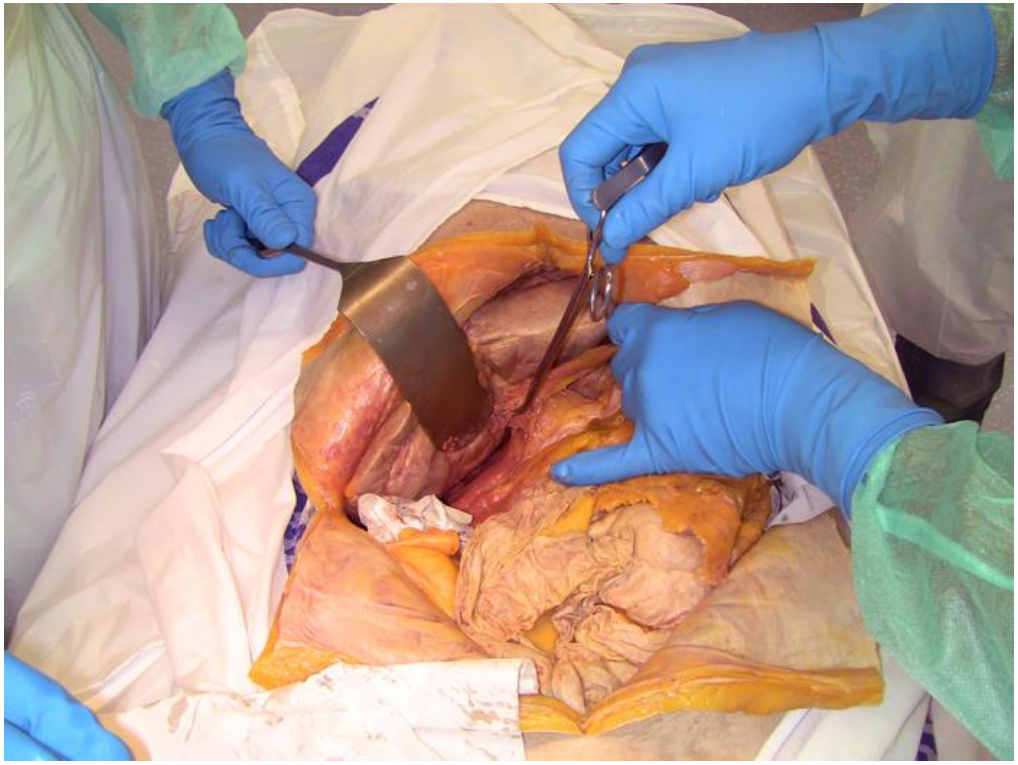
increased risk of exposure to microbial agents

2. Embalmed human cadaver

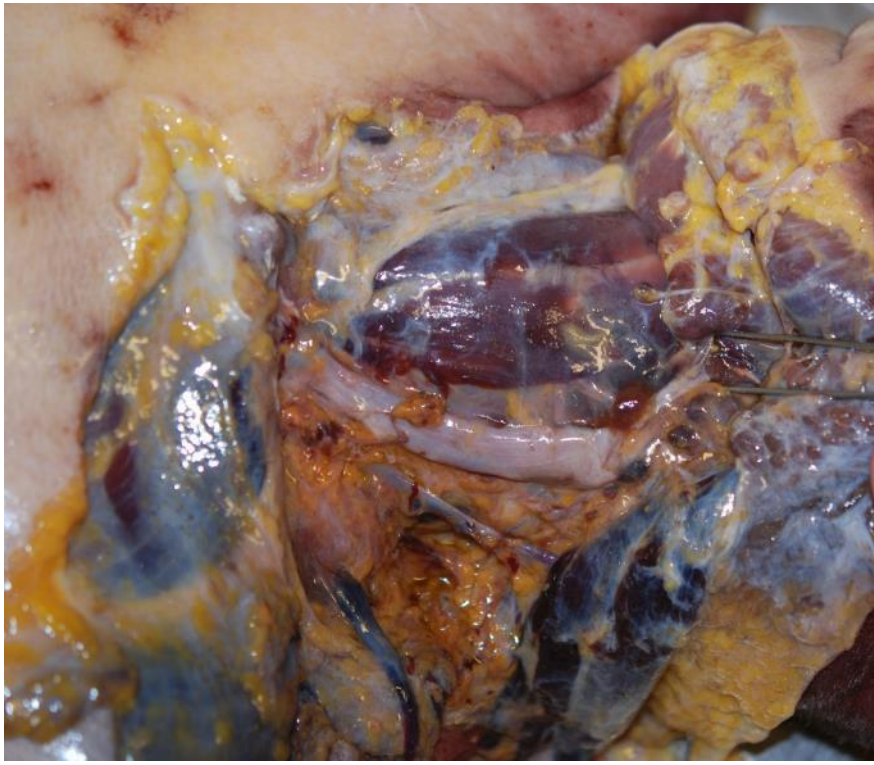
- realistic color, tissue consistence, odor, no risk of infection
- Thiel's embalming solution - expensive
- **Soft-Fix-Mix – only 4 components – cheap**

Embalmment of cadavers: available choice

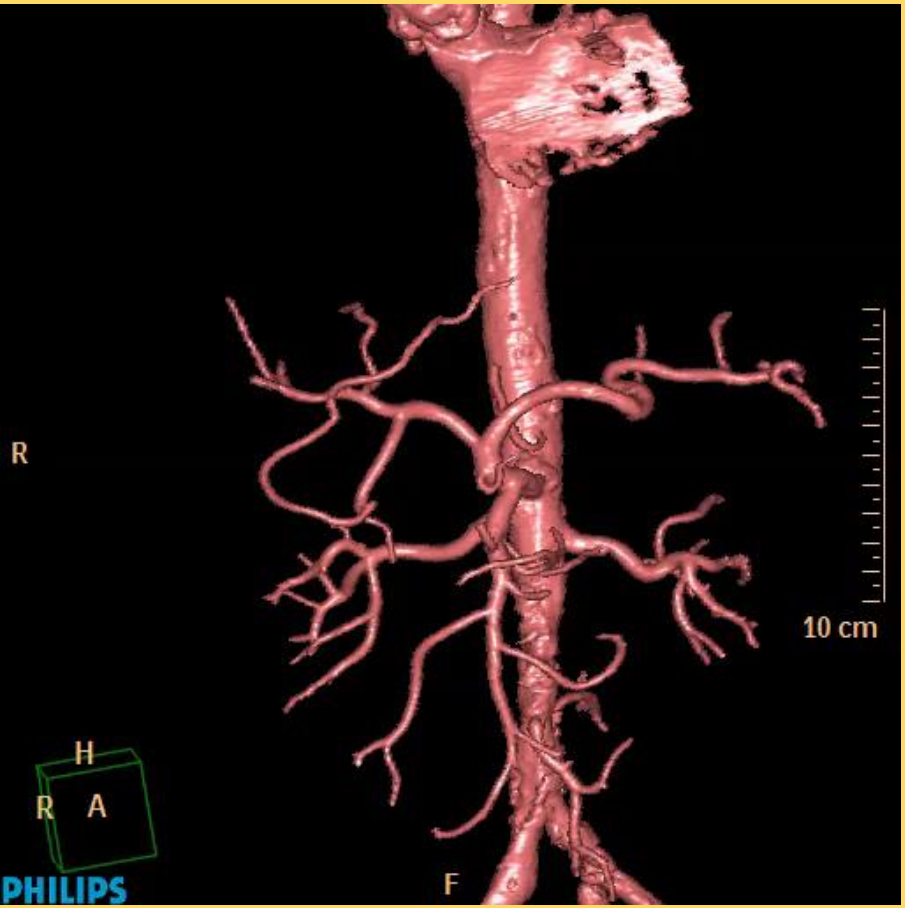
Soft-Fix-Mix

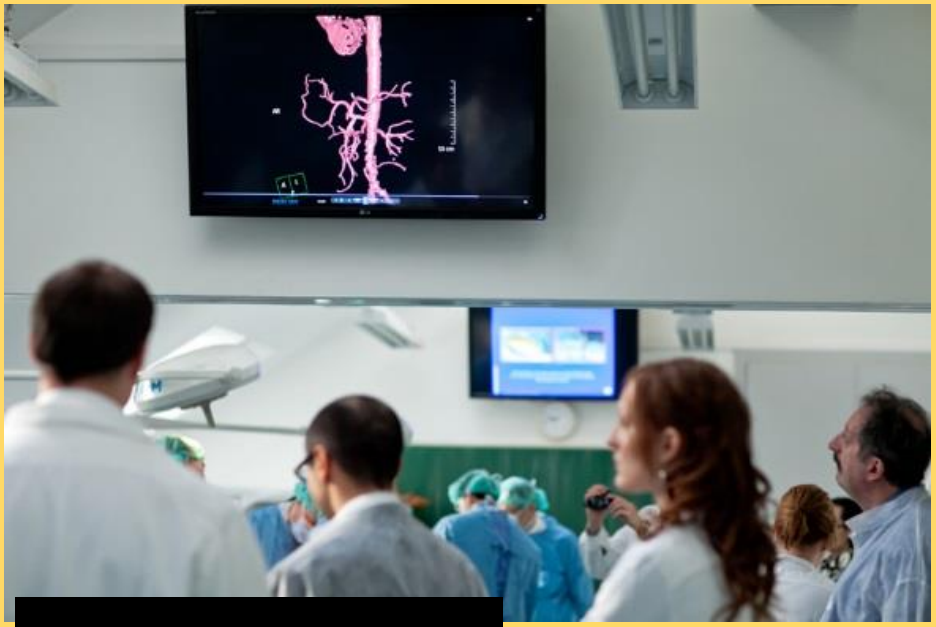


Thiel's fixative



2. Pre-procurement data on „donor's„ vascularity – CT-angiogram- 3D CT reconstruction





1st Hungarian Donor Procurement Surgery Masterclass
Practical Session (January 2014)

Clinical Anatomy Research Laboratory
Head of Laboratory: Ágnes Nemeskéri MD, PhD

Message of the masterclass

1. Training of new members in procurement teams in the four regions of the country
   - **more procurement surgeons** – more organs for transplantation
2. Surgical experience of procurement team should be improved in hands-on courses
   - more experienced procurement surgeons
   - **higher quality of procured organs – better outcome**

3. Procurement team members should be trained in the **recognition of vascular anomalies** – propagation of evaluation of vascularity
   - **less complications during and after the transplantation**

4. **Development of further innovative methods** for the simulation of back-table dissection and evaluation of aberrant anatomy that changes the strategy and technique of multiorgan transplantation

New strategy to further improve the efficiency of Organ Procurement Masterclass and to offer simulation of Multivisceral Procurement

I. Corrosion cast session – to improve the knowledge on aberrant vascularity and discussion on the strategy of procurement surgical procedure
- practical session for trainees

II. Demonstration of Multivisceral Procurement (en-bloc liver, stomach, pancreas and small intestine)
- expert surgeon from surgical center where such procurement is regularly performed
- demonstrates the procurement in one cadaver (pre-procurement CT-angiography performed)

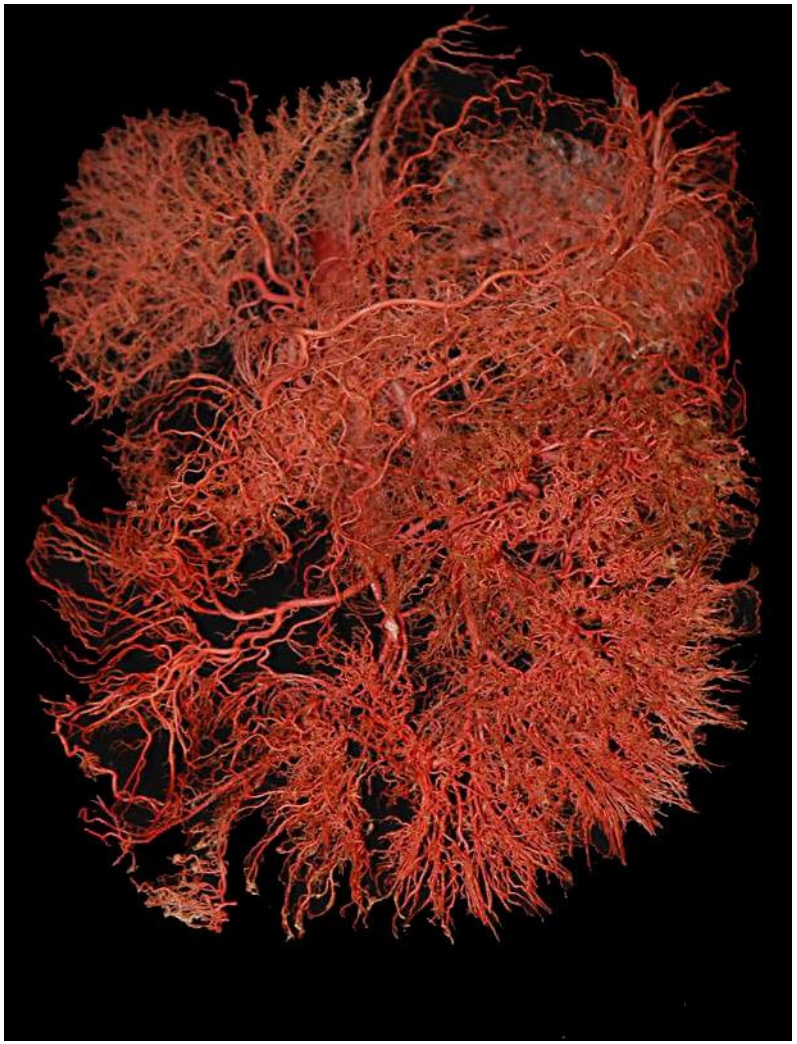
III. Pancreas procurement from organ-complex (pre-procurement CT-angiography performed)
- more training of most challenging organ procurement
- additional material for trainees

IV. Liver-split Simulation on „back-table"
- additional practical training for trainees

V. Laparascopic „living donor kidney procurement or hepatectomy" simulation
-laparoscopic living donor nephrectomy has become the gold standard technique for renal transplantation

I. Corrosion cast session

Corrosion casts and their CT scans for investigation of aberrant vascular anatomy



More than 500 casts…

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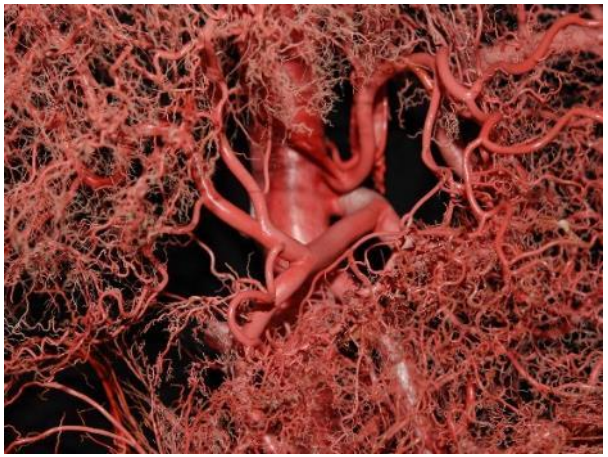
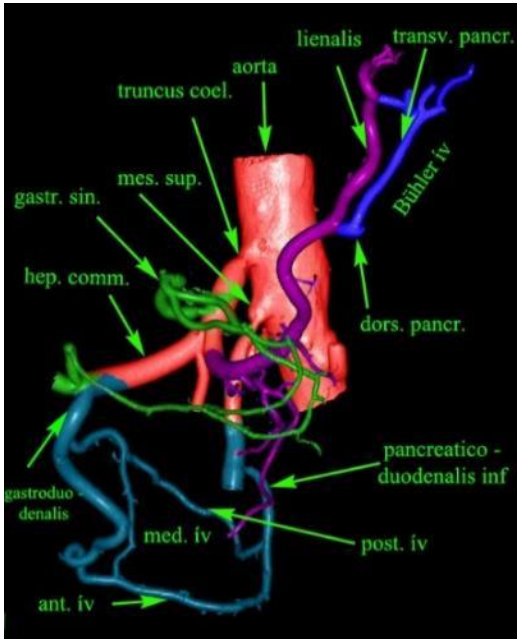
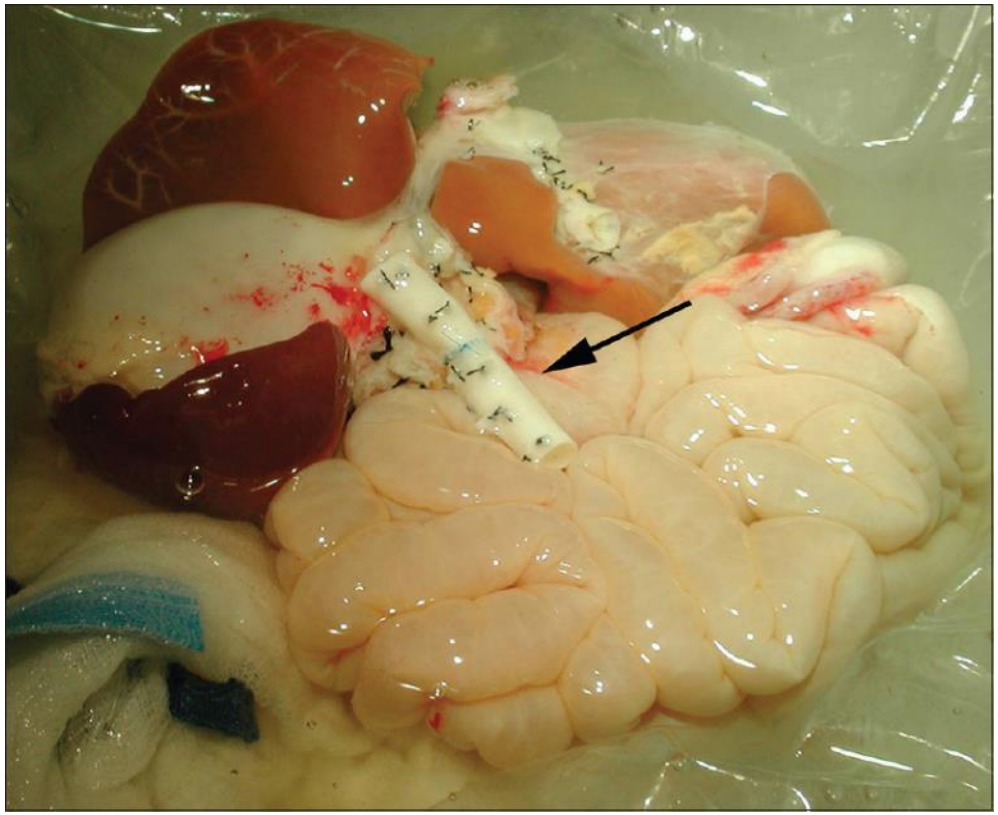




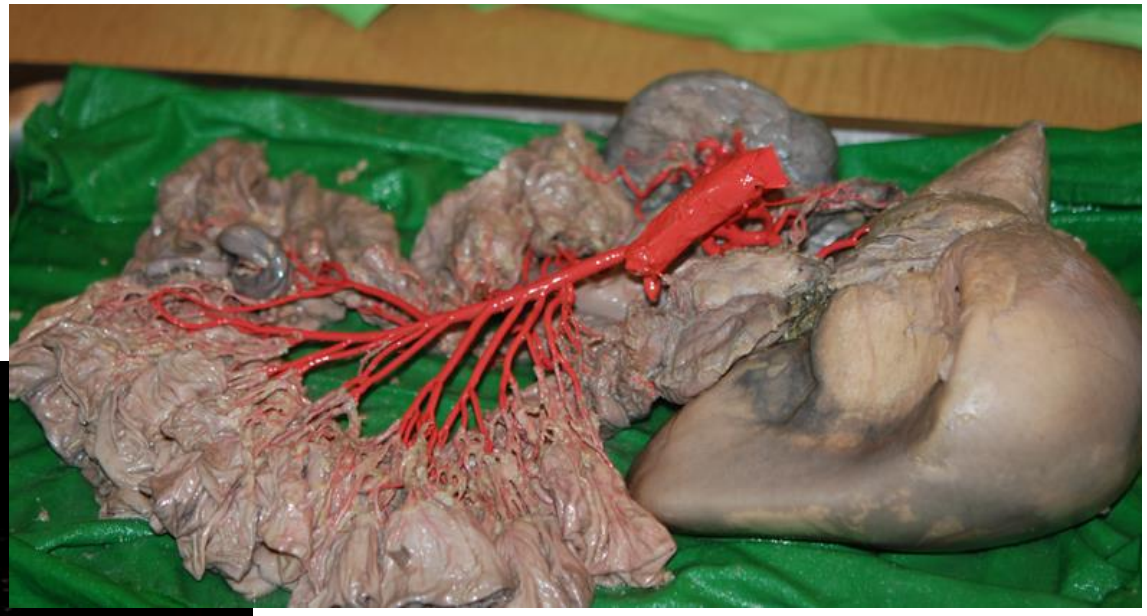
I. Corrosion cast session

II. Demonstration of Multivisceral Procurement (en-bloc liver, stomach, pancreas and small intestine)



Indian Journal of Radiology and Imaging, Vol. 24, No. 4, October-December, 2014, pp. 379-388 Transplant Imaging
Imaging in pediatric small bowel transplantation
Puneet Bhargava[1], Matthew T Heller[2], Nadir Khan[3], Leann E Linam[4], Mariam Moshiri[5], Shawn E Parnell[6], Grace S Phillips[6]

III. Pancreas procurement from organ-complex (pre-procurement CT-angiography performed)



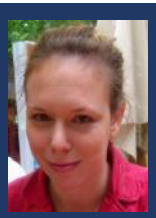
CT-density coded, color-coded elastic resin filling of vascular structures

IV. Liver-split Simulation on „back-table”

Mátyás Kiss MD

Ágnes Nemeskéri MD, PhD

Zsuzsa Kürti MS



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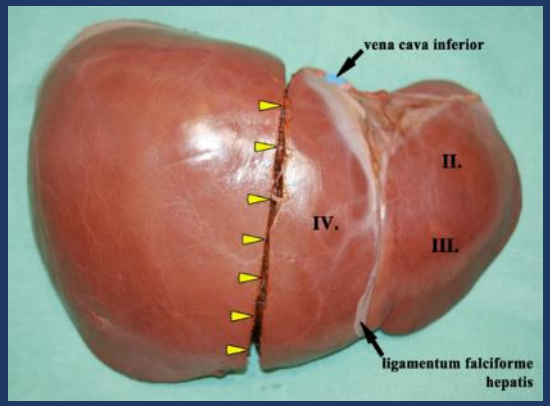

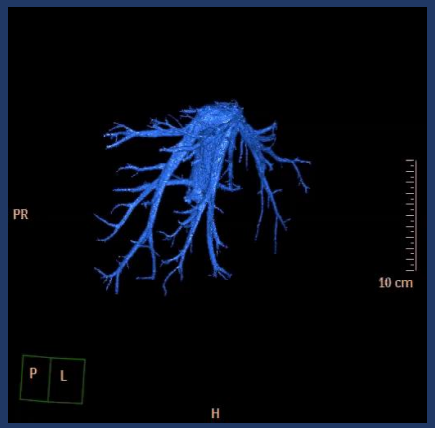

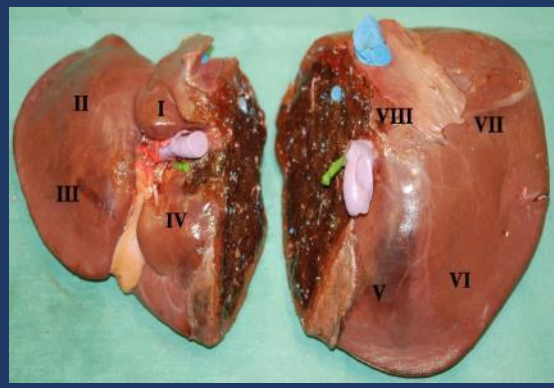

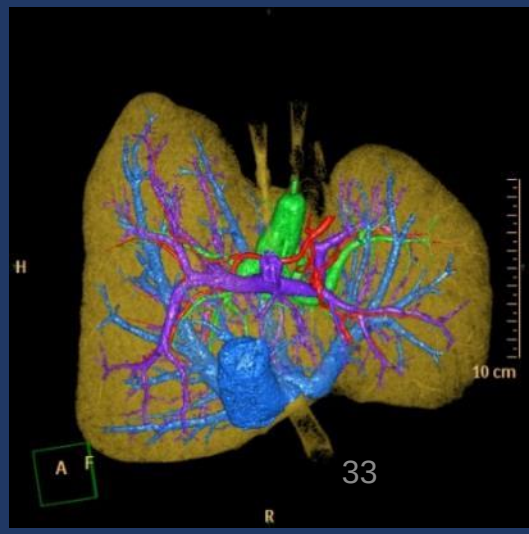

Universiteit Leiden
The Netherlands

European Commission

university of groningen

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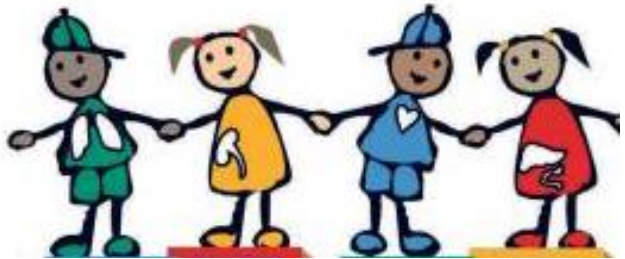
Head of Laboratory: Ágnes Nemeskéri M.D. PhD

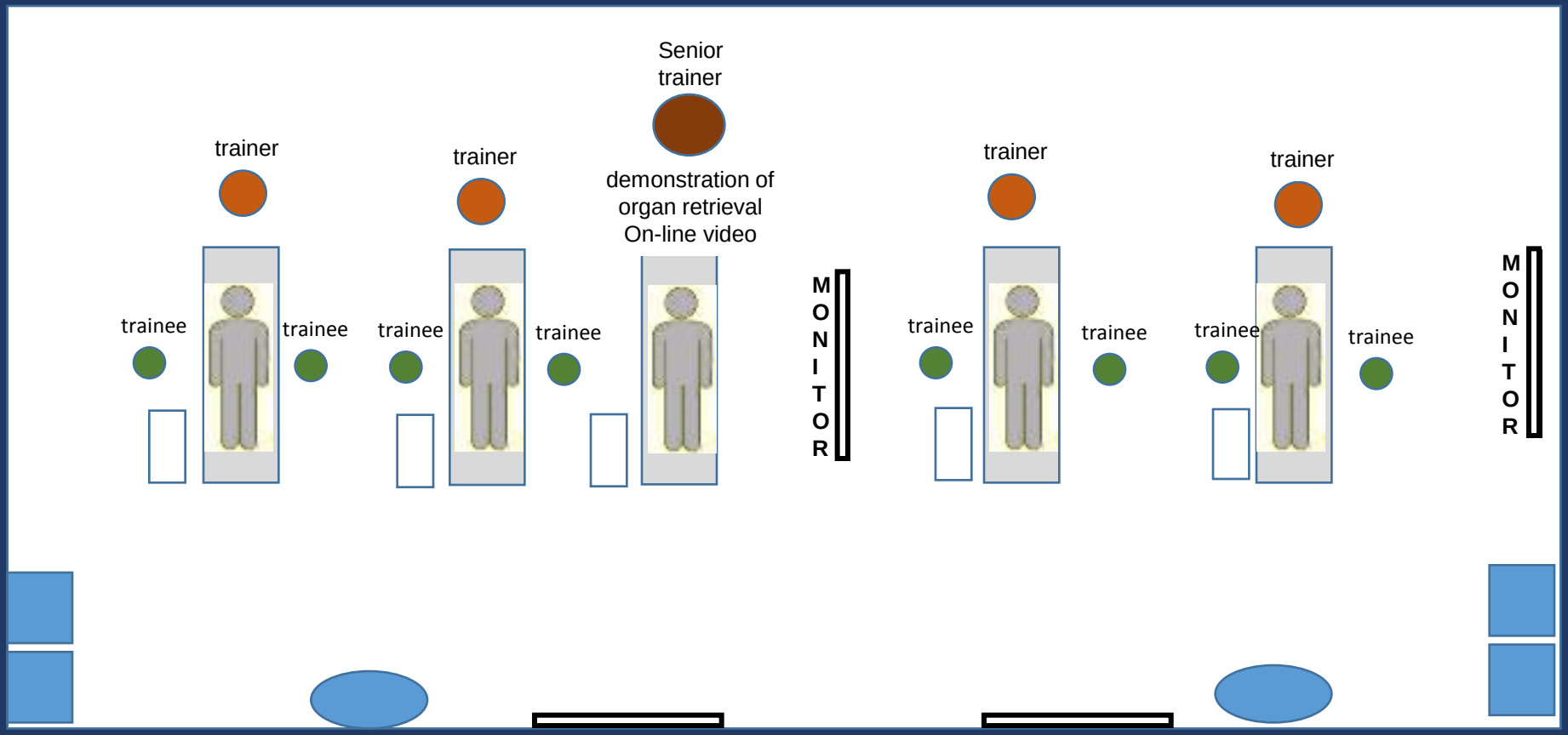
Score a great success

E-learning Modul

Advanced Procurement Training Modul

More experience in procurement – more competence – more good quality organs
more transplantations





Logistic preparation in 2014

Clinical Anatomy Research Laboratory
Head of Laboratory: Ágnes Nemeskéri MD, PhD

notebook
notebook
Senior trainer
demonstration of organ retrieval On-line video
notebook
notebook
demonstration of Multivisceral en-block procurement On-line video
trainee
trainee
trainee
trainee
MONITOR
trainee
trainee
trainee
trainee
trainer
MONITOR
trainer
trainer
trainer
trainer
notebook

Logistic preparation for a future advanced organ procurement mastercourse

Embalming

Preparation of cadavers

Formaldehyde - cheap

in human formaldehyde-embalmed cadavers, the anatomy is realistic, but the sensations during surgical manoevre are not because of the **rigidity** and **color** of the cadaver. **Hard consistence** of organs
Strongly irritant smell of formaldehyde

Soft-Fix-Mix - cheap

The soft-preservation fluid is made up as follows: 2 l of phenol (80% aqueous solution), 8 l of industrial methylated spirits, 8 l water, and 4 l glycerol. Saint George Hospital London

The embalming process consists of making a 2 cm incision in the femoral triangle, the femoral artery is cannulated, one cannula cephalad and one towards the feet. The cannulae are connected to a Porti boy pump and about 1 l of embalming fluid is injected into the leg, the cannula locked off, and then 5 l is injected through the cephalad-placed cannula. The cannulae are left in place overnight and if tissue preservation is apparent then another 5 l of embalming fluid is injected into the body cavity, and repeat as necessary until tissue preservation is judged to be adequate (LD). This is a matter of considerable experience but in general a cadaver will require approximately 22 l of embalming fluid (LD).

D•NOR

Thank you for The Netherlands and France for the supportive collaboration!

Thank you for your attention!