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ORGAN EXPERT COMMITTEE:

WHAT OPERATING AND RESOURCING MODEL(S) BEST ACCOMMODATE ORGAN TRANSPLANTATION? (DRAFT SOLUTION DESIGN PAPER)

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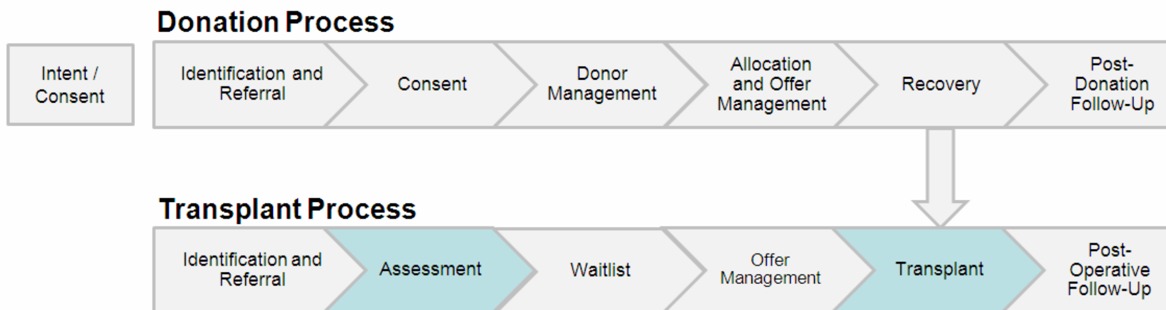
1. Scope

WHAT OPERATING AND RESOURCING MODEL(S) BEST ACCOMMODATE ORGAN TRANSPLANTATION?



For this paper:

- Operating models refer to organization arrangements such as role/mandate, structure, and staffing rather than clinical operations or standards of practice; and
- Resource models refer to approaches to allocating funding, human resources or facilities/space to support delivery of transplantation services.

Based on challenges highlighted in the Case for Change[1] this document focuses on the assessment and transplant elements of the transplant process flow as highlighted in the diagram above.

Other issues that may be discussed include:

- the impact of increasing donation on transplantation capacity and resourcing, particularly related to the increase in living donors; and
- the impact of resource availability (professionals, space, funding) on access to pre-transplant assessment services.

Identification and referral, wait listing, allocation, and post-operative care are out of scope; however, given the integrated approach to delivery of transplant services, these elements may be discussed as required. Discussion of equity of access to transplantation will not be discussed in this paper.

[1] Canadian Blood Services. Organ Donation and Transplantation in Canada: The Case for Change. Ottawa: Canadian Blood Services, 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

This section provides an overview of transplantation programs in Canada and summarizes current resourcing approaches and challenges in assessment and transplantation related to funding models and operating and infrastructure resourcing.

Overview of Transplantation Programs

Transplantation services are provided in all but three provinces. The four Atlantic Provinces refer transplant patients to the Multi-Organ Transplant Program in Halifax but maintain independent organ donation organizations. There are currently twenty-eight centres across Canada performing organ transplants, nine of which offer three or more types of transplants, three offer two types and sixteen that perform a single type of transplant (kidney - 12, heart - 3, liver - 1). Pediatric transplants are performed in seven centres. Appendix A maps the locations of these centres and indicates the types of organs transplanted by each centre.

Funding Models

Currently provincial Ministries of Heath generally use the following models alone or in combination to fund health services generally and transplant services specifically:

- global funding based on factors such as past operating costs and efficiency targets;
- population need-based models which consider the demographic profile and needs of the population;
- program-based funding for the delivery of provincial services; and
- service-based models that use a calculation of rate multiply by volume.

Hybrid models seem to prevail with varying combinations across the provinces. For example, the Ministry of Health in Manitoba funds the Winnipeg Regional Health Authority (WRHA) to deliver transplant services and organ donation services (Gift of Life)

under the umbrella of Transplant Manitoba. The current funding model includes program funding for coordinators, allied health staffing, ORs, medical wards, and assessment clinic resources as well as donation services. Additionally, annual funding for adult kidney transplants is structured to include a base budget for 38 transplants and a pool of funds to reimburse the OR budget for additional transplants once completed.[2]

Ontario's model separates funding for donation and transplantation activities. Transplants are funded by the Ministry of Health using a service-based calculation with rates established based on assessment, peri-operative and one year post transplant costs and annual performance targets. Living kidney and liver donation are funded in the same way. Hospitals in turn, fund transplants, human resources and infrastructure using a program approach. A few of the RHA-based donation programs are also organized and funded to provide transplantation services.

Unless specifically capped, target volumes may be exceeded. Anecdotal information about Ontario's approach noted the challenges associated with the requirement to return funds if targets are not met, the opportunity to secure additional funding if targets are exceeded, the accuracy of rates used for funding, the potential revenue source that exists for hospitals whose average cost pre transplant is lower than the funded rate and the need to recognize longer term post transplant follow-up.

BC's approach involves funding transplantation and donation services through BC Transplant, an agency of the Provincial Health Services Authority. Transplant hospitals are funded for a base volume of transplants and are eligible for additional funding if base volumes are exceeded. Funding is also flowed to regional clinics to support initial pre-transplant assessment and post-transplant follow-up care.

Alberta Health Services (Alberta's single regional health authority) is moving toward activity based funding for all hospital services. In 1996 Alberta Health and Wellness instituted a volume and rate based funding model for transplant services (in-patient, pre- and post-transplant clinics).

Operating and Infrastructure Resourcing

In terms of operating models, the size and structure of programs vary; however, common features include multi-disciplinary teams and transplant coordinators. Larger, multi-organ centres have dedicated in-patient beds or units, organ-specific transplant coordinators, clinic time slots and DI slots[3]. Smaller programs[4] have coordinators that cover both donation and transplantation and may be full-time or part-time (e.g., at satellite location). Given volume considerations, dedicated resources may not be feasible.

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[2] Transplant Manitoba Gift of Life. Improving Access to Transplantation for Manitobans (Phases II and III). Winnipeg Regional Health Authority, July 2007.
[3] E.g., Toronto General Hospital, London Health Sciences Centre, University of Alberta Hospital
[4] E.g., Saskatchewan Transplant Program

Resource challenges specific to pre-transplant assessment services relate to wait times for and access to HLA-typing and diagnostic imaging. Access is also impacted by availability of allied health professionals (e.g., social workers, physiotherapists, dietitians) as well as medical and surgical sub-specialists.[5,6]

Solutions to wait times for assessment services anecdotally reported include

- Splitting kidney transplant assessments for the living donor program and the deceased donor program between two locations;
- Providing initial pre-transplant assessment and post-transplant clinic services in hospitals located in other cities; and
- Employing dedicated recipient coordinators for each of the living and deceased donor kidney programs whose responsibilities include coordinating diagnostic testing, specialist consultations, etc.

For transplant services, availability of in-patient and ICU beds, OR capacity, nurses, and medical and surgical sub-specialists have been identified as resourcing issues. [5,6,7,8,9] Anecdotal reports indicate that availability of medical and surgical transplant specialists represents a challenge in part attributed to low service volume, academic practice relative to higher earning potential from community based practice and approaches to remunerating transplant specialists. Availability of and funding for nurses and allied health professionals was also sited as a challenge.

Significant peaks in activity that are occasionally experienced by transplant centres require mobilization of human resources, OR time and beds. The most common approach currently used to respond to these peaks involves prioritization of access to needed OR time and beds, calling in additional staff, moving current in-patients (to other hospitals or other cities). Although surge capacity does not appear to be used to support peaks in transplant activity, anecdotal information indicates that H1N1 and SARS have highlighted the strain.

Resource challenges unique to living donor transplantation include access to psychological and counseling services for the donor and wait times between pre-transplant assessments for living donors and scheduling of surgeries.[10] [11] One approach

[5] Organ Expert Committee June 23, 2009 meeting
[6] Anecdotal information
[7] CBS ODT Syntegration, Consolidated Output, 2008.
[8] BCTS Strategic Plan 2007/08
[9] Physician Resource Planning Committee. 2006 Update Report to the Minister of Alberta Health and Wellness Predicting Physician Supply and Future Need, 2006.
[10] Canadian Council for Donation and Transplantation, Environmental Scan of Policies, Practices, Experiences, Issues and Barriers Related to Live Organ Donation, Final Report. Edmonton: CCDT, 30 July 2004.
[11] S. M. Cockfield, Environmental Scan of Live Organ Donation Programs Executive Summary. Canadian Council for Donation and Transplantation, January 2006.

used by several centres to address wait times for living donor transplants is monthly scheduling of OR slots. Other resourcing challenges unique to living donor programs, which are out of scope of this paper, relate to reimbursement of expenses incurred by donors and need for post-discharge follow-up care of the donor.

The resourcing challenges discussed above are not unique to transplantation. Many recent national[12] [13] and provincial[14] [15] [16] health system reports have documented similar challenges. What is unique about the challenges experienced by organ transplantation centres is the combination of factors including relatively low volume, life saving service requiring highly specialized personnel and extensive resources (space, equipment, supplies and so on) as well as variable and primarily unpredictable supply of the critical input to transplantation – donor organs.

B. Current Community Thinking

This section of the paper presents recent findings and recommendations from national and international reports that will inform to operating and funding model discussions.

I. Reports and Papers

HRSA Transplant Center Growth and Management Collaborative: Best Practices Evaluation, 2007

This report was developed to identify and share best practices of leading US transplant centres. It notes that a key enabler of high-performing centres is access to institutional resources, such as clinic space, operating rooms, administrative staff, and financial resources. It also identifies several resource related strategic drivers that contribute to exemplary patient outcomes:

- Institutional vision and commitment - fully engaged in being a transplant centre and providing the necessary resources and support;
- Dedicated transplant team - attracting and retaining dedicated, skilled transplant specialists who work as collegial, non-hierarchical teams; and
- Financial intelligence - detailed accounting of program costs and finances to support resource planning and business case development.

Organs for Transplants: A Report from the Organ Donation Taskforce

[12] B. D. Postl. Final Report of The Federal Advisor on Wait Times. Ottawa: Health Canada, June 2006
[13] Health Council of Canada. Value for Money: Making Canadian Health Care Stronger, February 2009.
[14] Corpus Sanchez. Changing Nova Scotia's Healthcare System: Creating Sustainability Through Transformation – System Level Findings & Overall Directions Provincial Health Services Operational Review Final Report, December 2007
[15] BC Ministry of Health Services. Access to Surgery in British Columbia – A Conference Report, January 15-16, 2009.
[16] Manitoba Health. Manitoba's Health Human Resource Plan - A report on supply, April 2006.

UK Department of Health, 2008[17]

This report provides 14 recommendations to address obstacles to organ donation and suggest solutions to increase in transplants. It recognizes that staffing, physicians, infrastructure (beds, operating theatres, etc.) and support services will need to be addressed as measures are implemented to increase donation. The report also recommends that the national commissioning[18] (centralized planning and funding) used for liver, pancreas and cardio-thoracic transplantation be expanded to all transplant services.

Organ and Tissue Donation and Transplantation in Canada, Report from the Canadian Council for Donation and Transplantation to the Conference of Deputy Ministers of Health, September, 2007

This report was developed to provide the Federal, Provincial and Territorial Conference of Deputy Ministers of Health (CDM) with rationale for a country-wide OTDT agency, conditions required for an effective and efficient OTDT structure in Canada and options for an agency's mandate and structure. It highlights the need for a national coordinating organization with the mandate and resources to supplement provincial/territorial OTDT. An international scan completed for the report noted that OTDT agencies resourced to provide jurisdiction-wide coordination have led to improved OTDT services within models of decentralized program and services delivery.

II. Forums

National Consultation: Organ and Tissue Donation and Transplantation (Canadian Blood Services)
September 22 – 24, 2008, Gatineau, Quebec

National consultation participants noted resourcing challenges such as variable funding for access to ORs, critical care beds, infrastructure, and inter-provincial support for patients, lab services, and post-transplant care. Funding specific recommendations included the need to increase resource capacity (human resources, beds, diagnostics, OR time/space, clinic time/space), particularly as donation increases, and to link funding to performance. The Executive Summary of the Consultation[19] notes that "a key funding role for the National Agency will be to identify specific areas for organ donation and transplantation investment at regional and hospital levels and to gain Provincial agreement that purpose-specific budgets be established outside of global hospital budget envelopes".

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[17] Organ Donation Taskforce. Organs for Transplants: A report from the Organ Donation Taskforce London: Department of Health, 2008.

[18] From the Specialised Services Commissioning website (http://www.specialisedcommissioning.nhs.uk/. Accessed 10 August 2009).

[19] Canadian Blood Services. Executive Summary National Consultation Organ and Tissue Donation and Transplantation (OTDT), September 22-24, 2008.

A related finding was the lack of measurement and accountability mechanisms to support operational and resource planning. This is consistent with the idea that data collection, performance measurement, and reporting are vital to enabling policy development, planning, quality improvement, and accountability for performance. [20,21]

C. Other Models

Spanish Model

The Spanish model[22] focuses primarily on organ donation. However, the following resources and processes have contributed to increased transplantation rates since the model was introduced in 1989:

- transplant coordinators;
- national, regional and local coordination of resources; and
- central office coordination of organ and transplant transport teams, management of waiting lists, registries and performance improvement activities.

Spanish hospitals are reimbursed for donation and transplantation activities by the regional health care authorities. Each procurement and transplantation hospital receives a yearly budget based activities performed in the previous year. Reimbursement covers all human and material resources needed to efficiently develop the donation and transplantation program within the hospital.

UK National Commissioning of Specialised Services

Commissioning describes a process of centralized planning and funding for health services by the National Health Services in the UK. National commissioning is done to ensure critical mass, achieve best outcomes, maintain clinical competence, sustain specialists' training, ensure cost effectiveness, and make the best use of scarce resources (including staff, high tech equipment and donor organs). A National Commision Group (NCG) provides advice on the NHS services that are best commissioned nationally and most services commissioned by the NCG are for conditions where the national caseload is less than 400 people such as heart and lung transplantation. As noted earlier, the Organ Donation Taskforce recommends that national commissioning be expanded to all transplant services.[18]

Major Trauma Funding in Ontario

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[20] National Clinical Taskforce on Organ and Tissue Donation. Mid Term Report to the Minister of Health and Ageing, Commonwealth of Australia, 2007.

[21] U.S. Department of Health and Human Services Health Resources and Services Administration Healthcare Systems Bureau, Division of Transplantation. HRSA Transplant Center Growth and Management Collaborative: Best Practices Evaluation Final Report. 2007.

[22] R. Matesanz, B. Dominguez-Gil. Strategies to optimize deceased organ donation. Transplantation Reviews 21, 2007.

Since the early 1990's Ontario has used a hybrid model of funding major trauma which includes a base level of funding funded through hospital global budgets and incremental volumes funded at set rates. Over time the model has been refined to its current state which includes a combination of funding for base volumes (based on historical cases) and a revised definition of "major trauma" plus negotiation of funding for incremental cases (at an updated rate) based on volume multiplied by rate to cover the cost of in-patient and ER visit costs. [23]

BC Provincial Renal Agency (BCPRA)

The BCPRA[24] is an agency established under the Provincial Health Services Authority (PHSA). It works with the PHSA and the five regional health authorities in BC to plan, fund and coordinate renal care services across British Columbia. The budget is managed in partnership with health authority renal programs. Allocation by the BC Ministry of Health Services is based on per patient/per year using a patient-focused model. It represents a combination of centralized (at the agency level) and decentralized (at the health authority level) functions.

Resourcing Models to Respond to Peaks in Activity

Models to address peaks in transplant demand under "normal circumstances" were not described in published sources. However, as part of a comprehensive critical care strategy, Ontario is developing a Surge Capacity Management Program to manage critical care surge within hospitals. In collaboration with LHINs, hospitals are developing plans to use alternate human resource strategies, equipment and technology to cover minor surges in capacity and to assist others experiencing larger surges in capacity. Provincial implementation is scheduled for March 2010.[25]

Models for creating surge capacity in response to mass casualty incidents and pandemics such as H1N1 and SARS are documented. The UK Department of Health[26] guidance for developing surge capacity for pandemic influenza focuses on three areas for creating surge capacity:

- aspects of creating extra capacity, i.e., creating space, providing staff, supplying resources and/or managing the process;
- prioritizing and/or discontinuing services to release capacity (staff and space) to focus on those most in need; and
- prioritizing patients and interventions to control demand by deferring elective procedures, suspending non-essential services, restricting range of services, etc.

[23] Joint Policy and Planning Committee (JPPC) Trauma Technical Working Group. Review of the Methodology and Funding Rates for Trauma for Lead Trauma Hospitals: Toronto: JPPC, December, 2007.
[24] http://www.bcrenalagency.ca/about/default.htm
[25] http://www.health.gov.on.ca/english/providers/program/critical_care/cct_capacity.html
[26] Department of Health. Pandemic influenza: Surge capacity and prioritisation in health services. London: UK Department of Health, November 2007.

Pay for Performance Models

Pay for performance models are based on how well institutions or providers achieve a set of quality related outcomes or goals. Examples include:

- The US, Centers for Medicare and Medicaid Services (CMS) model of financial incentives for the top 20 percent of hospitals in five clinical areas (pneumonia, heart bypass, heart failure, acute myocardial infarction, and hip/knee replacement). The top 10 percent of hospitals receive a 2 percent incentive payment for patients in that clinical area. Hospitals in the second decile receive a 1 percent incentive payment. If all US hospitals were to achieve the three-year cost and mortality improvements found in the pay for performance participants across the five areas, it could have resulted in: nearly 70,000 fewer deaths annually and a reduction in hospital costs by as much as $4.5 billion annually.[27]
- The Emergency Department Improvement Initiative in Vancouver Coastal Health region which rewards participating hospitals with funding additional payments for getting patients through the ED more quickly to the appropriate discharge location.[28]

[27] http://www.premierinc.com/about/news/june08/p4pProject061708.jsp

[28] J. Coutts. and J. Thornhill. Service Based Funding and Pay for Performance. Healthcare Quarterly, 12, 3, 2009.

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 approaches to funding (i.e., models, incentives) would best support delivery of assessment and transplant services?
- What operating / infrastructure resource options best enable transplant programs to mobilize resources to meet needed transplant services, particularly during times of peak activity?
- What operating / infrastructure resource options best enable transplant programs to provide assessment services?

A high level SWOT analysis of current models for funding and resourcing assessment and transplant services was completed. The current state analysis was then used in a comparison of models in other jurisdictions to identify and assess potential options for addressing each of the questions. Last, a stakeholder analysis was completed to explore the impact of each option on key stakeholders (e.g., e.g., recipients, transplant surgeons, program staff, other hospital programs, administrators, provincial ministries of health, etc.).

Assumptions underlying the analysis include:

- simply adding resources is not an option for addressing issues and challenges in assessment and transplantation;
- funding agents (e.g., pt governments, RHAs/LHINs, OPOs, etc.) are willing to consider adjustments to current funding approaches; and
- given the variations in type and volume of transplants performed by transplant centres across Canada, each centre will need a mechanism to assess how best to implement preferred options.

B. Findings

- Many international jurisdictions (UK, Spain, US, Australia, Belgium, France, Germany, the Netherlands)[29,30] rely on more than one approach to fund in-patient care and specific types of services or patient groupings. The most common hybrid models involve global or program budgets combined with service-based funding (SBF).
- Specific to transplant services, Spain, the UK[31], Germany[32] and New Zealand[33] as well as at least three Canadian jurisdictions are using or have used variations of this hybrid model.
- An international review of SBF models (in Australia, Denmark, England, France, Sweden, Norway and the U.S.) could not draw conclusions about outcomes attributable to the model because of the multiple initiatives underway in each country that aligned with the timing of SBF implementation.
- Incentive or performance based funding models are becoming more common. Examples include:
  - the CMS pay-for-performance incentives for top performing hospitals;
  - the Veteran's Health Administration performance contracts across the dimensions such as quality, access, function, satisfaction and cost-effectiveness;
  - the Australia and UK pay for performance schemes for primary care physicians; and
  - the pilot in four emergency departments in Vancouver Coastal Health region[28].
- Anecdotal information indicates that larger centres with dedicated transplant resources, such as in-patient units or transplant equipped ORs assisted are better able to respond to peaks in activity.
- No centres (interviewed to date or found in the literature) had experience with surge capacity.
- Anecdotal information indicates that prioritized access to ORs and/or in-patient beds is commonly used to address peaks in demand. Some centres have more formal prioritization systems where transplants were ranked as the highest priority, while

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[29] F.H. Roger France, et al, (Eds.) Case mix: global views, local actions: evolution in twenty countries. IOS Press, 2001.

[30] A. Dor, M.V. Pauly, M.A. Eichleay, P.J. Held. End stage renal disease and economic incentives: the International Study of Health Care Organization and Financing (ISHCOF). International Journal of Health Care Finance and Economics, 7, 73 -111, 2007.

[31] T. Nicholson, P. Roderick. International Study of Health Care Organization and Financing of renal services in England and Wales. International Journal of Health Care Finance and Economics, 7:283–299, 2007.

[32] 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.

[33] 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.

others follow more informal approaches where an immediate major trauma case would be the only instance that would take priority.

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

I. What approaches to funding (i.e., models, incentives) would best support delivery of assessment and transplant services?

a) Service-Based Funding

This model involves calculation of funding based on volume of transplants (living and deceased) and living donors and rate (periodically updated to reflect inflation, change in practice, etc.) per type of transplant (and living donor) to determine funding level. Providers (RHAs/LHINs/hospitals) are funded based on negotiating target volume of activity (transplants and living donors) and adjustments are made at six months and year end based volumes achieved. Additional funding is flowed to transplant programs directly if target volumes are exceeded. Funding is recouped (from RHA/LHIN/hospital budgets) if targets are not met.

Strengths	Weaknesses
▪ Provides direct incentive to transplant programs for volumes that exceed targets ▪ Can incentivise efficiency as hospitals and programs that achieve a lower cost per transplant (or living donor retrieval) than the funding rates may generate revenue ▪ May incent allocation of resources (assessment and transplant) to support scheduling of additional living donor work-ups and transplants ▪ May assist transplant programs in justifying their prioritized access to resources	▪ Incentive to exceed target funding is lessened if funds are not flowed to program budgets ▪ Depending on how revenue from efficiencies is allocated (i.e., if it goes to global budget) programs that support transplantation activity may not see the revenue generated from their efforts ▪ May prompt focus on throughput over quality ▪ Funding rates may not adequately recognize costs of teaching and research that are part of academic requirement of transplant centres ▪ Funding rates many not be sufficient to cover costs of infrastructure and maintaining capacity when volumes are low ▪ Claw back of funds may be seen as unfair because transplant volumes depend on supply of donor organs, which is beyond the influence of transplant programs ▪ Difficult to determine real costs of service
Barriers	
▪ Many provinces do not have data or information systems in place to identify costs of transplant activities ▪ Would require an audit function to ensure appropriate reimbursement and maintain incentives ▪ Some programs may not be able to achieve or support increased volumes and associated cost-effectiveness and cost-efficiency benefits due smaller catchment area	

b) Pay for Performance Funding

This option involves providing funding incentives (in addition to base funding) based on how well hospitals and programs achieve a published set of quality related outcomes or goals, such as shorter duration for assessment services, improved coordination of care, lower readmission rates, improved one-year graft survival rates, etc. Incentive funding is allocated to transplant program budgets.

Strengths	Weaknesses
▪ Provides funding to hospitals for base level of infrastructure ▪ Can provide direct incentive to programs to focus on patients and quality ▪ Coupled with public reporting, can improve quality and enhance hospital accountability ▪ May provide additional revenues to hospitals and transplant programs to cover costs ▪ Quality improvements may translate to cost savings	▪ Would need to understand current volumes to set base level funding and ensure appropriate quality incentives ▪ Impact of incentive is lessened if funding is not flowed to programs ▪ Depending on how revenue from quality improvement is allocated (i.e., if it goes to global budget) programs supporting transplant services may not see the revenue generated from their efforts ▪ Need to develop appropriate quality indicators would take time to implement ▪ May create perception that only high profile, 'priority' services warrant quality incentives ▪ Incentive may be too small
Barriers	
▪ Increase in transplant volumes is dependent on increased availability of donor organs, which is beyond the influence of transplant programs ▪ Provinces may lack data and information systems to support tracking of quality indicators and allocation of performance funding ▪ Would require new funding to support payment for performance achievements ▪ Would require an audit function to ensure appropriate reimbursement	

II. What operating / infrastructure resource options best enable transplant programs to mobilize resources to meet needed transplant services, particularly during times of peak activity?

a) Surge Capacity

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

Strengths	Weaknesses
▪ Requires minimal if any additional operating resources when capacity is not used ▪ Would require minimal additional infrastructure investment ▪ Could be used when peaks in demand arise from other causes (e.g., infectious disease outbreaks, mass trauma, etc.) ▪ Demonstrates organizations' commitment to and importance of donation and transplantation	▪ Other everyday service pressures may arise that result in use of the surge capacity leaving no additional capacity ▪ Hospitals may not have the human resources or physical space to create surge capacity
Barriers	
▪ 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	

b) Prioritized Access to Resources

This relies on policies and procedures (formal or informal) which recognize transplantation (including living donors) as a priority service that warrants immediate access to required resources (e.g., OR time, in-patient beds).

Strengths	Weaknesses
▪ Enables flexibility to accommodate variability in activity without requiring excess capacity ▪ Does not require additional investment in infrastructure ▪ Demonstrates organizational commitment to and importance of donation and transplantation ▪ Adds incentive for hospitals to move transplants through the system	▪ Impacts non-transplant patients, e.g. surgical cancellations, transfers to other units or hospitals ▪ May result in increased overtime costs ▪ Other patients, such as major trauma, may still take precedence over transplants ▪ Places additional pressure on resources that are already stretched ▪ Living donors and recipients may be perceived as being similar to patients waiting for other elective procedures

Barriers
▪ Requires strong commitment from administration to support transplant as a priority program ▪ Potential for complaints or resistance from physicians, staff and patients from other programs due to postponement of their surgeries ▪ May be inhibited by hospital policies such as no over-time

c) Dedicated Transplant Resources

This model involves allocation of dedicated number in-patient beds, OR time slots to the transplant program for recipients and for living donors.

Strengths	Weaknesses
▪ Demonstrates organizations' commitment to donation and transplantation ▪ Enables flexibility to accommodate variability in activity ▪ Enables scheduling of living donor transplants ▪ Allows specialization of resources and enables development of a team	▪ Requires determination of the critical mass of activity to warrant cost-effectiveness of investment ▪ Competition from / pressures on other hospital programs would challenge ability to maintain dedicated resources if/when they are not in use ▪ Would be challenging to prevent "off-service" admissions when ED is backlogged with patients waiting admission ▪ Availability of specialized human resources may limit ability to staff dedicated infrastructure ▪ May not be sufficient to address surges in transplant activity
Barriers	
▪ Would require additional funding to implement ▪ Requires strong commitment from administration to support transplant as a priority program ▪ Potential resistance from intensivists and staff of ICU as well as physicians and staff from other programs ▪ Potential resistance from surgeons and if dedicated OR time slots reduce access to OR time for other surgeries	

III. What operating / infrastructure resource options best enable transplant programs to provide assessment services?

a) Dedicated Resources

This option involves allocation of dedicated transplant coordinators, and clinic time / space, laboratory testing and diagnostic imaging capacity.

Strengths	Weaknesses
▪ Decrease wait times ▪ Enables specialization of staff ▪ Improves coordination of assessment processes ▪ May contribute to improved quality and patient satisfaction ▪ Demonstrates organizations' commitment to transplantation	▪ May impact access to clinic time and diagnostic resources by other programs ▪ Requires determination of the critical mass of activity to ensure maintenance of specialized skills and cost –effectiveness of dedicated staff
Barriers	
▪ Requires sufficient physicians, nurses, allied heath professions ▪ Requires infrastructure (space), which may mean funding to build or renovate space ▪ Requires strong commitment from administration to support transplant as a priority program	

b) Prioritized Access to Assessment Resources

This option involves prioritized access to assessment services via allocated time slots for specialist referrals, lab and diagnostic imaging and other procedures to expedite assessment process for potential recipients and living donors.

Strengths	Weaknesses
▪ May decrease wait times ▪ May contribute to improved quality and patient satisfaction ▪ Enables flexibility to accommodate variability in activity ▪ Requires minimal additional investment in space or human resources ▪ Demonstrates organizations' commitment to of transplantation ▪ Based on understanding and working relationships around why prioritized access important	▪ May impact access to specialist, clinic time, diagnostic resources, etc. by other high priority patients ▪ Others, such as major cancer patients may take precedence over potential donors ▪ May place additional pressure on resources that may already be stretched
Barriers	
▪ Potential for complaints or resistance from physicians, staff and patients from other programs due to delayed access ▪ Requires strong commitment from administration to support transplant as a priority program	

c) Complete Living Donor Assessments in another Location

This option involves providing assessment services for living donors in a second hospital, or clinic within the same city.

Strengths	Weaknesses
▪ May decrease wait times ▪ Spreads demand for human resources, space, diagnostic procedures, etc. across two sites ▪ Enables specialization of staff focusing on living donors	▪ May impact access to clinic time, diagnostic resources by other programs on two sites ▪ Requires critical mass of activity and specialized human resources on two sites ▪ May reduce efficiencies from consolidating activity on one site ▪ Requires infrastructure in two locations
Barriers	
▪ Smaller cities may not have access to a second hospital or clinic with the required human resource expertise and equipment	

d) Expand Assessment Services to Other Cities

This option involves offering pre-transplant assessment (and post transplant follow-up) services in both transplant centres and other cities. These other cities would have the required human resources (e.g., nephrologists, cardiologists, nurses) and infrastructure (space and diagnostic equipment).

Strengths	Weaknesses
▪ Improves access/convenience for patients living in the other cities ▪ May decrease wait times ▪ May increase access to lab and diagnostic assessments ▪ Spreads demand for human resources, space, diagnostic procedures, etc. across sites in different cities	▪ Requires critical mass of activity on other sites ▪ Requires more coordination between assessment hospital and transplant centre
Barriers	
▪ Potential for lack of confidence in assessment results from a non-transplant centre	

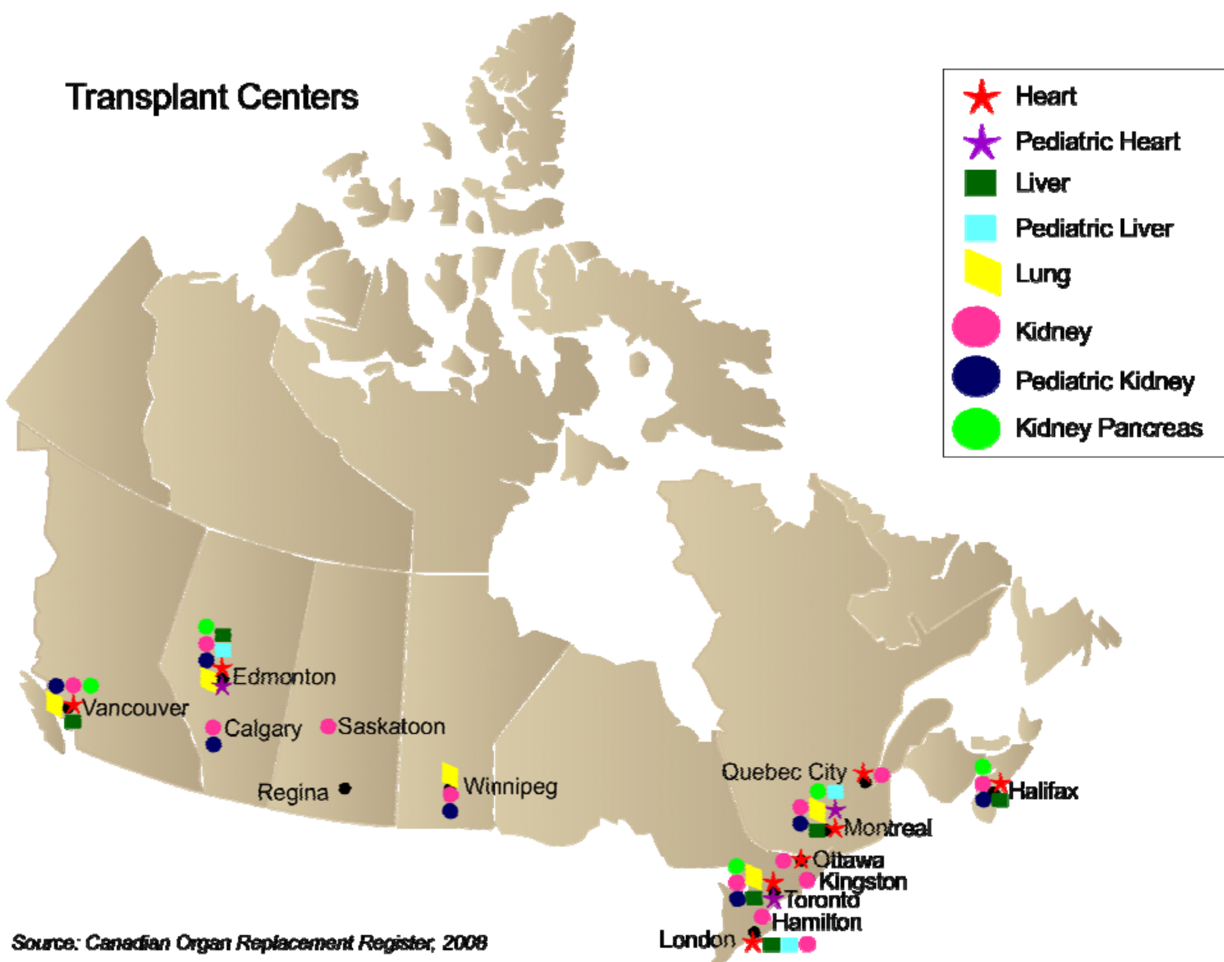
B. Considerations

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 transplant infrastructure and surge capacity could both be recommended as options to address the need for OR time and in-patient beds.

- Selection of options should be cognizant of activity required to maintain clinician expertise and ensure quality outcomes for patients.
- Selection of options needs to consider relationships and coordination with organ donation programs.
- The implications of various options on programs that serve patients from multiple provinces needs to be considered.
- Implementation of selected options at a provincial or national level may enable achievement of improved outcomes and better use of resources.
- Factors such as geography, population and hospital size will influence selection of resourcing options (human, infrastructure and financial) and need to align with volumes so some options may not be feasible for smaller programs.
- Discussion of options needs to consider ability of transplant programs to meet performance standards and ensure patient access given resource challenges and critical mass. Such discussions may include consideration of centralization of programs where performance standards are not achieved or access is not maintained.
- Increasing the number of transplants by addressing transplant resource constraints will increase demands on the post-transplant care portion of the overall transplantation process. Anecdotal reports indicated that resource pressures are already becoming an issue.
- Discussion of funding options and incentives will need to consider PT government perspectives and the current variation in models across the country.
- For financial resourcing options involving incentives related to quality or volume, the flow of incentive funding (to transplant program budget versus hospital global budget) impacts the effectiveness of the incentive. Anecdotal reports indicate that flow of such funding to global budgets minimizes the impact.
- Resourcing options may be implemented at a local, regional, provincial or national level. There may be options that would result in improved outcomes / greater efficiencies if implemented through provincial, multi-provincial or national approaches.
- Infrastructure (information systems), capacity, technical expertise may affect the ability to implement an option.
- Options that require investment in new infrastructure, e.g., facility space, information systems, etc may take longer to implement.
- The accountability, audit, and reporting requirements for each financial option may vary by option and level of implementation (regional, provincial, national).
- Demonstration that increased funds for advancing one option or a slate of options could be justified by the resulting increase in organ donors would translate to increased transplants and decreased expenditure on dialysis, bridge-to-transplant therapies and other treatments for end stage organ failure.

Appendix A

Organ Transplantation by Province[34]



[34] Canadian Organ Replacement Register. 2008 Annual Report – Treatment of End-Stage Organ Failure in Canada, 1997 – 2006. Ottawa: Canadian Institute for Health Information, 2008.