

PUBLIC HEALTH AND HEALTH POLICY

Improved Organ Donation Rates in Patients with Brain Death After Adopting a Comprehensive Program at the Hamilton Health Sciences Corporation

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ABSTRACT

In 2007, Hamilton Health Sciences (HHS) was recognized as a center of excellence, leading Ontario in the number of multiple organ donors. To overcome barriers plaguing successful donation, HHS had developed a comprehensive donation program. No standardized approach to donation existed before the creation of Ontario's Trillium Gift of Life Network (TGLN) in 2000. This paper is an explanatory policy analysis to describe how this change came about. HHS has made organ/tissue donation a priority. Adopted strategies include: a dedicated organ/tissue committee with participating intensive care unit physicians, chiefs of practice, nurses and senior administration; clinical triggers; a "pre-approach plan" to ensure timely discussion; public and healthcare team education; and standardized protocols. TGLN has been operational at HHS since 2002, with full-time, on-site nurses since 2003. The number of trauma patients admitted to the HHS increased from 398 patients in 2001/02 to 526 in 2006/07. Between 2001/02 and 2006/07, there was also an increase in the number of cornea donations (48 vs. 145), and multiple solid organ donors (12 vs. 32). In 2007, HHS reported high rates of referral (100%), approach (86%) and consent (61%). The experience for HHS has been rewarding, yet we continue to face challenges related to resources, education and cultural diversity.

BACKGROUND

Organ donation is a vital method of saving lives. For years, Ontario has worked to make the system of organ donation more effective. In 2000, there were only 147 multiple organ donors in Ontario.¹ This was primarily due to the lack of a standardized approach to organ and tissue donation. In addition, several barriers have hindered organ donation, including an inaccurate health card registry, cultural myths and societal misconceptions, and a lack of consistent hospital policies and protocols.^{2,3}

In 2000, the Ontario government created the Trillium Gift of Life Network (TGLN) whose mandate was to develop a provincial program with policies aimed at bridging the ever-widening gap between those waiting on the transplant list and those eligible to donate. Despite the diligence of TGLN to address the above barriers, problems continued to plague successful donation.

Hamilton Health Sciences has faced many challenges to donation and was once viewed as a mediocre center for donation. But in 2007 Hamilton Health Sciences (HHS) was recognized as a center of excellence, leading the province in the number of multiple organ donors. The questions then arise: Why has there been such change? With a commitment from senior leadership and the intensive care unit (ICU) physicians, HHS has developed and implemented a comprehensive donation program in partnership with TGLN.

METHODOLOGY AND OBJECTIVES

This is an explanatory policy analysis involving the use of research documents, including the Trillium Gift of Life Network Act,⁴ forum recommendations on the neurological determination of death and organ donor management in Canada,⁵ and newspapers and media sources. These were supplemented by qualitative interviews of various experi-

enced healthcare professionals in the areas of organ donation (n=2), critical care (n=3), neurology (n=1) and neurosurgery (n=3) at the Hamilton Health Sciences. On average, each qualitative interview lasted for about 30 minutes with questions directed to the role the interviewee plays in organ donation and how work in this particular area can be more effectively performed.

In this paper, we describe a number of institutions and stakeholder groups, and their opinions, attitudes and values will be highlighted and explored. It is relevant to mention at the outset that there seems to be a paucity of patient groups standing out to represent their own interests. This phenomenon can perhaps be explained by the fact that patients requiring organ donations form an extremely small percentage of the population as a whole; in addition, many of whom may be too ill to engage in advocacy activities.

National forums were organized for the determination of death, the recommendations of which have had significant implications for organ donation in Canada.⁵ These forums are good illustrations of the professional and research inputs that have shaped Canada's existing organ donation policy.

NEUROLOGICAL DETERMINATION OF DEATH

The Trillium Gift of Life Network Act sets out the procedure for declaring death in situations of deceased donation. Section 7(1) of the Act requires that death be determined by at least two physicians "in accordance with accepted medical practice".⁴ No physician who has had any association with the proposed transplant recipient may take part in the determination of death, and no physician who took part in the determination of death may participate in the transplant process.

The accepted medical practice relating to determining death across all Canadian provinces and territories is brain death. Despite widespread national, international and legal acceptance of the concept of death as defined by neurological criteria, substantial variability exists in the standards and their application. In view of this, the Canadian forum, entitled "Severe Brain Injury to Neurological Determination of Death" was initiated in April 2003 for the development of a national agreement on the process of care, commencing with severe brain injury and culminating with the neurological determination of death (NDD).⁵ This is an authoritative document involving the participation of various professional disciplines and stakeholders involved in end-of-life care, donation and transplantation. The total number of participating organizations totaled 31, including the TGLN.

Reflected in the process of development of the aforementioned national agreement are various concepts raised by policy analyst Naomi Fulop:⁶ "**Values** – what state of affairs is unsatisfactory? What means of addressing the problem would be acceptable? **Facts** – how do different actors frame the problem? Which actors would find which solutions acceptable? **Theories** – what has caused the problem and what interventions would improve matters?"^{7,8}

The participating institutional actors to this forum provide standards and a code of practice for the care of patients whose injuries result in NDD. They attach particular value to the provision of a framework for the development of regional and site-specific guidelines as well as an opportunity for international leadership.

ROLE OF HAMILTON HEALTH SCIENCES

In order to become a center of excellence in organ donation, the Hamilton Health Sciences (HHS) Corporation has made tissue and organ donation a priority. A number of strategies were developed and adopted, including:

- (1) dedicated organ and tissue committee with membership encompassing intensive care unit physicians, chiefs of practice, nurses and senior administration;
- (2) development and implementation of clinical triggers to generate prompt referrals to TGLN coordinators once patients have met the GIVE criteria as follows:
 - (a) Glasgow Coma Scale (GCS) ≤ 4 ,
 - (b) Injured brain (e.g., bleed, hypoxia, trauma),
 - (c) Ventilated, and
 - (d) End-of-life discussion or family-initiated organ donation discussion;
- (3) development and implementation of standardized protocols shared in both adult and pediatric patient populations;
- (4) a "pre-approach plan" to ensure timely organ donation discussion; and
- (5) public and healthcare team education.

TGLN has been operational at the HHS as of 2002, and an on-site, full-time nurse acting as organ and tissue donation coordinator has been present since 2003. With implementation of this comprehensive program, then, we will look at changes in the HHS's organ and tissue donation referral rates, consent rates, recovery rates and the number of organ donors from 2001 to 2007. For consistency of definitions, organ donation performance indicators used are defined as follows by the HHS:⁹

- (1) potential organ donors: number of deaths in ventilated units that had organ donation potential;
- (2) referrals: number of deaths in ventilated units that were referred to TGLN for organ donation;
- (3) approaches: number of cases that were approached for organ donation;
- (4) consented cases: number of cases from which consent was obtained for organ donation;
- (5) medically unsuitable: number of cases determined, pre- or post-consent, as medically unsuitable for organ donation;
- (6) organ donors: number of deceased donors from whom at least one organ was retrieved and transplanted;

- (7) referral rate: ratio at which death cases in ventilated units were referred to TGLN for organ donation;
- (8) consent rate: ratio at which consent was obtained from cases approached; and
- (9) conversion rate: ratio at which potential organ donors were “converted” into actual organ donors.

CHANGES AFTER ADOPTION OF COMPREHENSIVE HHS ORGAN AND TISSUE DONATION PROGRAM

The number of trauma patients admitted to the HHS increased from 2001 to 2007, from 398 patients in 2001/02 to 526 in 2006/07 (Table 1). Between 2001/02 and 2006/07, there was also an increase in the number of cornea donations (48 vs. 145) and multiple solid organ donors (12 vs. 32).

Table 1. HHS trauma volume, and number of multiple solid organ/cornea donors from 2001-2007

Year	HHS trauma volume (number of patients)	Number of multiple solid organ donors at HHS	Number of cornea donors at HHS
2001/02	398	12	48
2002/03	392	13	36
2003/04	417	14	36
2004/05	475	14	60
2005/06	482	20	80
2006/07	526	32	145

With the adoption of a comprehensive organ and tissue donation program at HHS, our referral rate, approach and consent rates changed from 83%, 88% and 71% respectively in 2005, to 100%, 86% and 61% respectively in 2008 (Table 2).

Table 2. HHS organ donation referral, approach and consent rates

Year	Referral Rate	Approach Rate	Consent rate
2005	83%	88%	71%
2006	84%	91%	50%
2007	82%	94%	58%
2008	100%	86%	61%

INTERPRETATION

In 2007, the Hamilton Health Sciences Corporation was the provincial leader in donations with 32 multiple organ donors. Implementation of multiple strategies has helped us achieve greatly improved referral, approach and consent rates. We have transformed from being a mediocre center for donation to a provincial leader. Implementing clinical triggers and timely referrals has led to achieving the benchmark of 100% referral rate. A pre-approach plan with all persons involved in the patient’s care has increased our consent rate and helped us reach our benchmark of 75% conversion rate. The experience for the HHS has been rewarding for all participants, yet we continue face hurdles in striving for excellence in donation due to challenges related to resources, education and cultural diversity. We are committed to creating a legacy for our patients and families, the grateful recipients, the front-line staff and our organization as a whole. †

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