

OPEN

What Is the Effect of Organ Donation Authorization Rates When Utilizing a Standardized Effective Request Process?

OBJECTIVES: To determine if implementation of a standardized effective request process (ERP) can increase organ donation authorization rates.

DESIGN: A retrospective, observational study was performed using data acquired from the Midwest Transplant Network. chi-square test was used to analyze categorical data, with *p* value of less than 0.05 deemed significant.

SETTING: The Midwest Transplant Network located in Westwood, KS from January 1, 2013 to June 30, 2017.

PATIENTS: A total of 1,391 consecutive patients were identified as potential donors based on medical evaluation of the patient's neurologic status, organ function, and established age criteria.

INTERVENTIONS: An ERP was used when discussing donation with 733 patients (53%), compared with no ERP usage with 658 patients (47%).

MEASUREMENTS AND MAIN RESULTS: A significant increase (30%) in donation rates was observed when an ERP was used. A comparative decrease in donation rates was observed whenever a breakdown in any of the four identified steps occurred.

LIMITATIONS: The data analyzed was gathered retrospectively. Due to the retrospective nature of our study, there is no way to determine delay in authorization times versus no delay. Although most population data information about the authorized donors was known, this information was limited in patients who declined.

CONCLUSIONS: With proper preparation and planning, the implementation of a standardized ERP may improve organ donation rates and increase the number of life-saving organs for transplant.

KEY WORDS: brain death; healthcare delivery; intensivist; organ donation; quality and patient safety; transplantation

Solid organ transplantation remains a field of medicine in which demand continues to overwhelm supply. As of August 2021, there were at least 106,698 patients awaiting organ transplantation within the United States but only an estimated 23,372 transplants were performed in 2020 (1). Of those, the majority of organs transplanted came from deceased donors rather than living donors (2). While the majority of Americans support organ donation (95%), only 58% are actually registered donors (3).

Without a clear intention expressed from the potential donor, the decision to donate is shifted to their family. Patients' families play a major role in the organ donation process and low authorization rates given by families remain as a critical barrier. Therefore, it is essential when a potential organ donor is identified that the request process is handled with extreme care and compassion; all the while, educating the family on the importance of the gifts that can be given and what it means for their loved one to be a donor (4).

Jacob D. Bly, MD¹

Sahaja Atluri, BA²

Alexis Graham-Stephenson, MD³

Melissa Ott, ARNP⁴

Lori Markham, RN, MSN⁴

Scott Sander, RRT⁴

Dustin R. Neel, MD²

Scott S. Johnson, MD⁵

Donald G. Vasquez, DO⁶

Steven P. Whitt, MD⁷

Jody Olson, MD⁸

Harbaksh Sangha, MD, MBA⁹

An-Lin Cheng, PhD²

Michael Moncure, MD²

Copyright © 2022 The Authors. Published by Wolters Kluwer Health, Inc. on behalf of the Society of Critical Care Medicine. This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

DOI: 10.1097/CCE.0000000000000615

Certain strategies such as, timely referral of a potential donor, development of a “huddle,” declaration of death by neurologic criteria as described by the American Academy of Neurology, enactment of agreed-upon plan, collaboration between the healthcare providers and the Organ Procurement Organization (OPO) and ensuring death has been declared if the patient meets the criteria for death before the discussion of donation have been developed, which aim to increase authorization rates for donation. By implementing these strategies in a systematic, stepwise manner, we believe we can increase the number of organs available for transplantation, as well as family satisfaction with the process.

MATERIALS AND METHODS

The Midwest Transplant Network (MTN) is a non-profit OPO located in Kansas City that has been helping address the shortage of organs for transplant since 1973. Its donor service area is Kansas and the western 2/3 of Missouri, states in which donor registry rates are 81% and 79%, respectively (3). Our data were analyzed in two separate groups: one group with the standardized process implemented and one group with the nonstandardized process implemented for comparison between the dates of January 1, 2013, and June 30, 2017. The standardized process was identified by our organization as a targeted intervention in donor authorization. Our study focused on the implementation of a standardized effective request process (ERP) developed specifically by MTN and its partner donor hospitals, consisting of the following four steps:

- 1) Timely referral to the OPO—Done according to hospital policy, most within 30 to 60 minutes of patients meeting referral criteria. Referral criteria is defined as neurologically injured patients on a ventilator, with a Glasgow Coma Scale (GCS) of 5 or less or plans to terminate life-sustaining therapies
- 2) Development of a “huddle”—A meeting between members of the healthcare team (such as physicians, nurses, chaplains, social workers) and the OPO representative to establish a set plan before any discussion of donation with the family occurs.
- 3) Declaration of death—If the patient meets criteria for death by neurologic criteria, they are declared dead. In cases of donation after circulatory death, a decision for comfort care is made by the family of the deceased prior to ever being approached for donation.
- 4) Enactment of the agreed-upon plan—A formal discussion of donation is held with the donor’s family, incorporating the plan created during the earlier huddle (step 2).

If one or more of the above steps did not occur, this was considered failure of the ERP to be carried out and was considered an ineffective request.

A retrospective observational study was performed examining data acquired from the MTN donor database. The protocol was reviewed and approved as a nonhuman subject study by the University of Missouri-Kansas City’s Institutional Review Board (IRB) (IRB Number: 17-278). Data of consecutive donors were documented and reviewed from January 1, 2013, to June 30, 2017. Patients eligible for death by neurologic criteria were neurologically injured, on a ventilator, with a GCS of 5 or less were included, while patients who met the above neurologic criteria but later improved or did not undergo pronouncement of death were excluded from the study.

Patients were further divided into two groups contingent upon whether an effective ERP was implemented. Data analysis included conversion to donation and donor status (not in registry, first person authorized, intent to donate). Similarly, causes influencing conversion rates were examined, as well as specific factors that negatively impacted an ERP completion. chi-square analysis was used to compare outcomes, with a *p* value of less than 0.05 considered significant.

RESULTS

A total of 1,391 eligible donors were identified and included in the analysis, of which 930 became actual donors (66.8%). The ERP was used in 733 eligible donor situations (52.7%), compared with 658 individuals who underwent a noneffective request (47.3%). There were significantly higher authorization rates in the effective request group (593 donors) compared

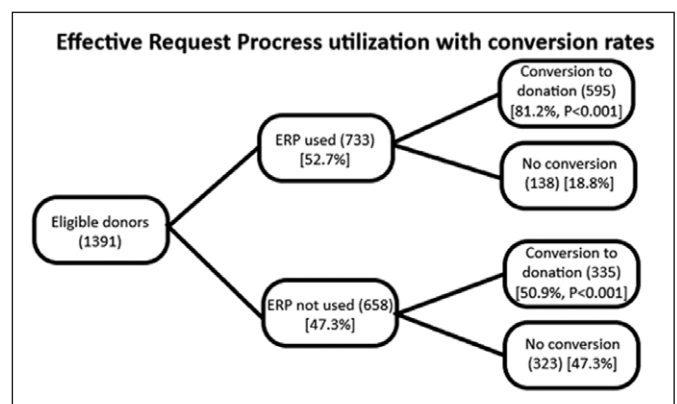


Figure 1. Effective request process (ERP) utilization with conversion rates.

with the noneffective request population (335 donors), with rates of 80.9% versus 50.9%, respectively ($p < 0.001$) (Fig. 1). Factors effecting failure of conversion in the noneffective request group included delayed referral to the OPO, lack of a huddle to establish a set plan prior to the request for donation, and poor implementation of agreed-upon plans between families and provider teams (Table 1). A breakdown of prior recorded donor status and ERP implementation (yes/no) with associated authorization rates is shown below (Table 2).

DISCUSSION

Our results suggest a standardized ERP can significantly increase the number of available organs for transplantation by increasing authorization rates from family decision-makers (FDMs). Such protocols are far from novel in the field of medicine. Even within the field of surgery, employing standardized protocols can improve outcomes when used in the form of checklists (5, 6). When all four steps of the ERP were followed in sequence (known as “bundling”), an overall 30% increase in conversion to donation was observed. If similar conversion rates were able to be obtained at a national scale, significant strides could be made to minimize the disparities between available organs and transplant demand. Further, the use of ERP was seen to be equally effective in both first person authorized donors and unregistered patients.

We also believe implementing a standardized ERP increases collaboration between healthcare providers and family members by encouraging stepwise discussions and expanding FDM’s understanding of brain

TABLE 2.
Authorization Rates Observed When Effective Request Process Used, Broken Down by Donor Status

Authorization Rates by Donor Status When ERP Used		
Donor Status	ERP Used	ERP Not Used
Not in registry	262 (44.2%)	159 (24.1%)
Yes—first person	274 (46.2%)	149 (22.6%)
Yes—intent	55 (9.3%)	22 (3.3%)
Unknown	2 (3.4%)	1 (0.15%)

ERP = effective request process.

death. Previous studies have suggested the content and quality of communication were major determining factors in a family’s decision to donate (7), as well as a correlation between understanding of the criteria for brain death and family willingness to donate (8–10). The ERP used in our model offered multiple opportunities for both providers and OPO team members to discuss the FDM’s understanding of brain death, as well as the donor’s stated preferences. It also integrated decoupling the declaration of brain death and the initial discussion of organ donation, which is commonly recommended (11, 12).

Bundling of all four steps was shown to be critical for successful conversion. Failure to implement any one step showed a decrease in authorization rates. It is difficult to discern exactly which step had the largest impact on failure of conversion in the noneffective request group, as often times there were overlapping breakdowns. However, there were observable trends. Of the four steps listed in our ERP, an inability to establish a set plan prior to the request for donation (40.8%) as well as delay in brain death declaration (42.1%) were most commonly cited as factors affecting failure of authorization. The importance of timing has been well cited, with long wait times associated with a reduction in authorization (13, 14). Poor timing, which has historically been suspected to be a large contributor to failed conversion requests (15), was an important determinant (22.6%).

Our study does have several limitations. The data analyzed was gathered retrospectively and therefore the methodology could have been limited. Due to the retrospective nature of our study, there is no way to determine delay in authorization times versus no delay. Delay in authorization rates was not collected in initial data. We found a positive association with the implementation of the protocol, but

TABLE 1.
Cited Factors Leading to Decreased Donation Rate

Cited Factors Leading to a Failure of Conversion in the Noneffective Request Process Group	
Factors Cited	Percentage Cited
Delayed referral to the Organ Procurement Organization	22.60%
Inability to establish a set plan prior to request	40.80%
Patient not declared	42.10%
Inadequate implementation of agreed-upon plans	0.09%

we cannot conclude further correlations or causative findings. Although most population data information about the authorized donors was known, this information was limited in patients who declined. Individual patient factors such as race, gender, and culture have been shown to have a heavily weighted impact on the choice to donate (15, 16). Further prospective studies are warranted to analyze the above factors and the cumulative effect they likely have on the authorization process.

CONCLUSIONS

Our study suggests the implementation of a standardized ERP can be used to increase organ donation rates when properly implemented. The breakdown of any key step outlined in the protocol may be seen to negate improvements. Communication between the health-care team and the OPO are critical to ensure successful implementation. Donation can represent something positive for potential donor families, and obviously provide life-saving organs to those who desperately need them. Thus, authorization for donation is the first critical step to ensuring these outcomes occur.

- 1 ChristianaCare, Newark, DE.
- 2 University of Missouri-Kansas City, Kansas City, MO.
- 3 Lahey Health System, Burlington, MA.
- 4 Midwest Transplant Network, Westwood, KS.
- 5 Ascension Via Christi, Manhattan, KS.
- 6 Wesley Medical Center, Wichita, KS.
- 7 University of Missouri Health Care, Columbia, MO.
- 8 University of Kansas Health System, Kansas City, KS.
- 9 Lake Regional Health System, Osage Beach, MO.

This work was performed at University of Missouri-Kansas City, Truman Medical Center, Midwest Transplant Network.

The authors have disclosed that they do not have any potential conflicts of interest.

For information regarding this article, E-mail: sahajaatl@gmail.com

REFERENCES

1. OPTN, USDHSS: Total Transplants by Donor Type. 2022. Available at: <https://optn.transplant.hrsa.gov/data/view-data-reports/national-data/> - Transplants by Donor Type. Accessed January 15, 2020
2. OPTN, USDHSS: Donors in the U.S. by Donor Type. 2022. Available at: <https://optn.transplant.hrsa.gov/data/view-data-reports/national-data/> - Donors Recovered in the U.S. by Donor Type. Accessed January 15, 2020
3. Allen K: Midwest Transplant Network Launches Green Ribbon Campaign for Organ Donation Awareness. 2018. Available at: https://mwtn.org/wp-content/uploads/2018/03/MTN-Green-Ribbon-Press-Release_KC-Market.pdf. Accessed March 26, 2018
4. Christmas AB, Burris GW, Bogart TA, et al: Organ donation: Family members NOT honoring patient wishes. *J Trauma* 2008; 65:1095–1097
5. Haynes AB, Weiser TG, Berry WR, et al; Safe Surgery Saves Lives Study Group: A surgical safety checklist to reduce morbidity and mortality in a global population. *N Engl J Med* 2009; 360:491–499
6. Weiser TG, Haynes AB, Dziekan G, et al; Safe Surgery Saves Lives Investigators and Study Group: Effect of a 19-item surgical safety checklist during urgent operations in a global patient population. *Ann Surg* 2010; 251:976–980
7. Siminoff LA, Marshall HM, Dumenci L, et al: Communicating effectively about donation: An educational intervention to increase consent to donation. *Prog Transplant* 2009; 19: 35–43
8. Franz HG, DeJong W, Wolfe SM, et al: Explaining brain death: A critical feature of the donation process. *J Transpl Coord* 1997; 7:14–21
9. Tawil I, Brown LH, Comfort D, et al: Family presence during brain death evaluation: A randomized controlled trial*. *Crit Care Med* 2014; 42:934–942
10. Webster PA, Markham LE: Never declared brain dead potential organ donors- an additional source of donor organs? *Prog Transplant* 2018; 28:43–48
11. West R, Burr G: Why families deny consent to organ donation. *Aust Crit Care* 2002; 15:27–32
12. Weiss J, Coslovsky M, Keel I, et al; Comité National du Don d'Organes: Organ donation in Switzerland—an analysis of factors associated with consent rate. *PLoS One* 2014; 9:e106845
13. Chandler JA, Connors M, Holland G, et al: "Effective" requesting: A scoping review of the literature on asking families to consent to organ and tissue donation. *Transplantation* 2017; 101:S1–S16
14. de Groot YJ, Lingsma HF, van der Jagt M, et al: Remarkable changes in the choice of timing to discuss organ donation with the relatives of a patient: A study in 228 organ donations in 20 years. *Crit Care* 2011; 15:R235
15. Ebadat A, Brown CV, Ali S, et al: Improving organ donation rates by modifying the family approach process. *J Trauma Acute Care Surg* 2014; 76:1473–1475
16. Morgan J, Hopkinson C, Hudson C, et al: The rule of threes: Three factors that triple the likelihood of families overriding first person consent for organ donation in the UK. *J Intensive Care Soc* 2018; 19:101–106