

Organ Donation Breakthrough Collaborative

Increasing Organ Donation Through System Redesign

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Organ donation saves lives. The use of organ transplantation to treat people with end-stage organ failure is both medically effective and cost-effective and is now considered mainstream medicine. Although some persons cannot access this treatment for the same sociological, economic, and educational reasons that they cannot access other medical treatment, most cannot gain access because the necessary ingredient—the organ—is missing. The United Network for Organ Sharing (UNOS) national waiting list of patients in need of an organ has nearly 90 000 names. Organ-specific

waiting lists have grown so large that the mean waiting time for a kidney now exceeds 3 years. Waiting time

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* This article has been designated for CE credit. A closed-book, multiple-choice examination follows this article, which tests your knowledge of the following objectives:

1. Identify issues related to organ donation
2. Describe the system redesign for the organ donation process
3. Extrapolate useful information for application to your own practice

for extrarenal organs (eg, hearts, lungs, livers) is limited by the one leveling factor that will eventually end the waiting: death. In 2004, a total of 7151 patients died while waiting for an organ transplant.¹

To address this crisis, in April 2003, Health and Human Services Secretary Tommy G. Thompson joined with key national leaders and practitioners from the nation's transplantation, healthcare, and hospital communities to launch the Organ Donation Breakthrough Collaborative, also referred to as the Collaborative. The Collaborative's goal—to dramatically increase access to transplantable organs—was clear, measurable, ambitious, and achievable; the Collaborative is “committed to saving or enhancing thousands of lives a year by spreading known best practices to the nation's largest hospitals, to achieve organ donation rates of 75% or higher in these hospitals.”²

The Need for Change

The US organ donation system compares favorably with that of other North American and European countries when measured by the most common metric used to assess organ donation: donors per million population^{3,4} (Table 1). How well the United States compares with other countries if the conversion rate (ie, the percentage of eligible donors who actually become donors), a more appropriate metric, is compared is less well known, because these data have not been historically reported, even in the United States—although this practice is changing. Even though the United States appears to have a good system, major improvements are necessary, because what is needed is a great system. However, until the

Table 1 International organ procurement: 2003⁴

Country	No. of donors	Donors per million
Spain	1443	33.8
United States	6457	23.5*
Ireland	80	21.1
Norway	87	19.1
Portugal	190	19.0
Italy	1402	18.5
Czech Republic	189	18.4
France	1119	18.3
Cuba	194	17.3
Latvia	39	16.9
Finland	85	16.3
Hungary	161	16.1
Uruguay	50	16.1
Puerto Rico	56	14.4
Slovenia	28	14.0
Germany	1140	13.8
Poland	525	13.7
The Netherlands	223	13.7
Canada	428	13.5
Switzerland	93	13.2
Denmark	75	13.0
Sweden	114	12.7
Mexico	1229	11.7
United Kingdom	644	10.9
Australia	179	10.2
Estonia	14	10.0
New Zealand	40	9.9
Chile	136	9.0
Australia	79	9.0
Croatia	39	8.9

*US data from Organ Procurement and Transplantation Network.³

responsibility for donation outcome and system participation includes not only organ donation and transplantation professionals but also hospital staff (eg, nurses, physicians, senior leaders, social workers, chaplains), a great donation system is not possible.

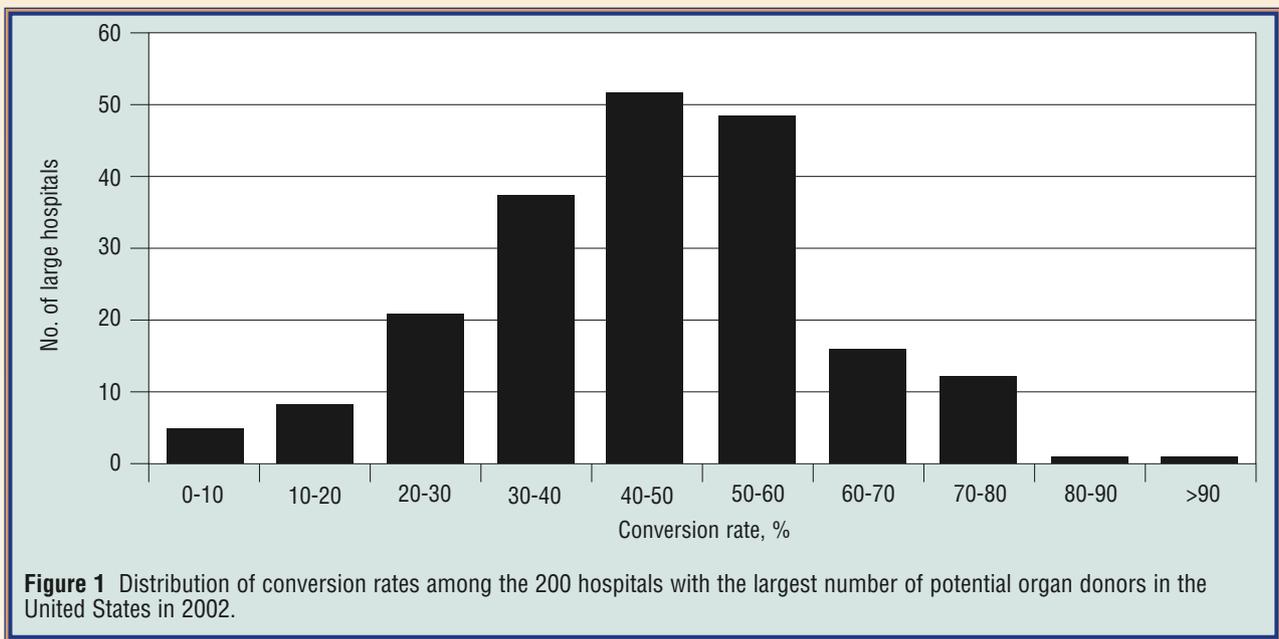
A strong participation of hospital staff, particularly critical care

nurses and physicians, in the donation process is necessary to increase the number of organs recovered in this country. Before the Collaborative was created, responsibility for a hospital's organ donation performance was solely in the hands of the organ procurement organization (OPO) serving that institution. Hospital staff members were generally observers or casual participants. The Collaborative changed that single-participant model; critical care nurses and physicians partnered with OPO staff to form teams to

participate in the donation process.

Hospital and OPO Performance

In September 2002, OPOs began reporting to the government the number of eligible donors and the number of actual donors per hospital each month, thereby establishing a reasonably sound estimate of the percentage of eligible donors that were



being converted to actual donors. A total of 12 015 eligible donors were reported in 2002; 6190 of these became actual donors, a conversion rate of 51.5% (6190/12 015).⁵ Fifty percent of these eligible donors were found in only 206 of the nation's nearly 6000 acute care hospitals. A total of 75% of potential donors were found in 483 hospitals, and fully 90% of eligible donors in 2002 were found in only 846 hospitals.

Clearly, some hospitals and OPOs had conversion rates higher than 52%, whereas others had lower rates. Overall, the conversion rates for hospitals ranged from 0% to 100%. This range in hospitals with 1 or 2 potential donors per year was not predictive of overall US donation effectiveness; of greater concern, this range also existed in those hospitals with the largest number of potential donors. Conversion rates varied widely in the nation's 200 largest donor-potential hospitals (Figure 1). Among hospitals with the greatest number of potential donors, 5 had conversion rates between 0% and 10%, 1 hospital had

a conversion rate greater than 90%, and more than 50 hospitals had conversion rates of 40% to 50%. The concentration of potential donors in the largest hospitals, coupled with the wide variation in donation rates, is indicative of a situation requiring rapid, systematic improvements. Questions such as Why the variation? and What were the high performers doing that caused these results? needed to be answered, and the information needed to be shared so that these improvements could be instituted at other hospitals.

Development and Commitment to the Collaborative

A collaborative is an intensive, full-court press to facilitate breakthrough transformations in the performance of organizations, based on what already works. It is designed to define, document, and disseminate good ideas, accelerate improvement, achieve results, and build clinical leaders of change. Collaboratives were first conceived by the Institute for Healthcare Improvement (IHI), a

not-for-profit organization that promotes the improvement of health by advancing the quality and value of healthcare. Founded in 1991 and based in Cambridge, Mass, IHI helps accelerate change in healthcare by cultivating promising concepts for improved care of patients and turning those ideas into action.⁶ The IHI had already conducted approximately 45 collaboratives when the work on the Organ Donation Breakthrough Collaborative started.

Key national leaders, including the chairman of the board of IHI, the president of the Association of Organ Procurement Organizations, the executive director of UNOS, the president of the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), and others, joined with Health and Human Services Secretary Tommy G. Thompson in committing to the Collaborative's ambitious but achievable goal of increasing access to transplantable organs. The Health Resources and Services Administration managed the initiative.

Study of Top-Performing Organizations

A qualitative case study approach was used to identify and describe best practices associated with higher rates of organ donation. A total of 6 OPOs and 16 affiliated hospitals were selected for study; these institutions were among the highest performers nationally according to rates of consent and organ donation within their communities (Table 2). Background information about factors in each institution that contribute to high rates of organ donation was gathered and reviewed. Interviews were conducted with nearly 300 OPO and hospital staff members, including numerous critical care nurses. These data and observations were then analyzed to formulate overarching principles and identify best practices.⁷

A clear set of common principles and best practices that contributed to the success of these organizations and hospitals emerged from the study (Table 3). The JCAHO has also researched best practices in organ donation and has published results specifying many of the same best practices.⁸

Table 2 High-performing organ procurement organizations and hospitals

Organ procurement organization	Hospital
Donor Alliance (Denver, Colo)	Denver Health Medical Center (Denver) Memorial Hospital (Colorado Springs) St. Anthony Central Hospital (Denver)
LifeGift Organ Donation Center (Houston, Tex)	Ben Taub General Hospital Memorial Hermann Hospital
LifeLink of Florida (Tampa, Fla)	Lakeland Regional Medical Center (Lakeland) Tampa General Hospital (Tampa)
Mid-America Transplant Services (St. Louis, Mo)	Barnes Jewish Hospital St. John's Mercy Medical Center
New England Organ Bank (Newton, Mass)	Beth Israel Deaconess Hospital (Boston) Boston Medical Center (Boston) Brigham Women's Hospital (Boston) Massachusetts General Hospital (Boston)
University of Wisconsin Hospital and Clinics Organ Procurement Organization (Madison, Wis)	Gundersen Lutheran Hospital (La Crosse) Theda Clark Regional Medical Center (Neenah) University of Wisconsin Hospital and Clinics (Madison)

Table 3 Overarching principles and best practices of successful donation systems of organ procurement organizations and hospitals

Overarching principles

1. Integrate organ donation fully into routine roles and responsibilities
2. Set high standards for donation performance to reduce the unacceptable shortage of lifesaving organs
3. Involve staff of organ procurement organizations and hospitals in setting standards and in redesigning the means to achieve the standards
4. Hold organ procurement organizations, hospitals, and their staff accountable for achieving these standards, and recognize the staff accordingly
5. Establish, maintain, and revitalize a network of interpersonal relationships and trust involving staff of the organ procurement organization and hospital, families of potential donors, and other key agents
6. Collaborate to meet the range of needs of families of potential donors and to achieve informed consent to donate
7. Collect data and feedback to promote decision making to improve performance

Best practices

1. Orient organizational mission and goals toward increasing organ donation
2. Do not be satisfied with the status quo; innovate and experiment continuously
3. Strive to recruit and retain highly motivated and skilled staff
4. Appoint members to the board of the organ procurement organization who can help achieve organ donation goals
5. Specialize roles to maximize performance
6. Tailor or adapt the organ donation process to complementary strengths of organ procurement organizations and individual hospitals
7. Be there: Integrate staff from the organ procurement organization into the fabric of high-potential hospitals
8. Identify and support champions of organ donation at various hospital levels; include leaders who are willing to be called on to overcome barriers to organ donation in real time
9. All aboard: Secure and maintain commitment at all levels of hospital staff and across departments and functions that affect organ donation
10. Educate constantly; tailor and accommodate to staff needs, requests, and constraints
11. Design, implement, and monitor public education and outreach efforts to achieve informed consent and other donation goals
12. Referral: Anticipate, don't hesitate; call early even when in doubt
13. Draw on respective strengths of organ procurement organizations and hospitals to establish an integrated consent process; one size does not fit all, but getting to an informed yes is paramount
14. Use data to promote decision making
15. Follow up in a timely and systematic manner; don't let any issues fester

The Collaborative Process

By 2002, 15 of the nation's 200 largest hospitals had achieved organ donation rates of 75% or more, and many other large hospitals, clustered in certain donation service areas, also had conversion rates well above the national average.⁹ The practices used by these OPOs and large hospitals to generate these high rates had been identified through study and could be replicated, but overall OPO and hospital performance nationwide indicated a clear gap between known best practices and the performance of the current system for organ donation.

Because a mean of 18 patients on transplantation waiting lists die each day,³ the knowledge gained on best practices for organ donation could not be spread in the same way that new knowledge normally spreads through the healthcare community, including the donation community. The slow process of study, abstract presentation, and publication, which all depend on the right persons reading, seeing, or hearing about the study and then being motivated to apply the new knowledge, was not an option. The dilemma in the United States, as documented by the largest multiyear study on the US donor pool,¹⁰ was the same dilemma that had existed for the previous decade: how to improve on a situation in which little more than half (52%) of those asked agree to donate and how to improve the situation *quickly*. (For definitions and calculations, see Tables 4 and 5.)

OPOs and large hospitals jointly sent multidisciplinary teams, composed primarily of critical care nurses and staff, to participate in an intensive series of Collaborative learning sessions and action periods between

Table 4 Definitions used in organ donation

Term	Definition
Eligible donor	Any patient aged 70 years or less who meets the definition of death according to neurological criteria (based on the American Academy of Neurology practice parameters for determining brain death) who does not have any of the following clinical conditions: <ul style="list-style-type: none"> • Tuberculosis • Human immunodeficiency virus (HIV) infection with specified conditions • Creutzfeldt-Jacob disease • Herpetic septicemia • Rabies • Reactive hepatitis B surface antigen • Any retrovirus infection • Active malignant neoplasms, except primary central nervous system tumors and skin cancers • Hodgkin disease, multiple myeloma, leukemia • Miscellaneous carcinomas • Aplastic anemia • Agranulocytosis • Fungal and viral meningitis • Viral encephalitis • Gangrene of bowel • Extreme immaturity • Positive serological or viral culture findings for HIV
Organ donor	Eligible donor from whom an organ is recovered for the purpose of transplantation after consent for donation has been obtained, including non-heart-beating donors and donors older than 70 years
No-consent eligible donor	Eligible donor for whom consent for organ donation is denied
No next-of-kin/other eligible donor	Eligible donor from whom organs are not recovered for reasons other than lack of consent (eg, next of kin is unavailable)
Medical examiner denial	Denial by medical examiner for organ recovery, irrespective of donation consent status
Organ referral	Referral to an organ procurement organization of a patient who meets the criteria for imminent death
Imminent death	A patient with severe, acute brain injury <ol style="list-style-type: none"> 1. Who requires mechanical ventilation, and 2. Is in an intensive care unit or emergency department, and 3. Has clinical findings consistent with a Glasgow Coma Scale score that is less than or equal to a mutually agreed upon threshold (eg, 4 or 5); or <ul style="list-style-type: none"> • For whom physicians are evaluating a diagnosis of brain death; or • For whom a physician has ordered that life-sustaining therapies be withdrawn, pursuant to the family's decision
Missed eligible referral	An imminent death in a donor who was apparently eligible but was not referred by the hospital to the organ procurement organization; missed eligible referrals are generally discovered by an audit of a death log or by review of death records

September 2003 and September 2004. Drawing from the experience

of practitioners with high donation rates, these teams worked together

Table 5 Measurements and calculations used in organ donation

Measurement	Calculation
Referral rate	No. of organ referrals ÷ (No. of organ referrals + No. of missed referrals); expressed as a percentage
Timely notification rate	No. of imminent death notifications made within 1 hour of a mutually established clinical trigger ÷ No. of imminent deaths; expressed as a percentage
Appropriate requester rate	No. of cases in which designated requester met with family ÷ total No. of requests made; expressed as a percentage
Conversion rate	No. of organ donors ÷ No. of eligible donors; expressed as a percentage
Medical examiner denials	No. of denials by medical examiner, expressed as a raw number

to rapidly learn, adapt, redesign, test, implement, track, and refine their organ donation processes with the intent of reaching the Collaborative goal of a 75% or higher conversion rate. Other goals and a timeline for the Collaborative were established (Tables 6 and 7). Key healthcare organizations, including the American Association of Critical-Care Nurses, provided input and support for the development and institution of the Collaborative (Table 8).

Learning Sessions

Six 2-day learning sessions, the major integrative events of the Collaborative, were held during the course of 20 months. A total of 95 large hospitals and 43 of the 60 OPOs

Table 6 Goals of the Collaborative for organ donation

Measurement	Goal
Conversion rate, %	75
Medical examiner denials, No.	0
Referral rate, %	100
Timely notification rate, %	100
Appropriate requester rate, %	100

in the first Collaborative and 5 Canadian hospitals participated in the second Collaborative.

During learning sessions, team participants had the opportunity to learn from faculty and colleagues, receive individual coaching from faculty members, and gather new knowledge on the subject of organ donation and process improvement. They developed organization-specific plans for testing and implementing changes to increase donation rates. Through their shared experi-

ences, nurses, physicians, and OPO staff collaborated on improvement plans and worked to solve anticipated challenges in the improvement process. Participants, critical care nurses, physicians, and OPO staff, working under the All Teach, All Learn focus, taught one another and shared their change strategies to build effective donation processes.

During the action periods between learning sessions, Collaborative teams tested action items, using the improvement model (Figure 2) to achieve breakthrough conversion rates. Participants focused on their own organizations and remained in continual contact with other teams enrolled in the Collaborative and with the Collaborative's leaders. This communi-

participated in the first Collaborative, conducted between September 2003 and September 2004; 131 large hospitals and 50 OPOs participated in the second Collaborative, conducted between September 2004 and May 2005. In addition, 3 Canadian hospitals participated

Table 7 Timeline for the Collaborative

Process	Timing
Study of high-performing organ procurement organizations and hospitals	October 2002-March 2003
Expert panel to vet study findings	March 2003
Health and Human Services secretary's launch of Collaborative	April 2003
Collaborative team formation and prework	Summer 2003
Learning session 1	September 2003
Action period 1	September 2003-January 2004
Learning session 2	January 2004
Action period 2	January-April 2004
Learning session 3	April 2004
Action period 3	April-September 2004
Team formation and prework for Collaborative 2	Summer 2004
Learning session 4/1 (Collaboratives 1 and 2)	September 2004
Action period 1 of Collaborative 2	September 2004-January 2005
Learning session 2 of Collaborative 2	January 2005
Action period 2 of Collaborative 2	January-May 2005
National Learning Congress	May 2005

Table 8 Key leadership organizations involved in organ donation

American Association of Critical-Care Nurses
American Society of Multicultural Health and Transplantation Professionals
American Society of Transplantation
American Society of Transplant Surgeons
Association of Organ Procurement Organizations
American Hospital Association
Centers for Medicare and Medicaid Services
Institute for Healthcare Improvement
Joint Commission for Accreditation of Healthcare Organizations
National Association of Medical Examiners
National Kidney Foundation
Neurocritical Care Society
North American Transplant Coordinators Organization
Quality Reality Checks, Inc
Society for Critical Care Medicine
United Network for Organ Sharing

cation took the form of conference calls, e-mails, accessing the extranet, and occasional site visits to other organizations in the Collaborative. In addition, Collaborative team members shared the results of their improvement efforts in monthly reports from senior leaders.

The Improvement Model and Rapid Spread of Best Practices

The key elements of the success of the collaborative model for breakthrough improvement are (1) the will to do what it takes to change to a new system, (2) the ideas on which to base the design of that new system, and (3) the execution of those ideas. The will began with Secretary Thompson's commitment and charge, which was embraced by the OPOs and hospitals that joined the Collaborative. The ideas came from the high-performing OPOs and hospitals that were already achieving the goal of 75% conversion rates. The execution was

propelled by using an improvement model that emphasized rapid testing of small changes in multiple areas, followed by implementation of system-wide improvements based on that learning.

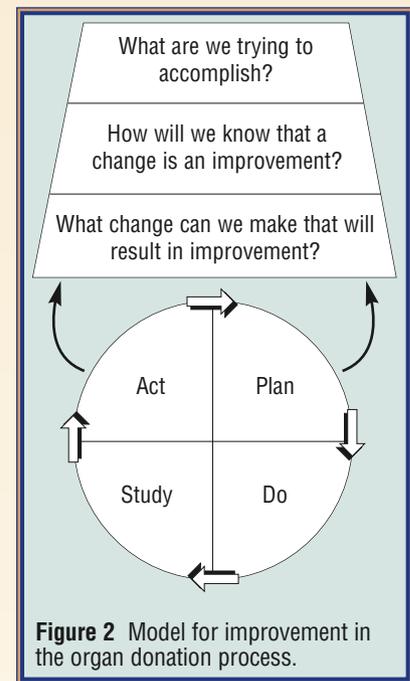
As has already been discussed, best practices were identified through site visits to the high performers and analysis of national data,⁷ along with the

UNOS Research to Practice National Consensus Conference.¹¹ These practices were then vetted by a national expert panel comprising members of the organ donation and hospital communities, and the practices ultimately became the foundation on which the Collaborative's teams incorporated change.

The improvement model provides a method for testing and implementing changes that make a difference by addressing 3 fundamental questions:

1. What are we trying to accomplish?
2. How will we know whether a change is an improvement?
3. What change can we make that will result in improvement?

This model is an adaptation of the well-established plan, do, study, act construct (the Nolan-Langley improvement model¹²) and is used by collaborative teams to apply the best-practice concepts to their systems. It allows small tests of big changes and



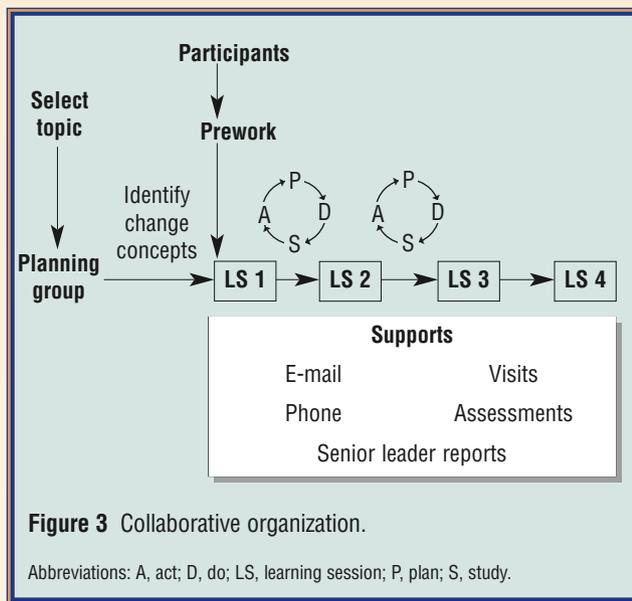
provides learning opportunities for rapid implementation¹² (Figures 2 and 3).

Four Overarching Strategies: Best Practices in the Change Package

The process of organ donation is complex and delicate.⁵ A Collaborative "Change Package" was identified, consisting of 4 overarching strategies for success: unrelenting focus on change, improvement, and results; rapid, early referral and linkage; management of an integrated donation process; and aggressive pursuit of every donation opportunity. Within those 4 strategies were 29 change concepts and 63 action items that could be implemented in an OPO or hospital. The 4 strategies are discussed in the following sections.

Unrelenting Focus on Change, Improvement, and Results

Successful organizations establish a strong culture of accountability for results by having a laserlike focus on



outcome. Their decision making is based on data that indicate organizational priorities and the effectiveness of interventions. They seek to improve their organization's performance over its historical performance, constantly changing and adapting processes to achieve results. In the Collaborative, the fact that 80% of all potential donors were found in only 20% of hospitals helped participants identify and target those hospitals with the greatest donor potential and resulted in resources being directed to those institutions.

OPOs and hospitals must maintain a rigorous focus on, and joint accountability for, increasing the number of organ donors by developing and maintaining a seasoned staff and creating a culture of excellence. It is critical to have measurement systems in place and to routinely monitor and report data on processes and outcomes. In high-performing organizations, performance goals are measured and disseminated and staff members are held accountable.

In order to maximize each donation opportunity, the organizations'

talents and resources should be applied, and all levels of management should be responsive, 24 hours a day, 7 days a week. Successful organizations provide active leadership and management support during donation cases, helping staff members overcome obstacles, plan reapproaches for consent after an initial denial from potential donors' families, address needs and concerns of potential donors' families, and ensure consistency and quality in a vigorous pursuit of donation.

Creating a culture of excellence also requires defining and maintaining relationships with key persons and organizations that have a stake in the outcome (eg, medical examiners, coroners, transplant centers, and hospital physician leaders) and developing a seamless integration with hospital staff. Creating and maintaining a visual presence of OPO staff in hospitals with high numbers of potential donors so that relationships can be established and maintained with everyone participating in the donation process are key to achieving breakthrough levels of performance.

Rapid, Early Referral and Linkage

Perhaps no other strategy is as critical to success as rapid referral of patients to the OPO as early as possible after injury and linking key OPO

and hospital donation staff to the families of potential donors. Early referral and linkage are precursors to many of the other best practices. Timely referral of potential donors to the OPO is the first step in the donation process. Hospitals that establish a system-wide commitment to unconditionally identify all opportunities for donation understand the critical nature of starting the process early and collaboratively, with OPO staff present. Creating a visual presence of OPO staff in the hospital, either through placement of in-house coordinators¹³⁻¹⁷ or by having designated family liaisons and hospital development staff who routinely visit the institution, are key.

Timely notification of the OPO about potential donors often prevents a rushed approach to requesting consent from families.^{18,19} Establishing the expectation that OPO staff will be called in a systematic manner as soon as it is evident that a patient has a severe, potentially nonsurvivable injury allows the OPO coordinator to interact early and spend more time with families of potential donors. This prompt response can be accomplished through the use of established clinical triggers, most often a score of 5 or less on the Glasgow Coma Scale. Studies^{7,20} have shown that longer periods of time spent by OPO staff with families are associated with positive donation results. In short, early referral leads to increased time with the potential donor's family and results in higher donation rates.

Research^{21,22} has revealed that families who are satisfied with their hospital experience are more predisposed to donate. Obtaining consent does not consist of simply asking a

patient's family members if they wish to donate. Informed consent takes time, time that often is not available for busy hospital staff. Donation is a process, and that process begins when patients' families start receiving information about the condition of their loved one and begin asking questions. OPO staff must be present with hospital and medical staff to begin the collaborative process of obtaining consent. Notification about a potential donor that occurs late in the process, at or near the time of death, prevents any collaboration between hospital and OPO staff and does not allow OPO staff to spend an extended time with a patient's family before the actual pronouncement of brain death.¹² Early collaboration between nursing and OPO staff results in a jointly developed plan for approaching potential donors' families to request consent for organ donation.

Successful donation systems have protocols that personalize the approach to families of potential donors, allowing nurses and OPO staff to develop a sense of trust with each family that ensures the family has a positive experience with the donation process. Effective hospital donation systems routinely make every effort to determine a family's willingness to donate and, if consent is initially denied, recognize that reapproaching the family after a delay can provide the family with valuable needed time and information that may result in a consent to donate.

"Team huddles" with all involved staff before approaching a potential donor's family to request consent are the norm rather than the exception. A team huddle consists of a meeting

between the healthcare professionals involved with the patient's care and the OPO staff to collaboratively develop the best possible plan for approaching the potential donor's family to request consent for organ donation. Critical care nurses figure prominently in the team huddle because they have cared for the patient at the bedside. They understand the patient's condition and are likely to have gained insight into family members during visits with the patient (Table 9). An effective team huddle is an "organized collaboration" that allows all participants

to be comfortable with the process and ready to participate effectively.

Management of an Integrated Donation Process

Among the sample of high performers are OPOs and hospitals with an integrated donation process that clearly defines roles and responsibilities and provides feedback. This process includes designating joint responsibility and accountability between the OPO and the hospital leadership. In this system, the OPO provides resources for all donation-related matters, and the hospital

Table 9 Team huddle

Purpose

To develop an environment for a successful outcome of requests for consent to organ donation

To involve everyone who was a part of the care of a patient and the patient's family and ensure consistent communication among the patient's family, the hospital staff, and the personnel from the organ procurement organization

To create a support system for potential donors' families in order to meet all of the following needs:

- Personal
- Cultural
- Spiritual

Determine who should be part of huddle

Physicians

Attending physician

Neurosurgeon

Intensivist

Family support team

Pastoral care

Case management/social worker

Nursing staff

Critical care nurses from intensive care unit taking care of patient

(may extend across more than 1 shift)

Personnel from organ procurement organization

Organ recovery coordinator

In-house coordinator

Actions during huddle

Discuss patient's family's understanding of situation

Determine best time for physician to speak with patient's family about death, including which physician has the best relationship and adequate time to spend with the family

Determine who will be in the room with the patient's family during the conversation about the death and, depending on the patient's family's acceptance of death, whether the consent conversation will immediately follow that conversation or will come later if the family needs time to process information

Determine how staff from the organ procurement organization will be introduced to the potential donor's family

Depending on the outcome of the consent conversation, make plans for reapproach if the initial response to donation is no

provides high-level support from, at a minimum, the chief nursing officer, chief medical officer, and other administrators at the vice president level. Each hospital's chief executive officer should be aware of the donation-related work and outcomes in his or her institution.

Appropriate data and tools to disseminate the data should be used to provide immediate feedback to hospital and clinical leaders about the results and outcomes of the donation process, with specific follow-up requests and action steps. In addition, OPO staff and nursing and physician leaders should analyze data and situational variables to determine what to request from one another and from senior leaders within the institution. In most instances, hospital staff are capable, poised, and ready to provide assistance, but the needs must be specific and clear. Effective hospital donation systems use regular surveys and other tools to evaluate and monitor the donation process and to identify trends, strengths, and problems.

Achieving an integrated donation process requires building and maintaining collaborative relationships with key hospital staff/physicians at all levels that affect the donation process. Building relationships results from partnering and working with hospital clinicians (both physicians and nurses), jointly setting goals for donation processes and outcomes, providing education at regular intervals, and establishing responsibilities for OPO staff consultants. Relationship building continues as policies are developed that clearly define the roles and responsibilities of both OPO and hospital staff and establish specific policies for brain death,

guidelines for discussion of brain death with patients' families, and standards for stabilization of potential donors. To maximize organ recovery, OPO and hospital staff jointly establish expectations, guidelines, and protocols with management and staff from the hospital's operating room and the anesthesia department. A specific time is designated after every donation process to evaluate the outcome and immediately implement needed modifications. Critical care nurses are key participants in this review process. These after-action reviews build team relationships and help identify learning opportunities.

An integrated system for managing organ and tissue donation contains many dynamic processes that in most cases begin with the admission of a critically ill patient. The goal of achieving an integrated donation system has been realized when all parties work together seamlessly, across and within one another's "boundaries," while keeping other parties informed and involved as appropriate for the other parties' respective positions. An integrated donation system consists of a high degree of communication and collaboration among OPO staff, nurses, physicians, and others, without either party keeping another at arm's length at any time during the donation process.

Aggressive Pursuit of Every Donation Opportunity

Aggressive pursuit of every donation opportunity means that every possibility for increased donation is maximized and routinely evaluated. This process is accomplished through early deployment of OPO staff, reapproaches for consent, expert donor

management, aggressive efforts for organ placement, improved organ yield (ie, an increased number of organs recovered per donor), and real-time review of death records.

Successful systems are those in which do-not-resuscitate and comfort-measures-only orders are coordinated and planned among nurses, physicians, OPO staff, and other appropriate hospital staff for each potential donor case being considered, before anyone talks to the potential donor's family about organ donation. This arrangement will help avoid conflict when the opportunity for organ donation presents itself.

Nursing, medical, and OPO leaders must also have a clear expectation that the medical examiner will allow organ recovery, a goal that is being achieved in most parts of the United States.²³⁻²⁵ The National Association of Medical Examiners has named "zero denials" as an association goal.²⁶

Successful outcomes of donation for hospitals involve having clinicians (nursing, medical, and OPO staff) focus on aggressive pursuit of each and every case. Successful systems establish, evaluate, and are accountable for a clear process for management of donors from referral to recovery, with OPO staff obtaining assistance from OPO management or OPO medical directors as needed. Broad criteria are applied to evaluate every potential organ donor. Organ placement is aggressive; the OPO suspends judgment on rule-out criteria (medical conditions that appear to make a patient unsuitable for donation), instead leaving such decisions to the transplanting surgeon for listed patients. Critical care nurses must understand that the determination of donor suitability

is dynamic; what may not be suitable in one instance could be lifesaving in another, similar circumstance. Many organs are lost because of the perception that they are not suitable. The ultimate test of suitability is one that must be made by the waiting recipient's physician, who weighs the risks of transplanting the organ against the continued risk of having the patient continue to wait.

Hospitals with consistently high donation rates embrace donation as part of their mission. Perhaps the hallmark of this overarching strategy is that the OPO and the hospital actively advocate for donation. Before the Collaborative was established, advocating for donation was largely seen as a responsibility of OPOs. Although donation accounts for a small part of hospital work in terms of the absolute number of cases, enlightened mission-driven chief executive officers see it as a "huge" part of their work and mission. During a JCAHO Crossroad symposium, one chief executive officer commented, "Donation is a big part of what we do. It's not about the number of cases. We had a 4-year-old girl who received a liver from one of our donors come to our hospital and visit. Her life was saved because of a donation in our institution. That is *huge*."²⁷

Aggressive pursuit of every donation opportunity requires OPOs to develop, define, and maintain a standard of high-quality service in handling all communications with hospitals and physicians. Increasing the interaction between the OPO's medical director and the hospital's physicians, identifying physician "champions," and establishing quality improvement and quality assurance processes with nurses and

physicians through one-on-one case reviews all contribute to improve performance of donation systems.

Finally, no action item is more important in this overarching strategy than implementing policies and practices for donation after cardiac death. Donation after cardiac death offers the greatest opportunity for increasing organ recovery because it dramatically increases the size of the pool of potential donors. Successful hospitals and OPOs establish policies and protocols for donation after cardiac death to ensure the referral of all patients with nonrecoverable neurological injuries and the pursuit of donation options.²⁸ The Institute of Medicine has endorsed donation after cardiac death, hospitals across the country are implementing policies, and families are demanding their right to donate desperately needed organs.²⁹ This emerging practice is fast becoming recognized as common practice.

Further Refinements to the Change Package

Don Berwick, MD, founder and chief executive officer of IHI, met with the faculty and cochairs of the Collaborative in March 2004 and challenged the group to "design the new and improved national organ donation system" on the basis of the proven experiences and successes of Collaborative teams. Berwick's challenge resulted in 2 important refinements to the original and rapidly evolving Change Package: first-things-first changes and high-leverage changes.

First-Things-First Changes

In order to take full advantage of the best practices that were the basis

for the changes that teams tested during the first Collaborative, the Change Package was refined and stratified to emphasize those changes that held the greatest promise for immediate improvements in process and outcome. These changes, the necessary building blocks for success, were termed first-things-first changes (Table 10). Teams introduced to the collaborative method in the second Collaborative were encouraged to work on these changes before moving on to more complex strategies.

High-Leverage Changes

Teams in the second Collaborative benefited from experienced teams from the first Collaborative through the refinement of the Change Package into those action items that had a direct relationship to outcomes and results. These changes, which often cut across strategies, were observed by Collaborative faculty and experienced teams as having a direct relationship to outcomes. They were termed high-leverage changes and represented a combination of change concepts within or across strategies (Table 11).

The Measurement Strategy

The Collaborative was disciplined in obtaining and tracking data, but it was always clear that the project was about improvement (ie, increasing the number of organ donors); it was not about measurement or research. Nonetheless, measurement was necessary to evaluate the effect of changes that the teams made in improving the donation process in each institution. The focus was on obtaining just enough measurements to determine that the changes being made were leading to improvement.

Table 10 First-things-first changes

Create a hospital presence/in-house coordinator for the organ procurement organization

Create and maintain visual presence of staff from the organ procurement organization in hospitals; become part of the fabric of high-potential hospitals in order to establish, maintain, and activate relationships with all individuals who participate or play a role in the donation process

Analyze and apply current hospital-specific data

Establish a strong culture of accountability for results:

Ensure that staff from the hospital and organ procurement organization know and talk about conversion rates and regularly review and respond to data reports of key donation indicators (ie, conversion rates, consent rates, timely notification rates); use these data to determine where to focus initial efforts and changes in the redesign of the donation system

Identify a physician or clinician “champion”

Identify and support organ donation champions at various hospital levels; include leaders who are willing to be called on to overcome barriers to organ donation in real time

Conduct monthly reviews of death records

Use reviews of death records to establish referral, consent, and donation rates and to automate the process to monitor performance in real time

Establish clinical triggers

Work with hospital staff to establish appropriate clinical triggers for referrals

Hold donation team huddles

Work as a team with hospital staff to determine the right person(s) to suggest donation and make the request; establish a plan for communicating with the patient’s family that incorporates all members of the patient care team

Identify effective requesters (Who is your most effective requester?)

Match requesters appropriately to the potential donor’s family, ensuring that effective requesters are available; the organ procurement organization or the hospital should hire and use special requesters who are specific to the ethnicity of the population in the organ procurement organization’s service area

Conduct after-action reviews

Maintain a formal process for comprehensive, immediate follow-up communication between the organ procurement organization and the hospital on every referral of a potential organ donor, regardless of the outcome; the system should include guidelines for in-person follow-up, debriefing, and mutual critique of the process, as well as written correspondence and e-mail communication to facilitate timely feedback when access is difficult

Table 11 High-leverage changes

Advocate organ donation as the mission

Advocate organ donation as the mission: aim for a 75% conversion rate

Involve senior leadership to get results

Senior leaders from the hospital and the organ procurement organization are informed and actively involved as teams press the system redesign to its maximum

Deploy a self-organizing team of staff from the organ procurement organization and the hospital

Establish a seamless integration of roles and responsibilities of staff from the hospital and the organ procurement organization
Integrated family-centered system: clinical care services and family support services

Practice early referral, rapid response

All staff have a clear understanding of what triggers timely referrals, and ensure that units with the highest donor potential are using those triggers

Link early referral to rapid response; the entire organization has a commitment to a rapid response to referrals

Master effective requesting

Dedicate the most effective requesters to either lead or be part of every hospital referral

Create a reapproach strategy, use role playing to practice that strategy, and test the strategy when the next no-consent situation presents itself

Debrief the entire team within 24 hours of each approach to learn what is working and what is making it work

Incorporate this learning into the very next consent opportunity; acknowledge organ donation advocacy as an appropriate objective of family support

Implement donation after cardiac death

Vigorously pursue every opportunity for donation after cardiac death, particularly those in which patients’ families independently raise the issue; use national experts on donation after cardiac death to support your effort if your organ procurement organization is new to donation after cardiac death

The measurement strategy for the Collaborative was intended to determine and track improvement in key measures of outcome and process that are essential to a successful organ donation process. Teams submitted monthly data on each process and outcome measure. The Collaborative's outcome measures were focused on 3 areas: conversion rate, referral rate, and medical examiner/coroner denials. In addition, teams tracked 2 process measures: timely notification rate and appropriate requester rate (Table 5). Team activities were focused on making improvements in each process and outcome measure. Teams were permitted to develop their own additional measures, but the aforementioned measures were required measurements for all teams.

Results

The Collaborative has led to major increases in conversion rates at the participating hospitals (Figure 4) as well as to national increases in organ

donation (Figures 5 and 6). The primary goal, a 75% conversion rate, was achieved by 21 of the 95 hospitals by the end of September 2004. An additional 15 hospitals reached the 75% conversion rate by April 2005.

In 2004, total donations in the United States from deceased donors increased by 10.8% over 2003; dona-

tions increased by 16% in the 95 hospitals participating in the Collaborative and by 9% in all other US hospitals. The number of deceased donors increased from 6457 in 2003 to 7153 in 2004. Furthermore, for each month in 2004, the total number of donors exceeded the number of donors in the corresponding

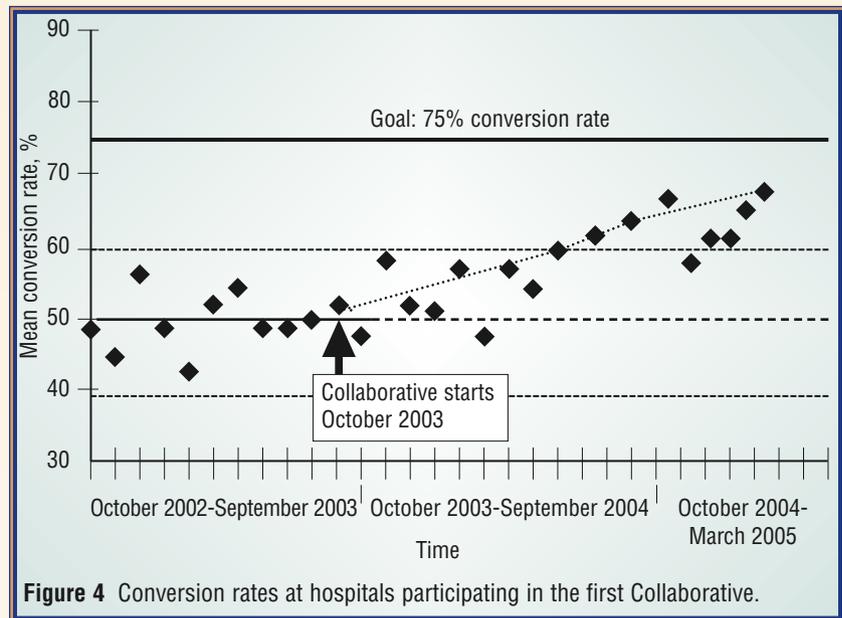


Figure 4 Conversion rates at hospitals participating in the first Collaborative.

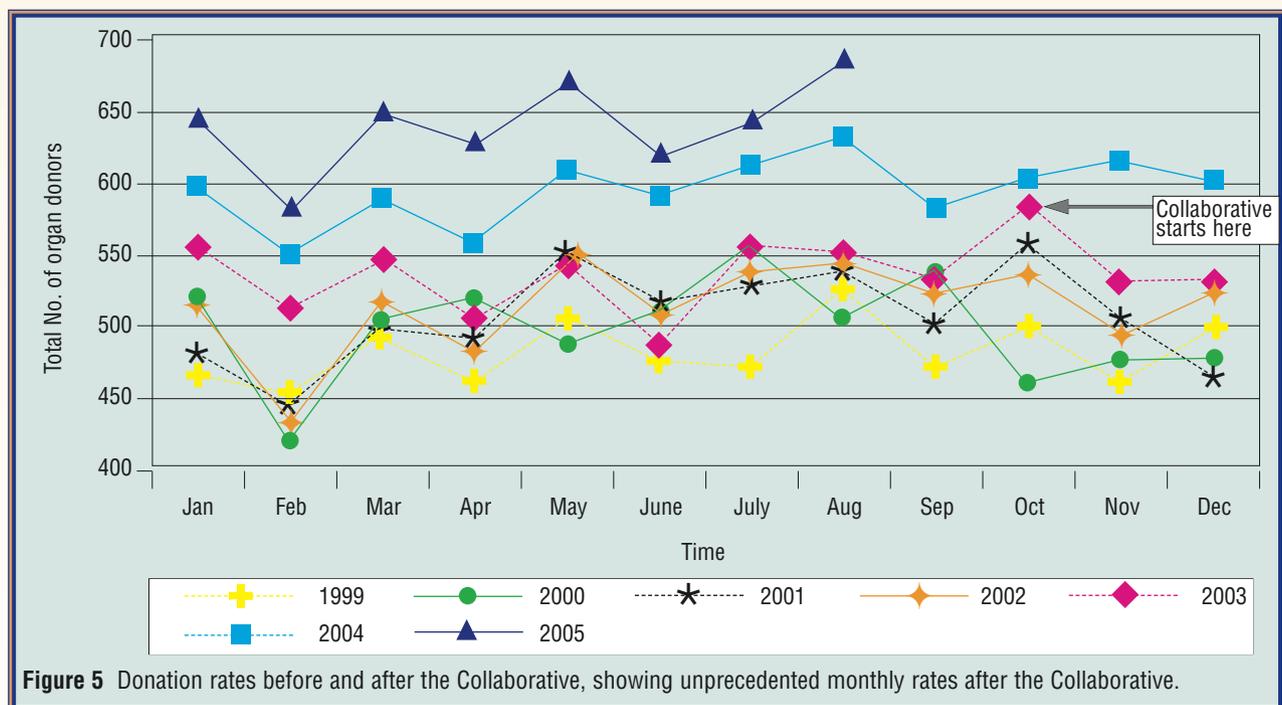


Figure 5 Donation rates before and after the Collaborative, showing unprecedented monthly rates after the Collaborative.

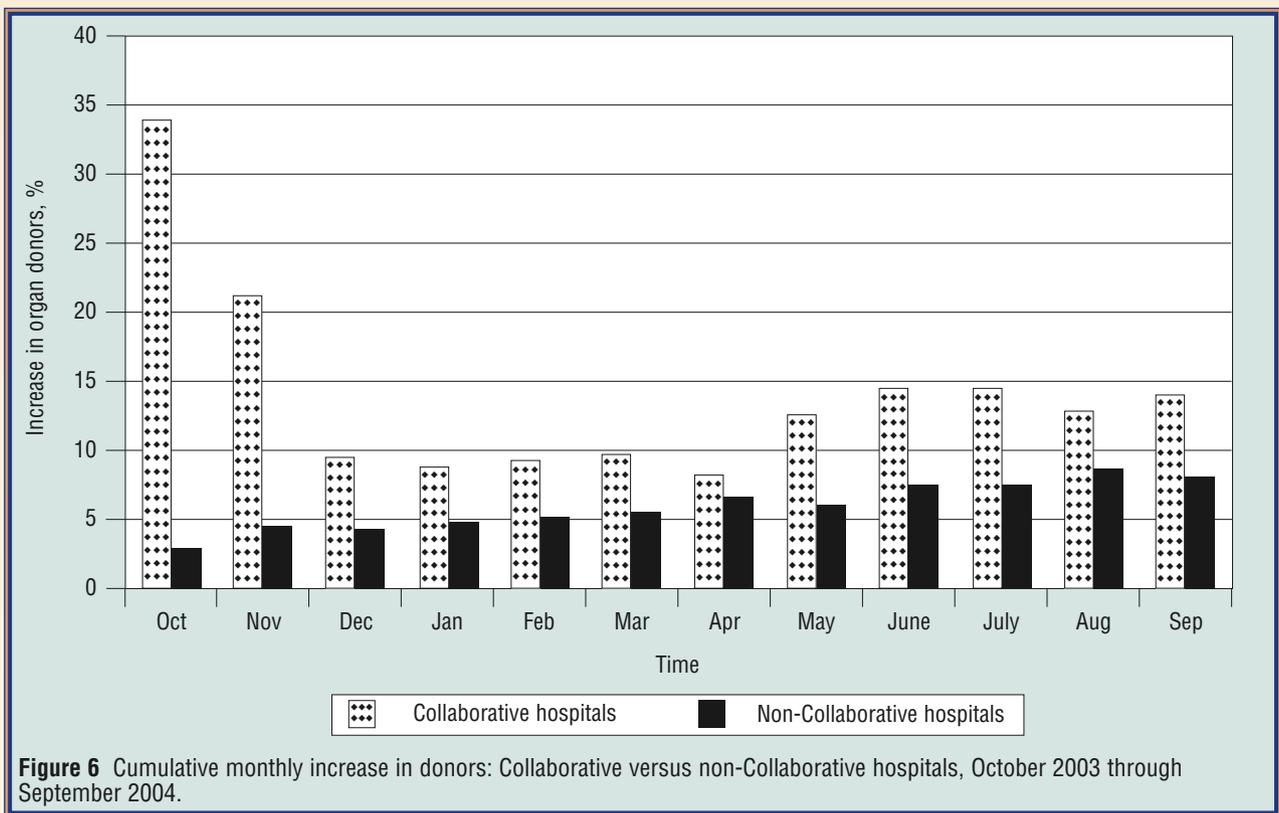


Figure 6 Cumulative monthly increase in donors: Collaborative versus non-Collaborative hospitals, October 2003 through September 2004.

month of 2003. This trend continued in 2005, with the total number of donors each month throughout 2005 exceeding the number of donors in the corresponding month of 2004, a telling difference from the preceding 2 decades, resulting in an additional 8.3% increase in 2005 over 2004 (Figure 5).

All of these increases were in addition to an impressive 4.3% increase in 2003. (For perspective, the mean annual increase in donation for the preceding 10 years was 2.9%.³) Back-to-back annual increases of 4.3%, 10.8%, and 8.3% are unprecedented.

Most likely these increases in donation, which included an increase in donors from hospitals not participating in the Collaborative, are due to the rapid spread of best practices generated by Collaborative teams in their donation service areas (Figures 4 through 6).

During the first full year of the Collaborative, Collaborative hospitals achieved a 14.1% increase in donation from the previous year, compared with non-Collaborative hospitals, which achieved an 8.3% increase in donation (Figure 6). This change represents a 70% greater increase in Collaborative hospitals than in non-Collaborative hospitals.

Conclusion

The Collaborative has given nurses, physicians, OPO staff, and other healthcare professionals the knowledge that they can make a difference. More importantly, it has demonstrated to healthcare professionals that they can effect change through systematic application of the improvement model, combined with known best practices. Every day on the Collaborative listserv, team members share their successes and

challenges and encourage one another to continue to push, to strive for ambitious goals.

The underlying practices that led to these increases are now widely known and are being systematically replicated by OPOs and hospitals throughout the nation. The Change Package has brought laserlike clarity to the strategies, key concepts, and actions that lead to higher, lifesaving conversion rates. Clinical leaders in hospitals and OPOs now have access to information on how to generate donation rates of 75% or more.

As evidenced by the dramatic improvement in conversion rates in 2004, resulting in the largest increase in organ donation in more than a decade, nurses, physicians, and other healthcare professionals, along with their partner OPO team members, know that outcomes can be improved. The spread of best

practices occurred rapidly with the Collaborative. Learning was accelerated by the learning sessions and the Collaborative listserv, and the teams' success was augmented by the active involvement of the leadership organizations mentioned earlier. The collaborative process, bringing teams together over time to implement rapid change in healthcare organizations, not only works, but should be seen as the way to bring about transformation throughout the healthcare system. Empowered teams across the organ donation community are now ready, willing, and able to apply these methods to all of their improvement efforts.

Finally, the all teach—all learn approach has brought an incredible level of mutual accountability, teamwork, and spirit to the lifesaving interactions between hospitals and OPOs. Critical care nurses and their OPO colleagues are at the heart of this team.

Organ donation can be increased and lives saved by having hospital and OPO staff remain in action: making bold requests and offers of assistance, studying what works, and testing it in their own institutions. One of the greatest results of the Collaborative occurred within the participants themselves: they were asked to be bold, to make bold requests and bold offers. The abundance created by this new behavior has changed the donation community in many ways, but most importantly, it has resulted in many lives being saved.

References

1. Waiting List Removals. Removal Reasons by Years: Removed from the Waiting List. January 1995-October 31, 2005. Richmond, Va: United Network for Organ Sharing. Available at: <http://www.optn.org/latestData/rptData.asp>. Accessed January 30, 2006.
2. Organ Donation Breakthrough Collaborative. About the Collaborative. Available at: <http://www.organdonationnow.org/index.cfm?fuseaction=Page.viewPage&pageId=471>. Accessed January 30, 2006.
3. Donors Recovered in the U.S. by Donor Type: Donors Recovered: January 1, 1988-October 31, 2005. Richmond, Va: United Network for Organ Sharing. Available at: <http://www.optn.org/latestData/rptData.asp>. Accessed January 30, 2006.
4. Definitive data of international transplant activities. *Organs Tissues*. June 2004;7:80-82.
5. OPTN/SRTR Annual Report. Chapter 3: Organ Donation and Utilization in the U.S., 2004. Table III.1. Eligible, Actual and Additional Donors, 2002-2003. Richmond, Va: United Network for Organ Sharing. Available at: http://www.optn.org/AR2004/Chapter_III_AR_CD.htm?cp=4. Accessed January 30, 2006.
6. Institute for Health Care Improvement. About us. Available at <http://www.ihc.org/ihc/about>. Accessed January 30, 2006.
7. The Organ Donation Breakthrough Collaborative: best practices final report. US Department of Health and Human Services; Health Resources and Services Administration, Office of Special Programs, Division of Transplantation. Contract 240-94-0037. Task order No. 12, September 2003. Available at: <http://www.organdonor.gov/bestpractice.htm>. Accessed January 25, 2006.
8. *Health Care at the Crossroads: Strategies for Narrowing the Organ Donation Gap and Protecting Patients*. Oakbrook, Ill: Joint Commission on Accreditation of Healthcare Organizations; 2004. No. 630-792-5631.
9. Wagner D. Shared vision overview. Presented at: Secretary Tommy Thompson's Organ Donation Breakthrough Collaborative, Learning Session 1; September 16, 2003; Washington, DC.
10. Sheehy E, Conrad SL, Brigham LE, et al. Estimating the number of potential donors in the United States. *N Engl J Med*. 2003;349:667-674.
11. Research to practice: a national consensus conference agenda. Presented at: United Network for Organ Sharing Conference; April 28-30, 2003; Orlando, Fla.
12. Langley GJ, Nolan KM, Nolan TW, Norman CL, Provost LP. Methods for improvement. In: *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*. New York, NY: Jossey-Bass; 1996:49-138.
13. Shafer TJ, Ehrle RN, Davis KD, et al. Increasing organ recovery from level I trauma centers: the in-house coordinator intervention. *Prog Transplant*. 2004;14:250-263.
14. Shafer TJ, Davis KD, Holtzman SM, Van Buren CT, Crafts NJ, Durand RE. Location of in-house organ procurement organization staff in level I trauma centers increase conversion of potential donors to actual donors. *Transplantation*. 2003;75:1330-1335.
15. Shafer T, Wood RP, Van Buren CT, et al. A success story in minority donation: The LifeGift/Ben Taub General Hospital In-House Coordinator Program. *Transplant Proc*. 1997;29:3753-3755.
16. Shafer T, Wood RP, Van Buren CT, et al. An in-house coordinator program to increase organ donation in public trauma hospitals. *J Transpl Coord*. 1998;8:82-87.
17. Sullivan H, Blakely D, Davis K. An in-house coordinator program to increase organ donation in public teaching hospitals. *J Transpl Coord*. 1998;8:40-44.
18. Ehrle RN, Shafer TJ, Nelson KR. Referral, request, and consent for organ donation: best practice: a blueprint for success. *Crit Care Nurse*. April 1999;19:21-33.
19. Dickerson J, Valadka AB, Levert T, Davis K, Kuria M, Robertson CS. Organ donation rates in a neurosurgical intensive care unit. *J Neurosurg*. 2002;97:811-814.
20. Siminoff LA, Gordon N, Hewlett J, Arnold RM. Factors influencing families' consent for donation of solid organs for transplantation. *JAMA*. 2001;286:71-77.
21. DeJong W, Franz HG, Wolfe SM, et al. Requesting organ donation: an interview study of donor and nondonor families. *Am J Crit Care*. 1998;7:13-23.
22. Shafer TJ, Van Buren CT, Andrews CA. Program development and routine notification in a large independent OPO: a 12-year review. *J Transpl Coord*. 1999;9:40-49.
23. Shafer TJ, Schkade LL, Evans RW, O'Connor KJ, Reitsma W. Vital role of medical examiners and coroners in organ transplantation. *Am J Transplant*. 2004;4:160-168.
24. Shafer TJ, Schkade LL, Siminoff LA, Mahoney TA. Ethical analysis of organ recovery denials by medical examiners, coroners and justices of the peace. *J Transpl Coord*. 1999;9:232-249.
25. Shafer TJ, Schkade LL, Warner HE, et al. Impact of medical examiner/coroner practices on organ recovery in the United States. *JAMA*. 1994;272:1607-1613.
26. Graham M. Bold offers and requests. Presented at: Organ Donation Breakthrough Collaborative, Learning Session 3; April 27-28, 2004; Detroit, Mich.
27. Romans J. Healthcare at the crossroads: organ donation in the 21st century, a regional program event—best practices for health care organizations to close the gap: characteristics of effective programs. Presented at: Lessons to Date from the HRSA Organ Donation Breakthrough Collaborative; November 17, 2004; Raleigh, NC.
28. Lewis J, Peitier J, Nelson H, et al. Development of the University of Wisconsin Donation After Cardiac Death Evaluation Tool. *Prog Transplant*. 2003;13:265-273.
29. Institute of Medicine, Division of Health Care Services. *Non-Heart-Beating Organ Transplantation: Medical and Ethical Issues in Procurement*. Washington, DC: National Academy Press; 1997.

CE Test Test ID C062: Organ Donation Breakthrough Collaborative: Increasing Organ Donation Through System Redesign

Learning objectives: 1. Identify issues related to organ donation 2. Describe the system redesign for the organ donation process 3. Extrapolate useful information for application to your own practice

1. According to the United Network for Organ Sharing, how many patients are in need of an organ?
 - a. 39 000
 - b. 90 000
 - c. 150 000
 - d. 8000
2. What factor limits the amount of time patients wait for extrarenal organs (heart, lung, liver)?
 - a. Limited facilities who perform these types of transplantations
 - b. Limited facilities who request the organs
 - c. Death
 - d. Lack of organ procurement organizations
3. What is the most important factor in increasing the number of organs recovered?
 - a. Strong participation of critical care nurses and physicians
 - b. All organ requestors should be organ procurement organization (OPO) employees.
 - c. Only physicians should approach the patients and families because they are the healthcare team leaders.
 - d. Administrators should be trained to be requestors.
4. Which one of the following statements is not a descriptor of a collaborative?
 - a. A collaborative is an intense, focused initiative with the purpose to achieve breakthrough change.
 - b. A collaborative is primarily made up of physicians.
 - c. A collaborative is designed to define and disseminate good ideas.
 - d. A collaborative is designed to build clinical leaders for change.
5. Which one of the following was not a key leader who joined forces in the Collaborative?
 - a. Joint Commission on Accreditation of Healthcare Organizations
 - b. Institute for Healthcare Improvement
 - c. American Medical Association
 - d. Association of Organ Procurement Organizations
6. What was the conversion rate for organ donation set by the Collaborative?
 - a. 50%
 - b. 85%
 - c. 100%
 - d. 75%
7. Which one of the following was not a key element of success of the collaborative model for breakthrough improvement?
 - a. The will to do what it takes to change to a new system
 - b. The commitment not to institute any changes unless approved by the Collaborative
 - c. The ideas on which to base the design of that new system
 - d. The execution of the ideas
8. Which one of the following is not a method for testing and implementing changes?
 - a. How will the information be disseminated?
 - b. What are we trying to accomplish?
 - c. How will we know whether a change is an improvement?
 - d. What change can we make that will result in improvement?
9. What percentage of potential donors were found in 20% of the hospitals?
 - a. 80%
 - b. 75%
 - c. 50%
 - d. 40%
10. Which one of the following is not a strategy identified under rapid, early referral and linkage?
 - a. Creating a link between the OPO, hospital staff, and families of potential donors
 - b. Establishing a system-wide commitment to unconditionally identify all potential donors
 - c. Allowing only nurses or the OPO to request organs because they will have the best rapport with the family
 - d. Timely notification of the OPO about potential donors to prevent a rushed approach to requesting consent from families
11. Which statement best describes an effective team huddle?
 - a. Allows for notification of hospital personnel to potential donation
 - b. Allows all participants to be comfortable with the process and ready to participate effectively
 - c. Allows for the family to be notified in a timely manner
 - d. Allows administration to track the progress of organ donation goals
12. Which one of the following is not an initiative of the first-things-first changes?
 - a. Analyze and apply current hospital-specific data
 - b. Hold donation team huddles
 - c. Wait several weeks to hold action reviews
 - d. Establish clinical triggers

Test answers: Mark only one box for your answer to each question. You may photocopy this form.

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