

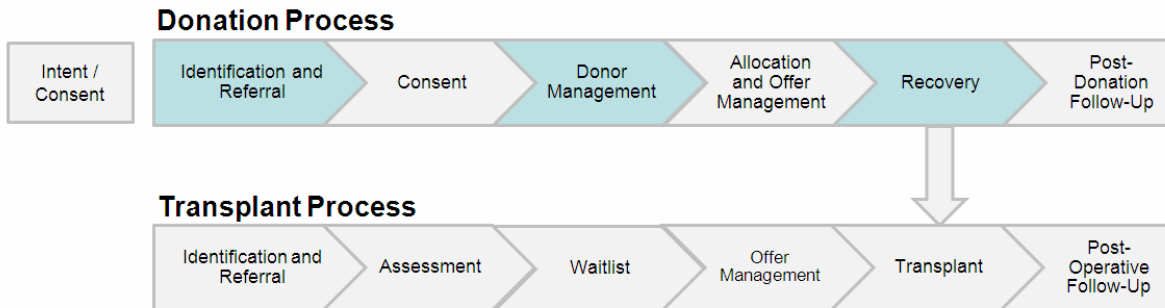
ORGAN EXPERT COMMITTEE: WHAT RESOURCING MODEL(S) BEST ACCOMMODATE ORGAN DONATION SERVICES? (DRAFT SOLUTION DESIGN PAPER)

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1. Scope

WHAT RESOURCING MODELS BEST ACCOMMODATE ORGAN DONATION SERVICES?



Based on challenges highlighted in the Problem Definition¹ this paper focuses primarily on resourcing challenges, options, and models related to donor management and recovery components of the process flow for living and deceased organ donation. Resourcing for identification and referral may also be discussed where appropriate.

For this paper, “resourcing models” encompass human resources, infrastructure and financing approaches to support organ donation. Resourcing models for donor intent, consent, allocation, offer management, and post donation care as well as reimbursement of living donor expenses are out of scope.

¹ Canadian Blood Services. Organ Donation and Transplantation Problem Definition. Ottawa: Canadian Blood Services, June 2009.

2. Current State

This section seeks to provide a brief overview of how the question considered in this paper is being thought about and addressed both within Canada and in foreign systems. The “Current State” sub-section provides a synopsis of the relevant portions of the current Canadian ODT system. The “Current Community Thinking” sub-section summarizes a sampling of domestic and international viewpoints related to the topic. The “Other Models” sub-section highlights a limited selection of organizations or jurisdictions that currently address this paper’s central question in ways that may inform a broader view of possible solutions.

A. Current State

The current state provides an overview of current resourcing challenges and describes current approaches to resourcing donor management and recovery from perspectives of:

- organizational/infrastructure (e.g., ICU beds, ORs, diagnostic resources);
- human resourcing (e.g., donation coordinators, physicians); and
- financial resourcing of providers (e.g., models for funding donation activity, physician payment mechanisms).

Given that resourcing approaches are not often discussed in published reports, the current state that follows draws on informal sources such as interviews and surveys.

Human Resourcing

Two primary approaches to allocating human resources to organ donation programs in Canada are resources dedicated to organ donation programs (hospital-based or OPO-based) and resources shared with other programs. Anecdotal information highlighted donor coordinators as essential participants in organ donation processes. Variations in role, and time allocation were noted including: dedicated (to deceased or living donor programs), dual role (donation and transplantation) and part-time with other hospital responsibilities. For example, coordinators based in Transplant Saskatchewan’s Regina satellite, or part-time FTEs distributed across health districts in Nova Scotia. Base of work (in-hospital or off-site) and employer (hospital or OPO-employed) also vary. For example, Trillium Gift of Life Network (TGLN) employs Organ and Tissue Donation Coordinators to provide in hospital development and case management support.

Only anecdotal information exists with respect to physician resourcing for donor management organ recovery. The value of formal medical leadership positions for organ donation in all hospitals was noted. Informal medical leaders are primarily intensivists.

Organizational Infrastructure Resourcing

Primary infrastructure resources required to support organ donation include intensive care unit (ICU) beds, operating rooms (ORs), diagnostic equipment, and transportation mechanisms. Availability of ICU beds, operating room time, and laboratory and diagnostic imaging capacity have been identified as challenges or barriers to donor management and recovery. Competition with other hospital programs for these scarce resources exacerbates this challenge.

Several approaches are in place or have been attempted to enable access to ICU beds and OR time. Anecdotal information described the use of a designated “donor” bed in ICU to manage surges in capacity and to enable the centre to accept and manage potential donors from other hospitals. It is however, challenging to retain the bed for potential donors given overall pressure on ICU beds. Prioritized access was reported as another strategy to access ICU beds utilized in several centres. This approach involves moving patients within or between hospitals to accommodate potential donors. It requires commitment and support from executive leadership and physicians. An organizational culture that recognizes and supports donation as a priority was also described as being important.

Increasing DCD donors may add pressure to ICUs and ORs as these donors have a longer length of stay in the ICU (2-3 days on average) and require multiple recipient procedures performed simultaneously to minimize the cold ischaemia period for all of the organs.

Although surge capacity does not appear to be used to support peaks in donation activity, anecdotal information indicates that H1N1 and SARS have highlighted the strained ICU capacity experienced in donor hospitals and transplant centres across Canada.

Financial Resourcing

The following discussion focuses primarily on approaches to funding organ donation at an organizational level, with brief mention of physician remuneration. The models (and associated accountability requirements) used by PT governments to fund organ donation activities vary across Canada. Variations include:

- Ministry of Health based with program budgets (e.g., New Brunswick Organ and Tissue Procurement Program);
- Regional Health Authority (RHA) based with program budgets for activities carried out by an RHA based OPO or provincial agency (e.g., Organ Procurement and Exchange Network of Newfoundland and Labrador, Transplant Manitoba – Gift of Life, Saskatchewan Transplant Program, Northern and Southern Alberta HOPE programs, BC Transplant);
- Provincial programs with global budgets (e.g., Legacy of Life, Nova Scotia); and
- OPO based with global budgets (e.g., TGLN, Quebec Transplant).

A few of the RHA-based programs are also organized and funded to provide transplantation services.

Limited information is publicly available describing the funding models used currently by RHAs/ Local Health Information Networks (LHINs) or donor hospitals. Anecdotal information indicates that a program funding approach is generally used. It may be directed at organ donation or embedded within transplant or critical care programs, or flowed through provincial OPOs. Transplant Manitoba – Gift of Life receives program funding from the Winnipeg Regional Health Authority for multi-organ donor coordinators, administrative support, critical care, and OR costs.² The provincial donation agency in Nova Scotia receives a global budget for donation activities and employment of donor coordinators.

Models exist in three provinces to reimburse hospitals for a portion of the costs associated with organ donation in order to minimize financial disincentives to donation. In Ontario, the TGLN administers a program that reimburses hospitals for consent and medical testing (regardless of whether recovery occurs) and recovery costs up to \$6000/donor.³ Quebec and New Brunswick⁴ also provide partial payment for donor identification and referral, evaluation, care, and organ recovery costs. Other provinces⁵ are considering implementing this type of model.

An inter-provincial agreement exists enabling provinces that provide transplants to residents of other provinces to bill the recipient's home province. The current billing rates outlined in the agreement are: heart (\$101,249), heart - lung (\$143,002), lung (\$163,523) and liver (\$103,732). These rates cover the inpatient cost of performing the transplant and also include a fixed amount of \$19,072 to cover organ retrieval to recognize that retrieval is part of the transplant supply cost. Elements included in the \$19,072 are not publicly available.

Physicians involved in organ donation activities are remunerated using alternate payment plan or salary for all medical services including donation and fee-for-service. Where fee-for-service is used, schedules of benefits vary across the provinces. Examples include certification of brain death, organ donor assessment⁶, counselling of potential donor family members, and donor management.⁷ Appendix A provides a high level listing of donation related practices reimbursed through provincial fee schedules.

² Transplant Manitoba Gift of Life. Improving Access to Transplantation for Manitobans (Phases II and III). Winnipeg Regional Health Authority, July 2007

³ Trillium Gift of Life. Saving More Lives Together 2006/07 Annual Report, 2007.

⁴ Canadian Council for Donation and Transplantation. Cost recovery for donation (unpublished), 2003.

⁵ British Columbia, Nova Scotia

⁶ Saskatchewan Health Regional Health Services Policy & Procedure Manual. Payment Schedule for Saskatchewan Physicians October 2008

⁷ Ontario Ministry of Health and Long Term Care. Schedule of Benefits: Physician Services Under the Health Insurance Act, 2006.

A financing related challenge noted during the National Consultation and summarized in the Case for Change, is the lack of measurement and accountability mechanisms which could support performance measurement, and operational and resource planning.

B. Current Community Thinking

I. Reports and Papers

Report of the Citizens Panel on Increasing Organ Donations, 2007⁸

The Ontario Minister of Health and Long Term-Care (OMHLTC) created the Citizens Panel to hear the views of Ontarians on organ donation. The Panel recommendations included funding TGLN for costs related to procuring organs from American hospitals and allowing TGLN to charge American hospitals for reasonable costs of Canadian organs sent to US transplant centres. The panel also recommended that the Ontario Critical Care Strategy (under development at the time) consider resources needed for an increase of donors to more than 300 per year, and for widespread use of DCD.

Health Care at the Crossroads: Strategies for Narrowing the Organ Donation Gap and Protecting Patients, 2004⁹

This report contains recommendations arising from a roundtable of US experts convened by the Joint Commission to discuss factors that inhibit organ donation and compromise the well-being of living donors, and to identify solutions for addressing these problems. Resourcing related recommendations include:

- Focusing resources for improving organ donation rates on the hospitals with the greatest potential to yield organ donors;
- Employing in-hospital coordinators in Level 1 Trauma Centres;
- Reimbursing hospital costs to maintain potential organ donors prior to declaration of death (OPOs provide reimbursement of costs after declaration of death); and
- Making organ donation a criterion in public sector pay-for-performance reimbursement models.

Organ Shortage: Current Status and Strategies for Improvement of Organ Donation: A European Consensus Document¹⁰

This document provides a step-by-step guide to the most effective ways of maximizing the number of high quality organs for transplantation from deceased donors. Resourcing related recommendations included:

⁸ Ontario Ministry of Health and Long Term Care. Report of the Citizens Panel on Increasing Organ Donations, March 2007.

⁹ Joint Commission on Accreditation of Healthcare Organizations Health Care at the Crossroads: Strategies for Narrowing the Organ Donation Gap and Protecting Patients, 2004

¹⁰ Accessed at <http://www.edqm.eu/site/Reports-73.html>

- Employing a key donation person in every acute care hospital with a clearly defined responsibility for establishing, managing, and auditing systems for donor identification and identifying potential areas for improvement; and
- Properly resourcing and reimbursing hospitals for organ procurement infrastructure and activity (ICU beds and ORs, maintaining patients in ICU, certifying brain death certification, retrieving organs).

II. Forums

National Consultation: Organ and Tissue Donation and Transplantation (Canadian Blood Services)

September 22-24, 2008, Gatineau, Quebec

National consultation participants recommended several resourcing approaches including:

- assigning priority services to potential organ donors and establishing appropriate cost recovery schemes;
- establishing purpose-specific budgets outside of global hospital budgets;
- block funding for dedicated personnel in hospitals;
- activity-based funding for donation targeted at ICUs, EDs, ORs, and EMS; and
- ensuring funding of core system elements as part of the national infrastructure such as ODT information systems and sustainment of the clinical capacity of the national system.

Medical Management to Optimize Donor Organ Potential: A Canadian Forum Report and Recommendations (Canadian Council for Donation and Transplantation)

February 23-25, 2004, Mt. Tremblant, Quebec

This Forum focused on recommendations for clinical management of donors necessary to promote donor eligibility and optimize organ function for transplantation. Forum participants agreed that addressing resource supports (e.g., clinical excellence) and barriers (e.g., extended ICU stays, access to OR time) was essential to implement the recommendations. However, specific resourcing models or options were not offered.

C. Other Models

Spain

The key features of Spain's approach to organ donation under the Spanish National Transplant Organization are well documented in the literature.^{11,12} An essential economic feature of the model is reimbursement of the hospitals for procurement and transplant activity, using a hybrid approach that considers local cost estimate and annual budgets based on donation activities performed in the previous year. Other key resourcing elements of the model are:

- Extensive coordination network at the national, regional, and hospital levels that covers all extra-salary and extra-time activities of coordinators and surgical retrieval teams, as well as any donor evaluation tests, the ICU bed daily costs, etc. This network and the role of in-hospital coordinators are viewed as major contributors to high donor rates.
- Utilization of highly trained, hospital based coordinators (part time), mainly physicians, to coordinate donation and transplantation activities.
- Funding for the donation program and the numbers from the preceding year, regardless of whether organ donation/procurement activity ends with a transplant.
- Payment models (salaries or activity-based) for professionals (in hospital and on call) vary by region.

United States (US)

In the US, the OPO – transplant centre model can be described as a service-based model with reimbursement of donor management and recovery costs. The process generally works as follows:

- Patient insurance companies (including Medicare and Medicaid) are responsible for covering patient treatment costs up to and including the diagnosis of death.
- Following diagnosis of death, the patient is discharged from the hospital and readmitted as a donor under an OPO. The OPO covers the cost of all donor management activities. Hospitals are reimbursed based on negotiated case fees or percentage of total charges, regardless of whether the recovered organs are used for transplant. Due to the negotiations, fees and financial arrangements vary across the US.
- For each organ placed for transplant, the OPO earns a 'standard acquisition fee' which is paid by the transplant center and the center bills the insurance company of the recipient of the organ.

United Kingdom (UK)

The National Health Services Blood and Transplant (NHSBT) is a special health authority in the NHS and is the organ donor organisation for the UK. The UK is in the midst of reform to improve its performance in organ donation and transplant. The

¹¹ R. Matesanz & B. Dominguez-Gil. Strategies to Optimize Deceased Organ Donation. *Transplantation Reviews* 21, 2007.

¹² B. Miranda, J. Vilardello, and J. M. Grinyo. Optimizing Cadaveric Organ Procurement: the Catalan and Spanish Experience. *American Journal of Transplantation* 3: 1189–1196, 2003.

reforms, focused primarily on national coordination and resourcing, and are based on the recommendations of the Organ Donation Taskforce.¹³ They include:

- Establishment of a national organ donation organisation with responsibility for UK-wide donation;
- Establishment of UK-wide network of dedicated organ retrieval teams;
- Employment of medical donation champions by each Trust¹⁴ to improve integration of organ donation as a regular part of end-of-life care;
- Expansion of the current network of donor transplant coordinators through central employment by a UK-wide Organ Donation Organisation;
- Removal of financial disincentives to Trusts through appropriate reimbursement; and
- Introduction of rates and payment by results¹⁵ to fund donor hospitals for all aspects of donor management, whether or not organ retrieval occurs.

Australia

Australia's health care delivery model is similar in structure to Canada, in that it is based on a federal system with national and state/territorial (S/T) governments. Health service delivery, and therefore delivery of organ donation services is a S/T responsibility. National policy can be developed for health matters, such as organ donation, but S/T collaboration is required for policy implementation.

Similar to the UK, Australia is reforming organ donation and transplantation activities based on recommendations from the National Clinical Taskforce on Organ and Tissue Donation.¹⁶ These reforms include multiple, concurrent initiatives aimed at achieving a more standardized and coordinated national approach:

- New national organization to provide national leadership, policy, direction and coordination;
- New national organ donation network;
- New medical leadership positions in S/Ts and hospitals;
- Matrix reporting of state-wide organ donation medical director to CEOs of health jurisdictions and the national authority;
- Clinical specialists dedicated to organ donation to work closely with hospital teams in emergency departments and ICUs; and
- New hospital funding for additional staffing, beds, and other infrastructure costs associated with organ and tissue donation.

¹³ Organ Donation Taskforce. *Organs for Transplants: A report from the Organ Donation Taskforce*. London, Department of Health.

¹⁴ Trusts represent a type of health care provider within the National Health Service in the UK. There are Primary Care Trusts and Acute Hospital Trusts. An NHS Trust may comprise one hospital or several hospitals, plus a variety of peripheral locations where clinics might be held (not all necessarily owned by the Trust).

¹⁵ Payment by results¹⁵ is a way of paying providers (Trusts, hospitals, etc.) a fixed price for each individual case treated. Department of Health. *Reforming NHS financial flows: introducing payment by results*. London: DOH, 2002.

¹⁶ Australia Department of Health and Ageing. *A World's Best Practice Approach to Organ and Tissue Donation for Australia: Overview*. 2008.

3. Analysis

This section briefly describes the data collected and reviewed, the assumptions made, the analysis conducted, and the findings discovered during the process of identifying a slate of recommendations. For the sake of conciseness, most, if not all, of the background research and analysis details are not included. The findings listed in this section are those that seem most applicable to the evaluation of possible solutions to the central question of this paper.

A. Analysis Approach

Subject to availability of data, analysis of the question will be undertaken to address three sub questions:

- What human resourcing models best enable donor management and organ recovery? (This may include identification and referral)
- What organizational infrastructure options (e.g., dedicated beds, dedicated OR time) best enable donor management and organ recovery?
- What financial resourcing models best enable donor management and organ recovery?

A high level SWOT analysis of current Canadian models and options (from financial, human resourcing, structure and infrastructure perspectives) was conducted. This analysis of the current state was then used in a comparison of models employed in other jurisdictions to identify and assess potential options for addressing each of the questions. Last, a stakeholder analysis will be completed to explore the impact of each option on key stakeholders (e.g., donor families, living donors, critical care physicians, procurement surgeons, donor coordinators, other hospital programs, administrators, provincial ministries of health).

One assumption underlying the analysis is that funding agents (e.g., PT governments, RHAs/LHINs, OPOs) are willing to consider adjustments to current funding approaches.

B. Findings

Organizational and Human Resourcing

- The value of dedicated organ donor coordinators is recognized by Canadian and international jurisdictions (UK, US, Australia, Germany). Jurisdictions rely on different models of employment, for example:
 - US and Australian models for donor coordinators rely predominantly off-site resources, employed through state/territory OPOs. In the US, some

- OPOs also employ hospital based donor coordinators.**Error! Bookmark not defined.**
- The UK model primarily consists of in-hospital coordinators employed locally by Trusts or hospitals. The UK taskforce recommendations support enhancing the number of dedicated, in-hospital coordinators and centralizing employment under the national organ donation agency.
 - The German model involves in-hospital transplant coordinators located in all hospitals with an ICU, who are also involved in organ procurement.¹⁷
 - Canada's model for donor coordinators varies depending on size or volume of the donation program across and within provinces and employs nurses or other trained health professionals. Variations include:
 - Dedicated or part-time (shared with transplant or other hospital programs);
 - Off-site, employed by OPO;
 - In-hospital, employed by OPO; and
 - In-hospital, employed by hospital.
 - The model of off-site organ donor coordinators employed by OPOs is followed by some provinces (e.g., British Columbia, Ontario, Quebec) and some Australian states/territories (e.g., Western Australia, South Australia, Victoria).
 - Spain's approach to donor coordinators differs by employing in-hospital, primarily physician (part time), in-hospital coordinators.
 - International and many Canadian jurisdictions have separate donor and recipient coordinators (usually specialized nurses); however, smaller jurisdictions may not have the resources to support this separation.

Organizational and Infrastructure Resourcing

- Australia and the United Kingdom are in the midst of reforming their structure and funding of organ donation (and transplantation) through enhanced national coordination and resourcing strategies. Notable reforms, largely modeled after Spain's structure and practices, include:
 - establishment of national organ donation agencies;
 - creation and funding of medical leadership/champion positions;
 - enhancement of national coordination networks; and
 - creation and funding of dedicated, hospital based clinical positions for organ and tissue donation.
- Central coordination of organ retrieval teams occurs at a national level in Spain and New Zealand¹⁸ and at an OPO level in the US. UK's Organ Donation Taskforce has recommended national organ retrieval teams.

¹⁷ W. Kleophas, H. Reichel. International study of health care organization and financing: development of renal replacement therapy in Germany. *International Journal of Health Care Finance and Economics*, 7:185–200, 2007.

¹⁸ T. Ashton, M. R. Marshall. The organization and financing of dialysis and kidney transplantation services in New Zealand. *International Journal of Health Care Finance and Economics*, 7:233–252, 2007.

- Anecdotal information from the US indicates that some of the largest hospitals with significant resources (ICU beds, ORs, etc.) are not as successful as smaller hospitals in achieving national goals such as a conversion rate of 75%, or utilization rate of 3.75 organs transplanted per donor. This result was attributed in part to the complexity inherent in large academic medical centres.

Financial Resourcing

- In Canada, the majority of provincial governments use global or program budgets to fund organ donation services delivered by RHAs or OPOs. One province manages donation services within a Ministry of Health Branch.
- Spain, France, Belgium, US, Scotland, and Northern Ireland have mechanisms for reimbursing hospitals for the costs of organ donation. The program in France (introduced in 2005) includes financial incentives with supplemental payments for hospitals involved in recovering organs.
- Recommended reforms for the UK include introduction of appropriate reimbursement to remove the disincentives to donation. Australia's OTDT reforms recognize the need to fund hospitals for donation staff and infrastructure, but do not include mechanisms that directly link funding to donor management or organ recovery activities.
- Policies for reimbursement of donor hospitals for donation activities vary across the 58 OPOs in the United States. Anecdotal information from one OPO indicates that many OPOs reimburse donor hospitals based on a negotiated percentage of total hospital charges for the organ donation process, regardless of whether organs are recovered for transplantation. This specific OPO has received bills for total charges that range from \$12000 to \$40000 and has negotiated a reimbursement rate of 75% with its donor hospitals.
- Three Canadian provinces have programs to reimburse hospitals for organ donation activities using flat rates; reimbursement levels are not tied to costs but rather are intended to help address financial barriers to donation. Two other provinces are considering implementing such programs. Spain's experience with reimbursement of donation activities is reported to have contributed to increased participation of hospitals generally and smaller, non-transplant hospitals specifically in donation activities; from 20 hospitals in 1988 to 156 in 2007 (112 of which are smaller hospitals).
- Physician fee schedules in at least six Canadian provinces include fee codes for organ retrieval and codes exist for donor management in at least five provinces.

4. Options and Considerations

The purpose of this section is to provide options as a starting point for discussing the central question of this paper. The options provided are intended to illustrate a range of plausible solutions; it is likely that the Committee will ultimately recommend solution(s) to this question that incorporate elements of multiple options in addition to any elements or mechanisms that may not be represented in this paper.

In addition to the options, this section suggests "considerations" that may be helpful to reflect on during the discussion of solution options.

A. Options

This section identifies options for addressing the three sub-questions analyzed. The options and associated strengths, weaknesses, and barriers are presented to stimulate discussion and may lead to hybrid or alternative suggestions. Options may not be mutually exclusive, for example under human resourcing models, preferred options may include designating medical leaders for donation and, where cost-effective, employing dedicated organ retrieval teams.

I. What human resourcing models best enable donor management and organ recovery?

a) Dedicated, in-hospital coordinators

This model involves employment of dedicated organ donor coordinators (specialized nurses or other health professionals) within donor hospitals. This role would be responsible for carrying out or coordinating activities across the donation process flow such as approaching and supporting families during the consent process, contributing to donor management activities, monitoring potential donors, coordinating testing, participating in organ retrieval, packaging and transporting organs, and providing education to health care professionals about donation processes. Coordinators could be accountable to the hospital or the OPO.

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Creates a visible hospital presence for organ donation ▪ Facilitates relationships across departments and disciplines required for donation ▪ Provides resource for education of other hospital staff and physicians ▪ Assists in maintaining/building a culture of organ donation ▪ Relieves other staff and physicians of roles / responsibilities that they may perceive as “not their job” ▪ May contribute to improved processes to approaching families 	<ul style="list-style-type: none"> ▪ Requires critical mass of potential donors to maintain skills and justify investment ▪ Without critical mass, coordinators may be redeployed to support other programs ▪ May not be feasible/affordable in smaller hospitals ▪ May represent increased costs ▪ May result in other staff not considering donation because it is seen as someone else’s job
Barriers	
<ul style="list-style-type: none"> ▪ Hospitals, OPOs or provinces who employ decentralized or off-site coordinators may resist change ▪ Would require additional funding for regions that do not currently have coordinators 	

b) Off-site coordinators

This model involves employment of coordinators (specialized nurses or other health professionals) who are located off-site and provide donation related services for a geographic area or group of hospitals. They may be full-time or part-time and would fulfill functions such as approaching and supporting families through the donation process, facilitating or supporting aspects of donor management, liaising with hospital administration and clinical staff, and providing education to health professionals about organ donation. Coordinators could be accountable to the hospital or the OPO.

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ More feasible/ affordable for smaller hospitals or regions ▪ Enables deployment of limited resources over more hospitals or broader geographic area ▪ Provides critical mass of coordinators in one location for ease of professional development and support for the position 	<ul style="list-style-type: none"> ▪ Reduces visibility of organ donation within hospitals ▪ Reduces in-hospital expertise to support organ donation (identification and referral, donor family support, coordination of donor management activities, education of other hospital staff) ▪ Decreases availability of coordinators ▪ May be challenging for coordinators to maintain their expertise if donor volumes are low ▪ May reduce ability and opportunity to maintain/build culture of donation and trust and credibility with physicians and hospital staff
Barriers	
<ul style="list-style-type: none"> ▪ Would require additional funding for regions that do not currently have coordinators 	

c) Dedicated organ retrieval team

This model involves centralized employment and the use of dedicated organ retrieval teams (nurses, anesthetists, surgeons, OR teams, etc.) to serve defined geographic areas.

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Dedicated organ retrieval team doing more volume within standardized practice may lead to better quality organs, which in turn would improve patient outcomes ▪ May enable more timely response given variability in need for retrieval teams ▪ Frees up medical and surgical specialists in hospitals to focus on other patients ▪ Increases pool of hospitals who could contribute to identification and referral of potential donors ▪ May help to ensure that recovery of all viable organs and simplify logistics or recovery and transplant surgeries by only having one recovery team ▪ May free up dollars in RHA/LHIN/ transplant centre budgets that currently support organ regional or local retrieval ▪ May increase cost effectiveness and cost efficiency depending on use and outcomes of the team, reduced transportation costs, reduced on-call costs, etc. 	<ul style="list-style-type: none"> ▪ Requires critical mass of potential donors to ensure team members retain their expertise and to justify investment ▪ Reduces in-hospital expertise to support organ donation ▪ Reduces RHA / transplant centre control of recovery processes
Barriers	
<ul style="list-style-type: none"> ▪ Potential resistance from hospitals / OPOs and transplant surgeons with established retrieval services ▪ May be challenging to gain agreement on the number and location of teams ▪ May be costly to implement if resources can not be redeployed 	

d) Medical leaders for donation

This model involves establishment of part time (paid) medical leadership positions in which part of the role and practice would involve working closely with ICUs, donation teams, emergency departments (EDs), and intensive care units (ICUs) to facilitate and coordinate organ (and tissue) donation activity, coordinate development and maintenance of clinical triggers, provide education, and contribute to maintaining / building a culture of organ donation in the hospital.

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Creates a visible, high profile hospital presence for organ donation ▪ Provides resource for physicians and other hospital staff and physicians ▪ Relieves other physicians of roles / responsibilities that they may perceive as “not their job” ▪ May help to address situations where physicians are concerned about handing off processes of obtaining family consent to non-physician colleagues 	<ul style="list-style-type: none"> ▪ Requires critical mass of potential donors to justify investment ▪ May not be feasible/ affordable in smaller hospitals ▪ May represent increased costs ▪ May result in other physicians and staff seeing donation as solely the job of the medical donation leader
Barriers	
<ul style="list-style-type: none"> ▪ May be costly to implement if resources can not be redeployed 	

II. What organizational infrastructure options (e.g., dedicated beds, dedicated OR time) best enable donor management and organ recovery?

a) Dedicated infrastructure

This model involves allocation of a dedicated number of ICU beds and/or OR time slots to support donor management and organ recovery.

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Demonstrates commitment to and importance of organ donation ▪ Ensures that lack of infrastructure is not a barrier to organ donation ▪ May contribute to efficiency as throughput is facilitated 	<ul style="list-style-type: none"> ▪ Requires determination of the critical mass of potential donors that would warrant investment ▪ Competition from and pressure on other hospital programs would challenge ability to maintain dedicated resources if/when they are not in use ▪ May not be sufficient to address surges in potential donors
Barriers	
<ul style="list-style-type: none"> ▪ Would require additional funding to implement ▪ Potential resistance from physicians and staff of other programs whose patients require ICU access ▪ Potential resistance from surgeons if dedicated OR time slots reduce access to OR time for other surgeries 	

b) Designated donation hospitals

This model involves identifying one or more hospitals in a geographic area that would provide donor management services to the area. These hospitals would be resourced with appropriate human resources, ICU beds and OR space to manage the level of potential donor activity in their area.

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Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Enables pooling of resources to support donor management and recovery ▪ Recognizes organ donation as an important hospital program ▪ Supports maintenance of expertise in donor management ▪ Helps to address the challenge of critical mass and expertise in smaller hospitals 	<ul style="list-style-type: none"> ▪ May diminish visibility or profile of organ donation in non-designated hospitals ▪ Competition from and pressures on other hospital programs would challenge ability to maintain dedicated resources if/when they are not in use ▪ May result in view that donation is solely the responsibility of designated donation hospitals
Barriers	
<ul style="list-style-type: none"> ▪ Potential resistance from transplant centres who view in hospital donation as critical to supporting their transplant activity ▪ May be challenging to gain consensus on which hospitals should be designated as donation facilities ▪ Transportation and communication infrastructure to support this model may not be available 	

c) Surge capacity

Surge capacity involves development of processes and space to accommodate increased short term demand for ICU beds, OR time, etc. through use of other physical space such as post-anesthetic care units, emergency departments, acute care floor beds/step-down units, and operating rooms and using over time or on-call staff.

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Requires minimal if any additional operating resources when capacity is not used ▪ Could be used to when peaks in demand arise from other causes (e.g., infectious disease outbreaks, mass trauma) ▪ Would require minimal additional investment 	<ul style="list-style-type: none"> ▪ Other everyday service pressures may arise that result in use of the surge capacity leaving no additional capacity ▪ Some hospitals may not have the human resources or physical space to create surge capacity
Barriers	
<ul style="list-style-type: none"> ▪ Budget-related policies limiting over-time or call back may inhibit use of surge capacity, unless a budget line is created for surge activity ▪ Potential resistance to integrating such a model into standard policies and procedures 	

d) Prioritized access

This option relies on policies and procedures (formal or informal) to recognize care of potential donors as priority patients that warrants immediate access to required resources (e.g., ICU beds, inpatient beds).

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Enables flexibility to meet peaks in activity without requiring excess capacity ▪ Does not require additional investment in infrastructure ▪ Demonstrates organizational commitment to and importance of donation 	<ul style="list-style-type: none"> ▪ Impacts non-transplant patients (e.g. surgical cancellations, transfers to other units or hospitals) ▪ May result in increased over-time costs ▪ Other patients, such as major trauma may take precedence over potential donors ▪ Places additional pressure on resources that are already stretched
Barriers	
<ul style="list-style-type: none"> ▪ Potential for complaints or resistance from physicians, staff and patients from other programs due to postponement of their surgeries ▪ Requires that care of potential organ donors be seen part of the end of life care ▪ May be inhibited by hospital policies such as no over-time 	

III. What financial resourcing models for service providers best enable donor management and organ recovery

a) Service-based funding

This option involves reimbursement of hospitals for a portion of donor management and recovery costs regardless of whether organs are recovered or transplanted. The intent is to help minimize financial disincentives to donation activities.

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Builds on existing practice ▪ Provides some link between donation activity and reimbursement. ▪ May act as an incentive for hospitals to support donation as a regular part of end of life care 	<ul style="list-style-type: none"> ▪ Depending on how funding is allocated within receiving hospital (i.e., if it goes to global budget) programs that support donation activity may not see the results of their efforts ▪ Creates a precedent that certain 'priority' services should be funded partially with incentives ▪ Incentive may be too small ▪ May incent hospitals to prioritize access in a way that disadvantages other patients
Barriers	
<ul style="list-style-type: none"> ▪ Would require new funding in most provinces ▪ Would require an audit function to ensure appropriate reimbursement 	

b) Full cost reimbursement

This option involves payment of hospitals for donor management (regardless of whether the potential donor becomes an actual donor) and recovery activities based on cost per case.

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Attaches payment directly to donation activity ▪ Recognizes full cost of activity ▪ Removes financial disincentives of engaging in donation activity ▪ May act as an incentive for hospitals to support donation as a regular part of end of life care 	<ul style="list-style-type: none"> ▪ Depending on how funding is allocated within receiving hospitals (i.e., if it goes to global budget) programs that support donation activity may not see the results of their efforts ▪ Smaller centres may not have sufficient volumes to support donation activities, without a base level of funding

Barriers
<ul style="list-style-type: none"> ▪ Many provinces do not have systems in place to identify costs of donor management and recovery activities ▪ Would require new funding in most provinces ▪ Would require an audit function to ensure appropriate reimbursement

c) Hybrid approach

Hybrid models rely on two or more approaches to funding, most commonly global or program funding along with service or performance based approaches. One hybrid is a combination of base level program funding and service based funding for volumes achieved beyond the base level.

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Provides funding to address base level of human and infrastructure resource needs ▪ May provide incentive to support organ donation activity 	<ul style="list-style-type: none"> ▪ Would need to understand current volumes to set base level funding and ensure incentives for increased activity ▪ Depending on how incentive funding is allocated within receiving hospitals (i.e., if it goes to global budget) programs that support donation activity may not see the results of their efforts
Barriers	
<ul style="list-style-type: none"> ▪ Would require new funding in most provinces ▪ Would require an audit function to ensure appropriate reimbursement 	

B. Considerations

Analysis of various resourcing models used across Canada and in other jurisdictions raised the following considerations that may support discussion of the options. Options may not be mutually exclusive, for example, creation of dedicated infrastructure and surge capacity could both be recommended as options to address the need for ICU beds.

Organizational and Human Resourcing

- Factors such as geography, population and hospital size will influence selection of organ donor coordinator options in terms of:
 - location (in hospital, off-site);
 - time commitment (dedicated, part-time); and
 - employer (OPO, RHA/hospital, province).

- Hospital size, geography and population will also impact the cost-benefit of implementing some options (e.g., dedicated organ retrieval teams).
- Option selection should consider that increased number of donors through DCD or other strategies will place further strain on donation and transplantation resources.
- Availability of human resources, infrastructure (information systems), capacity, and technical expertise may affect the ability to implement an option.
- Implementation of selected options at a provincial or national level may enable achievement of improved outcomes and better use of resources.

Financial Resourcing

- Resourcing options may be implemented at a local, regional, provincial or national level. There may be options that would result in improved outcomes or greater efficiencies if implemented through provincial, multi-provincial, or national approaches.
- The accountability, audit, and reporting requirements for an option may vary by level of implementation (regional, provincial, national).
- The types of behavior or outcomes that are desired (e.g., improved quality, building a culture of donation, removing disincentives to donation) may influence selection of financial resourcing options.
- Demonstration that increased funds for advancing one option or a slate of options could be justified by the resulting increase in organ donors which would translate to increased transplants and decreased expenditure on dialysis, bridge-to-transplant therapies, and other treatments for end stage organ failure.

Appendix A

Physician Fee for Service Remuneration for Organ Donation Activities by Province

Province	Coverage
Newfoundland	<ul style="list-style-type: none"> ▪ Recovery of donor organs/tissue
New Brunswick	<ul style="list-style-type: none"> ▪ Donor maintenance ▪ After hour premium for emergency cadaveric organ/tissue/bone removal ▪ Recovery of organs/tissues/bone including living donor recovery
Nova Scotia	<ul style="list-style-type: none"> ▪ Obtaining consent ▪ Donor management
P.E.I.	<ul style="list-style-type: none"> ▪ Schedule of medical benefits not accessible on-line
Quebec	<ul style="list-style-type: none"> ▪ Travel time for recovery of organs ▪ Care leading to the diagnosis brain dead for potential organ donation (including evaluation of the clinical condition, team discussion, discussion with relatives and appropriate follow-up) ▪ Retrieval of organs from deceased and living donors ▪ Retrieval of organs from living donors
Ontario	<ul style="list-style-type: none"> ▪ Travel time for collecting and transporting organs and fresh bone ▪ Counseling in circumstances where is death imminent to provide the donor or family member with adequate information and clinical data to enable that person to make an informed decision ▪ Counseling for transplant recipients, donors or families of recipients/ donors ▪ Nephrological management of donor procurement ▪ Donor organ removal (living and deceased – as applicable)
Manitoba	<ul style="list-style-type: none"> ▪ Retrieval of organs from deceased or living donors
Saskatchewan	<ul style="list-style-type: none"> ▪ Certification of brain death and organ donor assessment ▪ All services related to living kidney donors ▪ Retrieval of living or deceased donor kidneys ▪ Internist services in donor kidney procurement in other than the transplant center ▪ Donor related services; including the nephrological management of organ procurement, management of the neurologically “dead” donor on life support systems, the assessment of renal functions pre-nephrectomy, immunotherapy pre-nephrectomy, and assessment of potential recipients, etc.
Alberta	<ul style="list-style-type: none"> ▪ Donor maintenance prior to and during cadaveric harvesting of organs ▪ For pediatrics - professional communication, case conference or discussion related to pre-transplant donor/recipient assessment and prolonged consultation or hospital admission related to organ donor assessment/procurement ▪ Removal of donor organs, live and deceased
British Columbia	<ul style="list-style-type: none"> ▪ Services associated with cadaveric organ donor recovery except for physicians paid via alternate payment plan with BC Transplant ▪ Removal of donor kidney (living or deceased) ▪ Anesthesia fees for organ retrieval ▪ Pediatric case consultation for pre-transplant (concerning donor/recipient assessment)