
Active Donor Management During the Hospital Phase of Care Is Associated with More Organs Transplanted per Donor



Madhukar S Patel, MD, MBA, ScM, Salvador De La Cruz, MD, Mitchell B Sally, MD, FACS, Tahnee Groat, MPH, Darren J Malinoski, MD, FACS

- BACKGROUND:** Meeting donor management goals when caring for potential organ donors has been associated with more organs transplanted per donor (OTPD). Concern persists, however, as to whether this indicates that younger/healthier donors are more likely to meet donor management goals or whether active management affects outcomes.
- STUDY DESIGN:** A prospective observational study of all standard criteria donors was conducted by 10 organ procurement organizations across United Network for Organ Sharing Regions 4, 5, and 6. Donor management goals representing normal critical care end points were measured at 2 time points: when a catastrophic brain injury was recognized and a referral was made to the organ procurement organization by the DH; and after brain death was declared and authorization for organ donation was obtained. Donor management goals Bundle “met” was defined as achieving any 7 of 9 end points. A positive Bundle status change was defined as not meeting the Bundle at referral and subsequently achieving it at authorization. The primary outcomes measure was having ≥ 4 OTPD.
- RESULTS:** Data were collected for 1,398 standard criteria donors. Of the 1,166 (83%) who did not meet the Bundle at referral, only 254 (22%) had a positive Bundle status change. On adjusted analysis, positive Bundle status change increased the odds of achieving ≥ 4 OTPD significantly (odds ratio 2.04; 95% CI 1.49 to 2.81; $p < 0.001$).
- CONCLUSIONS:** A positive donor management goal Bundle status change during donor hospital management is associated with a 2-fold increase in achieving ≥ 4 OTPD. Active critical care management of the potential organ donor, as evidenced by improvement in routinely measured critical care end points can be a means by which to substantially increase the number of organs available for transplantation. (*J Am Coll Surg* 2017;225:525–531. Published by Elsevier Inc. on behalf of the American College of Surgeons.)
-

The number of organs available for transplantation continues to be substantially less than that required to treat the number of patients with end-stage organ disease.

Disclosure Information: Nothing to disclose.

Disclosures outside the scope of this work: Dr Malinoski received consulting fees and travel reimbursement from Symic.

Presented at the 44th Critical Care Congress, Phoenix, AZ, January 2015.

Received May 9, 2017; Revised June 27, 2017; Accepted June 28, 2017.

From the Department of Surgery, Massachusetts General Hospital, Boston, MA (Patel), Department of Family Medicine, Providence Milwaukie Hospital, Milwaukie (De La Cruz), Surgical Critical Care Section, Veterans Affairs Portland Healthcare System (Sally, Groat, Malinoski), and Department of Surgery, Oregon Health & Science University (Sally, Malinoski), Portland, OR.

Correspondence address: Darren J Malinoski, MD, FACS, Veterans Affairs Portland Health Care System, PO Box 1034, P3SURG, Portland, OR 97207. email: darren.malinoski@va.gov; malinosk@ohsu.edu

According to the most recent annual data, in 2016 there were 36,475 organ transplantations performed from 15,946 donors, and 6,057 patients died while waiting for an appropriate organ (based on Organ Procurement and Transplantation Network data as of February 12, 2017). In contrast, as of February 2017, more than 118,000 patients remain on the Organ Procurement and Transplantation Network/United Network for Organ Sharing (UNOS) waiting list. The fact that, on average, only 3 of a possible 8 organs are transplanted per donor (OTPD) undoubtedly contributes to this shortage. In an effort to address the profound shortage of organs available for transplantation, the US Health Resources and Services Administration set goals with the intent of optimizing organ donation and transplantation through the Donation and Transplantation Community of Practice.

Abbreviations and Acronyms

| | |
|------|--|
| DH | = donor hospital |
| DMG | = donor management goal |
| DNDD | = donors after neurologic determination of death |
| OPO | = organ procurement organization |
| OTPD | = organs transplanted per donor |
| SCD | = standard criteria donors |
| UNOS | = United Network for Organ Sharing |

As part of the strategy to obtain higher conversion rates and a greater number of OTPD, the Donation and Transplantation Community of Practice recommends using a checklist of preset critical care end points, or donor management goals (DMGs), to guide the management of donors after neurologic determination of death (DNDD). Donor management goals reflect the normal hemodynamic, acid-base, respiratory, endocrine, and renal status of any patient (Table 1).

In the context of donor management, there are 2 phases of care for a potential organ donor: the donor hospital (DH) phase and the organ procurement organization (OPO) phase (Fig. 1). The DH phase includes the critical care provided to patients with catastrophic brain injuries from the time a referral is made to the local OPO for imminent neurologic death, through the declaration of death by neurologic criteria, to the time that authorization is obtained for organ donation. Before the declaration of death, the primary intent of DH critical care is to try to save the patient's life. After declaration, the goal of care shifts to preserving the option of organ donation for those patients and families who choose it. The OPO phase begins at the time of authorization for donation and extends through organ recovery.

Recent studies have suggested that successfully meeting the DMG Bundle, defined as achieving any 7 of the 9 critical care end points during both the DH and OPO

phases, is associated with more OTPD as well as improved graft outcomes.¹⁻³ It remains unknown, however, whether this finding is confounded by the fact that younger/healthier donors are predisposed to meet the DMG Bundle throughout the organ donation process, or whether active critical care management leading to a positive change in DMG Bundle status from "not met" to "met" affects donation-related outcomes.

Contemporary consensus guidelines from the Society of Critical Care Medicine, American College of Chest Physicians, and Association of Organ Procurement Organizations,⁴ as well as the Neurocritical Care Society,⁵ highlight the importance of providing adequate critical care to patients with catastrophic brain injuries, to both improve their chances of recovery and preserve the option of organ donation for those who regress to a neurologic determination of death. The objective of our study was to examine the impact of a change in DMG Bundle status during the DH phase of care from time of referral to authorization. We hypothesized that a positive Bundle status change from not met to met is associated with more OTPD.

METHODS

Study design

A prospective observational study of all standard criteria DNDD from 10 OPOs in UNOS Regions 4, 5, and 6 was conducted from March 2012 to June 2014. These OPOs were located in Oregon, California, Nevada, Utah, New Mexico, Arizona, and Texas. Standard criteria donors (SCDs) were declared legally dead by neurologic criteria and were either younger than 50 years of age or 50 to 59 years old, with fewer than 2 of the following conditions: stroke as the cause of death, serum creatinine levels >1.5 mg/dL, or chronic hypertension. Excluded from the study were expanded criteria donors, a population that is typically older, has more comorbidities, and therefore typically yields fewer OTPD. In addition, donors after circulatory determination of death, donors younger than 18 years of age, and a group of donors enrolled in an unrelated randomized controlled trial were also excluded. The study was determined to represent nonhuman subject research by the Research and Development Committee at the Veterans Affairs Portland Health Care System.

Data collection

For DNDD meeting inclusion criteria, the UNOS DMG web portal (<https://nationaldmg.org>) was used by each OPO to prospectively record the following data: demographic, critical care end point, laboratory values, thyroid

Table 1. Donor Management Goals Checklist

| Variable | Target value |
|--|--------------|
| Mean arterial pressure, mmHg, range | 60–110 |
| Central venous pressure, mmHg, range | 4–12 |
| Ejection fraction, % | ≥50 |
| Arterial blood gas pH, range | 7.3–7.5 |
| PaO ₂ /FiO ₂ ratio | ≥300 |
| Sodium, mEq/dL | ≤155 |
| Glucose, mg/dL | ≤180 |
| Urine output, mL/kg/h over last 4 h | ≥0.5 |
| No. of low-dose* vasopressors | ≤1 |

*Low-dose vasopressors defined as dopamine ≤10 µg/kg/min, norepinephrine ≤0.2 µg/kg/min, or neosynephrine ≤1 µg/kg/min.
FiO₂, fraction of inspired oxygen; PaO₂, partial pressure of arterial oxygen.

Download English Version:

<https://daneshyari.com/en/article/5733373>

Download Persian Version:

<https://daneshyari.com/article/5733373>

[Daneshyari.com](https://daneshyari.com)