



IMPROVEMENT THROUGH COLLABORATION

A Reference Guide For Teams In Organ And Tissue Donation

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In addition, Improvement Associates Ltd. provided a wealth of knowledge on the design and implementation of this approach for the Canadian context and provided guidance to the participating teams and Faculty alike. The “improvement science” described in this Guide relies on the work and writing of IHI, API, Improvement Associates Ltd. and the Canadian ICU Collaborative Improvement Guide.

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Message from the Collaborative Chair

With the speed of leading practice change, new methods of knowledge transfer must be explored to ensure front-line professionals have the tools necessary to provide services to their patients and families.

The Organ Donation Collaborative is designed to teach, support and encourage you and your peers in the skills necessary to increase deceased organ donations in your centre through the engagement of teams of health professionals in a learning process. Although the formal educational sessions provide methodology and framework, many participants find that the most useful aspect of this approach is having the opportunity to exchange ideas and thus learn from colleagues from across the country.

We hope that participation in this Collaborative has helped to prepare you for meeting the challenges related to organ and tissue donation and transplantation presented in your organizations and communities.

Rosalie Starzomski,
University of Victoria

Message from the CEO

The Canadian Council for Donation and Transplantation (CCDT) is dedicated to enhancing every opportunity for patients and families to donate organs to save the lives of transplant candidates. In Canada, as in other countries, we are consistently addressing the shortage of organs. We can improve this situation by making changes to incorporate leading practices.

Health care providers and administrators make the difference in whether a family has an opportunity for organ and tissue donation. Improving patient care requires new approaches to health professional learning to incorporate practice changes that will achieve results. However, there are significant leading practices that have not been fully integrated into practice.

The aim of the Organ Donation Collaborative is to engage teams of health professionals in a learning process to improve donation. The Collaborative model has proven to be successful in the United States and around the world in organ donation, organ transplantation and a variety of other health topics.

We wish to acknowledge our partners from the Organ Donation Breakthrough Collaborative of the U.S. Department of Health and Human Services. In particular, we would like to thank Virginia McBride, Director, Breakthrough Collaborative Initiatives, HRSA Division of Transplantation and Dennis Wagner, Deputy Director, HRSA Center for Quality.

We at the CCDT appreciate the dedication that all participants have given this process. We look forward to seeing the continued gains of this work in the months to come.

Kimberly Young,
The Canadian Council for Donation and Transplantation

Message from the Collaborative Director

Breakthrough Series Collaboratives can achieve significant results. The Canadian Organ Donation Collaborative has resulted in increased awareness of donation among health professionals. A number of participating centres have reported improved quality and quantity of referrals, improved conversion rates and more consistent processes for handling potential donors in Intensive Care Units and Emergency Departments. I predict that the work of these pioneers will continue to trigger improvements in organ donation.

Bruce Harries
Improvement Associates Ltd.

1

Introduction

Purpose of This Guide

This guide documents the process used by the Canadian Council for Donation and Transplantation (CCDT) in sponsoring the Organ Donation Collaborative (ODC) to achieve significant improvements in deceased organ donations. It is designed to provide practical methods for health care providers who strive to improve their work while meeting their day-to-day responsibilities. It will also be of interest to those who look for strategies to engage the front-line clinicians in improvement initiatives that can affect the system as a whole.

In this section you will learn:

- the goals and results of the ODC
- the basic concepts of the collaborative process and how they were applied to the ODC



Background

In March 2006, the Donation Committee of the CCDT initiated health professional learning in the form of the Organ Donation Collaborative (ODC) in Western and Atlantic Canada to facilitate improvements in organ donation at the regional and site level.

There is a gap between what is known about organ donation processes and how they are practised in Canada, resulting in a concurrent gap between the number of people on the transplant waiting list and the number of organ donations.

The ODC was viewed as an important strategic initiative to assist with knowledge transfer between health care practitioners. It is a strategy that has been proven elsewhere. In the United States, the Breakthrough Collaborative began in mid 2003 and has seen a total of four collaboratives—two dedicated to organ donation, one to transplantation and one to a combined focus. These sessions resulted in unprecedented increases in monthly donation rates and the realization of conversion rate goals. The National Collaborative in Australia began in July 2006 and realized an increase in donation rates of 40 per cent.

The Goals

In the Canadian ODC, 19 multi-disciplinary teams from 7 provinces committed to change the process of care to improve organ donation rates. Overall, the goal was to increase deceased organ donations by 10 per cent in participating centres by July 2007. Additional objectives included the following:

- Improve the conversion rate to at least 75 per cent in each participating centre.
- Ensure that every potential donor is identified and appropriately referred.
- Ensure that every eligible family is offered the option to donate.
- Increase the average number of organs retrieved per donor (standard criteria donors to 4.3, expanded criteria donors to 2.5).
- Improve identification and timeliness of donor referrals.
- Improve family satisfaction with the donation experience.
- Implement donor management recommendations.

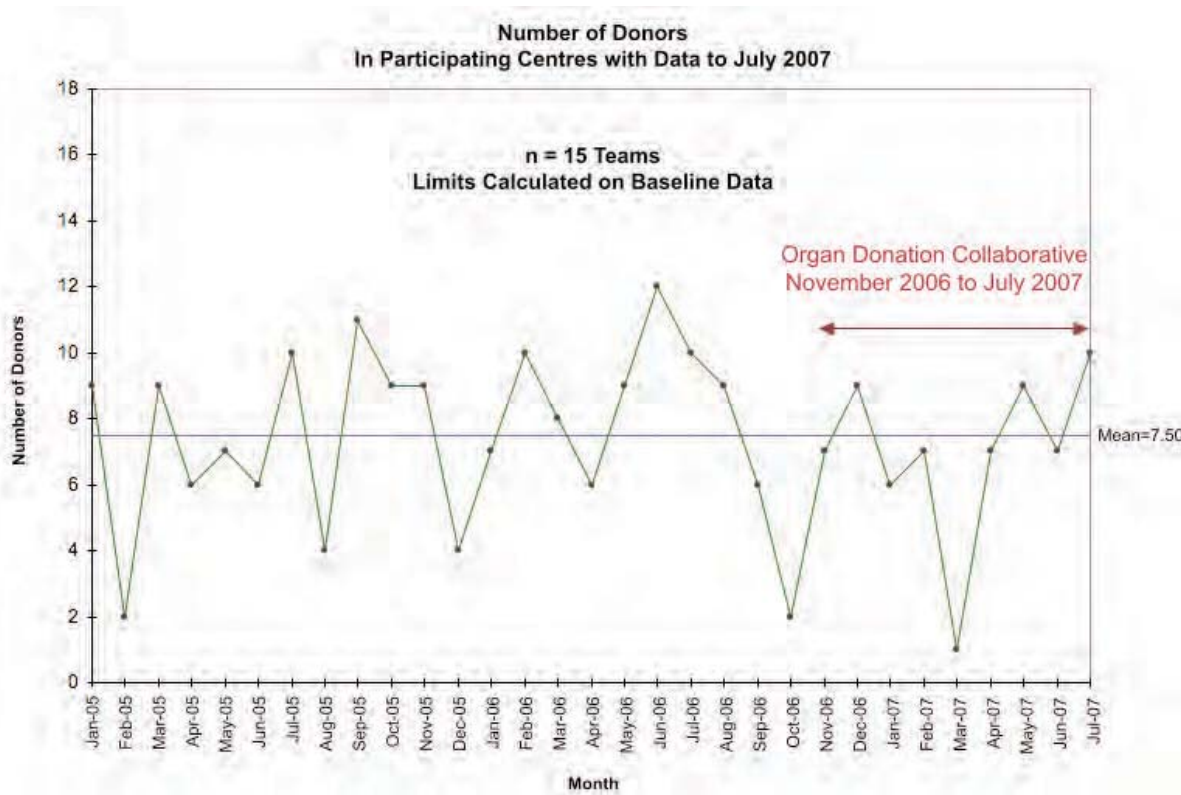
Teams adapted these overall goals to their local settings.

The Results

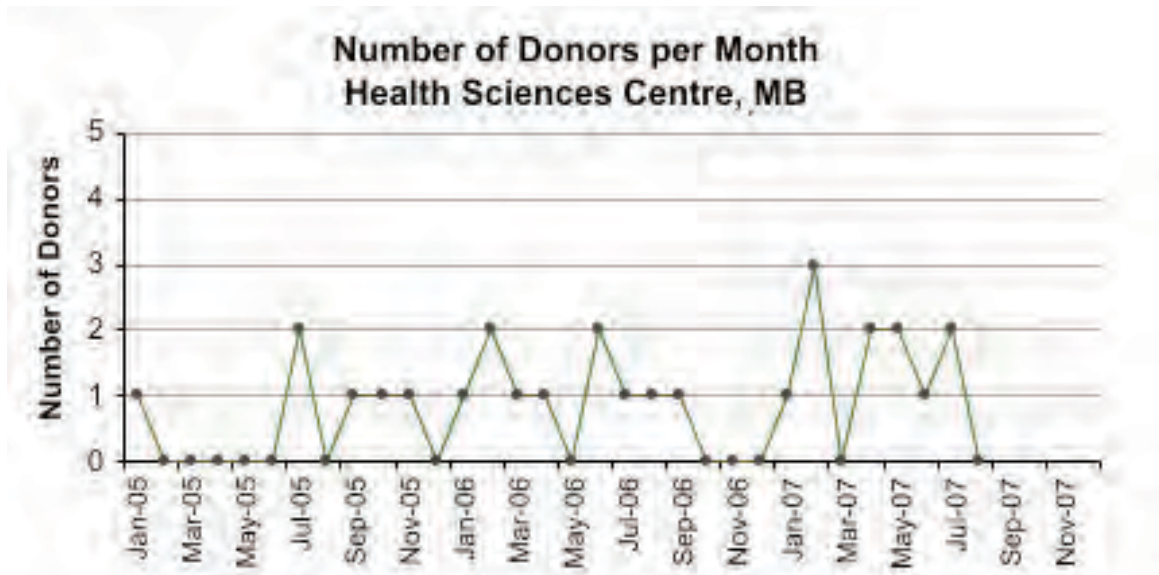
Many teams made significant progress toward their goals. The following pages highlight examples of their progress.

Results: Number of Donors

Most teams were able to provide data for the number of deceased organ donors from January 2005 to July 2007. Average deceased organ donations remain stable annually at 7.5 donors per month with large month-to-month variation.



Individual centres improved their results and achieved milestones. For example, The Health Sciences Centre in Winnipeg, Manitoba achieved their highest number of donors per month (February 2007) and per quarter (2007-Q1) during the Collaborative. The Grace Hospital, a community hospital in Winnipeg, Manitoba received their first two referrals in May 2007.

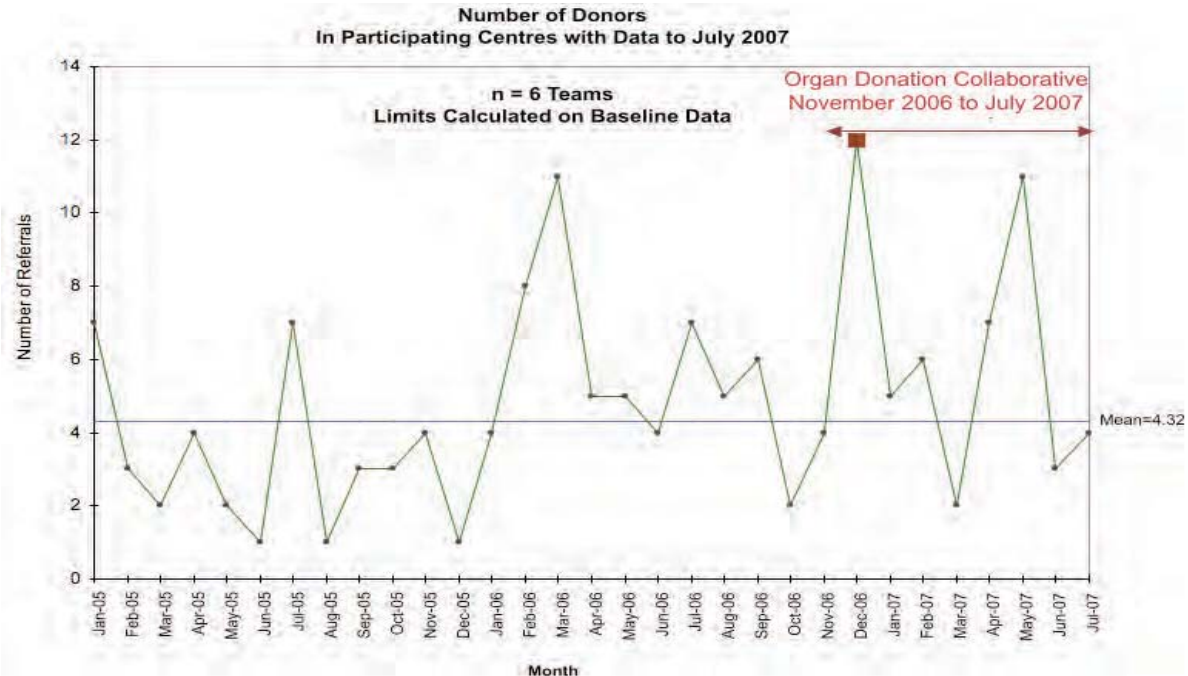


Stollery Children’s and University of Alberta Hospitals, both in Edmonton, Alberta, received a record number of donors in July 2007.

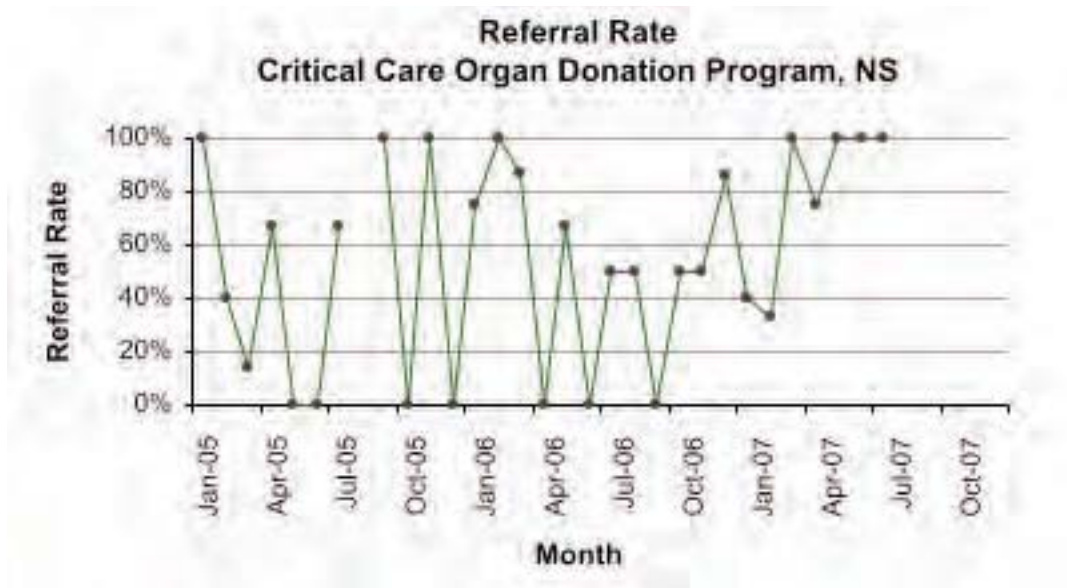


Results: Total Referrals and Referral Rates

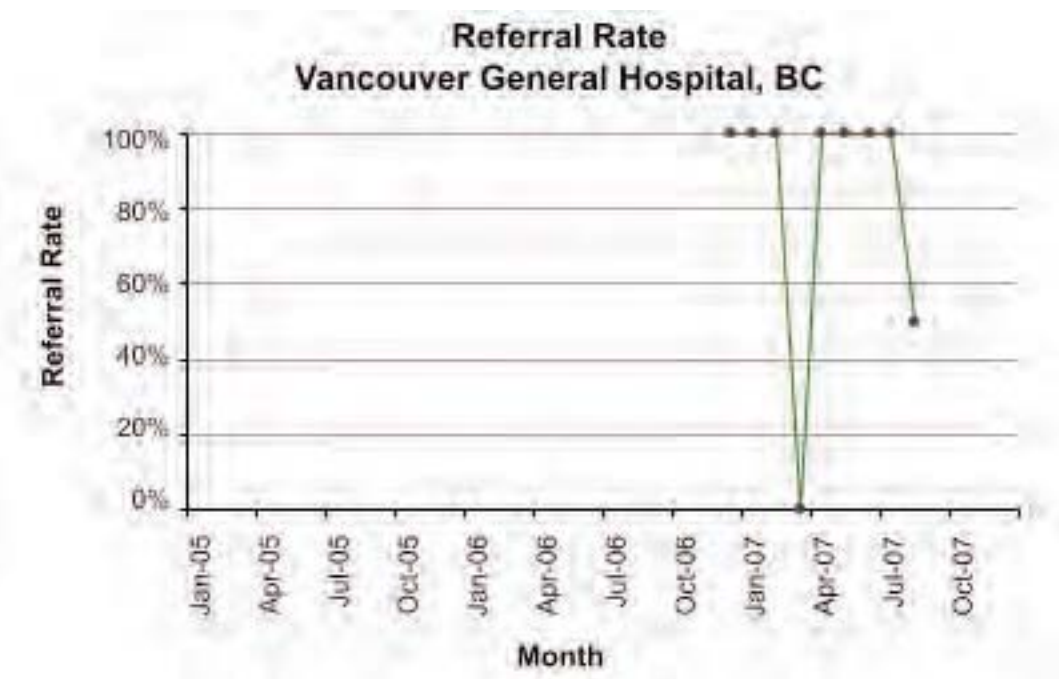
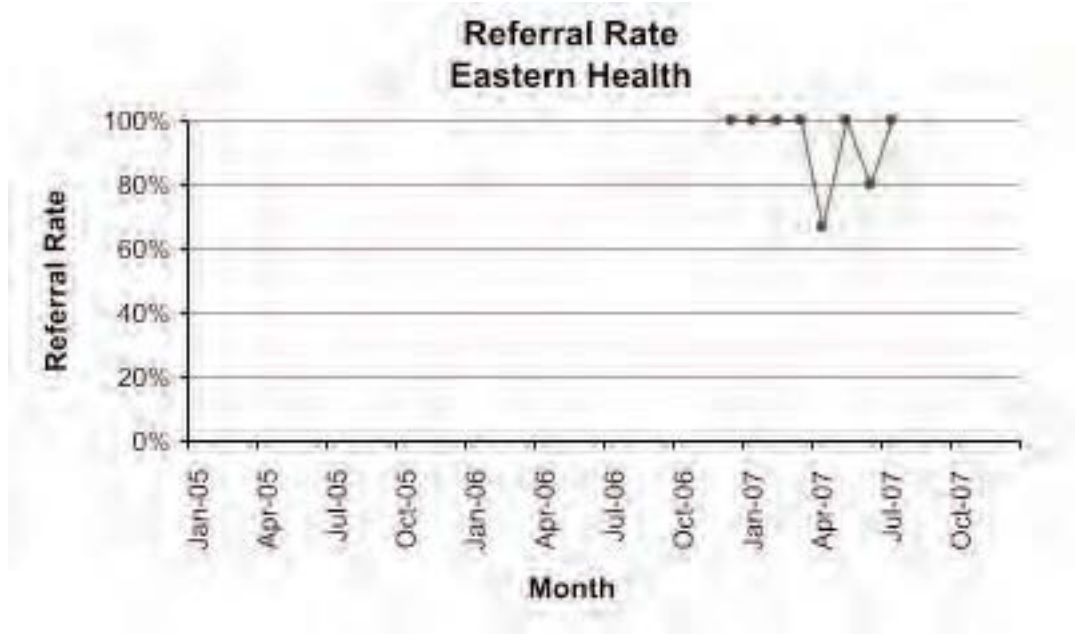
The ability to collect data on referrals and referral rates proved to be challenging for many teams. Six teams were able to provide data from January 2005 to July 2007.



Individual centres also made progress on this aspect of the organ donation process. For example, the Critical Care Organ Donation Program from Halifax, Nova Scotia, was able to achieve a 100% referral rate for several months throughout the Collaborative.



Several teams started to collect referral data due to their participation in the Collaborative and showed progress on this measure. Teams from Eastern Health in Newfoundland and Vancouver General Hospital in British Columbia were able to achieve 100% referral rates for several months while participating in the Collaborative.

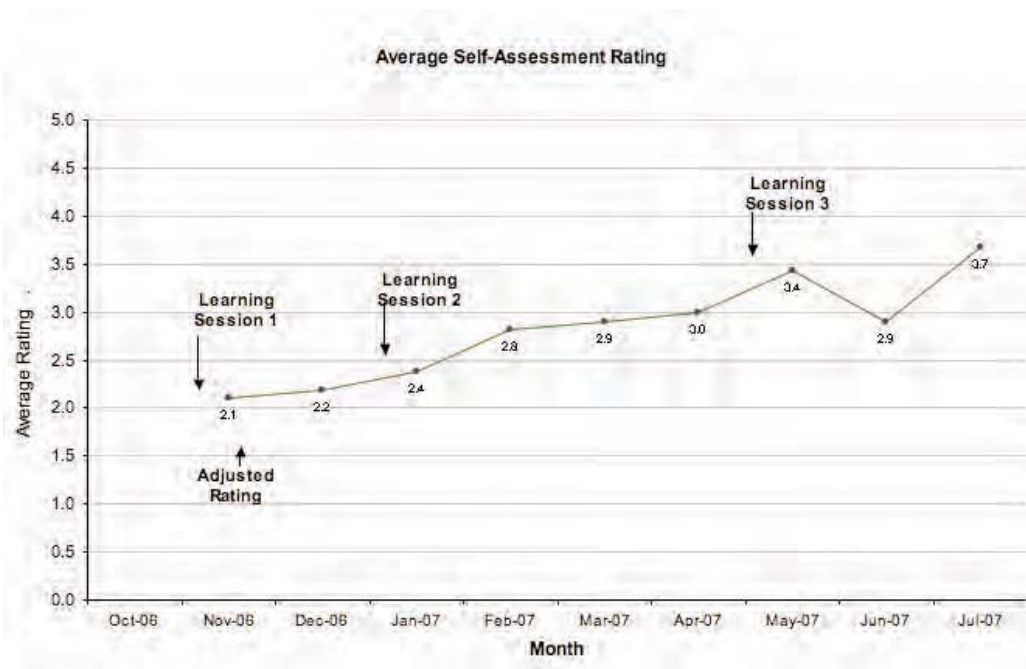


Additional Benefits

The Collaborative has affected participating organizations beyond the stated objectives. For example, the University of Alberta Hospital team noted, “It seems (anecdotally anyway) that we are seeing a rise in tissue donation since we have been involved in the ODC. I think it probably has to do with committee members becoming champions for donation in their areas of the hospital.” Similarly, the team from Eastern Health of Newfoundland and Labrador commented, “Interdisciplinary team involvement in the CCDT Collaborative has resulted in earlier referrals of potential organ donors, [and] ... communication between health care team members has improved.”

Results: Self-Assessment Summaries

As part of their monthly reports, teams submitted self-assessment ratings that summarized their progress toward their aims. As of July 2007, the average self-assessment rating of teams that submitted a report was 3.7 on a 5-point scale. This means that many teams were actively testing and implementing ideas for improvement, had evidence of improvement in their local setting, and were working toward achieving their goals. Some teams have realized their goals and are now starting to spread their improvements to other parts of the system and to other hospitals. These results are consistent with other IHI and Canadian Collaboratives.



Self-Assessment Scale

- 0 Non-starter: Team formed. Aim determined. Team attended Learning Session One.
- 1 Activity but no testing: Team engaged in data collection and developing changes. No tests of change or evidence of testing within last month.
- 2 Modest improvement: Testing has begun. There is anecdotal evidence of improvement.
- 3 Improvement: Implementation has begun. Improvements have reached 50 per cent of at least one goal.
- 4 Significant improvement: 100 per cent of at least one goal has been reached.
- 5 Outstanding sustainable results: Targets exceeded. Changes spread to larger system.

The Process

Every system is designed to produce the results it gets. Improved donations are not simply a matter of effort; they are a matter of design. Improved design comes from the application of new knowledge and new ideas.

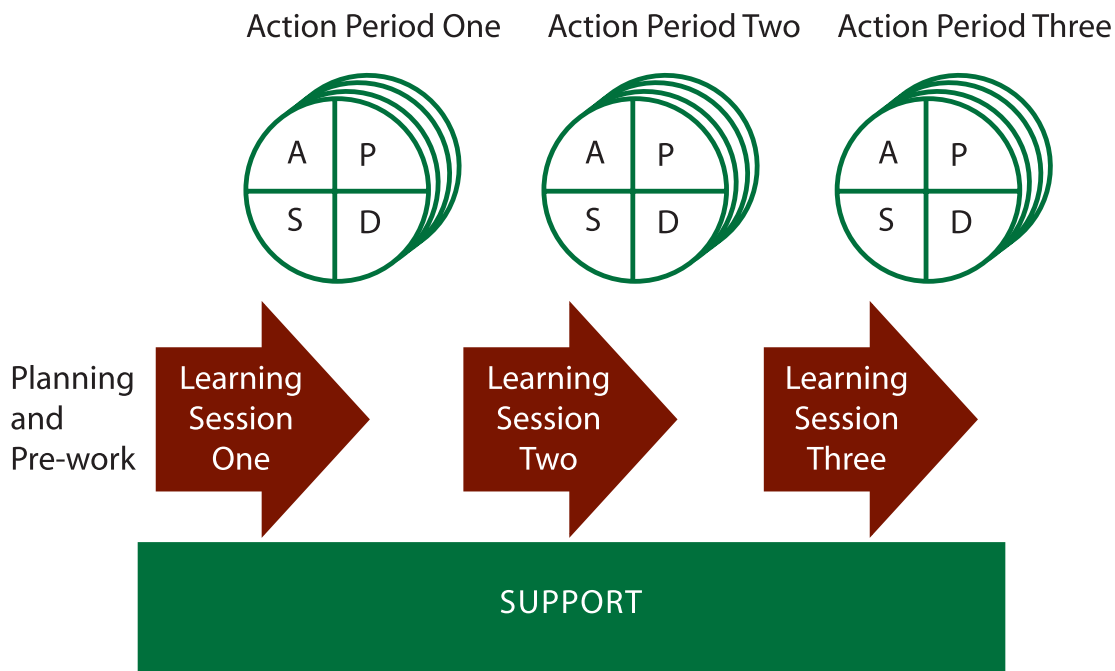
Health care does not yet reliably transfer best-known ideas into action. Processes often fail, despite the knowledge and best intentions of a dedicated and highly skilled workforce.

Breakthrough Series Collaboratives were designed by the Institute for Healthcare Improvement (IHI) to help organizations close the gap between what is known and what is done by creating a structure in which interested organizations can easily learn from each other and from recognized experts.

The approach allows multiple teams to address a common problem, to leverage ideas and to share what they learn along the way. Teams “learn by doing” and receive guidance and support on how to plan, implement and measure the impact of their changes. This approach has proven effective at addressing barriers to improvement.

The Collaborative Approach

The process is based on three learning sessions and action periods, usually occurring within 9 to 18 months. This timing generates a tension for change and allows for quick feedback. Results can be seen quickly, usually within the first two months.



Planning Phase

In the planning phase, health care leaders identify topics ripe for improvement—those areas where knowledge and examples of better performance exist but are not widely applied. A panel of experts gathered from around the world identifies, confirms and packages the best-known science on that topic.

Five to 10 faculty members, application experts and people who work in health care who have demonstrated improvement in their own practice are identified to validate the change package for a particular context. Improvement advisors teach and provide guidance to the Faculty on the Collaborative approach and improvement methods. These two groups then form the ongoing support infrastructure for the Collaborative.

ODC Planning: Based on what was learned from Collaboratives in the United States, Australia, Quebec and Ontario, an overall Canadian Charter was developed to describe the aims of the initiative, measures and initial improvement ideas.

These ideas were then adapted to the Canadian context by an Expert Panel that convened for a one-day session in October 2006. The outcome was a Canadian Change Package and Measurement Strategy that would be presented to the ODC Faculty and Collaborative teams.

Thirteen members were chosen to participate in the ODC Faculty. They validated the change package and measurement strategies and identified potential areas of opportunity as well as challenges and strategies for Collaborative teams.

Pre-work Activities

Teams enrol and complete a number of pre-work activities to prepare for the first Learning Session. Ideally, teams attend the first Learning Session with their overall aim in mind, their multi-disciplinary team chosen and baseline data available.

ODC Pre-work Activities: A Call to Action was distributed to potential teams to solicit expressions of interest. An Executive Summary and a list of FAQs (frequently asked questions) was provided to senior leaders to help them decide whether their organization should participate. Once a team expressed interest, an Enrolment Package was distributed to help them prepare for their participation in the Collaborative.

Learning Sessions

Teams meet three times in face-to-face Learning Sessions to learn about the topic, the Collaborative approach and improvement methods. At the first session, the Faculty presents a vision for better care and a practical change package alongside helping teams identify ways to adapt those changes to their local environment. Improvement advisors teach and coach teams on the improvement model, measuring for quality improvement and reporting results.

ODC Learning Sessions: Eighty-seven participants from 21 teams from Western and Atlantic Canada attended Learning Session One in Edmonton, Alberta, on November 7 and 8, 2007. The outcome was a shared understanding of organ donation processes and improvement methods. Also, teams made site-specific plans including local improvement charters, measurement plans, first tests of change using Plan-Do-Study-Act (PDSA) cycles and an overall project plan.

In the second and third Learning Sessions, teams learned more from each other as they reported on successes, barriers and lessons learned. Formal knowledge was enhanced with working sessions, informal dialogue and information exchange. Storyboard sessions displayed and celebrated results achieved.

At Learning Session Two, ninety-one participants from 19 teams attended in Burnaby, British Columbia, on February 8 and 9, 2007. Additional guest speakers introduced new knowledge in specific areas. The outcome was a collective celebration of Collaborative progress as well as additional knowledge and skills in organ donation processes, the Improvement Model and measurement. Teams also refined plans for the next action period, including implementation and overcoming barriers.

One hundred and five (105) participants from 18 teams attended Learning Session Three in Winnipeg, Manitoba, on May 28 and 29, 2007. Teams continued to learn from each other and Faculty about what ideas have the most impact in improving donation practices.

Teams also learned how to engage senior leaders and were taught specific strategies to hold the gains and spread their efforts beyond their original scope. Several senior leaders from participating organizations also attended the session to learn how they could support improved donation practices and improvement efforts generally in their organizations.

ODC Learning Sessions were enhanced with first-hand stories from transplant recipients and donor families. Teams commented on how being reminded of the outcome of their hard work makes a huge difference and inspires them to continue.

Action Periods

The times between face-to-face sessions are referred to as Action Periods, when teams adapt, test and implement changes locally. One of the most important aspects of the Collaborative is the exchange of learning between colleagues, even at a distance.

The support infrastructure provides ongoing coaching through conference calls, e-mail discussions, monthly feedback reports and site visits. The aim is to build collaboration and support between participating sites such that they can share information and therefore learn from each other. Ideas that seem to work are shared and spread across the country.

Teams submit a monthly progress report, the purpose of which is threefold. The reports provide a mechanism for:

- Collaborative teams to regularly summarize and assess their progress toward their aims;
- The Planning and Support team and Faculty to provide feedback on progress, with specific suggestions on how to move forward; and
- The Planning and Support team and Faculty to adjust the design of the Collaborative overall to enable team success.

The monthly reports are reviewed and summarized through a monthly Directors' Report and Team Progress Report. The Faculty meet in person at each Learning Session and once a month via teleconference to assess the progress of the collaborative, to identify educational content for conference calls and Learning Sessions and to adjust the design of the Collaborative as required.

In addition, Collaborative teams participate in one-hour conference calls monthly. Each call includes teams sharing what they have learned and the introduction of new knowledge by guest speakers and Faculty.

ODC Action Periods: A website allowed teams to store their documents in team-specific folders. The site also contained contact information and resource materials that were available to all interested team members. An e-mail list-serve was available for teams to share learning and ask questions.

Distribution of Findings

Once teams achieve success locally, they distribute findings, spreading to others what they have learned.

2

A Model for Accelerating Improvement

Introduction

A Collaborative is a structure that brings together multiple organizations to make dramatic improvements. The Improvement Model is at the heart of the Collaborative approach. This section provides an overview of the Improvement Model.

In this section you will learn:

- basic concepts of the Improvement Model
- how the Improvement Model is different from other approaches
- what the Improvement Model is and what it is not



Overview

Extensive learning from improvement efforts has shown that making system improvements requires the will to do what it takes, ideas on which to base the new design and execution to make change happen (Nolan).

The Improvement Model is a proven simple and powerful method for improving the performance of the health care system. The model provides a framework for developing, testing and implementing changes that lead to improvement. It has its basis in the scientific method and balances the desire to take immediate action with the wisdom of careful study.

Associates in Process Improvement (API) developed the Improvement Model as a framework for accelerating the pace of improvement in complex systems. It is not intended to replace other quality improvement methods.

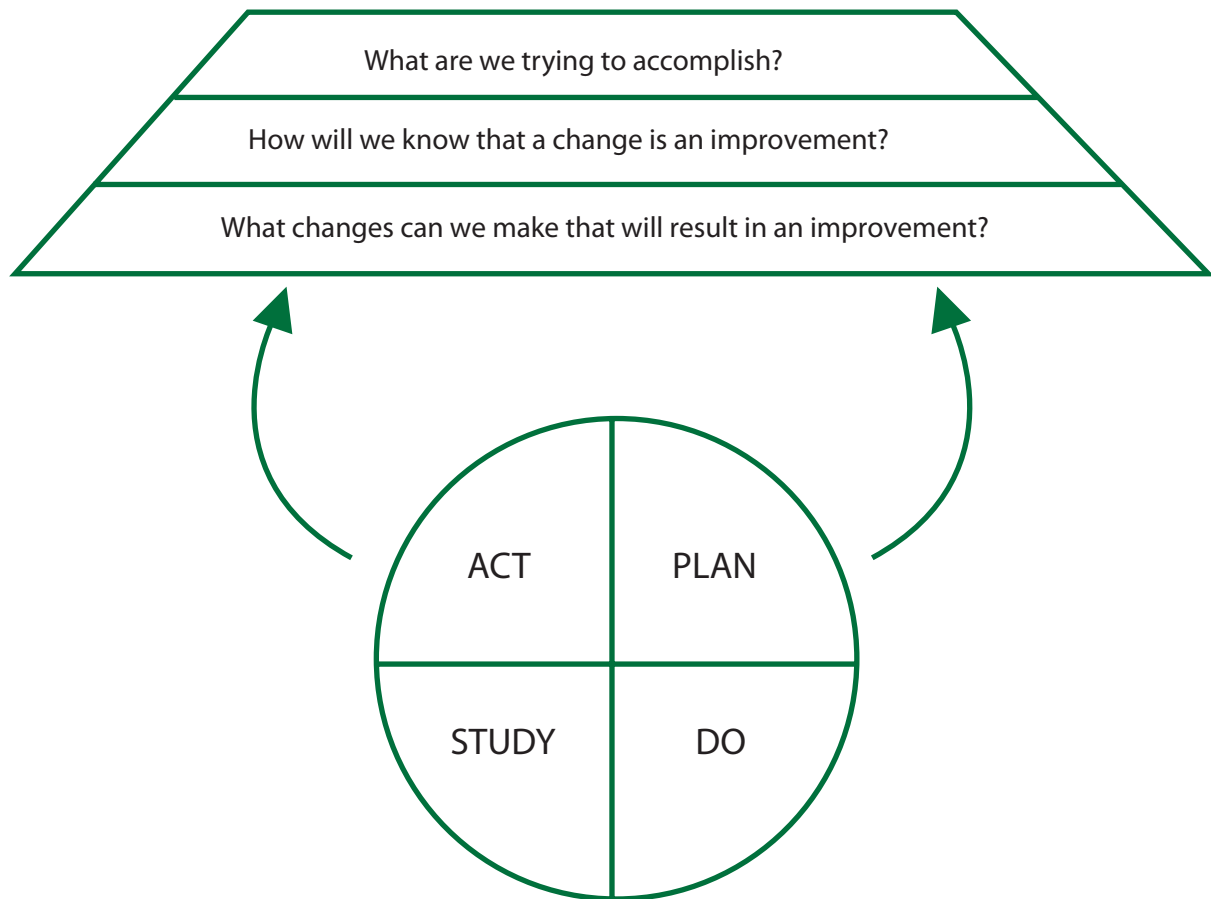
“All models are wrong; some are useful.”
—George E.P. Box, PhD

Experience with the Improvement Model shows that it has been useful in:

- facilitating the use of teams to make improvements
- providing a framework for effective measurement and the use of other improvement tools
- encouraging plans to be based on evidence-based theories
- emphasising and encouraging continuous learning
- empowering people to take action
- maintaining the will for improvement

The model consists of two parts: three questions and a cycle for learning and improvement.

The Improvement Model



The Model for Improvement was developed by Associates in Process Improvement and is fully described in Langley, G., Nolan, K., Nolan T., Norman C., Provost L. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*, San Francisco, CA.: Jossey-Bass Publishers, 1996.

The Three Questions

Three fundamental questions guide the improvement effort:

- What are we trying to accomplish?
- How will we know that a change is an improvement?
- What changes can we make that will result in improvement?

These questions help to define the endpoint of the initiative and provide direction, focus and context for the improvement. An Improvement Charter (Appendix A) can be used to answer these questions; it is a contract with the sponsor and a document that monitors team progress.

The PDSA Cycle

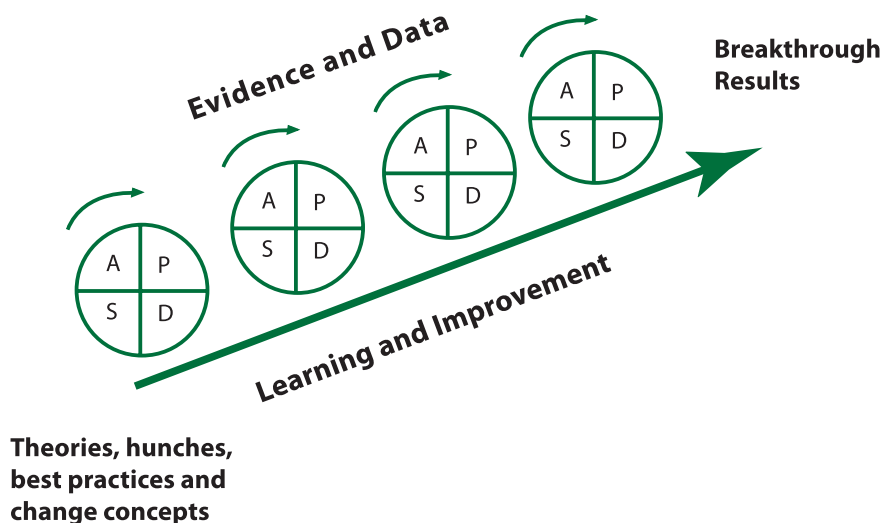
The PDSA cycle (Plan-Do-Study-Act) is the primary means to turn planning into action and to connect action to learning. It is used to develop, test and implement proposed changes in real time and in real work settings.

This is a “trial and learn” approach to improvement based on the scientific method. The PDSA cycle worksheet (Appendix B) can help teams design and document their cycles. The PDSA cycle provides a minimum level of structure, but to use it effectively takes discipline, effort and practice.

It is often more useful to run smaller cycles quickly, rather than larger cycles slowly. In this method, knowledge is built on an iterative process of developing a theory, making a prediction based on the theory, testing the predictions in the local environment, analysing the outcomes and improving the theory based on results.

This strategy can help teams learn faster and build knowledge sequentially. Through testing, teams learn which ideas work, under what conditions and why. As a result, each cycle provides a basis for further improvement. The importance of using PDSA Cycles to learn about proposed improvements cannot be understated – in fact, there is often positive relationship between the number, frequency and speed of PDSA Cycles and the success of an improvement team.

Building Knowledge Sequentially



Although it may seem counterintuitive, this approach to change is often effective in large, complex system redesign. Detailed analysis and grand designs are unlikely to uncover all the risks and uncertainties inherent in a rapidly changing environment. Trying to perfect a change without testing in the actual environment is not an effective way to make robust and lasting improvements.

Improvement Science and Other Approaches

The science of improvement uses methods different from those used in research or accountability frameworks. The goals and philosophies about the nature of knowledge are different and therefore require different methods.

Since the aim of research is new knowledge, studies are usually designed to isolate causes, avoiding the risks and technical difficulties caused by complex social situations.

The aim of accountability is generally for comparisons to spur change, so this framework relies on historical descriptions. Improvement science also aims to gain new knowledge but then to apply it in order to change future outcomes.

Differences between research, accountability and improvement science are highlighted in the following table and based on materials by Lloyd Provost, *Associates in Process Improvement*.

Table: Differences in Approaches

	Research	Accountability	Improvement Science
Aims	New knowledge	Comparison, judgments, springboard for change, promotion of public choice, reassurance and education	Improvement in care, practice and health care delivery outcomes
Methods			
Test Observability	Blinded tests	No testing, evaluate current performance	Observable tests to build the will to change
Bias	Eliminate bias	Measure and adjust to reduce bias	Accept stable and consistent bias over time
Sample Size	Collect large amounts of data “just in case”	Obtain 100% of available information	Collect “just enough” useful data
Flexibility of Hypothesis	Fixed a priori hypothesis	No hypothesis	Continual adaptation of the hypothesis, theories and changes as learning occurs
Testing Strategy	One large study	No tests	Many sequential tests
Confidentiality of Data	Research subjects are protected	Results are communicated to public and other stakeholders	Data are used by those involved in the improvement effort

Each approach has a key role to play in improving health care. Combining rigorous scientific research and accountability frameworks with improvement science can result in effective knowledge transfer from research to practice and continuous, sustainable improvement in complex systems.

Table: The Improvement Model

What It Is	What It Is Not
A structured approach to improvement	A recipe to follow
Sequential building of knowledge	Grand designs and planning to implementation in one step
Learning by doing	Learning by planning, data collection and analysis
Continual testing to reduce risk	Planning big, doing big and then problem-solving, or Doing a pilot, evaluating and then implementing
Theory, evidence, and action	Unspoken theories, rhetoric, power structures, public opinion or actions isolated from learning
Used to test and implement ideas for change	Used to perform tasks

Summary

Using the Improvement Model within a Collaborative structure can help teams to improve the processes and outcomes of complex systems. Focusing on three simple questions and a cycle for learning allows teams to move forward and accomplish lasting improvements.

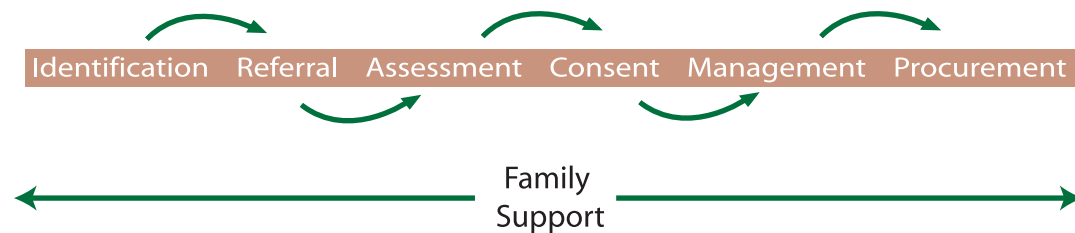
People using this approach in health care often enjoy renewed enthusiasm in providing care to patients and increased pride in the work they do.

3

Strategies for Improving Donation

Introduction

The process of organ donation involves many health care professionals, and for success, each step depends completely on the previous steps.



In this section you will learn:

- the definitions associated with organ donation
- the definition of change concepts
- the change and measurement strategies used by the Canadian ODC



Definitions

For the purposes of the Canadian ODC, the following definitions were used:

Clinical triggers

Criteria mutually established by the hospital and organ donation organization (ODO) that prompt the hospital to make a timely notification to the ODO.

Referral rate

The percentage of actual referrals to potential referrals (i.e., patients who meet locally agreed-upon clinical triggers) for consideration as potential organ donors who are appropriately referred for further assessment, divided by all patients meeting these clinical triggers.

Eligible organ donors

All patients who have died matching the following criteria:

- severe brain injury
- imminent or confirmed brain death

Actual organ donors

Consented donors who proceed to actual organ donation.

Conversion rate

The number of actual organ donors divided by the number of eligible donors, expressed as a percentage.

Average number of organs retrieved and transplanted per donor

The total number of organs retrieved and transplanted divided by the total number of donors.

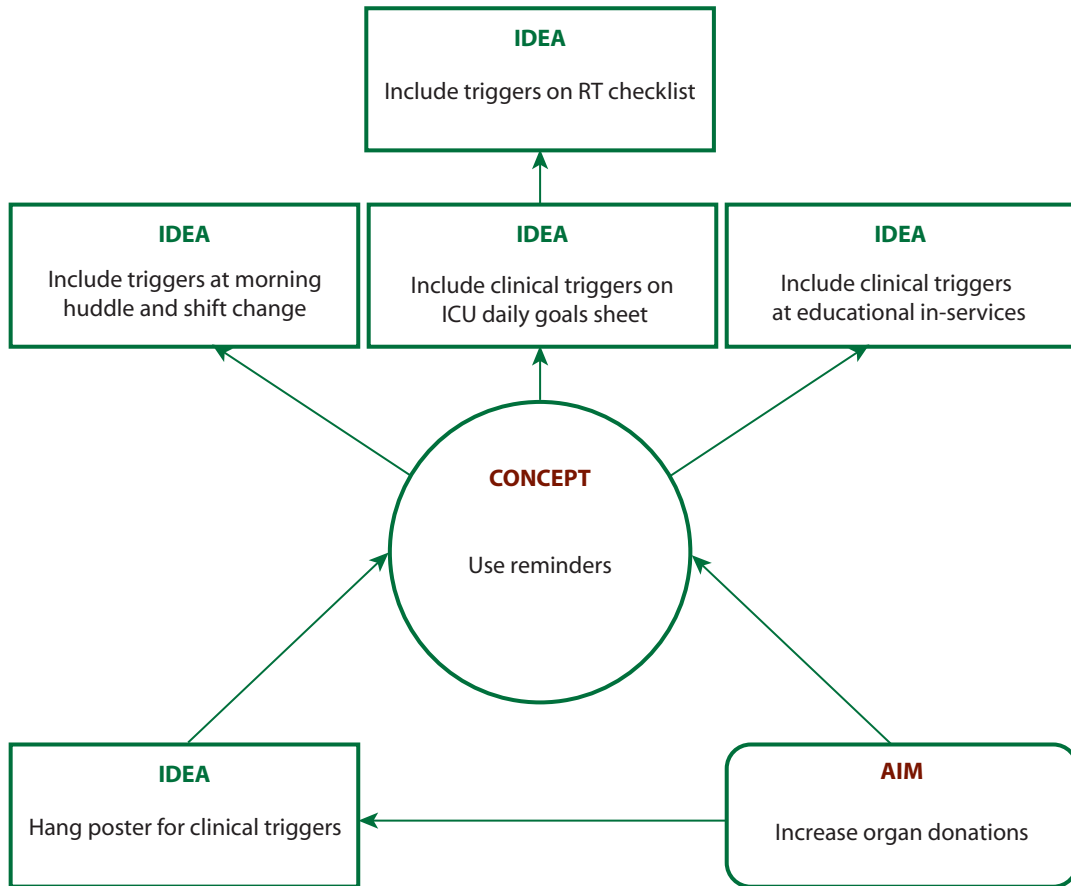
Change Concepts

A Change Concept is a general, scientifically grounded approach for change that has been proven to work. Change Concepts can be used as catalysts to generate innovative ideas.

The process of moving between concept and idea is like that of moving between the general and the specific; the abstract and the concrete. The concept fan is based on the work of Edward de Bono and is described below using a clinical example.

A team started with the idea of displaying a poster with clinical triggers. This idea can be grouped under the general heading of a change concept called “Use Reminders”. Once this concept is identified, other ideas of how to use reminders can then be developed and tested.

Change Concept



Associates in Process Improvement developed a list of 70 general change concepts, which are described in detail in *The Improvement Guide* (Langley, et al.).

Experts, using sentinel examples from around the world, have developed high-leverage Change Concepts for many topics in health care, such as reducing delays and waiting times and improving patient safety in the intensive care unit (ICU).

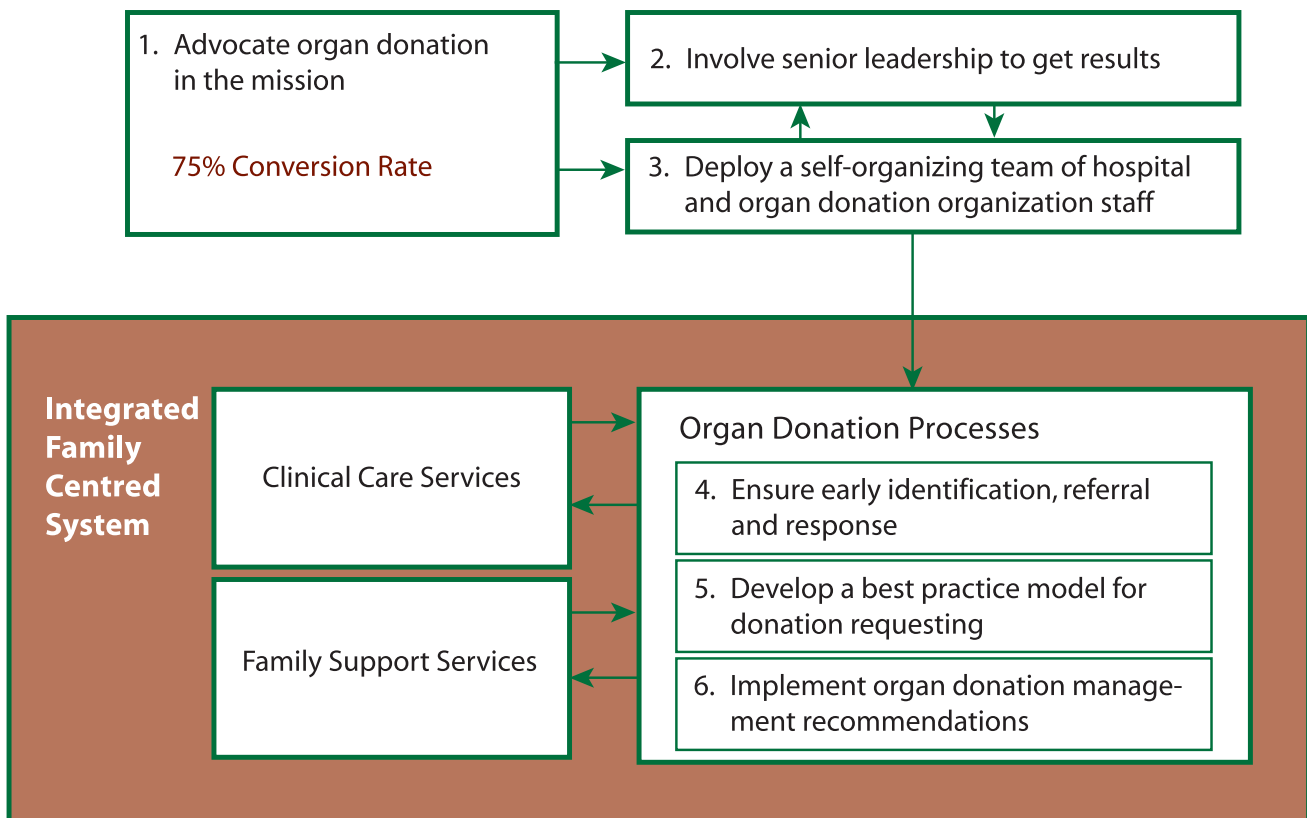
By combining Change Concepts with local knowledge, teams are more likely to develop changes that lead to improvement and increase the pace of improvement in their system.

Six Strategies: The Change Package

In the Organ Donation Collaborative, potential change concepts and measurement strategies were reviewed based on the U.S. and Australian Collaboratives. These concepts and strategies were then adapted to the Canadian context by an Expert Panel. The outcome was a Canadian Change Package and Measurement Strategy (see Appendices G and H).

1. Advocate organ donation in the mission.
2. Involve senior leadership.
3. Establish a flexible, self-organizing hospital and organ donation team clinical group for each potential case.
4. Ensure early identification, referral and rapid response.
5. Develop a best practice model for donation requesting.
6. Implement donor management recommendations.

Six High Leverage Changes



1. Advocate organ donation in the mission

Advocacy for organ donation should be built into the mission, business plans and staff practices of hospitals, organ donation organizations and clinical leadership groups.

Examples:

- Cape Breton District Health Authority gave a presentation on Organ Donation to fourth-year nursing students.
- Regina General Hospital engaged a clinician champion through their Head Intensivist, who presented the GIVE acronym and clinical triggers to all other Intensivists and Critical Care associates.
- South East Regional Health Authority, New Brunswick, has successfully had organ donation included in the mission statements of all critical care areas.

2. Involve senior leadership

Leaders in organ donation organizations and hospitals need to actively support each case through well-defined and documented organ donation processes that integrate the roles and responsibilities of each organization

Examples:

- Transplant Manitoba – Health Sciences Centre has engaged a Spiritual Care Director to work with the Collaborative team on strategies to improve family support for potential organ donor families.

3. Establish a flexible, self-organizing hospital and organ donation clinical group for each potential case

When all potentially involved clinicians are sensitized to regularly consider organ donation, both donations and all associated services, such as family support, increase.

Examples:

- Vancouver General Hospital instituted regular Friday “mini-huddles” in the ICU to familiarize staff with the donation process.

4. Ensure early identification, referral and rapid response

The early identification of a potential organ donor must be followed with prompt referral and a rapid response by the entire organ donation team.

Examples:

- Annapolis Valley Health Authority engaged their respiratory therapists to assist in identifying potential organ donors. The following action requirements were tested and implemented:
 - Do not withdraw life support to brain-injured patients without organ donation consideration.
 - Recruit respiratory therapist to district team.
 - Educate respiratory therapist on organ donation criteria and process.
 - Educate respiratory therapist on how to access Organ Donor Coordinator.
 - Provide respiratory therapist with sticker for the flow sheet to document if patient was assessed for organ donation.
- BC Children’s Hospital used a survey tool to increase the number of referral calls through increased awareness and education. The six questions addressed the following areas:
 - The organization that needs to be notified about any impending or actual death or potential organ donation.
 - What needs to happen before the first referral phone call to the identified organization.
 - Who is responsible for the first referral call.
 - The location of the phone number to call.
 - Occurrences after the first referral call.
 - What needs to happen if the patient has already died and there has not been a referral call.
- To assist with standardizing potential donor referral documentation, Kelowna General Hospital explored the usefulness of an algorithm to guide staff through the process from early identification of a potential donor through to documentation of the events.

5. Develop a best practice model for donation requesting

“Optimal requesting” requires facilities to establish, implement and manage a well-defined set of processes and practices, including ensuring positive communication with the donor family.

Examples:

- Eastern Health, Newfoundland and Labrador, assessed the attitudes of staff in critical care areas about the importance and benefits of the organ donation process both to the families of donors and to transplant recipients. An unexpectedly high percentage of staff indicated that they believed that a request for organ donation would add to the family's burden. Clearly, the option of organ donation and its importance in excellent end-of-life care needs to be emphasized in the education model for critical care staff.
- The teams from Capital Health (Royal Alexandra Hospital and University of Alberta Hospital, Edmonton), developed a Family Support Chart to increase staff comfort with organ donation and to promote appropriate timing of discussion with family. Donation is not discussed at the same time brain death is confirmed.
- Capital Health – University of Alberta Hospital, Edmonton, has added the team huddle to their clinical triggers algorithm to increase team satisfaction with the requesting process. It will be taught to all units where donors are identified as a best practice standard.
- Transplant Manitoba – Grace Hospital uses huddles to identify which team member would approach the family of a potential donor.

6. Implement donor management recommendations

Management strategies and organ protective therapies that improve donor organ function for the purposes of transplantation should be based on national guidelines such as the CCDT's *Medical Management to Optimize Donor Organ Potential* (October 2004). Facilities need to practise continuity of clinical care for all organ systems from timely referral through to brain death declaration to organ recovery. Staff members need to make use of advanced clinical practice support and best practices.

Examples:

- The Royal Columbian Hospital improved the level of staff satisfaction and donor management through the use of pre-printed physicians' orders. The pre-printed orders enable consistency in all donor care regardless of staff experience.

See detailed Change Package in Appendix G.

Team Examples

Following are a number of forms, check sheets, data entry forms, posters and surveys that have been developed by Collaborative teams:

- Family Support Chart – Capital Health – Royal Alexandra Hospital, Alberta
- Chart Audit Tool – Critical Care Organ Donation Program, Nova Scotia
- Physician Orders for Donor Management – Eastern Health, Newfoundland and Labrador
- Organ Donation Algorithm – Critical Care Organ Donation Program, Nova Scotia
- Screening Form – Critical Care Organ Donation Program, Nova Scotia
- Clinical Triggers – Transplant Manitoba – Health Sciences Centre, Manitoba
- GIVE Poster – South East Regional Health Authority, New Brunswick.

Family Support Chart



Providing Support for Families of Potential Organ/Tissue Donors

Prepared by the Organ Donation Collaborative, 2007

In the Emergency Room

- When a patient in ER is diagnosed as having an injury or condition not compatible with life, and meets the clinical assessment triggers that indicate a potential for organ donation, the Emergency Physician will consult the Intensivist.
- The Charge Nurse or RN will page the On-Call Chaplain and Social Worker so that both can provide support for the family.
- The ER Physician and/or Neurointensivist will communicate appropriate information to the family regarding the grave prognosis of the patient.
- A Chaplain and/or Social Worker should be present at the time of notification of grave prognosis whenever possible.
- The Chaplain/Social Worker will assess family circumstances and will (a) record any pertinent information on the patient's chart (b) if the patient is admitted to ICU, continue to provide support to the family, or refer to Unit Chaplain and/or Aboriginal Cultural Helper, as appropriate.



In ICU

- When a patient in an ICU is diagnosed as having an injury or condition no compatible with life, the Charge Nurse or bedside RN will contact the Chaplain and Social Worker to ensure support is provided for the family.
- The Intensivist will communicate appropriate information to the family regarding the grave prognosis of the patient.
- Include a Chaplain and Social Worker at the time of notification of grave prognosis whenever possible.



Information Gathering in ICU

- The Social Worker is responsible for: (a) reviewing the patient's chart for any notes provided by the SW previously involved; (b) conducting a quality of life assessment with the family, including but not limited to: personal directive (legal document or signed organ donor card), next of kin, spokesperson for the family, previously expressed wishes of patient, etc.
- The Social Worker will communicate the essence of the conversation (verbally and in writing).
- All care providers are responsible for reading entries documented by the Social Worker in the patient care record.
- All care providers are to listen for clues that would suggest that the family may be supportive of organ donation. This information should be shared with the RN.
- Any interest shown by the family at any time relating to organ/tissue donation should be referred to the Charge Nurse.



Page 1:3



Providing Support for Families of Potential Organ/Tissue Donors

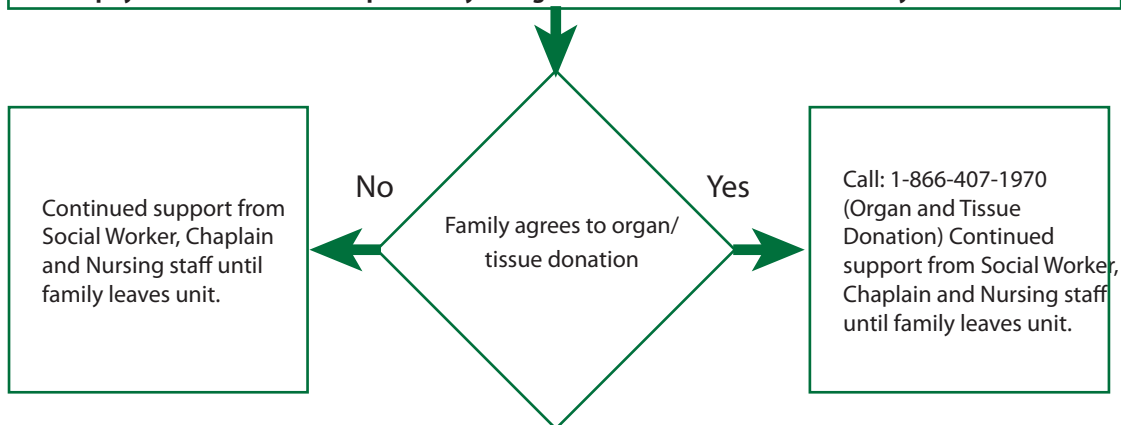
Prepared by the Organ Donation Collaborative, 2007

Family Conference – To Advise of Brain Death

- Recommended attendees include MD, RN, Social Worker, and Chaplain. Optional: Charge Nurse, Respiratory Therapist.
- Whenever possible, prior to the family conference the care team will “huddle” to discuss the purpose of the meeting and who will chair the meeting. The Physician and Nurses are likely to document the meeting in the patient chart. It is advisable for the Social Worker or Chaplain to also record on a form similar to the attached and add it to the patient’s chart.
- A debriefing with the care team is to occur post family conference to discuss any outstanding issues and identify “next steps.” At this time a second family conference will be scheduled.
- Charge Nurse/RN to contact HOPE to advise of potential organ donor.
- A discussion about organ donation should **not** occur at the same time as family is advised of brain death of their loved one.
- If the family asks, the Charge Nurse may contact HOPE to provide information.

Family Conference – Discussion of End of Life Options

- Allow the family time to begin absorbing news of brain death before convening this meeting.
- Confirm time of brain death and discuss end of life options.
- Recommended attendees include: MD, Charge Nurse or RN, Social Worker and Chaplain. Optional: HOPE Coordinator, Respiratory Therapist.
- Charge Nurse, RN or MD to notify HOPE Coordinator of date and time of family conference.
- Huddle (see above). Document (see above). Debrief (see above).
- **The physician will discuss the possibility of organ/tissue donation with the family.**



Notes:

Chaplains are available 24/7.

The Social Worker in ICU is available from 0800-1600 hours, seven (7) days/week.

The Social Worker in ER is available from 0700-2200 hours, seven (7) days/week.

UAH: 7-6191 (locating) - to page the Chaplain on-call or the Social Worker from the appropriate unit or ER.

RAH: 5-411 (switchboard) - request that they connect you to Social Services and/or page the Chaplain on-call.



Providing Support for Families of Potential Organ/Tissue Donors

Prepared by the Organ Donation Collaborative, 2007

Tips for Providing Effective Family Support

General

- Flexibility is important. Although the steps listed on the flowchart are considered ideal, not every situation may follow this process exactly.
- The Charge Nurse in the ICUs and ER are ultimately responsible for ensuring that the Social Worker and Chaplain are consulted to provide support to families of patients who receive a grave prognosis, whether or not the patient becomes an organ donor.

In the Emergency Room

- Whenever possible, an automatic referral to the Social Worker and/or Chaplain is to occur before a patient is diagnosed as brain dead or before a family receives a grave prognosis for a loved one. A Chaplain is available 24/7. Hours of Social Workers are documented on the flowchart. It is critical that a trusting relationship is developed between the family and these care providers prior to organ donation discussions.
- The Social Worker is responsible for conducting an initial assessment of the family and for passing this information along to staff who will receive the patient. This communication is to occur through documentation in the patient care record and also verbally whenever possible.

In ICU

- Experience and research tell us that experience of care at the end of life will influence the decision that a family will make regarding organ donation. Always be empathetic (put yourself in their shoes), respectful and caring.

Family Conferences

- Ensure every family has the opportunity to make an informed decision about donation. Remember that most people given the opportunity to help someone in need, would want to do so. 83% of Albertans support organ transplantation (IPSOS poll, 2006).
- During the “huddle”, establish a collaborative communication plan.
- It is the responsibility of all healthcare providers to ensure that the family understands neurological death – it has been proven that the families often do not understand this, thus reject the opportunity to donate.
- Express sympathies and use the person’s name.
- Engage the family in conversation about the loved one.
- Active listen to the family.
- Silence is okay.

Chart Audit Tool

Organ Donation Chart Audit

Hosp #: Medicare #:
 Date of Review: Last Name: Sex: M F
 Age: Physician:
 Unit: Admission Date: Admission Diagnosis:
 Expiry Date: Cause of Death:

Organ Donation Statistics	(check all that apply)
Referral	<input type="checkbox"/>
Family initiated discussion	<input type="checkbox"/>
Actual/Potential/Retrievable Donor	<input type="checkbox"/>
Missed Donor	<input type="checkbox"/>
Medically Unsuitable	<input type="checkbox"/>
Family Approached	<input type="checkbox"/>
Family Declined	<input type="checkbox"/>

- Head trauma, ICH, anoxia Cause: _____
- Neurosurgery/Neurology consulted? Attending: _____
- Decision to withdraw care? Y/N
- ODC consulted? Y/N
 Name and role of Consulter: _____
 Time of Consult: _____
- GCS ≤ 5?Y/N Temperature: ____
- Intubated
- Ventilated
 Does the patient have spontaneous respirations? Y/N
 Vent Settings: _____

Organ Donation Chart Audit (continued)

List drugs in last 4 hours: _____

- Brain stem reflexes checked? Check below
 Fixed, dilated pupils
- Absent corneals
- Absent gag
- Absent cough
- Absent vestibulo-oculars
- Statement of Brain or Brainstem death? Y/N (By: _____, MD)
- Neurological Determination of death completed? Y/N
 Name(s) of declaring physicians: _____
- Apnea test completed? Y/N
- Is ancillary testing necessary? Y/N
 If yes, method: _____ Time: _____

Eligible organ donor? Y N

Who first raised the issue of organ and tissue donation? Name: _____

Family MD ODC RTB Nursing Staff SW Other

Family offered the option of donation by? Name: _____

MD ODC RTB Nursing Staff SW Other

Consent obtained by? Name: _____

MD ODC RTB Nursing Staff SW Other

Organ Donation Chart Audit (continued)

Organ Eligibility: Absolute Contraindications	Brain death without organ donation
<input type="checkbox"/> Unknown Cause of Death <input type="checkbox"/> Uncontrolled/untreated sepsis <input type="checkbox"/> HIV <input type="checkbox"/> Leukemia <input type="checkbox"/> Lymphoma <input type="checkbox"/> Melanoma <input type="checkbox"/> Active Extra Cranial Malignancy <input type="checkbox"/> Antibiotic resistant organism (eg. MRSA) <input type="checkbox"/> Transmissible disease <input type="checkbox"/> ALS <input type="checkbox"/> MS <input type="checkbox"/> CJD <input type="checkbox"/> Alzheimer's Disease <input type="checkbox"/> Other: _____	<input type="checkbox"/> Medically unsuitable <input type="checkbox"/> MD unaware of absolute contraindications <input type="checkbox"/> Organ Donor Coordinator not consulted <input type="checkbox"/> Family not asked (reason: _____) <input type="checkbox"/> No next of kin <input type="checkbox"/> Family declined (reason: _____) <input type="checkbox"/> Medical Examiner refusal <input type="checkbox"/> Other: _____

Notes:

Reviewer:

Definitions to Correspond with Organ Donation Chart Audit Form

Referral	Consultation/communication to a donor program about a deceased or dying patient who may be a potential organ donor.
Family Initiated Discussion	The family have brought up the topic of organ donation with a member of the healthcare team.
Actual Donor	A donor from whom at least one organ has been transplanted.
Potential Donor	A referral who fulfills the general acceptance criteria for organ donation, and for whom neurological death has been determined.
Retrievable Donor	A potential donor for whom informed consent for organ procurement has been obtained. Organ recovery may occur, but no recovered organs are transplanted.
Missed Donor	A donor that meets the clinical trigger criteria who is not ruled medically unsuitable.
Medically Unsuitable	Patient had one of absolute contraindications.
Family Approached	A member of the healthcare team has documented that organ donation was discussed with family members. This discussion should occur only when neurological death has been determined.
Family Declined	Neurological death was determined. The family were approached and declined donation.

Physician Orders for Donor Management



Cardiac/Critical Care Program

**Doctor's Order Sheet
Organ Donor Maintenance
(Part I)**

Name:

MCP#:

Chart #:

Name: _____

Allergies:

No Known Allergies

1. Goals:

Maintain:

- Systolic blood pressure greater than or equal to 100 mmHg and/or MAP greater than or equal to 70 mmHg.
- Systolic blood pressure less than or equal to 160 mmHg and/or MAP less than or equal to 90.
- CVP 6 - 10 mmHg
- Temperature 36 – 37.5°C
- Urine output greater than or equal to 60 ml/hr
- SVO₂ greater than or equal to 60%
- Glucose 4 – 6

2. CVP Line, arterial line and at least 1 large bore IV.

3. Investigations:

- At request of donor nurse draw 12 tubes heparinized (Bright Yellow Top) (ACD) tubes, 2 lavender top tubes and 3 red top tubes – CMV, HbsAg, HbcAB, HIV, HIV2, HTLV1, HTLV2, HCV, EBV, RPR.
- Immediate CBC, cross match 6 units rbc's, ABG, urinalysis – routine and micro, electrolytes, glucose, LFT's, amylase, troponin, and CK.
- Repeat electrolytes, creatinine, glucose, urea, amylase and LFT's Q4h.
- Mixed venous gas Q2-4h in the presence of hemodynamic instability.
- Cultures for C & S of blood, urine and sputum.
- Serum lactate Q2-4h.



Cardiac/Critical Care Program

Doctor's Order Sheet Organ Donor Maintenance (Part I - continued)

4. For Hypertension: Mean Arterial Pressure (MAP) greater than 90 mmHg or systolic greater than 160 mmHg.

Wean and/or discontinue infusions started for hypotension

- Nitroprusside 0.5 to 5 mcg/kg/min
- Esmolol 100 – 500 mg/kg bolus than 100 – 300 mcg/kg/min

5. For Hypotension: Mean Arterial Pressure (MAP) less than 70 mmHg or systolic less than 100 mmHg.

- Vasopressin infusion to maintain MAP greater than 70 mmHg
 - start at 0.02 units/min and titrate to maintain Mean Arterial Pressure (MAP) greater than 70
 - maximum dose 0.04 units/min
- Norepinephrine 0.02 mcg/kg/min to 0.2 mcg/kg/min.
- Epinephrine 0.02 mcg/kg/min to 0.2 mcg/kg/min
- Phenylephrine 40 mcg/min and titrate to maximum of 180 mcg/min
- Dopamine titrate to a maximum of 10 mcg/kg/min

Physician's Signature: _____

Date: _____ Time: _____

Nurse's Signature: _____

Date: _____ Time: _____

Nurse's Signature: _____

Date: _____ Time: _____



Cardiac/Critical Care Program

Doctor's Order Sheet
Organ Donor Maintenance
(Part II)

Name:

MCP#:

Chart #:

Name: _____

Allergies:

No Known Allergies

6. Initiate Insulin Nomogram Order Sheet
7. If being enterally feed, continue. Discontinue on call to OR.
8. 5% D/W for maintenance fluid not 0.9% NaCl.
9. Height (cm), Weight (kg), thoracic girth at nipple line (cm), and abdominal girth (cm).
10. For Diabetes Insipidus (urine output greater than 4 ml/kg/hr associated with rising serum Na greater than or equal to 145 mmol/L and rising serum osmo greater than or equal to 300 m osmo)
 - DDAVP 4 mcg IV push PRN (should last 4 – 12 hours).
 - DDAVP 2 - 4 mcg IV Q6h for urine output greater than 4 ml/kg/hr
11. Thyroid Hormone: should be considered for all donors:
 - Levothyroxine (T4) 100 mcg IV bolus then 50 mcg IV Q12h
 - Levothyroxine (T4) 20 mcg IV bolus then 10 mcg/hr IV infusion
12. Methylprednisolone 15 mg/kg (less than or equal to 1 Gm) IV Q24h.



Cardiac/Critical Care Program

Doctor's Order Sheet
Organ Donor Maintenance
(Part II - continued)

For Heart Donor:

1. Insert PA catheter for evaluation of cardiac function
2. Echo (Cardiac)
3. Cardiology Consult
4. 12 Lead EKG then Q12h
5. Troponin Q12h

For Lung Donor:

1. O₂ challenge Q2 - 3h (100% O₂ for 15 minutes with 5 cm PEEP followed by ABG).
2. ABG Q2-3h.
3. Chest X-Ray
4. Bronchoscopy
5. Ventilate to maintain:
 - SaO₂ greater than or equal to 95%
 - ph 7.35 – 7.45
 - PaCO₂ 35 – 45 mmHg
 - Pa O₂ greater than or equal to 80 mmHg
 - PIP less than 30 cm H₂O

Physician's Signature: _____

Date: _____ Time: _____

Nurse's Signature: _____

Date: _____ Time: _____

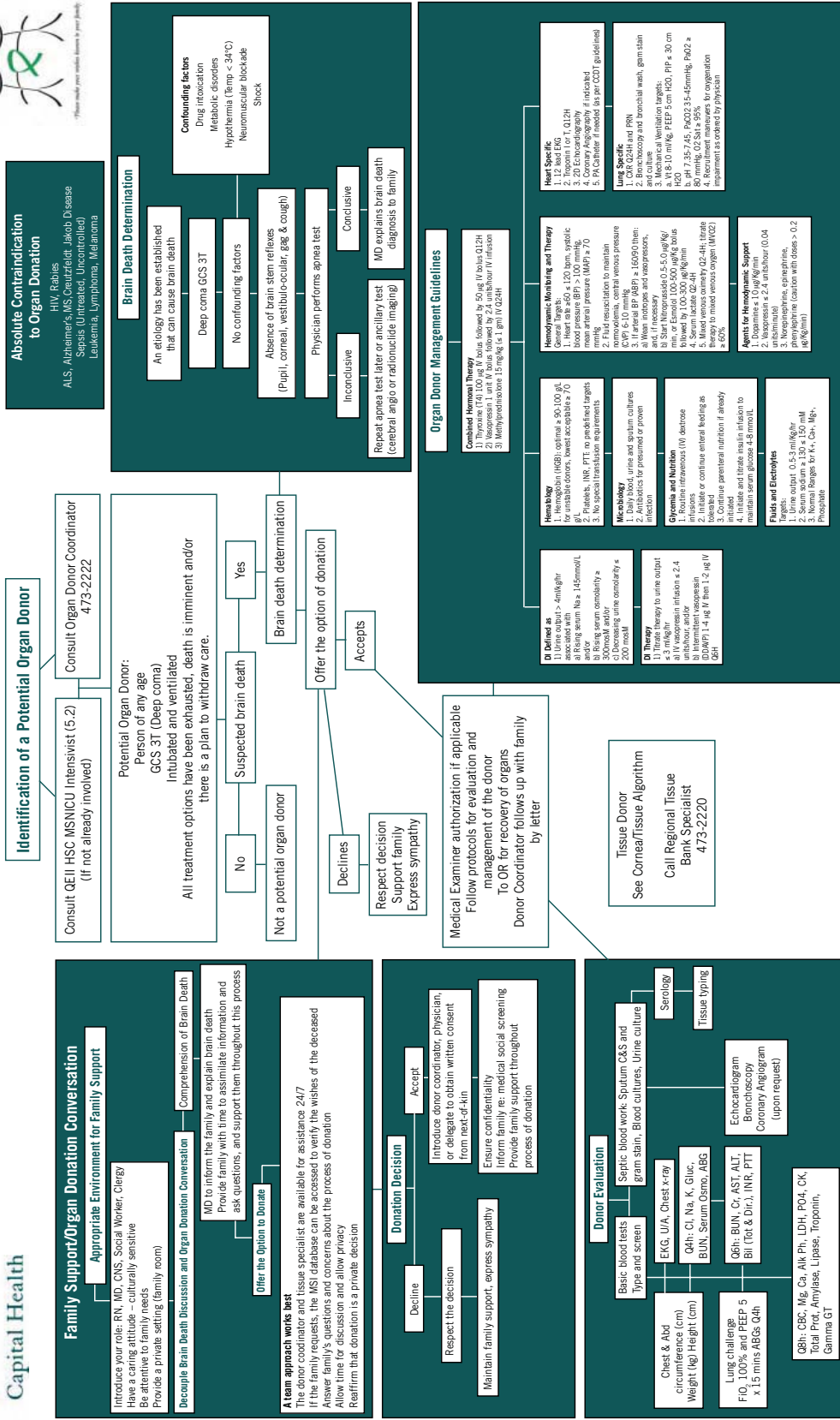
Nurse's Signature: _____

Date: _____ Time: _____

Organ Donation Algorithm



Organ Donation Algorithm



Developed by Capital Health, Critical Care Services, September 2005 Adapted from Quebec Transplant

Screening Form



Capital Health Screening Form Organ and Tissue Donation

The CDHA Organ and Tissue Donation Policy requires that all patients who die in hospital be evaluated as potential organ and tissue donors and their families offered the option of donation. Please screen using the following criteria and, if necessary, consult with the Organ Donation Coordinator or Tissue Bank Specialist.

Step 1

Quick Screen Criteria:

Contraindications

- Age >70 (for tissue donors)
- *No age restriction for organ donors*
- Sepsis (if treated, can be a potential organ donor)
- Leukemia, lymphoma, and melanoma
- Amotrophic Lateral Sclerosis (ALS), Alzheimer's, Creutzfeldt-Jacob Disease (CJD), Parkinson's or Multiple Sclerosis (MS)
- Unknown cause of death (patients having autopsies can still be donors)
- *Medical Examiner's consent required for ME cases*

Patient meets basic criteria: Yes: patient is a potential donor (go to step 2)

No: specify reason (sign and date below)
 age medical other _____

Step 2

Was the option of donation presented to the family?

- Yes: Accepted (contact Organ Donor Coordinator or Tissue Bank Specialist through locating 473-2222)
 Declined
- No: (specify reason) _____

Date (YYYY/MM/DD) _____

Signature of Physician completing form: _____
(print last name)



Address: HCTA
CD1082MR_08_06

Health Sciences Centre Clinical Triggers

The ICU has agreed to participate and implement the following triggers for early identification of Potential Organ Donors to Transplant Manitoba:

Intubated patient with Irreversible brain injury

Consider Mechanism of Injury:

- Intracranial Hemorrhage
- Traumatic brain injury
- Anoxic/Hypoxic brain injury

Brain Death Imminent or Inevitable

Consider all End of Life Care options:

- Organ Donation
 - Extubation
 - Palliation
- + Spiritual Care consult



www.transplantmanitoba.ca



Health Sciences Centre
Winnipeg

An operating division of the WRHA

- Discuss options with ICU Physician
- **Early referral to:**
Donor Coordinator (204 - 787-2071)
- Talk to the Family

24-hour on-call service via HSC Paging services

Have you given your patient the opportunity to G.I.V.E?

If your patient meets any of the following criteria, investigate their potential to be an organ donor.

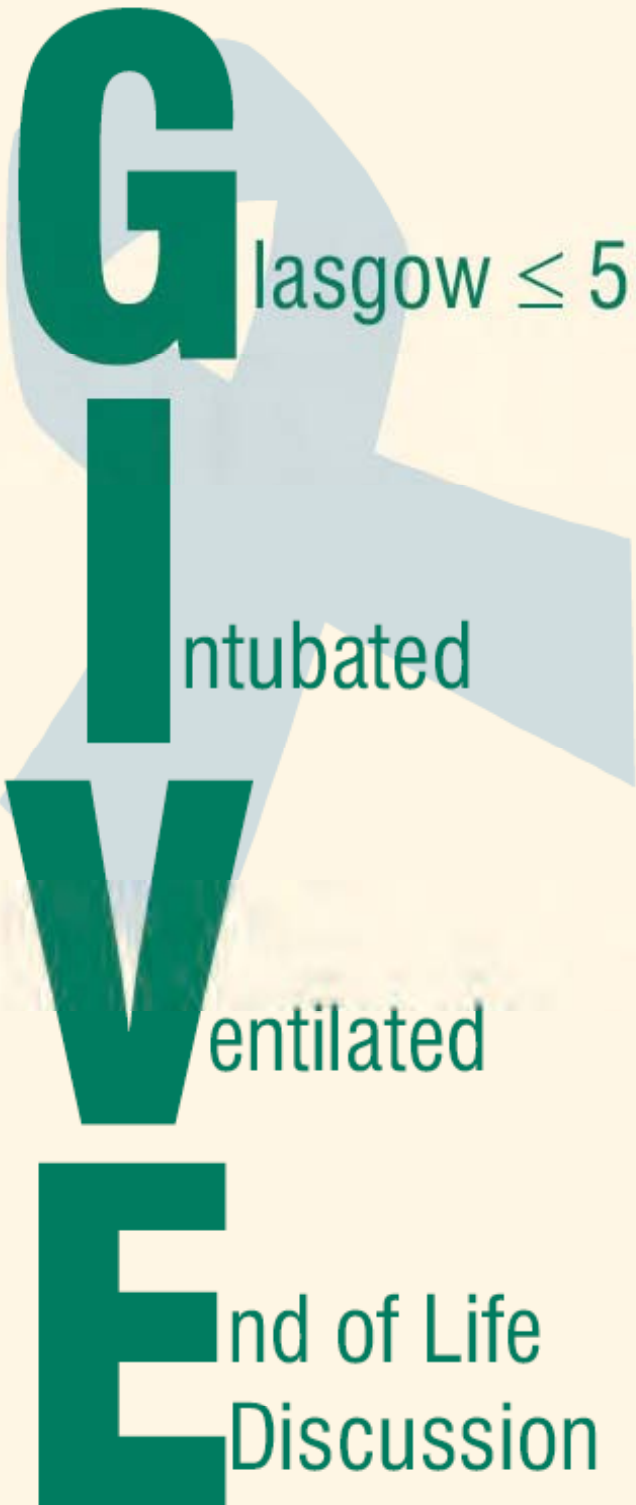
G: Glasgow Coma Scale ≤ 5
As a result of:

- Trauma
- CVA
- Ruptured Aneurysm
- Anoxic Brain Injury
- CNS Tumor

I: Intubated
Unable to maintain an airway independently

V: Ventilated
No respiratory effort

E: End of Life Discussion
Discussion of withdrawal of care initiated by health care providers or family members



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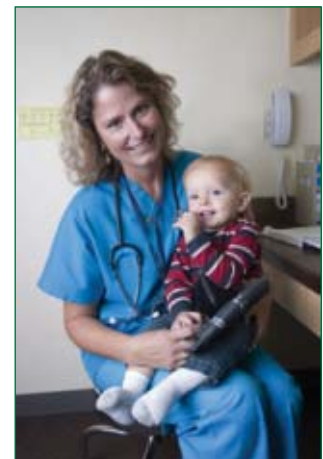
Theory into Practice

Introduction

Teams wanting to make lasting improvements in their organization, department or process can use the Improvement Model. An overview of the model was introduced in Section Two. This section provides detailed guidance on how to apply the model using examples from ODC teams.

In this section you will learn:

- how to set aims for improvement
- how to form an effective team
- how to establish measures for improvement
- how to develop, test, and implement ideas for improvement
- how to sustain and spread improvements to other systems



Setting Aims: What Are We Trying to Accomplish?

Improvement starts with agreement on a clearly understood aim. The more specific the aim, the better the chance that the team will be successful. When creating this plan, it is also helpful to include the project's context, boundaries and scope.

“We have to be bolder than we’ve been. We will never get there if timidity guides action. Marginal aims can be achieved with marginal change. But bold aims ... require bold change.”

—Donald M. Berwick, MD, MPP, President and CEO, IHI

Useful aims are often bold, comprehensive, and meaningful. Numerical goals that raise the bar of health care performance can be an effective way to communicate expectations, the level of support needed and the scale of change required.

For example, the approach to a 10 per cent improvement goal is very different from the approach required with a 50 per cent improvement goal. It is also helpful to include timelines on when goals can be achieved.

By setting a challenging goal as the aim, the team immediately recognises that the status quo is not an option. However, if the goal has no sound basis in research, no evidence of empirical examples or no explicit method for achieving the desired result, it may actually hinder team effectiveness.

Research and experience from other Collaboratives suggests that significant breakthroughs are achievable in improving organ donation. Methods are explicit in the Collaborative approach and avoid many of the pitfalls inherent in setting goals with no methods. Therefore, for the ODC, it was reasonable for the teams to establish significant goals for improvement.

An Improvement Charter (Appendix A) can help teams to document and communicate such promises and aims.

Examples

Below are effective aim statements, goals and timelines from ODC teams.

Team	Aim and Goals
Critical Care Organ Donation Program, Nova Scotia	To ensure that 100% of potential donors (from current referral rate of 72%) are referred to the donor coordinator in a timely manner by July 2007 while maintaining the organ donor conversion rate of 75%.
Capital Health – Royal Alexandra Hospital, Alberta	To increase deceased organ donations by 10% at the RAH by July 2007
Eastern Health, Newfoundland and Labrador	By July 2007, <ul style="list-style-type: none"> • to increase rate of organ donor referrals to 100% throughout the province of Newfoundland and Labrador • to increase public and professional awareness and knowledge of organ donation process • to increase conversion rates to 75%
Transplant Manitoba – Grace Hospital, Manitoba	<ul style="list-style-type: none"> • To improve the overall rate of organ donation in Manitoba by July 2007 in partnership with Transplant Manitoba. • To improve the overall organ donation rate of referrals from Grace Hospital by developing processes to ensure that all potential organ donors are referred, e.g. <ul style="list-style-type: none"> • implementation of clinical triggers for early referral of potential organ donor candidates • real-time death audit

Forming Teams

One important success factor for a team is its members' commitment to work together toward a shared aim. Team coordinators need to review the aim and scope of the initiative to determine what areas of the system and what disciplines should participate. Team members need to be able to meet frequently and work efficiently and effectively to institute change.

Three different types of expertise are required on the team: day-to-day leadership, technical expertise and system leadership. There may be one or more individuals who represent these areas, or one individual may represent more than one type of expertise.

Day-to-Day Leadership

The team needs front-line people who work in the process on a daily basis and who will understand the effects of the planned changes. These people must have the desire and ability to drive the project to its aim. Day-to-day leadership includes a team leader who provides an understanding of expectations and scope and who leads activities to accomplish the desired results.

Technical Expertise

The team needs a subject matter expert who understands the targeted topic and process of care. Additional support may be provided in using the Improvement Model, designing and testing changes, facilitating meetings, collecting and interpreting data, and preparing presentations.

System Leadership

The team needs a “sponsor”, a senior leader who has enough influence within the organization to implement and sustain the changes. The sponsor must be able to support the team with time and resources, which will assist in achieving the aim and removing any barriers to success.

Membership on most collaborative teams includes an administrator, a physician, and a nurse, with allied health professionals who work on the process of care under consideration (e.g., respiratory therapists, spiritual care and social workers).

Effective teams usually range from three to eight members. Others may participate as extended team members by providing input into plans and participating in tests of change.

The Improvement Charter (Appendix A) can also be used to help teams to document membership, roles and responsibilities, and principles for working together. This record may help to prevent problems later on.

Examples

The following examples illustrate the multi-disciplinary nature of the teams and the importance of senior leader membership.

- Capital Health – Royal Alexandra Hospital
 - ethicist
 - social worker
 - emergency and intensive care unit physicians
 - organ donation organization representative
 - respiratory therapist
 - pastoral care services representative
 - operating room manager
 - nurse educator, registered nurse and certified nurse specialist

- Eastern Health, Newfoundland and Labrador
 - physicians from ICU/respirology, emergency medicine and paediatrics
 - general surgeons and neurosurgeons
 - organ procurement organization representative
 - registered nurses, nurse educator
 - respiratory therapists
 - ethics/pastoral care representative
- Providence Health Care, British Columbia
 - critical care/trauma co-ordinator
 - ICU operations leader
 - ICU medical director
 - ICU research and nurse educator
 - VP of Mission, Ethics and Spirituality
 - professional practice leader of Respiratory Therapy
 - respiratory therapist
 - quality improvement specialist

Establishing Measures: How Will We Know That a Change Is an Improvement?

Why Measure?

Measurement is not the goal of improvement; however, it plays a key role in understanding whether changes are leading to improvement.

“You can’t fatten a cow by weighing it.”
—Proverb

Measures for improvement perform a function similar to that of the vital signs of a patient. They are one way to understand processes and systems of care. They are tools to help learn about, manage and improve care. They also provide teams with a common base for communication. Measures may be misused when they are not used as a basis for action or when they are used for judgment and comparisons, not for learning and improvement (see the following table).

“Measurement is almost always destructive in a non-learning environment.”
—Ronald Moen, *Associates in Process Improvement*

Table: Measurement for Judgment and Learning

Measurement for Judgment	Measurement For Learning
Used to make judgments and comparisons; to reward, motivate or punish	Used to make improvements to the system
Compares data to standards and specifications (plans, goals, budgets and targets)	Compares data to their historical performance and relationship with other variables
Ignores variation, systems and interactions	Understands variation, systems and interactions
Assumes “if you can’t measure it, you can’t manage it”	Recognises that “the most important figures ... are unknown and unknowable” (<i>Lloyd Nelson, statistician</i>)

Measures are of greatest value to those working in the system and those who are able to exert direct influence on a process that delivers care. In addition, team sponsors should be interested in how measures are developed and be involved in their design.

The Measurement Checklist (Appendix C) can help teams to design a measurement system for improvement.

Deciding What to Measure

Using more than one measure will help put the data in context and avoid optimizing one measure at the expense of other measures. Two to six measures are usually sufficient to determine whether changes are leading to improvement.

Three types of measures can be included:

- **Outcome measures** are determined by the aims identified in the Improvement Charter. These measures indicate whether changes are leading to improvement and achieving the overall aim of the project.
- **Balancing measures** help a team understand the effects of their changes on the broader system and to understand relationships, interactions and subsequent trade-offs between measures. Balancing measures are used to ensure that changes to improve one part of the system are not causing new problems in other parts of the system.
- **Process measures** indicate whether a specific change or PDSA cycle is having its intended effect. Affecting an outcome measure may require changes to several processes in the system, and a team may use several process measures in the course of its work. The assumption is that improvements in process measures will eventually improve the outcome measure.

Documenting Operational Definitions

Once measures have been identified, teams can work to make operational definitions explicit. Operational definitions give communicable meaning to a concept by specifying how the concept is applied in a particular set of circumstances. They facilitate communication between team members and external groups by using terminology and definitions that have a meaning common to all. Definitions reduce measurement variation, allowing for replication and continuity. A simple test for completeness is to give the measurement definition to a team member to see if she or he can replicate the procedure and interpretation.

Operational definitions can be thought of as useful for a purpose, not as right or wrong.

“There is no such thing as a fact in terms of any measurement or observation. A change in the procedure for measurement (change in operational definition) or observation produces a new number.”

—*W. Edwards Deming, PhD, The New Economics*

Examples

Below is an example of an operational definition for a key measure in the Collaborative. All definitions are included in Appendix H: ODC Measurement Strategy

- **Conversion rate** is defined as the percentage of organ donations (i.e., actual organ donors divided by eligible donors, expressed as a percentage).
- **Numerator:** Actual organ donors, those consented who proceed to donation with at least one organ transplanted.
- **Denominator:** Eligible organ donors: all patients who have died matching the following criteria:
 - Severe brain injury
 - Suspected brain death (upon chart review)
 - Confirmed brain death
 - And includes missed eligibles = consent not obtained and/or not approached and/or failed physiological support and/or any other reasons for no organ retrieval
- **Data collection:** Derived from death record reviews of eligible organ donors and index of potential donors either not consented, not approached or who fail to progress to donation for some other reason. The data collection system captures 100 per cent of patient deaths in hospital, screens to identify potential organ donors’ and medical record review gives ‘eligible organ donors’
- **Sample:** Review 100% patient deaths that were ventilated
- **Frequency:** Reported monthly

Accelerating the Use of Measures

Teams sometimes delay testing and implementing changes until they have collected baseline and supporting data. For teams doing improvement work in a collaborative, measurement should be used to speed things up, not slow them down.

To accelerate the pace of improvement, accelerate the use of measures:

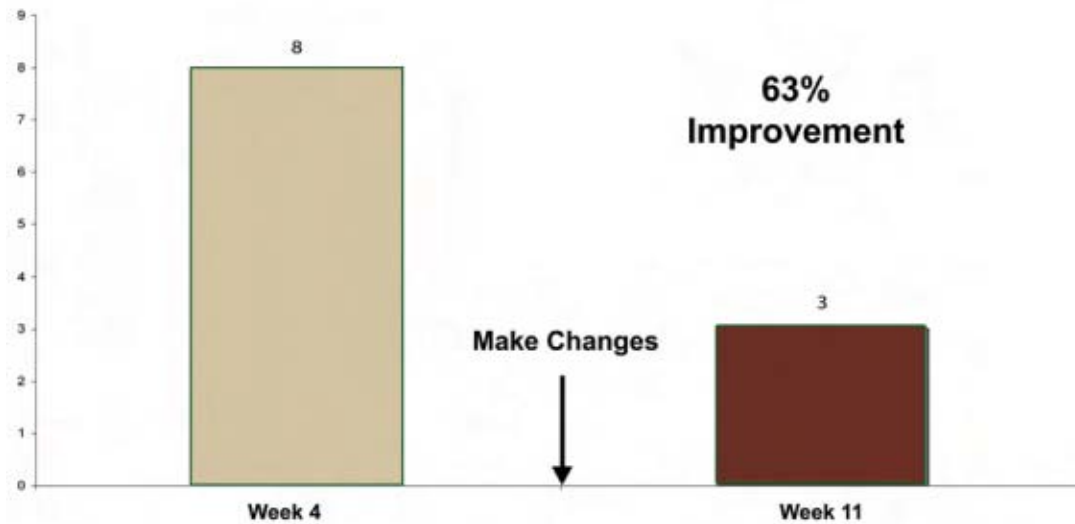
- **Plot data over time.** Much information about a system and how to improve it can be obtained by plotting data over time and observing trends and other patterns. Tracking a few key measures over time is the single most powerful tool a team can use.
- **Use sampling.** Sampling is a simple, efficient way to help a team understand how a system is performing. For example, teams could review all hospital charts to understand use of clinical triggers, but this kind of data collection would consume many resources. Instead, one team could choose a sample of one day per week. Sampling for improvement purposes means collecting just enough data to answer the questions that the team is trying to answer. Often, it means smaller sample sizes collected more frequently and displayed over time.
- **Integrate measurement into the daily routine.** Use or modify existing forms and information systems rather than designing new ones. Instead of waiting to receive data from the information systems department, develop and use simple manual data collection forms. Make collecting the data part of someone's job. Often, a few simple measures will yield the information the team needs.
- **Use qualitative and quantitative data.** In addition to collecting quantitative data, qualitative data should also be collected. It is often easier to obtain and can be highly informative. Talk to people in the system about which issues are the most important or what they have observed. Later, the team can confirm perceptions with quantitative data. Asking patients and their families open-ended questions about their experiences is a good way to focus on improving patient and family satisfaction.
- **Seek usefulness, not perfection.** Measurement is not the goal; improvement is the goal. To move forward to the next step, a team needs just enough data to know whether changes are leading to improvement. Teams should avoid collecting data “just in case”.

Interpreting Results

When changes are developed, it is predicted that there will be an improvement, but this is not always so. One study estimated that only 25 per cent of changes actually result in improvement; the other 75 per cent are either neutral or negative (*Qual-Pro Consulting Inc.*). So, what is the best way to decipher whether a change is leading to improvement?

One of the simplest ways to examine a change is by plotting the data collected over time. Problems may arise though if not enough data is collected. Caution should always be used to avoid misrepresentation. To illustrate this point, the following chart shows the results of a before-and-after evaluation of a test to reduce wait times. Baseline data was collected on week 4 and the change was tested in weeks 7 and 8. Data was again collected on week 11.

Before and After Evaluation



** Text and figures are excerpts from Chapter 2 of Quality Improvement through Planned Experimentation by Moen, Nolan and Provost. McGraw-Hill, July 1998.

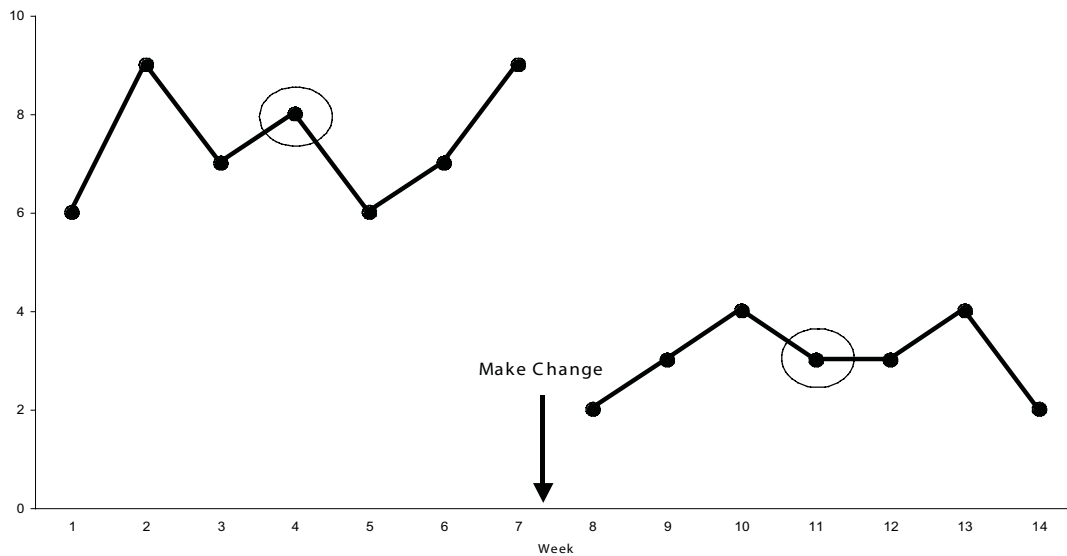
The 63 per cent reduction in wait times by week 11, from eight hours to three hours, was considered significant. These test results seem to predict that the change, if implemented, would lead to improvement. Are there other interpretations of the data?

Other interpretations of the same data

The next set of graphs shows run charts for four other possible scenarios, each of which offers an alternative explanation of the test results. In each case, a run chart of wait times for weeks 1 to 14 is shown. The test results for week 4 (eight hours) and week 11 (three hours) are the same for all cases.

The following shows one possible scenario that could have yielded the results observed.

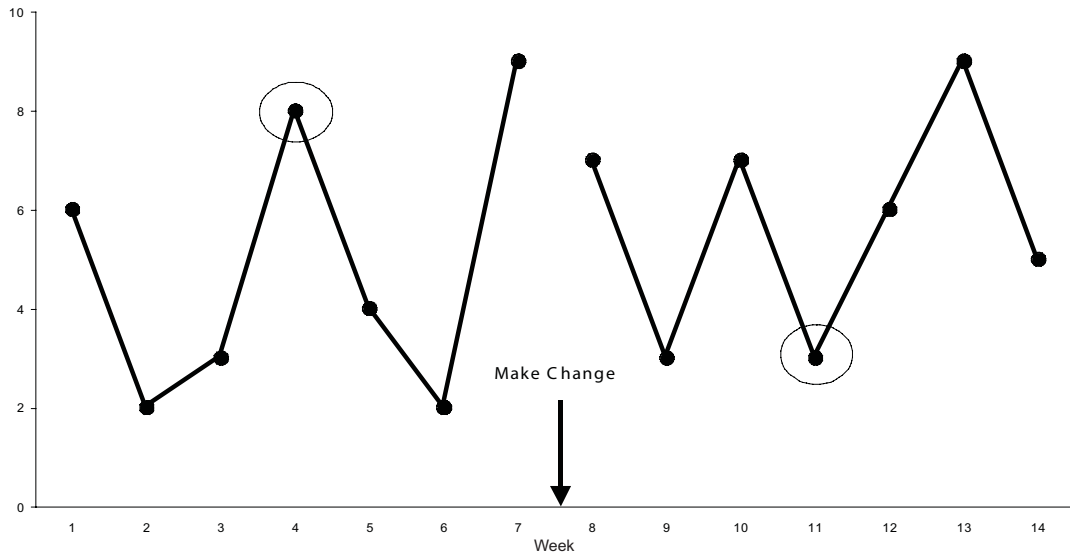
Case One



Analysis:

This run chart seems to confirm the conclusion that the change did result in a meaningful improvement. Wait time prior to the change averaged 8 hours and after the change averaged 3 hours.

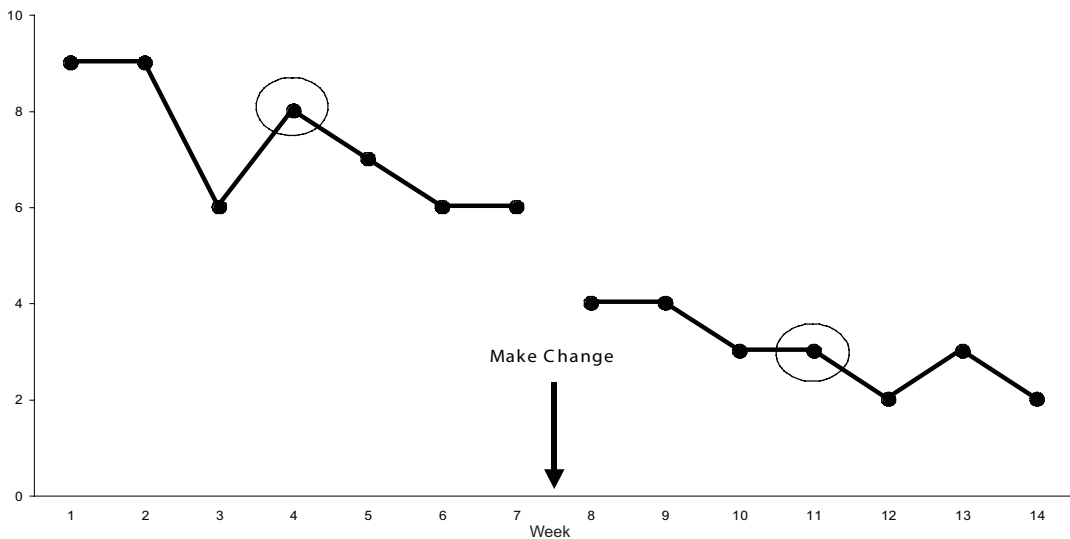
Case Two



Analysis:

There is no obvious improvement after the change is made. The measures taken before and after the change are typical results from a process that has a lot of week-to-week variation. The change did not have any impact on wait time.

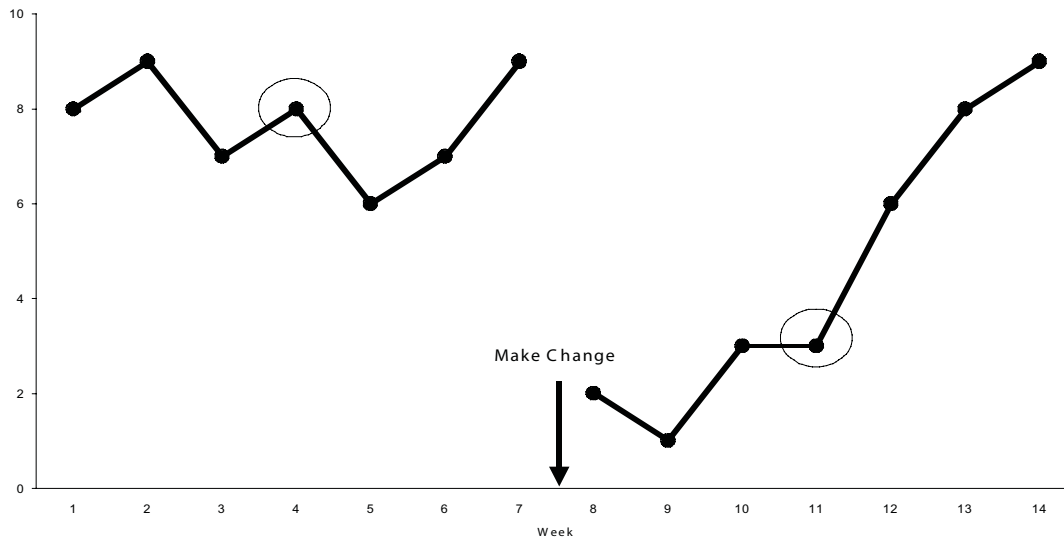
Case Three



Analysis:

It appears that wait time was already steadily improving over the 14-week period, and the rate of improvement did not alter when the change was introduced. There is no evidence to suggest that the change contributed to the steady improvement over the 14 weeks.

Case Four



Analysis:

An initial improvement was observed after the change was made, but in the last three weeks the process seemed to be returning to its pre-change level.

The results may be due to the Hawthorne effect. The Hawthorne effect is named after productivity tests conducted in the 1920s at the Western Electric Hawthorne plant. Whenever changes were made in the work environment, initial improvements were observed, but performance quickly returned to normal levels after workers became used to the change. This is similar to a placebo effect. Initial improvement can be attributed to people paying particular attention to the measures or process of interest.

Later, when focus on the change is lessened, performance reverts to the original levels. As a result, improvement is not sustained over the long term.

These examples show why the simple before-and-after evaluation is often not rigorous enough to confirm the impact of a change. A time dimension is needed to put the data in context and to see if a change is really an improvement.

The simplest alternative is to sample more frequently and to plot the data over time using an annotated run chart, both before and after the change.

It is always possible that some other cause, not the planned change, could be responsible for the observed effects. One approach to increase the thoroughness of testing is to remove the change and see if performance reverts back to its original levels; another approach is to test the change in a study group and compare it to a control group.

Displaying Data

As mentioned, most potential learning from data is easily accessed through graphical display. Effective displays help users make sense of data, and graphics tend to highlight variability or trends. Natural graphics—pictures, drawings, photos and video recordings—support a systemic view and help communicate important messages. Most data displays are quick and easy to prepare. Generally, success in graph creation is found in simplicity of design and complexity of data.

“Design graphics to give the viewer the greatest number of ideas in the shortest time with least ink in the smallest space.”

—Edward Tufte, PhD, *Visual Display of Quantitative Information*

Other principles to keep in mind:

- Display data over time.
- Show data in context.
- Provide clear, detailed and thorough labelling.
- Represent the numbers such that they are directly proportional to the numerical quantities being measured.
- Ensure that dimensions in the graphic do not exceed information-carrying dimensions in the data (i.e., for two-dimensional data, use two-dimensional graphics).
- Present horizontal graphics 50 per cent wider than tall.
- Use tables for small data sets.

“These principles should generate design options that guide choices among options. They should not be applied rigidly or in a peevish spirit.”

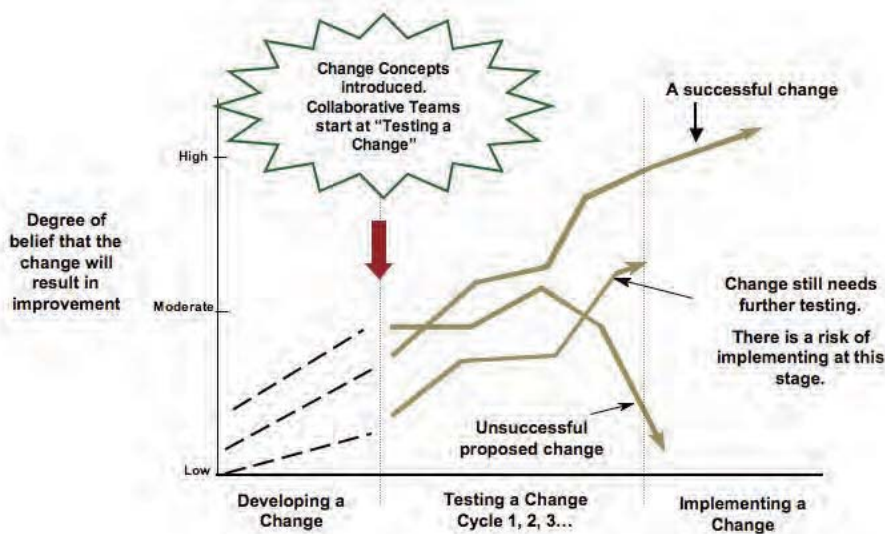
—Edward Tufte, PhD, *Visual Display of Quantitative Information*

Developing, Testing and Implementing Changes: What Changes Can We Make That Will Result in Improvement?

Not all changes tested result in significant improvement. The degree of belief that the change will result in improvement is increased with each successful test of the proposed change. This belief is based on the extent to which the evidence in testing supports the prediction and theory, and the similarity of the test conditions to the actual conditions.

The illustration that follows shows how degree of belief is increased through the three phases of developing, testing and implementing a change.

Developing, Testing and Implementing a Change



Developing a Change

When developing ideas for change, the team is making a prediction that the change will be beneficial in the future. There are several sources for developing good ideas for change:

- applying high-leverage Change Concepts as described in Section 3
- through critical thinking using tools such as flow-charting, brainstorming and process analysis tools
- watching the process in action
- using observation, focus groups and surveys for feedback
- through insight from research and benchmark data
- asking process participants or subject matter experts for ideas.

Testing a Change

Collaborative teams start with high-leverage Change Concepts and then translate those concepts into specific ideas for testing in their sites. These ideas are then tested on an appropriate scale to increase the degree of belief that they will bring improvements and to reduce risks, to ensure that there are few or no failures upon implementation.

“All improvement requires a change; not all changes are improvements.”

—Langley *et al.*

Testing is vital even if the team has

- spent a lot of time, energy, and analysis on developing the idea
- buy-in and agreement from sponsors and stakeholders
- planned and analysed every detail of the new design and there do not appear to be any problems
- a business case to justify the cost and benefit
- benchmarking studies to prove that the idea has worked in other health care systems

The importance of testing cannot be understated. Uncertainties about future conditions and unplanned events often arise between when a change is identified and when it is implemented. The environment may change, the intended impact on the measures may not materialise or there may be unintended, undesirable impacts in other areas.

Most ideas should be tested on a small or medium scale and under multiple conditions before implementing them. Collecting data over time is critical to seeing when a change is leading to an improvement.

Using one cycle to implementation should only be considered when there is a high degree of belief that the change will be successful, when there is evidence that the losses from a failed implementation would not be significant, and when there are no ways to test the change on a smaller scale.

The following table may help teams decide on the appropriate scale of testing:

Table: Deciding an Appropriate Scale of Testing

Consequence of a Failed Test	Degree of Belief in Success of the Change	
	Low	High
Minor	Medium-scale tests	One cycle to implementation
Major	Very small-scale tests	Small to medium-scale tests

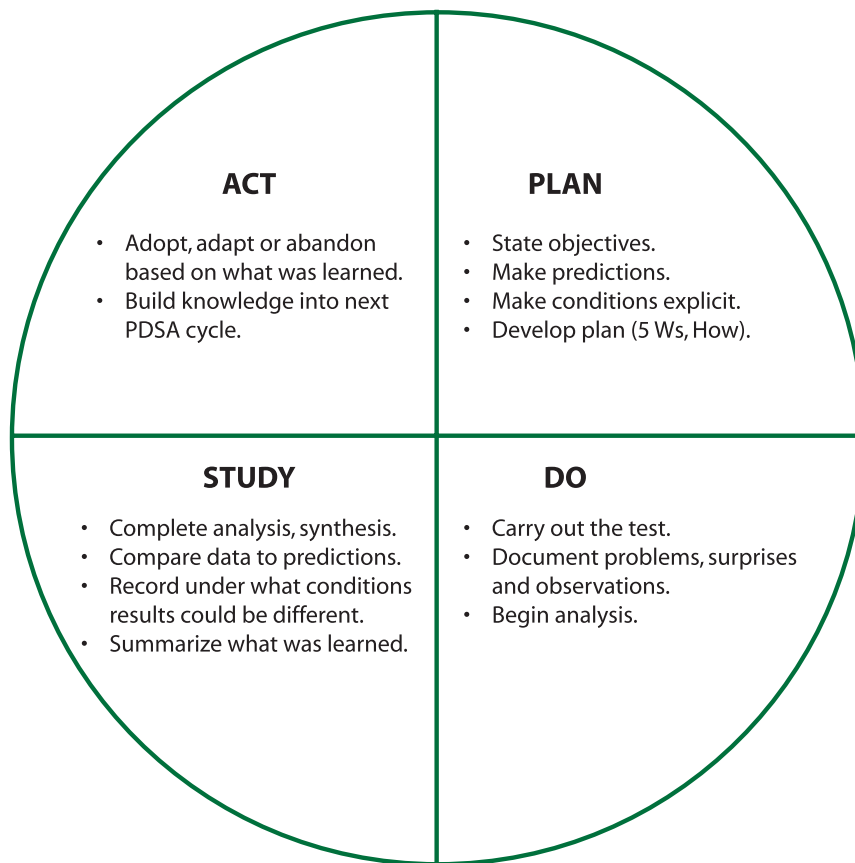
If tests are not yielding expected results, teams should consider discontinuing and trying something else. Failed tests are a gift that every team should value, as they are vital in learning how to refine ideas for implementation.

Using PDSA Cycles

Changes can be tested through the Plan-Do-Study-Act (PDSA) cycle: planning the details of the test, including predictions and theories (PLAN); trying the idea on a small scale and collecting data (DO); comparing the results of the test with plans and predictions (STUDY); and then transforming what was learned into action (ACT).

Often, each PDSA cycle provides a basis for the next. The diagram below provides detail on what should be considered in each phase.

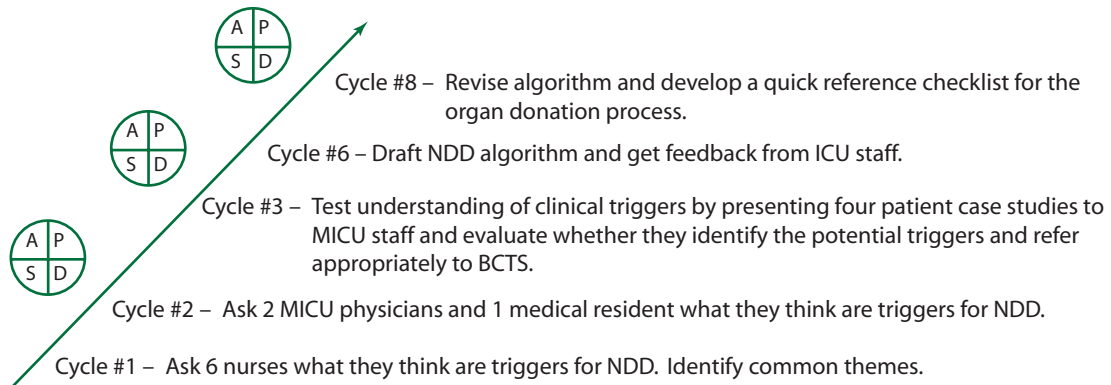
The PDSA Cycle



Building knowledge and degree of belief is an iterative process. Small-scale and frequent PDSA cycles conducted under multiple and varying conditions will help the teams learn as they go.

Sequential Building of Knowledge

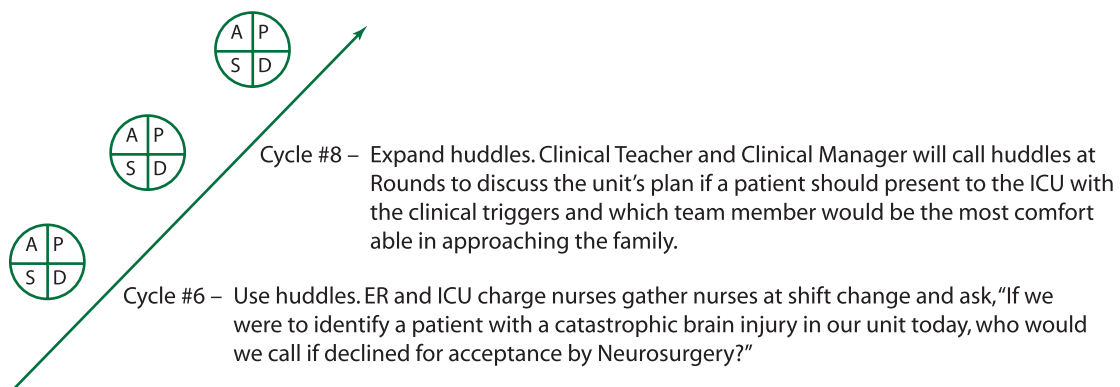
Kelowna General Hospital in British Columbia conducted several PDSA Cycles, testing their approach for clinical triggers prior to implementation.



Change Concept:

Establish clinical triggers to aid in early identification of potential donors.

The Grace Hospital in Winnipeg, Manitoba tested and expanded the use of huddles to establish a self-organizing team to respond to potential donors.



Change Concept:

Establish a flexible self-organizing team.

Accelerating the Learning

During the design of PDSA cycles, teams should continually ask how they can still gain knowledge about the change while reducing risk to the system. There are many ways to design useful, small-scale tests:

- Simulate the change.
- Have others review the change for feasibility.
- Conduct the test over a short time. Instead of saying “We need two weeks to run the test” ask, “What could we do by next Tuesday?” For example, Collaborative teams are challenged to complete one PDSA cycle within three days of leaving the first learning session.
- Use the 1:1:1 rule: Conduct the test in one location with one clinician and one patient. Scale down each test into manageable cycles and then expand conditions as knowledge about the change builds. For example, try a change on one shift or in one unit first.
- Use manual or pre-existing data collection methods and sampling. For example, one Collaborative team used existing forms and added an additional field. Another team involved families in data collection.
- Recruit a small group of volunteers. Use the improvement team as the initial sample or identify “early adopters”—those who like change and would be willing to try. Delay consensus or buy-in until later stages. For example, one Collaborative team tested initial changes within the unit of one of the team members. Once the change was refined and proven to work, others could see benefit in testing the idea.
- Break the change into smaller pieces.
- Think ahead. Consider what the results might be and think about what the next cycles could be.
- Use temporary support systems for testing, such as manual or pre-existing forms.

Implementing a Change

Teams are ready to implement changes when their degree of belief is high, that is, when they are confident that the change will be an improvement in their system. Although testing involves trying and adapting different ideas for change, implementation means that a change becomes a more permanent part of the day-to-day operation.

Implementation is similar to testing in the following ways:

- PDSA cycles are used to build knowledge of the implementation process and translate that learning into action.
- Predictions are made.
- Data are collected.
- Unexpected and unplanned impacts are documented and studied.
- New knowledge is built into subsequent plans.

The following table demonstrates how implementation and testing differ.

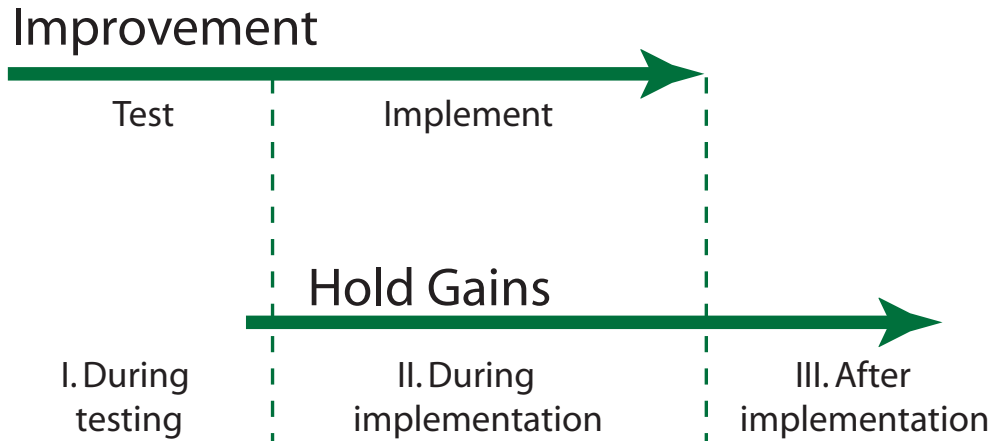
Table: Testing Versus Implementation

	Testing	Implementation
Expectations of Failure	25–50% of tests should fail Failed tests are critical to learning and building knowledge. They help teams understand under what conditions their ideas will not work and why.	No implementation should fail With an appropriate amount and scale of testing done under multiple conditions, few or no implementations should fail to achieve expected results.
Support Processes (training, documentation, such as job aids and flowcharts, standardization)	Less important Changes are not permanent and will be refined as testing continues.	Very important Training and documentation are two ways to hold the gains. They provide a consistent view and help others to understand the new process. Standardization is a helpful method to reduce variation and assure results.
Resistance to Change	Less important Communication of the aim is critical. Engaging staff in testing of changes is one strategy to mitigate resistance and build commitment. Because changes are not permanent, people can provide feedback. Ongoing measures provide evidence of whether the changes are resulting in improvement.	Very important With appropriate testing, resistance to change is mitigated. All change has social and emotional aspects to it. As changes become permanent, recognize the human impact of the change. Communicate why the changes are required. Results from testing can be used to show how the change will be an improvement.
Measures	Focus on outcome measures and include balancing The focus is on outcome measures of the immediate process. Some balancing measures are needed to ensure that the changes do not have a negative impact on other areas.	Focus more on balancing measures Balancing measures become more important. Additional measures of the system may be needed. Outcome measures are still used to ensure that changes have the intended impact and to hold gains developed in testing.

Holding the Gains

Once changes are tested and implemented, teams are challenged to hold the initial gains, and to ensure that improvements are permanent and that the system does not revert back to its previous performance. Holding the gains starts in the testing stage of improvement and continues through implementation.

Holding the Gains



- **Testing.** During the testing stage, teams will want to test changes under a wide range of conditions, and force the changes to fail in order to understand their limitations. This is called “robust design” in product and service development. Planned groupings, especially with extreme samples, can help the team understand how the changes work in the local system. Teams can make the new process foolproof with short feedback loops, using mechanisms to avoid errors, and technology where appropriate. Measurement during testing is used to understand which ideas have the most power to accomplish the aims and outcomes set out in the original Improvement Charter.
- **During Implementation.** It is important to seek and use contributions from people who may be affected. Senior leaders need to address the social aspects of change with frequent, interactive communication. They need to explain the “why” of the change and how it may affect people, and they must understand and address the causes of resistance. Leaders must also publicize results and show appreciation for team efforts. Support processes often need to be updated to reflect the new process. It may be helpful to map the flow of the new process, provide training to those affected and document learning to be used in subsequent projects. Teams may find it useful to ensure the default action is the desired action by making it difficult to revert back to previous behaviours.

- **After Implementation.** Once implemented, changes can be described as permanent—integrated into the daily work and “the way we now do business”. Teams may continue to use multiple PDSA cycles to organize and manage implementation and to assist in additional learning. After changes have been implemented, there is a natural tendency for teams to want to move on too soon to other priorities. Assumptions such as “We met our goals and figured that the improvement would hold” and “This is an isolated project with a start and finish” often prevent the long-term realization of goals. The consequence is that the improved system could revert to the old way of doing things. It is suggested that teams continue monitoring key outcome measures and integrate the process into the normal everyday workings of the system; for example, results could be reviewed at senior leadership meetings and compared to expected standards. Changes should be built into the infrastructure of the organization; for example, job descriptions, policies and legal documents may require review and modification. It also helps to assign ownership to a senior leader for holding the gains, to provide recognition to team efforts and to celebrate successes along the way.

A collaborative is an intense and focused initiative that usually has a designated end-date. The Institute for Healthcare Improvement (IHI) studied team results after participating in a Breakthrough Series Collaborative. Overall, most teams continue to make improvements after a Collaborative has ended. However, the weakest elements seem to be in formal documentation of the improved process, identification of financial return on investment and implementation of spread plans.

The reasons teams give for failure to hold the gains include abrupt changes in funding, turnover of staff or leadership and the departure of a key champion. The “measurement trap”, where leadership bias to certain measures diminishes others, also has an effect.

Key success factors include internal publicity to communicate intention, organizational commitment through dedicated resources, and the assignment of leadership. Often, successful organizations understand that the end of a formal Collaborative is only the beginning of an improvement journey. Small successes are a step in the right direction.

Spreading Successes

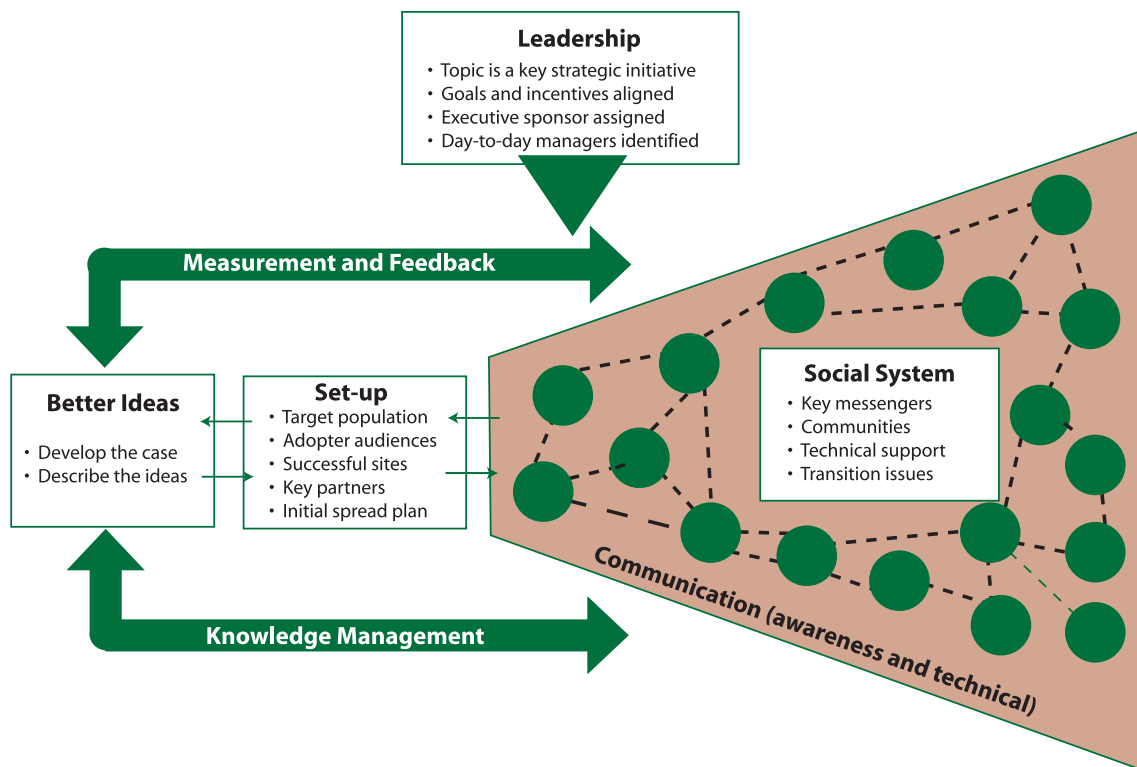
Spreading successes means disseminating the changes beyond the scope of the original charter. A team is ready to spread its ideas and successes to other parts of the system when:

- It has been successful at testing, implementing, and holding the gains in its own environment and can demonstrate its results through data and experience.
- There is will among senior leaders and sponsors to spread the changes developed in the collaborative.
- The topic is an important priority for the organization and is explicitly communicated in strategic and business plans.
- A senior leader has been assigned to spread the changes.

The IHI has developed a framework for spread. The Veteran’s Health Administration has successfully applied the model to spread same-day access to 4,600 providers across the United States, affecting almost four million patients.

The framework is not meant to be prescriptive or considered as a specific set of interventions. Instead, it is meant to suggest some general areas, based on theory and experience, to consider as a large spread project is undertaken. Factors such as a system’s infrastructure, culture, size, and the strength of the underlying social and operational systems will influence how the following components of the framework are applied.

A Framework for Spread



The framework includes six elements:

- Leadership: setting the agenda and assigning responsibility for spread
- Better ideas: describing the new ideas and using evidence to “make the case” to others
- Set-up for spread: identifying the target population and the initial strategy to reach all sites in the target population with the new ideas
- Social system and communication: understanding the relationships among the people who will be adopting the new ideas and methods to increase awareness and share technical information about the new ideas
- Knowledge management: observing and using the best methods for spread as they emerge from the organization
- Measurement and feedback: collecting and using data about process and outcomes to better monitor and make adjustments
- As depicted above, spread happens over time and contains multiple feedback loops.

Leadership

As changes are spread beyond the original charter, outside the control of the improvement team and away from Collaborative structure, infrastructure within the target population's organization becomes increasingly important. Organizational plans, priorities of key stakeholders, leadership attention and executive sponsorship have an influence. For example, topics for improvement need to be included in operating and strategic plans. An executive may need to be assigned to spread activities. Some teams have needed to address budgeting processes, technology acquisitions and staffing.

Better Ideas

This element provides information about why the innovation is needed and addresses what is being spread—the new ideas, processes, and change concepts. The case for change may include data concerning the gap between current and ideal practice, why the improvement is important for the system from a variety of perspectives, and the benefits for both clinicians and providers. It is also helpful to include evidence that the new system is better through data, examples and personal stories.

Diffusion of innovation research suggests that new ideas are more likely and more quickly to be adopted if they are:

- better than the alternative
- simple to understand and use
- compatible with existing value systems
- testable before making a commitment
- observable

In health care, the strength of the evidence in published literature can be additional criteria to consider. The following checklist can be used to identify activities to increase the likelihood of spreading ideas.

Ideas Checklist and Diffusion of Innovation

From the viewpoint of your spread population, evaluate the change on the following characteristics:

	Score	Plans to Increase
Relative advantage	1 2 3 4 5	
Simplicity	1 2 3 4 5	
Compatibility	1 2 3 4 5	
Trialability	1 2 3 4 5	
Observability	1 2 3 4 5	
Strength of evidence (health care-specific)	1 2 3 4 5	

Score: 1 (low) to 5 (high)

Plans to increase: What can we do to increase the score and increase chances that the idea will be adopted by target population/spread community?

** Based on an idea from Jim Roberts, MD VHA, the research of Everett Rogers “Diffusion of Innovation” and described in Paul Plesk’s paper “Spreading Good Ideas for Better Healthcare: A Practical Toolkit”.

Publications, videos, reports, documents and “frequently asked questions” can help people to become aware of, understand, and apply the change. This guide is one example. It is important for a team to continually assess the quality and usefulness of such resources.

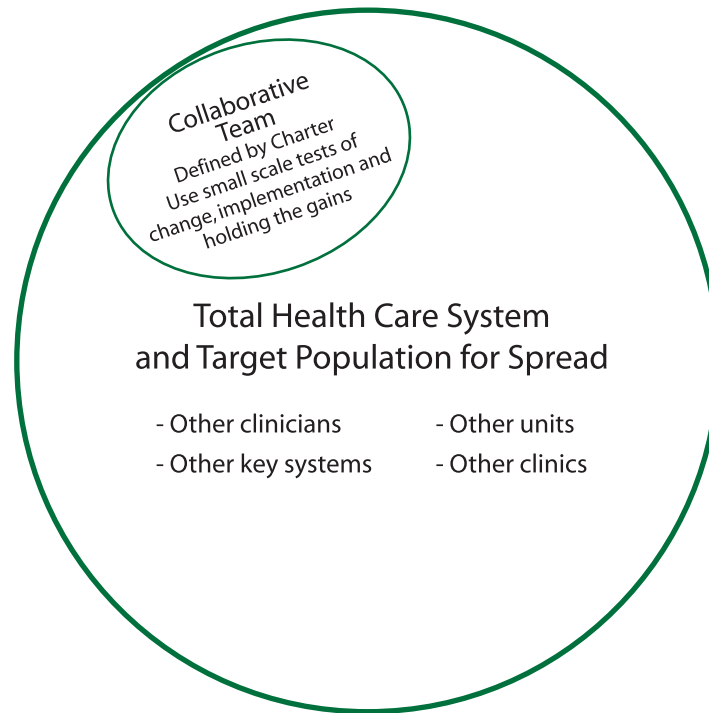
Set Up for Spread

To identify a spread population, teams and sponsors should identify who else might benefit from the new ideas, where the changes are needed most, and where they could be successful. Look for one or more specific locations, providers, or sub-systems.

Some teams look outside of their immediate departments or areas to spread their changes. For example, the team may want to spread changes to other departments within the same hospital.

Other teams consider providers in the same profession or program or have similar processes and issues but may exist in different organizational systems. For example, a tertiary care hospital may spread changes to a community health centre or a long-term care facility.

Collaborative Team and Potential Spread Populations



Teams may identify several potential audiences. It is important to appreciate the context of the spread population and the underlying motivations for wanting to adopt the change. Local adaptations and innovations must be considered.

Many teams teach the Improvement Model, PDSA cycles and small-scale tests of change to assist others with adapting changes for their environment. An overall spread plan that includes timelines and specific changes can be useful.

Spread Plan

What Change?	Where?	By When?	Who's Responsible?

Social System

How information is disseminated is complex and non-linear, and includes both formal and informal resources. The goals of communication are to build awareness of the new idea and to create technical knowledge of how to apply that idea in a new environment. How a message is communicated is as important as the message itself. It is useful and often very helpful to use frequent, informal and interactive means such as storyboards and face-to-face interactions.

Methods of Communication



In addition, using peer-to-peer communications can be an effective way to reach a target population. This is often a two-step approach. First, teams should identify key opinion leaders, early adopters and connectors in the target population to help disseminate the change. One way is to ask questions:

- “Among your peers, whose opinions do you most trust and respect when evaluating whether a new idea is appropriate for your practice?”
- “Among your peers, who is the first to try a new idea?”
- “Among your peers, who has many natural connections (social and professional) and bridge many environments?”

Second, these individuals should be trained and educated to effectively communicate to providers in their network.

Measurement and Feedback

Many teams have found ongoing measurement of key indicators to be useful in keeping the change front and centre. Quantitative and qualitative data are reviewed regularly, often in real time, and plans are adapted based on what is learned about the spread process.

Knowledge Management

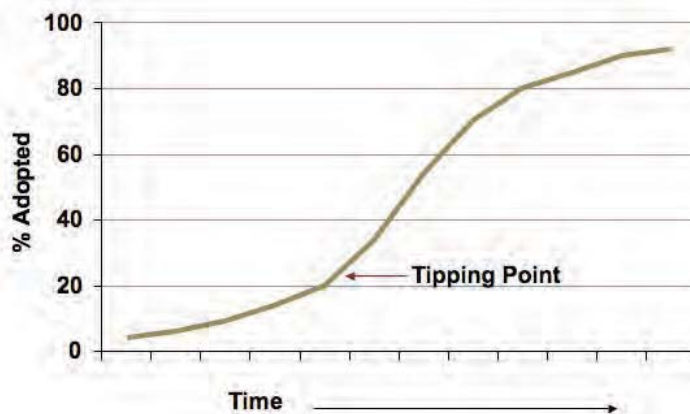
A good understanding of the changes and of the improvement science will be required to continually spread new ideas throughout the system. Cooperative and connected networks for learning and knowledge dissemination may need to be established or re-visited.

Some ideas for structuring these networks include mini-Collaboratives, website discussion forums and chat rooms, regional presentations, in-services and formal training programs. Some organizations have hired new staff to coordinate these activities; others have trained existing staff.

The Tipping Point

At some point, momentum will spread changes without as much additional support.

The Tipping Point



The S-shaped curve suggests that progress often starts slowly and small with a few key opinion leaders and those willing to try new ideas. Once a certain percentage of the target population has adopted the change (usually about 20 per cent), momentum increases dramatically, and it is difficult to reverse the change.

At a certain point, adoption slows and levels off, often at less than 100 per cent. The threshold is lower when people feel as if they have some latitude in reinventing specific details and customizing the change.

5

Overcoming Barriers to Improvement

Introduction

Resistance is a normal characteristic of any effort to make improvements. It means that teams are concentrating on issues people consider important.

The health care system is extremely complex and interconnected. It involves many people and processes.

Collaborative teams tried to look beyond the resistance to understand possible causes and to generate potential solutions. This section lists a number of these solutions.

In this section you will learn:

- how to set aims
- how to form functional teams
- how to measure progress
- how to develop, test and implement change
- how to address barriers for organizational change



Setting Aims

On occasion teams may have difficulty in establishing an aim that provides a clear answer to the question, “What are we trying to accomplish?” Following are possible solutions that teams might wish to try.

Diagnosis	Prescription
Lack of target	<ul style="list-style-type: none">• Set one arbitrarily.• Enlist the senior leader’s help. The leader can encourage the team to move beyond the status quo.• Identify what level of improvement would be required to achieve best-in-the-world performance.
Unclear or drifting aim	<ul style="list-style-type: none">• Set numerical targets and outline an approach and timeline for achieving them.• Try redrafting the aim statement to make the link between aim and action more obvious.• Focus on aims by reviewing them at the beginning of each meeting.
Multiple aims	<ul style="list-style-type: none">• Clarify priorities with senior leaders and other stakeholders.• Work toward unifying aims under themes.• Identify more global aims that may accomplish both purposes.

Forming a Functional Team

A well-formed and highly functioning team is important to accomplishing the aim. Following are possible ideas on how teams might address barriers associated with team functioning:

Diagnosis	Prescription
Unbalanced workload	<ul style="list-style-type: none">• Clarify roles and responsibilities in writing.• Ask “Will the current balance allow the team to achieve its aims?”• Ensure that the right people are involved.• Delegate work among team members.
Lack of resources	<ul style="list-style-type: none">• Work collaboratively with other teams.• Build on existing resources (e.g., add the work of the improvement team to existing staff meetings, or working groups).• Lobby senior management.• Find the “hidden resources” (e.g., volunteers, patients, families).• Steal shamelessly—adjust what is already out there.• Look to underutilized disciplines.

Diagnosis	Prescription
Lack of buy-in from physicians	<ul style="list-style-type: none"> • Find physician champion. • Emphasize end-of-life care and donation as an option.
No front-line involvement or lack of buy-in from staff	<ul style="list-style-type: none"> • Create simple introduction package to Collaborative. • Develop welcome letter from sponsor that reinforces importance of work. • Assign a “buddy” to coach new team members. • Spread knowledge of Collaborative beyond team. • Use peer-to-peer communications. • Follow up after chart reviews: what was positive, where were opportunities for improvement. • Provide recipient and donor family feedback. • Provide data to shift thinking. • Increase support from senior leaders, e.g., start at the top to encourage referrals.
Long meetings	<ul style="list-style-type: none"> • Hold short, concise meetings with definitive agendas. • Use huddles.
Infrequent meetings	<ul style="list-style-type: none"> • Utilize e-mail to brainstorm. • Use “hallway conversations”- short, real-time and focused opportunities to share information.
Unproductive meetings	<ul style="list-style-type: none"> • Revisit the project charter. Clarify responsibilities. • Use a facilitator. • Use a PDSA cycle to improve team functioning. • Use agendas and meeting minutes. • Outline meeting processes to achieve outcomes.

Establishing Measures

Barriers sometimes appear when teams try to answer the question “How will we know a change is an improvement?” Following are possible ideas to help teams establish meaningful, useful measures.

Diagnosis	Prescription
Outcome measure not well defined	<ul style="list-style-type: none"> • Use the aim statement as a reference for defining the measure. • Define what the team would like the results to look like at the end of the project. • Look at what other teams or institutions are doing.

Diagnosis

Low volumes or infrequent events

Prescription

- Show that missed opportunities are a problem.
- Use clinical triggers.
- Train the requesters.
- Provide expertise around cultural and spiritual matters.
- Provide education to rural hospitals, nurses, social work, spiritual care, neurosurgeons, etc., about referring catastrophic brain injuries; get everyone talking about donation.
- Be vigilant.

Too many measures

- Ensure that measures match aims.
- Collect only enough data to support the study phase. Use outcome, process and balancing measures only.
- Keep the number of data points the smallest possible to be able to detect change (need to know vs. nice to know)?

Delays while waiting for information

- Use sampling instead of waiting for data from information systems.
- Use manual data collection methods.
- Substitute qualitative data for quantitative data.

Poor access to information

- Use the resources available to you.
- Don't try to change the information systems for short-term projects.
- Specific goals.
- Engage a sponsor.
- Have senior leaders create demand for the data.
- Use manual data collection methods.
- Use other measures as a proxy.
- Decrease reliance on IS/health records data sources.

Resistance to collecting data on a small scale

- Differentiate between the need for research data and the need for improvement data.

Accuracy of data questioned

- Ask for independent physician review of charts.
- Present two sets of data: NDD category and "potential" category.
- Identify physician's role; referral combined with better charting = better data

Difficulty in obtaining good measures

- Use a paper and pencil to start. Collect data over time.
- Display in annotated run charts.
- Use measures check sheet.
- Agree to revise measures as team learns.

Developing, Testing and Implementing a Change

Improvement of care requires changes based on good design, tested in the local environment and implemented in a way that can sustain the new way of delivery. Following are barriers encountered by teams, with some ideas to try to meet these challenges.

Diagnosis	Prescription
PDSA cycles become disconnected from aim	<ul style="list-style-type: none">• Review aim.• Be clear on objective, prediction and theory.• Schedule time for reflecting on what was learned.• Connect the study phase of one cycle to the plan phase of the next cycle.
PDSA cycles not leading to results	<ul style="list-style-type: none">• Test under multiple conditions.• Use high leverage Change Concepts.• Try something different.

Organizational Change

Sometimes teams have faced barriers that may affect the entire process of change through design, testing and implementation. These barriers affect the results at a system or organization level. Following are possible ideas for teams in addressing these larger issues.

Diagnosis	Prescription
No visibility	<ul style="list-style-type: none">• Use internal communication vehicles to generate interest (e.g., hospital newsletter).• Engage people in the process of improvement (e.g., testing changes, collecting data).• Hold multi-disciplinary information sessions.• Use regular meetings to share involvement in the Collaborative.• Use provincial media bodies.

Diagnosis

Lack of support from senior leaders

Prescription

- Understand why senior leaders are not supporting the project (e.g., lack of time, lack of interest, competing priorities, lack of knowledge, etc.) and address underlying causes.
- Find new leaders who are learning and trying to create a role for themselves.
- Be realistic.
- Focus on the concerns of senior leaders.
- Provide data.
- Create expectations with goals and data; compel leaders to ask for more.
- Build on existing relationships to gain support.
- Align organ donation with goals, issues and concerns that leaders care most about (i.e., patients, community, societal responsibility, finances, etc.).
- Provide specific examples of support needed. Ask for what is needed.

Resistance to change

- Initially, work with the willing (organizations and individuals), the innovators and the early adopters.
- Continually communicate goals and progress using test cycle results.
- Build relationships.
- Involve people in the development of the changes.
- Use strong, emotional stories to compel change.
- Keep it simple.
- Dispel myths.
- Address misinformation about roles and expectations.
- Broadcast success stories.
- Tie to key strategies, shared values and shared vision.
- Provide data on test of change.

6 | *Appendices*

- A. Improvement Charter
- B. PDSA Cycles
- C. Measurement Check Sheet
- D. Storyboard Check Sheet
- E. Project Planning Template
- F. Monthly Report
- G. Strategies and Change Concepts for Organ Donation
- H. ODC Measurement Strategy
- I. Bibliography



Appendix A: Improvement Charter

Project Name: _____

Team Members: _____

Team Sponsor:

WHAT ARE WE TRYING TO ACCOMPLISH?	Purpose of Project Scope & Boundaries Improvement Objectives		
HOW WILL WE KNOW A CHANGE IS AN IMPROVEMENT?	Measures 1. 2. 3. 4. 5. 6.	Current Performance 1. 2. 3. 4. 5. 6.	Goals 1. 2. 3. 4. 5. 6.
WHAT CHANGES CAN WE MAKE THAT WILL RESULT IN IMPROVEMENT?	Change Concepts and Ideas to Test		
HOW WILL WE MANAGE THE IMPROVEMENT PROJECT?	Principles for Working Together Roles & Responsibilities Review Schedule Key Dates		

Author:

Date:

Example

This example is based on an Organ Donation Collaborative team and is modified to illustrate the key components of the Improvement Charter.

Include frontline, multidisciplinary team of nurses, physicians, administrators and other health professionals

Project Name: Organ Donation Team – X Hospital

Team Members: ICU nurse, ODO coordinator, ED nurse, ED physician,

Team Sponsor: Director of Critical Care

Identify senior leader in the unit, hospital or organization who has authority to take status quo off the table, implement changes, support team with resources and remove barriers.

WHAT ARE WE TRYING TO ACCOMPLISH?	<p>Purpose of Project By June 2007, increase organ donations by 10%.</p>
	<p>Scope & Boundaries Deceased organ donation only, although changes in practice could be generalized to tissues. Transplantation is out of scope for now. Process includes the stages of the process up to organ procurement. Pilot site is X hospital but intention is to spread to other sites by December 2007.</p>
	<p>Improvement Objectives: By June 2007:</p> <ol style="list-style-type: none"> 1. Increase deceased organ donations by 10%. 2. Improve the conversion rate to at least 75%. 3. Ensure every potential donor is identified and appropriately referred. 4. Ensure every eligible family is offered the option to donate. 5. Increase average number of organs retrieved per donor to 4.3. 6. Improve identification and timeliness of referrals of donors to within 1 hour. 7. Implement donor management recommendations. <p>While maintaining or improving</p> <ol style="list-style-type: none"> 8. Family satisfaction with the donation experience.

These aims are specific, concise and measurable with goals and timelines.

HOW WILL WE KNOW A CHANGE IS AN IMPROVEMENT?	<p>Outcome & Process Measures</p> <ol style="list-style-type: none"> 1. Conversion rate 2. Referral Rate 3. Average Number of Organs Retrieved per Donor 4. Compliance with Donor Management Recommendations 5. Percentage of Cases using an Appropriate Requester 6. Timely Identification and Referral <p>Balancing Measures</p> <ol style="list-style-type: none"> 7. Family Satisfaction with the Donation Experience 	<p>Current Performance</p> <ol style="list-style-type: none"> 1. 50% 2. 50% 3. 3.5 4. Unknown 5. Unknown 6. Unknown 7. Unknown 	<p>Goals</p> <ol style="list-style-type: none"> 1. 75% or higher 2. 100% 3. 4.3 4. 100% 5. 100% 6. within 1 hour 7. Maintain or Improve
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WHAT CHANGES CAN WE MAKE THAT WILL RESULT IN IMPROVEMENT?	<p>Change Concepts and Ideas to Test</p> <p>Start with Strategies # 4 and 5 and then move to other strategies.</p> <p>Develop and agree to clinical triggers</p> <p>Identify means of communicating clinical triggers amongst staff and education of their use.</p>
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HOW WILL WE MANAGE THE IMPROVEMENT PROJECT?	<p>Principles for Working Together</p> <p>Mutual respect</p> <p>Honesty</p> <p>Open Communication</p> <p>Commitment from all team members to do PDSA cycles</p> <p>Each team member to spend about 1-3 hours per week on project</p>	<p>Identify how the team will work together, how the responsibilities are to be divided and how the team will review their work.</p> <p>Indicate important dates and timelines.</p>
--	---	---

HOW WILL WE MANAGE THE IMPROVEMENT PROJECT?	<p>Roles & Responsibilities</p> <p>Team Recruitment –</p> <p>Data Collection and Run Charts -</p> <p>Communication –</p> <p>Documentation –</p> <p>Monthly Reports –</p> <p>Testing Cycles –</p> <p>Participation on Conference Calls – rotated amongst team members</p>
	<p>Review Schedule</p> <p>“Planning” and “Studying” (PDSA) meetings every 2 weeks with team.</p> <p>Review with project sponsor once a month.</p> <p>Communicate with Regional Quality Council once a quarter.</p> <p>Provide ongoing updates to senior management.</p>
	<p>Key Dates</p> <p>Conference Calls – every 2 weeks</p> <p>Collaborative Calls – once a month</p> <p>Learning Session 2 – February 2007</p> <p>Learning Session 3 – May 2007</p>

Author: MY NAME

Date: TODAY

Appendix B: The PDSA Cycle

Project Name: _____ Cycle #: _____

Objective of this Cycle: _____

PLAN	What change are we testing? What is our prediction and theory? Details of the plan (who, what, where, when and how).
DO	Carry out the plan. Record data and observations.
STUDY	Complete analysis and synthesis. Do the results agree with the predictions? Under what conditions could the results be different? Summarize new knowledge.
ACT	What action are we going to take as a result of this cycle (Adopt, Adapt or Abandon)? Are we ready to implement? What other processes or systems might be affected by this change?
	Objective of Next Cycle

Example

This example is based on an Organ Donation Collaborative team and is modified to illustrate the key components of the PDSA Cycle.

Project Name:	Organ Donation Team – X Hospital	Cycle #: 1
Objective of this Cycle:	Test if posting the previously tested clinical trigger in the form of posters in ICU will promote 100% referral and timely notification.	

PLAN	<p>What change are we testing? What is our prediction and theory? Details of the plan (who, what, where, when and how).</p> <p>Change Concept: Establish clinical triggers to help identify potential donors Specific Idea: Communicate clinical triggers via a poster. Prediction: The Clinical Triggers communicated via a poster will result in a 100% referral rate in the ICU. Theory: Serve as a visual, just in time reminder for staff</p> <p>Details of Plan: Who: Nurse A What: Tape clinical trigger poster Where: At 2 bedsides, by the phone When: Monday morning How: Data Collection Plan: Nurse A to ask Nurses and RTs who are on shift if they noticed the posters and if they thought it would cause them to use the clinical triggers (qualitative feedback). Nurse A to monitor usage of the clinical trigger (process measure) and will perform review charts to monitor for missed referrals (outcome measure).</p>	<p>Identify specific change that is being tested. Data collection alone is not a PDSA, but part of DO and STUDY.</p> <p>Make predictions and theories explicit. Think small-scale tests at first.</p>
DO	<p>Carry out the plan. Record data and observations.</p> <p>The nurses stated the criteria on the poster was very clear and would be easy to follow. Nurses have identified some discomfort with posters where family members can see them. Over the week, there were no missed referrals. Tape wasn't sticky enough to last very long.</p>	<p>During the test and after, collect data, both quantitative and qualitative, about the test.</p> <p>Include observations and surprises. Plot data on run chart.</p>

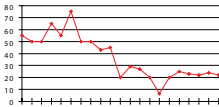
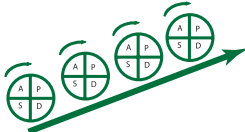
STUDY	<p>Complete analysis and synthesis. Do the results agree with the predictions? Under what conditions could the results be different? Summarize new knowledge.</p> <p>The clinical trigger poster could be successful in increasing referral rates.</p> <p>Could test with different professions – intensivists for example.</p> <p>Consider moving posters to different location (what about by nursing station?).</p> <p>Consider changing the size of poster (pocket cards?)</p> <div style="border: 1px solid green; border-radius: 15px; padding: 10px; margin-top: 10px;"> <p>Identify what was learned, especially when results did not agree with predictions. There is no such thing as a “failed test”. Look for additional conditions under which to test the change. Try to make the change fail for maximum learning.</p> </div>
ACT	<p>What action are we going to take as a result of this cycle (Adopt, Adapt or Abandon)? Are we ready to implement? What other processes or systems might be affected by this change?</p> <p>Adapt and re-test as it is not ready for implementation.</p> <p>Ensure Clinical Trigger posters use the acronym for Organ Donation Organization (ODO) to avoid concern from family members.</p> <div style="border: 1px solid green; border-radius: 15px; padding: 10px; margin-top: 10px;"> <p>What questions have been raised? Look a couple of cycles ahead.</p> </div>
	<p>Objective of Next Cycle Test adapted poster next week. Test with intensivists.</p> <div style="border: 1px solid green; border-radius: 15px; padding: 10px; margin-top: 10px;"> <p>Connect this cycle with future PDSA Cycles.</p> </div>

Appendix C: Measurement Check Sheet

Project Name: _____

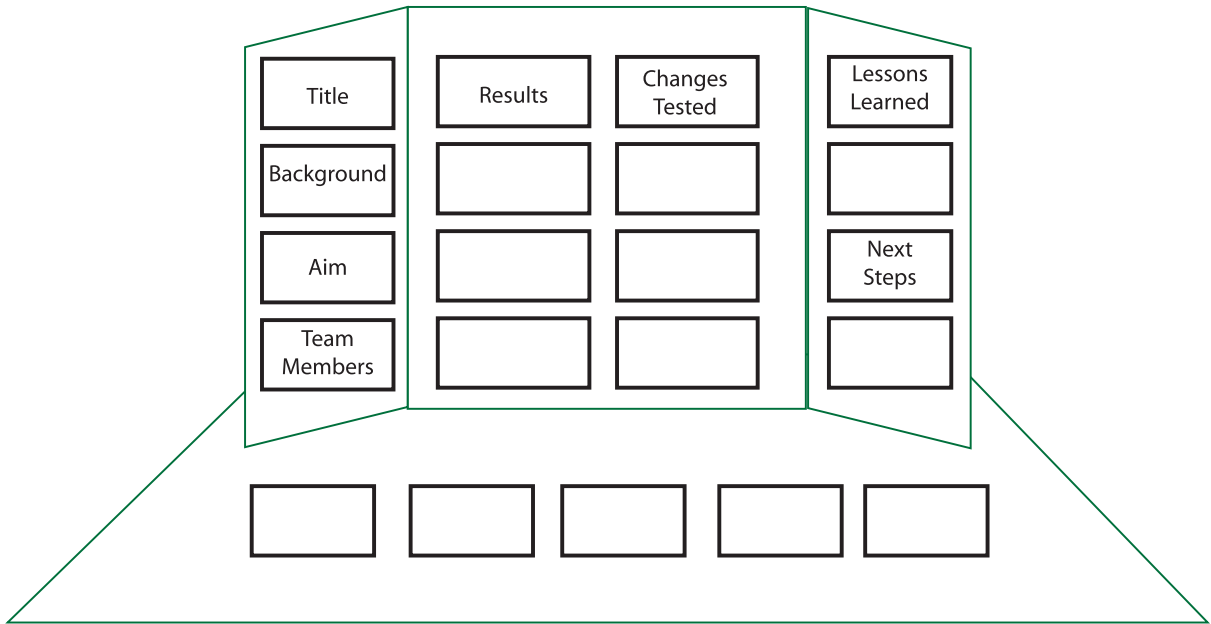
	YES	NO	Opportunities for Improvement
1. Balance of measures is used <ul style="list-style-type: none"> · Uses 2-6 measures related to overall aim · Includes outcome measure (e.g. donations) · Includes balancing measures (e.g. family satisfaction) · Includes process measures (e.g. conversion rates) 			
2. Data collection procedures are defined and useful for improvement <ul style="list-style-type: none"> · Sampling is used · Stratification is used · Data is collected at least monthly (weekly or biweekly is preferred) · Data collection is integrated into daily work routines · Uses manual collection procedures instead of waiting for computer systems 			
3. Data collection forms are used			
4. Team focuses on usefulness, not perfection, of measures <ul style="list-style-type: none"> · Collects just enough data to see if changes are leading to improvement · Uses qualitative data to supplement quantitative information · Improvements in the measures can be seen quickly 			
5. Measures are used for learning <ul style="list-style-type: none"> · Measures are reviewed and interpreted by the entire team · Actions are directed at systems and processes, not people 			
6. Data is displayed over time using an annotated run chart <ul style="list-style-type: none"> · Clear and thorough labeling, including X and Y axis labels · Includes PDSA cycles, context and important events 			
7. Overall, our measures help us answer the question “how will we know a change is an improvement?”			

Appendix D: Storyboard Check Sheet

Storyboard should include:	Description	Source
<input type="checkbox"/> Title	Title of project and/or team name	IMPROVEMENT CHARTER
<input type="checkbox"/> Background	Brief description of the site, team, patient population and rationale for improving.	IMPROVEMENT CHARTER
<input type="checkbox"/> Aim	Purpose, scope, boundaries, objectives and goals.	IMPROVEMENT CHARTER
<input type="checkbox"/> Team members	Names of team members	IMPROVEMENT CHARTER
<input type="checkbox"/> Results	Display in annotated run charts Include key measures (outcome, process and balancing) from the ODC Measurement Strategy. Include qualitative data where available. Display copies of surveys, data collection forms, CD-ROMs etc.	ANNOTATED RUN CHARTS PDSA CYCLES 
<input type="checkbox"/> Changes tested	Describe changes you've tested, based on change concepts. Use the "ramping" concept to display changes as sequential cycles. Display copies of protocols, check sheets, etc.	IMPROVEMENT CHARTER PDSA CYCLES 
<input type="checkbox"/> Lessons Learned	Describe keys to success and lessons learned about the changes and doing improvement work. Which change concepts were successful and why? What did you learn? What advice would you give to other teams?	PDSA CYCLES TEAM
<input type="checkbox"/> Next Steps	What other changes are you planning to test that you believe will allow you to achieve your stated goals and your aim?	PROJECT PLANS

Example

Storyboards will be displayed on tabletop poster boards that are 4 feet wide (2 feet in center and 2 one-foot fold outs) and 3 feet tall.



Include additional information such as checklists, copies of protocols, data collection forms, CD-ROMs, etc. in front of the poster board.

Use the PowerPoint template to create as many slides as needed.

All teams participating in the CCDT Organ Donation Collaborative are expected to have a storyboard for Learning Session 2 and 3.

Teams selected for Rapid Fire presentations will be asked to choose a maximum of 5 slides (6 including the title slide) from their storyboard.

Appendix E: Project Planning

Project Name: _____

Activity	Task Test Implement	PDSA Cycle #	Responsibility	Week															
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	<input type="checkbox"/> Task <input type="checkbox"/> Test <input type="checkbox"/> Implement																		

Appendix F. Monthly Report

Team Name: _____ Date: _____

1. General Information

Aim:

Report for (MONTH):

Changes tested:

-
-

Our main accomplishments:

-
-

Major lessons our team learned:

-
-

One thing our team would like to share with other Collaborative Teams:

-

One question our team has for other Collaborative Teams and/or Faculty:

-

2. Team Self-Assessment

Place an X on the scale that best represents your team's progress in achieving your aim (based on consensus).

0	1	2	3	4	5
<p>0 Non-Starter Team formed. Aim determined. Team attended Learning Session One.</p> <p>1 Activity but no testing Team engaged in data collection and developing changes. No tests of change or evidence of testing within last month.</p> <p>2 Modest improvement Testing has begun. There is anecdotal evidence of improvement.</p>				<p>3 Improvement Implementation has begun. Improvements have reached 50% of at least one goal.</p> <p>4 Significant Improvement 100% of at least one goal is reached.</p> <p>5 Outstanding Sustainable Results Targets exceeded. Changes spread to larger system.</p>	

3. Key Measures for the Month of _____

	Criteria	Definition	Data
1	Number of Donors this month	Number of Donors Where at Least One Organ is Transplanted	
2	Conversion Rate	Number of Donors Where at Least One Organ is Transplanted Eligible Donors + Missed Eligible's	
3	Referral Rate	Number of Referrals Number of Patients Meeting Clinical Triggers	

4. Annotated Run Charts

Paste measures here that support your team self-assessment.

Example

This example is based on an Organ Donation Collaborative team and is modified to illustrate the key components of the Monthly Report.

Team Name: _____ Date: _____

1. General Information

Aim:

Increased deceased organ donations by 10% and improve conversion rates to at least 75%.

Restate aim from Improvement Charter.

Report for (MONTH):

Changes tested:

- Adapted GIVE poster
- Draft decision tree

Summarize changes tested, accomplishments and lessons learned.

Our main accomplishments:

- GIVE poster now part of regular process
- Increasing number and rate of referrals

Be specific.

Relate to data.

Major lessons our team learned:

- GIVE poster increased awareness of clinical triggers and number of referrals, although it can be perceived as a passive tool. May want to include pocket cards and revise other existing decision making tools so that reminders are given at point of action.
- Discrepancy in staff believing Organ and Tissue Donation one entity
- Need a variety of approaches to reach staff
- Need to document processes to orient new staff, residents and fellows
- Conversion rates are consistently low – next step is to work on effective requesting.
- Staff in these areas will require further practice, education and training on Organ Donation requesting processes. Consider using huddles and/or simulation to continually refine and train staff in the process

One thing our team would like to share with other Collaborative Teams:

- Focus on aims and tests of changes that will most impact goals.
- Each successful test creates the momentum for further tests.

One question our team has for other Collaborative Teams and/or Faculty:

- Who are the designated askers in other programs? Is it someone from the program or social work of both?

2. Team Self-Assessment

Place an X on the scale that best represents your team's progress in achieving your aim (based on consensus).

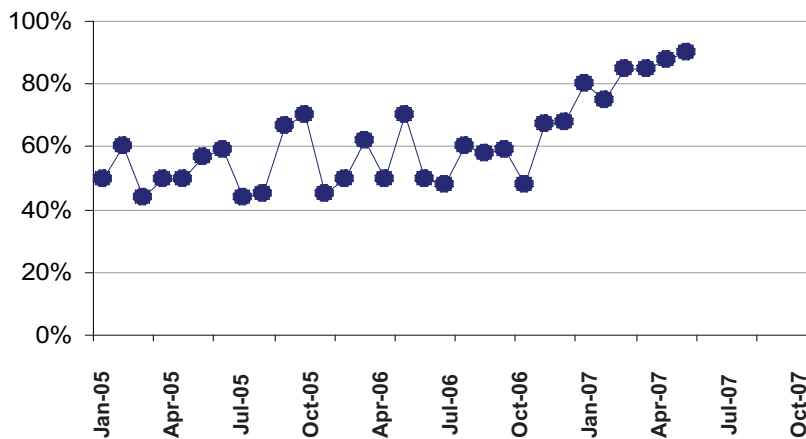


0	Non-Starter Team formed. Aim determined. Team attended Learning Session One.	3	Improvement Implementation has begun. Improvements have reached 50% of at least one goal.
1	Activity but no testing Team engaged in data collection and developing changes. No tests of change or evidence of testing within last month.	4	Significant Improvement 100% of at least one goal is reached.
2	Modest improvement Testing has begun. There is anecdotal evidence of improvement.	5	Outstanding Sustainable Results Targets exceeded. Changes spread to larger system.

3. Annotated Run Charts

Include outcome, process and balancing measures. Include quantitative and qualitative where appropriate.

Referral Rate
Hospital X



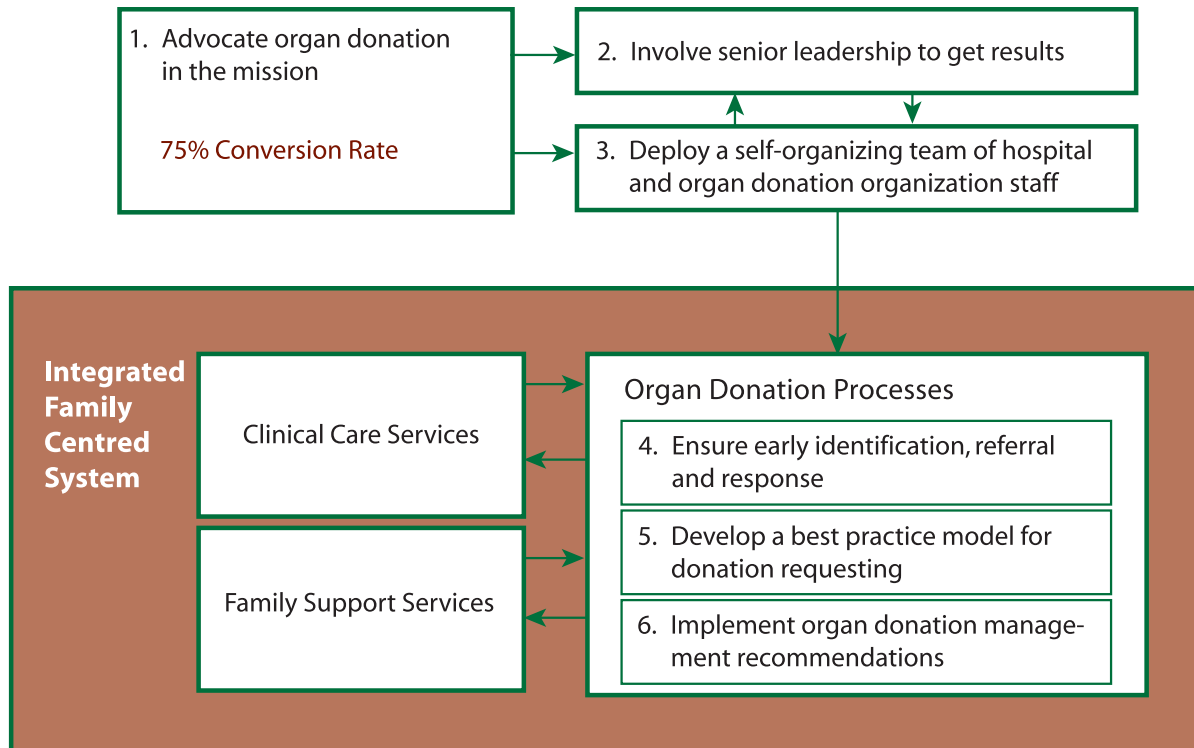
Appendix G: Six Strategies to Create a High Performance Organ and Tissue Donation System

Change Package Primer

1. Advocate Organ Donation in the Mission
2. Involve Senior Leadership
3. Establish a Self-Organizing Team Composed of Hospital and Organ Donation Organization (ODO) staff
4. Ensure Early Identification, Referral and Rapid Response to Potential Organ Donors
5. Develop a Best Practice Model for Donation Requesting
6. Implement Donor Management Recommendations

Updates on July 9 2007 **highlighted**

Six High Leverage Changes



Six Strategies to Create a High Performance Organ Donation System

1. Advocate organ donation in the mission

Build advocacy for organ donation into the mission, business plans, and staff practices of hospitals, organ donation organizations and clinical leadership groups

Key Change Concepts

a. Identify Clinician Champions

Action items

Express the Institutional Mission: We are responsible for the lives of patients on the waiting list; donation is desirable; advocacy is necessary and positive.

Good end of life care involves recognizing opportunities for donation and providing those opportunities in a positive light.

- Have the executives of hospitals, health regions, and organ donation organizations publicly commit to the aim of the CCDT organ donation collaborative
- Put in place high visibility, physical symbols of the institutional commitment to organ donation (e.g. posters, photographs, plaques, videos, community education literature, organ donation register pamphlets, media reports etc)
- Agree that the partnership between hospitals, health regions, organ donation organizations and clinical leadership groups is accountable for performance in organ donation
- Make continuous improvement in organ donation part of the mission and business plans of all those within this partnership
- Use organizational missions, values, culture and business plans to focus on organ donation
- **Be persistent**
- **Provide reasons that show value to constituency**
- **Build momentum and support within the medical, political and public community**

Communicate Mission to the Staff

- Communicate 'advocacy' to personnel as the opportunity to save lives, requesting they become advocates for all donors, families and patients on transplant waiting lists
- Build advocacy explicitly into the consent process through employee orientation and training
- Align accountability for conversion rates with personnel's passion and responsibility for family support

- Present continuous improvement in organ donation as a teachable method and core competency for hospital and organ donation organization staff
- Frequently acknowledge and celebrate hospital, health region, and organ donation organization performance in organ donation
- **Share stories about grateful recipients and fulfilled donor families**

2. Involve senior leadership to get results

Leaders in organ donation organizations and hospitals actively support each case through a well-defined and documented organ donation process that integrates the roles and responsibilities of each organization

Key Change Concepts

- b) **Create Organ Donation Organization presence in hospitals**
- c) **Analyze and apply current hospital specific data and process mapping to facilitate local organ and tissue donation performance improvement efforts**

Action items

Secure the Commitment

- Hospital leaders (Medical Director, Director of Nursing, Clinical, pastoral care/ social workers, legal counsel, and all with governance accountabilities), and organ donation organizations are prepared to play a constructive, real time role in support of a case
- Hospital clinical staff (critical care nurses, social workers, chaplains, physicians) and organ donation organization personnel know how to engage senior leadership to facilitate the process
- **Ensure the “right” person meets face to face with senior leaders**
- **Use appropriate data to set direction and provide progress reports**

Establish the Underlying Process

- There is a well developed, tested and documented system for identifying and running each case that covers all the stages in the process
- Roles and responsibilities are clear: everyone knows who does what, everyone acknowledges and respects the roles of others
- Barriers to donation are identified and managed proactively
- A well-defined communication system is in place to ensure a donor coordinator is available to assist the local team on each case.
- Create an integrated hospital/ODO organ donation committee independent of transplant committee
- **Identify opinion leaders**

- Get Collaborative on senior leader agenda, present data
- Re-affirm the mission and provide alignment
- Link to moving agendas e.g. quality of work life, advanced care planning, end of life care, grief and bereavement, trauma collaboratives, use of CME credits
- Use benchmarking and accreditation as a push strategy

3. Establish a flexible self-organizing hospital and organ donation clinical group for each potential case

Key Change Concept

- d) **An integrated and flexible group of clinicians manages each “potential donor”. This group identifies and uses the strengths of all the members in a well-defined and documented organ donation process.**

Action items

Set the Team Charter

- Each Hospital has a well-defined potential organ donor and family support process which is readily available and familiar to all staff
- All members of the team participate in advocacy and accountability for continued improvement in organ donation rates
- Communication systems and agreements are in place to ensure the appropriate group of clinicians is available in a timely way to manage each and every potential donor
- An organ donation leader is identified, adequately trained for the role and available in real time to assist this clinician group in handling each potential donor

Define Team Practices

- An appropriate amount of time is spent with families of potential organ donors to ensure optimum outcomes
- A “team huddle” is held at the time when a potential donor is initially identified to allow the care team responsible for managing that donor to agree on their roles and responsibilities to ensure the best outcome
- Develop a full understanding of the donation process in a given institution in order that those responsible for managing potential donors can effectively utilize resources available on a case by case basis to optimize outcomes
- The leadership role amongst those responsible for managing potential donors may change during the course of a case. Such changes should be clear and well communicated

- Clinicians responsible for managing potential donors use formal “case review” processes to support continual improvement in donation processes and outcomes
- Hold an informal team debrief immediately after each donor experience

4. Ensure Early Identification, Referral and Rapid Response

Follow early identification of a potential organ donor with prompt referral and a rapid response by entire organ donation team.

Key Change Concepts

- e) **Conduct Timely Death Record Reviews**
- f) **Establish clinical triggers to help identify potential donors**
- g) **Conduct case reviews after each potential and actual donor**

Action items

Set It Up

- Each team should use an evidence-based process to develop mutually agreed upon “clinical triggers” for early identification of all potential donors
- Staff are trained in use of the triggers agreed to and have ready access to clinical trigger information
- Provide effective and timely support for donor families to optimize the donation experience [“appropriate time with family = more trust in system = more donation = more lives saved”]
- Consider having a patient advocate on the hospital organ donation team to work with clinicians to ensure a patient & family focused approach
- **Suggest a designated “donor” ICU bed**
- Undertake timely audits of deaths in potential organ donors (using collaborative model tools and definitions). These audits must include feedback on outcomes with treating clinicians and the sharing of lessons learned with those clinicians involved in the care of potential organ donors

Make It Work

- Organ Donation Organization staff join the group of clinicians responsible for managing potential donors at the earliest possible stages and work as required with hospital staff and the family to optimize donation outcomes
- Build in systems that support early identification, referral and rapid response to potential donors; **one phone number for both organ and tissue programs**
- Discuss any potential organ donors routinely at clinical handovers in Intensive Care, Emergency Departments and Neurosciences wards
- **Create an algorithm for ER staff including scripts for family approach**

- Monitor the timing of the process steps (e.g., Identification, referral, response, requesting, requesting outcome, organ allocation and retrieval surgery) in each case review
- Include donation on daily goals sheet
- Work with physician opinion leaders to create change
- Identify all potentials and let the OPO determine suitability
- Provide education opportunities for all departments
- Take advantage of donation expertise across provinces
- Encourage team involvement (e.g., senior leaders, ER, CC physicians, neurology)
- Offer timely feedback to departments who participate
- Use real-time quick check sheets (Edmonton to share)
- Missed opportunities to be followed up on by physician champions

5. Develop a best practice model for donation requesting

Establish, implement and manage a well-defined set of processes and practices for “optimal requesting,” including ensuring good communication with the donor family.

Key Change Concepts

- h) **Identify and utilize those best trained and most appropriate and effective individuals to request donation**
- i) **Apply ethnic, cultural and faith considerations**

Action items

Set It Up

- Build into hospital education programs issues around potential conflicts with clinician/patient relationship and advocacy for the donor and donor family. **Advocate for every eligible family to have the right to make their own decisions about organ donation (every eligible family is approached)**
- **Advocate for choices about donation in quality end of life care**
- Ensure staff access to training in donation requesting which will include consideration of cultural and faith issues and may include role plays and case studies
- Develop a well-defined process for donation requesting highlighting the importance of maintenance of appropriate interactions with family to adequately address their concerns
- **Use tested communications (scripts) to engage families in discussion about organ donation**

- Measure consent rates for eligible donors and attempt to identify qualitative factors which help optimize the consenting process

Make It Work

- Use a clear process and tested practice for appropriate pre approach planning with families
- **Use pre-approach planning and huddles as a venue for testing other changes to effective requesting**
- Consider the best person to initiate the consent process, mindful of existing relationships with the family and any relevant cultural, ethical and social issues
- Track the requesting process and the results of requesting for all potential donors (log time spent, action taken, and important events) for use in case reviews and staff education
- Track the effectiveness of hospital and organ donation organization training on outcomes of the requesting process within the hospital
- Include the person undertaking the request in each case review process
- Undertake a feedback process to assess the quality of the requesting process with families of potential organ donors to assure it was timely, effective, and appropriate and fully met the needs of the participants
- Assure donor registry information is addressed when available and that the family is fully informed of the potential donor's intent

6. Implement Donor Management Recommendations

Implement management strategies and organ protective therapies that improve donor organ function for the purposes of transplantation based on national guidelines. Practice continuity of clinical care for all organ systems from timely referral, through brain death declaration, to organ recovery. Access and use advanced clinical practice support and best practices.

Key Change Concepts

- j) Stress and maintain intensive clinical management of all donor organ systems**
- k) Identify, organize, and utilize advanced clinical practice expertise**
- i) Create the expectation that critically ill organ donors are best managed in the Intensive Care Unit**

Action items

- Establishes a mutually agreed upon standard, **standing and pre-printed** order set for donor management consistent with the national guidelines
- Implement a timely referral by donor hospital with effective communication among OPO staff, attending physicians, and nurses

- Stress and maintain continuity of intensive clinical care throughout brain death declaration and donor maintenance
- Identify and deploy appropriate personnel for advanced clinical donor management and optimal organ utilization
- Implement and ensure timely and well-organized advanced clinical recovery practices
- Change mindset to view a donor just like other patients and a lifeline to seven other lives
- Address access and capacity issues in the Operating Room and ICU
- Create policies that donors are considered high priority patients

Appendix H: ODC Measurement Strategy

Required Measures:

Measure	Statistic	Definitions	Data Collection Methodology	Collaborative Goals
1. Conversion rate	Percentage of organ donations (Actual organ donors divided by eligible donors, expressed as a percentage)	<p>Numerator(s) Actual organ donors: those consented who proceed to donation with at least one organ transplanted.</p> <p>Denominator Eligible organ donors: all patients who have died matching the following criteria:</p> <ul style="list-style-type: none"> • Severe brain injury • Suspected brain death (upon chart review) • Confirmed brain death <p>Include missed eligible = consent not obtained and/or not approached and/or failed physiological support and/or any other reasons for no organ retrieval</p>	<p>Derived from death record reviews of eligible organ donors</p> <p>Index of potential donors either not consented, not approached or who fail to progress to donation for some other reason</p> <p>Data collection system captures 100% of patient deaths in hospital, screens to identify 'potential organ donors' and medical record review gives 'eligible organ donors'</p> <p>Review 100% patient deaths that were ventilated</p> <p>Reported monthly</p>	75% or higher for each hospital

Measure	Statistic	Definitions	Data Collection Methodology	Collaborative Goals
2. Referral Rate (Success in identification and appropriate referral of potential organ donors)	Percentage of potential organ donors successfully identified by hospital staff and appropriately referred for further assessment (Patients who meet locally agreed upon 'clinical triggers' for consideration as potential organ donors who are appropriately referred for further assessment divided by all patients meeting agreed upon 'clinical triggers', expressed as a percentage)	Numerator Patients meeting locally agreed upon 'clinical triggers' who are appropriately referred for further assessment: all patients in target unit meeting locally agreed upon 'clinical triggers' who are referred for further assessment in accordance with local protocols and procedures Denominator All patients meeting locally agreed upon 'clinical triggers': all patients within the target unit meeting the locally agreed upon 'clinical triggers' for referral for further assessment whether they were referred to the OPO or not.	Index of outcome of local processes to identify and refer potential organ donors for further detailed assessment Derived from unit based audit of 'clinical trigger' for identification of potential organ donors' Reported monthly Will require unit-based audit of patients to identify patients who met agreed clinical triggers and assessment of actions taken in these patients	100% for each hospital
3. Average Number of Organs Retrieved and Transplanted per Donor	Average number of organs retrieved per donor	Total number of organs retrieved and transplanted divided by total number of donors Use Standard Criteria and Expanded Criteria for Donors using the United Network for Organ Sharing (UNOS) definitions. www.unos.org . To be defined locally	Derived from chart audits Reported monthly	Standard Criteria Donors- Average of 4.3 Expanded Criteria Donors – Average of 2.5
4. Family satisfaction with the donation experience	Percentage of families that are satisfied with the donation experience		100% sample Reported monthly	Maintain or improve

Measure	Statistic	Definitions	Data Collection Methodology	Collaborative Goals
5. Compliance with Donor Management Recommendations [Medical Management to Optimize Donor Organ Potential (MEMODOP): Report and Recommendations]	Percentage of cases in which donor management is achieved and maintained (Number of cases in which donor management achieved and maintained expressed as percentage)	To be defined locally, consistent with MEMODOP guidelines Percentage of cases where an agreed-upon order set is followed (yes/no)	Create a data collection system to capture data on 100% of donor management opportunities Reported monthly	100% compliance

Optional Measures:

Measure	Statistic	Definitions	Data Collection Methodology	Collaborative Goals
6. Appropriate Requester	Percentage of cases in which an 'appropriate requester' met with family to consent for donation (Number of cases in which an 'appropriate requester' met with family to obtain consent for donation divided by the total number of requests for donation, expressed as a percentage)	Appropriate requester: An individual identified within hospital policies and procedures as having the requisite experience and relevant training to be authorized to initiate the formal request to the family (can be an ODO or hospital employee). This individual will typically have completed an approved course in the methodology for approaching potential donor families and requesting organ donation, and will be recognized as competent in that role Numerator Number of cases in which an 'appropriate requester' met with family to obtain consent for donation Denominator Total number of requests for donation	Derived from death record reviews Reported monthly	100% in each hospital

Measure	Statistic	Definitions	Data Collection Methodology	Collaborative Goals
7. Timely Identification and Referral	Time from first clinical trigger to notification of ODO	Clinical triggers to be determined locally	Derived from chart audits Reported monthly	Within 1 hour

Notes:

- A single set of death record reviews on eligibility and categorization criteria for the Collaborative need to be established, agreed upon, and used by all participating sites.
- The data needs to be used for qualitative feedback to clinicians. Concentrate in Intensive Care, Emergency Department and Neurosciences initially and use the rest of the hospital for the spread strategy in due course.
- Need to source examples for the clinical trigger tool.
- In jurisdictions where all deaths are referred to the ODO's, teams may choose to measure "Timely Identification and Referral" (Measure #7) instead of "Referral Rate" (Measure #2).
- Definitions of Terms:
 - Measure = name of measure at conceptual level
 - Statistic = description of the operation(s) performed on the data
 - Definitions = of key terms such as numerator and denominator
 - Data Collection Methodology = sources of data, procedure for collecting the data including potential sampling plans and frequency, reporting and interpretation methods.

Goal = what a team can be expected to achieve by participating in a Collaborative.

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