Factors Affecting Referral of Severe Brain-Injured Patients to Critical Care for Prognostication and Treatment

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The views in the paper do not reflect the official policy of the Canadian Council for Donation and Transplantation and are not intended for publication in their current format.

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Executive Summary

Transplantation success depends on donation. Despite widespread support among professionals and the public for donation, the donation rate is clearly not keeping pace with demand. This gap begs the important question of whether donation is being optimized.

Donation is the critical antecedent to providing life-saving transplantation for individuals with end-stage organ failure. Strategies to increase donation rates are numerous and reflect, in part, the complex nature of the health care system combined with societal factors in which the system operates. Several factors, including formal policies by professional societies, may affect the course of treatment for the severely brain-injured. These factors include the following:

- the potential desire of family members to avoid highly intensive intervention for a loved one who has life-threatening injuries in order to facilitate the best quality of death

- the ethical imperatives of physicians that entail acting in the best interests of the patient. Such imperatives may result in the reduction or withdrawal of life-support technology in intensive care, followed by patient death as determined by cardiopulmonary criteria

- policies and guidelines for admission to the intensive care unit (ICU) that reify the goals of critical care as the prevention of unnecessary suffering and premature death through treatment of reversible illnesses or injury for an appropriate period of time

- failure to refer patients to intensive care for prognostication and treatment because they are perceived to be too seriously ill to benefit from treatment

- triage of admission to the ICU because of scarcity of resources such as beds or staff

The first three factors are consistent with respecting the known wishes of the patient or acting in his or her best interests. The potential ethical implications of failure to refer patients to critical care for prognostication and treatment because they are judged too ill to benefit are unclear. This failure presupposes that the decision is thorough and is predicated upon current, evidence-based findings. If such suppositions are incorrect, then referral to critical care may be in the best interests of the patient to optimize the quality of prognostication and treatment. Alternatively, such failure may suggest the need for the development and continued updating of practice guidelines to support clinical practice before admission to critical care.

Factors Affecting Referral of Severe Brain-Injured Patients to Critical Care for Prognostication and Treatment[1]

Introduction

Canadians are unanimous in their support of organ and tissue donation and transplantation.[2] Health and medical professionals hold a similar view.[3] Yet despite high levels of support, nations such as Canada, the United States and the United Kingdom struggle with the low donation rates of vital organs. An obvious question emerges: If professionals and the public are supportive of organ and tissue donation, why is it not occurring with greater frequency?

Donation is the critical antecedent to life-saving transplantation for individuals who have end-stage organ failure. Strategies to increase donation rates are numerous and reflect, in part, the complex nature of the health care system and the societal factors in which the system operates. This paper explores selected factors, including the formal policies of professional societies, that may affect the referral of a severely brain-injured person to a critical care setting for prognostication and treatment.

The Donation Process

Ideally, to optimize donation, the family of every brain-dead individual should be given an opportunity to consider donation. An important prerequisite for organ donation is that at the time of death, the deceased person is mechanically ventilated and that the ventilation continues for the purposes of organ donation.[4] The determination of brain death and the care of the brain-dead donor are within the domain of the critical care specialist. Care of the donor normally occurs in an intensive care setting.[5]

Factors Affecting the Clinical Pathway of the Severely Brain-Injured Patient

Several factors operate independently or in concert to affect the type and course of treatment of the severely brain-injured patient within a hospital. These factors include the following:

- the reduction or withholding of life support technology
- the informal rationing of intensive care services through failure to refer the severely brain-injured patient to critical care for prognostication and treatment
- formal policies on the admission and triage of patients to critical care

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1 Preparation of this report has been commissioned by the Canadian Council for Donation and Transplantation as preparatory material for "Severe Brain Injury to Neurological Determination of Death—A Canadian Forum", to be held in Vancouver, British Columbia, on April, 2003.

2 In a poll commissioned by Health Canada and conducted by the Environics Research Group in November 2001, 96% of Canadians surveyed indicated that they approved of organ and tissue donation. Organ and tissue donation: Canadian public awareness, knowledge and attitudes. Final report, POR-01-08. Prepared for Health Canada by the Environics Research Group Limited. November 2001:PN 4996.

3 Durand, R., R.J. Davis, R. Marymount, D. Reyes and K.A. Nelson. Attitudes and organ donor referral behavior of hospital staff. *Transplantation Proceedings* 25(6); 1993: 2991-92.

4 In their position statement on Organ and Tissue Donation (CCCS, January 2001), the Canadian Critical Care Society advocates for the use of the term ventilation for the purposes of organ donation (VPOD) in preference to non-therapeutic ventilation (page 11). It is also noteworthy that the CCCS does not support the initiation of VPOD for persons who are not intubated at the time of their death.

5 The issue of a non-heart-beating donor is not considered in this report.

Reduction or Withholding of Health Care Technology in the Treatment of the Severely Brain-Injured Patient

The issue of the reduced use of life support technology can be subdivided into two interrelated areas of discussion:

- the preferences of a moribund patient or his or her family to bypass significant or intensive use of life support technology in favour of death occurring in the home, in a hospice or in a less technologically invested area of a hospital

- the reduction or withdrawal of life support technology before the occurrence of death in an intensive care unit (ICU) setting.

While conducting the literature review that accompanied the development of this paper, many elements of the "death with dignity" movement[6] were uncovered.[7] This movement advocates for the dying person to be empowered, to the extent possible, to define the circumstances of his or her death. Empowering actions include support to enable the dying person to be surrounded by loved ones in a comfortable venue and free (or as free as possible) from pain. A critical care environment is not generally regarded as the best place in which to die, and the plan for death may include refusal to receive any type of ICU support. Should the dying individual be unable to make a decision about her or his own death, a proxy decision by an appropriate loved one is made, consistent with the dying person's known beliefs.

A severely brain-injured patient is unable to participate actively in determining the circumstances of their own death. Consent for treatment is made by proxy decision makers—most notably family members or other loved ones—based on their understanding of the wishes of the patient. Heightened awareness of the death with dignity movement may lead proxy decision makers to opt against admission to critical care for prognostication and treatment. It is unknown if this premise has been researched extensively or if it has any relevance to the issue of referral of the severely brain-injured patient to critical care. However, it is an idea that merits further investigation.

An independent but related issue is the reduction or withholding of life support technology in critical care when the condition of a patient appears to be futile. Cook *et al* indicate that within an ICU, "therapeutic goals sometimes shift from extending life to allowing it to end."[8] They argue that life support technologies have value beyond saving lives and reducing morbidity: "In the context of end-of-life decision-making, clinicians use technology to orchestrate the 'best' death possible for critically ill patients under difficult circumstances."[9]

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6 Although no explicit attempts were made to conduct a review of the death with dignity movement, the notion of quality of death was referred to in many of the articles that primarily addressed care in the ICU environment. A cursory review was also conducted of the web-published document, "Compendium of health care organization guidelines on position statements on issues related to the care of the dying" published in 2001 by Last Acts: A national coalition to improve care near the end of life. The compendium was accessed in January 2003 from www.lastacts.org.

7 The impact of the death with dignity movement was not the specific focus of the literature. References that were reviewed were identified within the context of searching for policies related to the referral, prognostication and treatment of the severely brain-injured.

8 Cook, D., M. Giacomini, N. Johnson and D. Willms. Life support in the intensive care unit: A qualitative investigation of technological purposes. *CMAJ* 161(9); 1999: 1109.

9 *Ibid,* 1110.

This orchestration frequently involves the withholding or withdrawal of life support technologies.[10] Studies indicate that life support technologies are commonly withheld or withdrawn in intensive care before death and that this trend has increased in the last decade. A study by Prendergast *et al*[11] reveals that in 1987–88, 51% of patients who died in an ICU had some form of life support technology withheld or withdrawn. By 1992-98, that figure had risen to 90%. Although there were wide variations in practice among the facilities surveyed, Prendergast *et al* conclude that the limitation of life support before death is a predominant practice in the American intensive care programs that participated in the study. They also argue that the wide variations point to a lack of consensual guidelines for end-of-life care. Other studies and review articles report similar findings.[12]

A recent Canadian study also supports those findings. Hall and Rocker[13] conducted a retrospective chart audit of deaths that had occurred in an ICU over a one-year period. They determined that life support was withdrawn or withheld in 79.3% of all deaths that occurred in the ICU during the review period. They also found that withdrawal or withholding of life support was more prevalent among patients with neurological injury. Clearly, this statement does not apply to individuals who have been determined to be brain dead, as the withdrawal of support occurs after death.

The reduction or withholding of life support within intensive care settings must be considered against the backdrop of the ethical obligations of physicians. The critical care environment spawns varied and difficult ethical considerations. Standards, guidelines and position statements developed by professional societies help physicians make decisions within an ethical framework. A central ethical tenet is to act in the best interests of the patient. Even when the prognosis is grim, the ethics of leaving a patient on ventilation to enable her or him to progress to brain death may be argued as failing to act in the patient's best interests. Similarly, the introduction of non-therapeutic ventilation solely for the purpose of organ donation would not be considered in the best interests of the patient, and is a practice not supported by the Canadian Critical Care Society.[14]

Within this same ethical framework, all patients with severe brain injury deserve full review and prognostication to assess the extent of their injury and the potential for rehabilitation. It is important for prognostication to be based on current, evidence-based

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10 The Ethics Committee of the Society of Critical Care Medicine, American College of Critical Care Medicine, provides extensive recommendations related to end-of-life care in the intensive care unit and indicate that this care falls into two phases: (1) shared decision-making from the pursuit of a cure or recovery to pursuit of comfort and freedom from pain and (2) a focus on humanistic and technical skills to ensure that the needs of the patient and the family are met. Truog, R.D., A.F.M. Cist, S.E. Brackett, *et al* . Recommendations for end of life care in the intensive care unit: The Ethics Committee of the Society of Critical Care Medicine. *Critical Care Medicine* 29(12); 2001: 2332-48.
11 Prendergast, T.J., M.T. Claessens and J.M. Luce. A national survey of end-of-life care for critically ill patients. *American Journal of Respiratory and Critical Care Medicine* 158(4); 1998: 1163-67. The study gathered data on brain deaths and calculated the percentages based on the data on the remaining deaths.
12 See, generally, Way, J., A.L. Black and J.R. Curtis. Withdrawing life support and resolution of conflict with families. *British Medical Journal* 2002; 325: 1342-45; and Asch, D.A., J. Hansen-Flaschen and P.N. Lanken. Decisions to limit or continue life-sustaining treatment by critical care physicians in the United States: Conflicts between physicians' practices and patients' wishes. *American Journal of Respiratory Care Medicine* 151(2 pt. 1); 1995: 288-92.
13 Hall, R.,I and G. Rocker. End of life care in the ICU. *Chest* 118; 2000: 1424-30.
14 Position statement on Organ and Tissue Donation (CCCS, January 2001), Canadian Critical Care Society. The CCCS does not support the initiation of ventilation for the purposes of organ donation for people who are not intubated at the time of their death.

findings. Premature triage resulting in a decision not to refer to critical care for prognostication and treatment within this context could be argued as unethical and not acting in the best interests of the patient.

Accessing Intensive Care Services

A limited number of studies have investigated factors affecting admission to intensive care or the rationing of intensive care services. These studies suggest that admission is affected by resource availability (beds and staff) and clinical judgment about whether the person will benefit from care. The former entails the rationing of health services based on resources and the latter involves the application of criteria based on potential benefit from intensive care support.

Sprung *et al*[15] conducted a prospective review of all requests for evaluation for ICU admission. Patients fell into three groups: those admitted to the ICU, those refused but later admitted and those never admitted. Reasons for initial refusal for admission included bad prognosis, good prognosis, admission to another ICU, no beds and requirement for more data to support a decision to admit. Patients who were refused admission had higher APACHE II[16] scores (15.8 ± 1.4) than patients who were admitted after referral (12.1± 0.4).[17] The average APACHE II score of patients not admitted may be skewed by the impact of lower scores for patients refused admission because of perceived good prognosis. Patients who were not admitted to the ICU also had higher mortality rates than those who had were admitted, a finding similar to that by Metcalfe *et al*[18] The authors conclude that patients with good and bad prognoses were denied admission to the ICU and that the service benefited patients not at the extremes. Survival was improved in patients admitted to the ICU with APACHE II scores > 20.[19] Age, surgical status and diagnosis were also considered; triage to the ICU correlated positively with surgical status and diagnosis and negatively with age.[20]

One important element of the study by Sprung *et al* was its prospective analysis of the impact of ICU bed availability on a decision to admit a person to the ICU. The researchers found that there were fewer admissions to the unit when the unit was full, and that the frequency of admitted patients decreased markedly when more than 8 beds were occupied in the 8-bed closed unit.[21] In other studies, the number of available beds in an ICU has been identified as an important factor in triage decisions.[22,23]

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15 Sprung, C.L., D.Gerber, L.A. Eidelman, *et al.* Evaluation of triage decisions for intensive care admission. *Critical Care Medicine* 27(6); 1999: 1073-79.

16 APACHE II refers to Acute Physiology and Chronic Health Evaluation Scores.

17 Sprung et al, *op cit.,* 1074.

18 Metcalfe, M.A., A. Sloggett and K. McPherson. Mortality among appropriately referred patients refused admission to intensive-care units. *Lancet* 350; 1997: 7-12.

19 *Ibid.*

20 *Ibid.*

21 *Ibid*. The unit had the opportunity to expand and add more beds and did so to accommodate admissions beyond its 8-bed limit.

22 Strauss, M.L., J.P. LoGefro, J.A. Yeltatzie *et al*. Rationing of intensive care: An everyday occurrence. *Journal of the American Medical Association* 255; 1986: 1143-46.

23 Singer, D.E., P.L. Carr, A.G. Mulley *et al.* Rationing intensive care—Physician responses to a resource shortage. *New England Journal of Medicine* 309; 1983: 1155-60.

Briggs *et al* [24] examined whether severely brain-injured patients in the United Kingdom were being denied admission to the ICU because of policy or rationing of resources. They found that among ICU's that collected data on refused admissions, in 1993 in the UK, 108 brain damaged patients were refused admission because of facility shortages.[25] The researchers suggest that improvements in imaging technology enabled more precise prognostication of the clinical course of patients with severe brain damage, with the resultant decision not to admit patients with poor prognoses to the ICU.[26] The article does not specify whether evidence-based practice guidelines supported clinical decision-making in the case of the latter.

Rationing of ICU services can occur through failure to refer a patient to ICU for treatment or through the inability of the ICU to accept a referred patient for care. Such occurrences beg the question whether the actions are affected by established policies at a hospital level or professional standards of practice.

Metcalfe *et al*,[27] Prendergast *et al,*[28] Truog *et al,*[29] Way *et al*[30] and Luce[31] are among the authors who suggest the need for increased consensus on ICU admission and discharge criteria and on end-of-life care. These authors agree that there is a lack of clear policy to guide the actions of caregivers.

The American Thoracic Society (ATS), in recognizing this issue, convened a multi-disciplinary bioethics task force to develop principles guiding the allocation of ICU resources.[32] The ATS bioethics task force argued that the mission of the ICU included three goals:

1) to preserve meaningful human life by protecting and sustaining patients in a caring manner when they are threatened by acute critical illness or injury or as a consequence of medical or surgical therapy

2) to provide specialized rehabilitative care to ICU patients as they start to recover from their critical illness or injury

3) for patients previously admitted to the ICU, to provide compassionate and attentive care to the dying and their families

Subsequently, the ATS articulated 12 positions to guide the fair and equitable allocation of ICU resources. The ATS takes the position that access to the ICU should be based on medical need and that, if patients are not able to benefit from ICU care, they should not be admitted even if there are available beds.

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24 Briggs, J.D., A. Crombie, J. Fabre, E., *et al* . Organ donation in the UK. A survey by a British Transplantation Society Working Party. *Nephrology Dialysis and Transplantation* 12; 1997: 2251-57.

25 Ibid, p. 2252.

26 *Ibid,* 2254.

27 Metcalfe *et al, op cit.,* 7.

28 Prendergast *et al, op cit.*

29 Troug *et al, op cit.,* 2332.

30 Way, J., A.L. Black and J.R. Curtis. Withdrawing life support and resolution of conflict with families. *British Medical Journal* 325; 2002: 1342-45.

31 Luce, J.M. Making decisions about the forgoing of life-sustaining therapy. *American Journal of Respiratory and Critical Care Medicine* 156(6); 1997: 1715-18.

32 Lanken, P.N., P.B. Terry, D.C. Adler *et al* .Fair allocation of intensive care unit resources. *American Journal of Respiratory and Critical Care Medicine* 156(4); 1997: 1282-01.

The ATS position is consistent with the prioritization model developed for ICU admission, discharge and triage by the Society of Critical Care Medicine (SCCM)[33] and the draft service and admission and discharge policy of the Canadian Critical Care Society.[34] The SCCM defines priorities for admission to the ICU based on a continuum of patients who might benefit the most to patients who would not benefit at all. The highest priority for admission to the ICU includes critically ill or unstable patients in need of intensive treatment and monitoring that cannot be provided outside an ICU setting. Second priority is given to patients requiring intensive monitoring who might potentially require immediate intervention. Third priority is assigned to unstable and critically ill patients with a reduced likelihood of recovery because of underlying conditions. The final priority, individuals defined as being inappropriate for admission, includes patients who are (1) too well to benefit from ICU admission or (2) too sick to benefit from ICU care. Examples in the latter category include patients with severe and irreversible brain damage.[35]

Observations and Concluding Comments

Transplantation success depends on donation. Despite widespread support among professionals and the public, the donation rate is not keeping pace with demand. This gap begs the important question of whether donation is being optimized. It also focuses attention on the course of treatment and prognostication of the severely brain-injured person.

Many factors may affect the course of treatment for the severely brain-injured:

- the potential desire of family members to avoid highly intensive intervention for a loved one who has life-threatening injuries in order to facilitate the best quality of death

- the ethical imperatives of physicians that entail acting in the best interests of the patient. Such imperatives may result in the reduction or withdrawal of life-support technology in intensive care, followed by patient death as determined by cardiopulmonary criteria

- policies and guidelines for admission to the ICU that reify the goals of critical care as the prevention of unnecessary suffering and premature death through treatment of reversible illnesses or injury for an appropriate period of time

- failure to refer patients to intensive care for prognostication and treatment because they are perceived to be too seriously ill to benefit from treatment

- triage of admission to the ICU because of scarcity of resources such as beds or staff

The first three factors are consistent with respecting the known wishes of the patient or acting in his or her best interests. The potential ethical implications of failure to refer patients to critical care for prognostication and treatment because they are judged too ill

33 Society of Critical Care Medicine. Guidelines for ICU admission, discharge and triage. *Critical Care Medicine* 27(3); 1999: 633-38.

34 Canadian Critical Care Society. Critical care unit/program/department statement of service and admission and discharge policy (unpublished draft). 18 September 2000, 2.

35 *Op Cit,* p. 4 of web version on SCCM site, www.sccm.org/pdf/ICU%20AD&T.pdf.

to benefit are unclear. This failure presupposes that the decision is thorough and is predicated upon current, evidence-based findings. If such suppositions are incorrect, then referral to critical care may be in the best interests of the patient to optimize the quality of prognostication and treatment. Alternatively, such failure may suggest the need for the development and continued updating of practice guidelines to support clinical practice before admission to critical care.

The issue of triage of admission to intensive care is fraught with a host of ethical considerations, including those associated with placing a value on one life over another and confidence in prognostication. A debate on this matter is beyond the scope of this brief review.