Donation Physician Specialists
Critical Care Canada Forum
Toronto Nov 11th 2013

Sam D. Shemie MD
Division of Critical Care, Montreal Children’s Hospital
Medical Director, Extracorporeal Life Support Program
McGill University Health Centre
Montreal Children’s Hospital/MUHC Research Institute

Professor of Pediatrics, McGill University

The Bertram Loeb Chair in Organ and Tissue Donation
Faculty of Arts, University of Ottawa

Canadian Blood Services

The Loeb Research Consortium in Organ Donation
Summary

• Donation physicians are ICU specialists who have developed a focus and enhanced expertise in organ and tissue donation.

• Varies from direct donor care to program administration, education, training, performance measures, quality improvement and advocacy.

• In other countries, system changes that included donation physician specialists have been associated with increased donation rates.

• Implementation of donation physician specialists has been recommended for improving donation and transplantation systems in Canada.
Donation Physicians: Rationale

1. OTD is a medical, economic and socially critical issue
2. International successes
3. Intensivists are the gatekeepers of most aspects of the donation process - pivotal and undeniable role
4. Benefit for families
5. A physician’s position on these matters influences other professionals and the hospital culture
6. A lot of us can do this, but there are people who can do it better
   eg. palliative care model, ECMO model, neurocritical care, cardiac critical care

Greg Grant, Steve Beed Emily Macvean, with thanks
Cost Comparisons
Bridge versus Transplant

Dialysis:
$70,000/patient/year

Renal Transplant:
$15,000/patient/year (45K year one)

ECMO or VAD:
$10-15,000/patient per day
Low Volume Exposure

• 1-2% of all deaths are eligible for donation
  – approx. 10% of ICU deaths are brain death

• For an ICU with 1000 admissions per year:
  – 3% pediatric ICU mortality
    = 3 donors per year
  – 12% adult ICU mortality
    = 12 donors per year

No intrinsic reason for ICU physicians to develop skill or commitment to donation, or academic interest
OTD is Not Straightforward

1. Logistic ordeal
2. Large amount of organizational, psychological, emotional and physical work
3. Ability to help others through their darkest hour versus ending the burden
4. Rewarding, fulfilling vs. strenuous, exhausting
5. Unappealing workload in an already work overloaded environment
6. Disagreements, misconceptions and inconsistency amongst physicians and HCP about certain OTD practices

With thanks, E Macvean 2010
Provincial Deceased Donor Rates 2007-2011

Canadian Donor Potential 40-50 pmp

C2A Target 22

Source: Canadian Organ Replacement Register, CIHI; Stats Canada 2011 census

*2011 Atlantic Canada pooled data
System Perceptions?

Over-Statements & Simplifications:

1. Transplanters: “They are missing too many donors in the ED and ICU”

2. Intensivists: “We don’t miss donors in the ICU”
Where you die: Which hospital and where in the hospital impacts on provision of donation services
Incidence of neurologic death among patients with brain injury: a cohort study in a Canadian health region

Andreas H. Kramer MD MSc, David A. Zygun MD MSc, Christopher J. Doig MD MSc, Danny J. Zuege MD MSc

ABSTRACT

Background: Hospital mortality has decreased over time for critically ill patients with various forms of brain injury. We hypothesized that the proportion of patients who progress to neurologic death may have also decreased.

Methods: We performed a prospective cohort study involving consecutive adult patients with traumatic brain injury, subarachnoid hemorrhage, intracerebral hemorrhage or anoxic brain injury admitted to regional intensive care units in southern Alberta over a 10.5-year period. We used multivariable logistic regression to adjust for patient age and score on the Glasgow Coma Scale at admission, and to assess whether the proportion of patients who progress to neurologic death has changed over time.

Results: The cohort consisted of 2788 patients. The proportion of patients who progressed to neurologic death was 8.1% at the start of the study period, and the adjusted odds of progressing to neurologic death decreased over the study period (odds ratio [OR] per yr 0.92, 95% confidence interval [CI] 0.87–0.98, p = 0.006). This change was most pronounced among patients with traumatic brain injury (OR per yr 0.87, 95% CI 0.78–0.96, p = 0.005); there was no change among patients with anoxic injury (OR per yr 0.96, 95% CI 0.85–1.09, p = 0.6). A review of the medical records suggests that missed cases of neurologic death were rare (≤ 0.5% of deaths).

Interpretation: The proportion of patients with brain injury who progress to neurologic death has decreased over time, especially among those with head trauma. This finding may reflect positive developments in the prevention and care of brain injury. However, organ donation after neurologic death represents the major source of organs for transplantation. Thus, these findings may help explain the relatively stagnant rates of deceased organ donation in some regions of Canada, which in turn has important implications for the care of patients with end-stage organ failure.

Competing interests:

Andreas Kramer is medical director of the Southern Alberta Organ and Tissue Donation Program; Danny Zuege is the former medical director of this program. Christopher Doig is the former head of the Canadian Council of Donation and Transplantation. He is a co-author of the Canadian Guidelines for the Neurological Determination of Death. No competing interests declared by David Zygun.

Disclaimer: Christopher Doig is a member of the CMA Board and was not involved in the editorial decision-making process for this article.

This article has been peer reviewed.

Correspondence to:
Andreas H. Kramer, andreas.kramer@albertahealth.ca
Figure 1: Proportion of neurocritical care patients in Calgary intensive care units who progressed to neurologic death from Jan. 1, 2002, to June 30, 2012. Cochrane–Armitage trend test: $p = 0.01$. 
Decreasing NDD after TBI
Trend toward decreasing NDD after all forms of BI
NO CHANGE IN HOSPITAL MORTALITY
Organ and Tissue Donation

Graeme M. Rocker, C.P.A., F.C.T.A., for the Canadian Council of Transplantation

When patients with severe head injuries face the challenge of facing honest and compassionate discussions about organ and tissue donation with grieving families, we approach all families and similarly value and respect donation in all eligible circumstances. We support alternative ways to achieve our goals to enhance organ and tissue donation with the family. In the United States, for example, we are mandating representative organizations rather than ICU organizers.

The Canadian Council for Donation and Transplantation

Donation After Cardiocirculatory Death:

A Canadian Forum

February 17–20, 2005
Vancouver, British Columbia

Report and Recommendations

© 2002
## Canadian DCD activity 2006-2012

<table>
<thead>
<tr>
<th>PROVINCE</th>
<th>TOTAL DCD 2006-2012</th>
<th>% of all DCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CANADA</td>
<td>310</td>
<td>100</td>
</tr>
<tr>
<td>BC</td>
<td>20</td>
<td>6.5</td>
</tr>
<tr>
<td>ALBERTA</td>
<td>7</td>
<td>2.3</td>
</tr>
<tr>
<td>SASK</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MANITOBA</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ONTARIO</td>
<td>225</td>
<td>72.5</td>
</tr>
<tr>
<td>QUEBEC</td>
<td>47</td>
<td>15</td>
</tr>
<tr>
<td>NOVA SCOTIA</td>
<td>11</td>
<td>3.5</td>
</tr>
<tr>
<td>NEW BRUNSWICK</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PEI</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NFLD</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Jeff Zaltzman, TLGN/SMH, with thanks
Canada 2012
541 donors, 86 DCD (15.8%)
Spain Donation and Transplant Rates 1989-2007
HSC Toronto
Impact of an ICU Based Organ Donation Team

24x7 service, ICU physician, nurse coordinator chaplaincy, social work

* \( p = 0.006 \)
** \( p = 0.003 \)
What are the Challenges in the System

1. Sensitive interplay between the deceased, their family and the medical professional = natural discomfort at the juncture where EOL care and donation interface

2. Donation is not a high profile concern for Intensivists

3. Physician workload and qualifications

4. Hospital culture

With thanks, S. Beed, E Macvean 2010
• Two-day meeting to create strategic recommendations regarding donation physicians in Canada.
• In partnership with the Canadian Critical Care Society
• In collaboration with the Whistler Canadian CC Conference

Considerations:
• Existing models, structures and processes related to donation physicians nationally and internationally
• Lessons learned from international jurisdictions
• ICU Capacity
• Ethical considerations and potential conflicts of interest
Donation Physician Consultation Participants

**International Experts**
- Dr. Xavier Guasch, Spain
- Dr. Dale Gardiner, UK
- Dr. Raghaven Murugan, Pittsburgh
- Dr. Gerry O’Callaghan, Australia

**Canadian Critical Care Society**
- Dr. Chip Doig, Calgary
- Dr. Alison Fox Robichaud, Hamilton
- Dr. John Drover, Kingston
- Dr. Brendan McCarthy, Winnipeg
- Dr. John Granton, Toronto
- Dr. Robert Fowler, Toronto
- Dr. Giuseppe Pagliarello, Ottawa

**Ethicists**
- Dr. Franco Carnevale, Montreal, QC
- Dr. Bashir Jiwani, Surrey, BC

**ICU based OPO Medical Directors**
- Dr. Sonny Dhanani, TGLN, Ottawa,
- Dr. Greg Grant, BC Transplant, Vancouver
- Dr. Jim Kutsogiannis, Northern Alberta
- Dr. Andeas Kramer, Southern Alberta
- Dr. Steve Beed, Halifax
- Dr. Jean-Francois Lize, Quebec Transplant

**Intensivists**
- Dr. Ian Ball, Kingston, ON
- Dr. Tony Best, Grand Prairie, AB
- Dr. Mark James, Saskatoon, SK
- Dr. Brian Kavanagh, Toronto, ON
- Dr. Stephan Langevin, Quebec City, QC
- Dr. Sharon Peters, St. John’s, NL
- Dr. Jag Rao, Regina, SK
- Dr. Mike Sharpe, London
- Dr. Shavaun MacDonald, Saskatoon

**Canadian Neurosurgical Society**
- Dr. Brian Toyota, Vancouver, BC

**Canadian Assoc Emergency Physicians**
- Dr. John Tallon, Halifax

**OPO**
- Mr. Louis Beaulieau, Quebec Transplant
- Ms. Janet MacLean, TLGN
- Dr. Frank Markel, TGLN
- Mr. Laszlo Kalmar, BC Transplant,

**CBS**
- Kimberly Young
- Sherri Kashuba
- Mathias Haun
Donation Physicians in a Coordinated OTDT System: Consultation Topic Themes

1. Donation Physician Models
   - Structure, Roles and Responsibilities, Qualifications
2. Education and Training
3. Ethics: Potential Conflicts of Interest
4. Performance and Accountability
5. Remuneration
6. System Capacity
7. Physician Distribution & Geographic Considerations
8. Research and Innovation
# Intensivist Lead Donation Management Service

University of Pittsburgh Medical Center

**Increases Organ Utilization from BD Donors**

<table>
<thead>
<tr>
<th>Transplanted Organs</th>
<th>Odds Ratio</th>
<th>$\chi^2$-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Organs</td>
<td>1.7 (1.2-2.5)</td>
<td>$p = 0.0082$</td>
</tr>
<tr>
<td>Heart</td>
<td>1.4 (0.5-4.2)</td>
<td>$p = 0.5775$</td>
</tr>
<tr>
<td>Lung</td>
<td>2.5 (1.1-6.4)</td>
<td>$p = 0.0396$</td>
</tr>
<tr>
<td>Liver</td>
<td>1.6 (0.6-4.0)</td>
<td>$p = 0.3624$</td>
</tr>
<tr>
<td>Kidney</td>
<td>1.9 (1.0-3.7)</td>
<td>$p = 0.0439$</td>
</tr>
</tbody>
</table>

Singbartl et al, SCCM 2010
The UK Model

Organ Donation Task Force: six key strategies / areas of focus to increase donation by 50%:

1. Consent/authorization: focus on authorization rather than consent, to prevent family override
2. Diagnosis of brain death
3. Identification and referral
   a. two clinical roles:
      a. CLOD = clinical lead in organ donation (donation physicians)
      b. SNOD = specialist nurse in organ donation (donor coordinator)
   b. Early referral improves service to donor families
4. Increase DCD
5. Increase organ utilization (donor management)
6. Increase ED donors
The UK Model

Two clinical roles:

a. **CLOD** = clinical lead in organ donation (donation physicians)

b. **SNOD** = specialist nurse in organ donation (donor coordinator)

There is a Donation Specialized Physician responsible for donation activity in **every hospital** in the UK System.
Number of deceased and living donors in the UK, 1 April 2002 - 31 March 2012

- **DBD donors**
- **DCD donors**
- **Living donors**

Source: Transplant activity in the UK, 2011-2012, NHS Blood and Transplant
Australian National System Design
System Wide Donation Specialists

64% increased deceased donors

45% increased organ transplants

25% increased cornea donors
Improvements Related to Time after System Redesign

International comparison

Country (date of first full year after implementation):
- Australia (2010)
- Portugal (2007)
- Spain (1991)
- UK (2009)
- Croatia (2002)

Source: Australia and New Zealand Organ Donor (NHCO) Registry, IRCADAT

Canada
How do we know that it is a value added investment?
Measuring system-wide organ donation performance
UK NATIONAL AUDIT OF POTENTIAL DONORS

Breakdown of audited deaths in ICU’s, 1 April 2011 – 31 March 2012

Audit Deaths

Donation after brain death

Were there any absolute or relative medical contraindications to solid organ donation?

Were the family formally approached for consent/authorisation for solid organ donation?

Was consent/authorisation for solid organ donation given by the family?

Was the patient ever on mechanical ventilation?

Was imminent death anticipated?

Was consent/authorisation for solid organ donation given by the family?

Were the family formally approached for consent/authorisation for solid organ donation?

Audit Deaths

Donation after circulatory death

Were there any absolute or relative medical contraindications to solid organ donation?

Were the family formally approached for consent/authorisation for solid organ donation?

Was consent/authorisation for solid organ donation given by the family?

Was the patient ever on mechanical ventilation?

Was imminent death anticipated?

Was consent/authorisation for solid organ donation given by the family?

Were the family formally approached for consent/authorisation for solid organ donation?

Audit Deaths

What type of donation happened?

DBD

DCD

UK NATIONAL AUDIT OF POTENTIAL DONORS

Stages at which possible organ donors lose the opportunity to become actual donors, 1 April 2011 to 31 March 2012

% of possible donors

100

90

80

70

60

50

40

30

20

10

0

26%

1%

4%

7%

55%

36%

8%

51%

DBD: 636 donated (38% of possible donors)

DCD: 396 donated (8% of possible donors, 13% of those not contraindicated)

* DBD - Possible donors meeting criteria for neurological testing

DCD - Possible donors not confirmed dead by neurological criteria where imminent death anticipated and treatment withdrawn

The annotated percentages represent the percentage of remaining patients that are lost at each stage, not the percentage of all possible donors.
Consent/authorisation rates by Organ Donation Services Team, 1 April 2010 – 31 March 2011

Source: Transplant activity in the UK, 2011-2012, NHS Blood and Transplant
No physician ever wants to, or be misinterpreted to, prioritize donation over patient care.
Managing Ethical Challenges

• Full disclosure of roles and responsibilities

• Separation of ICU EOL care from donation team members

• Funding to support providing patients/SDM the opportunity to donate without incentive to increase donor or organ yield
Donation Specialists in Canada

• Starting to see advancement on the implementation of donation specialists
  – Implementation underway in ON, BC, MN
  – Proposals under review in AB, QC, AB

• Partnering with donor nurse coordinator

• Provincial models vary in roles, responsibilities and accountability

• Develop metrics to measure and demonstrate impact
Summary

• Donation physicians are ICU specialists who have developed a focus and enhanced expertise in organ and tissue donation.

• Varies from direct donor care to program administration, education, training, performance measures, quality improvement and advocacy.

• In other countries, system changes that included donation physician specialists have been associated with increased donation rates.

• Implementation of donation physician specialists has been recommended for improving donation and transplantation systems in Canada.
END
• Improving the process of deceased organ and tissue donation: a role for donation physician specialists.

Shemie, Macdonald, on behalf of the Canadian Blood Services- Canadian Critical Care Society Expert Consultation Group, CMAJ 2013 in press
Fragmented System but…. Variable Progress Continues

Hospital donor coordinators

Local OD committees and quality assurance process

Donation registries- ON, BC, NS, NB, MB(in process)

Gradual advancement of DCD

Collaboration and Collaboratives

High school curriculum

Hospital accreditation standards in OTDT
Donation Physician Consultation Planning Committee

- Sam Shemie, Chair
- Dorothy Strachan, Process Consultant
- Guiseppe Pagliarello, CCCS representative
- Sherri Kashuba, Director, O&T, CBS
- Mathias Haun, Director,
- Kimberly Young, Executive Director, OTDT, CBS
- Barbara Tuepah, coordinator, OTDT

Shavaun MacDonald
PRE-MEETING DOCUMENTS

Pre-meeting Documents
• Participant List
• Speaker Biographies
• Terms of Reference
• OTDT System Design Progress to Date
• Ethics Consultation Draft Summary Report
• Literature Review, Environmental Scan and Focused International Survey
• International Survey Responses
• Summary of Health Care Professionals Surveys
• Public Opinion
• Royal College Training Requirements
• OTDT Statistics
• Accreditation Canada Standards
Preconceptions re: Donation Physicians

1. This is already what we do; our job, our responsibility, our obligation and so why are we wasting money and time and complicating matters.

2. This is ethically compromising and merely a transplant-driven tactic to get more organs out of people before they are really dead and eligible.

3. Great idea, enhances expertise, invests in the specialty and its future, improves employability, breeds interest and research to improve practice and is good for society.
Trials of Donor Intervention

   - PRCT single center trial in 100 donors
   - methylprednisolone bolus and continuous infusion
   - decrease inflammatory markers
   - decrease ischemia-reperfusion liver injury
   - decrease acute liver rejection rates

2. **Donor dopamine & kidney graft function**: Schneulle et al, JAMA, 2009; Benck et al, J Am Coll Cardiol. 2011
   - PRCT European multicenter in 264 donors, 487 renal grafts
   - Low dose dopamine (4ug/kg/min)median 6 hours
   - Decrease need for post transplant dialysis
   - No detriment to heart function

3. **Lung protective strategy in donors**: Mascia et al, JAMA 2010
   - PRCT European multicenter in 118 donors
   - Increased lung procurement (27 vs 54%)
Monitoring Organ Donors to Increase Transplantation Results (MOnIToR)

- UPMC, HRSA, Kellem et al
- Randomized, prospective, multicenter controlled study of brain dead organ donors
- n=960, randomized to protocolized resuscitation versus standard care
- Primary outcome = # organs transplanted per donor
- Jan 2012- enrolled 362 donors, interim analysis pending at 480
END
Preconceptions re: Donation Physicians

1. This is already what we do; our job, our responsibility, our obligation and so why are we wasting money and time and complicating matters.

2. This is ethically compromising and merely a transplant-driven tactic to get more organs out of people before they are really dead and eligible.

3. Great idea, enhances expertise, invests in the specialty and its future, improves employability, breeds interest and research to improve practice and is good for society.
What are the Principle Goals of an Organ & Tissue Donation and Transplant System?

1. Serve the needs of potential transplant recipients
   = ‘underserviced population’
   = perform as many transplants as possible

2. Do so in an ethical, legal, safe and equitable manner

3. Provide the opportunity to donate **without** compromising the duty of care to the dying patient or living donor
Measuring organ donation performance
Draft Recommendations Going to F/P/T Governments

1. Specialization of donation care within hospital systems including the implementation of Donation Physicians

2. Implementation of an optimized funding model

3. Increased investment for enabling infrastructure for increased organ donation
Donation Physician Consultation Planning Committee

- Sam Shemie, Chair
- Dorothy Strachan, Process Consultant
- Guiseppe Pagliarello, CCCS representative
- Sherri Kashuba, Director, O&T, CBS
- Mathias Haun, Director,
- Kimberly Young, Executive Director, OTDT, CBS
- Barbara Tuepah, coordinator, OTDT

Shavaun MacDonald
Draft Recommendations Going to F/P/T Governments

1. Specialization of donation care within hospital systems including the implementation of Donation Physicians
   
   • It has not defined what a ‘Donation Physician’ is for Canada
   • Not addressed the operational feasibility of this recommendation, challenges and potential structures based on regional needs
   • We need to be better informed and advised by the expert community
Fragmented System but…. Variable Progress Continues

In-hospital donor coordinators

Local OD committees and quality assurance process

Donation registries- ON, BC, NS, NB

Gradual advancement of DCD

Collaboration and Collaboratives

High school curriculum

Hospital accreditation standards in OTDT